LEON HIGH SCHOOL -
BUILDING #3 & GYMNASIUM RE-ROOFING
FOR LEON COUNTY SCHOOL BOARD
CONSTRUCTION DOCUMENTS
APRIL 8, 2022

JRA Commission Number – 21816

JRA ARCHITECTS, INC.
2211 Thomas Drive
Suite 100
Panama City Beach, Fl. 32408
(850) 236-9832

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SECTION 02 41 00 - DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.02 SUBMITTALS

A. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 3 EXECUTION

2.01 SCOPE

A. Remove portions of existing building(s as indicated on drawings.

B. Remove other items indicated, for salvage, relocation, and recycling.

C. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permit.
   6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

D. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

E. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing

materials, lead, PCB's, and mercury.

2.03 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

C. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

2.04 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 41 00

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SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof Sheathing.

B. Roofing nailers.

1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

B. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2021.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.

D. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C 2019a.

E. NELMA (SGR) - Standard Grading Rules for Northeastern Lumber 2021.

F. PS 20 - American Softwood Lumber Standard 2021.

G. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber 2019.

H. SPIB (GR) - Grading Rules 2014.

I. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17 2018.

J. WWPA G-5 - Western Lumber Grading Rules 2021.

1.03 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Northeastern Lumber Manufacturers Association; NELMA (SGR).

B. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

C. Grading Agency: Redwood Inspection Service; RIS (GR).

D. Grading Agency: West Coast Lumber Inspection Bureau; WCLIB (GR).

E. Grading Agency: Western Wood Products Association; WWPA G-5.

F. Sizes: Nominal sizes as indicated on drawings, S4S.

G. Moisture Content: Kiln-dry or MC15.

H. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Roof Sheathing: Structural cementitious roof sheathing panels.
   1. Size: 48 inches wide nominal, by 96 inches long, nominal.
   2. Panel Thickness: 3/4 inch, nominal.
   3. Edges: Square edges.
   4. Span: 48 inches, maximum.
   5. Fire Resistance: Noncombustible, when tested in accordance with ASTM E136.
   6. Surface Burning Characteristics: Flame spread index of 0; smoke-developed Index of 0; when tested in accordance with ASTM E84.
   7. Mold Resistance: Rating of 10, when tested in accordance with ASTM D3273.
   8. Manufacturers:
      a. USG Corporation; Basis of Design: USG Structural Panel Concrete Roof Deck: www.usg.com/#sle.
      b. Or equal product.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Anchors: Toggle bolt type for anchorage to hollow masonry.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
   1. Nail panels to framing; staples are not permitted.

END OF SECTION 06 10 00

SECTION 07 41 13 - METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal roof panel system of preformed aluminum panels.

1.02 REFERENCE STANDARDS

A. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2021a.

B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2021.

C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2021.

D. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference 2005 (Reapproved 2017).

1.03 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Summary of test results, indicating compliance with specified requirements.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Specimen warranty.

B. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
   1. Show work to be field-fabricated or field-assembled.
   2. Include structural analysis signed and sealed by qualified structural engineer, indicating compliance of roofing system to specified loading conditions.

C. Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each roofing system specified, submit samples of minimum size six inches square, representing actual roofing metal, thickness, profile, color, and texture.
   1. Include typical panel joint in sample.
   2. Include typical fastening detail.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Test Reports: Indicate compliance of metal roofing system to specified requirements.

H. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section and with at least three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Provide strippable plastic protection on prefinished roofing panels for removal after installation.

B. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.06 FIELD CONDITIONS

A. Do not install metal roof panels, eave protection membrane or underlayment when surface, ambient air, or wind chill temperatures are below 45 degrees F.

1.07 WARRANTY

A. Finish Warranty: Provide 20-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

B. Special Warranty: Provide 30-year warranty for weathertightness of roofing system, including agreement to repair or replace metal roof panels that fail to keep out water commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Metal Roof Panel Manufacturers:
   1. Englert, Inc; A1300: www.englertinc.com/#sle.
   2. Fabral; Powerseam II: www.fabral.com/#sle.
   3. Metal Roofing Systems, Inc; System 2500 - Metal Roof Panels: www.metalroofingsystems.biz/#sle.
   4. Petersen Aluminum Corporation; Tite-Loc Plus Panel: www.pac-clad.com/#sle.

B. Metal Soffit Panels Manufacturers:
   1. Englert, Inc: www.englertinc.com/#sle.
   2. Fabral: www.fabral.com/#sle.
   3. Metal Roofing Systems, Inc: www.metalroofingsystems.biz/#sle.
   4. Petersen Aluminum Corporation: www.pac-clad.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

A. Metal Roof Panels: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:
   1. Structural Design Criteria: Provide panel assemblies designed to safely support design loads at support spacing indicated, with deflection not to exceed L/180 of span length(L) when tested in accordance with ASTM E1592.
   2. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
   3. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 100 degrees F.

2.03 METAL ROOF PANELS

A. Metal Roof Panels: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.

B. Metal Panels: Factory-formed panels with factory-applied finish.
   1. Aluminum Panels:

a. Alloy and Temper: Aluminum complying with ASTM B209/B209M; temper as required for forming.
b. Thickness: Minimum 18 gauge, 0.040 inch.

2. Profile: Standing seam , with minimum 1-1/2-inch seam height; concealed fastener system for field seaming with special tool. Provide a 180 degree seam style.
3. Texture: Smooth, with intermediate ribs for added stiffness.
4. Length: Maximum possible length to minimize lapped joints. Where lapped joints are unavoidable, space laps so that each sheet spans over three or more supports.
5. Width: Maximum panel coverage of 16 inches.

C. Metal Soffit Panels:
1. Profile: Flush, with venting not provided.
2. Material: Precoated aluminum sheet, 18 gauge, 0.0403 inch minimum thickness.
3. Color: As selected by Architect from manufacturer's full line.

2.04 ATTACHMENT SYSTEM

A. Concealed System: Provide manufacturer's standard stainless steel or nylon-coated aluminum concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

2.05 FABRICATION

A. Panels: Provide factory fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.

B. Joints: Provide captive gaskets, sealants, or separator strips at panel joints to ensure weathertight seals, eliminate metal-to-metal contact, and minimize noise from panel movements.

2.06 FINISHES

A. Fluoropolymer Coil Coating System: Manufacturer's standard multi-coat aluminum coil coating system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of coil coated aluminum surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected from manufacturer's standards.

2.07 ACCESSORIES

A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, and caps of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.
1. Provide leaf guards for all gutters.

B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.

C. Sealants:
1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
3. Seam Sealant: Factory-applied, non-skinning, non-drying type.

D. Underlayment: Self-adhering polymer-modified sheet; 30 mil total thickness; with strippable siliconized release film on bottom side and slip resistant and UV-stable facing on top side.
1. Self Sealability: Passing nail sealability test specified in ASTM D1970/D1970M.

2. Water Vapor Permeance: 30 perm, when tested in accordance with ASTM E96/E96M, Desiccant Method A.
3. Functional Temperature Range: From minus 40 degrees F to 250 degrees F.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to ensure that completed roof will be free of leaks.

B. Remove protective film from surface of roof panels immediately prior to installation; strip film carefully to avoid damage to prefinished surfaces.

C. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by metal roof panel manufacturer.

D. Protect surrounding areas and adjacent surfaces from damage during execution of this work.

E. At locations where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.03 INSTALLATION

A. Overall: Install roofing system in accordance with approved shop drawings and metal roof panel manufacturer's instructions and recommendations, as applicable to specific project conditions; securely anchor components of roofing system in place allowing for thermal and structural movement.
   1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
   2. Minimize field cutting of panels. Where field cutting is required, use methods that will not distort panel profiles. Use of torches for field cutting is prohibited.

