

PROJECT MANUAL
For



SOUTH SENECA
CENTRAL SCHOOL DISTRICT

VOLUME 2

SOUTH SENECA CENTRAL SCHOOL DISTRICT

2022 Capital Improvement Project Phase 2

7263 MAIN STREET

OVID, NY 14847

OVID JR/SR HIGH SCHOOL SED#: 56-05-01-04-0-001-025

INTERLAKEN ELEMENTARY SCHOOL SED#: 56-05-01-04-0-004-026

The design of this project conforms to all applicable provisions of the New York State Uniform Fire Prevention and Building Code, the Energy Conservation Construction Code of New York State, and the building standards of the New York State Education Department

ISSUED TO SED March 07, 2025
ISSUED FOR BID OCTOBER 03, 2025

HUNT 2541-040

SECTION 00 01 12
TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS

VOLUME I

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

00 01 12 - Table of Contents
00 01 15 - List of Drawing Sheets
00 11 13 - Advertisement for Bids
00 12 00 - Request for Information
00 21 13 - Instructions to Bidders (AIA A701)
00 31 32 - Geotechnical Data
00 41 13 - Bid Form
00 43 13 - Bid Bond (AIA A310)
00 44 00 - Equivalent Listing
00 45 13 - Qualifications Statement (AIA A305 and Exhibits A - E)
00 45 19 - Non-Collusion Affidavit
00 45 43 - Corporate Resolution
00 45 46.01 - Iran Divestment Act Certification
00 45 46.02 - Federal and State Certification
00 52 00 - Standard Form of Agreement (AIA A132)
00 61 13.13 - Performance Bond (AIA A312)
00 61 13.16 - Payment Bond (AIA A312)
00 62 16 - Sample Insurance Certificate with Supplemental Attachment (AIA Document G715)
00 72 00 - General Conditions of the Contract for Construction (AIA A232)
00 73 43 - Wage Rate Requirements

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

01 12 00 - Multiple Contract Summary
01 20 00 - Price and Payment Procedures
01 21 00 - Allowances
01 22 00 - Unit Prices

- 01 23 00 - Alternates
- 01 25 00 - Substitution Procedures
- 01 29 00 - Payment Procedures
- 01 30 00 - Administrative Requirements
- 01 31 00 - Project Management and Coordination
- 01 32 16 - Construction Progress Schedule
- 01 33 29.07 - Prohibited Content Installer Certification
- 01 35 17 - Alteration Project Procedures
- 01 40 00 - Quality Requirements
- 01 40 00 - Quality Control
- 01 41 00 - Work Restrictions
- 01 41 13 - Codes
- 01 45 33 - Code-Required Special Inspections and Procedures
- 01 50 00 - Temporary Facilities
- 01 51 00 - Temporary Utilities
- 01 51 10 - Life Safety Requirements During School Construction
- 01 57 13 - Temporary Erosion and Sediment Control
- 01 60 00 - Product Requirements
- 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions
- 01 70 00 - Execution and Closeout Requirements
- 01 74 19 - Construction Waste Management and Disposal
- 01 78 00 - Closeout Submittals

VOLUME II

00 01 12 - Table of Contents

DIVISION 02 -- EXISTING CONDITIONS - NOT USED

DIVISION 03 -- CONCRETE

03 30 00 - Cast-in-Place Concrete

03 54 00 - Cast Underlayment

DIVISION 04 -- MASONRY - NOT USED

DIVISION 05 -- METALS - NOT USED

DIVISION 06 -- WOOD, PLASTICS, COMPOSITES - NOT USED

06 10 00 - Rough Carpentry

06 17 53 - Shop-Fabricated Wood Trusses

DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

07 05 53 - Fire and Smoke Assembly Identification

07 25 00 - Weather Barriers

07 84 00 - Firestopping

07 92 00 - Joint Sealants

DIVISION 08-- OPENINGS

08 11 16 - Aluminum Doors and Frames

08 33 23 - Overhead Coiling Doors

08 44 13 - Glazed Aluminum Curtain Walls

08 71 00 - Door Hardware

08 80 00 - Glazing

DIVISION 09-- FINISHES

09 05 61 - Common Work Results for Flooring Preparation

09 21 16 - Gypsum Board Assemblies

09 30 00 - Tiling

09 51 00 - Acoustical Ceilings

09 65 00 - Resilient Flooring

09 67 00 - Fluid-Applied Flooring

09 72 00 - Wall Coverings

09 91 23 - Interior Painting

DIVISION 10-- SPECIALTIES

10 14 23 - Panel Signage

10 21 13.19 - Plastic Toilet Compartments

DIVISION 11-- EQUIPMENT - NOT USED

DIVISION 12-- FURNISHINGS

12 36 00 - Countertops

12 48 13 - Entrance Floor Mats and Frames

DIVISION 13-- SPECIAL CONSTRUCTION - NOT USED

DIVISION 14-- CONVEYING EQUIPMENT

14 26 00 - Limited-Use/Limited-Application Elevators

14 28 19 - Elevator Equipment

DIVISION 19 - THEATRICAL EQUIPMENT - NOT USED

VOLUME III

00 01 12 - Table of Contents

DIVISION 21 -- FIRE SUPPRESSION - NOT USED

DIVISION 22 -- PLUMBING

22 05 53 - Identification for Plumbing Piping and Equipment

22 07 19 - Plumbing Piping Insulation

22 10 05 - Plumbing Piping and Specialties

22 40 00 - Plumbing Fixtures

DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC) - NOT USED

23 37 00 - Air Outlets and Inlets

DIVISION 25 - INTEGRATED AUTOMATION - NOT USED

DIVISION 26 -- ELECTRICAL

26 05 00 - Common Work Results For Electrical

26 05 05 - Selective Demolition for Electrical

26 05 19 - Low-Voltage Electrical Power Conductors and Cables

26 05 26 - Grounding and Bonding for Electrical Systems

26 05 29 - Hangers and Supports for Electrical Systems

26 05 33.13 - Conduit for Electrical Systems

26 05 33.16 - Boxes for Electrical Systems

26 05 33.23 - Surface Raceways for Electrical Systems

26 05 53 - Identification for Electrical Systems

26 05 83 - Wiring Connections

26 09 23 - Lighting Control Devices

26 24 16 - Panelboards

26 27 26 - Wiring Devices

26 28 16.16 - Enclosed Switches

26 51 00 - Interior Lighting

26 56 00 - Exterior Lighting

DIVISION 27 -- COMMUNICATIONS

- 27 05 26 - Grounding and Bonding For Communications Systems
- 27 05 28 - Pathways For Communications Systems
- 27 05 53 - Identification For Communications Systems
- 27 10 05 - Communications Copper Cabling

DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY

- 28 10 00 - Access Control
- 28 46 21.16 - Existing Fire Alarm System

DIVISION 31 -- EARTHWORK

- 31 10 00 - Site Clearing
- 31 22 00 - Grading
- 31 23 16 - Excavation
- 31 23 16.13 - Trenching
- 31 23 23 - Fill

DIVISION 32 -- EXTERIOR IMPROVEMENTS

- 32 01 90 - Operation and Maintenance of Planting
- 32 11 23 - Aggregate Base Course
- 32 13 13 - Concrete Paving
- 32 91 19 - Landscape Grading
- 32 92 19 - Seeding

DIVISION 33 -- UTILITIES - NOT USED

- 33 05 61 - Concrete Manholes
- 33 31 23 - Sanitary Sewerage Force Main Piping
- 33 32 18 - Pumps

DIVISION 34 - TRANSPORTATION - NOT USED

DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION - NOT USED

DIVISION 40 - PROCESS INTEGRATION - NOT USED

DIVISION 41 - MATERIAL PROCESSING AND HANDLING EQUIPMENT - NOT USED

DIVISION 42 - PROCESS HEATING, COOLING, AND DRYING EQUIPMENT - NOT USED

DIVISION 43 - PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE - NOT
USED

DIVISION 44 - POLLUTION CONTROL EQUIPMENT - NOT USED

DIVISION 45 - INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT - NOT USED

DIVISION 46 - WATER AND WASTEWATER EQUIPMENT - NOT USED

DIVISION 48 - ELECTRICAL POWER GENERATION - NOT USED

END OF SECTION

SECTION 00 01 15
LIST OF DRAWING SHEETS

VOLUME I

GENERAL

G1.1 SYMBOLS & ABBREVIATIONS

OVID MIDDLE/HIGH SCHOOL

CODE COMPLIANCE DRAWINGS

HS-CO1.1 FIRST FLOOR CODE COMPLIANCE PLAN

HS-CO1.2 SECOND FLOOR CODE COMPLIANCE PLAN

STRUCTURAL DRAWINGS

HS-S0.1 STRUCTURAL GENERAL NOTES

HS-S1.1 FOUNDATION AND FRAMING PLANS

HS-S2.1 FOUNDATION AND FRAMING DETAILS

ARCHITECTURAL DRAWINGS

HS-A1.1 FIRST FLOOR PLAN AND DETAILS

HS-A8.1 FIRST FLOOR FINISH PLAN - AREA B & D

HS-A8.2 FIRST FLOOR WALL FINISH PLAN - PARTIAL AREA A, C, & D

HS-A8.3 FIRST AND SECOND FLOOR WALL FINISH PLAN - AREA C,D,& E

HS-A9.1 INTERIOR FINISH KEY AND SCHEDULES

HS-A9.2 INTERIOR SIGN TYPES

HS-A9.3 INTERIOR SIGNAGE PLACEMENT PLAN - FIRST FLOOR

HS-A9.4 INTERIOR SIGNAGE PLACEMENT PLAN - SECOND FLOOR.

ELECTRICAL DRAWINGS

HS-E1.1 PARTIAL FIRST FLOOR ELECTRICAL PLAN - AREA A AND B

HS-E1.2 PARTIAL FIRST FLOOR ELECTRICAL PLAN - AREA D AND E

PLUMBING DRAWINGS

HS-P0.1 BASEMENT SANITARY DEMOLITION PLAN - AREA B

HS-P1.1 BASEMENT SANITARY NEW WORK PLAN - AREA B

MECHANICAL DRAWINGS

HS-H1.1 FIRST FLOOR HVAC PLAN - AREA B

TECHNOLOGY DRAWINGS

HS-T1.1 FIRST FLOOR TECHNOLOGY PLAN

HS-T2.1 TECHNOLOGY DETAILS

INTERLAKEN ELEMENTARY SCHOOL

CODE COMPLIANCE DRAWINGS

ES-CO1.1 CODE COMPLIANCE AND KEY PLANS

ES-CO1.2 CODE COMPLIANCE AREA PLANS

SITE DRAWINGS

ES-L1.1 SITE DEMOLITION, IMPROVEMENT, AND UTILITY PLANS

ES-L2.1 GRADED BERM PLAN

ES-L3.1 SITE DETAILS

ARCHITECTURAL DRAWINGS

ES-A1.1 TOILET ROOM PLANS, ELEVATIONS, AND DETAILS

ES-A1.2 ALTERNATE TOILET ROOM PLANS

ES-A8.1 FIRST AND SECOND FLOOR FINISH PLAN - PARTIAL AREA A

ES-A8.2 FIRST FLOOR WALL FINISH PLAN - AREA A

ES-A8.3 FIRST FLOOR WALL FINISH PLAN - PARTIAL AREA B, C, & D

ES-A9.1 INTERIOR FINISH KEY AND SCHEDULES

ES-A9.2 INTERIOR SIGNAGE TYPES

ES-A9.3 INTERIOR SIGNAGE PLACEMENT PLANS

MECHANICAL DRAWINGS

ES-H1.1 MECHANICAL PLANS FOR ALTERNATES #1 & #2

ELECTRICAL DRAWINGS

ES-E0.1 PARTIAL FIRST/SECOND FLOOR DEMOLITION PLAN - AREA A

ES-E1.1 PARTIAL FIRST/SECOND FLOOR POWER PLAN - AREA A

ES-E1.2 PARTIAL FIRST FLOOR ELECTRICAL PLAN = AREA B & C

- ES-E2.1 PARTIAL FIRST-SECOND FLOOR LIGHTING PLAN - AREA A
- ES-E3.1 SITE ELECTRICAL UTILITY PLAN

PLUMBING DRAWINGS

- ES-P0.1 PLUMBING DEMOLITION PLAN - AREA A & C
- ES-P0.2 FIRST FLOOR DEMOLITION - AREA C & PARTIAL AREA D
- ES-P1.1 FIRST & SECOND FLOOR PLUMBING PLAN - AREA A
- ES-P1.2 FIRST FLOOR SANITARY - AREA B & PARTIAL AREA D

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Floors and slabs on grade.
- B. Concrete foundation walls.
- C. Concrete reinforcement.
- D. Joint devices associated with concrete work.
- E. Concrete finishing.
- F. Concrete curing.

1.2 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.3 REFERENCE STANDARDS

- A. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; 1998 (Reapproved 2004).
- B. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).
- C. ACI MNL-66 - ACI Detailing Manual; 2020.
- D. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.
- E. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.
- F. ACI PRC-304 - Heavyweight Concrete: Measuring, Mixing, Transporting and Placing; 2020.
- G. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.
- H. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.
- I. ACI PRC-308 - Guide to External Curing of Concrete; 2016.
- J. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.
- L. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.
- M. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- N. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2017.

- O. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2022.
- P. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- Q. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2021.
- R. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2022a.
- S. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens); 2021.
- T. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.
- U. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
- V. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2020.
- W. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
- X. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- Y. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete; 2017a.
- Z. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).
- AA. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2022.
- AB. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017.
- AC. ASTM C845/C845M - Standard Specification for Expansive Hydraulic Cement; 2018.
- AD. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.
- AE. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2021.
- AF. ASTM C 1064 - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete, 2017.
- AG. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete; 2010a (Reapproved 2015).
- AH. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2015.
- AI. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.
- AJ. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2015.
- AK. ASTM E1155 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers; 2020.
- AL. ASTM E1155M - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers (Metric); 2014.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products such as joint devices, attachment accessories, and admixtures, showing compliance with specified requirements.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI SPEC-301, Section 4 - Concrete Mixtures.
- D. Design Data:
 - 1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
 - a. Hot and cold weather concrete work.
 - b. Air entrained concrete work.
 - 2. Identify mix ingredients and proportions, including admixtures.
 - 3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.
 - 4. Submit 28 day concrete strength test data for each mix design per ACI CODE-318 requirements.
 - a. Provide a minimum of 15 concrete strength tests, where a concrete strength test is the average strength of at least two 6x12 inch or three 4x8 inch cylinders.
 - b. If 15 concrete tests are unavailable, the average strength of the concrete tests must exceed the required strength by 1200psi for up to 5000 psi mix concrete.
- E. Reinforcing Placement Drawings: Comply with requirements of ACI MNL-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices, supporting & spacing devices. Indicate quantities of reinforcing steel and welded wire fabric.
- F. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- G. Reports: Submit certified copies of mill test report of reinforcement materials analysis.
- H. Samples: Submit two, 12 inch long samples of waterstops and construction joint devices.
- I. Test Reports: Submit report for each test or series of tests specified.
- J. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

1.5 CLOSEOUT SUBMITTALS

- A. See Section 01 70 00 - Execution and Closeout Requirements for requirements.
- B. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.6 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
- B. Follow recommendations of ACI PRC-305 when concreting during hot weather.
- C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

1.7 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.1 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement (WWR): Plain type, ASTM A1064/A1064M.
 - 1. Form: Flat Sheets.
 - 2. WWR Style: As indicated on drawings.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.
- D. Fiber Reinforcement: Alkali-resistant polypropylene monofilament complying with ASTM C1116/C1116M, 24 ksi minimum tensile strength. Mixing rate per manufacturer's recommendations.
 - 1. Fiber Length: 0.75 inch, nominal.
 - 2. Products:
 - a. Fibermesh 150 by Propex Concrete Systems: www.fibermesh.com
 - b. FRC Mono 150 by FRC Industries: www.frcindustries.com
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 - 1. Acquire cement for entire project from same source.
- B. Hydraulic Cement with silica aggregate: ASTM C845/C845M, Type K.
- C. Fine and Coarse Aggregates: ASTM C33/C33M.
 - 1. Acquire aggregates for entire project from same source.
 - 2. Coarse Aggregate Maximum Size: In accordance with ACI CODE-318.
- D. Lightweight Aggregate: ASTM C330/C330M.
- E. Fly Ash: ASTM C618, Class F. Loss on ignition requirement waived if used in flowable fill concrete mix.
- F. Water: ACI 318; Clean and not detrimental to concrete.

2.3 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
- F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- G. Accelerating Admixture: ASTM C494/C494M Type C.
- H. Retarding Admixture: ASTM C494/C494M Type B.
- I. Water Reducing Admixture: ASTM C494/C494M Type A.

2.4 ACCESSORY MATERIALS

- A. Non-Shrink Cementitious Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 48 Hours, ASTM C109/C109M: 2,000 pounds per square inch.
 - 2. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch.
 - 3. Flowable Products:
 - a. Euclid Chemical Company; NS GROUT: www.euclidchemical.com/#sle.
 - b. Five Star Products, Inc; Five Star Fluid Grout 100: www.fivestarproducts.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, nonmetallic aggregate, and activator.
 - 1. Minimum Compressive Strength at 7 days, ASTM D695: 12,000 pounds per square inch.

2.5 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
- B. Epoxy Bonding System:
 - 1. Complying with ASTM C881/C881M and of Type required for specific application.
 - 2. Products:
 - a. Adhesives Technology Corporation: www.atcepoxy.com/#sle.
 - b. Kaufman Products Inc; SurePoxym Class B: www.kaufmanproducts.net/#sle.
 - c. SpecChem, LLC; SpecPoxym 1000, SpecPoxym 2000, SpecPoxym 3000, or SpecPoxym 3000FS: www.specchemllc.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Slab Isolation Joint Filler: 1/2-inch thick, height equal to slab thickness, with removable top section forming 1/2-inch deep sealant pocket after removal.
 - 1. Material: ASTM D1751, Nonextruding, resilient asphalt impregnated fiberboard or felt.
- D. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.
 - 1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
 - 2. Height: To suit slab thickness.
- E. Expansion and Contraction Joint Devices: ASTM B221 alloy, extruded aluminum; resilient elastomeric filler strip with Shore A hardness of 35 to permit plus or minus 25 percent joint

movement with full recovery; extruded aluminum cover plate, of longest manufactured length at each location, flush mounted; color as selected.

2.6 CURING MATERIALS

- A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
- B. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
- C. Moisture-Retaining Sheet: ASTM C171.
 - 1. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.
 - 2. Non-staining cotton fabric, weighing not less than 8 oz/per square yd, bonded to prevent separation during handling and placing.
- D. Polyethylene Film: ASTM D2103, 4 mil, 0.004 inch thick, clear.
- E. Water: Potable, not detrimental to concrete.

2.7 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.
- B. Proportioning Structural Lightweight Concrete: Comply with ACI 211.2 recommendations.
- C. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- D. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.
- E. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.

2.8 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
 - 1. Fiber Reinforcement: Batch and mix as recommended by manufacturer for specific project conditions.
- B. Transit Mixers: Comply with ASTM C94/C94M.
- C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.1 EXAMINATION

- A. See Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify requirements for concrete cover over reinforcement.

- C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 PREPARATION

- A. Remove debris and ice from formwork, reinforcement, and concrete substrates.
- B. Remove water from areas receiving concrete before concrete is placed.
- C. Verify that forms are clean and free of rust before applying release agent.
- D. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- E. Wet sticking anchor rods shall not be permitted.
- F. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions. Remove laitance, coatings & unsound materials.
 - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 - 2. Use latex bonding agent only for non-load-bearing applications.
- G. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.3 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI SPEC-301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.4 PLACING CONCRETE

- A. Place concrete in accordance with ACI PRC-304.
- B. Notify testing laboratory and Architect not less than 24 hours prior to commencement of placement operations.
- C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

3.5 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
- E. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.

- F. Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.
- G. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- H. Install joint covers in longest practical length, when adjacent construction activity is complete.
- I. Apply sealants in joint devices in accordance with Section 07 92 00.
- J. Deposit concrete at final position. Prevent segregation of mix.
- K. Place concrete in continuous operation for each panel or section determined by predetermined joints.
- L. Consolidate concrete.
- M. Place concrete continuously between predetermined expansion, control, and construction joints.
- N. Do not interrupt successive placement; do not permit cold joints to occur.
- O. Place floor slabs in checkerboard or saw cut pattern indicated.
- P. Screed floors level, maintaining the following minimum F(F) Floor Flatness and F(L) Floor Levelness values when measured in accordance with ASTM E1155.

3.6 SEPARATE FLOOR TOPPINGS

- A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.
- B. Place required dividers, edge strips, reinforcing, and other items to be cast in.
- C. Apply bonding agent to substrate in accordance with manufacturer's instructions.
- D. Place concrete floor toppings to required lines and levels.
 - 1. Place topping in checkerboard panels not to exceed 20 feet in either direction.
- E. Screed toppings level, maintaining surface flatness of maximum 1/8 inch in 10 feet.

3.7 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Section 01 40 00, will inspect finished slabs for compliance with specified tolerances.
- B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
 - 1. Exposed to View and Foot Traffic: F(F) of 35; F(L) of 25, on-grade only.
 - 2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
 - 3. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
 - 4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.
- C. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155 (ASTM E1155M), within 48 hours after slab installation; report both composite overall values and local values for each measured section.
- D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value.
- E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.8 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:

3.9 CURING

- A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.10 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Field inspection and testing will be performed by Owner's testing laboratory in accordance with ACI 318 and applicable code.
- C. Provide free access to concrete operations at project site and cooperate with appointed firm.
- D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- E. Concrete Inspections:
 - 1. Continuous Placement Inspection: Inspect for proper installation procedures.
 - 2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.
- F. Strength Test Samples:
 - 1. Sampling Procedures: ASTM C172/C172M.
 - 2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, field cured.
 - 3. Sample concrete and make one set of four cylinders for every 50 cu yds or less of each class of concrete placed each day and for every 5,000 sf of surface area for slabs and walls.
 - 4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
 - 5. Make one additional cylinder during cold weather concreting, and field cure.
- G. Field Testing:
 - 1. Slump Test Method: ASTM C143/C143M.
 - 2. Air Content Test Method: ASTM C173/C173M.
 - 3. Temperature Test Method: ASTM C1064/C1064M.
 - 4. Measure slump and temperature for each compressive strength concrete sample.
 - 5. Measure air content in air entrained concrete for each compressive strength concrete sample.
- H. Cylinder Compressive Strength Testing:
 - 1. Test Method: ASTM C39/C39M.
 - 2. Test Acceptance: In accordance with ACI CODE-318 and applicable code.
 - 3. Test one cylinder at 7 days.
 - 4. Test two cylinders at 28 days.

