
A D D E N D U M # 2

TO: ALL PROSPECTIVE Bidders

FROM: Sandra Auld, Director of Purchasing Department

DATE: April 11, 2016

**RE: Lessner Building First Floor Addition & First Floor & Lower Level Rehabilitation
BFY 16/17-29**

The following information is added to the bid documents for the aforementioned subject bid.

QUESTION #1: On drawing E402, calls for two (2) 4" conduits from the Denmarks, do both 4" conduits go out of the building?

ANSWER #1: Two 4" conduits indicated are existing to remain. New telephone and data service from utility company is not required, exiting services are reused

QUESTION #2: If the 4" conduits (on drawing E402) exit the building, how far out do they go?

ANSWER #2: The conduits are existing to remain.

QUESTION #3: Is utility bringing these (4" conduits) in or is it the contractor responsibility?

ANSWER #3: No, utility is not bringing new service to the building, existing conduit are to remain.

QUESTION #4: Men's and Women's restroom L10, L13, 116 and 118. After reviewing Plumbing Drawing P401/1,2, it is showing sink P-3. P-3 is an American Standard wall hung sink. Can you verify the type of sink that will be used at the Vanity tops?

ANSWER #4: Regarding the P-3 Fixture, Please revise the Plumbing fixture schedule on drawing P601. P-3 is to read: "LAVATORY- AMERICAN STANDARD. "STUDIO DROP IN SINK CAT. # 0643.001,VIT. CHINA; WITH FAUCET SLOAN OPTIMA MODEL ETF-610-4; #EL-154 TRANSFORMER, 120 VAC / 24 VAC, 50VA., #BDM, SLOAN BELOW DECK MECHANICAL MIXING VALVE, AND #ETF-460-A, CHROME PLATED BRASS GRID STRAINER W/1-1/4 OUTLET TUBE. MCGUIRE CAT #8902 1 1/4" X 1 1/2" 17 GA. C.P.T.B. ADJ. "P" TRAP AND CAT #170 3/8" FLEX. SUPPLIES AND STOPS"

QUESTION #5: Banquette seating: Will the contractor be the one to supply the upholstered cushions? If not please provide the specification for the fabric and a photo of the stitching required?

ANSWER #5: Yes, banquette seating is to be provided as part of the contract and is detailed on Architectural Drawings: A203, A207, A208, A301, A302, A524- issued as part of this Addendum #2.

The basis of design for the fabric is to be "Close Knit" K201 by Knoll Textiles. Stitching required is to be as shown on drawing A524.

QUESTION #6: What is the expected schedule for this project?

ANSWER #6: Please refer to the "Key Dates" section of the Pre-bid Meeting Minutes, included as part of Addendum #1. Additionally, please refer to Specification Section 013200_Part 2, Paragraph 2.1. delineating project activity milestone date requirements.

QUESTION #7: Regarding specification section 122413 Roller Shades – Part 1.1.A refers to several locations at the 7th floor however the drawings are for the lower level and first floor only. Please clarify.

ANSWER #7: See attached revised specification for Section 122413 Roller Shades. Manual shades are located only in Room #109. See revised details 3/A312 and 7/A312 included as part of this addendum.

QUESTION #8: The Bid Advertisement indicates the Bid Bond to be "ten percent (10%) of the amount of the total bid". The General Specifications, Instructions to Bidders Page 9, indicates the Bid Bond amount to be "ten percent (10%) of the total amount of the bid" and indicates that the Bid Bond form is "annexed to the Bidding Documents". The Architect's Instructions, Page AI-4 indicates the bid security to be in the amount of "ten percent (10%) of the Bid, but not in excess of \$20,000.00". Please clarify the amount of the bid bond required.

ANSWER #8: For a construction contract the bid guarantee/bond shall be in the amount of 10% of the Bid.

QUESTION #9: There is no bid bond form annexed to the bidding documents. Please advise if an AIA bid bond form would be acceptable.

ANSWER #9: No. An AIA bid bond form would not be acceptable.

QUESTION #10: Unit price M on the bid form is for "Face Brickwork & Includes Cleaning" and the amount given is 1,000. Is this 1,000 brick or 1,000 sf of brick?

ANSWER #10: Unit Price "M" refers to 1,000 brick

QUESTION #11: Spec section 074213 Metal Composite Material Wall Panels calls for Alucobond or Approved Equal. Please confirm that Alucoil ACM Panels are acceptable. Technical data is attached.

ANSWER #11: Products will not be pre-approved

QUESTION #12: Please confirm whether the HDI Optik Shoe is an acceptable manufacturer per specification section 057313 Glazed Decorative Metal Railings.

ANSWER #12: Products will not be pre-approved

QUESTION #13: Addendum #1 states that the bid is due on April 20th at 12:30 PM however the Union County College website states that the bid is due on April 20th at 1:00 PM. Please clarify.

ANSWER #13: The bid is due and opens on April 20th at 12:30 P.M. The College Website has been corrected.

QUESTION #14: With the issuing of Addendum #1, as well as Addendum #2 that will not be available until April 11th, we respectfully request that the bid date be extended by at least one week to allow enough time to review any changes. :

ANSWER #14: There will be no extension of the bid opening. The bid is due and opens on April 20th at 12:30 P.M.

QUESTION #15: Electrical- Is MC cable allowed for all work?

ANSWER #15: MC Cables shall be used concealed in ceilings, walls, and partitions for lighting and power branch circuits as indicated on Specifications section 26 05 19, 3.2, F.

QUESTION #16: Electrical- What # floor boxes are required at the lower level?

ANSWER #16: Floor box shall be shallow steel box with two 20A duplex receptacles, four (4) data outlets and two (2) voice outlets. Quantity shall be as indicated on the drawings. Refer to addendum #2 drawings for the part number.

QUESTION #17: Electrical-What # poke through is required for the first floor?

ANSWER #17: Refer to E001 addendum #1 drawing for the part number regarding fire rated poke thru. Refer to floor plans for quantity of devices.

QUESTION #18: Electrical- Is the baffle ceiling an accessible ceiling?

ANSWER #18: Yes the baffle ceiling system is accessible. The baffle ceiling is comprised of 6" deep metal baffles spaced 6" o.c. Per specification section 0953480_2.2B, each baffle is .025" thick. There will be open space between the baffles. Additionally the baffles are removable from their hangers. Please refer to Drawing A113 included as part of this Addendum #2 for clarification.

QUESTION #19: Drawing E-402, Is this drawing of the new required cabling, existing cabling or a combination of new and reused?

ANSWER #19: All cables indicated are new unless otherwise noted.

QUESTION #20: Drawing E-402, Lower Level, Main Data Rack is this a new rack and is it located in the new Data Equipment Room (L14).

ANSWER #20: Yes. Main Data Rack indicated is new and located in new Data Equipment Room (L14)

QUESTION #21: Drawing E-402, Lower Level, Main Data Rack indicates 4-24strand MM, 4-24strand SM, 1-48strand MM and 2-48strand SM cables. Are these all new cables?

ANSWER #21: All cables indicated are new unless otherwise noted

QUESTION #22: Drawing E-402, Lower Level, The High Density 1-RU Patch Panel, where is this panel located? In the new Data Equipment Room (L14), what rack?

ANSWER #22: The High Density Patch Panel shall be located in the existing Telephone Room (L26) as indicated on the drawing E-402.

QUESTION #23: Drawing E-402, The “Lower Level Voice Rack” and the “First Floor Voice Rack” were are these located, are they existing and is the indicated 200-pair copper cable new or existing?

ANSWER #23: Lower Level Voice Rack and First Floor Voice Rack are new and shall be installed in the new Data Equipment Room (L14) as indicated on the drawing E-402. All cables indicated are new unless otherwise noted.

QUESTION #24: Drawing E-402, The “Lower Level” Voice Rack, with the Riser copper cables and 1600-pair Tie cabling indicated, is this rack existing, new, where will it be located and the cables indicated new?

ANSWER #24: Lower Level Voice Rack is new and shall be installed in the new Data Equipment Room (L14) as indicated on the drawing E-402. All cables indicated are new unless otherwise noted.

QUESTION #25: Drawing E-402, The items listed in room “Tele room L26” existing or required as new cabling and hardware.

ANSWER #25: Fiber Optic and Telephone Demarks are existing to remain. High density Patch Panel and 110 Blocks indicated are new.

QUESTION #26: Drawing E-402, Indicate that the 24/48-strand cables will be installed into conduits. Are these conduit existing or are these cables to be installed into Inner-Ducts? If inner-duct are these new?

ANSWER #26: All conduits indicated are new unless otherwise noted. All optic fiber cable shall be installed into innerduct in all locations (whether inside conduit, on cable tray, etc.)

