Part II
Division 9

Finishes

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

1 PART 1 GENERAL

1.1 SUMMARY

A. Section includes gypsum board with joint treatment; metal stud wall framing; metal channel ceiling framing; shaftwall system; area separation wall system; tile backer boards and acoustic insulation.

1.2 SYSTEM DESCRIPTION

A. Acoustic Attenuation for Identified Interior Partitions: 50 STC in accordance with ASTM E90.

1.3 SUBMITTALS

A. Product Data: Submit data on metal framing, gypsum board, joint tape; acoustic accessories and joint compound.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840, GA-201 - Gypsum Board for Walls and Ceilings, GA-214 - Recommended Specification: Levels of Gypsum Board Finish, GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board, GA-600 - Fire Resistance Design Manual.

B. Furnish framing materials in accordance with SSMA - Product Technical Information.

C. Fire Rated Construction: Rating as indicated on Drawings.
   1. Tested Rating: Determined in accordance with ASTM E119.
   2. Fire Rated Partitions: Listed assembly by UL, WH, GA File.
   3. Fire Rated Ceilings and Soffits: Listed assembly by UL, WH, GA File.
   4. Fire Rated Structural Column Framing: Listed assembly by UL, WH, GA File.
   5. Fire Rated Structural Beam Framing: Listed assembly by UL; WH, GA File.
   6. Fire Rated Shaft Wall Requirements: two hour in accordance with UL listed assembly.

2 PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Manufacturers:
   1. Celotex Building Products.
   2. Domtar Gypsum, Inc.
   3. G-P Gypsum Corp.
   4. National Gypsum Co.
   5. United States Gypsum (USG).

2.2 COMPONENTS

A. Studs and Tracks: ASTM C645, GA-216 and GA-600; galvanized sheet steel, 0.021 and 0.036 inch thick, C shape.

B. Furring, Framing, and Accessories: ASTM C645, GA-216 and GA-600.

C. Gypsum Board Materials: ASTM C1396/C1396M [; Type X fire resistant where indicated on Drawings].
1. Standard Gypsum Board: 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.
2. Moisture Resistant Gypsum Board: 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.
3. Gypsum Sheathing Board: 5/8 inch thick, maximum available size in place; ends square cut, square edges; water repellent paper faces.
4. Gypsum Shaftliner: ASTM C442, 1 inch thick, maximum available size in place; square edges, ends square cut.
5. Abuse Resistant Gypsum Board: 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.

D. Tile Backer Boards:
1. Cementitious Backing Board: High density, glass fiber reinforced, 1/2 inch thick; 2 inch wide, coated glass fiber tape for joints and corners.

2.3 ACCESSORIES

A. Acoustic Insulation: ASTM C665, preformed glass fiber, friction fit type, unfaced, 2.5 inch thick.

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Gypsum Board Accessories: ASTM C1047; metal; corner beads, edge trim, and expansion joints.
1. Metal Accessories: Galvanized steel.
2. Plastic Accessories: PVC plastic.
3. Edge Trim: Type LC, L bead.

D. Joint Materials: ASTM C475, GA-201 and GA-216, reinforcing tape, joint compound, adhesive, and water.

E. Adhesive: ASTM C557, GA-216.

F. Fasteners: ASTM C954, ASTM C1002; length to suit application.
1. Screws for Steel Framing: Type S.
2. Screws for Wood Framing: Type W.

3 PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions are ready to receive work.

3.2 INSTALLATION

A. Metal Studs:
1. Install studs in accordance with ASTM C754, GA-216 and GA-600 and as required for fire resistance ratings indicated.
2. Metal Stud Spacing: 16 inches oc.
3. Partition Heights: Full height to structure above. Install additional bracing for partitions extending above ceiling.

B. Wall Furring:
1. Erect free standing metal stud framing tight to concrete, masonry walls; attached by adjustable furring brackets. Erect vertically.
2. Space furring channels maximum 16 inches oc, and at floor and ceiling lines, abutting walls.
3. Install insulation between furring channels attached to masonry and concrete walls.
4. Install furring as required for fire resistance ratings indicated.

C. Ceiling Framing:
1. Install in accordance with ASTM C754, GA-216.
2. Coordinate location of hangers with other work. Install ceiling framing independent of walls, columns, and above ceiling work.
3. Reinforce openings in ceiling suspension system interrupting main carrying channels or furring channels, with lateral channel bracing.
4. Laterally brace entire suspension system.