B. Accessories: Install necessary components that are required for complete roofing assembly, including flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, equipment curbs, rib closures, ridge closures, and similar roof accessory items.

C. Roof Panels: Install metal roof panels in accordance with manufacturer's installation instructions, minimizing transverse joints except at junction with penetrations.
   1. Form weathertight standing seams incorporating concealed clips, using an automatic mechanical seaming device approved by panel manufacturer.
   2. Install sealant or sealant tape at end laps and side joints as recommended by metal roof panel manufacturer.

3.04 CLEANING

A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.05 PROTECTION

A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work.

Protect roofing until completion of project.

B. Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

END OF SECTION 07 41 13

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SECTION 07 54 19 - POLYVINYL-CHLORIDE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adhered roof system with polyvinyl-chloride (PVC) roofing membrane.

B. Vapor retarder.

C. Deck sheathing.

D. Insulation.

1.02 REFERENCE STANDARDS

A. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2017.

B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board 2022.

C. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing 2021.

D. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces 2011 (Reapproved 2019).

E. FM (AG) - FM Approval Guide current edition.

F. FM DS 1-28 - Wind Design 2016.

G. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components 2016, with Editorial Revision (2020).

H. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Review preparation and installation procedures, in addition to coordination and scheduling required with related work.

1.04 SUBMITTALS

A. Product Data: Provide manufacturer's written information listed below.
   1. Product data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
   2. Preparation instructions and recommendations.

B. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and mechanical fastener layout.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions provided.

E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions, finish coating installation, special procedures, and perimeter conditions requiring special attention.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Warranty Documentation.
   1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
   2. Submit installer's certification that installation complies with required warranty conditions for waterproofing membrane.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with at least twenty years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least five years documented experience.
   1. Approved by membrane manufacturer.
   2. Extend manufacturer's labor and materials warranty.
   3. Extend manufacturer's "No Dollar Limit" warranty.

1.06 DELIVERY, STORAGE, AND HANDLING

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

B. Store products in weather protected environment, clear of ground and moisture.

C. Protect foam insulation from direct exposure to sunlight.

D. Provide Safety Data Sheets (SDS) at project site during transportation, storage, and installation of materials.

E. Comply with requirements from Owner to prevent overloading or disturbance of structure when loading materials onto roof.

1.07 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather, and refer to manufacturer's written installation instructions.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 100 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

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

E. Proceed with work so new roofing materials are not subject to construction traffic as work progresses.

F. Do not allow grease, oils, fats, or other contaminants to come into direct contact with roofing membrane.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Material Warranty: Provide membrane manufacturer's warranty agreeing to replace material that shows manufacturing defects within 30 years after installation.

C. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing membrane that leaks or is damaged due to wind or other natural causes.
   1. System Warranty Term: 30 years.
   2. For repair and replacement include costs of both material and labor in warranty.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Versico Roofing Systems; Basis of Design: www.versico.com/#sle.

B. Sika Sarnafil

C. FiberTite

D. Durolast

2.02 ROOFING APPLICATIONS

A. Polyvinyl-Chloride (PVC) Membrane Roofing: Single-ply membrane.
   1. Adhered, over insulation.

2.03 PERFORMANCE / DESIGN CRITERIA

A. Solar Reflectance Index (SRI): Minimum of 80 based on three-year aged value; if three-year aged data is not available, minimum of 100 initial value, calculated in accordance with ASTM E1980.
   1. Field applied coating may not be used to achieve specified SRI.

B. Roof Covering External Fire Resistance Classification: Class A when tested in accordance to UL 790.

C. Wind Uplift:
   1. Design Wind Speed: As indicated on drawings.

D. Insulation Thermal Resistance (R-Value): Provide R-30, minimum, over entire roof deck.

E. Drainage: No standing water within 48 hours after precipitation.

2.04 ROOFING MEMBRANE MATERIALS

A. Single Source Responsibility: Provide and install products from single source.

B. Vapor Barrier/Base Sheet: Self-adhering, rubberized asphalt membrane laminated to spun-bonded polyester fabric; 40 mils (0.040 inch) thick, minimum.
   1. Products:
      a. Versico Roofing Systems; VapAir Seal 725TR Air/Vapor Barrier.

C. Membrane: Polyvinyl-Chloride (PVC); ASTM D4434/D4434M, internally reinforced.
   1. Thickness: 80 mils, 0.080 inch, minimum.
   2. Sheet Width: Factory fabricated into largest sheets possible.
   3. Color: White.
   4. Products:
      a. Versico Roofing Systems; VersiFlex KEE HP PVC.

D. Seaming Materials: As recommended by membrane manufacturer.

E. Flexible Flashing Material: Same material as roofing membrane.

F. Base Flashing: Provide waterproof, fully adhered base flashing system at penetrations, plane transitions, and terminations.

2.05 DECK SHEATHING

A. Deck Sheathing and/or Cover Board: Glass mat faced gypsum panels, ASTM C1177/C1177M, fire resistant type.
   1. Thickness: 1/2 inch, minimum.
   2. Products:
      a. GP DensDeck Prime Roof Board, distributed by Versico.

2.06 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: Complying with ASTM C1289, Type II, Class 2 - Faced with coated glass fiber mat facers on both major surfaces of core foam.
   1. Board Thickness: 2 inch, nominal.
   2. Grade and Compressive Strength: Grade 2, with 20 psi, minimum.
   3. Products:
      a. Versico Roofing Systems; SecurShield Polyiso.

2.07 ACCESSORIES

A. Prefabricated Flashing Accessories:
   1. Corners and Seams:
      a. Curb Wrap Corners: PVC or KEE HP, 80 mil, 0.080 inch thick; used for flashing wraps at curb corners.
         1) Color: White.
         2) Curb Size: As indicated on drawings.
      b. Cover Strip, Reinforced: 80 mil, 0.080 inch thick, PVC flashing with polyester reinforcing fabric, 8 inch wide, used for stripping in rows of fasteners and plates and covering butt joints on PVC membranes.
         1) Color: White.
         2) Products:
            (a) Versico Roofing Systems; VersiFlex PVC Reinforced Coverstrip.
   2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
      a. Pipe Seals: Prefabricated PVC flashing for pipes 1 inch to 6 inch in diameter.
         1) Products:
            (a) Versico Roofing Systems; VersiFlex PVC Split Pipe Seals.
      b. Molded Pipe Seals: Injection-molded PVC flashing for pipes 3/4 inch to 8 inch in diameter.
         1) Color: White.
         2) Products:
            (a) Versico Roofing Systems; VersiFlex PVC Molded Pipe Seals.
      c. Square Tubing Wraps: Fabricated PVC flashing for penetrations, 3 inch square, with 11 inch overall height.
         1) Products:
            (a) Versico Roofing Systems; VersiFlex PVC Square Tubing Wraps.
      d. Sealant Pockets: Interlocking, two-piece, injection molded flexible pocket with rigid 6 inch high vertical flange and pre-formed deck flange, used to waterproof pipe clusters or other oddly shaped penetrations.
         1) Pocket Adjustment: Adjustable from 7-1/2 inch to 11-1/2 inch long.
         2) Products:
            (a) Versico Roofing Systems; VersiFlex PVC Molded Sealant Pockets.

B. Insulation Adhesive: Two component polyurethane, expanding foam.

C. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, and compatible with roofing materials; 6 inch wide; self adhering.