QUESTION #27: Drawing E-203, Indicate new racks and cabinets in room L14, will these racks and cabinets require Data/Fiber Optic Intra/Inter cabling?

ANSWER #27 Yes. Refer to drawing E303 for contractor provided patch cables requirements

QUESTION #28: Please provide contact name and phone number of the existing Security/CCTV maintenance Contractor.

ANSWER #28: Scott Seidler, Security Intelligence LLC, 201-951-4879 for CCTV and Thomas C. Kazanjian, Optimum Management, Inc., 732-463-0575 for access control in the Lessner Building.

QUESTION #29: Please advise what type of copper do you want for the backbone cabling, cat3 or cat5e?

ANSWER #29: The 200-pair and 400-pair copper riser backbone cables are for voice application and shall be cat3.

QUESTION #30: Copper backbone Riser Cable is planned for IDF’s on Floors LL thru Floor.

ANSWER #30: Provide new copper backbone riser cable as indicated in drawing E-402 and specified in bid documents.

QUESTION #31: Fiber Backbone Riser Cable is planned for IDF’s on Floors 2 thru 6.

ANSWER #31: Provide new fiber backbone riser cable as indicated in drawing E-402 and specified in bid documents.

QUESTION #32: Fiber Backbone Riser Cable is missing from the IDF's on Floors LL thru 1.

ANSWER #32: Provide station cables from each outlet directly to data equipment room.

QUESTION #33: Should we F&I new Fiber Backbone Riser Cable to the IDF locations on the LL and Floor 1?

ANSWER #33: 1st and LL does not have IDF. Provide station cables from each outlet directly to data equipment room.

QUESTION #34: Please specify fiber type and strand count.

ANSWER #34: Provide fiber optic cable as specified in E-303.

QUESTION #35: Please advise if the insurance requirement for Sexual Misconduct can be waived?

ANSWER #35: Please note the Sexual Misconduct insurance requirement below is modified

as follows under section **27. INSURANCE REQUIREMENTS**

The requirement for: SEXUAL MISCONDUCT insurance with limits of liability of at least \$1,000,000 per claim/\$1,000,000 aggregate can be met via an Employment Practices Liability including Third Party Coverage or with confirmation that there is no Sexual Misconduct exclusion under the General Liability policy.

Please see additional pages for more information, and inclusion as part of this addendum.

Please complete below. A signed copy of this addendum, SIGNED BY AN OFFICER OF THE BIDDER AUTHORIZED TO DO SO, must be included with your bid submission.

Submitted by _____

Signature: _____

Title: _____

Company or Corporation: _____

Phone #: _____ Email: _____

Date: _____

THE MUSIAL GROUP ARCHITECTURE

191 Mill Lane
Mountainside, NJ 07092
t. 908.232.2860
f. 908.232.2845

ADDENDUM #2

DATE: 11 APRIL 2016

PROJECT: **UCC FIRST FLOOR ADDITION
& LOWER LEVEL
REHABILITATION**

PROJECT NO. 108813.00

TO: **ALL CONTRACTORS AND OTHERS WHO HAVE PICKED UP
SETS OF DRAWINGS AND SPECIFICATIONS**

FROM: The Musial Group, pa

BIDDING DOCUMENT ADDENDUM # 2

The original contract documents dated March 2016, for the above-mentioned project is amended as noted in this **Addendum**. This Addendum shall become part of said contract documents as if originally included therein.

Bidders must acknowledge receipt of this Addendum on the Proposal Form.

Project Items:

1. Regarding the column computer stations depicted on A102&A523, after demolition, provide 2 full scale plywood mockups of the entirety Column C1 & Column E6 for owner review. Allow 2 weeks for owner's comments.
2. Regarding Specification section 0177000_Closeout Procedures, to clarify, all warranties and guaranties on the project are to start at the date of TCO.
3. Regarding Specification section 017700_Closeout Procedures Paragraph 3.1 Final Cleaning, add the following text: "q. Remove all adhesive and residue as resultant of the removal of glazing film the interior surfaces of the existing curtain wall. Clean the exterior and interior of all existing glazing and mullions on the first floor. Clean the exterior and interior glazing and mullions of the escalator curtainwall enclosure. Clean the new and existing coping and exterior fascia panels of the low roof area."
4. Regarding the mounting of exit lighting, smoke detectors, and their interface with the baffle ceiling, fixtures are to be stem mounted at the bottom elevation of the baffles.

5. Regarding the return Duct above Rm 113, the duct is to ogee to up to clear the continuous built-up header that runs above and supports the head of the frameless glass partition wall. Diagonal bracing and lighting supports are to be coordinated as required to prohibit interference.
6. Regarding the exterior plaza, in that portion of the plaza and addition that was previously plaza above the basement double slab condition, the insulation shall be tapered to allow for a full 3" topping slab.
7. Regarding the exterior planters above slab on grade, provide drains and 4" pvc piping underneath the new sidewalk to discharge through curb into street. Regarding the exterior planters above the double slab basement condition, provide drains and 4" PVC piping to tie into the existing drain lines.
8. Regarding specification section 084413-Glazed Aluminum Curtain walls, and Architectural drawings A511 & A512, to clarify, the 7 ½" deep mullion referenced in Paragraph 1.2A1 is to be considered "Type B" while the 11" deep mullion referenced in Paragraph 1.2 A2 is to be considered "Type A".
9. Regarding the Interior Lighting on E103 & A112, A113, Delete "G" fixtures shown at 2/E103 "Mezzanine Level Ceiling Plan. Add "G" Fixtures around escalator soffit as shown on A112_r1 issued as part of this Addendum #2. Add (2) E fixtures to the high ceiling area Plan West of Column Line 2 between CL E & D. Add 23 linear feet of type "J" fixtures surface mounted to underside of stair landing M03 at the southern wall of the stair core
10. Regarding the front plaza railing, the basis of design is CRL Modular Crossbar Infill system with ½" stainless steel rods spaced 4" o.c. with round post surface mount. Crossbar infill system is mounted to custom bent 2" o.d. stainless steel posts spaced 4" o.c. embedded into the architectural concrete curb. 2" o.d. stainless steel guard rail spans between posts. C.I. Laurence is the basis of design. Provide signed and sealed calculations from a PE licensed in the state of NJ. Posts are to align with tie patterning of architectural concrete form ties.
11. Replace Type "L" Lighting Fixture. Type "L" lighting fixture to be 9" & 4" tall Arial Bold standoff mount stainless steel backlit LED illuminated fabricated metal dimensional lettering
12. Add Type "R" lighting fixture. Type "R" to be Medley View II exterior architectural LED Linear Light by Insight or approved equal. Basis of design model # to be MVWII 3.5 3500K 100degree EASCW6 48" long INT1 DIM TBL VS. Provide 5 "R" fixtures as shown on G102_R1 issued as part of this Addendum. To be placed on Type "O" LPEG-24 LCPG-12 circuit. Delete 2 type "O" fixtures in the rear plaza as shown on G102_R1
13. Add power and data locations for 3 message boards above the banquette seating located plan north of the existing elevator.
14. Regarding exterior pole light fixtures Type O provide 6 FT deep 24" diameter footing with #5 bars at 12" O.C. Carefully set top of foundation w/plaza concrete.
15. Regarding the exterior architectural concrete retaining wall, to clarify, the reinforcing shall be #4 @ 12" o.c. horizontal and vertical with #4 bars doveled @ 24" o.c. into existing scarified foundation wall with epoxy bonding. Maintain 1" coverage minimum. Architectural concrete shall utilize 1" recessed tapered form ties in pattern shown on drawings aligned with railing posts using fiberglass smooth formwork.

16. Relative to the Clay plaster specification: This finish is on the North, East and West of the center core. Please note that on the East and West wall it will continue along the new exit way to the exterior wall.

DRAWINGS AND SPECIFICATIONS ATTACHED:

1. Specifications 8.5 x 11: 46 pages

084113-LESSNER 108813-Aluminum-Framed Entrances and Storefronts REV.doc 16 pg.

096500-LESSNER 108813-Resilient Sheet Flooring REV.doc 9 pg.

099123-LESSNER 108813-painting REV.doc 14 pg.

122413-LESSNER 108813-Roller Window Shades REV.doc 7 pg.

2. SK Drawings 8.5 x 11(except as noted): total 15 pages

Architectural 11 Pages: SK01 A103, SK01A A311_2016-04-11 (11 x 17), SK01B A306, SK01C A306, SK01D A603, SK01E A03, SK02 A203, SK02A A204, SK02B A205, SK02C A206, SK02D A208

Structural: 4 pages: SK-S101a, SK-S102a, SK-S102b, SK-S102c

3. FULL SIZE 24 X 36 DWGS. Total 29 sheets.

22 Architectural sheets: G101, G102, G103, A103, A111, A112, A113, A201, A207, A301, A302, A307, A310, A311, A312, A441, A442, A443, A501, A503, A524, A525

7 Electrical: E-001, E-201, E-301, E-302, E-402, E-502, E-503

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Exterior and interior storefront framing.
2. Storefront framing for window walls.
3. Exterior and interior manual-swing entrance doors and door-frame units.