5. Retain one cylinder for 56 days for testing when requested by Architect.
 6. Dispose remaining cylinders when testing is not required.
- I. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.11 PATCHING

- A. Allow Architect to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect upon discovery.
- C. Patch imperfections as directed by Architect in accordance with ACI CODE-318.

3.12 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.13 PROTECTION

- A. If cold weather provisions of ACI PRC-306 are required:
 1. Protect fresh concrete from freezing by heating the ground and forms to minimum temperatures of ACI PRC-306.
 2. Thermally protect the fresh concrete the following durations
 - a. Concrete footings/walls - 48 hours after placement
 - b. Concrete piers - 72 hours after placement.
 - c. Concrete slabs on grade - 72 hours after placement.
- B. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 03 54 00
CAST UNDERLAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Liquid-applied self-leveling floor underlayment.
 - 1. Use cementitious type at all locations.

1.2 RELATED REQUIREMENTS

- A. Section 01 70 00 - Execution and Closeout Requirements: Alteration project procedures; selective demolition for remodeling.
- B. Section 03 30 00 - Cast-in-place Concrete

1.3 REFERENCE STANDARDS

- A. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2018.
- B. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2021.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, mixing instructions, environmental limitations, and installation instructions.
- C. Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Instructions.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing Products specified in this section with minimum three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.7 FIELD CONDITIONS

- A. Do not install underlayment until floor penetrations and peripheral work are complete.

- B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.
- C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Cementitious Underlayment:
 - 1. ARDEX Engineered Cements; ARDEX V 1200 with ARDEX P51 Primer: www.ardexamericas.com/#sle.
 - 2. CMP Specialty Products; Level-1 with AS-100 Primer: www.cmppsp.com
 - 3. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
 - 4. Sika Corporation; Product Sikafloor Level 50. www.sikaconstruction.com

2.2 MATERIALS

- A. Cast Underlayments, General:
 - 1. Comply with applicable code for combustibility or flame spread requirements.
- B. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
 - 1. Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C348.
 - 2. Density: 125 pounds per cubic foot, nominal.
 - 3. Final Set Time: 1-1/2 to 2 hours, maximum.
 - 4. Thickness: Capable of thicknesses from feather edge to maximum 3-1/2 inch.
 - 5. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E 84.
- C. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.
- D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.
- E. Primer: Manufacturer's recommended type.
- F. Joint and Crack Filler: Latex-based filler, as recommended by manufacturer.

2.3 MIXING

- A. Site mix materials in accordance with manufacturer's instructions.
- B. Add aggregate for areas where thickness will exceed 1 inch or as required per product manufacturer. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.
- C. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.

3.2 PREPARATION

- A. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.
- B. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- C. Vacuum clean surfaces.
- D. Prime substrate in accordance with manufacturer's instructions. Allow to dry.
- E. Close floor openings.

3.3 APPLICATION

- A. Install underlayment in accordance with manufacturer's instructions.
- B. Pump or pour material onto substrate. Do not retemper or add water.
 - 1. Pump, move, and screed while the material is still highly flowable.
 - 2. Be careful not to create cold joints.
 - 3. Wear spiked shoes while working in the wet material to avoid leaving marks.
- C. Place to thickness indicated on Drawings or as required to achieve finished floor elevation, with top surface level to 1/16 inch in 10 ft.
- D. For final thickness over 1-1/2 inches, place underlayment in layers. Allow initial layer to harden to the point where the material has lost its evaporative moisture. Immediately prime and begin application of the subsequent layer within 24 hours.
- E. Place before partition installation.
- F. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.
- G. If a fine, feathered edge is desired, initial preparation per manufacturers recommendations and steel trowel the edge after initial set, but before it is completely hard.

3.4 CURING

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.

3.5 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field inspection and testing, as specified in Section 01 40 00 - Quality Requirements.
- B. Placed Material: Agency will inspect and test for compliance with specification requirements.

3.6 PROTECTION

- A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.
- B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Structural dimension lumber framing.
- B. Preservative treated wood materials.
- C. Fire retardant treated wood materials.

1.2 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.1 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.

2.2 EXPOSED DIMENSION LUMBER

- A. Sizes: Nominal sizes as indicated on drawings.
- B. Surfacing: S4S.
- C. Moisture Content: S-dry or MC19.

2.3 ACCESSORIES

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

3. Fasteners for roof replacements must be included in the Singly-Ply Roofing membrane manufacturer's warranty to meet uplift pressures determined in accordance with the Applicable Code using a basic wind speed of 120 MPH.

2.4 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Fire Retardant Treatment:
 1. Products:
 - a. Substitutions: See Section 01 60 00 - Product Requirements.
 2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Do not use treated wood in direct contact with the ground.
 3. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as indicated .
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.
 1. Products:
 - a. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.1 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

3.2 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.

- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.
- E. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- F. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

END OF SECTION

SECTION 06 17 53
SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shop-fabricated wood trusses.
- B. Truss bridging.
- C. Preservative treatment of wood.

1.2 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.
- C. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
 - 1. Provide shop drawings stamped or sealed by design engineer licensed in the state of New York.
 - 2. Submit design calculations.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
 - 1. Lumber Grading Agency: Certified by DOC PS 20
 - 2. Plywood Grading Agency: Certified by APA/EWA
 - 3. Lumber: DOC PS 20
 - 4. Wood Structural Panels: DOC PS 1 or DOC PS 2
- B. Fire Rated Roof Construction: Rating as indicated on Drawings.
 - 1. Tested Rating: Determined in accordance with ASTM E119.
- C. Apply label from agency approved by authority having jurisdiction to identify each preservative treated and fire retardant treated material.
- D. Designer Qualifications: Perform design by or under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State of New York.
- E. Fabricator Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- F. Perform Work in accordance with standards of the State of New York .
- G. Maintain one copy of each document on site.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements
- B. Handle trusses in accordance with SBCA (BCSI).
- C. Store trusses in vertical position resting on bearing ends.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Truss Plate Connectors:
 - 1. Curtis Lumber Co., Inc., Ballston Spa., NY
 - 2. P & R Truss Company, Sidney, NY
 - 3. Finger Lakes Truss Company, Batavia, NY
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 TRUSSES

- A. Wood Trusses: Design and fabricate trusses in accordance with ANSI/TPI 1 and to achieve specified design requirements indicated.

2.3 MATERIALS

- A. Lumber:
 - 1. Moisture Content: Between 7 minimum and 19 percent maximum.
 - 2. Lumber fabricated from old growth timber is not permitted.
 - 3. Single top and bottom chord
- B. Steel Connectors: ASTM A666, Type 304 stainless steel; die stamped with integral teeth; thickness as indicated.
- C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.4 ACCESSORIES

- A. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: Softwood lumber, Spruce/Pine/Fir, construction grade or better, 19 percent maximum and 7 percent minimum moisture content.
- B. Fasteners: Hot-dip galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
- C. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.
- D. Bearing Plates: Hot-dip galvanized steel.

2.5 FABRICATION

- A. Fabricate bottom and top chord extensions as indicated on drawings.
- B. Frame special sized openings in web framing as indicated on drawings

2.6 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Inspect Work performed at fabricator's facility to verify conformance to Contract Documents.
- C. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
 - 1. Specified shop inspections are not required for Work performed by approved fabricator.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions
- B. Verify that supports and openings are ready to receive trusses.

3.2 PREPARATION

- A. Coordinate placement of support items.

3.3 ERECTION

- A. Install trusses in accordance with manufacturer's instructions, SBCA (BCSI); maintain a copy of applicable documents on site until installation is complete.
- B. Set members level and plumb, in correct position.
- C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.
- D. Do not field-cut or alter structural members without approval of Architect.
- E. Install permanent bridging and bracing.
- F. Frame openings between trusses with lumber in accordance with Section 06 10 00.
- G. Coordinate placement of decking with work of this section.
- H. After erection, touch-up primed surfaces with primer consistent with shop coat.

3.4 SITE-APPLIED WOOD TREATMENT

- A. Allow field-applied treatment to dry prior to erecting members.

3.5 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances
- B. Framing Members: 1/2 inch maximum, from true position.

END OF SECTION

SECTION 07 05 53
FIRE AND SMOKE ASSEMBLY IDENTIFICATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Identification markings for fire and smoke rated partitions, and fire rated walls.

1.2 RELATED REQUIREMENTS

- A. Section 07 84 00 - Firestopping

1.3 REFERENCE STANDARDS

- A. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of marking, indicating font, foreground and background colors, wording, and overall dimensions.
- C. Schedule: Completely define scope of proposed marking, and indicate location of affected walls and partitions, and number of markings.
- D. Samples: Submit two samples of each type of marking proposed for use, of size similar to that required for project, illustrating font, wording, and method of application.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.6 FIELD CONDITIONS

- A. Do not install adhered markings when ambient temperature is lower than recommended by label or sign manufacturer.
- B. Do not install painted markings when ambient temperature is lower than recommended by coating manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Partition Identification Labels:
 - 1. Fire Wall Signs, Inc: www.firewallsigns.com/#sle.
 - 2. Safety Supply Warehouse, Inc: www.safetysupplywarehouse.com/#sle.
 - 3. Stencil Ease: www.stencilease.com.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 FIRE AND SMOKE ASSEMBLY IDENTIFICATION

- A. Regulatory Requirements: Comply with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of ICC (IBC).
- B. Adhered Fire and Smoke Assembly Identification Signs: Printed vinyl sign with factory applied adhesive backing.
- C. Applied Fire and Smoke Assembly Identification: Identification markings applied to partition with paint or permanent ink and a code compliant stencil.
- D. Location: On fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions; within concealed space where there is an accessible concealed floor, floor-ceiling, or attic space.
- E. Languages: Provide sign markings in English.
- F. Format: Whether adhered or applied, identification shall include, at a minimum:
 - 1. Lettering: Not less than three inches in height with a minimum 3/8 inch stroke, in contrasting color.
 - 2. Wording shall include, as applicable:
 - a. Wall Type, i.e FIRE BARRIER or SMOKE BARRIER, or similar.
 - b. Fire Resistance Rating, i.e. ONE HOUR, TWO HOUR, or similar.
 - c. PROTECT ALL OPENINGS.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.2 INSTALLATION

- A. Locate markings as required by ICC (IBC).
 - 1. No more than fifteen feet from end of each rated wall.
 - 2. No more than thirty feet interval measured horizontally along the rated wall or partition.
 - 3. Rated walls shall be identified on each side.
- B. Install adhered markings in accordance with manufacturer's instructions.
 - 1. Where adhered markings are used, a suitable Class A backer, permanently attached to the wall, may be used when wall surface would preclude adhesion.
- C. Install applied markings in accordance with manufacturer's instructions.
- D. Install neatly, with horizontal edges level.
- E. Protect from damage until Date of Substantial Completion; repair or replace damaged markings.

END OF SECTION

SECTION 07 25 00
WEATHER BARRIERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Water-resistive barriers.

1.2 DEFINITIONS

- A. Weather Barriers: Materials or assemblies forming water-resistive barriers, air barriers, vapor retarders, or combination of one or more assemblies.

1.3 REFERENCE STANDARDS

- A. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.
- B. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a.
- C. ASTM E1677 - Standard Specification for Air Barrier (AB) Material or Assemblies for Low-Rise Framed Building Walls; 2019.
- D. ASTM E2556/E2556M - Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment; 2010 (Reapproved 2016).
- E. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.5 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.1 WATER-RESISTIVE BARRIERS

- A. Description: Materials installed behind exterior wall coverings; designed to prevent liquid water from further penetration into exterior wall assembly. Primary materials include mechanically applied sheets; accessory materials include flashings and seam tapes.

- B. Regulatory Requirements: For use in ICC (IBC) construction Types I, II, III, and IV buildings greater than 40 feet in height.
 - 1. Comply with NFPA 285 wall assembly requirements in accordance with local building code and authorities having jurisdiction (AHJ).
- C. Water-Resistive Barrier Membrane: Nonwoven, polypropylene membrane with microporous coating.
 - 1. Water-Resistive Classification: Type II water-resistive barrier material, when tested in accordance with ASTM E2556/E2556M.
 - 2. Air Barrier Classification: Type I air barrier material, when tested in accordance with ASTM E1677.
 - 3. Water Vapor Permeance: 9 to 15 perms, when tested in accordance with ASTM E96/E96M, Procedure A.

2.2 ACCESSORIES

- A. Seal and Perimeter Tapes: As recommended by water-resistive barrier manufacturer.
- B. Flashings and Sealants: As recommended by water-resistive barrier manufacturer for application.
- C. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and weather barrier materials.
 - 1. Application: Apply at 30 to 40 mil, 0.030 to 0.040 inch nominal thickness.
 - 2. Color: Green.
- D. Flexible Flashing: Self-adhering sheet flashing complying with ASTM D1970/D1970M; waive slip resistance requirement if not installed on roof.
 - 1. Width: 3 inches.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions comply with requirements of this section.

3.2 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's installation instructions.

3.3 INSTALLATION

- A. Install materials in accordance with manufacturer's installation instructions.
- B. Apply sealants within recommended temperature range in accordance with manufacturer's installation instructions.
- C. Mechanically Fastened Sheets:
 - 1. Install sheets in shingle fashion to shed water; align horizontally.
 - 2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
 - 3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.

4. Attach to framed construction with fasteners extending through sheathing into framing, and space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
 5. For applications indicated to be airtight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners as recommended by manufacturer.
 6. Where stud framing rests on concrete or masonry substrate, extend lower edge of barrier sheets at least 4 inches below bottom of framing and seal to substrate with sealant or approved mounting tape.
 7. Install water-resistive barrier over jamb flashings.
 8. Install head flashings under water-resistive barrier.
 9. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.
- D. Self-Adhered Sheets:
1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.
 2. Lap sheets shingle-fashion to shed water and seal laps airtight.
 3. Upon placement of sheets, firmly press onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
 4. Use same material, or other material approved by sheet manufacturer, to seal sheets to adjacent substrates, and as flashing.
 5. At expansion joints, provide transition to joint assemblies approved by sheet manufacturer.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Owner's Inspection and Testing: Cooperate with Owner's testing agency.
1. Allow access to work areas and staging.
 2. Notify Owner's testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.
 3. Do not cover work of this section until testing and inspection is accepted.
- C. Do not cover installed water-resistive barriers until required inspections have been completed.
- D. Obtain approval of installation procedures from water-resistive barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

3.5 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.
- B. Do not leave paper- or felt-based barriers exposed to weather for longer than one week.

END OF SECTION

SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.2 RELATED REQUIREMENTS

- A. Section 01 35 17 - Alteration Project Procedures: Cutting and patching.
- B. Section 07 05 53 - Fire and Smoke Assembly Identification.

1.3 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015 (Reapproved 2019).
- D. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2013 (Reapproved 2017).
- E. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).
- F. ITS (DIR) - Directory of Listed Products; Current Edition.
- G. FM (AG) - FM Approval Guide; Current Edition.
- H. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.
- I. UL (DIR) - Online Certifications Directory; Current Edition.
- J. UL (FRD) - Fire Resistance Directory; Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Manufacturer's qualification statement.

- G. Installer's qualification statement.

1.5 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
 - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 - 1. Trained by manufacturer.
 - 2. With minimum ten years documented experience installing work of this type.

1.6 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Firestopping Manufacturers:
 - 1. 3M Fire Protection Products: www.3m.com/firestop.
 - 2. A/D Fire Protection Systems Inc: www.adfire.com.
 - 3. Hilti, Inc: www.us.hilti.com.
 - 4. RectorSeal, a CSW Industrials Company: www.rectorseal.com/firestop-solutions/#sle.
 - 5. Specified Technologies Inc: www.stfirestop.com/#sle.
 - 6. United States Gypsum Co.
 - 7. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 MATERIALS

- A. Firestopping Materials: Any materials meeting requirements.
- B. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
- C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- D. Fire Ratings: Refer to drawings for required systems and ratings.

2.3 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
 - 1. Movement: Provide systems that have been tested to show movement capability as indicated.

- B. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
 - 1. Movement: Provide systems that have been tested to show movement capability as indicated.
 - 2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
 - 3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
 - 4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- C. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
 - 1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
 - 2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
 - 3. Watertightness: In addition, provide systems that have been tested to show W Rating as indicated.
 - 4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.
- C. Install backing materials to prevent liquid material from leakage.

3.3 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- C. Install labeling required by code.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements.
- B. See Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- C. Inspect installed firestopping for compliance with specifications and submitted schedule.
- D. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.5 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.6 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Joint backings and accessories.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

1.3 REFERENCE STANDARDS

- A. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).
- B. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- D. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include 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. Backing material recommended by sealant manufacturer.
 - 4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 5. Substrates the product should not be used on.
 - 6. Substrates for which use of primer is required.
 - 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 - 8. Sample product warranty.
 - 9. Certification by manufacturer indicating that product complies with specification requirements.
- C. 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.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

- F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- G. Field Quality Control Plan: Submit at least two weeks prior to start of installation.
- H. Field Quality Control Log: Submit filled-out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.
- I. Manufacturer's qualification statement.
- J. Installer's qualification statement.
- K. Executed warranty.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- D. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 - 1. Adhesion Testing: In accordance with ASTM C794.
 - 2. Compatibility Testing: In accordance with ASTM C1087.
 - 3. Allow sufficient time for testing to avoid delaying the work.
 - 4. Deliver sufficient samples to manufacturer for testing.
 - 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
- E. Field Quality Control Plan:
 - 1. Visual inspection of entire length of sealant joints.
 - 2. Field testing agency's qualifications.
 - 3. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.1 JOINT SEALANTS - GENERAL

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

2.2 ACCESSORIES

- A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.
- B. Sealant Backing Rod, Open-Cell Type:
 - 1. Cylindrical flexible sealant backings complying with ASTM C1330 Type O.
 - 2. Size: 25 to 50 percent larger in diameter than joint width.
- C. Sealant Backing Rod, Bi-Cellular Type:
 - 1. Cylindrical flexible sealant backings complying with ASTM C1330 Type B.
 - 2. Size: 25 to 50 percent larger in diameter than joint width.

PART 3 EXECUTION

3.1 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.

3.2 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.

3.3 INSTALLATION

- A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Provide joint sealant installations complying with ASTM C1193.
- C. Install bond breaker backing tape where backer rod cannot be used.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- E. 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.
- F. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.

- B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 11 16
ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Flush aluminum doors with fiberglass reinforced plastic (FRP) face sheets.
- B. Aluminum frames.
- C. Flush door panels.

1.2 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware: Hardware for aluminum doors.
- B. Section 08 80 00 - Glazing: Glazing materials for aluminum doors and frames.

1.3 REFERENCE STANDARDS

- A. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- B. AAMA 701/702 - Voluntary Specification for Pile Weatherstripping and Replaceable Fenestration Weatherseals; 2011.
- C. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- D. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- I. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2019.
- J. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010 (Reapproved 2018).
- K. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 2022.
- L. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2022.
- M. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2017.
- N. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

- O. IBC 2603.4.1.7 - Standard for Plastic Foam Insulation in Non-Rated Swinging Doors.
- P. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- Q. ITS (DIR) - Directory of Listed Products; Current Edition.
- R. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- S. UL (DIR) - Online Certifications Directory; Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's descriptive literature for each type of door and frame; include information on fabrication methods, finishing, hardware preparation, installation, and maintenance instructions.
- C. Shop Drawings: Include elevations of each opening type, details at each wall type, and schedule of openings.
 - 1. Verify dimensions by field measurements before fabrication and indicate on shop drawings.
- D. Selection Samples: Complete set of color and finish options, using actual materials, for Architect's selection.
- E. Test Report: Certified test reports from qualified independent testing agency indicating doors comply with specified performance requirements.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than ten years of documented experience.
- B. The manufacturer or his representative shall be available for consultation to all parties engaged in the project including instruction to installation personnel.
- C. Unless otherwise indicated, obtain doors and frames from a single company specializing in the type of construction required so that there will be undivided responsibility for the specified performance of all component parts including glazing for doors and factory installation of door hardware.
- D. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver aluminum components in manufacturer's standard protective packaging, palletted, crated, or banded together.
- B. Inspect delivered components for damage and replace. Repaired components will not be accepted.
- C. Store components in clean, dry, indoor area, under cover in manufacturer's packaging until installation.
- D. Protect materials and finish from damage during handling and installation.

1.7 FIELD CONDITIONS

- A. Do not begin installation of interior aluminum components until space has been enclosed and ambient thermal conditions are being maintained at levels consistent with final project requirements.

1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Provide written warranty signed by manufacturer, installer and contractor, agreeing to replace, at no cost to the Owner, any doors, frames or factory hardware installation against failure in materials or workmanship within the warranty period. Failure of materials or workmanship includes: excessive deflection, faulty operation of entrances, deterioration of finish or construction in excess of normal weathering and defects in hardware installation. The minimum time period of warranty is ten years from Date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Flush Aluminum Doors with Fiberglass Reinforced Plastic (FRP) Face Sheets:
 - 1. Special-Lite, Inc; SL-20 Sandstone: www.special-lite.com/#sle.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Aluminum Frames:
 - 1. Special-Lite, Inc; SL-450TB: www.special-lite.com.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 DOORS AND FRAMES

- A. Accessibility: Comply with ICC A117.1 and ADA Standards.
- B. Flush Aluminum Doors with Fiberglass Reinforced Plastic (FRP) Face Sheets: Aluminum internal framing; no steel components.
 - 1. Thickness: 1-3/4 inches.
 - 2. Aluminum Finish: Superior performing organic coating.
 - 3. Facing: Seamless, ultraviolet stabilized laminated FRP sheet.
 - a. Sheet Thickness: 0.12 inch, minimum.
 - b. Texture - FRP: Sandstone.
 - c. Surface Burning Characteristics:
 - 1) Exterior Facing: Flame spread index (FSI) of 76 to 200, Class C, and smoke developed index (SDI) of 450 or less; when tested in accordance with ASTM E84.
 - 2) Interior Facing: Flame spread index (FSI) of 0 to 25, Class A, and smoke developed index (SDI) of 450 or less; when tested in accordance with ASTM E84.
 - d. Color: As selected by Architect from manufacturer's standard line.
 - 4. Weatherstripping: Replaceable pile type; at jambs and head of exterior doors.
- C. Aluminum Frames for Non-rated Doors, Sidelights, or Transoms: Extruded aluminum, thermally broken hollow sections; no steel components; open back framing shall not be accepted.
 - 1. Frame Depth: 4-1/2 inches.

