

PROJECT MANUAL

for



VA SAN DIEGO HEALTHCARE SYSTEM RENOVATE BUILDING 1 FIRST FLOOR FOR VOLUNTEER AND PATIENT SERVICES PHASE 3

DEPARTMENT OF VETERANS AFFAIRS
3350 La Jolla Village Drive
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VA PROJECT NO. 664-09-103

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**DEPARTMENT OF VETERANS AFFAIRS
PROJECT SPECIFICATIONS**

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SECTION 09 06 00

COLORS AND DESIGN

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section covers color and design information for products that are exposed to view in the finished construction. The word "finish", as used herein, includes color and pattern, and other surface characteristics requirements for quality and method of installation are covered in other appropriate sections of the specifications. Specific locations where the various materials are required are shown on the drawings. Items not designated for finish in this section may be specified in other sections. When finish is not designated for items, the Contractor shall propose a finish for approval.
- B. This section includes physical data requirements for materials specified and shown on the drawings.
- C. Samples:
 - 1. Color boards shall reflect all actual finish textures, patterns, and colors required for this contract.
 - 2. Materials shall be labeled with the finish type, manufacturer's name, pattern, and color reference.
 - 3. Samples shall be on size 8-1/2 by 11 inch boards with a maximum spread of size 25-1/2 by 33 inches for foldouts.
 - 4. Samples for this color board are required in addition to samples requested in other specification sections.

1.2 RELATED WORK:

Refer to specific items identified.

1.3 MANUFACTURER'S REQUIREMENT:

Refer to "Manufacturers Qualifications" for specific requirements.

1.4 SUBMITTALS:

In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWING, furnish the following:

- A. Shop Drawing:
 - 1. Where specifically requested, shop drawing will be submitted identifying all parts by name, kind of material and showing construction, installation and anchorage.
- B. Manufacturer's Literature & Data Sheets:
 - 1. Indicating manufacturer's qualifications, physical data and warranties.

1.5 REFERENCE TO MANUFACTURER'S PROPRIETARY IDENTIFYING NAMES

- A. Where finish is shown as being specific to one manufacturer, an "or equal" product by another manufacturer may be submitted for approval. Manufacturers and materials specified are not intended to deter the proposal of another producer, nor limit the selection of equal finish from other manufacturers.
- B. The finish schedule may list the colors, patterns and textures required for both exterior and interior finishes, including both factory applied and field applied colors.

PART 2 - PRODUCTS (TBD)

- - - E N D - - -

SECTION 09 22 16

NON-STRUCTURAL FRAMING SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section covers steel stud wall and ceiling systems, wall furring, fasteners, and accessories.

1.2 RELATED WORK

- A. Description of terms shall be in accordance with ASTM C754, ASTM C11, ASTM C841 and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead shall be the underside of the floor or roof construction supported by beams, trusses, or bar joists. In interstitial spaces, with walk-on floors, the underside of the walk-on floor is the underside of structure overhead.
- C. Thickness of steel is specified in decimals of an inch and is the minimum bare (uncoated) steel thickness.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS:
 - 1. Manufacturer's Literature and Data:
 - a. Studs, runners and accessories.
 - b. Hanger inserts.
 - c. Channels (Rolled steel).
 - e. Furring channels.
 - f. Screws, clips and other fasteners.

1.4 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE

- A. In accordance with the requirements of ASTM C754.

1.5 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society For Testing And Materials (ASTM)
 - A525-87.....Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
 - A641-82.....Zinc-Coated (Galvanized) Carbon-Steel Wire

- C11-87.....Definitions of Terms Relating to Gypsum
and related Building and Systems
- C635-87.....Metal Suspension System for Acoustical
Tile and Lay-in Panel Ceilings.
- C636-86.....Installation of Metal Suspension Systems
for Acoustical Tile and Lay-in Panels.
- C645-83.....Non-Load (Axial) Bearing Steel Studs,
Runners (Track), and Rigid Furring
Channels for Screw Application of Gypsum
Board
- C754-82.....Installation of Steel Framing Members to
Receive Screw-Attached Gypsum Wallboard,
Backing Board or Water-Resistant Backing
Board
- C841-87.....Installation of Interior Lathing and
Furring
- C1002-83.....Steel Drill Screws for the Application of
Gypsum Board
- C. Federal Specification (Fed. Spec.):
 - FF-P-395B.....Pin, Drive, Guided And Pin Drive, Power
Actuated (Fasteners For Powder Actuated
And Hand Actuated Fastening Tools

PART 2 - PRODUCTS

2.1 PROTECTIVE COATING

- A. Protect steel studs, runners (track), rigid (hat section) furring channels, "Z" shaped furring channels, and resilient furring channels, with not less than G60 galvanizing per ASTM A525.

2.2 STEEL STUDS AND RUNNERS (TRACK)

- A. ASTM C645.
 - 1. Use ASTM A525 steel.
 - 2. Runners same thickness as studs.
- B. Provide not less than two cutouts in web of each stud, approximately 12 inches from each end, and intermediate cutouts on approximately 24-inch centers.
- C. Doubled studs for openings.
- D. Studs 12 feet or less in length shall be in one piece.

2.3 FASTENERS, CLIPS, AND OTHER METAL ACCESSORIES

- A. ASTM C754, except as otherwise specified.

- B. Fasteners for steel studs thicker than 0.033-inch thick shall be steel drill screws of size and type recommended by the manufacturer of the material being fastened.
- C. Clips: ASTM C841 (paragraph 6.11), manufacturers standard items. Clips used in lieu of tie wire shall have holding power equivalent to that provided by the tie wire for the specific application.
- D. Attachments for Wall Furring:
 - 1. Manufacturers standard items fabricated from zinc-coated (galvanized) steel sheet.
 - 2. For concrete or masonry walls: Metal slots with adjustable inserts or adjustable wall furring brackets. Spacers may be fabricated from 0.0396-inch thick galvanized steel with corrugated edges.
- E. Power Actuated Fasteners:
 - 1. Fed. Spec. FF-P-395.
 - 2. Fastener length and Class as required to resist twice the imposed loads; style suitable for type of hanger or bracket used.
 - 3. Eye Pin: Type I, Class 4, Style EP.
 - 4. Threaded Stud: Style SC for concrete; Style SS for steel.
 - 5. Drive Pins: Style PC for concrete, Style PS for steel.
 - 6. For applications not specified, type and size as recommended by the manufacturer of the material being fastened.

2.4 SUSPENDED CEILING SYSTEM FOR GYPSUM BOARD (OPTION)

- A. Conform to ASTM C635, heavy duty, with not less than 35 mm (1-3/8 inch) wide knurled capped flange face designed for screw attachment of gypsum board.
- B. Wall track channel with 35 mm (1-3/8 inch) wide flange.

PART 3 - EXECUTION

3.1 INSTALLING STUDS

- A. Install studs in accordance with ASTM C754, except as otherwise shown or specified.
- B. Space studs not more than 16 inches on center.
- C. Cut studs 1/4 to 3/8-inch less than floor to underside of structure overhead when extended to underside of structure overhead.
- D. Openings:
 - 1. Frame jambs of openings in stud partitions and furring with two 0.0341-inch thick steel studs placed back to back or as shown.

2. Fasten back to back studs together with 3/8-inch long Type S panhead screws at not less than two feet on center, staggered along webs.
 3. Studs fastened flange to flange shall have splice plates on both sides approximately two inches by three inches screwed to each stud with two screws in each stud. Locate splice plates at 24 inches on center between runner tracks.
- E. Fastening Studs:
1. Fasten studs located adjacent to partition intersections, corners and studs at jambs of openings to flange of runner tracks with either two screws through each end of each stud and flange of runner, or by use of metal lock fastener tool.
 2. Do not fasten studs to top runner track when studs extend to underside of structure overhead.
- F. Chase Wall Partitions:
1. Locate cross braces for chase wall partitions to permit the installation of pipes, conduits, carriers and similar items.
 2. Studs or runners used as cross bracing shall be not less than 2-1/2 inches wide.
- G. Form building seismic or expansion joints with double studs back to back spaced three inches apart plus the width of the seismic or expansion joint.
- H. Form control joint, with double studs spaced 1/2-inch apart.

3.2 CEILING SYSTEMS

- A. Installing suspended ceiling system for gypsum board (ASTM C635 Option):
1. Install only for ceilings to receive screw attached gypsum board.
 2. Install in accordance with ASTM C636.
 - a. Install main runners spaced 1200 mm (48 inches) on center.
 - b. Install 1200 mm (four foot) tees not over 600 mm (24 inches) on center; locate for edge support of gypsum board.
 - c. Install wall track channel at perimeter.
- B. Installing Ceiling Bracing System:
1. Brace suspended ceiling or soffit framing in seismic areas in accordance with ASTM E580.
 2. Construct bracing of 38 mm (1-1/2 inch) channels for lengths up to 2400 mm (8 feet) and 50 mm (2 inch) channels for lengths over 2400 mm (8 feet) with ends bent to form surfaces for anchorage to carrying channels and over head

construction. Lap channels not less than 600 mm (2 feet) at midpoint back to back. Screw or bolt lap together with two fasteners.

3. Install bracing at an approximate 45 degree angle to carrying channels and structure overhead; secure as specified to structure overhead with two fasteners and to carrying channels with two fasteners or wire ties.

3.3 INSTALLING SUPPORTS REQUIRED BY OTHER TRADES

- A. Provide for attachment and support of electrical outlets, plumbing, laboratory or heating fixtures, recessed type plumbing fixture accessories, access panel frames, wall bumpers, wood seats, toilet stall partitions, dressing booth partitions, urinal screens, chalkboards, tackboards, wall-hung casework, handrail brackets, recessed fire extinguisher cabinets and other items supported by stud construction.
- B. Provide additional studs where required. Install metal backing plates, or special metal shapes as required, securely fastened to metal studs.

3.4 TOLERANCES

- A. Fastening surface for application of subsequent materials shall not vary more than 1/8-inch from the layout line.
- B. Plumb and align vertical members within 1/8-inch.
- C. Level or align ceilings within 1/8-inch.

- - - E N D - - -

SECTION 09 24 00

PORTLAND CEMENT PLASTERING

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies lathing and Portland cement based plaster (stucco).

1.2 RELATED WORK

A. Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 TERMINOLOGY

- A. Definitions and description of terms shall be in accordance with ASTM C11, C841, and C926 and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead shall be the underside of the floor or roof construction supported by beams, trusses, and bar joists.
- C. Self-furring Lath: Metal plastering bases having dimples or crimps designed to hold the plane of the back of the lath 6 to 10 mm (1/4 to 3/8 inch) away from the plane of the solid backing.
- D. Solid Backing or Solid Bases: Concrete, masonry, sheathing, rigid insulation, and similar materials to which plaster is directly applied.
- E. Wet Areas: Areas of a building where cyclic or continuous exposure to very humid or wet conditions, or in which a dew point condition may occur in the plaster. Dew point conditions occur frequently in such areas as laundries, natatoriums, cart and dish washing spaces, hydrotherapy, kitchens, bathing or shower rooms and similar areas.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Accessories for plaster, each type.
 - 2. Metal plastering bases, each type.
 - 3. Fasteners.
 - 4. Bonding compounds, including application instructions.
 - 5. Admixtures, including mixing and application instructions.
- C. Samples: Accessories for plaster, each type, not less than 150 mm (6 inches) long.

1.5 PROJECT CONDITIONS

- A. Maintain work areas for interior work at a temperature of not less than 4°C (40°F) for not less than 48 hours prior to application of plaster, during application of plaster and until plaster is completely dry.
- B. Exterior plaster shall not be applied when the ambient temperature is less than 4°C (40°F).
- C. Plaster shall not be applied to frozen surfaces or surfaces containing frost.
- D. Frozen materials shall not be used in the mix.
- E. Plaster coats shall be protected against freezing for a period of not less than 24 hours after application.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. American Society for Testing And Materials (ASTM):
 - A653/A653M-07.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 - A641-03.....Zinc-Coated (Galvanized) Carbon Steel Wire
 - C11-07.....Terminology Relating to Gypsum and Related Building Materials and Systems.
 - C91-05.....Masonry Cement
 - C150-07.....Portland Cement
 - C207-06.....Hydrated Lime for Masonry Purposes
 - C260-06.....Air Entraining Admixtures for Concrete.
 - C841-03.....Installation of Interior Lathing and Furring
 - C847-06.....Metal Lath
 - C897-05.....Aggregate for Job-Mixed Portland Cement Based Plasters
 - C926-06.....Application of Portland Cement-Based Plaster
 - C933-07.....Welded Wire Lath
 - C979-05.....Pigments for Integrally Colored Concrete
 - C1002-07.....Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs

C. Commercial Item Description (CID):

A-A-55615.....Shield, Expansion (Wood Screw and Lag Bolt Self-Threading Anchors)

D. Federal Specifications (Fed Spec.):

UU-B-790A.....Building Paper, Vegetable Fiber (Kraft, Waterproofed, Water Repellent and Fire Resistant)

PART 2 - PRODUCTS

2.1 METAL PLASTERING BASES

A. Expanded Metal Lath:

1. ASTM C847, zinc-coated (galvanized) except as modified by ASTM C841 and this specification. Self furring where applied over solid backing.
2. Flat diamond mesh weighing not less than 1.8 kg/m² (3.4 pounds per square yard).
3. Stucco Mesh: Flat expanded diamond mesh pattern, with openings approximately 38 by 75 mm (1-1/2 by 3 inches), weighing not less than 1.9 kg/ m² (3.6 pounds per square yard), with backing as specified.