D. Acoustic Accessories:
1. Install resilient channels at maximum 16 inches oc perpendicular to framing. Locate joints over framing members.
2. Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
3. Install acoustic sealant at any gaps at the top and bottom of partitions.

E. Gypsum Board:
1. Install gypsum board in accordance with GA-216 and GA-600. Install gypsum board at fire rated assemblies in accordance with fire test listing.
2. Install abuse resistant gypsum board 48" high in all corridors.
3. Shim all window rough openings to receive drywall returns with even reveals on all sides.
4. Fasten gypsum board to furring or framing with screws.
5. Place control joints consistent with lines of building spaces as recommended by gypsum board manufacturer and as directed by Architect/Engineer.]
6. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

7Seal cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

F. Joint Treatment:
1. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
2. Feather coats onto adjoining surfaces so camber is maximum 1/32 inch.

G. Tolerances: Maximum Variation from Flat Surface: 1/8 inch in 10 feet in any direction.

...END OF SECTION

SECTION 09 30 10

EXTERIOR WALL TILE

1 PART 1 GENERAL

1.1 SUMMARY

A. Scope of work - Provide tile, tile installation materials and accessories as indicated on drawings, as specified herein, and as needed for complete and proper installation.

B. Related Documents - provisions within General and Supplementary General Conditions of the Contract, Division 1 -General Requirements, and the Drawings apply to this Section.

1.2 SECTION INCLUDES

A. Porcelain tile

B. Installation Products; adhesives, mortars, grouts and sealants

C. Waterproof membranes for ceramic tilework

D. Thresholds, trim, cementitious backer units and other accessories specified herein.

1.3 RELATED SECTIONS

A. Section 06100 Rough Carpentry (plywood sub-floors)

B. Section 09250 Gypsum Board Assemblies

1.4 REFERENCE STANDARDS

A. American Iron and Steel Institute (AISI) Specification for the Design of Cold-Formed Steel Structural Members

B. American National Standards Institute (ANSI) A137.1 American National Standard Specifications For Ceramic Tile

C. American National Standards Institute (ANSI) A108.01 - A108.17 American National Standard Specifications For The Installation Of Ceramic Tile

D. American National Standards Institute (ANSI) A118.1 - A118.12 American National Standard Specifications For The Installation Of Ceramic Tile

E. American National Standards Institute (ANSI) A136.1 American National Standard Specifications For The Installation Of Ceramic Tile

F. American Plywood Association (APA) Y510T Plywood Design Specifications

G. American Society For Testing And Materials (ASTM) A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement

H. American Society For Testing And Materials (ASTM) A185 Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement

I. American Society For Testing And Materials (ASTM) C33 Standard Specification for Concrete Aggregate

J. American Society For Testing And Materials (ASTM) C36 Standard Specification for Gypsum Wallboard

K. American Society For Testing And Materials (ASTM) C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)

L. American Society For Testing And Materials (ASTM) C144 Standard Specification for Aggregate for Masonry Mortar

M. American Society For Testing And Materials (ASTM) C150 Standard Specification for Portland Cement

N. American Society For Testing And Materials (ASTM) C171 Standard Specification for Sheet Materials for Curing Concrete

O. American Society For Testing And Materials (ASTM) C241 Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic

P. American Society For Testing And Materials (ASTM) C267 Standard Test Method for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings

Q. American Society For Testing And Materials (ASTM) C482 Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement

R. American Society For Testing And Materials (ASTM) C503 Standard Specification for Marble Dimension Stone (Exterior)

S. American Society For Testing And Materials (ASTM) C531 Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes

T. American Society For Testing And Materials (ASTM) C627 Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester

U. American Society For Testing And Materials (ASTM) C794 Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants

V. American Society For Testing And Materials (ASTM) C847 Standard Specification for Metal Lath

W. American Society For Testing And Materials (ASTM) C905 Standard Test Method for Apparent Density of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacings

X. American Society For Testing And Materials (ASTM) C920 Standard Specification for Elastomeric Joint Sealants

Y. American Society For Testing And Materials (ASTM) C955 Standard Specification for Load Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases

Z. American Society For Testing And Materials (ASTM) D226 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing And Waterproofing