D. Fasteners: Appropriate for application indicated as recommended and approved by membrane manufacturer.
   1. Insulation Fastening Plate: Use 3 inch nominal diameter metal plate with manufacturer's acceptable fasteners to attach insulation.
   2. Fastener and Plate Assembly: Phillips head screw pre-assembled with 3 inch diameter metal or plastic locking insulation plate, for use with wood or metal roof decks.

E. Walkway Rolls: Heat weldable PVC membrane, 36 inch wide by 60 feet long, and 110 mils thick, gray colored; used to protect PVC membrane in areas exposed to foot traffic.
   1. Products:
      a. Versico Roofing Systems; PVC 110-mil Walkway Rolls: www.versico.com/#sle.

F. Membrane Adhesive:
   1. Bonding Adhesive: Low-VOC, water-based, wet lay-in, one-sided dispersion adhesive and light tan colored.
      a. Products:
         1) Versico Roofing Systems; HydroBond PVC.

G. Membrane Cleaner: Manufacturer's recommended products for applications indicated.
   1. Products:
      a. Versico Roofing Systems; PVC and KEE HP Membrane Cleaner.

H. Primer: Manufacturer's recommended products for applications indicated.

I. Roof Edgings and Terminations: Manufacturer's standard roof edge and termination accessories.
   1. Color: As selected by Architect.
   2. Coping: Parapet wall type coping system providing galvanized steel hold-down cleats and snap-on coping cap.
      a. Parapet Wall Width: As indicated on drawings.
      b. Face and Back Leg Heights: 6 inch face height, and 4 inch back height, nominal.
      c. Products:
         1) Versico Roofing Systems; VersiTrim 300 Parapet Wall Coping.
   3. Termination Bar: Decorative metal cover over formed aluminum termination bar, 1-3/4 inch wide, with slotted fastening holes.
      a. Products:
         1) Versico Roofing Systems; VersiTrim Term Bar Fascia.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips and nailing strips are in place.

3.02 SURFACE PREPARATION

A. Clean substrate thoroughly prior to roof application.

B. Do not begin this work until other work that requires foot or equipment traffic on roof has been completed.

C. Apply manufacturer's recommended vapor retarder or temporary roofing before roof installation.

3.03 INSTALLATION - GENERAL

A. Install roofing system in accordance with manufacturer's instructions, as well as NRCA (RM) and NRCA (WM) applicable requirements.

B. Application of roofing membrane during unsuitable weather is not permitted.

C. Application of roofing membrane when ambient temperature is outside temperature range recommended by manufacturer is not permitted.

D. Application of roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring is not permitted.

E. Exposing materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day is not permitted.

F. When substrate preparation is responsibility of another installer, notify Architect of unsatisfactory conditions, and do not proceed until corrections have been made.

3.04 VAPOR RETARDER APPLICATION

A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
   1. Extend vapor retarder under cant strips and blocking to deck edge.
   2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of air barrier plane.

B. Verify that vapor retarder is clean and dry, continuous, and ready for application of insulation.

3.05 INSULATION APPLICATION

A. Attachment of Insulation: Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions and FM (AG), FM DS 1-28, and FM DS 1-29 applicable requirements.

B. Installing wet, damaged, or warped insulation boards is not permitted.

C. Apply subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.

D. Apply tapered insulation to required slope pattern in accordance with manufacturer's instructions.

E. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.

F. Apply boards with edges in moderate contact without forcing, and with gap between boards no greater than 1/4 inch wide; cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

G. Tape joints of insulation in accordance with roofing and insulation manufacturer's instructions.

H. At roof drains, use factory-tapered boards or boards cut to slope to slope down to roof drains over distance of 18 inches.

I. Only apply quantity of insulation than can be completely waterproofed in same day.

3.06 MEMBRANE APPLICATION

A. Roll out membrane, free from wrinkles or tears; place sheet membrane into place without stretching.

B. Shingle joints on sloped substrates in direction of drainage.

C. Adhesive Adhered Membrane Application: Apply adhesive at manufacturer's recommended rate, and fully embed membrane in adhesive except in areas directly over or within 3 inch of expansion joints; fully adhere one roll before proceeding to adjacent rolls.

D. Seam Welding:
   1. Overlap edges and ends at least 2 inch, and seal seams by heat welding.

2. Cover seams with joint covers as recommended by membrane manufacturer.
3. Probe each seam once welds have thoroughly cooled, approximately 30 minutes.
4. Repair any deficient seams within same work day.
5. Seal cut edges of reinforced membrane after seam probe has been completed.
    a. Seal with cut edge type sealant as recommended by membrane manufacturer.

E. At membrane intersections with vertical surfaces, provide the following:
1. Extend membrane over and up cant strips at least 4 inch onto vertical surfaces.
2. Fully adhere flexible flashing over membrane and up to nailing strips.

F. Coordinate installation of roof related flashings, and drains; locate field splices away from low areas and roof drains, and shingle lap upslope sheets over downslope sheets.

G. Daily Seal: Provide daily seal in accordance with manufacturer's installation instructions at end of each work day to prevent infiltration of water at incomplete flashings, terminations, and other unfinished membrane edges.

3.07 FIELD QUALITY CONTROL

A. Attendance is required on-site of roofing and insulation material manufacturer's daily during installation of this work.

3.08 CLEANING

A. Remove wrappings, empty containers, paper, and other debris from roof daily, and dispose of debris in compliance with local, State, and Federal regulations.

B. Remove bituminous markings from finished surfaces.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

3.09 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION 07 54 19

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SECTION 07 72 00 - ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof curbs.

B. Roof penetrations mounting curbs.

C. Roof hatches.

1.02 RELATED REQUIREMENTS

A. Section 07 41 13 - Metal Roof Panels.

1.03 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.

B. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
   1. Non-penetrating Rooftop Supports: Submit design calculations for loadings and spacings.

C. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
   3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products under cover and elevated above grade.

1.05 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 ROOF CURBS

A. Roof Curbs Manufacturers:
   1. AES Industries Inc: www.aescurb.com/#sle.
   2. The Pate Company: www.patecurbs.com/#sle.
   3. LMCurbs: www.lmcurbs.com/#sle.
   4. MKT Metal Manufacturing: www.mktduct.com/#sle.
   5. Roof Products & Systems (RPS): www.rpscurbs.com/#sle.

B. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.
   1. Applications: Roof curbs used for roof penetrations/openings as indicated on drawings.

2. Roof Curb Mounting Substrate: Curb substrate consists of standing seam metal roof panel system.
3. Sheet Metal Material:
   a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
      1) Color: As selected by Architect from manufacturer's standard line of colors.
4. Fabricate curb bottom and mounting flanges for installation directly on metal roof panel system to match slope and configuration of system.
   a. Extend side flange to next adjacent roof panel seam and comply with seam configurations and seal connection, providing at least 6 inch clearance between curb and metal roof panel flange allowing water to properly flow past curb.
   b. Where side of curb aligns with metal roof panel flange, attach fasteners on upper slope of flange to curb connection allowing water to flow past below fasteners, and seal connection.
   c. Maintain at least 12 inch clearance from curb, and lap upper curb flange on underside of down sloping metal roof panel, and seal connection.
   d. Lap lower curb flange overtop of down sloping metal roof panel and seal connection.
5. Provide layouts and configurations indicated on drawings.

C. Pipe, Duct, or Conduit Mounting Curbs: Vertical posts, minimum 8 inches square unless otherwise indicated.
   1. Height Above Finished Roof Surface: 8 inches, minimum.