- B. Related Requirements:

1. Section 084413 GLAZED ALUMINUM CURTAIN WALLS
2. Division 087100 FINISH HARDWARE
3. Division 088000 GLAZING
4. Division 079200 JOINT SEALANTS
5. Division 072726 FLUID-APPLIED MEMBRANE AIR BARRIERS

1.3 ALLOWANCES

- A. Source quality control and field quality control is part of testing and inspecting allowance.

1.4 PREINSTALLATION MEETINGS

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

1.5 ACTION SUBMITTALS

- A. **084113_01** Product Data: For each type of product.
 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

- B. **084113_02** 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. **084113_03** Samples for Initial Selection: For units with factory-applied color finishes.
- D. **084113_04** Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- E. **084113_05** Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch (300-mm) 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.
- F. **084113_06** 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. **084113_07** Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- 1.6 INFORMATIONAL SUBMITTALS
- A. **084113_08** Qualification Data: For Installer.
- B. **084113_09** Energy Performance Certificates: For 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. **084113_10** Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by manufacturer and witnessed by a qualified testing agency.
 - D. **084113_11** Quality-Control Program: Developed specifically for Project, including fabrication and installation, according to recommendations in ASTM C 1401. Include periodic quality-control reports.
 - E. **084113_12** Source quality-control reports.
 - F. **084113_13** Field quality-control reports.
 - G. **084113_14** Sample Warranties: For special warranties.
- 1.7 CLOSEOUT SUBMITTALS
- A. **084113_15** Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.
 - B. **084113_16** Maintenance Data for Structural Sealant: For structural-sealant-glazed storefront to include in maintenance manuals. Include ASTM C 1401 recommendations for post-installation-phase quality-control program.
- 1.8 QUALITY ASSURANCE
- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 - B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.
 - C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.
 - D. Structural-Sealant Glazing: Comply with ASTM C 1401 for design and installation of storefront systems.

1.9 WARRANTY

- A. Special Warranty: 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, metal finishes, and other materials beyond normal weathering.
 - d. Water penetration through fixed glazing and framing areas.
 - e. Failure of operating components.
 2. Warranty Period: Two years from date of Substantial Completion.
- B. 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:
 - 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. Warranty Period: 20years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design aluminum-framed entrance systems, including the contractor submitting a comprehensive engineering analysis calculations and drawings signed and sealed by a qualified NJ licensed professional engineer, using performance requirements and design criteria indicated and as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrances and storefronts.
- B. 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.
- C. Structural Loads:
 1. Wind Loads: As per 2015 IBC.
 2. Other Design Loads: As per 2015 IBC.
- D. Deflection of Framing Members:
 1. UNIFORM LOAD: A STATIC AIR DESIGN LOAD OF 20 psf (958 Pa) 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 LOAD TEST 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 SPAN SHALL OCCUR.
 - a. Operable Units: Provide a minimum 1/16-inch (1.6-mm) clearance between framing members and operable units.
- E. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
 1. Fixed Framing and Glass Area:
 - a. Maximum air leakage of 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
 2. Entrance Doors:
 - a. Pair of Doors: Maximum air leakage of 1.0 cfm/sq. ft. (5.08 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
 - b. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. (2.54 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
- F. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:
 1. THERE SHALL BE NO LEAKAGE AT A MINIMUM STATIC AIR PRESSURE DIFFERENTIAL OF 8 psf (383 Pa) AS DEFINED IN AAMA 501.
- G. Energy Performance: Certify and label energy performance according to NFRC as follows:

1. Thermal Transmittance (U-factor): WHEN TESTED TO AAMA SPECIFICATION 1503, THE THERMAL TRANSMITTANCE (U-FACTOR) SHALL NOT BE MORE THAN: GLASS TO EXTERIOR: 0.46 (LOW-E) OR 0.63 (CLEAR)
 2. Solar Heat Gain Coefficient: Fixed glazing and framing areas shall have a solar heat gain coefficient of no greater than **0.35** as determined according to NFRC 200.
 3. Condensation Resistance: WHEN TESTED TO AAMA SPECIFICATION 1503, THE CONDENSATION RESISTANCE FACTOR SHALL NOT BE LESS THAN:
 - a. GLASS TO EXTERIOR 60frame and 63 glass(LOW-E) OR 60frame and 58glass (LOW-E).
- H. Noise Reduction: Test according to ASTM E 90, with ratings determined by ASTM E 1332, as follows.
1. Outdoor-Indoor Transmission Class: Minimum **26**
- I. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:
1. Temperature Change: **120 deg F (67 deg C)**, ambient; **180 deg F (100 deg C)**, material surfaces.
 2. Thermal Cycling: 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.
 - a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of **180 deg F (82 deg C)** .
 - b. Low Exterior Ambient-Air Temperature: **0 deg F (minus 18 deg C)**.
 - c. Interior Ambient-Air Temperature: **75 deg F (24 deg C)**.
- J. Structural-Sealant Joints:
1. Designed to carry gravity loads of glazing.
 2. Designed to produce tensile or shear stress of less than 20 psi (138 kPa).
 3. Comply with ASTM C 1401, "Guide for Structural Sealant Glazing" for design and installation of structural-sealant-glazed systems.
- K. Structural Sealant: Capable of withstanding tensile and shear stresses imposed by structural-sealant-glazed storefront system without failing adhesively or cohesively. When tested for preconstruction adhesion and compatibility, cohesive failure of sealant shall occur before adhesive failure.
1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
 2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.

2.2 MANUFACTURERS

- A. Kawneer North America: an Alcoa Company. 555 Guthridge Court, Norcross, GA 30092, (770) 449-5555.
- B. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing spandrel panels and accessories, from single manufacturer.
- C. BASIS FOR DESIGN PRODUCT: ENCORE FRAMING SYSTEM (THERMALLY IMPROVED). SYSTEM DIMENSIONS 1 3/4" X 4 1/2" NOMINAL DIMENSION.

2.3 FRAMING

- A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
 - 1. Construction: **Thermally broken.**
 - 2. Glazing System: **Retained mechanically with gaskets on four sides**
 - 3. GLASS: TO MATCH ADJACENT EXISTING STOREFRONT.
 - 4. Finish: **To match curtain wall system.**
 - 5. Fabrication Method: Field-fabricated stick system.
- B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- D. Materials:
 - 1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - a. Sheet and Plate: ASTM B 209 (ASTM B 209M).
 - b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
 - c. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
 - d. Structural Profiles: ASTM B 308/B 308M.
 - 2. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.
 - a. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - b. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 - c. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.4 ENTRANCE DOOR SYSTEMS

- A. Aluminum (Entrances and Components):
1. Material Standard: ASTM B 221; 6063-T6 alloy and temper.
 2. The door stile and rail face dimensions of the Kawneer 350 entrance door will be as follows:
 - a. Door is Kawneer 350
 - b. Vertical Stile is 3-1/2"
 - c. Top Rail is 3-1/2"
 - d. Bottom Rail is 6-1/2"
 3. Major portions of the door members to be 0.125" nominal in thickness and glazing molding to be 0.05" thick
 4. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data, published by The Aluminum Association.
 5. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomeric.
 6. Provide adjustable glass jacks to help center the glass in the door opening.
- B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing operation.
1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 - a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
 2. Door Design: As indicated.
 3. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide non-removable glazing stops on outside of door.

2.5 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Finish Hardware."
- B. General: Provide entrance door hardware for each entrance door to comply with requirements in this Section.
1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated.
 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems..

3. Opening-Force Requirements:
 - a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.
 - b. Accessible Interior Doors: Not more than 5 lbf (22.2 N) to fully open door.

- C. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:
 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.
 2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

- D. Pivot Hinges: BHMA A156.4, Grade 1.
 1. Offset-Pivot Hinges: Provide top, bottom, and intermediate offset pivots at each door leaf.

- E. Butt Hinges: BHMA A156.1, Grade 1, radius corner.
 1. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while entrance door is closed.
 2. Exterior Hinges: Stainless steel, with stainless-steel pin.
 3. Quantities:
 - a. For doors up to 87 inches (2210 mm) high, provide three hinges per leaf.
 - b. For doors more than 87 and up to 120 inches (2210 and up to 3048 mm) high, provide four hinges per leaf.

- F. Continuous-Gear Hinges: Manufacturer's standard with stainless-steel bearings between knuckles, fabricated to full height of door and frame.

- G. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.

- H. Manual Flush Bolts: BHMA A156.16, Grade 1.