AA. American Society For Testing And Materials (ASTM) D227 Standard Specification for Coal-Tar Saturated Organic Felt Used in Roofing and Waterproofing

BB. American Society For Testing And Materials (ASTM) D751 Standard Test Method for Coated Fabrics

CC. American Society For Testing And Materials (ASTM) D751 Standard Test Method for Rubber Property - Durometer Hardness

DD. American Society For Testing And Materials (ASTM) D1248 Standard Test Method for Staining of Porous Substances by Joint Sealants

EE. American Society For Testing And Materials (ASTM) D2240 Standard Test Method for Coated Fabrics

FF. American Society For Testing And Materials (ASTM) D4263 Standard Test Method for Indicating Moisture in Concrete by The Plastic Sheet Method

GG. American Society For Testing And Materials (ASTM) D4397 Standard Specification for Polyethylene Sheeting for Construction, Industrial and Agricultural Applications

HH. American Society For Testing And Materials (ASTM) D4716 Standard Test Method for Determining the (In Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geo-synthetic Using a Constant Head

II. American Society For Testing And Materials (ASTM) E84 Standard Test Method for Surface Burning Characteristics of Building Materials

JJ. American Society For Testing And Materials (ASTM) E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

KK. American Society For Testing And Materials (ASTM) E96 Standard Test Methods for Water Vapor Transmission of Materials

LL. American Society For Testing And Materials (ASTM) E413 Standard Classification for Rating Sound Insulation

MM. American Society For Testing And Materials (ASTM) E492 Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

NN. American Society For Testing And Materials (ASTM) E989 Standard Classification for Determination of Impact Insulation Class (IIC)

OO. American Society For Testing and Materials (ASTM) E2179 Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors

PP. American Society For Testing and Materials (ASTM) F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

QQ. American Society of Mechanical Engineers (ASME) - ASME A112.6.3 Floor and Trench Drains

RR. Canadian Sheet Steel Building Institute (CSSBI) Lightweight Steel Framing Binder {Publication 52M}

SS. Federal Housing Administration (FHA) Bulletin No. 750 Impact Noise Control in Multifamily Dwellings

TT. Housing and Urban Development (HUD) TS 28 A Guide to Airborne, Impact and Structure-borne Noise-Control in Multifamily Dwellings

WW. Materials And Methods Standards Association (MMSA) Bulletins 1-16

UU. Metal Lath/Steel Framing Association (ML/SFA) 540 Lightweight Steel Framing Systems Manual

VV. Steel Stud Manufacturers Association (SSMA) Product Technical Information and ICBO Evaluation Service, Inc. Report ER-4943P

XX. Terrazzo, Tile and Marble Association Of Canada (TTMAC) Specification Guide 09300 Tile Installation Manual

YY. Tile Council of North America (TCNA) Handbook For Ceramic Tile Installation

1.5 SYSTEM DESCRIPTION

A. Porcelain tile and base installed using latex modified Portland cement mortar over a plastic Portland cement mortar bed or over a cured (pre-floated) Portland cement mortar bed with epoxy grouted joints.

NOTE TO SPECIFIER: The above systems are example descriptions; edit for additional applicable systems

1.6 SUBMITTALS

A. Submittal Requirements: Submit the following "items as listed below. Refer to Division 1 for additional requirements:
   1. Material Safety Data Sheets for all applicable products.

B. Submit shop drawings and manufacturers' product data under provisions of Section 01 00 00.

C. Submit samples of each type/style/finish/size/color of tile.

D. Submit manufacturers' installation instructions.

E. Submit manufacturer's certification that the materials supplied conform to ANSI A137.1.

F. Submit proof of warranty.

G. Submit sample of installation system demonstrating compatibility/functional relationships between adhesives, mortars, grouts and other components

H. For alternate materials, at least thirty (30) days before submittal date submit independent laboratory test results confirming compliance with specifications listed in Part 2 - Products.

1.7 QUALITY ASSURANCE

A. Tile Manufacturer (single source responsibility): Company specializing in porcelain tile with three (3) years minimum experience. Obtain tile from a single source with resources to provide products of consistent quality in appearance and physical properties.

B. Installation System Manufacturer (single source responsibility): Company specializing in adhesives, mortars, grouts and other installation materials with ten (10) years minimum experience and ISO 9001 certification. Obtain installation materials from single source manufacturer to insure consistent quality and full compatibility.