2. Frames for Fire-Rated Doors Specified Elsewhere: Tested in accordance with NFPA 252, listed and labeled by UL (DIR), ITS (DIR), or testing agency acceptable to authorities having jurisdiction.
 3. Finish: Same as doors.
 4. Weatherstripping: Replaceable pile type; at jambs and head.
- D. Dimensions and Shapes: As indicated on drawings; dimensions indicated are nominal.
1. Provide vision lites as indicated on drawings.
 2. Provide the following clearances:
 - a. Hinge and Lock Stiles: 1/8 inch.
 - b. Between Meeting Stiles: 1/4 inch.
 - c. At Top Rail and Bottom Rail: 1/8 inch.

2.3 COMPONENTS

- A. Flush Door Panels: Without visible seams on face sheet.
1. Framing and Hardware Backup: Extruded aluminum tubing, 1/8 inch minimum thickness.
 - a. Minimum 2-5/16 inch deep one-piece with integral reglets to accept face sheet on interior and exterior of door for flush appearance.
 - 1) Screw applied removable rail caps or other face sheet capture methods are not acceptable.
 - b. Provide 3/16" angle blocks with hex type aircraft nuts for joinery without welds, glues or other methods for securing internal door extrusions.
 - c. Construct with mitered corners and provide joinery with 3/8" dia. full-width steel tie rods through extruded splines top and bottom as standard.
 - d. Hardware Preparations: Factory reinforce, machine, and prepare for all specified hardware; obtain manufacturer's templates for hardware preparations. Factory install hardware.
 2. Exterior Doors Thermal Transmittance: U-value of 0.50, nominal, when tested in accordance with ASTM C1363.
 3. Core: Poured-in-place polyurethane foam insulating material of not less than 5 lb/cu ft density.
 - a. Foam Plastic Insulated Doors: IBC 2603.4.
 - 1) Foam plastic shall be separated from the interior of a building by an approved thermal barrier.
 - 2) Approved thermal barrier must meet the acceptance criteria of the Temperature Transmission Fire Test and Integrity Fire Test as stated in NFPA 275.
 - 3) IBC 2603.4.1.7 foam plastic insulation, having a flame spread index less than 75 and a smoke developed index of not more than 450 shall be permitted as a door core when the face is metal minimum 0.032" aluminum or 0.016" steel.
 - 4) Standard door assembly shall be tested to show it meets these requirements without the use of thermal barrier. If no independent testing conducted all doors with foam plastic core must have a thermal barrier.
 4. Laminating Adhesive: Manufacturer's standard low-VOC materials.
- B. Frames: Extruded aluminum shapes, not less than 0.125 inch thick, reinforced at hinge and strike locations.
1. Corner Brackets: Extruded aluminum, fastened with stainless steel screws.
 2. Applied Door Stops: Extruded aluminum, not less than 0.125 inch thick, 0.625 high removable screw-in type with exposed fasteners.
 - a. Counterpunch fastener holes in door stop to preserve full metal thickness under fastener head.
 - b. At closer arm location, reinforce with solid bar stock for secure hardware attachment.
 3. Caulk joints before assembling frame members. Secure joints with fasteners and provide a hairline butt joint appearance. Prefit doors to frame assembly at factory prior to shipment. Field fabrication of framing using "stick" materials is not acceptable.

- 4. Factory preassemble sidelights to greatest extent possible and mark frame assemblies according to location.
- C. Manufacture doors with cutouts for vision lites as scheduled. Factory finish and install all glazing prior to shipment.
- D. Vision Lites: Extruded aluminum framed, gasket glazed.
 - 1. Glazing: See Section 08 80 00.
- E. Astragals and Edges for Double Doors: Pairs of doors astragals, and door edge sealing and protection devices.
 - 1. Provide manufacturer's standard astragal to cover or fill space for full door height between pair of doors or door and adjacent jamb.
- F. Provide manufacturers standard concealed adjustable door bottom with dual brushes for up to 5/8-inch adjustment.
 - 1. Special-Lite SL-301 or equal.
- G. Additional Door Hardware: See Section 08 71 00.
 - 1. All hardware with the exception of door closer, threshold and weatherstripping to be shipped to door manufacturer. Door manufacturer shall install hardware on doors and warranty attachment for ten years. Complete fabrication, assembly, finishing and other work before shipment to project site. Disassemble components only as necessary for shipment and installation.
- H. Replaceable Weatherstripping: AAMA 701/702 wool pile.

2.4 PERFORMANCE REQUIREMENTS

- A. Provide door assemblies that have been designed and fabricated in compliance with specified performance requirements.
- B. Fiberglass Reinforced Plastic (FRP) Face Sheet Properties; Class C:
 - 1. Izod Impact Resistance: ASTM D256, 7 ft lbf/inch of width, minimum, with notched izod.
 - 2. Tensile Strength at Break: ASTM D638, 18,000 psi, minimum.
 - 3. Water Absorption: ASTM D570, 0.16 percent, maximum, after 24 hours at 74 degrees F.
 - 4. Flexural Strength: ASTM D790, 27,000 psi, minimum.
- C. Fiberglass Reinforced Plastic (FRP) Face Sheet Properties; Class A:
 - 1. Izod Impact Resistance: ASTM D256, 4.0 ft lbf/inch of width, minimum, with notched izod.
 - 2. Tensile Strength at Break: ASTM D638, 7,000 psi, minimum.
 - 3. Water Absorption: ASTM D570, 0.16 percent, maximum, after 24 hours at 74 degrees F.
 - 4. Flexural Strength: ASTM D790, 14,000 psi, minimum.

2.5 MATERIALS

- A. Aluminum Sheet: ASTM B209/B209M, alloy 5005, temper H14, stretcher leveled.
- B. Extruded Aluminum: ASTM B221 (ASTM B221M), alloy 6063, temper T5, or alloy 6463, temper T5.

2.6 FINISHES

- A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
- B. Color: As selected by Architect from manufacturer's standard line.

- C. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.7 ACCESSORIES

- A. Fasteners: Aluminum, non-magnetic stainless steel, or other material warranted by manufacturer as non-corrosive and compatible with aluminum components.
- B. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible, otherwise, non-magnetic stainless steel or steel hot-dip galvanized in compliance with ASTM A123/A123M.
- C. Bituminous Coating: Cold-applied asphaltic mastic, compounded for 30-mil thickness per coat.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that wall surfaces and openings are ready to receive frames and are within tolerances specified in manufacturer's instructions.
- B. Verify that frames installed by other trades for installation of doors of this section are in strict accordance with recommendations and approved shop drawings and within tolerances specified in manufacturer's instructions.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Perform cutting, fitting, forming, drilling, and grinding of frames as required for project conditions.
- B. Replace components with damage to exposed finishes.
- C. Separate dissimilar metals to prevent electrolytic action between metals.

3.3 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and approved shop drawings.
 - 1. Provide thermal isolation where components penetrate or disrupt building insulation. Coordinate attachment and seal of perimeter air and vapor retarder materials. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- B. Set frames plumb, square, level, and aligned to receive doors. Anchor frames to adjacent construction in strict accordance with manufacturer's recommendations and within specified tolerances.
 - 1. Install with anchors appropriate for wall conditions to anchor framing to wall materials.
 - 2. Secure head and sill members of transom, sidelights and similar conditions.
 - 3. Maintain continuity of line and accurate relation of planes and angles. Secure attachments and support at mechanical joints with hairline fit at contacting members.
- C. Set thresholds in bed of mastic and backseal.

- D. Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by painting dissimilar metal with heavy coating of bituminous paint.
- E. Hang doors and adjust hardware to achieve specified clearances and proper door operation.
- F. Comply with glazing installation requirements. See Section 08 80 00.

3.4 CLEANING

- A. Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609 & 610.
- B. Do not use abrasive, caustic, or acid cleaning agents.

3.5 PROTECTION

- A. Protect products of this section from damage caused by subsequent construction until Date of Substantial Completion.
- B. Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

END OF SECTION

SECTION 08 33 23
OVERHEAD COILING DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fire-rated coiling doors.
- B. Electric operators and control stations.
- C. Wiring from electric circuit disconnect to operators and control stations.

1.2 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware: Cylinder cores and keys.
- B. Section 26 05 33.13 - Conduit for Electrical Systems: Conduit from fire alarm system.
- C. Section 26 05 83 - Wiring Connections: Power to disconnect.
- D. Section 28 46 21_16 - Existing Fire Alarm System

1.3 REFERENCE STANDARDSUL 723

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- D. ITS (DIR) - Directory of Listed Products; Current Edition.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- F. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
- G. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- H. UL (DIR) - Online Certifications Directory; Current Edition.
- I. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- J. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.
- K. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide general construction, electrical equipment, and component connections and details.
- C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.

- D. Manufacturer's Installation Instructions: Indicate installation sequence and procedures, adjustment and alignment procedures.
- E. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

1.5 QUALITY ASSURANCE

- A. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for purpose specified and indicated.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Overhead Coiling Fire Doors:
 - 1. McKeon Door - T2500 - Vertical Acting Fire Door System
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 COILING DOORS

- A. Fire-Rated Coiling Doors: Steel slat curtain; comply with NFPA 80.
 - 1. Provide products listed and labeled by ITS (DIR) or UL (DIR) as suitable for purpose specified and indicated on drawings.
 - 2. Oversized Openings: Provide certificate of compliance from authorities having jurisdiction indicating approval of fire rated units and operating hardware assembly.
 - 3. Swinging Egress Doors (Refer to Architectural Drawing for layout) with Fire Exit Hardware
 - 4. Single Thickness Slats: Manufacturer's standard.
 - 5. Nominal Slat Size: 2 inches wide by required length.
 - 6. Finish: Primed.
 - 7. Guides, Angles: Stainless steel.
 - 8. Hood Enclosure: Manufacturer's standard; primed steel.
 - 9. Coiling Door Release Mechanism: Fire alarm system activated with automatically governed closing speed.
 - 10. Electric operation.
 - 11. Mounting: Within framed opening.
 - 12. Locking Devices: Lock and latch handle on outside.

2.3 MATERIALS

- A. Metal Curtain Construction: Interlocking slats.
 - 1. Curtain Bottom for Slat Curtains: Fitted with angles to provide reinforcement and positive contact in closed position.
 - 2. Weatherstripping for Exterior Doors: Moisture and rot proof, resilient type, located at jamb edges, bottom of curtain, and where curtain enters hood enclosure of exterior doors.
- B. Guide Construction: Continuous, of profile to retain door in place with snap-on trim, mounting brackets of same metal.
- C. Guides - Angle: ASTM A36/A36M metal angles, size as indicated.
 - 1. Stainless Steel: ASTM A 666, Type 304, rollable temper.
- D. Hood Enclosure and Fascia: Internally reinforced to maintain rigidity and shape.
 - 1. Prime painted.

- E. Lock Hardware:
 - 1. Furnish locks to allow doors to be secured.
 - 2. Lock Cylinders: six pin type; keyed master keyed. Furnished under Section 08 71 00, installed as part of Work of this section.
 - a. Cylinder dead lock on inside ar door jamb, key operated from exterior; interior latch release mechanism.
 - 3. For motor operated units, additional lock or latching mechanisms are not required.
 - 4. Latching Mechanism: Inside mounted, adjustable keeper, spring activated latch bar feature to keep in locked or retracted position.
 - 5. Latch Handle: Manufacturer's standard.
 - 6. Swinging Egress Doors: Provide Fire Exit Hardware

2.4 ELECTRIC OPERATION

- A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
 - 1. Provide interlock switches on motor operated units.
- B. Electric Operators:
 - 1. Mounting: Side mounted.
 - 2. Motor Enclosure:
 - 3. Motor Rating: 1/3 HP; continuous duty.
 - 4. Motor Voltage: 120 volts, single phase, 60 Hz.
 - 5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
 - 6. Controller Enclosure: NEMA 250, Type 4.
 - 7. Opening Speed: 12 inches per second.
 - 8. Brake: Manufacturer's standard type, activated by motor controller.
 - 9. Manual override in case of power failure.
 - 10. See Section 26 05 83 for electrical connections.
- C. Control Station: Provide standard three button, "Open-Close-Stop" momentary-contact control device for each operator complying with UL 325.
 - 1. 24 volt circuit.
 - 2. Surface mounted, at interior door jamb.
 - 3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
 - a. When any safety device encounters an obstruction, door will automatically retract to the open position. The system shall attempt to close a maximum of three times. If the obstruction remains after the third attempt, the door shall close to the height of the obstruction and remain closed at that position.
 - b. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
- D. Safety Edge: Located at bottom of coiling door, full width, electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object, hollow neoprene covered.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that adjacent construction is suitable for door installation.
- B. Verify that electrical services have been installed and are accessible.

- C. Verify that door opening is plumb, header is level, and dimensions are correct.
- D. Notify Architect of any unacceptable conditions or varying dimensions.
- E. Commencement of installation indicates acceptance of substrate and door opening conditions.

3.2 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install fire-rated doors in accordance with NFPA 80.
- C. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- D. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- E. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- F. Coordinate installation of electrical service with Section 26 05 83.
- G. Complete wiring from disconnect to unit components.
- H. Complete wiring from fire alarm system.
- I. Install enclosure and perimeter trim.

3.3 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum Variation From Plumb: 1/16 inch.
- C. Maximum Variation From Level: 1/16 inch.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 feet straight edge.

3.4 ADJUSTING

- A. Adjust operating assemblies for smooth and noiseless operation.
- B. Test smoke activated assemblies for proper activation.

3.5 CLEANING

- A. Clean installed components.
- B. Remove labels and visible markings.

END OF SECTION

SECTION 08 44 13
GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aluminum-framed curtain wall, with vision glazing and infill panels.
- B. Firestopping between curtain wall and edge of floor slab.

1.2 RELATED REQUIREMENTS

- A. Section 07 25 00 - Weather Barriers: Sealing framing to water-resistive barrier installed on adjacent construction.
- B. Section 07 84 00 - Firestopping: Firestop at system junction with structure.
- C. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
- D. Section 08 80 00 - Glazing.

1.3 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.
- B. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems; 2014.
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- I. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- J. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
- K. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).
- L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of other components that comprise the exterior enclosure.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, internal drainage details, glazing, and infill.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
- D. Samples: Submit two samples 6" by 6" inches in size illustrating finished aluminum surface, glazing, infill panels, and glazing materials.
- E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- F. Design Data: Provide framing member structural and physical characteristics and engineering calculations, and identify dimensional limitations; include load calculations at points of attachment to building structure.
- G. Test Reports: Submit results of full-size mock-up testing. Reports of tests previously performed on the same design are acceptable.
- H. Structural Engineering Calculations: Submit structural engineer's calculations for design of system to meet loading requirements.
 - 1. Structural calculations are to be stamped with engineer's stamp and signed.
- I. Test Reports: Indicate substantiating engineering data, test results of previous tests [by independent laboratory] which purport to meet performance criteria, and other supportive data.
- J. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.
- K. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- L. Submit NFRC 100- CMA Bid Report for the project showing compliance with the project thermal requirements at time of initial submission. Bid report shall be based on NFRC test sizes utilizing project specific glazing.

1.6 QUALITY ASSURANCE

- A. Designer Qualifications: Design curtain wall and its structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the State of New York.
- B. Perform Work in accordance with AAMA CW-DG-1 - Aluminum Curtain Wall Design Guide Manual.
- C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than three years of documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.

- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.8 FIELD CONDITIONS

- A. Section 01 60 00 - Product Requirements.
- B. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.9 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 5-year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units. Complete forms in Owner's name and register with installer.

PART 2 PRODUCTS

2.1 CURTAIN WALL

- A. Aluminum-Framed Curtain Wall: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Finish: Class I natural anodized.
 - a. Factory finish surfaces that will be exposed in completed assemblies.
 - b. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
 - 2. Provide flush joints and corners, weathersealed, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for imposed loads.
 - 3. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
 - 4. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
 - 5. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.
- B. Structural Performance Requirements: Design and size components to withstand the following load requirements without damage or permanent set.
 - 1. Design Wind Loads: Comply with the following:
 - a. Positive Design Wind Load: +25 lbf/sq ft.
 - b. Negative Design Wind Load: -27 lbf/sq ft.
 - c. Measure performance by testing in accordance with ASTM E330/E330M, using test loads equal to 1.5 times the design wind loads and 10 second duration of maximum pressure.
 - 2. Movement: Accommodate the following movement without damage to components or deterioration of seals:
 - a. Expansion and contraction caused by 180 degrees F surface temperature.
 - b. Expansion and contraction caused by cycling temperature range of 170 degrees F over a 12 hour period.
 - c. Movement of curtain wall relative to perimeter framing.
 - d. Deflection of structural support framing, under permanent and dynamic loads.

- C. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on indoor face when tested as follows:
 - 1. Test Pressure Differential: 10 psf.
- D. Air Leakage: 0.06 cfm/sq ft maximum leakage of wall area when tested in accordance with ASTM E283/E283M at 6.24 psf pressure difference across assembly.
- E. Thermal Performance Requirements: Installed system shall conform to the following minimum standards:
 - 1. Fabricator will be required to thermally model each head, sill and jamb, including adjacent construction, using thermal computer modeling software by an NFRC certified simulator to conform to the following:
 - 2. Inside air temperature of 72 degrees F at 30 percent RH and an outside air temperature of -10 degrees F with a 15 mph wind speed.
 - 3. An NFRC Component Modeling Approach (CMA) generated label certificate shall be provided by the manufacturer. The label certificate shall be project specific and will contain the thermal performance ratings of the manufacturer's framing combined with the specified glass, and the glass spacer used in the fabrication of the glass, at NFRC standard test size as defined in table 4-3 in NFRC 100-2010.

2.2 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
 - 1. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.
- B. Glazing: See Section 08 80 00.
- C. Infill Panels: .125 inch thick aluminum sheet.

2.3 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Sheet Aluminum: ASTM B209/B209M.
- C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.
- D. Firestopping: See Section 07 84 00.
- E. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
- F. Glazing Accessories: See Section 08 80 00.
- G. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.4 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other related work.
- B. Verify that curtain wall openings and adjoining water-resistive and air barrier seal materials are ready to receive work of this section.
- C. Verify that anchorage devices have been properly installed and located.

3.2 INSTALLATION

- A. Install curtain wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Install firestopping at each floor slab edge. Comply with applicable codes and requirements specified in Section 07 84 00.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Coordinate attachment and seal of perimeter air barrier and vapor retarder materials.
- J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation from Plumb: 0.06 inch per 3 feet noncumulative or 0.5 inches per 100 feet, whichever is less.
- C. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.
- D. Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4 inch and minimum of 1/4 inch.

3.4 FIELD QUALITY CONTROL

- A. Provide services of curtain wall manufacturer's field representative to observe for proper installation of system and submit report.
- B. See Section 01 40 00 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.
- C. Provide field testing of installed curtain wall system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.

1. Perform a minimum of two tests in each designated area as indicated on drawings.
2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 4.18 psf.
 - a. Maximum allowable rate of water penetration in 15-minute test is 0.5 ounce that is not contained in an area with provisions to drain to exterior, or collected on surface of interior horizontal framing member.
- D. Repair or replace curtain wall components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.5 ADJUSTING

- A. Adjust operating sash for smooth operation.

3.6 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.

3.7 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Hardware for wood, aluminum, and hollow metal doors.
- B. Hardware for fire-rated doors.

1.2 REFERENCE STANDARDS

- A. BHMA A156.3 - Exit Devices; 2020.
- B. BHMA A156.4 - Door Controls - Closers; 2019.
- C. BHMA A156.18 - Materials and Finishes; 2020.
- D. BHMA A156.31 - Electric Strikes and Frame Mounted Actuators; 2019.
- E. ITS (DIR) - Directory of Listed Products; Current Edition.
- F. UL (DIR) - Online Certifications Directory; Current Edition.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:
 - 1. Architect.
 - 2. Installer's Architectural Hardware Consultant (AHC).
 - 3. Hardware Installer.
 - 4. Owner's Security Consultant.
- D. Keying Requirements Meeting:
 - 1. Attendance Required:
 - 2. Agenda:
 - 3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
 - 4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
 - 5. Deliver established keying requirements to manufacturers.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule

- C. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware. Upon request, check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- E. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- F. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.

1.5 QUALITY ASSURANCE

- A. Furnish hardware marked and listed in BHMA Directory of Certified Products.
- B. Manufacturer: Obtain each type of hardware (ie., lock sets) from a single manufacturer, although several may be indicated as offering products complying with requirements.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- C. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- D. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM for types and sizes of doors required and complies with requirements of door and door frame labels.
 - 1. Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors' UL or FM labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL or FM label on exit devices indicating "Fire Exit Hardware."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.
 - 1. Include necessary fasteners, installation instructions and templates with each item or package.
- B. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- C. Provide secure lock-up for hardware delivered to the project, but not yet installed. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the work will not be delayed by hardware losses, both before and after installation.
- D. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference."

1.7 WARRANTY

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

- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods, from Date of Substantial Completion: against defects in material and workmanship for period indicated, from Date of Substantial Completion.
 - 1. Mortise Locks and Latches: Ten years, minimum.
 - 2. Heavy duty Cylindrical (bored) locks and latches: Seven years, minimum.
 - 3. Motorized electric latch retraction exit devices: Five years, minimum.
 - 4. Electromechanical Door Hardware: Two years, minimum.

PART 2 PRODUCTS

2.1 MANUFACTURERS - BASIS OF DESIGN

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in the Finish Hardware Data Sheet and Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of manufacturers on Basis of Design standard:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- B. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 DESIGN AND PERFORMANCE CRITERIA

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Provide door hardware products that comply with the following requirements:
 - 1. Applicable provisions of federal, state, and local codes.
 - 2. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.