- I. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.

- J. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

- K. Cylinders: As specified in Section 087100 "Finish Hardware."

1. Keying: Master key system. Permanently inscribe each key with a visual key control number and include notation "DO NOT DUPLICATE" to be furnished by Owner.
 - L. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.
 - M. Operating Trim: BHMA A156.6.
 - N. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to comply with field conditions and requirements for opening force.
 - O. Concealed Overhead Holders: BHMA A156.8, Grade 1.
 - P. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.
 - Q. Weather Stripping: Manufacturer's standard replaceable components.
 1. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.
 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
 - R. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.
 - S. Silencers: BHMA A156.16, Grade 1.
 - T. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch (12.7 mm).
 - U. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.
- 2.6 GLAZING
- A. Glazing: Comply with Section 088000 "Glazing."
 - B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers. Comply with Section 088000 "Glazing."
 - C. Glazing Sealants: As recommended by manufacturer.
 - D. Structural Glazing Sealants: ASTM C 1184, chemically curing silicone formulation that is compatible with system components with which it comes in contact, specifically

formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in storefront system indicated.

1. Color: As selected by Architect from manufacturer's full range of colors.

E. Weatherseal Sealants: ASTM C 920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed storefront manufacturers for this use.

1. Color: Match structural sealant.

2.7 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.

2. Accurately fitted joints with ends coped or mitered.
 3. Physical and thermal isolation of glazing from framing members.
 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 5. Provisions for field replacement of glazing from interior. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.
- F. Storefront Framing: Fabricate components for assembly using manufacturer's standards.
- G. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
1. At exterior doors, provide compression weather stripping at fixed stops.
 2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.
- H. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
 2. At exterior doors, provide weather sweeps applied to door bottoms.
- I. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- J. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 ALUMINUM FINISHES

- A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2604 or AAMA 2605 and containing not less than 50 or 70 percent (respectively) PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.10 SOURCE QUALITY CONTROL

- A. Structural Sealant: Perform quality-control procedures complying with ASTM C 1401 recommendations including, but not limited to, assembly material qualification procedures, sealant testing, and assembly fabrication reviews and checks.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. FIELD MEASUREMENTS: VERIFY ACTUAL DIMENSIONS OF ALUMINUM-FRAMED STOREFRONT OPENINGS BY FIELD MEASUREMENTS BEFORE FABRICATION AND INDICATE FIELD MEASUREMENTS ON SHOP DRAWINGS.

3.2 PREPARATION

- A. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

3.3 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 079200 "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 088000 "Glazing."
- G. Install weather seal sealant according to Section 079200 "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.

3.4 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 (3.2 mm in 3 m).
 - 2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m).
 - 3. Alignment:
 - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
 - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
 - c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).
 - 4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

- B. Field Quality-Control Testing: Perform the following test on representative areas of aluminum-framed entrances and storefronts.
1. Water INFILTRATION Tests: Before installation of interior finishes has begun, areas designated by Architect shall be tested according TO 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 (300 Pa).
 - a. Perform a minimum of three tests in areas as directed by Architect.
 - b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 35 percent completion.
 2. 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/ft², WHICHEVER IS GREATER.
 - a. Perform a minimum of three tests in areas as directed by Architect.
 - b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 35 percent completion.
- C. Structural-Sealant Adhesion: Test structural sealant according to recommendations in ASTM C 1401, Destructive Test Method A, "Hand Pull Tab (Destructive)," Appendix X2.
1. Test a minimum of six areas on each building facade.
 2. Repair installation areas damaged by testing.
- D. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

3.1 ADJUSTING, CLEANING AND PROTECTION

- A. CLEAN ALUMINUM SURFACES IMMEDIATELY AFTER INSTALLING ALUMINUM-FRAMED STOREFRONTS. AVOID DAMAGING PROTECTIVE COATINGS AND FINISHES. REMOVE EXCESSIVE SEALANTS, GLAZING MATERIALS, DIRT AND OTHER SUBSTANCES.
- B. CLEAN GLASS IMMEDIATELY AFTER INSTALLATION. COMPLY WITH GLASS MANUFACTURER'S WRITTEN RECCOMENDATIONS FOR FINAL CLEANING AND MAINTENANCE. REMOVE NONPERMANENT LABELS AND CLEAN SURFACES.
- C. REMOVE AND REPLACE GLASS THAT HAAS BEEN BROKEN, CHIPPED, CRACKED, ABRADED OR DAMAGED DURING MANUFACTURE OR CONSTRUCTION.

3.2 MAINTENANCE SERVICE

A. Entrance Door Hardware:

1. 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 entrance door hardware.
2. Initial Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Use parts and supplies that are the same as those used in the manufacture and installation of original equipment.

END OF SECTION 084113

SECTION 096500 RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Resilient linoleum sheet flooring.
 - 1. Homogeneous linoleum sheet flooring, 2.5 mm thick "Concrete" type, adhesive and NET FIT seams installation. Also included is vertical application at some column locations as well as HORIZONTAL work surface applications.
- B. Related Sections: Section(s) related to this section include:
 - 1. Resilient Flooring Accessories: Refer to Division 9 Finishes Sections for resilient wall bases, reducer strips, metal edge strips and other resilient flooring accessories.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM F 2034 for Linoleum Sheet Flooring
 - 2. ASTM E 66 Test Method for Specific Density of Smoke Generated by Solid Materials.
 - 3. ASTM F 710 Practice for Preparing Concrete Floors to Receive Resilient Flooring.
 - 4. ASTM F 970-87 Test Method for Static Load Limit.
 - 5. ASTM F 1869 STANDARD TEST METHOD FOR MEASURING VAPOR EMISSION RATE OF CONCRETE SUBFLOOR USING CALCIUM CHLORIDE.
 - 6. ASTM F 2170 STANDARD TEST METHOD FOR DETERMINING RELATIVE HUMIDITY IN CONCRETE FLOOR SALBS USING IN SITU PROBES.
 - 7. ASTM F 1861 STANDARD SPECIFICATION FOR RESILIENT WALL BASE
 - 8. ASTM E 662 STANDARD TEST METHOD FOR SPECIFIC OPTICAL DENSITY OF SMOKE GENERATED BY SOLID MATERIALS.
 - 9. ASTM E 84 STANDARD TEST METHOD FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS.
- B. Federal Specification (Fed Spec):
 - 1. Fed Spec L-F-475A Floor Covering, Vinyl, Surface (Tile and Roll), with Backing, February 1971.
- C. National Fire Protection Association (NFPA):
 - 1. NFPA 258 Test Method for Specific Density of Smoke Generated by Solid Materials.

1.3 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide flooring which has been manufactured, fabricated and installed to performance criteria certified by manufacturer without defects, damage, or failure.

1.4 SUBMITTALS

- A. **096500_01** General: Submit listed submittals in accordance with "Conditions of the Contract" and Division 1 Submittal Procedures Section.
- B. **096500_02** Product Data: Submit product data, including manufacturer's SPEC-DATA product sheet, for specified products.
- C. **096500_03** Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors, patterns and textures. Submit 1/8" scale layout of all seams for review.
- D. **096500_04** Samples: Submit selection and verification samples for finishes, colors, and textures. Architect to select from manufacturer's full range of colors.
- E. **096500_05** Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.
 - 3. Manufacturer's Instructions: Manufacturer's installation instructions.
- F. **096500_06** Closeout Submittals: Submit the following:
 - 1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 2. Warranty: Warranty documents specified herein.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
 - 1. Engage installer certified as a "Forbo Master Mechanic" or "Associate Mechanic."
 - 2. Certificate: BEFORE START OF JOB INSTALLER IS TO submit certificate indicating qualification TO GC TO BE VERIFIED BY FORBO. INSTALLER IS TO insure that certified installer is on the job from start to finish. Installer should be able to show a job of similar size, scope and material.

- B. Regulatory Requirements:
1. Fire Performance Characteristics: Provide resilient linoleum sheet flooring with the following fire performance characteristics as determined by testing products in accordance with ASTM method indicated below by a certified testing laboratory or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - a. Critical Radiant Flux: Class 1 Rating per NFPA 253 (ASTM 648) (0.45 watts/cm² or greater).
 - b. Smoke Density: Less than 450 per NFPA 258 (ASTM E 662).
- C. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, texture and pattern, and workmanship standard. Comply with Division 1 Quality Control (Mock-Up Requirements) Section 14000.
1. FLOOR Mock-Up Size: 4'-0" X 4'-0"
 2. VERTICAL APPLICATION: ONE COLUMN BASE AS INDICATED BY ARCHITECT.
 3. FLOOR PATTERN SCRIBE AT COLUMN BASE; SEE NO. 2.
 4. FLOOR PATTERN SCIBE AT DOOR FRAME.
 5. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
 6. Incorporation: Mock-up will **NOT** be incorporated into final construction.
- D. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section. MANUFACTURER REPRESENTATIVE IS TO ATTEND PRE-INSTALLATION MEETING.
- E. Pre-Installation Testing: Conduct pre-installation testing as SPECIFIED IN SECTION 3.3 PREPARATION.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.
1. Material should be stored AT JOBSITE in areas that are fully enclosed, weathertight with the permanent HVAC system OPERATIONAL, CONTROLLED AND set at a uniform temperature of at least 68 degrees F (20 degrees C) for AT LEAST 48 hrs. prior to the installation.