2.02 ROOF HATCHES

A. Roof Hatch Manufacturers:
   1. Babcock-Davis; ThermalMAX: www.babcockdavis.com/#sle.
   2. Bilco Company; Type TB (various types and special size): www.bilco.com/#sle.
   3. Nystrom, Inc: www.nystrom.com/#sle.

B. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
   1. Insulation: Manufacturer's standard; 1 inch rigid glass fiber, located on outside face of curb.
   2. Curb Height: 12 inches from finished surface of roof, minimum.

C. Metal Covers: Flush, insulated, hollow metal construction.
   1. Capable of supporting 40 psf live load.
   2. Material: Galvanized steel; outer cover 14 gauge, 0.0747 inch thick, liner 22 gauge, 0.03 inch thick.
   3. Finish: Factory prime paint.
   4. Insulation: Manufacturer's standard 1 inch rigid glass fiber.
   5. Gasket: Neoprene, continuous around cover perimeter.

D. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.
   1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
   2. Hinges: Heavy duty pintle type.
   3. Hold open arm with vinyl-coated handle for manual release.
   4. Latch: Upon closing, engage latch automatically and reset manual release.
   5. Manual Release: Pull handle on interior.
   6. Locking: Padlock hasp on interior.

PART 3 EXECUTION

3.01 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.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING

A. Clean installed work to like-new condition.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 07 72 00

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SECTION 07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer 2015 (Reapproved 2022).

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications 2022.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.

E. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants 2018.

F. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants 2018.

G. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness 2015 (Reapproved 2021).

H. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension 2016 (Reapproved 2021).

1.03 SUBMITTALS

A. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.

B. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

C. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

1.04 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

1.05 WARRANTY

A. Correct defective work within a five year period after Date of Substantial Completion.

B. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
   1. Bostik Inc: www.bostik-us.com/#sle.
   2. Dow: www.dow.com/#sle.
   3. Hilti, Inc: www.us.hilti.com/#sle.
   4. Pecora Corporation: www.pecora.com/#sle.
   5. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
   6. Sika Corporation: www.usa.sika.com/#sle.
   7. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   8. W.R. Meadows, Inc: www.wrmeadows.com/#sle.

B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
   1. Bostik Inc: www.bostik-us.com/#sle.
   2. Dow: www.dow.com/#sle.
   3. Pecora Corporation: www.pecora.com/#sle.
   4. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
   5. Sika Corporation: www.usa.sika.com/#sle.
   6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
      a. Wall expansion and control joints.
      b. Joints between door, window, and other frames and adjacent construction.
      c. Joints between different exposed materials.
      d. Openings below ledge angles in masonry.
      e. Other joints indicated below.
   2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
      a. Joints between door, window, and other frames and adjacent construction.
   3. Do not seal the following types of joints.
      a. Intentional weepholes in masonry.
      b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
      c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
      d. Joints where installation of sealant is specified in another section.
      e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.

C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.

2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 61 16.

2.04 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 50 percent, minimum.
   2. Non-Staining to Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
   3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
   4. Color: Match adjacent finished surfaces.
   5. Manufacturers:
      a. Dow; DOWSIL 790 Silicone Building Sealant: www.dow.com/#sle.
      b. Pecora Corporation; Pecora 890 NST (Non-Staining Technology): www.pecora.com/#sle.
      c. Pecora Corporation; Pecora 864 NST (Non-Staining Technology): www.pecora.com/#sle.
      d. Tremco Commercial Sealants & Waterproofing; Spectrem 3: www.tremcosealants.com/#sle.

B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 50 percent, minimum.

2.05 SELF-LEVELING SEALANTS

A. Self-Leveling Silicone Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
   1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
   2. Color: To be selected by Architect from manufacturer's standard range.
   3. Service Temperature Range: Minus 40 to 180 degrees F.
   4. Manufacturers:
      a. Dow; DOWSIL SL Parking Structure Sealant: www.dow.com/#sle.
      b. Dow; DOWSIL FC Parking Structure Sealant: www.dow.com/#sle.
      c. Pecora Corporation; Pecora 300 SL (Self-Leveling): www.pecora.com/#sle.
      d. Pecora Corporation; Pecora 322 FC (Fast Cure): www.pecora.com/#sle.
      e. Sika Corporation; Sikasil 728RCS: www.usa.sika.com/#sle.
      f. Sika Corporation; Sikasil 728SL: www.usa.sika.com/#sle.
      g. Tremco Commercial Sealants & Waterproofing; Spectrem 900SL: www.tremcosealants.com/#sle.

B. Self-Leveling Polyurethane Sealant for Horizontal Expansion Joints: ASTM C920, Grade P, Uses T, M, and O; multi-component; explicitly approved by manufacturer for horizontal expansion joints.
   1. Movement Capability: Plus and minus 25 percent, minimum.
   2. Hardness Range: 30 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: To be selected by Architect from manufacturer's standard range.
   4. Tensile Strength: 200 to 250 psi in accordance with ASTM D412.
   5. Manufacturers:
      a. Pecora Corporation; DynaTrol II-SG (Slope Grade): www.pecora.com/#sle.
      b. Tremco Commercial Sealants & Waterproofing; THC-901: www.tremcosealants.com/#sle.

C. Rigid Self-Leveling Polyurethane Joint Filler: Two part, low viscosity, fast setting; intended for cracks and control joints not subject to significant movement.

1. Hardness Range: Greater than 100, Shore A, and 50 to 80, Shore D, when tested in accordance with ASTM C661.
2. Manufacturers:
   a. ARDEX Engineered Cements; ARDEX ARDIFIX: www.ardexamericas.com/#sle.

D. Flexible Polyurethane Foam: Single-component, gun grade, and low-expanding.
1. Color: White.
2. Manufacturers:
   a. ADFAST Corporation; Adfoam Flex 1865: www.adfastcorp.com/#sle.
   b. DAP Products Inc; DRAFTSTOP 812 Foam: www.dapspecline.com/#sle.
   c. Tremco Commercial Sealants & Waterproofing; ExoAir Flex Foam: www.tremcosealants.com/#sle.

2.06 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
3. Open Cell: 40 to 50 percent larger in diameter than joint width.
4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
5. Manufacturers:
   a. ADFAST Corporation; ADSEAL BR-2600 (Backer Rod): www.adfastcorp.com/#sle.
   b. Nomaco, Inc: www.nomaco.com/#sle.

B. Preformed Extruded Silicone Joint Seal: Pre-cured low-modulus silicone extrusion, in sizes to fit applications indicated on drawings, combined with a neutral-curing liquid silicone sealant for bonding joint seal to substrates.
1. Size: 1 inch wide, in rolls 100 feet long.
2. Thickness: 0.78 inch, with ridges along outside bottom edges for bonding area.
3. Color: As selected by Architect..
4. Durometer Hardness, Type A: 26 to 32, minimum, when tested in accordance with ASTM D2240.
5. Tensile Strength: 218 psi, in accordance with ASTM D412.
6. Elongation at Break: 554 percent, in accordance with ASTM D412.
7. Manufacturers:
   a. Tremco Commercial Sealants & Waterproofing; Spectrem Simple Seal: www.tremcosealants.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

D. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

E. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.

F. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

A. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specific requirements. Record results in a field-adhesion-test log.

B. Inspect tested joints and report the following:

1. Whether sealants in joints connected to pulled out portion failed to adhere to joint substrate or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
2. Whether sealants filled joint cavities and are free of voids.
3. Whether sealant dimensions and configurations comply with specified requirements.

C. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimension.