B. Wire Lath:

1. Zinc coated (Galvanized).
2. Welded Wire Lath: ASTM C933, with backing as specified.
3. Self furring where applied over solid backing.

C. Building Paper Backing for Metal Plastering Bases:

1. Backing attached to lath as specified in ASTM C933.
2. Vapor Permeable Backing: Fed. Spec. UU-B-790, Type I, Grade D.
3. Water Resistant Backing: Fed. Spec. UU-B-790, Type I, Grade B.

2.2 ACCESSORIES FOR CEMENT PLASTER (STUCCO)

A. ASTM C841, except fabricate from zinc alloy.

B. Control Joints: ASTM C841, zinc.

2.3 FASTENERS

A. Tie, wire, screws, clips, and other fasteners ASTM C841, except as otherwise specified.

B. Fasteners for securing metal plastering bases shall have heads, or be through washers large enough to engage two strands of the metal plastering base.

- C. For fire rated construction; type and size as used in fire rated test.
- D. Screws: ASTM C1002.
- E. Expansion Shields: CID A-A-55615, of the Type and Class applicable.

2.4 CEMENT

- A. Portland: ASTM C150, Type I.

2.5 LIME

- A. ASTM C206, Type S.
- B. ASTM C207, Type S.

2.6 AGGREGATES (SAND)

- A. ASTM C897, graded as required to suit texture of finish specified.
- B. White where white finish coat is specified.

2.7 BONDING AGENT

ASTM C932.

2.8 FACTORY PREPARED FINISH COAT FOR CEMENT PLASTER (STUCCO)

- A. Factory prepared dry blend of materials, integrally colored, designed for exterior finish coat application.
- B. Pigments: ASTM C979, lime proof mineral oxide.
- C. Not more than 35 percent, by weight of all ingredients (cement, aggregate, hydrated lime, admixture and coloring pigment) shall pass a number 100 sieve.

2.9 ADMIXTURES

Air Entrainment: ASTM C260.

PART 3 - EXECUTION

3.1 METAL PLASTERING BASES (LATH) LOCATIONS

- A. Where plaster is required on solid concrete or masonry bases, metal plastering bases are not required, unless shown on the drawings. Where shown use wire lath or stucco mesh.
- B. On ceiling or soffit framing use flat diamond mesh lath.
- C. On interior wall framing:
 - 1. Use flat diamond mesh lath.
 - 2. Use lath with water resistant backing in wet areas.

- D. Over steel columns, use self-furring flat diamond mesh lath.
- E. Where metal plastering bases are used as a base for exterior cement plaster over wall sheathing, use wire lath or stucco mesh with water resistant backing.

3.2 APPLYING METAL PLASTERING BASES

- A. In accordance with ASTM C841, except as otherwise specified or shown.
- B. Form true surfaces, straight or in fair curves where shown, without sags or buckles and with long dimension of lath at right angles to direction of supports.
- C. Lath for ceiling or soffit construction shall terminate at casing bead (floating angle construction) at perimeter angles between walls and ceilings or soffits.
- D. Lath with backing shall be applied to produce a paper to paper and metal to metal lap at ends and sides of adjacent sheets, whether full sheets or less than full sheets are used:
 - 1. Backing shall be lapped 50 mm (2 inches) for both horizontal and vertical laps.
 - 2. Horizontal laps shall be ship lap fashion to conduct water to the outside and over flashing or waterproofing.
- E. Metal plastering bases shall not be continuous through expansion and control joints, but shall be stopped at each side.
- F. Attach metal lath directly to masonry and concrete with hardened nails, power actuated drive pins or other approved fasteners. Fasteners shall be located at the dimples or crimps only.
- G. Wood plugs are not acceptable.

3.3 INSTALLING PLASTERING ACCESSORIES

- A. Install accessories in accordance with ASTM C841, except as otherwise specified.
 - 1. Set plastering accessories plumb, level and true to line, neatly mitered at corners and intersections, and securely attach to supporting surfaces as specified for metal lath.
 - 2. Install in one piece, within the limits of the longest commercially available lengths.
- B. Corner Beads: Install at all vertical and horizontal external plaster corners, as required to establish grounds, and where shown.
- C. Strip Lath:
 - 1. Install metal lath strips centered over joints between dissimilar materials, such as hollow tile, brick, concrete masonry units, concrete, and joints with metal lath on framing or furring, where both such surfaces are required to

be plastered and are in contact with each other in same plane, except where expansion joints and casing beads are required.

2. Wire tie or fasten strip lath to base along both edges at not over 150 mm (six inches) on centers.

D. Casing Beads:

1. Install casing beads where shown and at following locations where plaster terminates to provide finish trim.
2. Where plaster terminates against non-plastered surfaces such as masonry, concrete, and wood.
3. Where plaster terminates against trim of steel frames and trim of other materials and equipment, except where trim overlaps plaster.
4. Around perimeter of openings except where edge is covered by flanges. Locate to conform to dimensions shown on shop drawings.
5. Where plaster for new walls or furring (vertical or horizontal) terminates against existing construction.
6. Both sides of expansion and control joints unless shown otherwise.
7. Install casing bead at perimeter angles between walls and ceilings so as to provide floating angle (unrestrained) construction in accordance with ASTM C841.

E. Cornerites:

1. Install at interior corners of walls, partitions, and other vertical surfaces to be plastered, except where metal lath is carried around angle.
2. Fasten only as necessary to retain position during plastering.
3. Omit cornerites at junction of new plastered walls with existing plastered walls at locations where casing beads are specified.

F. Control Joints:

1. Where control joints are placed parallel to framing members, install joints within 100 mm (four inches) of the framing member.
2. Install control joints only to the edges of abutting sheets of lath so that the lath is not continuous or tied across the joint.
3. Joints shall extend the full width and height of the wall or length of soffit/ceiling plaster membrane.

3.4 SURFACE PREPARATION OF SOLID BASES

- A. Surfaces that are to receive plaster shall be prepared and conditioned in accordance with ASTM C926, except as otherwise specified.
- B. New surfaces of masonry and concrete:
 - 1. Remove projections and clean concrete surface of form oil.
 - 2. Fill depressions, holes, cracks and similar voids flush with Portland cement plaster to provide substrate within the tolerance specified in ASTM C926.
 - 3. Use bonding agent.
 - 4. Cover with self furring lath where required to keep the total plaster thickness as specified in Table 4 of ASTM C926.
- C. Existing surfaces of concrete and masonry:
 - 1. Clean surface of dirt and other foreign matter which will prevent bond.
 - 2. Apply dash bond coat or bonding agent as specified herein.
 - 3. Where existing surfaces have a coating such as paint or bituminous waterproofing apply metal plastering base as specified herein.

3.5 PORTLAND CEMENT BASED PLASTER

- A. Provide portland cement based plaster where cement plaster (stucco) is shown and specified, and as follows:
 - 1. Three coat work shall be used over all metal plastering bases, with or without solid backing.
 - 2. Two coat work may only be used over solid bases meeting the requirements of Paragraph, SURFACE PREPARATION OF SOLID BASES.
- B. Proportion, mix and apply plaster in accordance with ASTM C926, except as otherwise specified.
 - 1. Use air entrained plaster for all exterior work.
 - 2. Use coloring pigments for finish coat when integral color other than white is specified.
 - 3. Use white cement with white sand when white finish coat is specified.
 - 4. Factory prepared finish coat: Add water, mix, and apply as specified by manufacturer.
 - 5. Color: As selected by the Architect.

- a. Color of finish coat shall be natural cement color when painted or other coating is specified.
 - b. Other colors as specified in Section 09 06 00, SCHEDULE FOR FINISHES.
6. Finish coat shall be as selected by the Architect, and either smooth troweled, sand float, or machine dash texture.

3.6 UNACCESSIBLE CEILINGS

At Mental Health and Behavioral Nursing Units, areas accessible to patients and not continuously observable by staff (e.g., patient bedrooms, day rooms), ceilings should be a solid material such as portland cement plaster. This will limit patient access. Access doors are needed to access electrical and mechanical equipment above the ceiling. These doors should be locked to prevent unauthorized access and secured to ceiling using tamper resistant fasteners.

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SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies installation and finishing of gypsum board.

1.2 RELATED WORK

- A. Installation of steel framing members for walls, partitions, furring, soffits, and ceilings: Section 09 22 16, NON-STRUCTURAL METAL FRAMING.
- B. Sound deadening board: Section 07 21 13, THERMAL INSULATION.
- C. Acoustical Sealants: Section 07 92 00, JOINT SEALANTS.

1.3 TERMINOLOGY

- A. Definitions and description of terms shall be in accordance with ASTM C11, C840, and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead shall be the underside of the floor or roof construction supported by the trusses or bar joists.
- C. "Yoked": Gypsum board cut out for opening with no joint at the opening (along door jamb or above the door).

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Cornerbead and edge trim.
 - 2. Finishing materials.
 - 3. Laminating adhesive.
 - 4. Gypsum board, each type.
 - 5. Cementitious Backer Board
- C. Shop Drawings:
 - 1. Typical gypsum board installation, showing corner details, edge trim details and the like.
 - 2. Typical sound rated assembly, showing treatment at perimeter of partitions and penetrations at gypsum board.
 - 3. Typical shaft wall assembly.

D. Samples:

1. Cornerbead.
2. Edge trim.
3. Control joints.

E. Test Results:

1. Fire rating test, each fire rating required for each assembly.
2. Sound rating test.

1.5 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE

- A. In accordance with the requirements of ASTM C840.

1.6 ENVIRONMENTAL CONDITIONS

- A. In accordance with the requirements of ASTM C840.

1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

- B. American Society for Testing And Materials (ASTM):

C11-07.....Terminology Relating to Gypsum and Related
Building Materials and Systems

C475-02.....Joint Compound and Joint Tape for
Finishing Gypsum Board

C840-07.....Application and Finishing of Gypsum Board

C954-07.....Steel Drill Screws for the Application of
Gypsum Board or Metal Plaster Bases to
Steel Stud from 0.033 in. (0.84mm) to
0.112 in. (2.84mm) in thickness

C1002-07.....Steel Self-Piercing Tapping Screws for the
Application of Gypsum Panel Products or
Metal Plaster Bases to Wood Studs or Steel
Studs

C1047-05.....Accessories for Gypsum Wallboard and
Gypsum Veneer Base

C1177-06.....Glass Mat Gypsum Substrate for Use as
Sheathing

C1396-06.....Gypsum Board

E84-07.....Surface Burning Characteristics of
Building Materials

E497-99.....Installing Sound Isolating Lightweight
Partitions

- C. Underwriters Laboratories Inc. (UL):
Latest Edition.....Fire Resistance Directory
- D. Inchcape Testing Services (ITS):
Latest Editions.....Certification Listings

PART 2 - PRODUCTS

2.1 GYPSUM BOARD

- A. Gypsum Board: ASTM C1396, Type X, 16 mm (5/8 inch) thick unless shown otherwise. Shall contain a minimum of 20 percent recycled gypsum.
- B. Coreboard or Shaft Wall Liner Panels.
 - 1. ASTM C1396, Type X.
 - 2. Coreboard for shaft walls 300, 400, 600 mm (12, 16, or 24 inches) wide by required lengths 25 mm (one inch) thick with paper faces treated to resist moisture.
- C. Cementitious Backing Board: Provide one of the following, as indicated:
 - 1. Cementitious Backing Panels: Water-resistant cementitious panels reinforced with a fiberglass scrim, complying with ANSI A118.9, Durock, Hardibacker 500, or equal.
 - 2. Screws for board attachment: ASTM C 1002.
- D. Water Resistant Gypsum Backing Board: ASTM C620, Type X, 16 mm (5/8 inch) thick.
- E. Gypsum cores shall contain a minimum of 95 percent post industrial recycled gypsum content. Paper facings shall contain 100 percent post-consumer recycled paper content.

2.2 GYPSUM SHEATHING BOARD

- A. ASTM C1396, Type X, water-resistant core, 16 mm (5/8 inch) thick.
- B. ASTM C1177, Type X.

2.3 ACCESSORIES

- A. ASTM C1047, except form of 0.39 mm (0.015 inch) thick zinc coated steel sheet or rigid PVC plastic.
- B. Flanges not less than 22 mm (7/8 inch) wide with punchouts or deformations as required to provide compound bond.

2.4 FASTENERS

- A. ASTM C1002 and ASTM C840, except as otherwise specified.

- B. ASTM C954, for steel studs thicker than 0.04 mm (0.33 inch).
- C. Select screws of size and type recommended by the manufacturer of the material being fastened.
- D. For fire rated construction, type and size same as used in fire rating test.
- E. Clips: Zinc-coated (galvanized) steel; gypsum board manufacturer's standard items.