1.7 PROJECT CONDITIONS

1. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, Areas to receive flooring shall be clean, fully enclosed, weathertight with the permanent HVAC MUST BE FULLY OPERATIONAL, CONTROLLED AND SET AT A MINIMUM OF 68 DEGREES F FOR A MINIMUM OF 7 DAYS PRIOR TO, DURING AND SEVEN DAYS AFTER THE INSTALLATION. THE FLOORING MATERIAL SHOULD BE CONDITIONED IN THE SAME MANNER FOR AT LEAST 48 HOURS BEFORE THE INSTALLATION. AREAS TO RECEIVE FLOORING SHALL BE ADEQUATELY LIGHTED TO ALLOW FOR PROPER INSPECTION OF THE SUBSTRATE, INSTALLATION AND SEAMING OF THE FLOOR AND FOR FINAL INSPECTION.
 - A. Existing Conditions: Verify all existing conditions in the field. Correct defective conditions prior to commencement of installation and at no cost to the owner. Coordinate installation of sheet linoleum with flooring at entrances to rooms. WHERE SELF-LEVELING CONCRETE IS NOT USED contractor shall flash patch floor slab AND/OR GRIND FLOOR as required to ensure overall smooth substrate and transition between other flooring and linoleum. Comply with all barrier free requirements for any change in floor elevations at classroom entrances.
 - B. Field Measurements: Verify actual measurements/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.

1.8 SEQUENCING AND SCHEDULING

- A. Finishing Operations: Install SHEET flooring after finishing operations, including painting and ceiling operations, have been completed.
- B. Concrete Curing: Do not install tile flooring over concrete substrates until substrates have cured and are dry to bond with adhesive as determined by resilient flooring manufacturer's recommended bond, moisture test, and pH test.
- C. Contractor shall perform moisture tests before starting work and submit those results to the architect. MOISTURE TESTS, HUMIDITY AND PH TO BE PERFORMED WHEN HVAC SYSTEM IS FULLY OPERATIONAL.

1.9 WARRANTY

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

1. RESILIENT LINOLEUM SHEET FLOORING:

- a. Warranty Period: Five (5) year limited warranty commencing on Date of Substantial Completion.

1.10 MAINTENANCE

- A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals (Maintenance Materials) Section.
1. Quantity: Furnish quantity of flooring units equal to 5% of amount installed.
 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 - PRODUCTS

2.1 RESILIENT LINOLEUM SHEET FLOORING

A. ARCHITECT SHALL SELECT COLORS FROM THE FOLLOWING PRODUCT LINES:

1. Manufacturer: Forbo Linoleum, Inc.: (800) 842-7839
 - a. MARMOLEUM "CONCRETE" STYLE Sheet
 - 1) Description: Homogeneous sheet linoleum of primarily natural materials consisting of linseed oil, wood flour, and rosin binders, mixed and calendered onto natural jute backing. Pattern and color shall extend throughout total thickness of material.
 - 2) Width: 79".
 - 3) Length: 105 Linear Feet.
 - 4) GAUGE: 2.5 mm (1/10")
 - 5) Backing: Jute
 - 6) Pattern and Color: As selected by Architect from manufacturer's standard patterns and colors.
 - 7) Adhesive: Forbo Linoleum, Inc., FORBO SUSTAIN 885M Adhesive or FORBO SUSTAIN 1195
 - 8) NET FIT SEAMS: ALL MRMOLEUM SHEET PRODUCTS SHALL BE INSTALLED UTILIZING NET FIT SEAMS.
 - 9) TOPSHEILD 2 FINISH: APPLIED DURING THE MANUFACTURING PROCESS.
 - 10) COLOR RIGHT CAULK AT VERTICAL APPLICATION. COLOR TO BE CHOSEN BY ARCHITECT. 405-354-3644.

B. APPROVED EQUAL

2.2 RELATED MATERIALS

- A. Related Materials: Refer to other sections for related materials as follows:
 - 1. Underlayment and Patching Compound: Refer to Division 3 Concrete Sections for portland cement-based underlayments and patching compounds.
 - 2. Resilient Flooring Accessories: Refer to Division 9 Finishes Sections for resilient flooring accessories.
 - 3. Expansion Joint Covers: Refer to other specification section for expansion joint covers to be used with resilient flooring.

2.3 SOURCE QUALITY

- A. Source Quality: Obtain flooring product materials from a single manufacturer.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions, and product carton instructions for installation.

3.2 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions.
- B. Material Inspection: In accordance with manufacturer's installation requirements, visually inspect materials prior to installation. Material with visual defects shall not be installed and shall not be considered as a legitimate claim.

3.3 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
- B. Surface Preparation:
 - 1. General: Prepare floor substrate in accordance with manufacturer's instructions.
 - 2. Floor Substrate: Prepare floor substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as dust, paint, grease, oils, solvent, curing and hardening compounds, sealers, asphalt and old adhesive residue.
 - 3. Concrete Floor Substrate: Concrete floor substrate shall have a minimum compressive strength of **3000** psi. Refer to Division 3 Concrete sections for patching and repairing crack materials, and leveling compounds with portland

cement-based compounds. Do not use or install flooring over gypsum-based leveling or patching materials.

- a. Reference Standard: Comply with ASTM F 710 Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- C. Concrete Moisture Test: Conduct moisture tests on all concrete floors regardless of the age or grade level with a minimum of three tests for the first 1000 square feet. The test shall be a calcium chloride test in accordance with ASTM F 1869. MEASURE THE INTERNAL RELATIVE HUMIDITY OF THE CONCRETE SLAB IN ACCORDANCE WITH THE LATEST VERSION OF ASTM 2170. One test shall be conducted for every 1000 sq. ft. of flooring. The test shall be conducted around the perimeter of the room, at columns and where moisture may be evident. The moisture emission from the concrete shall not exceed 8.0 lbs. per 1000 sq. ft. (2.4KG/100 M2) in 24 hours when using FORBO V 885 ADHESIVE. CONCRETE INTERNAL RELATIVE HUMIDITY MUST NOT EXCEED 85% WHEN USING FORBO V885 ADHESIVE. A diagram of the area showing the location and results of each test shall be submitted to the architect, general contractor or end user. If the test results exceed the limitations, the installation shall not proceed until the problem has been corrected. THE TEST SHALL BE CONDUCTED WITH THE HVAC SYSTEM FULLY OPERATIONAL.
- D. Concrete pH Test: Perform pH tests on concrete floors regardless of the age or grade level. THE SURFACE pH OF CONCRETE SLABS MUST NOT EXCEED A pH OF 10 FOR FORBO L 885 OR SUSTAIN 885m ADHESIVES. THE SURFACE OF CONCRETE SLABS MUST NOT EXCEED A PH OF 11 FOR FORBO SUSTAIN 1195 ADHESIVE. CONCRETE SUBSTRATES WITH PH READINGS LESS THAN 7.0 OR ABOVE 10.0 WILL REQUIRE REMEDIATION PRIOR TO INSTALLATION. THE TEST SHALL BE CONDUCTED WITH THE HVAC SYSTEM FULLY OPERATIONAL.