C. Submit laboratory confirmation of adhesives, mortars, grouts and other installation materials:
1. Identify proper usage of specified materials using positive analytical method.
2. Identify compatibility of specified materials using positive analytical method.
3. Identify proper color matching of specified materials using a positive analytical method.

D. Installer qualifications: company specializing in installation of ceramic tile, mosaics, pavers, trim units and thresholds with five (5) years documented experience with installations of similar scope, materials and design.

1.8 MOCK-UPS

A. Provide mock-up of each type/style/finish/size/color of ceramic tile, mosaics, pavers, trim unit and threshold, along with respective installation adhesives, mortars, grouts and other installation materials.

1.9 PRE-INSTALLATION CONFERENCE

A. Pre-installation conference: At least three weeks prior to commencing the work attend a meeting at the jobsite to discuss conformance with requirements of specification and job site conditions. Representatives of owner, architect, general contractor, tile subcontractor, Tile Manufacturer, Installation System Manufacturer and any other parties who are involved in the scope of this installation must attend the meeting.

1.10 DELIVERY, STORAGE AND HANDLING

A. Acceptance at Site: deliver and store packaged materials in original containers with seals unbroken and labels, including grade seal, intact until time of use, in accordance with manufacturer's instructions.

B. Store tile and installation system materials in a dry location; handle in a manner to prevent chipping, breakage, and contamination.

C. Protect latex additives, organic adhesives, epoxy adhesives and sealants from freezing or overheating in accordance with manufacturer's instructions; store at room temperature when possible.

D. Store portland cement mortars and grouts in a dry location.

1.11 PROJECT/SITE CONDITIONS

A. Provide ventilation and protection of environment as recommended by manufacturer.

B. Prevent carbon dioxide damage to tile and adhesives, mortars, grouts and other installation materials, by venting temporary heaters to the exterior.

C. Maintain ambient temperatures not less than 50°F (10°C) or more than 100°F (38°C) during installation and for a minimum of seven (7) days after completion. Setting of portland cement is retarded by low temperatures. Protect work for extended period of time and from damage by other trades. Installation with latex portland cement mortars requires substrate, ambient and material temperatures at least 37°F (3°C). There should be no ice in slab. Freezing after installation will not damage latex portland cement mortars. Protect portland cement based mortars and grouts from direct sunlight, radiant heat, forced ventilation (heat & cold) and drafts until cured to prevent premature evaporation of moisture. Epoxy mortars and grouts require surface temperatures between 60°F (16°C) and 90°F (32°C) at time of installation. It is the General Contractor's responsibility to maintain temperature control.

1.12 SEQUENCING AND SCHEDULING

A. Coordinate installation of tile work with related work.

B. Proceed with tile work only after curbs, vents, drains, piping, and other projections through substrate have been installed and when substrate construction and framing of openings have been completed.

1.13 WARRANTY

A. The Contractor warrants the work of this Section to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for a period of 10 years. The manufacturer of adhesives, mortars, grouts and other installation materials shall provide a written ten (10) year warranty, which covers materials and labor - reference LATICRETE Warranty Data Sheet 230.12 (or equal) for complete details and requirements.

1.14 MAINTENANCE

A. Submit maintenance data. Include cleaning methods, cleaning solutions recommended, stain removal methods, as well as polishes and waxes recommended.

1.15 EXTRA MATERIALS STOCK

A. Upon completion of the work of this Section, deliver to the Owner 2% minimum additional tile and trim shape of each type, color, pattern and size used in the Work, as well as extra stock of adhesives, mortars, grouts and other installation materials for the Owner's use in replacement and maintenance. Extra stock is to be from same production run or batch as original tile and installation materials.