2.5 FINISHING MATERIALS AND LAMINATING ADHESIVE

- A. ASTM C475 and ASTM C840. Free of antifreeze, vinyl adhesives, preservatives, biocides and other VOC. Adhesive shall contain a maximum VOC content of 50 g/l.

PART 3 - EXECUTION

3.1 GYPSUM BOARD HEIGHTS

- A. Extend all layers of gypsum board from floor to underside of structure overhead on following partitions and furring:
 - 1. Two sides of partitions:
 - a. Fire rated partitions.
 - b. Smoke partitions.
 - c. Sound rated partitions.
 - d. Full height partitions shown (FHP).
 - e. Corridor partitions.
 - 2. One side of partitions or furring:
 - a. Inside of exterior wall furring or stud construction.
 - b. Room side of room without suspended ceilings.
 - c. Furring for pipes and duct shafts, except where fire rated shaft wall construction is shown.
 - 3. Extend all layers of gypsum board construction used for fireproofing of columns from floor to underside of structure overhead, unless shown otherwise.
- B. In locations other than those specified, extend gypsum board from floor to heights as follows:
 - 1. Not less than 100 mm (4 inches) above suspended acoustical ceilings.
 - 2. At ceiling of suspended gypsum board ceilings.
 - 3. At existing ceilings.

3.2 INSTALLING GYPSUM BOARD

- A. Coordinate installation of gypsum board with other trades and related work.
- B. Install gypsum board in accordance with ASTM C840, except as otherwise specified.
- C. Use gypsum boards in maximum practical lengths to minimize number of end joints.
- D. Bring gypsum board into contact, but do not force into place.
- E. Ceilings:
 - 1. For single-ply construction, use perpendicular application.
 - 2. For two-ply assemblies:
 - a. Use perpendicular application.
 - b. Apply face ply of gypsum board so that joints of face ply do not occur at joints of base ply with joints over framing members.
- F. Walls (Except Shaft Walls):
 - 1. When gypsum board is installed parallel to framing members, space fasteners 300 mm (12 inches) on center in field of the board, and 200 mm (8 inches) on center along edges.
 - 2. When gypsum board is installed perpendicular to framing members, space fasteners 300 mm (12 inches) on center in field and along edges.
 - 3. Stagger screws on abutting edges or ends.
 - 4. For single-ply construction, apply gypsum board with long dimension either parallel or perpendicular to framing members as required to minimize number of joints except gypsum board shall be applied vertically over "Z" furring channels.
 - 5. For two-ply gypsum board assemblies, apply base ply of gypsum board to assure minimum number of joints in face layer. Apply face ply of wallboard to base ply so that joints of face ply do not occur at joints of base ply with joints over framing members.
 - 6. For three-ply gypsum board assemblies, apply plies in same manner as for two-ply assemblies, except that heads of fasteners need only be driven flush with surface for first and second plies. Apply third ply of wallboard in same manner as second ply of two-ply assembly, except use fasteners of sufficient length enough to have the same penetration into framing members as required for two-ply assemblies.
 - 7. No offset in exposed face of walls and partitions will be permitted because of single-ply and two-ply or three-ply application requirements.

8. Installing Two Layer Assembly Over Sound Deadening Board:
 - a. Apply face layer of wallboard vertically with joints staggered from joints in sound deadening board over framing members.
 - b. Fasten face layer with screw, of sufficient length to secure to framing, spaced 300 mm (12 inches) on center around perimeter, and 400 mm (16 inches) on center in the field.
9. Control Joints ASTM C840 and as follows:
 - a. Locate at both side jambs of openings if gypsum board is not "yoked". Use one system throughout.
 - b. Not required for wall lengths less than 9000 mm (30 feet).
 - c. Extend control joints the full height of the wall or length of soffit/ceiling membrane.
- G. Acoustical or Sound Rated Partitions, Fire and Smoke Partitions:
 1. Cut gypsum board for a space approximately 3 mm to 6 mm (1/8 to 1/4 inch) wide around partition perimeter.
 2. Coordinate for application of caulking or sealants to space prior to taping and finishing.
 3. Follow ASTM E497 for sound rated partitions. STC minimum values as shown.
- H. Accessories:
 1. Set accessories plumb, level and true to line, neatly mitered at corners and intersections, and securely attach to supporting surfaces as specified.
 2. Install in one piece, without the limits of the longest commercially available lengths.
 3. Corner Beads:
 - a. Install at all vertical and horizontal external corners and where shown.
 - b. Use screws only. Do not use crimping tool.
 4. Edge Trim (casings Beads):
 - a. At both sides of expansion and control joints unless shown otherwise.
 - b. Where gypsum board terminates against dissimilar materials and at perimeter of openings, except where covered by flanges, casings or permanently built-in equipment.
 - c. Where gypsum board surfaces of non-load bearing assemblies abut load bearing members.

d. Where shown.

3.3 CAVITY SHAFT WALL

- A. Coordinate assembly with Section 09100, NON-STRUCTURAL METAL FRAMING, for erection of framing and gypsum board.
- B. Conform to UL Design No. U438 or FM WALL CONSTRUCTION 12-2/HR (Nonbearing for two-hour fire rating or 25-1/HR (Non-loadbearing) for one-hour fire rating where shown.
- C. Cut coreboard (liner) panels 25 mm (one inch) less than floor-to-ceiling height, and erect vertically between J-runners on shaft side.
 - 1. Where shaft walls exceed 4300 mm (14 feet) in height, position panel end joints within upper and lower third points of wall.
 - 2. Stagger joints top and bottom in adjacent panels.
- D. Gypsum Board:
 - 1. Two hour wall:
 - a. Erect base layer (backing board) vertically on finish side of wall with end joints staggered. Fasten base layer panels to studs with 25 mm (one inch) long screws, spaced 600 mm (24 inches) on center.
 - b. Use laminating adhesive between plies in accordance with UL or FM if required by fire test.
 - c. Apply face layer of gypsum board required by fire test vertically over base layer with joints staggered and attach with screws of sufficient length to secure to framing staggered from those in base, spaced 300 mm (12 inches) on center.
 - 2. One hour wall with one layer on finish side of wall: Apply face layer of gypsum board vertically. Attach to studs with screws of sufficient length to secure to framing, spaced 300 mm (12 inches) on center in field and along edges.
 - 3. Where coreboard is covered with face layer of gypsum board, stagger joints of face layer from those in the coreboard base.
- E. Treat joints, corners, and fasteners in face layer as specified for finishing of gypsum board.

3.4 FINISHING OF GYPSUM BOARD

- A. Finish joints, edges, corners, and fastener heads in accordance with ASTM C840. Use Level 5 finish for all finished areas open to public view.
- B. Before proceeding with installation of finishing materials, assure the following:

1. Gypsum board is fastened and held close to framing or furring.
 2. Fastening heads in gypsum board are slightly below surface in dimple formed by driving tool.
- C. Finish joints, fasteners, and all openings, including openings around penetrations, on that part of the gypsum board extending above suspended ceilings to seal surface of non decorated smoke barrier, fire rated and sound rated gypsum board construction. After the installation of hanger rods, hanger wires, supports, equipment, conduits, piping and similar work, seal remaining openings and maintain the integrity of the smoke barrier, fire rated and sound rated construction/ Sanding is not required of non decorated surfaces.

3.5 REPAIRS

- A. After taping and finishing has been completed, and before decoration, repair all damaged and defective work, including nondecorated surfaces.
- B. Patch holes or openings 13 mm (1/2 inch) or less in diameter, or equivalent size, with a setting type finishing compound or patching plaster.
- C. Repair holes or openings over 13 mm (1/2 inch) diameter, or equivalent size, with 16 mm (5/8 inch) thick gypsum board secured in such a manner as to provide solid substrate equivalent to undamaged surface.
- D. Tape and refinish scratched, abraded or damaged finish surfaces including cracks and joints in non decorated surface to provide smoke tight construction fire protection equivalent to the fire rated construction and STC equivalent to the sound rated construction.

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SECTION 09 51 00

ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Metal ceiling suspension system for acoustical ceilings.
- B. Acoustical units.

1.2 RELATED WORK

- A. Color, pattern, and location of each type of acoustical unit:
Section 09 06 00, SCHEDULE FOR FINISHES. Also refer to the finish
schedule displayed on the drawings.

1.3 SUBMITTAL

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT
DATA, AND SAMPLES.
- B. Samples:
 - 1. Acoustical units, each type, with label indicating
conformance to specification requirements, including units
specified to match existing.
 - 2. Colored markers for units providing access.
- C. Manufacturer's Literature and Data:
 - 1. Ceiling suspension system, each type, showing complete
details of installation, including suspension system
specified to match existing and upward access system details
for concealed grid systems.
 - 2. Acoustical units, each type
 - 3. Runners designed for snap-in attachment of metal pans.
- D. Manufacturer's Certificates: Acoustical units, each type, in
accordance with specification requirements.

1.4 DEFINITIONS

- A. Standard definitions as defined in ASTM C634.
- B. Terminology as defined in ASTM E1264.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to
extent referenced. Publications are referenced in the text by
basic designation only.
- B. American Society for Testing and Materials (ASTM):

A641/A641M-03.....Zinc-coated (Galvanized) Carbon Steel Wire

A653/A653M-07.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip Process

C423-07.....Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

C634-02 (E2007)...Standard Terminology Relating to Environmental Acoustics

C635-04.....Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings

C636-06.....Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels

E84-07.....Surface Burning Characteristics of Building Materials

E119-07.....Fire Tests of Building Construction and Materials

E413-04.....Classification for Rating Sound Insulation.

E580-06.....Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint

E1264-(R2005).....Classification for Acoustical Ceiling Products

PART 2 - PRODUCTS

2.1 METAL SUSPENSION SYSTEM

- A. ASTM C635, heavy-duty system, except as otherwise specified.
 - 1. Ceiling suspension system members may be fabricated from either of the following unless specified otherwise.
 - a. Galvanized cold-rolled steel, bonderized.
 - b. Extruded aluminum.
 - c. Fire resistant plastic (glass fiber) having a flame spread and smoke developed rating of not more than 25 when tested in accordance with ASTM E84.
 - 2. Use same construction for cross runners as main runners. Use of lighter-duty sections for cross runners is not acceptable.
 - 3. Use aluminum suspension in kitchens and aluminum or fire resistant plastic in toilets adjacent to shower areas, hydrotherapy, and swimming pools.
- B. Exposed grid suspension system for support of lay-in panels:
 - 1. Exposed grid width not less than 22 mm (7/8 inch) with not less than 8 mm (5/16 inch) panel bearing surface.

2. Fabricate wall molding and other special molding from the same material with same exposed width and finish as the exposed grid members.
 3. On exposed metal surfaces apply baked-on enamel flat texture finish in color to match adjacent acoustical units unless specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Concealed grid suspension system for support of mineral base acoustical tile:
1. Concealed grid upward access suspension system to provide an initial opening of 300 mm by 600 mm (12 by 24 inches) and for removal of adjacent runners and tile without the use of special tools, and without damage to suspension system and acoustical tile.
 2. Minimum flange width of 22 mm (7/8 inch) except for access hook and angle.
 3. Minimum flange width of 11 mm (7/16 inch) for access hook and angle.
- D. Suspension system for support of Metal Type V, VI, and VII tiles: Concealed grid type having runners designed for the snap-in attachment of metal tile (pans).

2.2 PERIMETER SEAL

- A. Vinyl, polyethylene or polyurethane open cell sponge material having density of 1.3 plus or minus 10 percent, compression set less than 10 percent with pressure sensitive adhesive coating on one side.
- B. Thickness as required to fill voids between back of wall molding and finish wall.
- C. Not less than 9 mm (3/8 inch) wide strip.

2.3 WIRE

- A. ASTM A641.
- B. For wire hangers: Minimum diameter 2.68 mm (0.1055 inch).
- C. For bracing wires: Minimum diameter 3.43 mm (0.1350 inch).

2.4 ANCHORS AND INSERTS

- A. Use anchors or inserts to support twice the loads imposed by hangers attached thereto.
- B. Hanger Inserts:
 1. Fabricate inserts from steel, zinc-coated (galvanized after fabrication).

2. Nailing type option for wood forms:

- a. Upper portion designed for anchorage in concrete and positioning lower portion below surface of concrete approximately 25 mm (one inch).
- b. Lower portion provided with not less than 8 mm (5/16 inch) hole to permit attachment of hangers.

3. Flush ceiling insert type:

- a. Designed to provide a shell covered opening over a wire loop to permit attachment of hangers and keep concrete out of insert recess.
- b. Insert opening inside shell approximately 16 mm (5/8 inch) wide by 9 mm (3/8 inch) high over top of wire.
- c. Wire 5 mm (3/16 inch) diameter with length to provide positive hooked anchorage in concrete.

C. Clips:

1. Galvanized steel.
2. Designed to clamp to steel beam or bar joists, or secure framing member together.
3. Designed to rigidly secure framing members together.
4. Designed to sustain twice the loads imposed by hangers or items supported.