3.4 INSTALLATION

A. LINOLEUM SHEET

2. **Material Installation: Measure the area to be installed and determine the direction in which the material will be installed and seam placement. Seams must be a minimum of 6" away from underlayment and concrete joints, saw cuts, etc. Cut the required length for the first sheet, adding 3" - 6" for trimming. Fit the first sheet along the main wall and at the ends using standard fitting methods. The factory edge must be trimmed in order to produce a clean edge suitable for seaming. Immediately after installation, roll the sheet with a 100 pound three-section roller in both directions and repeat as necessary to ensure adequate transfer of adhesive to the backing. Repeat the same procedure on the other half of the sheet. DO NOT REVERSE THE SHEETS. INSTALL ALL MARMOLEUM® AND LINOLEUM SHEETS IN THE SAME DIRECTION.**
3. **Adhesive Flooring Installation: Use trowel recommended by flooring manufacturer for specific adhesive (1/16" x 1/16" x 1/16" Square notch trowel). Spread rate is approximately 125 ft²/gallon.**
4. **Seaming: After the material has been laid into the adhesive, the material should be trimmed to produce a net fit at the seam. The seam edges should**

**just meet, with no pressure or fullness and should be cut with a slight bevel.
This will compensate for any slight expansion that may occur.**

- B. Installation Techniques:
- a. Where demountable partitions and other items are indicated for installation on top of finished flooring, install flooring before these items are installed.
 - b. Scribe, cut, fit flooring to butt tightly to vertical surfaces, permanent fixtures and built-in furniture, including pipes, outlets, edgings, thresholds, nosings, and cabinets.
 - c. Extend flooring into toe spaces, door reveals, closets, and similar openings.
 - d. Install flooring on covers for telephone and electrical ducts, and similar items occurring within finish floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.
 - e. Do not install resilient flooring over expansion joints. Use expansion joint covers manufactured for use with resilient flooring. Refer to other specification sections for expansion joint covers.
 - f. Adhere resilient flooring to substrate without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed installation.
 - 1) Use adhesive applied to substrate in compliance with flooring manufacturer's recommendations, including those for trowel notching, adhesive mixing, and adhesive open and working times.
 - g. Roll resilient flooring as required by resilient flooring manufacturer.
- C. Finish Flooring Patterns: As selected by Architect AND INCLUDING MULTIPLE COLORS, BORDERS, ETC.
- D. INSTALL CLEAR CAULKING AT LOWER LEVEL WHERE FLOORING MEETS EXTERIOR WALLS.

3.5 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
1. Remove visible adhesive and other surface blemishes using cleaning methods recommended by tile floor manufacturer.
 2. Sweep and vacuum floor after installation.
 3. Do not wash floor until after time period recommended by tile flooring manufacturer.
 4. Damp-mop tile flooring to remove black marks and soil.
 5. **Marmoleum® with Topshield 2™ is pre-sealed and pre-finished. It is occupancy ready- no additional finish is required at the time of installation. See manufacturers' recommendations for further information.**

- B. Protection: Protect installed product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of Substantial Completion.

3.6 INITIAL MAINTENANCE PROCEDURES

- A. General: Include in Contract Sum Amount cost for initial maintenance procedures, and execute procedures after flooring installation as recommended by flooring manufacturer.
- B. **Initial maintenance to be conducted by awarded Flooring Contractor using a Certified Forbo Floor Care Technician.**
- C. **Drying Room Yellowing/Ambering: While Marmoleum® and linoleum products are maturing in the drying stoves, a yellow cast, called “drying room yellowing” or “ambering” may appear on the surface. This yellow cast is caused by the oxidation of linseed oil and is TEMPORARY. It occurs intermittently and with varying intensity. It is most noticeable on blue and grey shades of material. When the material is exposed to light, the drying room yellowing will disappear. The process may take as little as a few hours in bright sunlight or longer with artificial light. Because this is a natural occurrence in the product, there is no set time frame for the yellowing to disappear. This is not a material defect. In regards to floor care, applying finish to the material before the drying room yellowing disappears will make no difference; it will still disappear with exposure to light.**

END OF SECTION 096500

SECTION 099123 – PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes surface preparation and field painting of exposed **exterior and interior** items and surfaces.
 - 1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, NEW AND EXISTING exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish, TOUCH-UP OF FACTORY APPLIED FINISHES AS REQUIRED.
- C. **Do not paint** pre-finished items, concealed surfaces, (EXCEPT ABOVE CEILING SPACES ABOVE THE V FIN CEILING) finished metal surfaces, operating parts, and labels.
 - 1. Pre-finished items include the following factory-finished components:
 - a. Architectural woodwork.
 - b. Acoustical wall panels.
 - c. Toilet enclosures.
 - d. CASEWORK.
 - e. Light fixtures.
 - f. METAL PANELS.
 - 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Foundation spaces.
 - b. Furred areas.

- c. Ceiling plenums.
(However, entire space above the v fin ceiling shall be painted)
 - d. Utility tunnels.
 - e. Pipe spaces.
 - f. Duct shafts.
 - 3. Finished metal surfaces include the following:
 - a. Anodized aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper and copper alloys.
 - e. Bronze and brass.
 - 4. Operating parts include moving parts of operating equipment and the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
 - 5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- D. Related Sections include the following:
- 1. Division 5 Section "Structural Steel" for shop priming structural steel.
 - 2. Division 5 Section "Metal Fabrications" for shop priming ferrous metal.
 - 3. Division 8 Section "Hollow Metal Doors and Frames" for factory priming steel doors and frames.
 - 4. Division 9 Section "Gypsum Board" for surface preparation of gypsum board.
- E. Alternates: Refer to Division 1.
- ### 1.3 DEFINITIONS
- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
- 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 - 3. Semi-gloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 - 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.
- ### 1.4 SUBMITTALS
- A. **099123_01** Product Data: Manufacturer's technical data sheets for each coating.

1. Material analysis including vehicle type and percentage by weight and by volume of vehicle, resin, and pigment.
2. Application instructions including mixing, surface preparation, compatible primers and topcoats, recommended wet and dry film thickness, recommended application methods.

B. **099123_02** Color and Texture Samples:

1. Provide for each coating system, color, and texture and applied to representative substrate samples.
 - a. Prepare samples to show bare, prepared surface and each successive coat.
 - b. Label each sample with coating name and color.

C. **099123_03** Miscellaneous substrates: 12-by-12-inch hardboard.

D. **099123_04** Concrete masonry: 8-by-16-inch samples; include mortar joint.

E. **099123_05** Wood: 8-inch square samples for surfaces; 8-inch long samples for trim.

F. **099123_06** Metal: 5-by-7-inch samples.

G. **COATINGS MAINTENANCE MANUAL: UPON CONCLUSION OF THE PROJECT, THE CONTRACTOR IN CONJUNCTION WITH THE SELECTED COATINGS MANUFACTURER SHALL FURNISH A COATING MAINTENANCE MANUAL SUCH AS SHERWIN-WILLIAMS "CUSTODIAN PROJECT COLOR AND PRODUCT INFORMATION" REPORT OR EQUAL.**

1.5 QUALITY ASSURANCE

- A. ALL SUBMITTED PRIMER AND FINISH MATERIALS MUST MEET OR EXCEED THE CRITERIA SET FORTH BY THE US GREEN BUILDING COUNCIL LEED CI VERSION 2.0 AND/OR LEED NC, VERSION 2.2 (AS DIRECTED BY THE ARCHITECT) AND OTHERWISE CONFORM TO N.J. STATE AND UNIFORM CONSTRUCTION CODE REQUIREMENTS.
- B. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- C. Source Limitations: Obtain **primers** for each coating system from the same manufacturer as the finish coats.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 1. Product name or title of material.
 2. Product description (generic classification or binder type).
 3. Manufacturer's stock number and date of manufacture.
 4. Contents by volume, for pigment and vehicle constituents.
 5. Thinning instructions.

6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. **MAINTAIN A SERVICEABLE ABC TYPE FIRE EXTINGUISHER WITHIN THE CONFINES OF THE PAINT STORAGE AREA.**

1.7 PROJECT CONDITIONS

A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.

B. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

C. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds **75** percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

D. Do not apply coatings during inclement weather except within enclosed, conditioned spaces.

1. Provide temporary lighting to achieve a well-lit surface with a level of at least 80 foot-candles measured mid-height. **PAINTING CONTRACTOR SHALL PROVIDE ADDITIONAL TEMPORARY LIGHTING REQUIRED TO PAINT SPACES.**
2. Provide continuous ventilation and heating to prevent accumulation of hazardous fumes and to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and for 48 hours after application of finishes, or longer if required to obtain full cure as indicated by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

B. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Sherwin-Williams Co. (Sherwin-Williams)-
2. Benjamin Moore Paints
3. APPROVED EQUAL.

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions AS PER THE "OR EQUAL" REQUIREMENTS IN DIVISION 1.
- C. Colors: As selected by Architect from manufacturer's full range. ARCHITECT SHALL SELECT MULTIPLE COLORS FOR THE PROJECT. ARCHITECT SHALL HAVE THE OPTION OF USING MULTIPLE COLORS ON SIMILAR ITEMS AND AREAS.

2.3 EXTERIOR PRIMERS

- A. Exterior Ferrous-Metal Primer: Factory-formulated rust-inhibitive metal primer for exterior application.
 1. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Waterbased Primer, B66-310: Applied at a dry film thickness of not less than 2.0-4.0 mils.
 2. APPROVED EQUAL.
- B. Exterior Galvanized Metal OR ALUMINUM Primer: Factory-formulated galvanized metal primer for exterior application.
 1. Sherwin-Williams; primer not required over this substrate EXCEPT
 - a. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Waterbased Primer, B66-310: Applied at a dry film thickness of not less than 3.0-4.5.0 mils.
 - b. APPROVED EQUAL.