2.3 EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
 - 1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as

- required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
 3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
 4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
 5. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
 6. Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.
 7. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets
 8. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
 9. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 10. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 11. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 12. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets
- B. Exit Devices: Comply with BHMA A156.3, Grade 1.
1. Lever design to match lockset trim.
 2. Provide cylinder with cylinder dogging or locking trim.
 3. Provide exit devices properly sized for door width and height.
 4. Provide strike as recommended by manufacturer for application indicated.
 5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.4 ELECTRIC STRIKES

- A. Electric Strikes: Comply with BHMA A156.31, Grade 1.
1. Provide UL (DIR) listed burglary-resistant electric strike; style to suit locks.
 2. Provide non-handed 24 VDC electric strike suitable for door frame material and scheduled lock configuration.

2.5 LOCK CYLINDERS

- A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
1. Provide cylinders from same manufacturer as locking device.
 2. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 3. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.

4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 5. Keyway: Match Facility Standard.
 6. Within specific Door Sections, when provisions for lock cylinder are being referenced to this Section, provide specified lock cylinder and keyed to building keying system, unless otherwise indicated.
 7. Provide cams and/or tailpieces as required for locking devices.
- B. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- C. Keying System: Each type of lock and cylinders to be factory keyed.
1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. Existing System: Key locks to Owner's existing system
- D. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Two (2)
 2. Master Keys (per Master Key Level/Group): Five (5).
 3. Construction Keys (where required): Ten (10).
- E. Construction Keying: Provide construction master keyed cylinders.
- F. Construction Keying: Provide temporary keyed construction cores.
- G. Key Registration List (Bitting List):
1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 CLOSERS

- A. Manufacturers; Concealed - Overhead:
- B. Closers (Large Body Cast Iron): Comply with BHMA A156.4, Grade 1.
1. Type: Surface mounted to door.
 - a. Closers that incorporate Pressure Relief Valve (PRV) technology will not be accepted.
 - b. Fully operational adjustable according to door size, frequency of use, and opening force.
 - c. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.
 2. Provide door closer on each exterior door.
 3. All door closers specified herein shall meet or exceed the following criteria:
 - a. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 - b. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 - c. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 - d. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency

- of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
- e. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - f. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 - g. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
4. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.
- a. Provide keyed removable feature where specified in the Hardware Sets.
 - b. Provide stabilizers and mounting brackets as required.
 - c. Provide electrical quick connection wiring options as specified in the hardware sets.
 - d. Acceptable Manufacturers:
 - 1) Corbin Russwin Hardware.
 - 2) Sargent Manufacturing.
 - 3) Von Duprin.

2.7 KICK PLATES

- A. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
- 1. Size: 8 inch high by 2 inch less door width (LDW) on push side of door.

2.8 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
- 1. Primary Finish: 625; bright chromium plated over nickel, with brass or bronze base material (former US equivalent US26); BHMA A156.18.
 - 2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
 - a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
- D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.2 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.3 PROTECTION

- A. Protect finished Work under provisions of Section 01 70 00 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Insulating glass units.
- B. Glazing units.
- C. Glazing compounds.

1.2 RELATED REQUIREMENTS

- A. Section 07 25 00 - Weather Barriers.
- B. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.
- C. Section 08 11 16 - Aluminum Doors and Frames
- D. Section 08 44 13 - Glazed Aluminum Curtain Walls: Glazing provided as part of wall assembly.

1.3 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).
- E. ASTM C1036 - Standard Specification for Flat Glass; 2021.
- F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- G. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.
- H. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- I. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.
- J. ASTM F1233 - Standard Test Method for Security Glazing Materials And Systems; 2021.
- K. GANA (GM) - GANA Glazing Manual; 2022.
- L. GANA (SM) - GANA Sealant Manual; 2008.
- M. GANA (LGRM) - Laminated Glazing Reference Manual; 2019.
- N. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2016).

- O. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2020.
- P. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2020.
- Q. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.
- R. UL 972 - Standard for Burglary Resisting Glazing Material; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Samples: Submit two samples 10 by 10 inch in size of glass units, showing coloration and design.
- E. Certificate: Certify that sealed insulated glazing units meet or exceed specified requirements.
 - 1. Submit NFRC 100- CMA Bid Report for the project showing compliance with the project thermal requirements at time of initial submission. Bid report shall be based on NFRC test sizes utilizing project specific glazing.
- F. Installer's Certificate: Certify that glass furnished without identification label is installed in accordance with Construction documents and applicable code.
- G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.7 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 40 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.
- C. Laminated Glass: Provide a ten (10) year manufacturer warranty to include coverage for delamination, including replacement of failed units.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Float Glass Manufacturers:
 - 1. Guardian Industries Corp: www.sunguardglass.com.
 - 2. Pilkington North America Inc: www.pilkington.com/na.
 - 3. Solar Seal Company; www.solarseal.com.
 - 4. Vitro Architectural Glass: www.vitroglazings.com
- B. Laminated Glass Manufacturers:
 - 1. Viracon, Architectural Glass segment of Apogee Enterprises, Inc: www.viracon.com.
 - 2. Oldcastle Building Envelope: www.obe.com.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
 - 1. Design Pressure: In accordance with ASCE 7.
 - a. Positive Design Pressure: 20 psf.
 - b. Negative Design Pressure: 20 psf.
 - 2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 - 3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7.
 - 4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 - 5. Glass thicknesses listed are minimum.
- B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
 - 1. In conjunction with weather barrier related materials described in other sections, as follows:
 - a. Water-Resistive Barriers: See Section 07 25 00.
 - 2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.
 - 3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.
- C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:

1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.3 GLASS MATERIALS

- A. Float Glass: Provide float glass based glazing unless otherwise indicated.
 1. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
 2. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
 3. Tinted Type: ASTM C1036, Class 2 - Tinted, Quality - Q3, with color and performance characteristics as indicated.
 4. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.
- B. Laminated Glass: Heat-Strengthened float glass laminated in accordance with ASTM C1172.
 1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.
- C. Laminated Glass which is also specified as Security Glass shall comply with UL 972 and ASTM F1233, Class 1.3.
 1. Polyvinyl Butyral (PVB) Interlayer: 0.030 inch thick, minimum, or as required to meet specified standards.

2.4 INSULATING GLASS UNITS

- A. Manufacturers:
 1. Glass: Any of the manufacturers specified for float glass.
- B. Insulating Glass Units: Types as indicated.
 1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 2. Metal-Edge Spacers: Aluminum, bent and soldered corners.
 3. Spacer Color: Black.
 4. Edge Seal:
 - a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
 - b. Color: Black.
 5. Purge interpane space with dry air, hermetically sealed.
- C. Type IG-A - Insulating Glass Units: Vision glass, double glazed.
 1. Applications: Exterior glazing unless otherwise indicated.
 2. Space between lites filled with argon.
 3. Outboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
 4. Inboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
 - b. Coating: Solarban 70 Low-E film, on #3 surface.
 5. Total Thickness: 1 inch.
 6. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.24, nominal.
 7. Visible Light Transmittance (VLT): 60 percent, nominal.
 8. Solar Heat Gain Coefficient (SHGC): 0.38 percent, nominal.
 9. Glazing Method: Dry glazing method, tape and gasket spline.
- D. Type IG-3 - Insulating Glass Units: Spandrel glazing.
 1. Applications: Exterior spandrel glazing unless otherwise indicated.

2. Space between lites filled with air.
 3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
 - b. Coating: Same as on vision units, on #2 surface.
 4. Inboard Lite: Heat-strengthened float glass, 1/4 inch thick.
 - a. Tint: Clear.
 5. Total Thickness: 1 inch.
 6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.23, nominal.
- E. Type IG-B - - Insulating Glass Units: Security glazing; ASTM F1233, Class 1.3; UL 972.
1. Applications:
 - a. Glazed lites in exterior doors and interior vestibule doors.
 - b. Glazed sidelights and panels next to exterior doors and interior vestibule doors.
 2. Space between lites filled with argon.
 3. Outboard Lite: Fully Tempered Safety Glass, 1/4 inch thick,, minimum.
 - a. Tint: Clear.
 - b. Coating: Low-E (passive type), on #2 surface.
 4. Laminated Inboard Lite: Glass Clad Polycarbonate
 - a. Glass: Inner and Outer panes shall be Fully tempered float glass.
 - b. Interlayer: Polyvinyl butyral (PVB); .030" minimum, or thickness as required
 - c. Overall Nominal Thickness: 3/8 inch thick, minimum.
 5. Total Thickness: 1 inch.
 6. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.23, nominal.
 7. Visible Light Transmittance (VLT): 59 percent, nominal.
 8. Solar Heat Gain Coefficient (SHGC): 0.27 percent, nominal.
 9. Glazing Method: Dry glazing method, tape and gasket spline.

2.5 ACCESSORIES

- A. Setting Blocks: Neoprene, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.
- C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
- D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color to match frame.

PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

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

3.2 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.3 INSTALLATION, GENERAL

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- C. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- D. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- E. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, and paint.

3.4 INSTALLATION - DRY GLAZING METHOD (TAPE AND GASKET SPLINE GLAZING)

- A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.
- B. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- D. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- E. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- F. Carefully trim protruding tape with knife.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- C. Monitor and report installation procedures and unacceptable conditions.

3.6 CLEANING

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove nonpermanent labels immediately after glazing installation is complete.

- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.7 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
 - 1. Resilient tile and sheet.
 - 2. Thin-set ceramic tile and stone tile.
- B. Removal of existing floor coverings.
- C. Preparation of new and existing concrete floor slabs for installation of floor coverings.
- D. Testing of concrete floor slabs for moisture and alkalinity (pH).
- E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
 - 1. Contractor shall include, in base bid, specified remediation work of all interior concrete floor slabs receiving floor coverings outlined below. If such remediation is indicated as not necessary following testing agency's report, a contract modification will be issued.
 - 2. Remedial Floor Coating to include in base bid at:
 - a. Existing concrete slabs receiving adhesively applied flooring.
 - b. Existing concrete slabs receiving Resinous Matrix Terrazzo.
 - c. New concrete slabs receiving Resinous Matrix Terrazzo.
 - d. Existing concrete slabs receiving Wood athletic flooring.
 - 3. Remedial Floor Coating not included in base bid at:
 - a. New concrete slabs receiving adhesively applied flooring where Moisture Vapor Reduction Admixture (MVRA) is integral in the new slab.
 - b. Existing concrete slabs receiving thin-set applied flooring, including but not limited to ceramic, quarry, and stone tile.
 - c. New concrete slabs receiving thin-set applied flooring, including but not limited to ceramic, quarry, and stone tile.
- F. Patching compound.
- G. Remedial floor coatings.
- H. Preparation of new and existing wood-based floors and subfloors for installation of new floor coverings.

1.2 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements: Additional requirements relating to testing agencies and testing.
- B. Section 01 74 19 - Construction Waste Management and Disposal: Handling of existing floor coverings removed.
- C. Section 03 30 00 - Cast-in-Place Concrete: Concrete admixture for slabs to receive adhered flooring, to prevent moisture content-related flooring failures.
- D. Section 03 30 00 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.
- E. Section 03 54 00 - Cast Underlayment: Self-leveling underlayment applied as remediation treatment.

1.3 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens); 2021.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.
- C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a.
- D. ASTM F3010 - Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings; 2018.
- E. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
- F. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2022.
- G. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
- H. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Visual Observation Report: For existing floor coverings to be removed.
- C. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
 - 1. Moisture and alkalinity (pH) limits and test methods.
 - 2. Manufacturer's required bond/compatibility test procedure.
- D. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
 - 1. Manufacturer's qualification statement.
 - 2. Certificate: Manufacturer's certification of compatibility with types of flooring applied over remedial product.
 - 3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
 - 4. Manufacturer's installation instructions.
 - 5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.
- E. Testing Agency's Report:
 - 1. Description of areas tested; include marked up floor finish plans and photographs if helpful.
 - 2. Summary of conditions encountered.
 - 3. Moisture and alkalinity (pH) test reports.
 - 4. Copies of specified test methods.
 - 5. Recommendations for remediation of unsatisfactory surfaces.
 - 6. Product data for recommended remedial coating.

7. Submit report to Architect.
 8. Submit report not more than two business days after conclusion of testing.
- F. Adhesive Bond and Compatibility Test Report.
- G. Copy of RFCI (RWP).

1.6 PERFORMANCE REQUIREMENTS

- A. Manufacturer must provide Independent lab test reports documenting performance per the following:
1. ASTM E 96, Water Vapor Transmission (wet method) Performance shall be documented by an independent testing laboratory at a minimum of 97% water vapor transmission reduction compared to untreated concrete.
 2. ASTM E96- Perm Rating - Standard Test Method for Water Vapor Transmission of Materials – Perm Rate results must not exceed 0.1 Perms.
 3. ASTM D 1308; Insensitivity to alkaline environment up to, and including, pH 14. A 14 day test is required with no degradation of sample reported.
 4. Certify acceptance and exposure to continuous topical water exposure after final cure.

1.7 QUALITY ASSURANCE

- A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.
- B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
- C. Contractor's Responsibility Relating to Independent Agency Testing:
1. Provide access for and cooperate with testing agency.
 2. Confirm date of start of testing at least 10 days prior to actual start.
 3. Allow at least 4 business days on site for testing agency activities.
 4. Achieve and maintain specified ambient conditions.
 5. Notify Architect when specified ambient conditions have been achieved and when testing will start.
- D. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.
- B. Deliver materials in manufacturer's packaging; include installation instructions.
- C. Keep materials from freezing.

1.9 FIELD CONDITIONS

- A. Only conduct calcium chloride tests at the same temperature and humidity expected during normal use, maintained 48 hours prior to and during testing. If this is not possible, use the following guidelines:
- B. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

- C. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
 - 1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
 - 2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
 - 3. Basis of Design Products:
 - a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com/#sle.
 - b. LATICRETE International, Inc; SKIM LITE: www.laticrete.com/#sle.
 - c. CMP Specialty Products; Prepstar: www.cmpsp.com.
- B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.
- C. Remedial Floor Coating: Single-layer epoxy based coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
 - 1. System shall comply with requirements of ASTM F3010.
 - 2. Thickness: As required for application and in accordance with manufacturer's installation instructions.
 - 3. Water Vapor reduction system shall be a single coat, stand alone system with no requirements for additional components such as sand broadcast for adhesion of flooring systems.
 - 4. System must reduce Calcium Chloride readings of up to 25lbs/1000 ft²/24 hrs by 97% in one coat. System must be able to perform as required with RH Probe readings of 100%.
 - 5. Basis of Design Products:
 - a. ARDEX Engineered Cements; ARDEX MC RAPID: www.ardexamericas.com/#sle.
 - b. CMP Specialty Products; Lockdown: www.cmpsp.com.
 - c. LATICRETE International, Inc; LATICRETE VAPOR BAN E: www.laticrete.com/#sle.
 - d. Or as approved by manufacturer of flooring system.

PART 3 EXECUTION

3.1 CONCRETE SLAB PREPARATION

- A. Follow recommendations of testing agency.
- B. Perform following operations in the order indicated:

1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
 - a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
 - b. Removal of existing floor covering.
 2. Preliminary cleaning.
 3. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
 4. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 5. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 6. Specified remediation, if required.
 7. Patching, smoothing, and leveling, as required.
 8. Other preparation specified.
 9. Adhesive bond and compatibility test.
 10. Protection.
- C. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
 2. Excessive Moisture Emission or Relative Humidity: Apply remedial floor coating over entire suspect floor area.
 3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.2 REMOVAL OF EXISTING FLOOR COVERINGS

- A. Comply with local, State, and federal regulations and recommendations of RFCI (RWP), as applicable to floor covering being removed.
- B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.3 PRELIMINARY CLEANING

- A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.
- B. Do not use solvents or other chemicals for cleaning.

3.4 MOISTURE VAPOR EMISSION TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F1869 and as follows.
- D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.
- F. Report: Report the information required by the test method.

3.5 INTERNAL RELATIVE HUMIDITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F2170 Procedure A and as follows.
- D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.
- F. Report: Report the information required by the test method.

3.6 ALKALINITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
 - 1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
 - 2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
 - 3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.
- C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.7 PREPARATION

- A. See individual floor covering section(s) for additional requirements.
- B. Comply with requirements and recommendations of floor covering manufacturer.
- C. Comply with recommendations for preparation and application in accordance with ASTM F3010.
- D. Clean all surfaces to receive moisture vapor reduction system. Shot blast all floors to a Concrete Surface Profile (CSP) #3 or #4 and clean surfaces with an industrial vacuum cleaner and remove all residues from the substrate. Grinding is allowed only in areas not accessible by shot blasting. Remove ALL defective materials, and foreign matter such as dust, adhesives, leveling compounds, paint, dirt, floor hardeners, bond breakers, oil, grease, curing agents,

form release agents, efflorescence, laitance, Shot blast bee bees, etc. Repair all cracks, expansion joints, control joints, and open surface honeycombs and fill in accordance with Manufacturer's recommendations. If concrete additives such as chlorides or any other soluble compounds that may contaminate surfaces have been used in the concrete mix do not use this product on that floor without written approval from manufacturer. Reinforcing fibers that are visible after shot blasting must be removed and vacuumed leaving no fibers left on the concrete surfaces. Provide an uncontaminated, sound surface. DO NOT ACID ETCH!

- E. Repair concrete prior to moisture vapor reduction system installation by using MVRs manufacturer's approved concrete repair materials. Comply with all requirements as listed in Manufacturer's technical data information. Consult with vapor reduction manufacturer.
- F. Ensure surfaces to be treated with moisture vapor reduction system have NOT previously been treated with other materials such as underlayments, screeds, penetrating sealants, silicates, etc. If this is the case, consult with the Manufacturer's Representative prior to any application of moisture vapor reduction system.
- G. Any testing for concrete deficiencies or contamination such as alkali silica reaction, untreated silicates, organic residue, etc. is recommended and is the responsibility of the Building owner.
- H. Shot blast a small test area and review surface profile with the finished flooring applicator.
- I. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
- J. Do not fill expansion joints, isolation joints, or other moving joints.

3.8 ADHESIVE BOND AND COMPATIBILITY TESTING

- A. The Owner's Special Inspector shall verify proper adhesion of flooring adhesives, coatings, and leveling compounds to the final vapor reduction coating system for acceptability. Contact Manufacturer's Representatives for recommendations.
- B. Comply with requirements and recommendations of floor covering manufacturer.

3.9 APPLICATION OF REMEDIAL FLOOR COATING

- A. Comply with requirements and recommendations of coating manufacturer.
- B. Allow to cure a minimum of 12 hours before installing flooring system.

3.10 APPLICATION OF REMEDIAL FLOOR TREATMENT

- A. Comply with requirements and recommendations of treatment manufacturer.

3.11 PROTECTION

- A. Cover prepared floors with building paper or other durable covering.
- B. Protect each coat during specified cure period from any kind of traffic, topical water and contaminants.

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Acoustic insulation.
- D. Cementitious backing board.
- E. Gypsum wallboard.
- F. Joint treatment and accessories.

1.2 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).
- B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.
- C. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).
- D. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
- F. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
- G. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020.
- H. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
- I. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2020).
- J. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).
- K. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- L. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
- M. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2020.
- N. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

- O. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.
- P. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.
- Q. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- R. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2018.
- S. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2017.
- T. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing; 2018.
- U. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022.
- V. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- W. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2019, with Editorial Revision (2020).
- X. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
- Y. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
- Z. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- AA. ASTM E413 - Classification for Rating Sound Insulation; 2022.
- AB. GA-216 - Application and Finishing of Gypsum Panel Products; 2021.
- AC. GA-224 - Installation of Predecorated Gypsum Board; Gypsum Association; 2008.
- AD. GA-226 - Application of Gypsum Board to Form Curved Surfaces; 2019.
- AE. GA-600 - Fire Resistance and Sound Control Design Manual; 2021.
- AF. UL (FRD) - Fire Resistance Directory; Current Edition.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- C. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten years of documented experience.

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

1.5 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
 - 1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- C. Fire Rated Assemblies: Provide completed assemblies (Tested rating determined in accordance with ASTM119) with rating as indicated on drawings.
 - 1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.2 METAL FRAMING MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
- B. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. ClarkDietrich: www.clarkdietrich.com/#sle.
 - 2. Marino: www.marinoware.com/#sle.
 - 3. MBA Studs: www.mbastuds.com
- C. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
 - 1. Studs: C-shaped with knurled or embossed faces.
 - 2. Minimum Base Metal Thickness: 18 mils; 0.018 inch, or as required to meet design or code requirements.
 - 3. Runners: U shaped, sized to match studs.
 - 4. Furring Members: Hat-shaped sections, minimum depth of 7/8 inch.
- D. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
 - 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
 - 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.
 - 3. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
 - 4. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-resistance rating of the wall assembly.
 - a. Products:

- 1) ClarkDietrich; MaxTrak Slotted Deflection Track: www.clarkdietrich.com/#sle.
- 2) Marino; Slotted Track: www.marinoware.com/#sle.
- 3) MBA Building Supplies; Slotted Slip Track: www.mbastuds.com/#sle.
- 4) Substitutions: See Section 01 60 00 - Product Requirements.

2.3 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 1. CertainTeed Corporation: www.certainteed.com/#sle.
 2. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
 3. National Gypsum Company: www.nationalgypsum.com/#sle.
 4. USG Corporation: www.usg.com/#sle.
- A. Gypsum Wallboard - General
 1. All gypsum wallboard incorporated into the Work, whether indicated or not, shall comply with all of the following:
 - a. Thickness: 5/8 inch.
 - b. Core: Type X, UL or WH listed.
 - 1) Exception: Where Fire Resistance Rating requires Type C.
 - c. Core and Face: Moisture and mold resistant, with a mold resistance score of 10, when tested in accordance with ASTM D3273.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
 3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. Mold resistant board is required at all locations.
 4. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
 5. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Ceilings: 5/8 inch.
 - c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
 6. Mold-Resistant, Paper-Faced Products:
 - a. CertainTeed Corporation; M2Tech 5/8" Type X Moisture & Mold Resistant Drywall: www.certainteed.com/#sle.
 - b. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard: www.gpgypsum.com/#sle.
 - c. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond XP Gypsum Board: www.goldbondbuilding.com/#sle.
 - d. USG Corporation; Sheetrock Brand EcoSmart Panels Mold Tough Firecode X 5/8 in. (15.9 mm): www.usg.com/#sle.
 7. Glass Mat Faced Products:
 - a. Georgia-Pacific Gypsum; DensArmor Plus: www.gpgypsum.com/#sle.
 - b. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Interior Extreme Fire-Shield Gypsum Panel: www.goldbondbuilding.com/#sle.
 - c. USG Corporation; Sheetrock Brand Glass-Mat Panels Mold Tough Regular 1/2 in. (12.7 mm): www.usg.com/#sle.
- C. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.
 1. Glass Mat Faced Type: Glass mat shaftliner gypsum panel or glass mat coreboard gypsum panel as defined in ASTM C1658/C1658M.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.