D. Tile Splines: ASTM C635.

2.5 CARRYING CHANNELS FOR SECONDARY FRAMING

- A. Fabricate from cold-rolled or hot-rolled steel, black asphaltic paint finish, free of rust.
- B. Weighing not less than the following, per 300 m (per thousand linear feet):

Size mm	Size Inches	Cold-rolled Kg Pound		Hot-rolled Kg Pound	
38	1 1/2	215.4	475	508	1120
50	2	267.6	590	571.5	1260

2.6 ADHESIVE

- A. ASTM D1779, having flame spread index of 25 or less when tested in accordance with ASTM E84.
- B. Developing minimum strength of 7 kg/m² (one psi) of contact surface 48 hours after installation in temperature of 21 °C (70 °F).

2.7 ACOUSTICAL UNITS

A. General:

1. Ceiling Tile shall meet minimum 37% bio-based content in accordance with USDA Bio-Preferred Product requirements.
 2. ASTM E1264, weighing 3.6 kg/m² (3/4 psf) minimum for mineral fiber panels or tile.
 3. Class A Flame Spread: ASTM 84
 4. Minimum NRC (Noise Reduction Coefficient): 0.55 unless specified otherwise: ASTM C423.
 5. Minimum CAC (Ceiling Attenuation Class): 40-44 range unless specified otherwise: ASTM E413.
 6. Manufacturers standard finish, minimum Light Reflectance (LR) coefficient of 0.75 on the exposed surfaces, except as specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES. Colored units integrally colored throughout.
 7. Lay-in panels: Sizes as shown, with square edges reveal edges, tegular, or as indicated on the drawings.
 8. Tile for concealed grid upward access system: Optional 300 by 300 or 300 by 600 mm (12 by 12 or 12 by 24 inch) size.
 - a. Cross score 300 by 600 mm (12 by 24 inch) tile to simulate 300 by 300 mm (12 by 12 inch) tile edges.
 - b. Provide tile with beveled or square edges and joints as required to suit suspension and access system.
- B. Type III Units - Mineral base with water-based painted finish less than 10 g/l VOC, Form 2 - Water felted, minimum 16 mm (5/8 inch) thick. Mineral base to contain minimum 65 percent recycled content.
- C. Type IV Units - Mineral base with membrane-faced overlay, Form 2 - Water felted, minimum 16 mm (5/8 inch) thick. Apply over the paint coat on the face of the unit a poly (vinyl) chloride overspray having a flame spread index of 25 or less when tested in accordance with ASTM E84.
- D. Type V Units - Perforated steel facing (pan) with mineral or glass fiber base backing.
1. Steel ASTM A653, not less than 0.38 mm (0.015 inch) thick, minimum G30 galvanizing.
 2. Bonderize both sides of sheet and apply two coats of baked-on enamel finish, free from gloss or sheen, on surfaces exposed to view and at least one coat on concealed surfaces.

2.9 ACCESS IDENTIFICATION

A. Markers:

1. Use colored markers with pressure sensitive adhesive on one side.
 2. Make colored markers of paper or plastic, 6 to 9 mm (1/4 to 3/8 inch) in diameter.
- B. Use markers of the same diameter throughout building.
- C. Color Code: Use following color markers for service identification:
- Color.....Service
- Red.....Sprinkler System: Valves and Controls
- Green.....Domestic Water: Valves and Controls
- Yellow.....Chilled Water and Heating Water
- Orange.....Ductwork: Fire Dampers
- Blue.....Ductwork: Dampers and Controls
- Black.....Gas: Laboratory, Medical, Air and Vacuum

PART 3 - EXECUTION

3.1 CEILING TREATMENT

- A. Treatment of ceilings shall include sides and soffits of ceiling beams, furred work 600 mm (24 inches) wide and over, and vertical surfaces at changes in ceiling heights unless otherwise shown. Install acoustic tiles after wet finishes have been installed and solvents have cured.
- B. Lay out acoustical units symmetrically about center lines of each room or space unless shown otherwise on reflected ceiling plan.
- C. Moldings:
1. Install metal wall molding at perimeter of room, column, or edge at vertical surfaces.
 2. Install special shaped molding at changes in ceiling heights and at other breaks in ceiling construction to support acoustical units and to conceal their edges.
- D. Perimeter Seal:
1. Install perimeter seal between vertical leg of wall molding and finish wall, partition, and other vertical surfaces.
 2. Install perimeter seal to finish flush with exposed faces of horizontal legs of wall molding.
- E. Existing ceiling:
1. Where extension of existing ceilings occur, match existing.

2. Where acoustical units are salvaged and reinstalled or joined, use salvaged units within a space. Do not mix new and salvaged units within a space which results in contrast between old and new acoustic units.
3. Comply with specifications for new acoustical units for new units required to match appearance of existing units.

3.2 CEILING SUSPENSION SYSTEM INSTALLATION

A. General:

1. Install metal suspension system for acoustical tile and lay-in panels in accordance with ASTM C636, except as specified otherwise.
2. Use direct or indirect hung suspension system or combination thereof as defined in ASTM C635.
3. Support a maximum area of 1.48 m² (16 sf) of ceiling per hanger.
4. Prevent deflection in excess of 1/360 of span of cross runner and main runner.
5. Provide extra hangers, minimum of one hanger at each corner of each item of mechanical, electrical and miscellaneous equipment supported by ceiling suspension system not having separate support or hangers.
6. Provide not less than 100 mm (4 inch) clearance from the exposed face of the acoustical units to the underside of ducts, pipe, conduit, secondary suspension channels, concrete beams or joists; and steel beam or bar joist unless furred system is shown,
7. Use main runners not less than 1200 mm (48 inches) in length.
8. Install hanger wires vertically. Angled wires are not acceptable except for seismic restraint bracing wires.

B. Anchorage to Structure:

1. Concrete:
 - a. Install hanger inserts and wire loops required for support of hanger and bracing wire in concrete forms before concrete is placed. Install hanger wires with looped ends through steel deck if steel deck does not have attachment device.
 - b. Use eye pins or threaded studs with screw-on eyes in existing or already placed concrete structures to support hanger and bracing wire. Install in sides of concrete beams or joists at mid height.
2. Steel:

- a. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels for attachment of hanger wires.
 - 1) Size and space carrying channels to ensure that the maximum deflection specified will not be exceeded.
 - 2) Attach hangers to steel carrying channels, spaced four feet on center, unless area supported or deflection exceeds the amount specified.
 - b. Attach carrying channels to the bottom flange of steel beams spaced not 1200 mm (4 feet) on center before fire proofing is installed. Weld or use steel clips to attach to beam to develop full strength of carrying channel.
 - c. Attach hangers to bottom chord of bar joists or to carrying channels installed between the bar joists when hanger spacing prevents anchorage to joist. Rest carrying channels on top of the bottom chord of the bar joists, and securely wire tie or clip to joist.
- B. Direct Hung Suspension System:
- 1. As illustrated in ASTM C635.
 - 2. Support main runners by hanger wires attached directly to the structure overhead.
 - 3. Maximum spacing of hangers, 1200 mm (4 feet) on centers unless interference occurs by mechanical systems. Use indirect hung suspension system where not possible to maintain hanger spacing.
- C. Indirect Hung Suspension System:
- 1. As illustrated in ASTM C635.
 - 2. Space carrying channels for indirect hung suspension system not more than 1200 mm (4 feet) on center. Space hangers for carrying channels not more than 2400 mm (8 feet) on center or for carrying channels less than 1200 mm (4 feet) on center so as to ensure that specified requirements are not exceeded.
 - 3. Support main runners by specially designed clips attached to carrying channels.
- D. Seismic Ceiling Bracing System: Conform to California Building Code (CBC) Seismic Zone 4.
- 1. Construct system in accordance with ASTM E580.
 - 2. Connect bracing wires to structure above as specified for anchorage to structure and to main runner or carrying channels of suspended ceiling at bottom.

3.3 ACOUSTICAL UNIT INSTALLATION

- A. Cut acoustic units for perimeter borders and penetrations to fit tight against penetration for joint not concealed by molding.
- B. Install lay-in acoustic panels in exposed grid with not less than 6 mm (1/4 inch) bearing at edges on supports.
 - 1. Install tile to lay level and in full contact with exposed grid.
 - 2. Replace cracked, broken, stained, dirty, or tile not cut for minimum bearing.
- C. Tile in concealed grid upward access suspension system:
 - 1. Install acoustical tile with joints close, straight and true to line, and with exposed surfaces level and flush at joints.
 - 2. Make corners and arises full, and without worn or broken places.
 - 3. Locate acoustical units providing access as specified under Article, ACCESS.
- D. Markers:
 - 1. Install markers of color code specified to identify the various concealed piping, mechanical, and plumbing systems.
 - 2. Attach colored markers to exposed grid on opposite sides of the units providing access.
 - 3. Attach marker on exposed ceiling surface of upward access acoustical unit.

3.5 CLEAN-UP AND COMPLETION

- A. Replace damaged, discolored, dirty, cracked and broken acoustical units.
- B. Leave finished work free from defects.

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SECTION 09 63 40

STONE FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

The requirements for interior stone flooring, set in mortar on a rigid base are covered in this section, including sealing the stone.

1.2 RELATED WORK

- A. Color and texture of grout, mortar, and stone: Section 09 06 00, SCHEDULE FOR FINISHES
- B. See drawings for the paving pattern.

1.3 ALLOWABLE TOLERANCES

- A. Floor surface true to plane within 1 in 1000 (1/8-inch in 10 feet) not cumulative.
- B. Joint width deviation not greater than 10 percent of dimension shown.

1.4 SUBMITTAL

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, furnish the following:
- B. Samples: Five individual samples of stone showing extreme variations in color and texture.
- C. Shop Drawings: Special stone shapes.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.
- B. Store masonry materials under waterproof covers on planking clear of ground, and protect from handling damage, dirt stain, water and wind.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - C150-07.....Portland Cement
 - C241-90 (R2005).....Abrasion Resistance of Stone Subjected to Foot Traffic
 - C270-07.....Mortar for Unit Masonry

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stone Slabs: With abrasion resistance of at least 25 as measured by ASTM C241. Stone slabs to be uniform in quality and texture, free from shale, excess mica, seams, sealing and disintegration.
- B. Portland Cement: ASTM C150.
- C. Coloring Pigments: Pure mineral pigments, lime proof and non-fading; added to grout, and mortar by the manufacturer at the place of manufacture. Job colored grout and mortar are not acceptable.

2.2 MORTAR

ASTM C270, Type S. No admixtures permitted. Type N lime is not permitted.

2.3 GROUT

One part portland cement and three parts sand by volume. Mix with enough water for flowability.

2.4 PROPRIETARY MATERIALS PERMITTED

- A. Portland Cement Mortar Thin Bed: Sand-cement mortar mix gauged with Laticrete Acrylic Admix or Custom Building Products Thin-Set Mortar Admix, or equal.
- B. Portland Cement Mortar Thick Bed: Laticrete 226 Thick Bed Mortar Mix gauged with Laticrete 3701 Mortar and Grout Admix or on site mix per ANSI A108.1A with Custom Building Products Thin-Set Mortar Admix, or equal.
- C. Latex Portland Cement Bond Mortar: Laticrete 317 Floor & Wall thinset gauged with Laticrete Admix, or Custom building Products Master Blend mixed with Thin-Set Mortar Admix, or equal.
- D. Latex Portland Cement Grout: Laticrete Sanded Grout (1500 Series), Custom Polyblend Sanded Grout or Laticrete Unsanded Grout 1600 Series (for joints smaller than 1/8"), Custom Polyblend Unsanded Grout, or equal.

2.5 CLEANER AND SEALER

- A. Cleaner and sealer shall be from one manufacturer, acceptable to tile and grout manufactures. To establish quality, the Specification is based on Aqual Mix Inc., or equal. Equivalent products from Miracle Sealants Co. or Watco Tile and Brick may be provided.
- B. Cleaner: Aqua Mix Concentrated Tile Cleaner, neutral phosphate-free cleaner, or Custom Building Products Tile Lab Surface Gard, or equal.

PART 3 - EXECUTION

3.1 APPLICATION

- A. General: Proprietary products shall be installed as recommended by its manufacturer. Do not use stone slabs with chips, cracks, discoloration or other visible defects.
- B. Installation with Portland Cement Grout:
 - 1. Spread and screed mortar setting bed mixture 13 mm to 25 mm (1/2-inch to 1-inch) in thickness true to plane.
 - 2. Limit setting bed to minimum amount which can be covered with stone before initial set.
 - 3. Apply 1 mm (1/32-inch) layer of neat cement paste over setting bed. Set and level each stone immediately. Tamp stone to completely contact setting bed.
 - 4. Grout joints as soon as initial set is achieved. Place grout in joints, strike flush and tool slightly concave.
 - 5. Cure grout by maintaining in a damp condition for seven days.
- C. Installation with Portland Cement Mortar:
 - 1. Install in full bed joint. Remove excess mortar. Strike joints flush with top surface of stone and tool slightly concave.
 - 2. Cure mortar by maintaining in a damp condition for seven days.

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SECTION 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the installation of resilient flooring, vinyl or rubber base.