D. Repair sealants pulled from test area by applying new sealants following same procedures used to originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

E. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicateds requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

F. Repair destructive test location damage immediately after evaluation and recording of results.

3.05 POST-OCCUPANCY

A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION 07 92 00

SECTION 09 84 13 - ACOUSTICAL CEILING PANEL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sound-absorbing panels.

B. Mounting accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS

A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method 2022.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.

C. ASTM E795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests 2016.

1.04 SUBMITTALS

A. Product Data: Manufacturer's printed data sheets for products specified.

B. Shop Drawings: Fabrication and installation details, panel layout, and orientation.

C. Samples: 12 inch by 12 inch, indicating color, thickness, and edge condition.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Panels: Quantity equal to 5 percent of total installed, but not less than one of each type.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect sound-absorptive panels from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until panels are needed for installation.

B. Store panels flat, in dry, well-ventilated space; do not stand on end.

C. Protect edges from damage.

PART 2 PRODUCTS

2.01 SOUND-ABSORPTIVE PANELS

A. System Description: Prefabricated, sound-absorptive fiber cement panels for interior applications as indicated.

2.02 COMPONENTS

A. Sound-Absorptive Panels for Ceilings:

1. Product:
   a. Armstrong Ceilings; Tectum Direct Attach.
   b. Acoustical Surfaces, Inc.; Envirocoustic Wood Wool.
   c. Acoustical Solutions; AlphaSorb Wood Fiber Acoustic Panel.
   d. ASI Architectural; StrandTec.
2. Panel Composition: Manufacturer's standard panel composed of wood fibers bonded with Portland cement.
3. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero or less, when tested in accordance with ASTM E84.

4. Noise Reduction Coefficient (NRC): .45 when tested in accordance with ASTM C423 for Type A mounting, per ASTM E795.
5. Panel Size: 23-5/8 by 94-1/2 inches.
6. Panel Thickness: 1 inch.
   a. Panel Weight 1-inch Thick Panel: 2.5 lb/sq ft.
7. Edges: Beveled.
8. Color: Factory primed for future painting.
9. Mounting Method: Face-mounted with mechanical fasteners to substrate, as indicated on drawings.

2.03 FABRICATION

A. General: Fabricate panels to sizes and configurations as indicated.

B. Tolerances: Fabricate to finished tolerance of plus or minus 1/8 inch for thickness, overall length and width, and squareness from corner to corner.

2.04 ACCESSORIES

A. Fasteners: Manufacturer's standard fasteners at spacing as recommended by manufacturer on each sound-absorptive panel, sized appropriately for weight of panel.

B. Panel Adhesives: Acceptable to sound-absorptive panel manufacturer for applications as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install sound-absorptive panels in locations as indicated, following manufacturer's installation instructions.

B. Align panels accurately, with edges plumb and top edges level. Scribe to fit accurately at adjoining work and penetrations.

C. Install acoustical panels to construction tolerances of plus or minus 1/16 inch for the following:
   1. Plumb and level.
   2. Flatness.

3.03 CLEANING

A. Clean sound-absorptive panels upon completion of installation from dust and other foreign materials, following manufacturer's instructions.

3.04 PROTECTION

A. Protect installed sound-absorptive panels until Date of Substantial Completion.

B. Replace sound-absorptive panels that cannot be cleaned and repaired to satisfaction of the Architect.

END OF SECTION 09 84 13

SECTION 09 91 13 - EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non-metallic roofing and flashing.
   6. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
   7. Marble, granite, slate, and other natural stones.
   8. Floors, unless specifically indicated.
   9. Ceramic and other types of tiles.
   10. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
   11. Glass.
   12. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating 2005 (Reapproved 2017).

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.

D. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association Current Edition.

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.

F. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).

G. SSPC-SP 2 - Hand Tool Cleaning 2018.

H. SSPC-SP 6 - Commercial Blast Cleaning 2007.

1.03 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).

3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
4. Manufacturer's installation instructions.
5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

B. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

C. Manufacturer's Instructions: Indicate special surface preparation procedures.

D. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
2. Label each container with color in addition to the manufacturer's label.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Provide paints and finishes from the same manufacturer to the greatest extent possible.
1. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.

2. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.

C. Paints:
1. Behr Process Corporation: www.behr.com/#sle.
2. Cloverdale Paint, Brand Products of Rodda Paint Company: www.cloverdalepaint.com/#sle.
3. Diamond Vogel Paints: www.diamondvogel.com/#sle.
4. PPG Paints: www.ppgpaints.com/#sle.
5. Rodda Paint Company: www.roddapaint.com/#sle.
6. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
7. Vista Paint Corporation: www.vistapaint.com/#sle.

D. Primer Sealers: Same manufacturer as top coats.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
5. Supply each paint material in quantity required to complete entire project's work from a single production run.
6. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
b. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
1) Opaque, Flat: 50 g/L, maximum.
2) Opaque, Nonflat: 150 g/L, maximum.
3) Opaque, High Gloss: 250 g/L, maximum.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by Architect after award of contract.
2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.

3. Extend colors to surface edges; colors may change at any edge as directed by Architect.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, brick, fiber cement siding, primed wood, and primed metal.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Exterior Latex; MPI #10 or 11.
      a. Products:
         1) Behr Marquee Exterior Flat [No. 4450]. (MPI #10)
         2) Behr Marquee Exterior Semi-Gloss Enamel [No. 5450]. (MPI #11)
         3) Behr Premium Plus Exterior Flat [No. 4050]. (MPI #10)
         4) Behr Premium Plus Exterior Semi-Gloss Enamel [No. 5050].
         5) Behr Pro e600 Exterior Flat Paint [No.610]. (MPI #10)
         6) Behr Pro e600 Exterior Semi-Gloss Paint [No.PR670]. (MPI #11)
         7) Kilz Pro-X 610 Exterior Flat [No. PX610].
         8) Kilz Pro-X Exterior Flat [No. PX613].
         9) PPG Paints Speedhide Exterior Latex, 6-610XI Series, Flat. (MPI #10)
         10) PPG Paints Speedhide Exterior Latex, 6-900XI Series, Semi-Gloss. (MPI #11)
         11) PPG Paints Acri-Shield Max Exterior Latex, 519-10 Series, Flat.
         12) PPG Paints Acri-Shield Max Exterior Latex, 649-10 Series, Semi-Gloss.
         13) PPG Paints Advantage 900 Interior/Exterior Latex, 919-10 Series, Semi-Gloss.
         14) Rodda pHlex-Tite Elastomeric Coating, 512301. (MPI #10)
         15) Rodda Unique II Semi-Gloss, 542001. (MPI #11)
         16) Sherwin-Williams Loxon Self-Cleaning Acrylic Exterior, Flat. (MPI #10)
         17) Sherwin-Williams Loxon XP Exterior. (MPI #10)
         18) Sherwin-Williams Solo Series, Flat. (MPI #10)
         19) Sherwin-Williams Solo Series, Semi-Gloss. (MPI #11)
         20) Sherwin-Williams Resilience, Flat. (MPI #10)
         21) Vista Paint Corporation; 2800 Acriglo Flat Semi-Gloss: www.vistapaint.com/#sle. (MPI #10)
         22) Vista Paint Corporation; 8400 Carefree Semi-Gloss: www.vistapaint.com/#sle. (MPI #11)

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
   1. Alkali Resistant Water Based Primer; MPI #3.
      a. Products:
         1) Behr Premium Plus Interior/Exterior Multi-Surface Primer and Sealer [No. 436]. (MPI #3)
         2) PPG Paints Series Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer, 17-921XI Series. (MPI #3)
         3) PPG Paints Perma-Crete Interior/Exterior Alkali Resistant Primer, 4-603XI. (MPI #3)
         4) Rodda First Coat Interior Exterior Latex Primer, 501601. (MPI #3)
         5) Rodda pHlex-Tite Elastomeric Coating, 512301. (MPI #3)
         6) Sherwin-Williams Loxon Concrete and Masonry Primer Sealer, LX02W50. (MPI #3)