3. Glass Mat Faced Products:
 - a. CertainTeed Corporation; GlasRoc Shaftliner Type X: www.certainteed.com/#sle.
 - b. Georgia-Pacific Gypsum; DensGlass Shaftliner (mold-resistant): www.gpgypsum.com/#sle.
 - c. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Shaftliner: www.goldbondbuilding.com/#sle.
 - d. USG Corporation; Sheetrock Brand Glass-Mat Liner Panels Mold Tough 1 in. (25.4 mm): www.usg.com/#sle.

2.4 GYPSUM BOARD ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: To match wall depth.
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- C. Finishing Accessories: ASTM C1047, galvanized steel, rolled zinc, or rolled zinc, unless noted otherwise.
 1. Types: As detailed or required for finished appearance.
 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
 3. Products:
 - a. Same manufacturer as framing materials.
- D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
 2. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
 3. Joint Compound: Drying type, vinyl-based, ready-mixed.
 4. Joint Compound: Setting type, field-mixed.
- E. High Build Drywall Surfer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
 1. Products:
 - a. CertainTeed Corporation; Level V Wall and Ceiling Primer/Surfer with M2Tech: www.certainteed.com/#sle.
 - b. USG Corporation; USG Sheetrock Brand Tuff-Hide Primer-Surfer: www.usg.com/#sle.
- F. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.
- G. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.
- H. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

- B. Verify that project conditions are ready to receive work and opening dimensions are as indicated on shop drawings to commence.

3.2 EXISTING WORK

- A. Extend existing gypsum board installations using materials and methods as specified.
- B. Repair and remodel existing gypsum board assemblies which remain or are to be altered.

3.3 SHAFT WALL INSTALLATION

- A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
 - 1. Fasten runners to structure with short leg to finished side, using appropriate power-driven fasteners at not more than 24 inches on center.
 - 2. Install studs at spacing required to meet performance requirements.
- B. Shaft Wall Liner: Cut panels to accurate dimensions and install sequentially between special friction studs.

3.4 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C1007/AISI S220 and manufacturer's instructions.
- B. Studs: Space studs at 16 inches on center.
 - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 - 2. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging. Provide extended leg ceiling runners with compressible fire rated fill.
- C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- D. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
- E. Acoustic Furring: Install resilient channels at maximum 24 inches on center. Locate joints over framing members.
- F. Furring for Fire-Resistance Ratings: Install as required for fire-resistance ratings indicated and to GA-600 requirements.
- G. Blocking: Install wood blocking for support of:
 - 1. Wall-mounted cabinets.
 - 2. Plumbing fixtures.
 - 3. Toilet partitions.
 - 4. Toilet accessories.
 - 5. Wall-mounted door hardware.
 - 6. Wood frame opening.
 - 7. Or any other materials requiring blocking. Coordinate blocking requirements with other contractors.

3.5 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

1. Place two beads continuously on substrate before installation of perimeter framing members.
2. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, rough-in boxes, and other equipment. Do Not seal penetrations scheduled to receive firestopping.

3.6 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
 1. Use screws when fastening gypsum board to metal furring or framing.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Double-Layer Non-Rated:
 1. Use gypsum backing board for first layer, placed perpendicular to framing or furring members, with ends and edges occurring over firm bearing. [Use fire rated gypsum backing board for fire rated partitions and ceilings.]
 2. Place second layer parallel to framing or furring members.
 3. Offset joints of second layer from joints of first layer.
 4. Treat cut edges and holes in moisture resistant gypsum board with sealant.
- D. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
 1. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
- E. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.
- F. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 1. Seal joints, cut edges, and holes with water-resistant sealant.
- G. Exterior Soffits: Install exterior soffit board perpendicular to framing, with staggered end joints over framing members or other solid backing.
- H. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- I. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.

3.7 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 1. Not more than 30 feet apart for exposed interior linear construction.
 2. Not more than 25 feet where ceramic wall tile is installed on an interior wall.
 3. Not more than 12 feet where ceramic wall tile is installed on an exterior wall, in direct sunlight or wet conditions.
 4. At metal door frames and windows above each jamb.
 5. At exterior soffits, not more than 30 feet apart in both directions.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.8 JOINT TREATMENT

- A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
 - 2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 3. Level 3: Walls to receive textured wall finish.
 - 4. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 - 5. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
 - 6. Level 0: Temporary partitions.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
- D. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.
- E. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.9 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 30 00
TILING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Stone thresholds.
- D. Ceramic accessories.
- E. Ceramic trim.
- F. Non-ceramic trim.
- G. Accessory materials.

1.2 RELATED REQUIREMENTS

- A. Section 03 54 00 - Cast Underlayment.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.
- C. Section 09 21 16 - Gypsum Board Assemblies: Tile backer board.

1.3 REFERENCE STANDARDS

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2019.
 - 1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2017.
 - 2. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 2017.
 - 3. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2021).
 - 4. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2019.
 - 5. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 2021.
 - 6. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 1999 (Reaffirmed 2019).
 - 7. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2019).
 - 8. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2019).
 - 9. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017.

10. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
 11. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2019).
 12. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).
 13. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.
 14. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs; 2020.
 15. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.
 16. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2019.
 17. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2019.
 18. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2014 (Reaffirmed 2019).
 19. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2019).
 20. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2019.
- B. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.
- C. ANSI A326.3 - American National Standard Test Method for Measuring Dynamic Coefficient of Friction of Hard Surface Flooring Materials; 2021.
- D. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2018.
- E. ASTM D4551 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane; 2022.
- F. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2023.
- G. TCNA (HB-GP) - Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation; 2023.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Pre-installation Meeting: Convene a pre-installation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

- C. Samples: Submit one set of samples of the following for color selection or verification of color and finish variations:
 - 1. Tile products.
 - 2. Trims and accessories.
 - 3. Grouts.
 - 4. Sealants.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Installer's Qualification Statement:
 - 1. Submit documentation of National Tile Contractors Association (NTCA) or Tile Contractors' Association of America (TCAA) accreditation.
 - 2. Submit documentation of completion of apprenticeship and certification programs.
- F. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- G. 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 Tile: 5 percent of each size, color, and surface finish combination, but not less than 2 of each type.

1.6 CLOSEOUT SUBMITTALS

- A. See Section 01 70 00 - Execution and Closeout Requirements for closeout procedures.

1.7 QUALITY ASSURANCE

- A. Maintain one copy of ANSI A108/A118/A136, TCNA (HB), and TCNA (HB-GP) on-site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum ten years of documented experience.
- C. Installer Qualifications:
 - 1. Company specializing in performing tile installation, with minimum of five years of documented experience.
 - a. Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).
 - 2. Installer Certification:
 - a. Ceramic Tile Education Foundation (CTEF): Certified Tile Installer (CTI).
 - b. Apprenticeship Program: Installer has achieved Journeyworker status through an apprenticeship from the International Union of Bricklayers and Allied Craftworkers (IUBAC) or a U.S. Department of Labor (DOL)-recognized program.
 - c. Advanced Certifications for Tile Installers (ACT): Certification in the installation of membranes, mortar bed (mud) floors, mortar (mud) walls, shower receptors, large format tile, gauged porcelain tile/panels/slabs, and grouts.
 - d. International Masonry Training and Education Foundation (IMTEF): Supervisor Certification Program (SCP).
- D. Warranty: Installer of work contained in this Section to warrant installation for minimum of 1 year from date of completion for defects in workmanship.

1.8 MOCK-UPS

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Construct tile mock-up where directed by Architect, incorporating all components specified for the location.

1. Minimum size of mock-up shall be determined by Architect.
2. Locate where directed by Architect.
3. Approved mock-up may remain as part of work.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.
- B. See Section 01 60 00 - Product Requirements for product storage and handling requirements.
- C. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.10 FIELD CONDITIONS

- A. Do not install adhesives and grouts in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.1 TILE

- A. Manufacturers:
 1. Crossville, Inc.: www.crossvilleinc.com
 2. Dal-Tile Corporation: www.daltile.com/#sle.
 3. Fireclay Tile; www.fireclaytile.com.
 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Colorbody Porcelain Mosaic Tile, Type FT-1: ANSI A137.1, standard grade.
 1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
 2. Size: 2 by 2 inch, nominal.
 3. Edges: Square.
 4. Coefficient of Friction: 0.50 to 0.60 when tested in accordance with ANSI A326.3.
 5. Surface Finish: UPS.
 6. Color(s): As indicated on drawings.
 7. Basis of Design Product:
 - a. Crossville Inc. Beljn; www.crossvilleinc.com..
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Colorbody Porcelain Floor Tile, Type FT-2: ANSI A137.1, standard grade.
 1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
 2. Size: 6 by 6 inch, nominal.
 3. Edges: Square.
 4. Coefficient of Friction: 0.42 when tested in accordance with ANSI A3326.3.
 5. Surface Finish: Matte.
 6. Color(s): As indicated on drawings.
 7. Basis of Design Product:
 - a. Daltile; Volume 1.0: www.daltile.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Glazed Ceramic Wall Tile, Type ES WT-1,2,3,&4: ANSI A137.1, standard grade.
 1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
 2. Size: 6 by 6 inch, nominal.
 3. Edges: Cushioned.
 4. Surface Finish: High gloss.

5. Color(s): As indicated on drawings.
 6. Pattern: As indicated on drawings.
 7. Trim Units, Type CB-1: Matching cove shapes in sizes coordinated with field tile.
 8. Basis of Design Product:
 - a. Dal-Tile Corporation; Colorwheel Collection - Classic: www.daltile.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Glazed Ceramic Wall Tile, Type HS WT-1: ANSI A137.1, standard grade.
1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
 2. Size: 6 by 6 inch, nominal.
 3. Edges: Cushioned.
 4. Surface Finish: Matte.
 5. Color(s): As indicated on drawings.
 6. Pattern: As indicated on drawings.
 7. Basis of Design Products:
 - a. Daltile; Colorwheel Collection - Classic.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Glazed Brick Wall Tile, Type HS WT-2 & 3: ANSI A137.1, standard grade.
1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
 2. Size: 8 by 2 1/2 inch, nominal.
 3. Edges: Square.
 4. Surface Finish: Gloss.
 5. Color(s): As indicated on drawings.
 6. Pattern: As indicated on drawings.
 7. Trim Units: Matching corner tile in sizes coordinated with field tile.
 8. Basis of Design Product:
 - a. Fireclay Tile; Brick: www.fireclaytile.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- G. Glazed Ceramic Wall Tile, Type HS WT-4 & 5: ANSI A137.1, standard grade.
1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
 2. Size: 2 by 2 inch, nominal
 3. Edges: Square.
 4. Surface Finish: Gloss.
 5. Color(s): As indicated on drawings.
 6. Pattern: As indicated on drawings.
 7. Basis of Design Product:
 - a. Fireclay Tile; Mosaic: www.fireclaytile.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 TRIM AND ACCESSORIES

- A. Ceramic Trim, Type CB-1: Matching cove base shapes in sizes coordinated with field tile.
1. Color(s): As indicated on drawings.
 2. Applications:
 - a. Floor to Wall Joints: Cove base.
 3. Manufacturers: Same as for coordinating tile.
- B. Glazed Brick Trim: Matching corner tile in sizes coordinated with field tile.
1. Color(s): Same as for coordinating tile.
 2. Applications:
 - a. Outer Corners: standard corner.
 3. Manufacturers: Same as for coordinating tile.
- C. Non-Ceramic Trim, Type TS-2: Brushed stainless steel, style and dimensions to suit application, for setting using tile mortar or adhesive.
1. Thickness: As required by installation and to comply with ADA Regulations.

2. Applications:
 - a. Outside wall corners.
3. Basis of Design Product:
 - a. Schluter-Systems; Quadec: www.schluter.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Non-Ceramic Trim, Type TS-4: Satin anodized aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
 1. Thickness: As required by installation and to comply with ADA Regulations.
 2. Applications:
 - a. Floor to wall joints.
 3. Basis of Design Product:
 - a. Schluter-Systems; Dialex-AHKA: www.schluter.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Thresholds, Type ES TS-1: 2 inches wide by full width of wall or frame opening; beveled edge on both long edges; without holes, cracks, or open seams.
 1. Material: Marble, honed finish.
 2. Color and Pattern: As indicated on drawings.
 3. Applications:
 - a. At doorways where tile terminates.
 4. Basis of Design Product:
 - a. Daltile; Windowsills & Thresholds: www.daltile.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 SETTING MATERIALS

- A. Provide setting and grout materials from same manufacturer.
- B. Manufacturers:
 1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
 2. Custom Building Products: www.custombuildingproducts.com/#sle.
 3. LATICRETE International, Inc: www.laticrete.com/#sle.
- C. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
 1. Applications: Use this type of bond coat for ceramic and porcelain tiles.
 2. Basis of Design Product:
 - a. LATICRETE International, Inc; 253 Gold: www.laticrete.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Improved Latex-Portland Cement Mortar Bond Coat: ANSI A118.15.
 1. Applications: Use this type of bond coat for brick tiles.
 2. Basis of Design Product:
 - a. LATICRETE International, Inc; LATICRETE 254 Platinum: www.laticrete.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.4 GROUTS

- A. Provide setting and grout materials from same manufacturer.
- B. Manufacturers:
 1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
 2. Custom Building Products: www.custombuildingproducts.com/#sle.
 3. LATICRETE International, Inc: www.laticrete.com/#sle.
- C. Premixed Polymer Modified Grout: Single component, stain resistant grout. Meets or exceeds ANSI A118.3 performance criteria.
 1. Applications: Where indicated.
 2. Color(s): As indicated on drawings.

3. Basis of Design Product:
 - a. LATICRETE International, Inc; SPECTRALOCK 1 Pre-Mixed Grout:
www.laticrete.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.5 MAINTENANCE MATERIALS

- A. Tile Sealant, Type TS-3: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
 1. Applications: Between tile and plumbing fixtures, from wall tile to flooring where indicated.
 2. Color(s): As indicated on drawings.
 3. Basis of Design Product:
 - a. LATICRETE International, Inc; LATICRETE LATASIL: www.laticrete.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.6 ACCESSORY MATERIALS

- A. Waterproofing and Slab Crack Isolation Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 1. Crack Resistance: No failure at 1/8 inch gap, minimum; comply with ANSI A118.12.
 2. Fluid or Trowel Applied Type:
 - a. Material: Synthetic rubber.
 - b. Thickness: 25 mils, minimum, dry film thickness.
 - c. Basis of Design Product:
 - 1) LATICRETE International, Inc; LATICRETE HYDRO BAN:
www.laticrete.com/#sle.
 - 2) Substitutions: See Section 01 60 00 - Product Requirements.
- B. Backer Board: Cementitious type; See Section 09 21 16 - Gypsum Board Assemblies.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- C. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- D. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
- E. Verify that sub-floor surfaces, in areas with floor drains, are pitched uniformly to drains at 1/4 inch per foot nominal if not indicated on the drawings.
 1. Exception: Where tile is installed in areas of previously removed floor covering, and the sub-floor does not meet the stated pitch, build up thinset during installation to provide a positive pitch to drains of 1/8" per foot, minimum in all directions.
- F. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).
 1. Test in accordance with Section 09 05 61.
 2. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.

3. Follow moisture and alkalinity remediation procedures in Section 09 05 61.

G. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

F. Scarify existing glazed structural block prior to installation of wall tile.

G. Place edge strips at exposed tile edges.

3.3 INSTALLATION - GENERAL

A. Install tile, thresholds, and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) or TCNA (HB-GP) recommendations, as applicable.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings. Arrange pattern so that a full tile or joint is centered on each wall and that no tile less than 1/2" width is used.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor, base, and wall joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

1. Tile joint width shall be as recommended by manufacturer for the individual tile type indicated, however, tile joint shall be no less than 1/8 inch, unless otherwise noted.

E. Form internal angles square and external angles bullnosed.

F. Install ceramic accessories rigidly in prepared openings.

G. Maintain specified positive pitch to all floor drains in all directions.

H. Install non-ceramic trim in accordance with manufacturer's instructions.

I. Install thresholds where indicated on drawings.

J. Sound tile after setting. Replace hollow sounding units.

K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

L. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

M. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

N. When installation requires varying tile thickness due to patterning, build up thinset so that the entire installation is flush.

O. Seal all sanded and unsanded grout, with the exception of epoxy grout, per grout manufacturer's installation instructions.

3.4 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.
 - 2. Where epoxy bond coat and grout are indicated, install in accordance with TCNA (HB) Method F131.

3.5 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.
- B. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method W222, one coat method.
- C. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.

3.6 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final Cleaning.
- B. Clean tile and grout surfaces per manufacturer's recommendations.

3.7 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Do not permit traffic over finished floor surface for 4 days after installation.
- C. Protect installed tile from damage due to subsequent construction until Date of Substantial Completion.

3.8 SCHEDULE

- A. Refer to Finish Key and Schedules.

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.3 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
- B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.
- C. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.
- E. CHPS (HPPD) - High Performance Products Database; Current Edition.
- F. CISCA (AC) - Acoustical Ceilings: Use and Practice; 1999.
- G. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on suspension system components and acoustical units.
- C. Samples: Submit two samples 6 x 6 inch size illustrating material and finish of acoustical units.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- E. Manufacturer's qualification statement.
- F. 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 Acoustical Units: Quantity equal to 5 percent of total installed.

3. Extra Exposed Grid: Quantity equal to 2 percent of total installed.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing the work specified in this section with minimum five years documented experience.
- C. Conform to Cisca (AC) requirements.
- D. Single Source Responsibility: To obtain combined warranty for the suspension system and the acoustical panel, color match or ceiling panel and suspension system compatibility, all acoustical panel and suspension system components shall be produced and supplied by one manufacturer. Materials supplied by more than one manufacturer are not acceptable.
- E. Source quality control:
 1. Test reports: Manufacturer will provide test certification for minimum requirements as tested in accordance with applicable industry standards and/or to meet performance standards specified by various agencies.
 2. Changes from system: System performance following any substitution of materials or change in assembly design shall be certified by the manufacturer.
 3. All ceiling panel cartons must contain UL label for acoustical compliance.
 4. All suspension system cartons must contain UL label for load compliance per ASTM C635.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements.
- B. Storage:
 1. Panels: Storage time of materials at the job site should be as short as possible and environmental conditions should be as near as possible to those specified for occupancy.
 2. Suspension System: Store in manner that will prevent warping, scratches and damage of any kind.
- C. Handling: Handle in such manner to ensure against racking, distortion, or physical damage of any kind.
- D. Damaged or deteriorated materials shall be removed from the premises.

1.8 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

1.9 WARRANTY

- A. Provide written warranty executed by the manufacturer, agreeing to repair or replace acoustical ceiling products that fail within the warranty period. Failures include, but are not limited to:
 1. Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.
 2. Grid System: Rusting and manufacturer's defects.
 3. Warranty Period:
 - a. Acoustical panels: Ten years from date of substantial completion.
 - b. Grid: Ten years from date of substantial completion.

- c. Combined single source panel and grid: Thirty years from date of substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acoustic Tiles/Panels:
 - 1. Armstrong World Industries, Inc: www.armstrong.com/#sle.
 - 2. USG: www.usg.com/#sle.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Suspension Systems:
 - 1. Same as for acoustical units.

2.2 ACOUSTICAL UNITS

- A. Acoustical Units - General: ASTM E1264, Class A.
 - 1. VOC Content: As specified in Section 01 61 16.
 - 2. VOC Content: Certified as Low Emission by one of the following:
 - a. Product listing in UL (GGG).
 - b. Product listing in CHPS (HPPD).
 - 3. Inherently resistant to humidity, sag, mold, and mildew.
- B. Acoustical Panels, Type ACT-1: Painted mineral fiber, with the following characteristics:
 - 1. Classification: ASTM E1264 Type A.
 - a. Form: A1.2.
 - b. Pattern: G.
 - 2. Size: 24 by 24 inches.
 - 3. Thickness: 5/8 inch.
 - 4. Light Reflectance: 88 percent, determined in accordance with ASTM E1264.
 - 5. Ceiling Attenuation Class (CAC): 33, determined in accordance with ASTM E1264.
 - 6. Panel Edge: Square.
 - 7. Color: White.
 - 8. Suspension System: Exposed grid.
 - 9. Basis of Design Product:
 - a. Armstrong World Industries, Inc; Georgian High Washability: www.armstrongceilings.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 SUSPENSION SYSTEM(S)

- A. Metal Suspension Systems - General: Complying with 1; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
 - 1. Materials:
 - a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
- B. Exposed Suspension System: Hot-dip galvanized steel grid and cap.
 - 1. Structural Classification: Heavy-duty, when tested in accordance with ASTM C635/C635M.
 - 2. Profile: Tee; 15/16 inch face width.
 - 3. Finish: Baked enamel.
 - 4. Color: White.
 - 5. Products:
 - a. Armstrong World Industries, Inc.; Prelude XL 15/16": www.armstrongceilings.com.

- b. Substitutions: See Section 01 60 00 - Product Requirements.

2.4 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.
 - 1. Size: As required for installation conditions.
- D. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.2 PREPARATION

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.
- C. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.

3.3 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C 636/C 636M and manufacturer's instructions, and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Locate system on room axis according to reflected plan.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.
- E. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Do not eccentrically load system or induce rotation of runners.