1.2 RELATED WORK

- A. Color and texture: Section 09 06 00, SCHEDULE FOR FINISHESS.
- B. Integral base with sheet flooring: Section 09 65 16, RESILIENT SHEET FLOORING.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product.
 - 2. Base and stair material manufacturer's recommendations for adhesives.
 - 3. Application and installation instructions.
- C. Samples:
 - 1. Base: 150 mm (6 inches) long, each type and color.
 - 2. Adhesive: Literature indicating each type.

1.4 DELIVERY

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Materials from containers which have been distorted, damaged or opened prior to installation will be rejected.

1.5 STORAGE

- A. Store materials in weather tight and dry storage facility.
- B. Protect material from damage by handling and construction operations before, during, and after installation.

1.6 APPLICABLE PUBLICATIONS

- A. The publication listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

- B. American Society for Testing and Materials (ASTM):

F1861-02..... Resilient Wall Base

PART 2 - PRODUCTS

2.1 GENERAL

- A. Subject to compliance with specified requirements, topset rubber base shall be by Johnsonite or equal. Refer to finish schedule on Architectural Drawings for style and color designation.
- B. Use only products by the same manufacturer and from the same production run.

2.2 RESILIENT BASE

- A. ASTM F1861, 3 mm (1/8 inch) thick, 100 mm (4 inches) high, Type TP Rubber, Thermoplastics, Group 2-layered with molded top. Style B-cove.
- B. Where carpet occurs, use Style A-straight.
- C. Use only one type of base throughout.

2.3 ADHESIVES

- A. Use products recommended by the material manufacturer for the conditions of use.
- B. Use low-VOC adhesive during installation. Water based adhesive with low VOC is preferred over solvent based adhesive.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials above 21° C (70 °F), for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs, between 21° C and 27° C (70°F and 80°F) for at least 48 hours, before, during, and after installation.
- C. Do not install materials until building is permanently enclosed and wet construction is complete, dry, and cured.

3.2 INSTALLATION REQUIREMENTS

- A. The respective manufacturer's instructions for application and installation will be considered for use when approved by the Resident Engineer.
- B. Submit proposed installation deviation from this specification to the Resident Engineer indicating the differences in the method of installation.

- C. The Resident Engineer reserves the right to have test portions of material installation removed to check for non-uniform adhesion and spotty adhesive coverage.

3.3 PREPARATION

- A. Examine surfaces on which material is to be installed.
- B. Fill cracks, pits, and dents with leveling compound.
- C. Level to 3 mm (1/8 inch) maximum variations.
- D. Do not use adhesive for leveling or filling.
- E. Grind, sand, or cut away protrusions; grind high spots.
- F. Clean substrate area of oil, grease, dust, paint, and deleterious substances.
- G. Substrate area dry and cured. Perform manufacturer's recommended bond and moisture test.
- H. Preparation of existing installation:
 - 1. Remove existing base and stair treads including adhesive.
 - 2. Do not use solvents to remove adhesives.
 - 3. Prepare substrate as specified.

3.4 BASE INSTALLATION

- A. Location:
 - 1. Unless otherwise specified or shown, where base is scheduled, install base over toe space of base of casework, lockers, laboratory, pharmacy furniture island cabinets and where other equipment occurs.
 - 2. Extend base scheduled for room into adjacent closet, alcoves, and around columns.
- B. Application:
 - 1. Apply adhesive uniformly with no bare spots.
 - 2. Set base with joints aligned and butted to touch for entire height.
 - 3. Before starting installation, layout base material to provide the minimum number of joints with no strip less than 600 mm (24 inches) length.
 - a. Short pieces to save material will not be permitted.
 - b. Locate joints as remote from corners as the material lengths or the wall configuration will permit.
- C. Form corners and end stops as follows:

1. Score back of outside corner.
 2. Score face of inside corner and notch cove.
- D. Roll base for complete adhesion.

3.5 STAIR TREAD INSTALLATION

- A. Prepare surfaces to receive the treads in accordance with applicable portions of paragraph, preparation.
- B. Layout of Treads.
1. No joints will be accepted in treads.,
 2. Set full treads on intermediate and floor landings.
- C. Application:
1. Apply adhesive uniformly with no bare spots.
 2. Roll and pound treads to assure adhesion.

3.6 SHEET RUBBER INSTALLATION.

- A. Prepare surfaces to receive sheet rubber in accordance with applicable portions of paragraph, preparation.
- B. Layout of Sheet Rubber:
1. Use minimum number of joints compatible with material direction and symmetrical joint location.
 2. Where sheet rubber intersect vertical stair members, other sheets, stair treads, and other resilient materials at the floor landings, material shall touch for the entire length within 5 mils (0.005 inch).
 3. Install sheet rubber on floors and intermediate landings where resilient stair treads are installed; center joint with other flooring material under doors.
- C. Application:
1. Apply adhesive uniformly with no bare spots.
 2. Roll sheet rubber to assure adhesion.

3.7 CLEANING AND PROTECTION

- A. Clean all exposed surfaces of base and adjoining areas of adhesive spatter before it sets.
- B. Keep traffic off resilient material for at least 72 hours after installation.
- C. Clean and polish materials in the following order:
1. After two weeks, scrub resilient base, sheet rubber and treads materials with a minimum amount of water and a mild

detergent. Leave surfaces clean and free of detergent residue. Polish resilient base to a gloss finish.

2. Do not polish tread and sheet rubber materials.
- D. When construction traffic is anticipated, cover tread materials with reinforced kraft paper and plywood or hardboard properly secured and maintained until removal is directed by the Resident Engineer.
- E. Where protective materials are removed and immediately prior to acceptance, replace damaged materials and re-clean resilient materials. Damaged materials are defined as having cuts, gouges, scrapes or tears and not fully adhered.

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SECTION 09 65 16

RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section covers the installation of sheet flooring with integral cove base.
- B. Unless otherwise specified where sheet flooring is scheduled, provide integral base at intersection of floor and vertical surfaces. Provide sheet flooring and base scheduled for room on floors and walls under and behind areas where casework, furniture and other equipment occurs, except where mounted in wall recesses.
- C. Refer to Finish Schedule on drawings.

1.2 INSTALLATION REQUIREMENTS

- A. The sheet flooring manufacturer's instructions for application and installation shall be the basis for obtaining the specified results.
- B. Inform the Project Engineer of conflicts between this section and the manufacturer's instructions or recommendations for auxiliary materials, or installation methods, before proceeding.

1.3 SUBMITTALS

In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS, submit the following:

- A. Manufacturer's Literature and Data:
 - 1. Description of each product to be provided.
 - 2. Sheet flooring manufacturers' recommendations for adhesives, underlayment, and primers.
 - 3. Application and installation instructions.
- B. Samples:
 - 1. Sheet material: 12 inches by 12 inches for each type, pattern and color.
 - 2. Adhesive, underlayment and primer: Pint container, each type.
 - 3. Cap strip and fillet strip for integral base.

1.4 DELIVERY

Deliver sheet flooring to the site in full width roll, factory wrapped, completely enclosed, and clearly marked with the manufacturer's number, type and color, production run number and manufacture date. Deliver

other materials to the site in original sealed packages or containers; labeled for identification with the manufacturer's name and brand.

1.6 STORAGE

Store materials in weather tight and dry storage facility. Protect from damage from handling, weather and construction operation before, during and after installation. Store sheet flooring on end.

1.7 PROJECT CONDITIONS

- A. Maintain temperature of sheet flooring above 65 degrees F, for 48 hours before installation.
- B. Maintain temperature of rooms where sheet flooring work occurs above 65 degrees F, for 48 hours, before installation and during installation. After installation, maintain temperature at or above 55 degrees F.
- C. Wet construction in or near areas to receive sheet flooring shall be complete, dry and cured.

1.8 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

- A. Federal Specifications (Fed. Spec.):
L-F-475A(1).....Floor Covering, Vinyl, Surface (Tile And Roll)
- B. American Society for Testing and Materials (ASTM):
E84-81.....Surface Burning Characteristics of Building Materials
- C. Resilient Floor Covering Institute (RFCI):
Cleaners for Use in Resilient Floor Covering - Revised 12-78
Concrete Curing Compound and Parting Agents - Published 7-77

PART 2 - PRODUCTS

2.1 SHEET FLOORING

Fed. Spec. L-F-475, Type II (roll), grade A, 6 feet minimum width.

- A. Flame spread - 75 maximum; smoke developed - 450 maximum (tested in accordance with ASTM E84).
- B. Each color and pattern of sheet flooring shall be of the same production run.

2.2 ADHESIVES

Type recommended by the sheet flooring manufacturer for the conditions of use.

2.3 PRIMER (For Concrete Subfloors)

As recommended by the adhesive or sheet flooring manufacturer.

2.4 CAP STRIP

Extruded vinyl, flanged zero edge vinyl reducer strip approximately one inch with one half inch flange, 2-3/4 inch radius fillet strips compatible with the sheet flooring.

2.5 MASTIC UNDERLAYMENT (For Concrete Floors)

Provide products with latex or polyvinyl acetate resins in the mix. The condition to be corrected shall determine the type of underlayment selected.

2.6 POLISH

Non-buffable metal cross link polymer type.

PART 3 - EXECUTION

3.1 SUBFLOOR PREPARATION

- A. Examine surfaces on which sheet flooring is to be installed. Correct conditions which will impair proper installation.
 - 1. Trowel marks, pits, dents, protrusions, cracks or joints are unacceptable and shall be corrected.
- B. Fill cracks, joints and other irregularities in concrete with mastic underlayment.
 - 1. Do not use adhesive for filling or leveling purposes.
 - 2. Do not use mastic to correct imperfections which can be corrected by spot grinding.
- C. Preparation shall include the removal of existing resilient floor and existing adhesive. Do not use solvents to remove adhesives.
- D. Clean floor of oil, paint, dust and deleterious substances, floor shall be dry and cured.
- E. Concrete Subfloor Testing:
 - 1. Apply a three foot square prime coat patch to the prepared concrete subfloor in each room or area to receive sheet flooring.
 - 2. The Project Engineer may require additional patches as follows:
 - a. Area configuration such as long corridors or large rooms.
 - b. Slab conditions such as oil or fuel spillage which may have leached into the slab, questionable curing or release agents used on the slabs.

3. The Project Engineer may waive any or all patch tests.
 4. Patches shall have adhered after 24 hours for the subfloor to be accepted. Project Engineer will be present when the patches are scraped to check adherence.
- F. In the event that curing agents or parting agents used on the concrete slabs are the type which will inhibit bond, harm adhesive or the resilient material, detection and removal shall be in accordance with RFCI Concrete Curing Compound and Parting Agents.
- G. Prime the concrete subfloor if the primer will seal slab conditions that would inhibit bonding, or if priming is recommended by the adhesive manufacturer.

3.2 FLOORING INSTALLATION

- A. Method of installation shall be full coverage adhesives.
1. Air pockets or loose edges will not be accepted.
 2. Trim sheet materials to touch in the length of intersection at pipes and vertical projections, seal, joints at pipe with waterproof cement.
- NOTE: Where manufacturer has developed an edge and seam cement down method, the Project Engineer may consider accepting this form of application if presented as part of the manufacturers literature and is fully described. The finished floor shall conform to the specification for fully cemented sheets.
- B. Joints shall be held to a minimum; avoid small filler pieces or strips.
- C. Joints shall be butted and shall be solvent welded, open joints will not be accepted. Joints shall not be readily visible from a standing position.
- D. Match patterns at joints exactly, reverse sheets as required to obtain the optimum color and pattern match.
- E. Installation at Edges:
1. Where sheet edge abuts vinyl tile provide a flush tight connection.
 2. Locate sheet edges under center line of doors or as directed by the Project Engineer.

3.3 INTEGRAL COVE BASE INSTALLATION

- A. Set performed fillet strip to receive base. Install the base with adhesive, terminate expose edge with the cap strip.
- B. Form internal and external corners to the geometric shape generated by the cove at either straight or radius corners.
- C. Solvent weld joints specified for the flooring. Seal cap strip to wall with an adhesive type sealant.

3.4 CLEANING AND PROTECTION

- A. From exposed surfaces, clean small adhesive marks during the application of sheet flooring and base before adhesive sets, excessive adhesive smearing will not be permitted.
- B. Keep traffic off sheet flooring for 24 hours after installation.
- C. Clean and polish materials in the following order:
 - 1. For the first two weeks after installation sweep and damp mop only.
 - 2. After two weeks, scrub sheet flooring and base with a minimum amount of water and a mild detergent.
 - 3. Apply polish to the floor in accordance with the polish manufacturer's instructions.
- D. Where construction traffic is anticipated, cover sheet flooring with reinforced kraft paper properly secured and maintained until removal is ordered by the Project Engineer.
- E. Where protective materials are removed and immediately prior to acceptance, repair any damage, re-clean sheet flooring, lightly re-apply polish and buff floor.

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SECTION 09 65 19

RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the installation of vinyl tile flooring, vinyl composition tile flooring, rubber tile flooring, and accessories.