2 PART 2 PRODUCTS

2.1 TILE MANUFACTURERS

A. Subject to compliance with paragraphs 1.12 and performance requirements, provide products by one of the following manufacturers:

B. TAU Ceramics, Spain; Distributed by Stone Source, Somerville, MA www.stonesource.com

2.2 WALL TILE MATERIALS

A. Porcelain Tile: TAU Metalica Corten A

B. Size: 24" x 24"

C. Color/Finish: Corten A

D. Location: Full Height First Level Below Marquis

E. Pattern: Stacked Bond

2.3 TILE INSTALLATION ACCESSORIES

A. Installation accessories as manufactured by LATICRETE International, Inc., 1 LATICRETE Park North, Bethany, CT 06524-3423 USA. Phone 800-243-4788, www.laticrete.com, or equal

B. Waterproofing Membrane: LATICRETE® 9235 Waterproofing Membrane** as manufactured by LATICRETE International, Inc.

2.4 TILE INSTALLATION MATERIALS

A. Installation materials as manufactured by LATICRETE International, Inc., 1 LATICRETE Park North, Bethany, CT 06524-3423 USA. Phone 800-243-4788, www.laticrete.com; or equal.

B. Latex Portland Cement Thin Bed Mortar: LATICRETE 254 Platinum** as manufactured by LATICRETE International, Inc.

C. Latex Portland Cement Grout: LATICRETE 1500 Sanded Grout** gauged with LATICRETE 1776 Grout Enhancer** as manufactured by LATICRETE International, Inc.

D. Expansion and Control Joint Sealant: LATICRETE Latasil™ as manufactured by LATICRETE International, Inc.

3 PART 3 EXECUTION

3.1 SUBSTRATE EXAMINATION

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, stone, trim or waterproofing are:
   1. Sound, rigid and conform to good design/engineering practices;
   2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials;
   3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
   4. Thin-set tile installations have a specified subsurface tolerance, for instance ¼" in 10' (6mm in 3m) and 1/16" in 1' (1.5mm in 300mm), to conform with the ANSI specifications. Because thin-set is not intended to be used in truing or leveling the work of others, the subsurface typically should not vary by more than 1/16" over 1' (1.5mm over 300mm), nor more than 1/32" (0.8mm) between adjoining edges where applicable (e.g. between sheets of exterior glue plywood or between adjacent concrete masonry units). Should the architect/designer require a more stringent tolerance (e.g. 1/8" in 10' [3mm in 300mm]), the subsurface specification must reflect that tolerance, or the tile specification must include a specific and separate requirement to bring the ¼" (6mm) subsurface tolerance into compliance with the 1/8" (6mm) tolerance desired;
   5. Not leveled with gypsum or asphalt based compounds;
   6. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:
   1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;
   2. Wood float finished, or better, if the installation is to be done by the thin bed method;

C. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. *Beginning of work constitutes acceptance of substrate or surface conditions.*

3.2 SURFACE PREPARATION

A. SUBSTRATES

   1. 1/2" 48" x96" Cement Board Sheathing Panels over ½" 48" x96" pressure treated plywood panels, lap joints minimum 12".

3.3 INSTALLATION ACCESSORIES

A. WATERPROOFING:

1. Install the waterproofing membrane in compliance with current revisions of ANSI A108.01 (2.7 Waterproofing) and ANSI A108.13. Review the installation and plan the application sequence. Pre-cut LATICRETE® 9235 Waterproofing Membrane Reinforcing Fabric, allowing 2" (50mm) for overlap at ends and sides. Roll up the pieces for easy handling and placement. Shake or stir LATICRETE 9235 Waterproofing Membrane Liquid before using. Pre-treat all substrate cracks, cold joints, control joints, coves, corners and penetrations according to manufacturer's specific recommendations. Allow pre-treated areas to dry to the touch. Apply a liberal coat of LATICRETE 9235 Waterproofing Membrane Liquid with brush or roller over substrate including pre-treated areas. Before the coat dries, unroll LATICRETE 9235 Waterproofing Membrane Reinforcing Fabric, smooth out any wrinkles and press with brush or roller until LATICRETE 9235 Waterproofing Membrane Liquid "bleeds" through to surface. Apply another liberal coat of LATICRETE 9235 Waterproofing Membrane Liquid and allow it to dry to the touch, ~1-3 hours @ 70°F (21°C) & 50% RH. Apply a third liberal coat of LATICRETE 9235 Waterproofing Membrane Liquid to seal membrane. When last coat has dried to the touch, inspect final surface for pinholes, voids or thin spots. Use additional LATICRETE 9235 Waterproofing Membrane Liquid to seal such defects. For installation of ceramic tile, mosaic, paver, brick or stone, follow *Thin Bed Method* (§ 3.4H), which may begin as soon as last coat of LATICRETE 9235 Waterproofing Membrane Liquid has dried to the touch. Allow LATICRETE 9235 Waterproofing Membrane to cure for at least 7 days @ 70°F (21°C) & 50% RH before running water penetration tests.