3.4 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. For some pattern edge details, if perimeter panels must be cut smaller, the cut edge must be field-rabbeted, or the wall angle must be lowered by reveal depth.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
 - 1. Cut to fit irregular grid and perimeter edge trim.
 - 2. Make field cut edges of same profile as factory edges.
 - 3. Double cut and field paint exposed reveal edges.
- G. Where round obstructions and bullnose concrete block corners occur, provide preformed closures to match perimeter molding.

3.5 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.6 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Clean surfaces.
- C. Replace damaged or abraded components.

3.7 SCHEDULE

- A. Refer to drawings for Finish Key and Schedule

END OF SECTION

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Resilient tile/plank flooring.
- B. Resilient base.
- C. Installation accessories.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.
- B. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.
- C. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.3 REFERENCE STANDARDS

- A. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).
- B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2019a, with Editorial Revision (2020).
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
- D. ASTM F970 - Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading; 2022.
- E. ASTM F1344 - Standard Specification for Rubber Floor Tile; 2021a.
- F. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.
- G. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Pre-installation Meeting: Convene a pre-installation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

- C. Verification Samples: Submit two samples, 12" x 12" illustrating color and pattern for each resilient flooring product specified.
- D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- 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.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum five years documented experience.
 - 1. Rubber Flooring: Manufacturer shall have an active installer qualification and training program.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience and approved by flooring manufacturer.
 - 1. Rubber Flooring: Contractor shall have manufacturer certified installer on site at all times during rubber flooring work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 60 00 - Product Requirements for additional storage and handling requirements.
- B. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- C. Store all materials off of the floor in an acclimatized, weather-tight space.
- D. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

1.8 FIELD CONDITIONS

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.9 CLOSEOUT SUBMITTALS

- A. See Section 01 70 00 - Execution and Closeout Requirements for closeout procedures.
- B. Furnish 10 percent of installed vinyl tile flooring and base, 5 percent of installed linoleum flooring and 5 percent of rubber flooring of each type and color specified. Deliver all required overage and maintenance stock to owner's specified location prior to start of installation.
- C. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials and suggested schedule for cleaning, stripping and re-waxing.

PART 2 PRODUCTS

2.1 TILE FLOORING

- A. Rubber Tile - Type RF-1&2: Homogeneous, color and pattern throughout thickness.
 - 1. Minimum Requirements: Comply with ASTM F1344, of Class corresponding to type specified.

2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
3. Size: 39.53 by 39.53 inch.
4. Thickness: 0.14 inch.
5. Hardness: Shore "A"; 82 minimum in accordance with ASTM D2240
6. Pattern: Refer to Drawings
7. Color: As indicated on drawings.
8. Basis of Design Product:
 - a. Nora Flooring; Norament Grano: www.nora.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 RESILIENT BASE

- A. Resilient Base - Type RB-1&2: ASTM F1861, Type TV, vinyl, thermoplastic; style as scheduled.
 1. Basis of Design Product:
 - a. Roppe Corporation; Vinyl Wall Base: www.roppe.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
 2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 3. Height: 4 inch, 6 inch as scheduled.
 4. Thickness: 0.125 inch.
 5. Finish: Matte.
 6. Length: Roll.
 7. Color: As indicated on drawings.
 8. Accessories: Premolded external corners and end stops.

2.3 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.
- C. Moldings, Transition and Edge Strips, Type TS-1: Same material as flooring.
 1. Thickness: As required by installation and to comply with ADA Regulations.
 2. Color: As indicated on drawings.
 3. Basis of Design Product:
 - a. Roppe Corp; Rubber Accessories: www.roppe.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- C. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- D. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).

1. Test in accordance with Section 09 05 61.
 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
 3. Follow moisture and alkalinity remediation procedures in Section 09 05 61.
- E. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface. Fill excessive low areas with self leveling flowable fill. Reduce ridges or bumps by grinding.
- C. Prohibit traffic until filler is fully cured.
- D. Clean substrate to remove adhesives, coatings or contaminants that will inhibit adhesion of the new floor system. Use chemical treatment or bead blast as dictated by the existing conditions and as recommended by the flooring manufacturer .
- E. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.3 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Adhesive-Applied Installation:
 1. Spread only enough adhesive to permit installation of materials before initial set.
 2. Fit joints and butt seams tightly.
 3. Set flooring in place, press with heavy roller to attain full adhesion.
- D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
 1. Resilient Strips: Attach to substrate using adhesive.
- F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- G. Install flooring in recessed floor access covers, maintaining floor pattern.
- H. At movable partitions, install flooring under partitions without interrupting floor pattern.

3.4 INSTALLATION - TILE FLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
- B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.

3.5 INSTALLATION - RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.
- E. Reveal Base: Miter all corners.

3.6 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final Cleaning.
- B. Remove excess adhesive from floor, base, and wall surfaces without damage.
- C. Clean and maintain in accordance with manufacturer's instructions.

3.7 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Prohibit traffic on resilient flooring for 48 hours after installation.
- C. Upon completion of installation, protect resilient flooring in traffic areas with heavy duty kraft paper.

3.8 SCHEDULE

- A. Refer to Finish Keys and Schedules

END OF SECTION

SECTION 09 67 00
FLUID-APPLIED FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fluid-applied flooring.

1.2 RELATED REQUIREMENTS

- A. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.
- B. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.3 REFERENCE STANDARDS

- A. ANSI/ESD STM7.1 - The Protection of Electrostatic Discharge Susceptible Items Flooring Systems Resistive Characterization; 2021.
- B. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Pre-installation Meeting: Convene a pre-installation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.
- C. Samples: Submit one sample, produced by flooring contractor, 6 by 6 inch in size illustrating color and pattern for each floor material for each color specified.
- D. Manufacturer's Installation Instructions: Indicate special procedures and application rate for each coat.
- E. Manufacturer's Qualification Statement.
- F. Applicator's Qualification Statement.
- G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section.
 - 1. Minimum 10 years of documented experience.
 - 2. Approved by manufacturer.
- C. Single Source Responsibility: To obtain combined warranty for the installed flooring system from manufacturer, obtain flooring system materials from a single manufacturer throughout project.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store resin materials in a dry, secure area.
- B. Maintain optimal storage temperature of between 50 and 80 degrees F.
- C. Store materials for three days prior to installation in area of installation to achieve temperature stability.

1.8 FIELD CONDITIONS

- A. Maintain optimal storage temperature in storage area of between 60 and 85 degrees F.
- B. Store materials in area of installation for minimum period of 24 hours prior to installation.
- C. Maintain ambient and substrate temperature required by manufacturer 72 hours prior to, during, and 72 hours after installation of materials.
- D. Prior to and during installation, the flooring contractor shall verify that the dew point is at least 5 degrees Fahrenheit less than the slab and air temperature.
- E. Provide ambient lighting level of 50 ft candles, measured at floor surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Fluid-Applied Flooring:
 - 1. Sherwin-Williams Company: General Polymers Brand: www.generalpolymers.com/#sle.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 FLUID-APPLIED FLOORING SYSTEMS

- A. Fluid-Applied Flooring Type EPX-1: Quartz aggregates with resin.
 - 1. Self-leveling Primer Coat(s): Epoxy.
 - 2. System Thickness: 1/16 inch, nominal, dry film thickness (DFT).
 - 3. Texture: Slip resistant.
 - 4. Sheen: High Gloss.
 - 5. Color: As indicated on drawings.
 - 6. Basis of Design Product:
 - a. Sherwin Williams; Resuflor Deco Quartz: industrial.sherwin-williams.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 ACCESSORIES

- A. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.
- B. Primer: Type recommended by fluid-applied flooring manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.
- B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to subfloor surfaces.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for fluid-applied flooring installation by testing for moisture and alkalinity (pH).
 - 1. Test in accordance with Section 09 05 61.
 - 2. Obtain instructions if test results are not within limits recommended by fluid-applied flooring manufacturer.
 - 3. Follow moisture and alkalinity remediation procedures in Section 09 05 61.
- D. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

- A. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.
- B. Prepare concrete surfaces according to ICRI 310.2R.
- C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.
- D. Vacuum clean substrate.
- E. Apply primer to surfaces required by flooring manufacturer.

3.3 INSTALLATION - FLOORING

- A. Apply in accordance with manufacturer's instructions.
- B. Apply each coat to minimum thickness required by manufacturer.
- C. Finish to smooth level surface.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Test installed floor surface in accordance with ANSI/ESD STM7.1 .

3.5 PROTECTION

- A. Prohibit traffic on floor finish for 48 hours after installation.

- B. Barricade area to protect flooring until fully cured.

END OF SECTION

SECTION 09 72 00
WALL COVERINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation and prime painting.
- B. Protective Wallcovering.

1.2 REFERENCE STANDARDS

- A. ASTM D1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Coating Systems; 2020.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
- C. ASTM F793/F793M - Standard Classification of Wall Coverings by Use Characteristics; 2020.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Pre-installation Meeting: Convene a pre-installation meeting one week before starting work of this section; require attendance by all affected installers.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on wall covering and adhesive.
- C. Samples: Submit two samples of wall covering, 6 by 6 inch in size illustrating color, finish, and texture. Verify image and substrate with Interior Designer/Architect/Owner.
- D. Manufacturer's Installation Instructions: Indicate special procedures.
- E. Maintenance Data: Submit data on cleaning, touch-up, and repair of covered surfaces.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum 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.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inspect materials at arrival on site, to verify acceptability.
- B. Protect packaged adhesive from temperature cycling and cold temperatures.
- C. Store panel materials flat in a clean dry area.

1.7 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the adhesive or wall covering product manufacturer.
- B. Maintain these conditions 24 hours before, during, and after installation of adhesive and wall covering.
- C. Provide lighting level of 80 ft candles measured mid-height at substrate surfaces.

PART 2 PRODUCTS

2.1 WALL COVERINGS

- A. General Requirements:
 - 1. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84.
 - 2. Chemical and Stain Resistance: No visible staining or discoloration and no damage to surface texture when tested in accordance with ASTM D1308.
- B. Protective Wall Covering - Type WC-1: Rigid high impact sheet.
 - 1. Thickness: 0.040 inches.
 - 2. Color: As indicated on drawings.
 - 3. Surface Texture: Dune.
 - 4. Fire Rating: Class A.
 - 5. Basis of Design Product:
 - a. Koroseal; Korogard Sheet: www.koroseal.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Adhesive: Type recommended by wall covering manufacturer to suit application to substrate.
- D. Termination Trim: Extruded plastic, clear.
- E. Substrate Filler: As recommended by adhesive and wall covering manufacturers; compatible with substrate.
- F. Substrate Primer and Sealer: Alkyd enamel type.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are prime painted and ready to receive work, and comply with requirements of wall covering manufacturer.
- B. Measure moisture content of surfaces using an electronic moisture meter. Do not apply wall coverings if moisture content of substrate exceeds level recommended by wall covering manufacturer.
- C. Verify flatness tolerance of surfaces does not vary more than 1/8 inch in 10 feet nor vary at a rate greater than 1/16 inch/ft.

3.2 PREPARATION

- A. Fill cracks in substrate and smooth irregularities with filler; sand smooth.

- B. Wash impervious surfaces with tetra-sodium phosphate, rinse and neutralize; wipe dry.
- C. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- D. Apply one coat of primer sealer to substrate surfaces. Allow to dry. Lightly sand smooth.
- E. Vacuum clean surfaces free of loose particles.

3.3 INSTALLATION

- A. Apply adhesive and wall covering in accordance with manufacturer's instructions.
- B. Apply adhesive to wall surface immediately prior to application of wall covering.
- C. Apply wall covering smooth, without wrinkles, gaps or overlaps. Eliminate air pockets and ensure full bond to substrate surface.
- D. Butt edges tightly.
- E. Do not seam within 2 inches of internal corners or within 6 inches of external corners.
- F. Install corner and dividing trim.
- G. Remove excess adhesive while wet from seam before proceeding to next wall covering sheet. Wipe clean with dry cloth.

3.4 CLEANING

- A. Clean wall coverings of excess adhesive, dust, dirt, and other contaminants.
- B. Reinstall wall plates and accessories removed prior to work of this section.

3.5 SCHEDULES

- A. Refer to Finish Key and Schedule.

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.1 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. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
 - 6. Marble, granite, slate, and other natural stones.
 - 7. Floors, unless specifically indicated.
 - 8. Glass.
 - 9. Acoustical materials, unless specifically indicated.
 - 10. Concealed pipes, ducts, and conduits.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

1.3 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

1.4 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 D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2019.
- C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- D. ASTM D4259 - Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application; 2018.
- E. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.
- F. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.
- G. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

- H. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- I. SSPC-SP 2 - Hand Tool Cleaning; 2018.
- J. SSPC-SP 3 - Power Tool Cleaning; 2018.
- K. SSPC-SP 13/NACE No.6 - Surface Preparation of Concrete; 2018.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. 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 products to be used in project; include description of each system.
 - 4. Manufacturer's installation instructions.
 - 5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit one paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
 - 2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.
 - 3. Allow 30 days for approval process, after receipt of complete samples by Architect.
 - 4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
- D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures.
- F. 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, and touch-up procedures.
- G. 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 gal of each color; from the same product run, store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 10 years experience and approved by manufacturer.

1.7 MOCK-UP

- A. See Section 01 40 00 - Quality Requirements, for general requirements for mock-up.
- B. Provide panel, 10 feet long by 10 feet wide, illustrating paint color, texture, and finish.

- C. Provide door and frame assembly illustrating paint color, texture, and finish.
- D. Locate where directed by Architect.
- E. Mock-up may remain as part of the work.

1.8 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.

1.9 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 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

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

2.2 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
 - 1. 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.
 - 2. 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.
 - 3. 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.
 - 4. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 5. 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. 6 CRR-NY, Chapter III, Subpart A.
 - c. 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: 100 g/L, maximum.
 - 3) Opaque, High Gloss: 150 g/L, maximum.
 - d. Architectural coatings VOC limits of the State of New York.
 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: As indicated on drawings.
1. Extend colors to surface edges; colors may change at any edge as directed by Architect.

2.3 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

3.1 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.

3.2 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. 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 concrete according to ASTM D4258. Allow to dry.
 - 3. Prepare surface as recommended by top coat manufacturer and in accordance with SSPC-SP 13/NACE No.6.
- H. Masonry:
 - 1. Prepare surface as recommended by top coat manufacturer.
- 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.

3.3 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- 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 in thicknesses specified by manufacturer.
- F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- G. Sand metal surfaces lightly between coats to achieve required finish.
- H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 FIELD QUALITY CONTROL

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

- B. Owner will provide field inspection.

3.5 CLEANING

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

3.6 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

3.7 SCHEDULE - PAINT SYSTEMS: ALL MATERIALS ARE BASED ON SHERWIN WILLIAMS UNLESS NOTED OTHERWISE.

- A. Concrete Block:
 - 1. One coat Preprite Block Filler (B25) DFT- 8.0. (MPI #4)
 - 2. Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
- B. Concrete:
 - 1. One coat Preprite Masonry Primer (B28W300) @ 3.0 MDFT. (MPI #149)
 - 2. Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
- C. Steel and Metal - Steel access doors and frames, hollow metal doors and frames, all new removable mullions, stair railings, hollow metal Windows frames, existing painted fire extinguisher cabinets:
 - 1. One coat Pro Industrial Pro-Cryl Primer (B66-1300 Series) @ 1.9-3.8 MDFT.
 - 2. Two coats DTM Acrylic Semi-Gloss Coating (B66-200) @ 2.5-5.0 MDFTper coat.
- D. Gypsum Board: Finish surfaces exposed to view.
 - 1. All interior drywall gypsum board wall surfaces for a painted finish. (Spot prime all areas containing joint compound with primer first)
 - a. Walls and ceilings: One coat Pro Mar 200 Zero VOC Primer (B28) DFT- 1.0. (MPI #50).
 - b. Walls: Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
 - c. Ceilings: Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
- E. Plaster: Finish surfaces exposed to view.
 - 1. All interior plastered wall surfaces for a painted finish. (Spot prime all areas containing raw plaster with primer first)
 - a. Walls and ceilings: One coat Pro Mar 200 Zero VOC Primer (B28) DFT- 1.0. (MPI #50).
 - b. Walls: Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT
 - c. Ceilings: Two coats SuperPaint Air Purifying Technology (A86) @ 1.8 MDFT

3.8 SCHEDULE - PAINT SYSTEMS: ALL MATERIALS ARE BASED ON PPG UNLESS NOTED OTHERWISE.

- A. Concrete Block:
 - 1. One coat Speedhide Masonry Hi Fill Latex Block Filler, 6-15XI. (MPI #4)
 - 2. Two coats Copper Armor Interior Latex, 29-1510, Semi-Gloss.
- B. Concrete:
 - 1. One coat Perma-Crete Interior/Exterior Alkali Resistant Primer, 4-603XI Series. (MPI #3)
 - 2. Two coats Pure Performance Interior Latex, 9-510XI Series, Semi-Gloss. (MPI #147)

- C. Steel and Metal - Steel access doors and frames, hollow metal doors and frames, all new removable mullions, stair railings, hollow metal Windows frames, existing painted fire extinguisher cabinets:
 - 1. One coat Pitt-Tech Plus DTM Industrial Primer/Finish 4020.
 - 2. Two coats Pitt-Tech Plus EP DTM Acrylic, Semi-Gloss 90-1610 Series.
- D. Gypsum Board: Finish surfaces exposed to view.
 - 1. All interior drywall gypsum board wall surfaces for a painted finish. (Spot prime all joints and spots with primer first)
 - a. Walls and ceilings: Two coats Pure Performance Interior Latex Primer, 9-900.
 - b. Walls: Two coats Copper Armor Interior Latex, 29-1310, Eggshell. (MPI #144)
 - c. Ceilings: Two coats Copper Armor Interior Latex, 29-1310, Eggshell. (MPI #144)
 - d. Exception: Where topcoat is indicated or scheduled as white, provide UltraLast Interior, Eggshell.
- E. Plaster: Finish surfaces exposed to view.
 - 1. All interior plastered wall surfaces for a painted finish. (Spot prime all joints and spots with primer first)
 - a. Walls and ceilings: Two coats Pure Performance Interior Latex Primer, 9-900.
 - b. Walls: Two coats Copper Armor Interior Latex, 29-1310, Eggshell. (MPI #144)
 - c. Ceilings: Two coats Copper Armor Interior Latex, 29-1310, Eggshell. (MPI #144)
 - d. Exception: Where topcoat is indicated or scheduled as white, provide UltraLast Interior, Eggshell.

3.9 SCHEDULE

- A. Refer to Finish Key and Schedule on Drawings.

END OF SECTION

SECTION 10 14 23
PANEL SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Panel signage.

1.2 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's product literature for each type of panel sign, indicating styles, font, foreground and background colors, locations, and overall dimensions of each sign.
- C. Shop Drawings:
 - 1. Include dimensions, locations, elevations, materials, text and graphic layout, and schedules.
 - 2. Schedule: Provide information sufficient to completely define each panel sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - a. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
 - b. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
 - c. Submit for approval by Owner through Architect prior to fabrication.
- D. Samples: Submit one sample of each type of sign, of size similar to that required for project, indicating sign style, font, and method of attachment.
- E. Selection Samples: Where colors, materials, and finishes are not specified, submit two sets of color selection charts or chips.
- F. Verification Samples: Submit samples showing colors, materials, and finishes specified.
- G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.
- H. Manufacturer's qualification statement.
- I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements for additional provisions.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store under cover and elevated above grade.
- D. Store tape adhesive at normal room temperature.

1.6 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain minimum ambient temperature during and after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Panel Signage:
 - 1. ASI Sign Systems, Inc: www.asisignage.com
 - 2. ID Signsystems: www.idsignsystems.com.
 - 3. Takeform: www.takeform.net/#sle.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 REGULATORY REQUIREMENTS

- A. Accessibility Requirements: Comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most restrictive requirements.
- B. Surface burning characteristics: Maximum flame spread of 25 (Class A) when tested in accordance with ASTM E84.

2.3 PANEL SIGNAGE

- A. Panel Signage Type 1, 3, 4, 6, 11, 12, 13, 14, 15, 16, 28, 30, 31, & 33:
 - 1. Application: Room and door signs.
 - 2. Description: Flat signs co-molded media, tactile characters.
 - 3. Sign Size: As indicated on drawings.
 - 4. Total Thickness: 1/8 inch.
 - 5. Sign Edges: Bevelled.
 - 6. Color and Font, unless otherwise indicated:
 - a. Character Font: Helvetica, Arial, or other sans serif font.
 - b. Character Case: Upper case only.
 - c. Background Color: to be selected by Architect.
 - d. Character Color: Contrasting color.
 - 7. Material: One-piece injection molded polycarbonate plastic with raised letters and braille.
 - 8. Profile: Flat panel without frame.
 - a. Clear Cover, Type 1 & 4: For customer produced sign media, provide clear cover of polycarbonate plastic, glossy on back, nonglare on front.
 - 9. Tactile Letters: Raised 1/32 inch minimum.
 - 10. Braille: Grade II, ADA-compliant.

11. One-Sided Wall Mounting: Tape adhesive.
 12. Basis of Design Product:
 - a. ASI; InForm: www.asisignage.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Panel Signage Type 10:
1. Application: Recognition and donor panels signs.
 2. Description: Flat signs with etched metal panel media, tactile characters.
 3. Sign Size: As indicated on drawings.
 4. Total Thickness: 1/8 inch.
 5. Sign Edges: Squared.
 6. Color and Font, unless otherwise indicated:
 - a. Character Font: Helvetica, Arial, or other sans serif font.
 - b. Character Case: Upper and lower case (title case).
 - c. Background Color: to be selected by Architect.
 - d. Character Color: Contrasting color.
 7. Material: Etched metal.
 8. Profile: Flat panel without frame.
 9. Tactile Letters: Raised 1/32 inch minimum.
 10. Braille: Grade II, ADA-compliant.
 11. One-Sided Wall Mounting: Concealed screws.
 12. Basis of Design Product:
 - a. ASI; Recognition Signage: www.asisignage.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Panel Signage Type 2 & 8:
1. Application: Evacuation and Directory Maps signs.
 2. Description: Flat signs for customer-produced media, tactile characters.
 3. Sign Size: As indicated on drawings.
 4. Total Thickness: 1/8 inch.
 5. Sign Edges: Squared.
 6. Color and Font, unless otherwise indicated:
 - a. Character Font: Helvetica, Arial, or other sans serif font.
 - b. Character Case: Upper and lower case (title case).
 - c. Background Color: to be selected by Architect.
 - d. Character Color: Contrasting color.
 7. Profile: Flat panel without frame.
 - a. Clear Cover: For customer produced sign media, provide clear cover of polycarbonate plastic, glossy on back, nonglare on front.
 8. Tactile Letters: Raised 1/32 inch minimum.
 9. Braille: Grade II, ADA-compliant.
 10. One-Sided Wall Mounting: Tape adhesive.
 11. Basis of Design Products:
 - a. ASI; InForm: www.asisignage.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Panel Signage Type 9, 32, 34, 35, 36, 37, 38, 39, 41, & 42:
1. Application: Interior directional and information signs.
 2. Description: Flat signs co-molded media, tactile characters.
 3. Sign Size: As indicated on drawings.
 4. Total Thickness: 1/8 inch.
 5. Sign Edges: Bevelled.
 6. Color and Font, unless otherwise indicated:
 - a. Character Font: Helvetica, Arial, or other sans serif font.
 - b. Character Case: Upper and lower case (title case).
 - c. Background Color: to be selected by Architect.
 - d. Character Color: Contrasting color.