1.2 RELATED WORK

- A. Color and pattern and location in room finish schedule: Refer to Drawings.
- B. Resilient Base: Refer to Drawings.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product.
 - 2. Resilient material manufacturer's recommendations for adhesives, underlayment, primers and polish.
 - 3. Application and installation instructions.
- C. Samples:
 - 1. Tile: 300 mm by 300 mm (12 inches by 12 inches) for each type, pattern and color.
 - 2. Edge Strips: 150 mm (Six inches) long, each type.
 - 3. Feature Strips: 150 mm (Six inches) long.
- D. Shop Drawings:
 - 1. Layout of patterns shown on the drawings.
 - 2. Edge strip locations showing types and detail cross sections.
- E. Test Reports:
 - 1. Abrasion resistance: Depth of wear for each tile type and color and volume loss of tile, certified by independent laboratory.
 - 2. Tested per ASTM F510.

1.4 DELIVERY

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Materials from containers which have been distorted, damaged or opened prior to installation will be rejected.

1.5 STORAGE

- A. Store materials in weathertight and dry storage facility.
- B. Protect from damage from handling, water, and temperature.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - D4078-87.....Water Emulsion Floor Finish
 - D3564-88.....Application of Floor Polishes to Maintain Vinyl Asbestos Tile or Flooring
 - F510-81.....Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Method
 - F710-92.....Preparing Concrete Floors and other Monolithic Floors to Receive Resilient Flooring
 - F1066-87.....Vinyl Composition Floor Tile
 - F1344-91.....Rubber Floor Tile
- C. Federal Specifications (Fed. Spec):
 - SS-T-312B.....Tile, Floor: Asphalt, Rubber, Vinyl, and Vinyl
 - INT AMD 2.....Composition
 - MMM-A-115C-79.....Adhesive, Asphalt, Water Emulsion Type (For Asphalt And Vinyl Composition Tiles)
- D. National Fire Protection Association (NFPA):
 - NFPA 253-90.....Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using Radiant Heat Energy Source
- E. Resilient Floor Covering Institute (RFCI):
 - ADH-1.....Vinyl Composition Tile Adhesive

- ID-2.....Concrete Treating Compounds Installation
Specifications for Vinyl Composition,
Solid Vinyl and Asphalt Tile Floorings
- CL-1.....Cleaners for Use on Resilient Floor
Coverings (Revised 1988)
- TM-6.....Determination of Quality of Cut (Joint
Tightness and Corner Openings) of
Resilient Tile

PART 2 - PRODUCTS

2.1 GENERAL

- A. Furnish product type, materials of the same production run.
- B. Use adhesives, underlayment, primers and polish recommended by the floor resilient material manufacturer.
- C. Interior Floor Finisher For Corridors, Stairs, and Halls: Class I, critical radiant flux minimum of 0.45 watts per square centimeter as determined by NFPA 253.
- D. Interior Floor Finishes For Remaining Areas: Class II, Critical radiant flux minimum of 0.22 watts per square centimeter as determined by NFPA 253.

2.2 VINYL COMPOSITION TILE

- A. ASTM F1066, Class 2, Type IV, Composition 1, non-asbestos, 300 mm (12 inches) square, 3.2 mm (1/8-inch) thick.
- B. Color and pattern uniformly distributed throughout thickness.

2.3 ADHESIVES

- A. Water emulsion asphalt: Fed. Spec. MMM-A-115.
- B. Latex type adhesives RFC ADH-1, Type III, Water based latex as recommended by tile manufacturer.
- C. Use only adhesive approved for flooring material applied to wood, plywood or particleboard underlayment.

2.4 PRIMER (FOR CONCRETE SUBFLOORS)

Asphaltic type as recommended by the adhesive and tile manufacturer.

2.5 LEVELING COMPOUND (For Concrete Floors)

- A. Provide products with latex or polyvinyl acetate resins in the mix.
- B. Determine the type of underlayment selected for use by the condition to be corrected.

2.6 POLISH AND CLEANERS

- A. Cleaners RFCI CL-1.

- B. Polish: ASTM D4078.

2.7 EDGE STRIPS

- A. 28 mm (1-1/8 inch) wide unless shown otherwise.
- B. Bevel from maximum thickness to minimum thickness for flush joint unless shown otherwise.
- C. Extruded aluminum, mill finish, mechanically cleaned.
 - 1. Drill and counter sink edge strip for flat head screws.
 - 2. Space holes near ends and approximately nine inches on center between.
- D. Resilient Edge Strip or Reducer Strip: Fed. Specs. SS-T-312, Solid vinyl.

2.8 SCREWS

Stainless steel flat head screw.

2.9 FEATURE STRIPS

- A. Use same material as floor tile.
- B. Sizes and shapes as shown.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials a minimum of 22 degrees C (70 degrees F,) for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs between 21 degrees and 27 degrees C 70 degrees and 80 degrees F, for at least 48 hours, before, during and after installation.
- C. Do not install flooring until building is permanently enclosed and wet construction in or near areas to receive tile materials is complete, dry and cured.

3.2 SUBFLOOR PREPARATION

- A. Examine surfaces on which resilient flooring is to be installed.
- B. Correct conditions which will impair proper installation.
- C. Fill cracks, joints and other irregularities in concrete with leveling compound and level floors for a maximum wave variation of 1:1000 (1/8-inch in 10 feet) (non-accumulative).
 - 1. Do not use adhesive for filling or leveling purposes.
 - 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
 - 3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joints.

- D. Clean floor of oil, paint, dust, and deleterious substances:
Leave floor dry and cured free of residue from existing curing or cleaning agents.
- E. Concrete Subfloor Testing:
 - 1. Apply a 1 meter (three foot) square test patch to the prepared concrete subfloor in room or area to be tiled in accordance with RFCI ID-2.
 - 2. After the test patches have remained on the floor for a period of 72 hours, check adherence to surface by scraping test patches for ease of removal in the presence of the Project Engineer.
 - 3. In the event that test patch is easily removed the Project Engineer may require additional test patches as follows:
 - a. Area configuration such as long corridors or large rooms.
 - b. Slab conditions such as oil or fuel spillage which may have leached into the slab, and presence of questionable curing or release agents used on the slabs.
 - c. Retesting after additional subfloor preparation.
- F. Perform additional subfloor preparation to obtain satisfactory adherence of flooring if subfloor test patches allows easy remove of tile.
- G. Prime the concrete subfloor if the primer will seal slab conditions that would inhibit bonding, or if priming is recommended by the tile or adhesive manufacturers.

3.3 INSTALLATION

- A. Install in accordance with RFCI INS-87 and manufacturer's instructions for application and installation unless specified otherwise.
- B. Mix tile from at least two containers. An apparent line either of shades or pattern variance will not be accepted.
- C. Tile Layout:
 - 1. If layout is not shown on drawings, lay tile symmetrically about center of room or space with joints aligned.
 - 2. No tile shall be less than 6-inches and of equal width at walls.
 - 3. Place tile pattern in the same direction; do not alternate tiles.
- D. Trim tiles to touch for the length of intersections at pipes and vertical projections, seal joints at pipes with waterproof cement.
- E. Application:

1. Apply adhesive uniformly with no bare spots.
 - a. Conform to RFC1-TM-6 for joint tightness and for corner intersection unless layout pattern shows random corner intersection.
 - b. More than 5 percent of the joints not touching or any joint more than 0.0051-inch wide will not be accepted.
 2. Roll tile floor with a minimum 100 pound roller. No exceptions.
 3. The Project Engineer may have test tiles removed to check for non-uniform adhesion, spotty adhesive coverage, and ease of removal. Install new tile for broken removed tile.
- F. Installation of Edge Strips:
1. Locate edge strips under center line of doors unless otherwise shown.
 2. Set resilient edge strips in adhesive. Anchor metal edge strips with anchors and screws specified.
 3. Where tile edge is exposed, butt edge strip to touch along tile edge.
 4. Where thin set ceramic tile abuts resilient tile, set edge strip against floor file and against the ceramic tile edge.

3.4 CLEANING AND PROTECTION

- A. Clean adhesive marks on exposed surfaces during the application of resilient materials before the adhesive sets. Exposed adhesive is not acceptable.
- B. Keep traffic off resilient material 72 hours after installation.
- C. Clean and polish materials in the following order:
 1. For the first two weeks sweep and damp mopped only.
 2. After two weeks, scrub resilient materials with a minimum amount of water and a mild detergent. Leave surface clean and free of detergent residue.
 3. Apply polish to the floors in accordance with the polish manufacturer's instructions.
- D. When construction traffic occurs over tile, cover resilient materials with reinforced kraft paper properly secured and maintained until removal is directed by Project Engineer. At entrances and where wheeled vehicles or carts are used, cover tile with plywood, hardboard, or particle board over paper, secured and maintained until removal is directed by the Project Engineer.
- E. When protective materials are removed and immediately prior to acceptance, replace any damage tile, re-clean resilient materials, lightly re-apply polish and buff floors.

3.5 LOCATION

- A. Unless otherwise specified or shown, install tile flooring, on floor under areas where casework, laboratory and pharmacy furniture and other equipment occurs, except where mounted in wall recesses.
- B. Extend tile flooring for room into adjacent closets and alcoves.

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SECTION 09 65 20

LINOLEUM

PART 1 GENERAL

1.1 SUMMARY

- A. Furnish and install linoleum as indicated on the drawings and specified.

1.2 SUBMITTALS

- A. Submit samples for selection.
- B. Submit the manufacturer's specifications and other data needed to prove compliance with the specified requirements;

1.3 QUALITY ASSURANCE

- A. Linoleum shall be installed by trained personnel who have participated in a technical seminar given, at no cost to the Contractor, by materials manufacturer.

PART 2 PRODUCTS

2.1 LINOLEUM

- A. Products: Subject to compliance with specified requirements, linoleum shall be Farbo Marmoleum, or equal, and as indicated on the drawings.
- B. "Or equal" linoleum by Gerbert Ltd., Glenstar Corp., Azrock Tile, or Ken Tile Floors Inc. will also be acceptable subject to the approval of the Architect.
- C. Linoleum shall be comprised of all natural ingredients (asbestos free), linseed oil, cork, wood flour, resin binders, gum and dry pigments. The ingredients shall be mixed and calendared onto a natural jute backing.
- D. Physical Characteristics:

Thickness	0.079 inch (minimum)
Residual Indentation	Meets FS LLL-F-1238A, Short Term.
Load Limit	125 psi
Impact Sound Reduction	6 dB
Slip Resistance	SRT 90 - 110.
Smoke Density	Meets NFPA, Below 450°
Fire Resistance	Meets NFPA 258, Class 1.
- E. Colors and Patterns: As selected by the Architect, and as indicated on the drawings.

2.2 ACCESSORY MATERIALS

- A. Adhesive: As recommended by the manufacturer of the linoleum materials. Adhesive shall be waterproof and stabilized type. Asphalt emulsions and other non-waterproof type adhesives will not be acceptable.
- B. Reducing Strips: Vinyl floor reducer, thickness to suit abutting floor covering material, 1 1/4 inches wide, Johnsonite, Flexco, or equal, in color to match that of linoleum.
- C. Concrete Slab Primer: A non-staining type as recommended by the manufacturer of the linoleum to be applied over it.
- D. Wax: Federal Specification P-W-155, 16% Concentration, water emulsion base.
- E. Other Materials: All other materials, not specifically described but required for a complete installation of the work shall be as recommended by the manufacturer of the linoleum and approved by the Architect.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install linoleum as recommended by its manufacturer. Substrate shall be smooth, level at required finish elevation and without more than 1/8" in 10 feet variation from slopes or levels indicated on the Drawing. Fill cracks or irregularities with plastic filler as recommended by manufacturers of linoleum materials.
- B. Bond to floor surfaces with adhesive in compliance with manufacturer's recommendations. Tightly butt linoleum to vertical surfaces, edgings and thresholds, and where the material of one color abuts material of another color. Scribe as necessary around obstructions to produce neat joints. Place linoleum tightly laid, even and in straight parallel lines. Extend units into toe spaces, door reveals and into closets and similar spaces.
- C. Continuity Through Doorways: Join flooring from hallways to linoleum of adjacent rooms appropriately through doorways, to provide continuous floor covering, as approved by the Architect. Install reducing strips where linoleum is at one side of doorways and bare concrete on other side.
- D. Reducing Strips: Provide at unprotected exposed edges of linoleum or at doorways.
 - 1. Provide in single lengths full width of and at centerline of doors. Adhesively bond in place with floor covering manufacturer's approved adhesive and tightly abut exposed edges of linoleum.

2. Fit end edges to door frames and abutting surfaces. Make top surface flush with adjoining floor covering.

3.2 CLEANING AND PROTECTING

- A. Cleaning: After completion of work of this Section and just prior to inspection, clean and remove excess adhesive and other blemishes from exposed surfaces, using neutral cleaner and wax and buff as recommended by the manufacturer of the linoleum materials.
- B. Protecting: Protect finished work from damage by subsequent construction operations as directed by the Architect until completion of Contracted Work. Where possible, lock rooms following installation of linoleum and cleaning operations.

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SECTION 09 66 16

TERRAZZO FLOOR TILE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnish and install terrazzo floor tile as indicated on the drawings and specified..