3.4 INSTALLATION – PORCELAIN TILE

A. *General:* Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) "A108 American National Standard Specifications for Installation of Ceramic Tile" and TCNA "Handbook for Ceramic Tile Installation." Cut and fit ceramic tile, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16" over 8' (1.5mm in 2.4m). Install divider strips at junction of flooring and dissimilar materials.

B. *Thin Bed Method:* Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format (>8" x 8"/200mm x 200mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. 'back-butter') each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

C. *Grouting or Pointing:*

1. *Latex Fortified Cement Grout (ANSI A118.7):* Allow porcelain tile, mosaics, pavers, brick or stone installation to cure a minimum of 24 hours @ 70°F (21°C). Verify grout joints are free of dirt, debris or tile spacers. Sponge or wipe dust/dirt off veneer face and remove any water standing in joints. Apply grout release to face of absorptive, abrasive, non-slip or rough textured ceramic tile, pavers, bricks, or trim units that are not hot paraffin coated to facilitate cleaning. Surface temperature must be between 40-90°F (4-32°C). Thoroughly shake or stir LATICRETE 1776 Grout Enhancer and pour into a clean mixing container. Add LATICRETE 1500 Sanded Grout powder, in approximately the proportions indicated in the chart below, to the container while mixing. Mix by hand or with a slow speed mixer to a smooth, stiff consistency.

LATICRETE 1776 Grout Enhancer	LATICRETE 1500 Sanded Grout
26 fl oz (0.8 l) Bottle	10 lbs (4.5kg) Bag
47 fl oz (1.4 l) Bottle	
64 fl oz (1.9 l) Bottle	25 lbs (11.3kg) Bag

Install latex fortified cement grout in compliance with current revisions of ANSI A108.1A (7.0 Grouting of tile), ANSI A108.02 (4.5 Cleaning tile) and ANSI A108.10. Dampen dry surfaces with clean water. Spread using a sharp edged, hard rubber float and work grout into joints. Using diagonal (at 45° angle to direction of grout line) strokes, pack joints full and free of voids/pits. Hold float face at a 90° angle to grouted surface and use float edge to "squeegee" off excess grout, stroking diagonally to reduce pulling grout out of filled joints. Initial cleaning can begin as soon as grout has become firm, typically 20-30 minutes after grouting depending on temperature. Drag a clean towel, dampened with water, or wipe a clean, dampened sponge, diagonally over the veneer face to remove any grout haze left after "squeegeeing." Rinse towel/sponge frequently and change rinse water at least every 200 ft^2 ($19m^2$). Repeat this cleaning sequence again if grout haze is still present. Allow grout joints to become firm. Buff surface of grout with clean coarse cloth. Inspect joint for pinholes/voids and repair them with freshly mixed grout. Within 24 hours, check for remaining haze and remove it with warm soapy water and a nylon scrubbing pad, using a circular motion, to lightly scrub surfaces and dissolve haze/film. Do not use acid cleaners on latex portland cement grout less than 10 days old.

Use the following LATICRETE System Materials:
LATICRETE® 1500 Sanded Grout, submit full range of colors for selection by Architect.
LATICRETE 1776 Grout Enhancer

D. *Adjusting*: Correction of defective work for a period of one (1) year following substantial completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

3.5 CLEANING

A. Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.6 PROTECTION

A. Protect finished installation under provisions of Basic Requirements. Close areas to other trades and traffic until tile being installed has set firmly. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).

B. Keep floors installed with epoxy adhesive closed to traffic for 24 hrs. at 70°F (21°C), and to heavy traffic for 48 hours @ 70°F (21°C) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days for epoxy based grout and 14 days for latex portland cement based grout @ 70°F (21°C) before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60°F (15°C), and at high relative humidity (>70% R.H.) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

4 PART 4 HEALTH AND SAFETY

4.1 The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

...END OF SECTION

SECTION 09 90 10

PAINTING

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 specification sections apply to Work of this section.