2.4 INTERIOR PRIMERS

- A. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.
 1. Sherwin-Williams; PROMAR 200 ZERO VOC Interior Latex Primer, B28-60: Applied at a dry film thickness of not less than 1.6 mils.

2. APPROVED EQUAL.

B. INTERIOR CLAY PLASTER WALL SURFACE PRIMER:

1. SHERWIN WILLIAMS PROMAR 200 INTERIOR LATEX PRIMER
2. APPROVED EQUAL
3. SEE SECTION 092526 FOR CLAY PLASTER FINISH COATINGS

C. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive Acrylic-based metal primer.

1. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Waterbased Primer, B66-310: Applied at a dry film thickness of not less than 2.0-4.0 mils.
2. APPROVED EQUAL

D. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.

1. Sherwin-Williams; primer not required over this substrate EXCEPT Sherwin-Williams over galvanized metal surfaces under Acrylic finishes.
 - a. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Waterbased Primer, B66-310: Applied at a dry film thickness of not less than 2.0-4.0 mils.
 - b. APPROVED EQUAL.

E. INTERIOR BLOCK FILLER FOR PROPERLY PREPARED AND UNPAINTED CMU / BLOCK OR CONCRETE WALLS:

1. SHERWIN-WILLIAMS LOXON BLOCK SURFACER, A24 AT PROPER DRY FILM THICKNESS AS RECOMMENDED BY MANUFACTURER
2. APPROVED EQUAL

F. INTERIOR WOOD PRIMER FOR PROPERLY PREPARED AND UNPAINTED WOOD OR WOOD TRIM:

1. SHERWIN-WILLIAMS PREMIUM WALL & WOOD PRIMER, B28 AT PROPER DRY FILM THICKNESS AS RECOMMENDED BY MANUFACTURER
2. APPROVED EQUAL

2.5 EXTERIOR FINISH COATS

A. Exterior Full-Gloss ACRYLIC Enamel: Factory-formulated full-gloss acrylic enamel for exterior application (For all existing/NEW exposed structural steel & supports)

1. Sherwin-Williams; Pro Industrial O VOC Acrylic, Gloss, B66W11 Series: Applied at a dry film thickness of not less than 2.0-3.0 mils per coat
2. APPROVED EQUAL.

2.6 INTERIOR FINISH COATS

A. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel (For: Gypsum board walls and ceiling areas)

1. Sherwin-Williams; PROMAR 200 ZERO VOC Interior Latex Eg-Shel, B20-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.
2. APPROVED EQUAL.

B. Interior Semi-gloss ACRYLIC Enamel: Factory-formulated semi-gloss acrylic enamel for interior application

1. Sherwin-Williams; Pro Industrial O VOC Acrylic, Semi-Gloss, B66: Applied at a dry film thickness of not less than 1.7 mils
 2. APPROVED EQUAL.
- C. Interior High- Gloss POLYURETHANE FINISH: Pro Industrial Water Based Acrolon 100 Polyurethane HIGH PERFORMANCE REQUIRED AREAS AS DESIGNATED:
1. Sherwin-Williams; Pro Industrial Water Based Acrolon 100 Polyurethane, Product number B65W00721
 2. APPROVED EQUAL
- D. INTERIOR CONCRETE FLOOR EPOXY – MECHANICAL ROOMS OR BOILER ROOMS AS DESIGNATED:
1. SHERWIN-WILLIAMS ARMORSEAL 8100 WB EPOXY FLOOR COATING
 2. APPROVED EQUAL
- E. INTERIOR SPRAY ON FIREPROOFING FINISH COATING:
1. SEAL SPRAY-ON FIREPROOFING WITH “CAFECO BOND-SEAL” SEALER PRIOR TO PAINTING WITH WATER-BASED LATEX COATING AS RECOMMENDED BY PAINT MANUFACTURER – REFER TO SPECIFICATION SECTION 078100
- F. SPACE ABOVE “V” FIN BAFFLE CEILING SHALL BE ENTIRELY PAINTED INCLUDING DUCT WORK, SPRINKLER PIPING, STORM AND SANITARY PIPING, INSULATED HOT AND COLD WATER PIPING, INSULATED HEATING PIPING, ETC. EVERYTHING ABOVE CEILING SHALL BE PAINTED USING THE APPROPRIATE PAINT FOR THE MATERIAL TO BE PAINTED. THIS INCLUDES PAINTING THE FIREPROOFING ON THE STEEL AND ON THE METAL DECK.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

- B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil, DIRT, METAL FINES, SPACKLE AND SAW DUST and grease before Painting.
 - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturers written instructions for each particular substrate condition and as specified.
 - 1. Provide barrier coats over incompatible primers or remove and reprime.
 - 2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
 - c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
 - 3. Ferrous Metals:
 - a. INCLUDING BUT NOT LIMITED TO Doors & Frames: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. REMOVE ALL AGED EXISTING COATINGS AT HIGH ROOF TOWER SOFFIT. Use solvent or mechanical cleaning methods that comply with SSPC SP2 (HAND SCRAPING AND WIRE BRUSH) preparation recommendations and product manufacturer written data page specifications. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush; clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat. CONTRACTOR SHALL ALSO PAINT

THE PREFINISHED ELECTRIC PANEL DOORS FOR THE RECESSED
ELECTRIC PANELS.

4. Galvanized Surfaces: Clean galvanized surfaces with non-petroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Material Preparation: Mix and prepare paint materials according to manufacturers written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 7. Paint backsides of access panels and removable or hinged covers to match exposed surfaces.
 8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 9. Sand lightly between each succeeding enamel or varnish coat.

- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions sand between applications.
 2. Omit primer over metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required. IF SPRAY EQUIPMENT IS USED, ADJACENT AREAS ARE TO BE PROTECTED FROM OVERSPRAY. AREAS WHERE SPRAY EQUIPMENT IS TO BE USED SHALL BE SEALED OFF TO PREVENT PAINT MIST FROM TRAVELING AND STAINING OTHER AREAS OF THE BUILDING. OPEN DUCTWORK, DIFFUSERS, RETURNS ARE TO BE COVERED WHETHER ACTIVE OR INACTIVE TO PREVENT PAINT MIST FROM ENTERING SUCH SYSTEMS. PROTECT PRE-FINISHED METAL PANELS AND POLYCARBONATE PANELS.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.
- E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces. PAINTING SHOULD NOT AFFECT THE OPERATION OF MECHANICAL COMPONENTS OR THE CONDUCTIVITY OF ELECTRICAL COMPONENTS.
- F. Mechanical items to be painted include, but are not limited to, the following:

1. Uninsulated & insulated metal piping.
 2. Uninsulated & insulated plastic piping.
 3. Pipe hangers and supports.
 4. Tanks that do not have factory-applied final finishes.
 5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
 7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
 8. ALL EXPOSED DUCTWORK IN ALL AREAS.
- G. Electrical items to be painted include, but are not limited to, the following:
1. Panelboard.
 2. PAINT ALL EXPOSED ELECTRICAL PANELS IN CORRIDORS TO MATCH ADJACENT WALL SURFACE.
 3. Electrical equipment that is indicated to have a factory-primed finish for field painting.
 4. PANELBOARD PLYWOOD BACKER PANELS.
- H. ALL EXPOSED STEEL ITEMS SHALL BE PAINTED INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. COLUMNS
 2. BEAMS
- I. PROVIDE ADDITIONAL PAINT COATS REQUIRED FOR COMPLETE COVERAGE AT ALL HOLLOW METAL FRAMES.
- J. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- K. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- L. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
- M. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:
 - 1. Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
 - 2. Testing agency will perform appropriate tests for the following characteristics as required by Owner:
 - a. VOC COMPLIANCE
 - 3. Owner may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove noncomplying paint from Project site, pay for testing, and repaint surfaces previously coated with the noncomplying paint. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal: provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
 - 1. Full-Gloss Modified Acrylic-Enamel Finish: **Two finish coats** over a rust-inhibitive primer.