7) Vista Paint Corporation; 4600 Uniprime II: www.vistapaint.com/#sle. (MPI #3)

2. Water Based Primer for Galvanized Metal; MPI #134.
   a. Products:
      1) Behr Premium Plus Interior/Exterior Multi-Surface Primer and Sealer [No. 436]. (MPI #134)
      2) PPG Paints Pitt-Tech Plus DTM Industrial Primer, 4020 PF Series. (MPI #134)
      3) Sherwin-Williams DTM Primer/Finish (MPI #134)
      4) Vista Paint Corporation; 4800 Metal Pro Primer: www.vistapaint.com/#sle. (MPI #134)
3. Latex Primer for Exterior Wood; MPI #6.
   a. Products:
      1) Behr Premium Plus Interior/Exterior Multi-Surface Primer and Sealer [No. 436]. (MPI #6)
      2) Kilz Premium Water-Based Primer [No. 1300]. (MPI #6)
      3) PPG Paints Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer, 17-921XI Series. (MPI #6)
      4) Rodda First Coat Interior Exterior Latex Primer, 501601. (MPI #6)
      5) Sherwin-Williams Exterior Latex Primer, B42W8041. (MPI #6)
4. Alkyd/Oil Primer for Exterior Wood; MPI #5.
   a. Products:
      1) PPG Paints Seal Grip Interior/Exterior Alkyd Universal Primer/Sealer, 17-941NF. (MPI #5)
      2) Rodda Exterior Control Primer, 701501. (MPI #5)
      3) Sherwin-Williams Extreme Block Stain Blocking Primer. (MPI #5)
5. Bonding Primer, Water Based; MPI #17.
   a. Products:
      1) Behr Interior/Exterior Bonding Primer [No. 432]. (MPI #17)
      2) Behr Premium Plus Interior/Exterior Multi-Surface Primer and Sealer [No. 436]. (MPI #17)
      3) Kilz Adhesion Bonding Primer [No. L2111].
      4) PPG Paints Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer, 17-921XI Series. (MPI #17)
      5) Rust-Oleum Corporation XIM UMA Advanced Technology Primer Sealer Bonder (White): www.rustoleum.com/#sle. (MPI #17)
      6) Zinsser by Rust-Oleum Corporation Bulls Eye Zero Primer-Sealer: www.rustoleum.com/#sle. (MPI #17)

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   2. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
   3. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Clean surfaces with pressurized water. Use pressure range of 1,500 to 4,000 psi at 6 to 12 inches. Allow to dry.
   3. Clean concrete according to ASTM D4258. Allow to dry.

H. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.
   3. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi at 6 to 12 inches. Allow to dry.

I. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

J. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

K. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

L. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

M. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

N. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

3.06 SCHEDULE - MPI SYSTEMS

A. Concrete Substrate (Non-traffic Sufaces): Latex System, Exterior .
   1. MPI System: MPI EXT 3.1A (Concrete Vertical Surfaces).
   2. Primer: Aklali-Resistant Primer, W.B.; MPI # 3.
   3. Intermediate Coat: Exterior latex matching topcoat; MPI # 10.
   4. Top Coat: Exterior latex (flat); MPI # 10.

B. Galvanized-Metal Surfaces (Hollow Metal): Latex System, Exterior .
   1. MPI System: MPI EXT 5.3A.
   2. Primer: Water-Based Galvanized Primer; MPI # 134.
   3. Intermediate Coat: Exterior latex matching topcoat; MPI # 11.
   4. Top Coat: Exterior latex (Semigloss); MPI # 11.

C. Exterior Trim: Latex System, Exterior .
   1. MPI System: MPI EXT 6.4K.
   2. Primer: Aklali-Resistant Primer, W.B.; MPI # 6.
   3. Intermediate Coat: Exterior latex matching topcoat; MPI # 11.
   4. Top Coat: Exterior latex (flat); MPI # 11.

D. Exterior Trim: Latex Over Alkyd Wood PrimerSystem, Exterior .
   1. MPI System: MPI EXT 6.4G.

2. Primer: Aklali-Resistant Primer, W.B.; MPI # 5.
3. Intermediate Coat: Exterior latex matching topcoat; MPI # 11.
4. Top Coat: Exterior latex (flat); MPI # 11.

E. Plastic Trim Fabrication Substrates: Latex System, Exterior .
1. MPI System: MPI EXT 6.8A.
2. Primer: Bonding Primer (Water Based); MPI # 17.
3. Intermediate Coat: Exterior latex matching topcoat; MPI # 11.
4. Top Coat: Exterior latex (flat); MPI # 11.

END OF SECTION 09 91 13

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating 2005 (Reapproved 2017).

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.

D. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association Current Edition.

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.

F. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).

G. SSPC-SP 2 - Hand Tool Cleaning 2018.

H. SSPC-SP 6 - Commercial Blast Cleaning 2007.

I. SSPC-SP 13 - Surface Preparation of Concrete 2018.

1.03 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. MPI product number (e.g., MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.

B. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

C. Manufacturer's Instructions: Indicate special surface preparation procedures.

D. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
   2. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.

C. Paints:
   1. Behr Process Corporation: www.behr.com/#sle.
   2. Cloverdale Paint, Brand Products of Rodda Paint Company: www.cloverdalepaint.com/#sle.
   3. Diamond Vogel Paints: www.diamondvogel.com/#sle.
   4. PPG Paints: www.ppgpaints.com/#sle.

5. Rodda Paint Co: www.roddapaint.com/#sle.
6. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
7. Vista Paint Corporation: www.vistapaint.com/#sle.

D. Primer Sealers: Same manufacturer as top coats.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
   1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
   2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   5. Supply each paint material in quantity required to complete entire project's work from a single production run.
   6. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
      b. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
         1) Opaque, Flat: 50 g/L, maximum.
         2) Opaque, Nonflat: 150 g/L, maximum.
         3) Opaque, High Gloss: 250 g/L, maximum.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: To be selected from manufacturer's full range of available colors.
   1. Selection to be made by Architect after award of contract.
   2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
   3. Extend colors to surface edges; colors may change at any edge as directed by Architect.
   4. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PAINT SYSTEMS - INTERIOR

A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry units, brick, wood, plaster, uncoated steel, shop primed steel, galvanized steel, aluminum, and acoustical ceilings.