1.2 SECTION INCLUDES

A. Surface preparation and field application of paints and coatings.

1.3 SYSTEM DESCRIPTION

A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.4 SUBMITTALS

A. Product Data: Provide data on all finishing products.

B. Samples: Submit coating samples for selection, illustrating range of colors and textures available for each surface finishing product scheduled.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Store and apply materials in environmental conditions required by manufacturer's instructions.

1.6 EXTRA MATERIALS

A. Provide minimum of five (5) gallons of each type and color of coating specified.

2 PART 2 PRODUCTS

2.1 MATERIALS

A. Manufacturers: Products of one or more manufacturers are listed in Finish Schedules to establish appearance, performance and quality characteristics. Products of other manufacturers may be accepted subject to review by Architect.

1. RD Coatings, Inc. Distributed by the Righter Group, Inc. www.rightergroup.com
2. Benjamin Moore and Co.
3. ICI/Dulux
4. PPG Industries: Pittsburgh Paints
5. Pratt and Lambert
6. Sherwin Williams Co.

B. Coatings: Ready mixed except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.

C. VOC Content: Provide coatings with low or zero VOC content to the greatest extent possible. As a minimum, comply with requirements of Green Seal GS-11:

1. Non flat: 150 g/l.
2. Flat: 50 g/l.

D. Quality: Manufacturer's best quality of each type of product specified.

E. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve the finishes specified, as recommended by coating manufacturer.

2.2 FINISHES

A. Refer to schedule at end of section for surface finish schedule.

3 PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that substrate conditions are ready to receive Work.

B. Measure moisture content of porous surfaces using an electronic moisture meter. Do not apply finishes unless moisture content is less than 12 percent.

C. Correct minor defects and clean surfaces which affect work of this section.

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

E. Gypsum Board Surfaces: Fill minor defects with latex compounds. Spot prime defects after repair.

F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

G. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to dry.

H. Uncoated Ferrous Surfaces: Remove scale by wire brushing, sandblasting, clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.

I. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust, hand or power tool clean, clean surfaces with solvent. Prime bare steel surfaces.

J. Interior Wood/PVC Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

K. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.

L. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied.

M. Exterior Wood Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior calking compound after sealer has been applied.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instructions. Provide tinted primers where recommended by manufacturer.

B. Sand transparent finishes lightly between coats to achieve required finish.

C. Back prime interior and exterior woodwork scheduled to receive paint finish with primer paint.

D. Back prime interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

E. Minimum Coating Thickness: As recommended by manufacturer.

F. Prime Coats: Prime material as recommended by manufacturer. Recoat primed surfaces as required to cover suction spots or unsealed areas.

G. Pigmented Surfaces: Completely cover to achieve an opaque, smooth surface of uniform finish, color and appearance. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other imperfections will not be accepted.

H. Transparent Finishes: Provide smooth surface of uniform luster, free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes or other imperfections.

3.3 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Painting of mechanical equipment is covered under the mechanical specification sections.

B. Painting of electrical equipment is covered under the electrical specification sections.

C. Paint shop primed equipment.

D. Remove unfinished louvers, grilles, covers, and access panels and paint separately. Paint dampers exposed behind louvers, grilles, convector and baseboard cabinets to match face panels.

E. Prime and paint insulated and exposed pipes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.

F. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line.

G. Paint exposed conduit and electrical equipment occurring in finished areas except prefinished surfaces.

H. Paint exposed faces of plywood backboards.

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

3.4 CLEANING

A. As work proceeds, promptly remove finishes where spilled, splashed, or spattered.

3.5 SCHEDULE - INTERIOR SURFACES

Surface	Finish	System	Product	Coats
Concrete	Satin	Finish	Benjamin Moore Latex Floor & Patio Enamel 122	2
Drywall	Flat	Primer	Benjamin Moore Regal FirstCoat 216	1
		Finish	Benjamin Moore Pristine Eco Spec Latex Flat 219	1
Drywall	Eggshell	Primer	Benjamin Moore Regal FirstCoat 216	1
		Finish	Benjamin Moore Pristine Eco Spec Latex Eggshell 223	2
Drywall	Semigloss	Primer	Benjamin Moore Regal FirstCoat 216	1
		Finish	Benjamin Moore Pristine Eco Spec Latex Semi-Gloss 224	2
Metal	Semigloss	Primer	Benjamin Moore IronClad Latex Low Lustre 363	1
		Finish	Benjamin Moore Pristine Eco Spec Latex Semi-Gloss 224	2
Wood/PVC	Semigloss	Primer	Benjamin Moore Regal FirstCoat 216	1
		Finish	Benjamin Moore Pristine Eco Spec Latex Semi-Gloss 224	2
Wood	Clear Satin	Finish	Benjamin Moore Benwood Acrylic Polyurethane 423	2
Hardboard Doors	Semigloss	Primer	Benjamin Moore Fresh Start Primer	1
		Finish	BM Pristine Eco Spec Latex Semi-Gloss 224	1