1.2 MANUFACTURER'S QUALIFICATIONS

- A. Approval by Contracting Officer is required of products or service, or proposed manufacturer, suppliers and installers, and will be based upon submission by Contractor of certification that:
 - 1. Manufacturer regularly and presently manufactures terrazzo tile as one of his principal products.
 - 2. Installer has technical qualifications, experience, trained personnel and facilities to install specified items. Approval will not be given, however, where experience record is one of unsatisfactory performance.
 - 3. Manufacturer's product submitted has been in satisfactory and efficient operation on three installations similar or equivalent to this project for three years. Submit list of installations. List shall include name of project, and owner and location of project.

1.3 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:
- B. Flooring Manufacturer's Literature and Data: Printed installation instructions for conditions indicated.
- C. Certificates: Indicating materials conform to specified requirements. Indicating flooring manufacturer's approval of underlayment, adhesive and cleaners.
- D. Samples: Terrazzo Tile (each color and pattern to be used) and adhesive.

1.4 DELIVERY

Deliver materials to job in manufacturer's original unopened containers, free of damage, with manufacturer's brand name marked thereon.

1.5 STORAGE

Store materials in a protected area. Storage area shall be kept dry and temperature of storage area shall not be lower than 10 degrees C (50 degrees F) or higher than 32 degrees C (90 degrees F).

1.6 PROJECT CONDITIONS

Tiles shall not be installed until all other work that could cause damage to the finish flooring has been completed. Maintain a temperature of not less than 21 degrees C (70 degrees F) in spaces where tile is to be installed for at least 48 hours before, during and after the laying of tiles. Bring tile into such spaces and allow it to condition at not less than 21 degrees C (70 degrees F) at least 48 hours before installing. A minimum temperature of 13 degrees C (55 degrees F) shall be maintained thereafter.

1.7 WARRANTY

Terrazzo tile is subject to terms of "Warranty of Construction" FAR clause 52.246-21, except that warranty period is two years in lieu of one year.

1.8 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. American Society for Testing And Materials (ASTM):
- C109-05.....Compressive Strength of Hydraulic Cement Mortars
- D2047-04.....Static Coefficient of Friction of Polish Coated Floor Surfaces as Measured by the James Machine
- E648-06.....Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
- C. Military Specifications (Mil. Spec.):
- MIL-D-3134J.....Deck Covering Materials

PART 2 - PRODUCTS

2.1 TERRAZZO TILE

Terrazzo tile shall consist of aggregate chips embedded in a flexible thermo-set resin matrix. Tiles shall have a smooth polished finish with uniform color distribution of chips. Tile shall have the following properties.

TABLE I - MARBLE TERRAZZO TILE		
PROPERTY	TEST METHOD	VALUE
Compressive strength Water absorption Hardness	ASTM 109 Mil.Spec.MIL-D-3134 Barcol Hardness	51.7 Mpa (7500 psi) minimum 0.4 percent maximum Resin 78, Marble at 25 degrees C 55-85
Coefficient of Friction Flame Resistance	ASTM D2047 ASTM E645	0.70 0.45 watt/cm square minimum

TABLE II GRANITE TERRAZZO TILE		
Compressive strength Water absorption Hardness at 25 degrees C	ASTM C109 Mil. Spec. MIL-D-3134 Barcol Hardness	35.8 MPa (5,200 psi) 0.4 percent maximum Resin 70, 55-85
Coefficient of Friction Flame Resistance minimum	ASTM D2047 ASTM E648	0.70 0.45 watt/cm square

2.2 ADHESIVE

Shall be terrazzo tile manufacturer's standard product or a product recommended by the terrazzo tile manufacturer.

2.3 WALL BASE

See Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

2.4 METAL EDGE STRIPS

Extruded aluminum, butt-type, approximately 38 mm (1-1/2 inches) wide with thickness to set top surface flush with top of tile and with bevel at exposed edge. Edge strips shall have countersunk holes, near each end and spaced at no more than 300 mm (8 inches) on center for securement.

PART 3 - EXECUTION

3.1 GENERAL

Provide flooring and base on floor surfaces and walls where shown on the drawings. Provide resilient base as scheduled for room or space, for freestanding columns, pilasters, furred spaces convectors and where shown. Resilient base required over metal base of casework is specified in other sections. Except as necessary to install new tile, keep all traffic off new tile for at least 24 hours after installation.

3.2 SUBSTRATE PREPARATION

- A. Concrete Floors (New Construction): Fill holes and cracks with approved mortar. Concrete floors shall be free of curing compounds, grease, dirt, loose particles and other foreign matter that would prevent adhesion. Remove projecting irregularities by chipping or grinding smooth. Fill depressions and level uneven surfaces with underlayment. Then rinse subfloors and allow them to dry thoroughly before applying adhesive.
- B. Concrete Floors (Existing Construction): Remove any existing resilient flooring and condition subfloors to provide smooth, clean, continuous surface. Use underlayment where required to provide level surfaces ready to receive tile. Fill holes and cracks in concrete subfloors with mortar. Remove grease, dirt, loose particles, and other foreign matter that would prevent adhesion. Then, rinse subfloors and allow to dry thoroughly before applying adhesive.

- C. Wood Floors: Plywood floor shall be double construction. Sand floors to a smooth surface with joints tight and level. Single construction or badly warped floors shall be covered with exterior grade plywood specified in Section 06 10 00, ROUGH CARPENTRY and sanded smooth.

3.3 MOISTURE TEST

After concrete floor surfaces have been cleaned, spread small patches of adhesive to be used, in several locations in each room and allow to dry overnight. If the adhesive can be peeled easily from the floor surfaces, the floor is not sufficiently dry. The test shall be repeated until the adhesive adheres properly. Lay tile flooring when the adhesive adheres tightly to the subfloor.

3.4 INSTALLATION

- A. Install tile in accordance with the tile manufacturer's approved installation instructions, except as specified herein. Lay design symmetrical about center lines of rooms. Joints shall be tight, and inconspicuous as possible, and in true alignment. Cut tile to fit snugly at pipes and other fixed vertical surfaces. Seal joints at pipes with adhesive. Remove spots or smears of adhesive immediately. Make entire surfaces of finished tile floors smooth, straight, and free from bleeding adhesive, buckles, waves or projecting tile edges upon completion. Remove any surface film on back of base due to mold release agents as recommended by base manufacturer, before applying base adhesive.
1. Where metal edge strip or transition strip is required, install as detailed.
 2. Bleeding of adhesive on finished floors is considered cause for rejection. Replace damaged tiles.
- B. Metal Edge Strips: Secure strips with No. 10 aluminum alloy, counter sunk flathead machine screws with expansion sleeves. Provide metal edge strips, in one piece, at any exposed edges of tile.
- C. Transition Strips: Apply transition strips with adhesive continuous, between ceramic tile finish floors and resilient tile finish floors as shown.
- D. Premolded Base: Install as specified in Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

3.5 CLEANING

Upon completion of the installation, and after adhesive has cured, clean flooring in accordance with manufacturer's recommendations.

3.6 PROTECTION

From the time of laying until acceptance, protect the flooring from damage. Replace damaged, loose, broken, or curled tiles.

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SECTION 09 68 00

CARPETING

PART 1 - GENERAL

1.1 DESCRIPTION

Section specifies carpet, edge strips, adhesives, and other items required for complete installation.

1.2 RELATED WORK

- A. Color and texture of carpet and edge strip: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Resilient wall base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

1.3 QUALITY ASSURANCE

- A. Carpet installed by mechanics certified by the Floor Covering Installation Board.
- B. Certify and label the carpet that it has been tested and meets criteria of CRI IAQ Carpet Testing Program for indoor air quality.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data:
 - 1. Manufacturer's catalog data and printed documentation stating physical characteristics, durability, resistance to fading and flame resistance characteristics for each type of carpet material and installation accessory.
 - 2. Manufacturer's printed installation instructions for the carpet, including preparation of installation substrate, seaming techniques and recommended adhesives and tapes.
 - 3. Manufacturer's certificate verifying carpet containing recycled materials include percentage of recycled materials as specified.
- C. Samples:
 - 1. Carpet: "Production Quality" samples of carpet, showing quality, pattern and color specified in Section 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Floor Edge Strip (Molding): 150 mm (6 inches) long of each color and type specified.
 - 3. Base Edge Strip (Molding): 150 mm (6 inches) long of each color specified.

- D. Shop Drawings: Installers layout plan showing seams and cuts for sheet carpet and carpet module.
- E. Maintenance Data: Carpet manufacturer's maintenance instructions describing recommended type of cleaning equipment and material, spotting and cleaning methods and cleaning cycles.

1.5 DELIVERY AND STORAGE

- A. Deliver carpet in manufacturer's original wrappings and packages clearly labeled with manufacturer's name, brand, name, size, dye lot number and related information.
- B. Deliver adhesives in containers clearly labeled with manufacturer's name, brand name, number, installation instructions, safety instructions and flash points.
- C. Store in a clean, dry, well ventilated area, protected from damage and soiling. Maintain storage space at a temperature above 16 degrees C (60 degrees F) for 2 days prior to installation.

1.6 ENVIRONMENTAL REQUIREMENTS

Areas in which carpeting is to be installed shall be maintained at a temperature above 16 degrees C (60 degrees F) for 2 days before installation, during installation and for 2 days after installation. A minimum temperature of 13 degrees C (55 degrees F) shall be maintained thereafter for the duration of the contract. Traffic or movement of furniture or equipment in carpeted area shall not be permitted for 24 hours after installation. Other work which would damage the carpet shall be completed prior to installation of carpet.

1.7 WARRANTY

Carpet and installation subject to terms of "Warranty of Construction" FAR clause 52.246-21, except that warranty period is extended to two years.

1.8 APPLICABLE PUBLICATIONS

- A. Publication listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American National Standards Institute (ANSI):

ANSI/NSF 140-07.....Sustainable Carpet Assessment Standard
- C. American Association of Textile Chemists and Colorists (AATCC):

AATCC 16-04.....Colorfastness to Light

AATCC 129-05.....Colorfastness to Ozone in the Atmosphere
under High Humidities

AATCC 134-06.....Electric Static Propensity of Carpets

AATCC 165-99.....Colorfastness to Crocking: Textile Floor
Conerings-AATCC Crockmeter Method

- D. American Society for Testing and Materials (ASTM):
- ASTM D1335-05.....Tuft Bind of Pile Yarn Floor Coverings
 - ASTM D3278-96 (R2004)...Flash Point of Liquids by Small Scale Closed-Cup Apparatus
 - ASTM D5116-06.....Determinations of Organic Emissions from Indoor Materials/Products
 - ASTM D5252-05.....Operation of the Hexapod Tumble Drum Tester
 - ASTM D5417-05.....Operation of the Vettermann Drum Tester
 - ASTM E648-06.....Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
- E. The Carpet and Rug Institute (CRI):
- CRI 104-02.....Installation of Commercial Carpet

PART 2 - PRODUCTS

2.1 CARPET

- A. Subject to compliance with specified requirements, carpet shall be the products of Milliken & Company, or "Or Equal" products by one of the following manufacturers will also be acceptable:
1. Couristan Inc.
 2. Mohawk Carpet Co.
 3. Lees Commercial Carpet.
 4. Bentley Mills Inc.
- B. Physical Characteristics:
1. Carpet free of visual blemishes, streaks, poorly dyed areas, fuzzing of pile yarn, spots or stains and other physical and manufacturing defects, not less than 27 oz/sq/yd.
 2. Manufacturers standard construction commercial carpet:
 - a. Broadloom; maximum width to minimum use.
 - b. Modular Tile: Square tile as standard with the manufacturer.
 3. Provide static control to permanently control static build upto less than 2.0 kV when tested at 20 percent relative humidity and 21 degrees C (70 degrees F) in accordance with AATCC 134.
 4. Pile Height: Maximum 3.25 mm (0.10 inch).
 5. Pile Fiber: Nylon with recycled content 25 percent minimum branded (federally registered trademark).
 6. Pile Type: Tufted Level Loop.

7. Backing materials: Manufacturer's unitary backing designed for glue-down installation using recovered materials.
 8. Appearance Retention Rating (ARR): Carpet shall be tested and have the minimum 3.5-4.0 Severe ARR when tested in accordance with either the ASTM D 5252 (Hexapod) or ASTM D 5417 (Vettermann) test methods using the number of cycles for short and long term tests as specified.
 9. Tuft Bind: Minimum force of 40 N (10 lb) required to pull a tuft or loop free from carpet backing. Test per ASTM D1335.
 10. Colorfastness to Crocking: Dry and wet crocking and water bleed, comply with AATCC 165 Color Transference Chart for colors, minimum class 4 rating.
 11. Colorfastness to Ozone: Comply with AATCC 129, minimum rating of 4 on the AATCC color transfer chart.
 12. Delamination Strength: Minimum of 440 N/m (2.5 lb/inch) between secondary backing.
 13. Flammability and Critical Radiant Flux Requirements:
 - a. Test Carpet in accordance with ASTM E 648.
 - b. Class I: Not less than 0.45 watts per square centimeter.
 - c. Class II: Not less than 0.22 watts per square centimeter.
 - d. Carpet in corridors, exits and Medical Facilities: Class I.
 14. Density: Average Pile Yarn Density (APYD):
 - a. Corridors, lobbies, entrances, common areas or multipurpose rooms, open offices, waiting areas and dining areas: Minimum APYD 6000.
 - b. Other areas: Minimum APYD 4000.
 15. VOC Limits: Use carpet and carpet adhesive that comply with the following limits for VOC content when tested according to ASTM D 5116:
 - a. Carpet, Total VOCs: 0.5 mg/sq.m x hr.
 - b. Carpet, 4-PC (4-Phenylcyclohexene): 0.05 mg/sq.m x hr.
 - c. Carpet, Formaldehyde: 0.05 mg/sq.m x hr.
 - d. Carpet, Styrene: 0.4 mg/sq.m x hr.
 - e. Adhesive, Total VOCs: 10.00 mg/sq.m x hr.
 - f. Adhesive, Formaldehyde: 0.05 mg/sq.m x hr.
 - g. Adhesive, 2-Ethyl-1-Hexanol: 3.00 mg/sq.m x hr.
- B. Shall meet platinum level of ANSI/NSF 140.