1. Two top coats and one coat primer.
2. Top Coat(s): Interior Latex; MPI #52, 53 or 54.
    a. Products:
        1) Behr Marquee Interior Eggshell Enamel [No.2450]. (MPI #52)
        2) Behr Marquee Interior Semi-Gloss Enamel [No. 3450]. (MPI #54)
        3) Behr Premium Plus Interior Flat [No. 1050]. (MPI #53)
        4) Behr Premium Plus Interior Eggshell Enamel [No. 2050]. (MPI #52)
        5) Behr Premium Plus Interior Semi-Gloss Enamel [No. 3050]. (MPI #54)
        6) Behr Pro i300 Interior Dead Flat Paint [No.PR310]. (MPI #53)
        7) Behr Pro i300 Interior Semi-Gloss Paint [No.PR370]. (MPI #54)
        8) PPG Paints Speedhide Pro-EV Zero Interior Wall and Ceiling Latex, 12-110XI Series, Flat. (MPI #53)
        9) PPG Paints Speedhide Pro-EV Zero Interior Latex Enamel, 12-510XI Series, Semi-Gloss. (MPI #54)
        10) PPG Paints Speedhide Zero Interior Latex, 6-4110XI Series, Flat. (MPI #53)
        11) PPG Paints Speedhide Zero Interior Latex, 6-4410XI Series, Satin. (MPI #52)
        12) PPG Paints Speedhide Zero Interior Latex, 6-4510XI Series, Semi-Gloss. (MPI #54)
        13) PPG Paints Speedhide Interior Latex, 6-70 Series, Flat. (MPI #53)
        14) PPG Paints Speedhide Interior Latex, 6-3511 Series, Satin. (MPI #52)
        15) PPG Paints Speedhide Interior Latex, 6-500 Series, Semi-Gloss. (MPI #54)
        16) PPG Paints Advantage 900 Interior/Exterior Styrene Acrylic, 919-10 Series, Semi-Gloss. (MPI #54)
        17) Rodda Master Painter Ultra Low VOC Flat, 513601. (MPI #53)
        18) Sherwin-Williams Harmony Interior Acrylic Latex, Flat. (MPI #53)
        19) Sherwin-Williams Harmony Interior Acrylic Latex, Semi-Gloss. (MPI #54)
        20) Sherwin-Williams ProMar 200 HP Series, Eg-Shel. (MPI #52)
        21) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Eg-Shel. (MPI #52)
        22) Sherwin-Williams Solo Series, Flat. (MPI#53)
        23) Vista Paint Corporation; 8100 Carefree Flat: www.vistapaint.com/#sle. (MPI #53)
        24) Vista Paint Corporation; 8300 Carefree Eggshell: www.vistapaint.com/#sle. (MPI #52)
        25) Vista Paint Corporation; 8400 Carefree Semi-Gloss: www.vistapaint.com/#sle. (MPI #54)

B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
    1. Medium duty applications include doors, door frames, railings, handrails, and guardrails.
    2. Two top coats and one coat primer.
    3. Top Coat(s): Interior Alkyd; MPI #47.
        a. Products:
            1) PPG Paints Glyptex Interior Alkyd Enamel, 439-10 Series, Semi-Gloss. (MPI #47)
            2) Rodda Porsalite Semi-Gloss, 745001. (MPI #47)
    4. Top Coat Sheen:
        a. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.

C. Paint I-OP-MD-WC - Medium Duty Vertical and Overhead: Including gypsum board, plaster, concrete, concrete masonry units, uncoated steel, shop primed steel, galvanized steel, and aluminum.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Interior Alkyd; MPI #81.
      a. Products:
         1) PPG Paints Interior Alkyd Industrial Enamel, 7-844 Series, Semi-Gloss. (MPI #81).
         2) Substitutions: Section 01 60 00 - Product Requirements.
   3. Top Coat Sheen:
      a. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.

D. Paint I-OP-FL - Concrete and Wood Floors to be Painted.
   1. Two top coats and one coat primer.

E. Paint I-TR-C - Transparent Finish on Concrete Floors.
   1. Sealer: Water Based Sealer for Concrete Floors; MPI #99.
      a. Products:
         1) Behr Premium Wet-Look Sealer High Gloss [No. 985]. (MPI #99)
         2) Behr Premium Wet-Look Sealer Low-Lustre [No. 986]. (MPI #99)
         3) PPG Paints Perma-Crete Plex-Seal WB Interior/Exterior Clear Sealer, 4-6200XI, Satin. (MPI #99)
         4) Sherwin-Williams H&C Clarishield Water-Based Wet-Look Concrete Sealer. (MPI #99)
   2. Sealer Sheen:
      a. Eggshell: MPI gloss level 3; use this sheen at all locations.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
   1. Interior/Exterior Latex Block Filler; MPI #4.
      a. Products:
         1) Kilz Pro-X p50 Block Filler Primer.
         2) PPG Paints Speedhide Masonry Hi Fill Latex Block Filler, 6-15XI . (MPI #4)
         3) Rodda Sprayable Block Filler, 501901. (MPI #4)
         4) Sherwin-Williams ConFlex Block Filler. (MPI #4)
         5) Sherwin-Williams Loxon Block Surfacer. (MPI #4)
         6) Vista Paint Corporation; 040 Block Kote: www.vistapaint.com/#sle. (MPI #4)
         7) Zinsser by Rust-Oleum Corporation Block Filler 2X High Build Primer for Concrete: www.rustoleum.com/#sle. (MPI #4)
   2. Interior Latex Primer Sealer; MPI #50.
      a. Products:
         1) Behr Premium Plus Interior All-In-One Primer and Sealer [No. 75]. (MPI #50)
         2) Behr Premium Plus Interior Drywall Primer and Sealer [No. 73]. (MPI #50)
         3) PPG Paints Speedhide Interior Latex Sealer, 6-2. (MPI #50)
         4) PPG Paints Pure Performance Interior Latex Sealer, 9-900. (MPI #50).
         5) Rodda Roseal II, 502701. (MPI #50)
         6) Vista Paint Corporation; 1100 Hi-Build PVA Sealer: www.vistapaint.com/#sle. (MPI #50)

7) Rust-Oleum Corporation Sierra Acrylic Primer Griptec: www.rustoleum.com/#sle. (MPI #50)
8) Rust-Oleum Corporation XIM Prime Start Multi-Purpose Primer/Sealer: www.rustoleum.com/#sle. (MPI #50)
9) Zinsser by Rust-Oleum Corporation Drywall Primer: www.rustoleum.com/#sle. (MPI #50)

3. Interior/Exterior Quick Dry Alkyd Primer for Metal; MPI #76.
   a. Products:
      1) PPG Paints Multiprime Multi-Purpose Primer, 4160 Series. (MPI #76)
4. Interior Water Based Primer for Galvanized Metal; MPI #134.
   a. Products:
      1) Behr Premium Plus Interior/Exterior Multi-Surface Primer and Sealer [No. 436]. (MPI #134)
      2) PPG Paints Pitt-Tech Plus Interior/Exterior DTM Waterborne Acrylic Primer/Finish, 4020 PF Series. (MPI #134)
      3) Rodda Metal Master Primer, 508901. (MPI #134)
      4) Sherwin-Williams DTM Primer/Finish (MPI #134)

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been adequately prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Plaster and Stucco: 12 percent.
   3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
   5. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Clean surfaces with pressurized water. Use pressure range of 1,500 to 4,000 psi at 6 to 12 inches. Allow to dry.
   3. Clean concrete according to ASTM D4258. Allow to dry.
   4. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

G. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.
   3. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi at 6 to 12 inches. Allow to dry.

H. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

I. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

J. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

K. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

L. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

M. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

N. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

O. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

P. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

Q. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

3.06 SCHEDULE - MPI PAINT SYSTEMS

A. Concrete Substrates, Nontraffic Surfaces: Latex System, Exterior.
   1. MPI System: MPI INT 3.1E.
   2. Primer: Interior Latex matching topcoat; MPI # 53.
   3. Intermediate Coat: Interior latex matching topcoat; MPI # 53.
   4. Topcoat: Interior latex (flat); MPI # 53.

B. CMU Substrates: Latex System
   1. MPI System: MPI INT 4.2A.
   2. Primer: Interior/exterior latex block filler; MPI # 4.
   3. Intermediate Coat: Interior latex matching topcoat; MPI # 52.
   4. Topcoat: Interior latex (eggshell); MPI # 52.