3.6 SCHEDULE - EXTERIOR SURFACES

Surface	Finish	System	Product	Coats
Exist. Cement Stucco Siding	Quartz	See Below	RD Coatings – ELASTOFLEX Primer plus Three Coat Crack Bonding System – (See 3.7 ELASTOFELX SYSTEM)	3
Metal	Gloss	Primer	Tnemec 90-97 primer (SSPC-SP6): 2.5-3.5 mils DFT	1
		Finish 1	Tnemec Series 27 Typoxy second coat: 4.0-6.0 mils DFT	1
		Finish 2	Tnemec Enduroshield : 2.0-3.0 mils DFT	1
Wood	Satin	Primer	Benjamin Moore Fresh Start Acrylic Primer 023	1
		Finish	Benjamin Moore MoorGlo 096	2
Wood	Stain	Finish	Cabot OVT Acrylic Stain	1

3.7 ELASTOFLEX SYSTEM

ELASTOFLEX WITH MESH OVER ALL SURFACES

System Description:

ELASTOFLEX + MESH - A breathable, elastomeric, waterbase acrylic weatherproof coating systems for exterior façades designed to prevent wind driven rain from penetrating the surface. RD-Elastoflex with mesh is guaranteed to adhere to clean sound substrates, bridge new cracks up to 1/8", remain flexible, prevent penetration of wind driven rain and not fade or chalk noticeably in most colors.

Surface Preparation:

Washing: Pressure water wash all surfaces at 4000 psi minimum with a rotating tip. Purpose of prep is to remove; loose parge, powdery concrete and airborne dirt and pollutants, etc. After drying, remove any remaining loose or curling edges. If pressure washing is not permissible, other methods will be considered if approved by RD Coatings, such as washing with clean water to remove contamination and use a combination of hand and power tools to remove loose coatings and substrate. All prep systems shall be approved by RD Coatings.

Crack Bridging: Small cracks shall be bridged by specified mesh. Fill larger, deep cracks with RD-Acrykit caulk or RD-Elastoflex Quartz.

Filling Holes: After proper surface preparation, large holes, spalls, etc should first be patched with cementitious patching material. Smaller holes (such as air holes in concrete) or other similar small holes shall be filled with RD-Acrykit or RD-Elastoflex Quartz.

Irregular surfaces: Parge minor surface irregularities with RD-Elastoflex Quartz.

Primer plus Three Coat Crack Bridging System:

Primer:	(1) coat RD-Unifix Primer at 1-2 mils dft or RD-Elastoflex thinned 10-15% with water on exposed surfaces.
Reinforcing Mesh Coat:	Apply RD -Elastoflex Mesh with (1) coat of RD-Elastoflex elastomeric acrylic at 6-8 mils dft per coat over all parged surfaces.
Fill Pin Holes:	After the first coat of RD-Elastoflex/Elastoflex Mesh has cured and before the 2nd coat has been applied, identify and cover pinholes with a spot coat of RD-Elastoflex. Should pinholes be missed in the 1st coat, spot the 2nd coat with RD-Elastoflex at any remaining pinhole locations.
Intermediate Coat:	(1) coats RD-Elastoflex Quartz, elastomeric acrylic at 6-8 mils dft per coat on all surfaces. Apply RD-Elastoflex Quartz by roller, or broad knife or hopper gun etc. Submit samples of systems with the full range of type and size proposed aggregates to vary the texture (approved by RD-Coatings) available to be added to RD-Elastoflex Quartz for review and approval of owner and architect.
Finish Coat	(1) coats RD-Elastoflex, elastomeric acrylic at 6-8 mils dft per coat on all surfaces.
ELASTOFLEX Color:	Refer to drawings for colors to match Benjamin Moore colors.

...END OF SECTION