7. Material: Plastic panel with high temperature cured polyester paint letters and graphics.
8. Profile: Flat panel without frame.
9. Tactile Letters: Raised 1/32 inch minimum.
10. One-Sided Wall Mounting: Tape adhesive.
11. Basis of Design Products:
 - a. ASI; Messenger Interior: www.asisignage.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.4 SIGNAGE APPLICATIONS

- A. Room and Door Signs:
 1. Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
 2. Office Doors: Identify with the room numbers indicated on drawings; provide "window" section for replaceable occupant name.
 3. Service Rooms: Identify with room names and numbers indicated on drawings.
 4. Rest Rooms: Identify with pictograms, the names as indicated on room finish schedule located on drawings, room numbers indicated on the drawings, and braille.
- B. Interior Directional and Informational Panel Signs:
- C. Emergency Evacuation Map Panel Signs:
 1. Allow for one map per elevator lobby.
 2. Map content to be provided by Owner.
- D. Recognition/Donor Panels:
 1. Dimensions and number of name signs: As indicated on drawings.
 2. Provide all name signs whether engraved or not, for uniform overall appearance.

2.5 ACCESSORIES

- A. Concealed Screws: Noncorroding metal; stainless steel or chrome plated.
- B. Tape Adhesive: Double-sided tape, permanent adhesive.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Notify Architect if conditions are not suitable for installation of signs; do not proceed until conditions are satisfactory.

3.2 INSTALLATION

- A. Ensure new and existing substrate surfaces are suitably cleaned prior to installation to remove dust, dirt, and other contaminants that would adversely affect tape adhesive attachment.
- B. Install in accordance with manufacturer's instructions.
- C. Install with horizontal edges level.
- D. Locate panel signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.
- E. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

3.3 CLEANING, PROTECTION AND REPAIR

- A. Repair scratches and other damage which might have occurred during installation. Replace components where repairs were made but are still visible to the unaided eye from a distance of 5 feet interior and 10 feet exterior.
- B. Remove temporary coverings and protection to adjacent work areas. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance.
- C. Dispose of construction debris.

3.4 SCHEDULE

- A. Refer to Signage Schedule, Signage Type Schedule and Drawings for sizes, locations and layout of signage types, sign text copy and graphics.

END OF SECTION

SECTION 10 21 13.19
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Solid plastic toilet compartments.
- B. Urinal screens.

1.2 REFERENCE STANDARDS

- A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- B. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2019.
- C. ANSI A117.1 - America National Standard- Accessible and Usable Buildings and Facilities.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on panel construction, hardware, and accessories.
- C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall, floor, and ceiling supports, door swings.
- D. Samples: Submit two samples of partition panels, 4" by 4" inch in size illustrating panel finish, color, and sheen.
- E. Manufacturer's Installation Instructions: Indicate special procedures.

1.5 WARRANTY

- A. Manufacturer to supply a written warranty covering all components against breakage corrosion and delamination for a period of 1 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Solid Plastic Toilet Compartments:
 - 1. All American Metal Corp - AAMCO: www.allamericanmetal.com/#sle.
 - 2. ASI Global Partitions: www.asi-globalpartitions.com/#sle.
 - 3. Metpar Corp: www.metpar.com/#sle.
 - 4. Scranton Products (Santana/Comtec/Capital): www.scrantonproducts.com/#sle.
 - 5. Substitutions: Section 01 60 00 - Product Requirements.

2.2 PLASTIC TOILET COMPARTMENTS

- A. Solid Plastic Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance with NFPA 286; floor-mounted headrail-braced.
 - 1. Color: As indicated on drawings.
- B. Doors:
 - 1. Thickness: 1 inch.
 - 2. Width: 24 inch.
 - 3. Width for Handicapped Use: 36 inch, out-swinging.
 - 4. Height: 55 inch.
- C. Panels:
 - 1. Thickness: 1 inch.
 - 2. Height: 55 inch.
- D. Pilasters:
 - 1. Thickness: 1 inch.
 - 2. Width: As required to fit space; minimum 3 inch.
- E. Screens: Without doors; to match compartments; mounted to wall with two panel brackets.
 - 1. Panel bottom not more than 12" above finished floor.
 - 2. Panel top not less than 60" above finished floor.
 - 3. Panel depth not less than 18" or less than 6" beyond the outermost front lip of urinal, whichever is greater.

2.3 ACCESSORIES

- A. Pilaster Shoes: Stainless steel, satin finish, 3 inches high; concealing floor fastenings.
 - 1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
- B. Head Rails: Extruded aluminum, anti-grip profile.
- C. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
 - 1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated on shop drawings.
- B. Verify correct spacing of and between plumbing fixtures.
- C. Verify correct location of built-in framing, anchorage, and bracing.

3.2 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

- E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.3 TOLERANCES

- A. Maximum Variation From True Position: 1/4 inch.
- B. Maximum Variation From Plumb: 1/8 inch.

3.4 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.
- C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Solid surface for wall cap.

1.2 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.
- D. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Pre-installation Meeting: Convene a pre-installation meeting one week before starting work of this section; require attendance by all affected installers.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Specimen warranty.
- C. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- D. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- F. Installation Instructions: Manufacturer's installation instructions and recommendations.
- G. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.
- B. Quality Certification:

1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
2. Provide designated labels on shop drawings as required by certification program.
3. Provide designated labels on installed products as required by certification program.
4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 FIELD CONDITIONS

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

PART 2 PRODUCTS

2.1 COUNTERTOPS

- A. Quality Standard: Premium Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Solid Surfacing Sills: Solid surfacing sheet or plastic resin casting over continuous substrate.
 1. Flat Sheet Thickness: 1/2 inch, minimum.
 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Manufacturers:
 - 1) Dupont: www.corian.com/#sle.
 - 2) Formica Corporation: www.formica.com/#sle.
 - 3) Wilsonart: www.wilsonart.com/#sle.
 3. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
 4. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
 5. Color and Pattern: As indicated on drawings.
 6. Exposed Edge Treatment: Built up to minimum 1 1/2 inch thick; square edge.
 7. Fabricate in accordance with manufacturer's standard requirements.

2.2 MATERIALS

- A. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- B. Joint Sealant: Mildew-resistant silicone sealant, clear.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Securely attach sill to top of partial walls using adhesive. Make flat surfaces level; shim where required.

3.4 TOLERANCES

- A. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
- B. Field Joints: 1/8 inch wide, maximum.

3.5 CLEANING

- A. Clean solid surfaces surfaces thoroughly.

3.6 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

SECTION 12 48 13
ENTRANCE FLOOR MATS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Carpet mat.
- B. Recessed mat frames.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete

1.3 REFERENCE STANDARDS

- A. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine; 2017.
- B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2019a, with Editorial Revision (2020).
- C. CRI 104 - Standard for Installation of Commercial Carpet; 2015.
- D. ANSI/NFSI B101 -Operating Procedures; 2009

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Provide product data for each type of floor mat and frame specified including manufacturer's specifications and installation instructions.
- C. Shop drawings: provide sufficient detail showing layout of mat and frame specified including direction of traffic, spline locations, profiles, anchors and accessories.
- D. Product Data: Provide data indicating properties of walk-off surface, component dimensions and recessed frame characteristics.
- E. Shop Drawings: Indicate dimensions and details for recessed frame.
 - 1. For recessed frames located within a dimensionally restricted area, show dimensions of space within which the frame will be installed.
- F. Samples for verification purposes: Submit a sample of floor mat and frame members with selected tread insert showing each type of color for exposed floor mat, frame and accessories required.
- G. Maintenance Data: Include cleaning instructions and stain removal procedures.

1.5 QUALITY ASSURANCE

- A. Single source responsibility: Obtain floor mats and frames from one source of a single manufacturer.
- B. Flammability in accordance with ASTM E648, Class I, Critical Radiant Flux: minimum 0.45 watts/m².

- C. Slip resistance in accordance with ASTM D2047, Coefficient of Friction: minimum 0.60 for accessible routes.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Deliver materials to the project site ready for use in unopened original factory packaging clearly labeled to identify manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Entrance Floor Grilles and Gratings:
 - 1. Construction Specialties, Inc; Entrance Grids: www.c-sgroup.com/#sle.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Floor Mats:
 - 1. Construction Specialties, Inc: www.c-sgroup.com/entrance-flooring
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 ENTRANCE FLOOR GRILLES AND GRATINGS

- A. Entrance Floor Grilles: Recessed extruded aluminum grille assembly with nominal 1 inch wide tread strips running perpendicular to traffic flow, slots between treads, and perimeter frame forming sides of recess; grille hinged for access to recess.
 - 1. Recess Depth: 3/4 inches.
 - 2. Tread Surfaces: Alternating serrated anodized aluminum and nylon carpet.
 - 3. Colors: To be selected by Architect from manufacturer's standard selection.
 - 4. Length in Direction of Traffic Flow: 72 inches.
 - 5. Width Perpendicular to Traffic Flow: Full width of entrance door opening.
 - 6. Frame: Anodized aluminum for embedding in concrete; minimal exposed trim; stud or hook concrete anchors.
- B. Mounting: Top of non-resilient members level with adjacent floor.
- C. Standard rolling load performance is 600 pounds/wheel with large loading requirements as specified (load applied to a solid 5" x 2" wide polyurethane wheel, 1000 passes without damage).
- D. Vibration Resistant Fabrication: Welded, riveted, or bolted members; no snap or friction connections.

2.3 FLOOR MATS

- A. Carpet Mat: Cut nylon pile permanently bonded to vinyl backing; see drawings for custom shape, 1-inch black matching vinyl border on all edges.
 - 1. Colors: As indicated on drawings.

2.4 FABRICATION

- A. Fabricate mats in single unit sizes; fabricate multiple mats where indicated on drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that floor opening for mats are ready to receive work.

3.2 PREPARATION

- A. Manufacturer shall offer assistance and guidance to provide a template of irregular shaped mat assemblies to ensure a proper installation.
- B. Check actual openings for mats by accurate field measurements before fabrication. Record actual measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.
- C. Vacuum clean floor recess.

3.3 INSTALLATION

- A. Install the work of this section in strict accordance with the manufacturer's recommendations.
- B. Set mat at height recommended by manufacture for most effective cleaning action.
- C. Coordinate top of mat surfaces with bottom of doors that swing across to provide ample clearance between door and mat.
- D. Delay installation of floor mats until time of substantial completion of project.

3.4 TOLERANCES

- A. Maximum Gap Formed at Recessed Frame From Mat Size: 1/4 inch.

3.5 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Maintain protection until construction traffic has ended.

3.6 CLEANING

- A. It is important to the life cycle of the entrance mat that a maintenance schedule be developed which includes regular vacuuming and extraction that correctly matches the amount of traffic the mat incurs.

END OF SECTION

SECTION 14 26 00
LIMITED-USE/LIMITED-APPLICATION ELEVATORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Limited-use/limited-application (LULA) elevators.
- B. Maintenance contract.

1.2 RELATED REQUIREMENTS

- A. Section 26 05 33.13 - Conduit for Electrical Systems.
- B. Section 26 05 83 - Wiring Connections.

1.3 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2019, with Errata (2021).
- C. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks Includes Inspection Procedures for Electric Traction and Winding Drum Elevators, Hydraulic Elevators, Inclined Elevators, Limited-Use/Limited-Application Elevators, Private Residence Elevators, Escalators, Moving Walks, and Dumbwaiters; 2020.
- D. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2022).
- E. ITS (DIR) - Directory of Listed Products; Current Edition.
- F. NEMA MG 1 - Motors and Generators; 2021.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- I. UL (DIR) - Online Certifications Directory; Current Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate work with other installers to provide conduits necessary for installation of wiring including, but not limited to:
 - a. LULA elevator equipment devices remote from machine room or hoistway.
 - 2. Coordinate work with other installers for equipment provisions necessary for proper LULA elevator operation, including but not limited to:
 - a. Shunt trip devices for automatic disconnection of LULA elevator power prior to fire suppression system activation.
 - b. Overcurrent protection devices selected to achieve required selective coordination.
- B. Preinstallation Meeting: Convene meeting at least one week prior to start of this work.
 - 1. Review schedule of installation, proper procedures and conditions, and coordination with related work.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Include data on material descriptions, construction details, component dimensions and profiles, and finishes; include data on rated capacities, electrical and operating characteristics, and necessary accessories.
- C. Designer's qualification statement.
- D. Manufacturer's qualification statement.
- E. Installer's qualification statement.
- F. Testing agency's qualification statement.
- G. Executed warranty.
- H. Maintenance Contract: Submit proposal to Owner for maintenance contract agreement in accordance with ASME A17.1 and requirements as indicated.
 - 1. Indicate in proposal the services, obligations, conditions, and terms for agreement period and for renewal options.
- I. Operation and Maintenance Data:
 - 1. Parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.
 - 2. Operation and maintenance manual.
 - 3. Schematic drawings of equipment and hydraulic piping, and wiring diagrams of installed electrical equipment with list of corresponding symbols to identify markings on machine room and hoistway apparatus.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Trained personnel and supervisor on staff of LULA elevator equipment manufacturer.
- B. Installer Qualifications: Company specializing in performing the work of this section and approved by LULA elevator equipment manufacturer.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of types specified in this section.
- D. Products Requiring Fire Resistance Rating: Listed and classified by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
- E. Products Requiring Electrical Connection: Listed and classified by UL (DIR) or testing agency acceptable to authorities having jurisdiction as suitable for the purpose indicated.

1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for LULA elevator operating equipment and devices commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Limited-Use/Limited-Application (LULA) Elevators:
 - 1. Garaventa Lift; Genesis Enclosure Vertical Platform Lift - Hydraulic Drive : www.garaventlift.com/#sle.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with ASME A17.1, applicable local codes, and authorities having jurisdiction (AHJ).
- B. Accessibility Requirements: Comply with ADA Standards.
- C. Perform welding of steel in accordance with AWS D1.1/D1.1M.
- D. Fabricate and install door and frame protective assemblies in accordance with NFPA 80 and comply with requirements of authorities having jurisdiction (AHJ).
- E. Perform electrical work in accordance with NFPA 70.

2.3 LIMITED-USE/LIMITED-APPLICATION (LULA) ELEVATORS

- A. LULA Elevator System: Manufacturer's standard LULA elevator components, unless otherwise indicated, as required for complete system.
 - 1. Rated Load Capacity: 750 lb, nominal.
 - 2. Rated Speed: 17 fpm, nominal.
- B. Drive System:
 - 1. Hydraulic: Holeless, beside the car; roped hydraulic or direct-acting hydraulic machine.
- C. Pump Units: Submersible induction motor, positive-displacement type unit, suspended within oil tank from vibration isolation mounts.
 - 1. Motor with solid-state starting.
- D. Provide LULA elevator manufacturer's standard fire-resistant hydraulic fluid with necessary additives to prevent oxidation of fluid, corrosion of cylinder and other components, as well as other adverse effects.
- E. Provide necessary concrete and masonry inserts and other anchoring devices for installation of guide rails, machinery, and other LULA elevator components.
- F. Operation Control System: Provide manufacturer's standard microprocessor operation system for the following:
 - 1. Single Automatic Pushbutton Operation Control.
- G. Standby Power Operation: When standby power is activated, car is returned to a designated floor and left with doors open. Car may be manually put into service on standby power, either for return, or for regular operation, by switches in control panel located at main lobby. When manual operation is used, automatic operation is shut-down.
- H. Provide automatic operation of lights and ventilation fans in accordance with ASME A17.1.
- I. Emergency Operation: Provide Phase I emergency recall operation as required by local authorities having jurisdiction.

- J. Keyswitch Operation: Provide push-buttons that are activated and deactivated by security keyswitch; key is removable only in deactivated position.
- K. Elevator Equipment:
 - 1. Motors, Hydraulic Equipment, Controllers, Controls, Buttons, Wiring, Devices, and Indicators: Comply with NFPA 70; see Section 26 05 83.
 - 2. Guide Rails, Cables, Buffers, Attachment Brackets and Anchors: Comply with design criteria for components in accordance with safety code requirements of ASME A17.1.
- L. Electrical Equipment:
 - 1. Motors: NEMA MG 1.
 - 2. Boxes, Conduit, Wiring, and Devices: Comply with NFPA 70; see Sections 26 05 33.13 and 26 05 83.

2.4 OPERATION CONTROL

- A. Single Automatic Pushbutton Operation Control: Applies to car in single elevator shaft.
 - 1. Refer to description provided in ASME A17.1.
 - 2. Set system operation so that momentary pressure of landing button dispatches car from other landing to that landing.
 - 3. Allow call registered by momentary pressure of landing button at any time to remain registered until car stops in response to that landing call.
 - 4. If LULA elevator car door is not opened within predetermined period of time after car has stopped at terminal landing, allow car to respond to call registered from other landing.

2.5 HOISTWAY

- A. Hoistway Size: As indicated on drawings and in compliance with manufacturer's requirements.
- B. Interior Car Clearance: As indicated on drawings and in compliance with manufacturer's requirements.
- C. LULA Elevator Pit Depth:
 - 1. Hydraulic Drive: At least 14 inches deep.
- D. Overhead Clearance at Top Floor:
 - 1. Hydraulic Drive: 135 inches.
- E. Number of Hoistway Openings: As indicated on drawings.

2.6 CAR AND HOISTWAY ENTRANCES

- A. Freight, LULA Elevator:
 - 1. Hoistway Fire Rating: As indicated on drawings.
 - 2. Car Door Fire Rating: As indicated on drawings.
 - 3. Door Width: As indicated on drawings.
 - 4. Door Height: As indicated on drawings.
 - 5. Provide both door and frame for hoistway and car entrances with matching sizes, complete with hardware, track systems, sills, and accessories.
- B. Finish and Material: Meeting manufacturer's standards, but not less than the following:
- C. Hoistway and Car Doors:
 - 1. Finish and Material: Meeting manufacturer's standards, but not less than the following:
- D. Gasketing: Provide acoustic type gasketing at hoistway doors and frames to eliminate audible noise due to car activities in hoistway, and air pressure differential between hoistway and landing floors.

PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

- A. Verify existing conditions, and that preliminary work including hoistway, pit, landings, and machine room space have been properly prepared before starting work.
- B. Verify that environment of hoistway and machine room is designed to maintain temperature between 50 degrees F and 90 degrees F with noncondensing humidity between 5 and 90 percent.
- C. Verify hoistway shaft and openings are of correct size and within tolerance.
- D. Verify location and size of machine foundation and position of machine foundation bolts.
- E. Verify that electrical power is available and of correct characteristics.
- F. Notify Architect of unsatisfactory conditions prior to starting work.

3.2 PREPARATION

- A. Thoroughly clean surfaces prior to installation.
- B. Prepare surfaces using manufacturer's recommended methods to achieve best result for each of the project's substrate conditions.
- C. Arrange for temporary electrical power for installation work and testing of LULA elevator components.

3.3 INSTALLATION

- A. Coordinate this work with installation of hoistway wall construction.
- B. Install system components, and connect equipment to building utilities.
- C. Provide conduit, electrical boxes, wiring, and accessories; see Sections 26 05 33.13 and 26 05 83.
- D. Mount machines, motors, and pumps on vibration and acoustic isolators.
 - 1. Place on structural supports and bearing plates.
 - 2. Securely fasten to building supports.
 - 3. Prevent lateral displacement.
- E. Install hoistway, LULA elevator equipment, and components in accordance with approved shop drawings.
- F. Install guide rails to allow for thermal expansion and contraction movement of guide rails.
- G. Accurately machine and align guide rails, forming smooth joints with machined splice plates.
- H. Install hoistway door sills, frames, and headers in hoistway walls; grout sills in place, set hoistway floor entrances in alignment with car openings, and align plumb with hoistway.
- I. Structural Metal Surfaces: Clean surfaces of rust, oil or grease; wipe clean with solvent; prime two coats.
- J. Wood Surfaces not Exposed to Public View: Finish with one coat primer; one coat enamel.
- K. Adjust equipment for smooth and quiet operation.

3.4 TOLERANCES

- A. Guide Rail Alignment: Plumb and parallel to each other in accordance with ASME A17.1 and ASME A17.2.
- B. Car Movement on Aligned Guide Rails: Adjust for smooth movement, without any excessive lateral or oscillating movement or vibration.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Testing and inspection by regulatory agencies certified in accordance with ASME QEI-1 to be performed at their discretion.
- C. Operational Tests:
 - 1. Perform operational tests in the presence of Owner and Architect.
 - 2. At an agreed time, and the building occupied with normal building traffic, conduct tests to verify performance.
 - a. Furnish event recording of each landing call registration, time initiated, and response time throughout entire working day.

3.6 ADJUSTING

- A. Adjust for smooth acceleration and deceleration of car to minimize passenger discomfort.
- B. Adjust with automatic floor leveling feature at each floor landing to reach 1/4 inch maximum from flush with sill.

3.7 CLEANING

- A. Remove protective coverings from finished surfaces.
- B. Clean surfaces and components in accordance with manufacturers written instructions.

3.8 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals for additional submittals.
- B. Demonstration: Demonstrate proper operation of system equipment to Owner's designated personnel.
 - 1. Use operation and maintenance data as reference during demonstration.
 - 2. Briefly describe function, operation, cleaning and maintenance of each component.
- C. Training: Train Owner's personnel on cleaning, operation, and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.