C. Steel Substrates: Quick -Drying Enamel System
   1. MPI System: MPI INT 5.1A.
   2. Primer: Quick-drying alkyd metal primer; MPI # 76.
   3. Intermediate Coat: Quick-drying enamel matching topcoat; MPI # 81.
   4. Topcoat: Quick-drying enamel (semigloss); MPI # 81.

D. Galvanized-Metal Substrates: Latex System
   1. MPI System: MPI INT 5.3J.
   2. Primer: Waterborne galvanized-metal primer; MPI # 134.
   3. Intermediate Coat: Interior latex matching topcoat; MPI # 54.
   4. Topcoat: Interior latex (semigloss); MPI # 54.

E. Gypsum Board Substrates: Latex System
   1. MPI System: MPI INT 9.2A.
   2. Primer: Interior Latex primer/sealer; MPI # 50.
   3. Intermediate Coat: Interior latex matching topcoat; MPI # 52.
   4. Topcoat: Interior latex (eggshell); MPI # 52.

F. Cotton or Canvas Insulation-Covering Substrates: Including pipe and duct coverings Latex System
   1. MPI System: MPI INT 10.1A.
   2. Primer: Interior Latex matching topcoat; MPI # 50.
   3. Intermediate Coat: Interior latex matching topcoat; MPI # 53.
   4. Topcoat: Interior latex (flat); MPI # 53.

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SECTION 09 96 00 - HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. High performance coatings.

B. Surface preparation.

1.02 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating 2005 (Reapproved 2017).

C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association Current Edition.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.

E. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

A. Product Data: Provide complete list of all products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified coating system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. If proposal of substitutions is allowed under submittal procedures, explanation of all substitutions proposed.

B. Manufacturer's Certificate: Certify that high-performance coatings comply with VOC limits specified.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Coating Materials: 1 gallon of each type and color.
   2. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

1.04 QUALITY ASSURANCE

A. Maintain one copy of each referenced document that applies to application on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Only materials (primers, coatings, etc.) listed in the latest edition of the MPI Approved Product List (APL) are acceptable for use on this project.

B. Provide high performance coating products from the same manufacturer to the greatest extent possible.
   1. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
   2. Substitution of a different high performance coating system using MPI-approved products by the same manufacturer will be considered.

C. High-Performance Coatings:
   1. Dow: www.dow.com/#sle.
   2. PPG Paints: www.ppgpaints.com/#sle.
   3. Precision Coatings: www.precisioncoatingsinc.com/#sle.
   4. Sherwin-Williams Company: www.protective.sherwin-williams.com/industries/#sle.
   5. Tnemec Company, Inc: www.tnemec.com/#sle.

2.02 HIGH-PERFORMANCE COATINGS

A. Provide coating systems that meet the following minimum performance criteria, unless more stringent criteria are specified:
   1. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0, maximum, when tested in accordance with ASTM E84.
   2. NFPA 101, Class A rated.
   3. Lead Content: None.

2.03 TOP COAT MATERIALS

A. Coatings - General: Provide complete multi-coat systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated; number of coats specified does not include primer or filler coat.
   1. Lead Content: Not greater than 0.06 percent by weight of total nonvolatile content.
   2. Chromium Content, as Hexavalent Chromium, Zinc Chromate, or Strontium Chromate: None.
   3. Volatile Organic Compound (VOC) Content:
      a. Provide coatings that comply with the most stringent requirements specified in the following:
         1) 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
         2) Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings: www.otcair.org.
      b. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
   4. Colors: Selected from manufacturer's standard colors.

B. Epoxy Coating:
   1. Top Coat(s): Polyamide Epoxy; MPI #77, #177.
      a. Sheen: Gloss.
      b. Products:

1) PPG Paints; Amerlock 400 High Solids Epoxy Coating, AK-400 Series, Semi-Gloss: www.ppgpaints.com/#sle.
2) PPG Paints; Aquapon High Build Polyamide Epoxy, 97-1212 Series, Semi-Gloss: www.ppgpaints.com/#sle.
3) PPG Paints; HPC Epoxy, High Gloss, 95-501 Series: www.ppgpaints.com/#sle.
4) Sherwin-Williams; Macropoxy 646-100 Epoxy, B58-600 Series: www.protective.sherwin-williams.com/#sle.
5) Sherwin-Williams; Macropoxy 646 Fast Cure Epoxy: www.protective.sherwin-williams.com/#sle. (MPI #177)
6) Sherwin-Williams; Macropoxy HS: www.protective.sherwin-williams.com/#sle.
7) Sherwin-Williams; Tile Clad HS: www.protective.sherwin-williams.com/#sle. (MPI #77)
8) Tnemec Company, Inc; Series 287 Enviro-Pox: www.tnemec.com/#sle.

C. Shellac: Pure, white type.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by coating manufacturer.
1. Primer Sealer, Latex, Interior; MPI #50.
a. Products:
1) PPG Paints; Speedhide Latex Quick Dry Sealer, 6-2: www.ppgpaints.com/#sle. (MPI #50)
2) PPG Paints; Speedhide Zero Interior Latex Sealer, 6-4900XI: www.ppgpaints.com/#sle. (MPI #50)
3) PPG Paints; Pure Performance Interior Latex Primer, 9-900; www.ppgpaints.com/#sle. (MPI #50)
4) Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer: www.protective.sherwin-williams.com/#sle. (MPI #50)
2. Block Filler, Latex; MPI #4.
a. Products:
1) PPG Paints; Speedhide Masonry Hi Fill Latex Block Filler, 6-15XI: www.ppgpaints.com/#sle. (MPI #4)
2) Sherwin-Williams; Heavy Duty Block Filler: www.protective.sherwin-williams.com/#sle. (MPI #4)
3) Sherwin-Williams; PrepRite Interior/Exterior Block Filler: www.protective.sherwin-williams.com/#sle. (MPI #4)

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of coated surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Do not begin application of coatings until substrates have been properly prepared.

C. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.

D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

F. Test shop-applied primer for compatibility with subsequent cover materials.

G. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Board: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

H. Masonry: Verify masonry joints are struck flush.

I. Proceed with coating application only after unacceptable conditions have been corrected.
   1. Commencing coating application constitutes Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

A. Clean surfaces of loose foreign matter.

B. Remove substances that would bleed through finished coatings. If unremovable, seal surface with shellac.

C. Remove finish hardware, fixture covers, and accessories and store.

D. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by coating manufacturer.
   3. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi at 6 to 12 inches. Allow to dry.

E. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

3.03 PRIMING

A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

B. Concrete Masonry: Apply masonry filler to thickness required to fill holes and produce smooth surface; minimum thickness of 30 mils.

3.04 COATING APPLICATION

A. Apply coatings in accordance with manufacturer's written instructions, to thicknesses specified and recommendations in MPI - Architectural Painting and Specification Manual.

B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for general requirements for field inspection.

3.06 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Clean surfaces immediately of overspray, splatter, and excess material.

C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.07 PROTECTION

A. Protect finished work from damage.

3.08 SCHEDULE

A. Substrate: CMU Substrates, Interior.
   1. Primer: Interior/exterior latex block filler; MPI # 4.
   2. Intermediate Coat: Epoxy, cold-cured, gloss; MPI # 77.
   3. Top Coat: Epoxy, cold-cured, gloss; MPI # 77.

B. Substrate: Gypsum Wallboard, Interior.
   1. Primer: Interior/exterior latex primer/sealer; MPI # 50.
   2. Intermediate Coat: Epoxy, cold-cured, gloss; MPI # 77.
   3. Top Coat: Epoxy, cold-cured, gloss; MPI # 77.

END OF SECTION 09 96 00