- a. Primer: Exterior ferrous-metal primer. S-W Pro-Cryl Universal WB Primer, B66-300
 - b. (2) Finish Coats: Exterior full-gloss ACRYLIC enamel: S-W Pro Industrial O VOC Acrylic Gloss, B66
- B. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:
- 1. Full-Gloss Modified Acrylic-Enamel Finish: **Two finish coats** over a galvanized metal primer.
 - a. Primer: Exterior galvanized metal OR ALUMINUM primer. S-W Pro-Cryl Universal WB Primer, B66-310
 - b. (2) Finish Coats: Exterior full-gloss ACRYLIC enamel : S-W Pro Industrial O VOC Acrylic Gloss, B66

3.8 INTERIOR PAINT SCHEDULE

- A. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
- 1. WALLS, Latex, eggshell. Two finish coats over a primer.
 - a. Primer: Gypsum wallboard/plaster/masonry (except CMU) primer. SW: PROMAR 200 ZERO VOC Interior Latex Primer, B28-2600.
 - b. (2) Finish coats: interior eggshell acrylic latex enamel. S-W: PROMAR 20 ZERO VOC Interior Latex Eg-Shel, B20-2600.
 - 2. SOFFIT UNDER NEW EXIT STAIR AND SOUTH WALL OF CENTER CORE AS WELL AS SOFFIT OVER CENTER CORE COMPUTER STATIONS AND SOFFIT UNDER NORTH WALL
 - a. Primer: Gypsum wallboard/plaster/masonry (except CMU) primer. SW: PROMAR 200 ZERO VOC Interior Latex Primer, B28-2600.
 - b. (2) Finish Coats: High Gloss Pro Industrial Water Based Acrolon 100 Polyurethane. B65W00721
 - 3. CEILINGS, LATEX FLAT, LUSTERLESS FINISH, with two finish coats over primer.
 - a. Primer: Gypsum wallboard/plaster/masonry (except CMU) primer. SW: PROMAR 200 ZERO VOC Interior Latex Primer, B28-2600.
 - b. (2) Finish coats: S-W PROMAR 200 ZERO VOC Interior Latex Flat, B30-2600
- B. Ferrous Metal: INCLUDING BUT NOT LIMITED TO: DOORS AND DOOR FRAMES, STAIRS, ALL EXISTING STRUCTURAL FRAMING. Provide the following finish systems over ferrous metal:
- 1. Semi-gloss ACRYLIC-Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior ferrous-metal primer. S-W: Pro-Cryl Universal WB Primer, B66-310
 - b. (2) Finish Coats: S-W: Pro Industrial O VOC Acrylic Semi-Gloss, B66 Series or

- c. (2) Finish Coats: S-W: Armorseal Tread-Plex Floor Coating, B90 (Foot traffic surfaces only)
- C. Zinc-Coated Metal: INCLUDING BUT NOT LIMITED TO: OVERHEAD DUCTWORK AND DECKING: Provide the following finish systems over interior zinc-coated metal surfaces:
 - 1. WATERBORNE DRYFALL Finish: Two finish coats over a primer.
 - a. Primer: Interior zinc-coated metal primer. S-W: For GALVANIZED STEEL: NO PRIMER REQUIRED.
 - b. PRIMER FOR STEEL- S-W Pro-Cryl Universal WB Primer, B66-310
 - c. (2) Finish Coats: S-W: WATERBORNE ACRYLIC DRYFALL, B42 SERIES, eg-shel.
- D. Concrete Masonry Units AND EXPOSED CONCRETE – INTERIOR SOLID COLOR Finish:
 - 1. MASONRY WALLS, CONCRETE: ACRYLIC, Two finish coats.
 - a. S-W LOXON BLOCK SURFACER, A24
 - b. S-W FINISH WITH TWO COATS OF PROMAR 200 ZERO VOC INTERIOR LATEX EG-SHEL, B20-2600
- E. Wood: (STAINED)
 - 1. Varnish, CLEAR gloss WITH TWO FINISH COATS OVER APPROVED STAIN.
 - a. Bottom and intermediate coats: Minwax 250 VOC Stains (LEED NC).
 - b. (2) Topcoats: S-W WOOD CLASSICS WATERBORNE INTERIOR CLEAR VARNISH A68 SATIN, A49-200, SATIN.
- F. WOOD: PAINTED SEMI-GLOSS FINISH FOR DESIGNATED WOOD AND WOOD TRIM:
 - 1. S-W PREMIUM WALL & WOOD PRIMER, B28
 - 2. S-W FINISH WITH TWO COATS OF PROCLASSIC.

END OF SECTION 099123

SECTION 122413 - ROLLER WINDOW SHADES

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Provide manually operated (pull-chain) roller shades in Room # 109.
 - 1. PROVIDE MATCHING WINDOW SHADES WITH FASCIAS, SIDE CHANNELS AND SILL CHANNELS.

1.2 RELATED SECTIONS

- A. Section 092900 - Gypsum Board Assemblies: Coordination with gypsum board assemblies for blocking, installation of shade pockets, closures and related accessories.
- B. Section 095480 – Screen Baffle Ceiling System: Coordination with ceiling system for blocking, installation of shade pockets, closures and related accessories.

1.3 SUBMITTALS

- A.. **122413_02** Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
 - 3. Storage and handling requirements and recommendations.
 - 4. Mounting details and installation methods.
- B. **122413_03** Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, and relationship to adjacent work.
 - 1. Prepare shop drawings on AutoCAD using base sheets provided electronically by the Architect.
- C. **122413_05** Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
- D. **122413_06** Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.
- E. **122413_07** Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades system through one source from a single manufacturer with a minimum of ten years experience and minimum of five projects of similar scope and size in manufacturing products comparable to those specified in this section.
- B. Installer for Roller Shade System - Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section.
- C. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.
- E. Requirements for Roller Shade Installer/Contractor:
 - 1. Roller Shade Hardware, and shade fabric shall be furnished and installed as a complete system.
- L. Mock-Up: Provide a mock-up of roller shade assembly for evaluation of mounting, appearance and accessories. SEE SECTION 1400 QUALITY CONTROL.
 - 1. Locate mock-up in window designated by Architect at Rm #109
 - 2. Do not proceed with remaining work until mock-up is accepted by Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.7 WARRANTY

- A. Roller Shade Hardware and Shadecloth: Manufacturer's standard non-depreciating twenty-five year limited warranty.
- C. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas, which are deemed owners responsibility.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer for Roller Shade Systems and Controls: MechoShade Systems, Inc.; 42-03 35th Street, Long Island City, NY 11101. Tel: (732) 991-1395; Mr. Jerry Feldman. Email: jerryf@mechoshade.com.

B. APPROVED EQUAL

2.2 SCHEDULE

- A. Roller Shade Type WT-1:

Manual interior solar roller shades in exterior window of room #109. Include the following as indicated on the Drawings:

- A. Wall Mount
- B. Fascia

- B. Total hanging weight of shade band shall not exceed 80 percent of the rated lifting capacity of the shade motor and tube assembly. Spring assisted lift systems shall not be accepted.

2.3 SHADE BAND

- A. Shade Bands: Construction of shade band includes the fabric, the enclosed hem weight, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets shall not be acceptable.
- 1. Concealed Hembar: Shall be continuous extruded aluminum for entire width of shade band and with the following characteristics:
 - a. Hembar shall be heat sealed on all sides.
 - b. Open ends shall not be accepted.
 - 2. Shade band and Shade Roller Attachment:
 - a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection.
 - b. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" Spline mounting, without having to remove shade roller from shade brackets.
 - c. Mounting Spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
 - d. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets, does not meet the performance requirements of this specification and shall not be accepted.

2.4 SHADE FABRICATION

- A. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows:
1. Bottom hem weights.
 2. Concealed hemtube.
 3. Exposed hemtube with side and back guide cable capability; hembar may be attached and demounted from the cable with out removing or loosening the cables.
 4. Exposed blackout hembar with light seal.
 5. Exposed blackout hembar with polybond seal.
- B. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.
- C. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.
- D. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.

2.5 COMPONENTS

- A. Access and Material Requirements:
1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
 2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
 3. Use only Delran engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester shall not be accepted.

B. Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable.
7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
8. Drive Bracket / Brake Assembly:
 - a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, center supports and connectors for multi-banded shades.
 - b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
 - c. The brake shall be an over running clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
 - d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.
 - e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.
9. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted

2.6 SHADE CLOTH

1. A. Visually Transparent Single-Fabric Shadecloth: MechoShade Systems, Inc.:
0.010 diameter (0.254 mm), Opaque, non-raveling vinyl/polyester yarn, fabric thickness 0.025 inches (0.635 mm).

1. EXTRA Dense TWILL Weave "6000 series, 2 percent open
2. Color: Selected from Manufacturers standard colors.

2.7 ACCESSORIES

A. Fascia:

1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
2. Fascia shall be able to be installed across two or more shade bands in one piece.
3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
5. Notching of Fascia for manual chain shall not be acceptable.

B. PROVIDE MANUFACTURERS STANDARD FULL LENGTH PULL CHAINS FOR MANUAL OPERATION OF NON- ELECTRICALLY OPERATED SHADES.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. FIELD VERIFY ALL WINDOW OPENING DIMENSIONS PRIOR TO SHADE FABRICATION. PROVIDE ALL NECESSARY SUPPORT BRACKETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. COORDINATE WITH GC FOR ALL REQUIRED BLOCKING, ETC.

3.3 INSTALLATION

- A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.
- B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
- D. Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 122413