3.9 PROTECTION

- A. Do not permit construction traffic within car after cleaning.
- B. Protect installed products until Date of Substantial Completion.
- C. Touch-up, repair, or replace damaged products and materials prior to Date of Substantial Completion.

3.10 MAINTENANCE

- A. Maintenance Contract: Provide for LULA elevator system and components in accordance with ASME A17.1 and requirements as indicated for one year from Date of Substantial Completion.
- B. Perform maintenance contract services using qualified personnel under the supervision and direct employ of the LULA elevator manufacturer or original installer.
- C. Include systematic examination, adjustment, and lubrication of LULA elevator equipment.
- D. Perform work without removing cars from use during peak traffic periods.

END OF SECTION

SECTION 14 28 19
ELEVATOR EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide all labor, equipment and materials for the complete modernization of the elevator systems detailed herein.

1.2 RELATED REQUIREMENTS

- A. Section 09 65 00 - Resilient Flooring: Floor finish in car.
- B. Section 09 91 23 - Interior Painting: Field painting of hoistway entrance doors and frames.
- C. Section 26 05 00 - Common Work Results For Electrical: Electrical power for elevator installation and testing.

1.3 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2016.
- C. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks Includes Inspection Procedures for Electric Traction and Winding Drum Elevators, Hydraulic Elevators, Inclined Elevators, Limited-Use/Limited-Application Elevators, Private Residence Elevators, Escalators, Moving Walks, and Dumbwaiters; 2020.
- D. ASME QE1-1 - Standard for the Qualification of Elevator Inspectors; 2018.
- E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2021a.
- F. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2022.
- G. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2017.
- H. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- I. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- J. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- K. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- L. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- M. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- N. NEMA MG 1 - Motors and Generators; 2018.

- O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2019.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Prior to submission of cost proposal, the contractor is responsible to examine, measure, and otherwise determine that the work can be performed as specified. Any discrepancies or ambiguities found in the specifications shall be reported to the owner, in writing, no less than seven (7) days prior to bid for resolution. Submission of discrepancies in writing will be accepted in writing via email, facsimile, or mail. All requests will be answered and copied to all interested vendors.

1.5 SUBMITTALS

- A. Prior to commencement of fabrication, submit details of proposed replacement items and finish samples for selection for approval. No fabrication will proceed without approval.
- B. Product Data: Submit data on following items:
 - 1. Signal and operating fixtures, operating panels, and indicators.
 - 2. Car layout, and components.
 - 3. Car and hoistway door and frame details.
 - 4. Electrical characteristics and connection requirements.
- C. Shop Drawings: Include appropriate plans, elevations, sections, diagrams, and details on following items:
 - 1. Elevator Equipment and Machines: Size and location of driving machines, power units, controllers, governors, and other components.
 - 2. Locations in hoistway and machine room of traveling cables and connections for car lighting and telephone.
 - 3. Location and sizes of hoistway and car doors and frames.
 - 4. Electrical characteristics and connection requirements.
 - 5. Indicate arrangement of elevator equipment and allow for clear passage of equipment through access openings.
- D. Samples: Submit samples illustrating car interior finishes, car and hoistway door and frame finishes, and handrail material and finish in the form of cut sheets or finish color selection brochures.
- E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.
- B. Installer Qualifications: Trained personnel and supervisor on staff of elevator equipment manufacturer.
 - 1. The Contractors Management, Field Management and Field Leadership Staff must have been performing elevator maintenance, service repairs and modernization for a minimum of five years.
- C. Products Requiring Fire Resistance Rating: Listed and classified by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
- D. Products Requiring Electrical Connection: Listed and classified by UL (DIR) or testing agency acceptable to authorities having jurisdiction as suitable for the purpose indicated in construction documents.

1.7 MAINTENANCE

- A. Maintenance during use, including cleaning, lubricating and adjusting equipment and components for proper elevator operation shall be performed only by the elevator manufacturer. Cost for maintenance shall be covered under modernization contract.
- B. Submit parts catalog and show evidence of local parts inventory with complete list of recommended spare parts. Parts shall be produced by manufacturer of original equipment.
- C. Manufacturer shall have a service office and full-time service personnel within 120-mile radius of the project site.
- D. The Elevator Contractor shall furnish preventative maintenance, on all equipment, described herein, for a period of twelve (12) months commencing on the date of final acceptance of the entire elevator system. The maintenance shall include systematic examination, adjustment and lubrication of all elevator and related equipment. The Elevator Contractor shall repair or replace electrical and mechanical part whenever required and shall use only genuine, standard parts produced by the Manufacturer of the equipment installed.
- E. All maintenance work shall be performed by competent personnel under the supervision and a direct employee of the Elevator Contractor.
- F. Maintenance work, including emergency call back repair service, shall be performed by trained employees of the elevator contractor during regular working hours

1.8 CODE REQUIREMENTS

- A. Work covered by these specifications is to be done in full accordance with Federal, State and City codes, ordinances and elevator safety orders that are in effect at the time of execution of the contract.
- B. All of the requirements of the State of New York are to be fulfilled by the contractor and subcontractors. The entire elevator plant, including all elevator equipment and work, shall be in accordance with the latest edition and supplements of the American National Standard Safety Codes for elevators, dumbwaiters, escalators, and moving walks, ASME A17.1, current applicable Building Code, NFPA 70, and ADA Standards.

1.9 OWNER'S MANUALS AND WIRING DIAGRAMS

- A. The following shall be provided upon completion and prior to Final Acceptance of the Installation:
 - 1. Drawings submitted.
 - 2. Two (2) complete sets of Wiring Diagrams for the elevator submitted to the Owner.
 - 3. One (1) complete set of Wiring Diagrams to be left in the elevator equipment room for use by maintenance personnel.
 - 4. Provide all instruments, specialty tools, and equipment necessary for proper maintenance and service of the elevator. These should also include ALL programming / installation tools and manuals.
- B. Ownership of all above noted instruments, manuals, tools, and/or equipment will convey to the Owner upon completion and Final acceptance of the elevator and will be retained on site in a location to be designated by the Owner.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials, components and equipment in manufacturer's protective packaging. Store materials in a dry protected area provided by building owner. Protect and handle materials in

accordance with manufacturer's recommendations to prevent damage, soiling, or deterioration.

1.11 WARRANTY

- A. The Elevator Contractor shall warrant that the material and workmanship of the equipment installed by them under these specifications will be first-class in every respect and will make good any defects except those due to improper use, which may develop within twelve months from the Date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Other Acceptable Manufacturers: KoneInc. www.kone.us.com
 - 1. Otis Elevator: www.otis.com/#sle.
 - 2. Schindler Elevator Corporation: www.schindler.com/#sle
 - 3. ThyssenKrupp Elevator: www.thyssenkruppelevator.com/#sle

NO PROPRIETARY SOFTWARE / HARDWARE EQUIPMENT SHALL BE INSTALLED

2.2 MATERIALS:

- A. Steel:
 - 1. Shapes and bars: ASTM A36/A36M.
 - 2. Sheet: ASTM A1008/A1008M, cold-rolled steel sheet, commercial quality, Class 1, matte finish, stretcher leveled.
 - 3. Finish: Factory-applied baked enamel.
- B. Stainless steel:
 - 1. Shapes and bars: ASTM A276/A276M, Type 300 (18-8).
 - 2. Tubing: ASTM A269/A269M, Type 300 (18-8).
- C. Aluminum:
 - 1. Sheet and plate: ASTM B209, alloy 6063-T52.
 - 2. Extrusions: ASTM B221, alloy 6063-T52.
- D. Plastic laminate:
 - 1. Decorative high-pressure type, complying with NEMA LD 3, Type GP-50 General Purpose Grade, nominal 0.050" thickness.

2.3 SYSTEM OPERATING FEATURES

- A. Duty
 - 1. The present capacity and speed will be retained:
- B. Travel
 - 1. The present travel and rise will be retained.
- C. Stops and Openings
 - 1. The present stops and openings will be retained:
- D. Automatic Self-Leveling
 - 1. The elevator shall be provided with automatic self-leveling that shall typically bring the elevator car level with the floor landings +/-1/4" regardless of load or direction of travel.
- E. Operation: One Car

1. Operation shall be automatic by means of the car and landing buttons. Stops registered by momentary actuation of the car or landing buttons shall be made in the order in which the landings are reached in each direction of travel after the buttons have been actuated. All stops shall be subject to the respective car or landing button being actuated sufficiently in advance of the arrival of the car at that landing to enable the stop to be made. The direction of travel for an idle car shall be established by the first car or landing button actuated.
 2. Landing calls shall be answered while the car is traveling in the up direction and "DOWN" landing calls shall be answered while the car is traveling down. The car shall reverse after the uppermost or lowermost car or landing call has been answered, then proceed to answer car calls and landing calls registered in the opposite direction of travel.
 3. If the car without registered calls arrives at a floor where both up and down hall calls are registered, it shall initially respond to the hall call in the direction that the car was traveling. If no car call or hall call is registered for further travel in that direction, the car shall close its doors and immediately reopen them in response to the hall call in the opposite directions. Direction lanterns, if furnished, shall indicate the change of direction when the doors reopen.
 4. An independent service switch shall be provided in the car operating panel which, when actuated, shall cancel previously registered car calls, disconnect the elevator from the hall buttons and allow operation from the car buttons only.
- F. Firefighters' Emergency Operation (FEO)
1. Special Emergency Service operation shall be provided in compliance with the latest applicable revision of the ASME A17.1 Code.
 2. Firefighters' Emergency Operation Phase I to return the elevator non-stop to a designated floor shall be initiated by an elevator smoke detector system or a key switch provided in a lobby fixture.
 3. The contractor shall provide contacts on the elevator controller to receive signals from the smoke detector system.
 4. A FEO cabinet shall be installed in the Car Operating Panel with a key switch for in-car control of the elevator when on Phase II of FEO.
 5. If the elevator is on independent service when the elevator is recalled on Phase I operation, a buzzer shall sound in the car and a jewel shall be illuminated, subject to applicable codes.

2.4 ELEVATOR MODERNIZATION EQUIPMENT

- A. Controller
1. A microprocessor-based control system shall be provided to perform all the functions of safe elevator motion and elevator door control. This shall include all the hardware required to connect, transfer and interrupt power, and protect the motor against overloading.
 - a. 24 VDC signal voltage.
 - b. Auto light & fan feature.
 - c. Car Independent Service.
 - d. Car Traveling Lantern circuitry.
 - e. Door bypass operation.
 - f. Electronic door detector interface.
 - g. Hoistway access and enable.
 2. The controller cabinet containing memory equipment shall be properly shielded from line pollution. The microcomputer system shall be designed to accept reprogramming with minimum system downtime.
 3. Real-time, cloud-based predictive maintenance capabilities.
 4. Battery Lowering in controller:
 - a. Provide an Emergency Return Unit (ERU) providing auxiliary power to the hydraulic elevator. In the event of a primary power failure or a single-phase condition, the ERU

- is designed to automatically return the elevator to its lowest landing at normal speed and allow all passengers to exit safely.
- b. Four to six seconds after a power failure has been sensed, an electronic timer in the ERU is designed to turn on an inverter (converting DC battery power into elevator operating voltages). Six seconds later, the device is designed to send a signal to the microprocessor to disengage the hall and car floor buttons, close the door(s), and open the valve to return the car to the lowest landing at normal speed.
 - c. When the car reaches the lowest landing, the ERU is designed to open the door(s) for a preset time. The device is also designed to allow the DOOR OPEN button to continue to operate normally to allow passengers to exit safely. After all passengers have exited, the car remains parked with the door(s) closed. To preserve battery life, the ERU is designed to turn off after four minutes.
 - d. If all elevator controls are in normal position, the elevator will be able to resume normal operation when building power is restored. Once main power has returned, it takes from six to 24 hours for the batteries to become fully charged, depending on the amount of power consumed in performing an ERU operation.
5. Solid state starter: A new solid-state starter will be provided to control the motor starting and limit the in-rush current. The new starter will have built in protection for overload conditions, reverse phase, loss of phase, and shortened SCR. It will be of the same power requirement and starting configuration as presently exists.
 6. Viscosity control.
- B. Power Supply
1. The present power supply will be retained.
- C. Power Unit:
1. The existing power unit shall be replaced with a new submersible power unit. The new power unit consists of a positive displacement pump, motor, integral 4-coil control valve, oil tank and muffler. The pump and motor are submerged and are mounted to the tank with rubber isolators to reduce vibration and noise. The pump and motor are externally mounted and are belt driven. A muffler is provided to dissipate pulsations and noise from the flow of hydraulic fluid. The valve consists of up, up leveling, down and down leveling controls along with manual lowering and a pressure relief valve.
- D. Car & Cab Equipment:
1. Car Equipment:
 - a. Toe Guard.
 - b. Fan: Two-speed.
 - c. Car top exit switch.
 2. Cab Equipment:
 - a. Car door.
 - b. Enclosure.
 3. Door Equipment:
 - a. Hoistway doors with Gibs & Escutcheons as needed - Front
 - b. Front hoistway door equipment, complete:
 - 1) Tracks & hangers - The existing tracks, hangers, rollers and interlocks shall be replaced. A thorough examination will be made of all mechanisms. All replacement components will be the original manufacture replacement parts or equal. Components will be cleaned, inspected and adjusted as necessary.
 - 2) Interlocks & pickups - interlock / pickup assemblies for existing Dover operators including closers - Front.
 - 3) Reel closers.
 - c. Door Operator with complete carside equipment (Front):
 - 1) A new closed loop door operator shall be provided. Doors on the car and at the hoistway entrances shall be power operated by means of a closed loop door operator mounted on top of the car. The door operator is a closed-loop system designed to provide consistent door performance despite changes in

temperature or wind and despite the presence of minor debris in the door track. The system continuously monitors door speed and position and adjusts them to match the predefined profile. Door operation shall be automatic at each landing, with door opening initiated as the car arrives at the landing. Closing will take place after an adjustable time interval expires. An electric car door contact shall prevent the elevator from operating unless the car door is in the closed position. Door close shall be arranged to start after a minimal time, consistent with disabled persons' requirements. Doors shall be arranged to remain open for an adjustable time period sufficient to meet ADA requirements. Elevator cars' door-open time intervals, when the car is at a landing, shall be adjustable independently for the cars' responses to car and hall calls.

- d. Door Protection Device
 - 1) A solid state infrared passenger protection system shall be installed on the car door. The system shall continuously scan for interrupted beams. If any beam in the curtain is interrupted, the system will reopen the elevator door instantly. The systems infrared beams will also detect approaching objects within the elevator entrance which reduces potential for damage to elevator doors.
 - e. Door Restrictors
 - 1) Provide new code compliant restrictors.
 - f. Elevator Doors and frames on each floor shall be primed and painted, color to be determined.
- E. Hoistway Equipment:
- 1. HN Boxes (per each (2) cars, grouped).
 - 2. Steel tape with mounting hardware, selector and magnets (terminal limits included)
 - 3. Controller field friendly wiring package including:
 - a. Single travelling cable.
 - b. Hoistway wiring.
 - c. Interlock wiring.
 - d. Interlock connectors.
 - e. Serial wiring.
 - 4. Hoistway duct kit.
- F. Pit Equipment:
- 1. Pit Switch: An emergency pit stop switch shall be located in the pit accessible from the pit access door.
 - 2. Shutoff valve kit.
 - 3. Pit Ladder.

2.5 ELEVATOR FIXTURES AND AESTHETICS

- A. Car Operating Panel
- 1. Provide a new applied Car Operating Panel containing all push buttons, key switches, and message indicators for elevator operation. The car operating panel shall have a satin stainless steel finish. It shall contain a bank of round satin stainless steel, LED illuminated mechanical buttons. Flush mounted to the panel and marked to correspond to the landings served.
 - 2. The car operating panel shall be equipped with the following features:
 - a. Raised markings and Braille to the left-hand side of each push-button.
 - b. Digital Car Position Indicator at the top of and integral to the car operating panel.
 - c. Door open and door close buttons.
 - d. Inspection Station.
 - e. Hoistway Access switches or Lunar Key Access as required by code.
 - f. Emergency Communications:
 - 1) Comply with the requirements of ASME A17.1.

- 2) Provide two-way hands free communications between the car and a location inside the building, switching over to another location if the call is unanswered, where authorized personnel are available who can take the appropriate action.
 - 3) Communications system shall support both verbal and non-verbal communication, activated by push button, and shall be located in accordance with current ADA requirements. Indication shall be given to acknowledge that communications with authorized personnel have been established.
 - 4) Operating instructions shall be incorporated or posted adjacent to the activation push button.
 - 5) Provide a means to display video to observe passengers at any location on the car floor to authorized personnel for entrapment assessment.
 - 6) Emergency communications systems shall automatically transfer to an auxiliary power supply if normal building power fails.
 - g. Landing Passing Signal: A chime bell shall sound in the car to signal that the car is either stopping at or passing a floor served by the elevator.
 - h. An emergency power unit employing a 12-volt sealed rechargeable battery and a totally static circuit shall be provided within the car operating panel. The light shall illuminate the elevator car and provide current to the alarm bell in the event of normal power failure. The equipment shall comply with the requirements of the latest revision of the ASME A17.1 Code.
- B. Hall Buttons
1. Provide new stainless-steel hall buttons and faceplates at each landing with a single button at each terminal landing. Faceplates shall be surface mounted to wall.
 2. A call shall be registered by momentary pressure of a landing button. The button shall become illuminated and remain illuminated until the call is answered. All buttons to be long life LED illumination.
- C. In Car Lantern and Chime
1. Install in the car entrance, a new car lantern with chime indicating directional lantern visible from the corridor. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound.
- D. Cab Interiors
1. Renovate the interior of the elevator which shall include the following:
 - a. New cab interior panels – The existing elevators shall have the existing panels removed to accommodate the Interiors Package. This shall include a modular horizontal panel system that spans the full width of the wall sections. Reveals shall be installed in the corners and against the return and strike jamb portions of the interior. Panels shall be finished in plastic laminate as selected from standard laminate selections. The base shall be finished in plastic laminate. Furnish a one-eighth inch satin stainless steel inlay in the horizontal reveals between each panel.
 - b. Ceiling: New frame ceiling with LED lighting shall be furnished.
 - c. Handrail: New satin stainless-steel handrails shall be mounted to the new interior panels on the rear wall and side walls in accordance with ADA requirements and local governing codes.
 - d. Contractor to remove existing floor covering and provide new VCT flooring. See Section 09 65 00 - Resilient Flooring for requirements.
- E. Emergency Lighting
1. Provide as required by code.

2.6 REMOTE SERVICES

A. Remote Services

1. A microprocessor system that continuously monitors the Unit(s) on a 24-hour per day, year-round basis will be provided. The system will notify a dispatching center that the elevator is inoperative by sending a message via telephone line. This makes it possible to have a mechanic dispatched rapidly in response to such a message.
2. The monitoring system will collect data on the equipment condition whether the operation of a Unit has been interrupted.

2.7 GENERAL REQUIREMENTS

A. Wiring

1. All insulated conductors and conduits or tubing as well as fittings including metal boxes, troughs and ducts to comply with the requirements of NFPA 70.
2. Provide complete, new insulated wiring to connect all parts of new equipment and interface with retained components.
3. Insulated wiring shall have (NEC 600 VOLT) insulation, type THW for power items. Type TF in sizes # 16 and # 18 may be used for push buttons and control items. Install provided wiring in metal conduits. Existing raceways, and conduits may be reused if practical and if in conformance to code.
4. Provide new traveling cables between the car and controller. Provide NEC type ETT with thermoplastic insulation. Each cable conductor shall be color-coded and have at least 10% spare conductors per AWG. All cables provided will contain steel supporting fillers for hanging to remove the weight from the wires. Cables must be flexible and suitably supported to reduce strain on individual conductors to a minimum and always be free from contact with the hoistway construction or other equipment.
5. Provide dedicated ground where required by control equipment manufacturer. Ground all motors, controller cabinets, junction boxes and disconnects.

B. Engineering Design

1. All new material furnished shall be specifically designed to operate with the original equipment being retained, thus assuring maximum performance and eliminating any divided responsibility.

C. Permits and Inspections

1. The elevator contractor shall furnish all licenses and permits and shall arrange for and make all required inspections and tests.

D. Code

1. The elevator equipment shall be furnished and installed in accordance with the applicable version of the ASME A17.1 Safety Code for Elevators and Escalators, An American National Standard, including the latest Supplement, and the Americans with Disabilities Act.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting this work.
- B. Verify that hoistway, pit, and machine room are ready for work of this section.
- C. Verify that electrical power is available and of correct characteristics.

3.2 INSTALLATION

- A. Install system components, and connect equipment to building utilities.
- B. Provide conduit, electrical boxes, wiring, and accessories. Refer to Sections 26 05 33.13.

- C. Install hydraulic piping between cylinder and pump unit.
- D. Install hoistway, elevator equipment, and components in accordance with approved shop drawings.
- E. Adjust equipment for smooth and quiet operation.

3.3 TESTING AND FINAL ACCEPTANCE

- A. Upon completion of the installation and before the elevator is placed in service, perform Acceptance Inspection and Test to determine that all parts of the equipment and installation conform to these specifications and referenced standards and codes. All protective devices and safety equipment must function as required.
 - 1. Testing and inspection by regulatory agencies certified in accordance with ASME QEI-1.
 - 2. Perform tests as required by ASME A17.2.

3.4 CLEAN-UP AND PAINTING

- A. Clean all new and reused components to remove all construction debris, dirt, rust or other impurities.
- B. All metal surfaces shall be painted with two (2) coats of rust inhibiting paint after installation. Including but not limited to, guide rails (EXCEPT GUIDE SURFACES), pit equipment, dust covers and fascias.
- C. Clean all horizontal and vertical surfaces within the hoistway including walls, floors, beams, ledges, brackets, vent louvers, screens, etc., all shall be brushed down and vacuumed to remove accumulated lint, dust and dirt.

3.5 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
- B. Demonstrate proper operation of equipment to Owner's designated representative.
- C. Training: Train Owner's personnel on cleaning and operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.
 - 3. Instructor: Manufacturer's training personnel.
 - 4. Location: At project site, unless noted otherwise.

END OF SECTION