- C. Color, Texture, and Pattern: As specified in Section 09 06 00, SCHEDULE FOR FINISHES, and as selected by the Architect.

2.2 ADHESIVE AND CONCRETE PRIMER

- A. Waterproof, resistant to cleaning solutions, steam and water, nonflammable, complies with air-quality standards as specified. Adhesives flashpoint minimum 60 degrees C (140 degrees F), complies with ASTM D 3278.
- B. Seam Adhesives: Waterproof, non-flammable and non-staining.

2.3 SEAMING TAPE

- A. Permanently resistant to carpet cleaning solutions, steam, and water.
- B. Recommended by carpet manufacturer.

2.4 EDGE STRIPS (MOLDING)

- A. Metal:
 - 1. Hammered surface aluminum, pinless, clamp down type designed for the carpet being installed.
 - 2. Floor flange not less than 38 mm (1-1/2 inches) wide, face not less than 16 mm (5/8 inch) wide.
 - 3. Finish: Clear anodic coating unless specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Vinyl Edge Strip:
 - 1. Beveled floor flange minimum 50 mm (2 inches) wide.
 - 2. Beveled surface to finish flush with carpet for tight joint and other side to floor finish.
 - 3. Color as specified in Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Carpet Base Top Edge Strip:
 - 1. Vinyl "J" strip wall flange minimum of 38 mm (1-1/2 inches) wide with cap beveled from wall to finish flush with carpet being installed.
 - 2. Color as specified in Section 09 06 00, SCHEDULE FOR FINISHES.

2.5 LEVELING COMPOUND (FOR CONCRETE FLOORS)

- A. Provide Portland cement bases polymer modifier with latex or polyvinyl acetate resin manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.

- B. Determine the type of underlayment selected for use by condition to be corrected.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Examine surfaces on which carpeting is to be installed.
- B. Clean floor of oil, waxy films, paint, dust and deleterious substances that prevent adhesion, leave floor dry and cured, free of residue from curing or cleaning agents and existing carpet materials.
- C. Correct conditions which will impair proper installation, including trowel marks, pits, dents, protrusions, cracks or joints.
- D. Fill cracks, joints depressions, and other irregularities in concrete with leveling compound.
 - 1. Do not use adhesive for filling or leveling purposes.
 - 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
 - 3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joint lines.
- E. Test new concrete subfloor prior to adhesive application for moisture and surface alkalinity per CRI 104 Section 6.3.1 or per ASTM E1907.

3.2 CARPET INSTALLATION

- A. Do not install carpet until work of other trades including painting is complete and dry.
- B. Install in accordance with CRI 104 direct glue down installation.
 - 1. Relax carpet in accordance with Section 6.4.
 - 2. Comply with indoor air quality recommendations noted in Section 6.5.
 - 3. Maintain temperature in accordance with Section 15.3.
- C. Secure carpet to subfloor of spaces with adhesive applied as recommended by carpet manufacturer.
- D. Follow carpet manufacturer's recommendations for matching pattern and texture directions.
- E. Cut openings in carpet where required for installing equipment, pipes, outlets, and penetrations.
 - 1. Bind or seal cut edge of sheet carpet and replace flanges or plates.

2. Use additional adhesive to secure carpets around pipes and other vertical projections.
- G. Broadloom Carpet:
1. Install per CRI 104, Section 8.
 2. Lay broadloom carpet lengthwise in longest dimension of space, with minimum seams, uniformly spaced to provide a tight smooth finish, free from movement when subjected to traffic.
 3. Use tape-seaming method to join sheet carpet edges. Do not leave visible seams.
- H. Carpet Modules:
1. Install per CRI 104, Section 13, Adhesive Application.
 2. Lay carpet modules with pile in same direction unless specified other wise in Section 09 06 00, SCHEDULE FOR FINISHES.
 3. Install carpet modules so that cleaning methods and solutions do not cause dislocation of modules.
 4. Lay carpet modules uniformly to provide tight flush joints free from movement when subject to traffic.

3.3 EDGE STRIPS INSTALLATION

- A. Install edge strips over exposed carpet edges adjacent to uncarpeted finish flooring.
- B. Anchor metal strips to floor with suitable fasteners. Apply adhesive to edge strips, insert carpet into lip and press it down over carpet.
- C. Anchor vinyl edge strip to floor with adhesive apply adhesive to edge strip and insert carpet into lip and press lip down over carpet.
- D. Carpet Base Top Edge Strip Installation:
 1. Place carpet molding at top edge of carpet where turned up as base.
 2. Install molding in accordance with manufacturer's instructions.

3.4 PROTECTION AND CLEANING

- A. Remove waste, fasteners and other cuttings from carpet floors.
- B. Vacuum carpet and provide suitable protection. Do not use polyethylene film.
- C. Do not permit traffic on carpeted surfaces for at least 48 hours after installation. Protect the carpet in accordance with CRI 104.

- D. Do not move furniture or equipment on unprotected carpeted surfaces.
- E. Just before final acceptance of work, remove protection and vacuum carpet clean.

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SECTION 09 91 00

PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work to be painted:
 - 1. Painting and finishing of interior work, and painting of mechanical and electrical systems, except as specified under Article, WORK NOT TO BE PAINTED.
 - 2. Painting and finishing of existing work as specified under Article, REFINISHING.
- B. Work NOT to be Painted:
 - 1. Prefinished items: Casework, doors, equipment, and similar items specified under other sections.
 - 2. Concealed surfaces: Above ceilings, except as otherwise specified.
 - 3. Finished surfaces: Anodized aluminum, stainless steel, chromium plating, copper, brass, except as otherwise specified.
 - 4. Moving and operating parts: Mechanical and electrical parts such as valve stems, operators, linkages, sprinkler heads, sensing devices.
 - 5. Labels: Any code required label such as Underwriters Laboratories Inc., or Factory Mutual Research Corporation, identification plates, instruction plates, performance rating, nomenclature.
 - 6. Hot-dip galvanized metal, except where specifically specified to be painted.
 - 7. Surfaces concealed behind permanently installed equipment.

1.2 QUALITY CONTROL

- A. Paint Color:
 - 1. In general, color and texture of finish coats, shall match existing.
 - 2. For additional requirements regarding color, see Articles, REFINISHING AND FIELD PAINTING OF MECHANICAL AND ELECTRICAL SYSTEM.
 - 3. Color of priming coat shall be lighter than body coat.
 - 4. Color of body coat shall be lighter than finish coat.

5. Color prime and body coats as required so as to not show through the finish coat and to mask surface imperfections.
- B. Color Cards: Sets of color cards are to be provided upon submittal of product to be used.

1.3 SUBMITTALS

In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS, furnish the following:

- A. Manufacturer's Literature and Data:
 1. Before any work is done, submit manufacturer's literature, indicating brand names, kind, color, texture, composition of vehicle and pigment, and certificates as specified.
 2. Submit a certificate attesting that the epoxy paint complies with specified requirements.

1.4 DELIVERY, AND STORAGE

- A. Delivery:
 1. All materials shall be delivered to the site in the manufacturer's sealed container marked to show the following:
 - a. Name of manufacturer
 - b. Kind of paint
 - c. Batch number
 - d. Instruction for use
 - e. Safety precautions
 2. In addition to the manufacturer's label, each container shall bear a label upon which is legibly printed the following:
 - a. Federal Specification Number (where applicable) and name of material.
 - b. Surface upon which material is to be applied.
 - c. If paint or other coating, the coat (prime, body or finish) for which it is to be used.
- B. Storage:
 1. Maintain space for storage, and handling of painting materials and equipment in a neat and orderly condition.
 2. Store all materials at the site at least 24 hours before using in order to bring their temperature between 65 and 85 degrees F.

1.5 JOB CONDITIONS

- A. Safety: Observe all required safety regulations and the manufacturer's warning and instructions during the storage, handling and application of painting materials.
 - 1. Necessary precautions shall be taken to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
 - 2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at the end of each work day.
- B. Lead-Base Paint: NOT TO BE USED.
- C. Atmospheric and Surface Conditions:
 - 1. No interior painting in foggy, damp or rainy weather. When building is enclosed, interior work may be painted.
 - 2. Paint interior surfaces when the ambient temperature is between 45 and 90 degrees F, except when water thinned paints are used, the ambient temperature shall be between 50 and 90 degrees F, unless otherwise designated in the manufacturer's printed instructions. Maintain these temperatures until the paint dries hard.
 - 3. Apply only on clean, dry and frost free surfaces. Apply water thinned paints to damp (not wet) surfaces where allowed by the manufacturer's printed instructions.

1.6 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

- A. Federal Specifications (Fed. Spec.):
 - SS-J-570B.....Joint Compound and Tape, Wallboard For Gypsum Wallboard Construction
 - SS-P-00450A(1).....Plaster, Patching, Gypsum (Spackling)
 - TT-F-322D(1).....Filler, Two-Component Type, For Dents, Cracks, Small-Holes And Blow-Holes
 - TT-F-340C.....Filler, Wood, Plastic

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Manufacturer: Subject to compliance with specified requirements, provide the products of Dunn-Edwards, or "or equal" products of one of the following:
 - 1. ICI Dulux
 - 2. Vista

3. Frazee
 4. Sherwin-Williams
 5. Benjamin Moore & Co.
 6. PPG Industries
 7. Kelley-Moore Paint Co.
-
- B. Interior Latex, Semi Gloss Enamel White and Pastel Base.
 - C. Quick Drying Enamel Undercoating
 - D. Interior-Exterior Water Base Gloss Enamel, White and Pastel Base
 - E. Exterior Semi Gloss House Paint, White and Pastel Tint Base.
 - F. Interior Latex primer - Sealer. Use on concrete, masonry, and other cementitious surfaces.
 - G. Interior Semi Gloss Enamel White and Tint Base.
 - H. Interior Waterborne Epoxy, White and Pastel Base by Rustoleum, Tnemec, Ameron, or equal.
 - I. Exterior Latex Flat Masonry Paint Pastel Tint Base.
 - J. Rust Inhibitive Waterbase Primer.

2.2 PAINT PROPERTIES

- A. All painting materials shall be ready-mixed (including colors), except two component polyesters, those having metallic powders packaged separately and those paints requiring specified additives.
- B. Materials shall be finely ground, uniform in consistency and readily dispersed to form a smooth and homogeneous fluid.
- C. Where no requirements for pigment and vehicle are given in the referenced specifications for primers, their composition shall be compatible with substrate and finishing coats specified.

PART 3 - EXECUTION

3.1 PAINT PREPARATION

- A. Thoroughly mix all painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
- B. No material shall be thinned, unless necessary for proper application and when finish paint is used for body and prime coats. Materials and the quantities used for thinning shall be in accordance with the manufacturer's printed instructions.
- C. Remove paint skins, then strain paint through commercial paint strainer to remove all lumps and other particles.
- D. Two component and two part paint and those requiring additives shall be mixed in such a manner as to be uniformly blended in accordance with the manufacturer's printed instructions.

- E. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

3.2 SURFACE PREPARATION

- A. General: Remove lighting fixtures and similar items for complete painting of such items and adjacent areas.
 - 1. See other sections of the specifications for requirements for surface conditions and prime coat.
 - 2. Surfaces to be finished shall be dry, clean, smooth and prepared as specified.
 - 3. Materials and methods used for cleaning shall be compatible with the substrate and specified finish. Remove any residue remaining from cleaning agents used.
 - 4. Method of surface preparation is optional, provided results of finish painting produce solid even color and texture specified.
 - 5. Remove all cover plates and hardware prior to any wall prep or finishing.
- B. Wood: Sand to a smooth even surface and then dust off.
 - 1. Where transparent finish is specified, finish sanding shall be with 220 grit sandpaper. Wipe surface with a tack rag prior to applying finish.
 - 2. Surface to be painted with an opaque finish shall have all knots, sap and pitch streaks coated with knot sealer before applying any coat of paint. Apply two coats of knot sealer over large knots.
 - 3. Surfaces showing raised grain shall be sanded smooth between each coat.
 - 4. After application of prime or first coat of stain, fill all cracks, nail and screw holes, depressions and similar defects with patching compound. Sand to make smooth and flush with surrounding surface.
 - 5. Before applying finish coat, reapply patching compound if required, and lightly sand surface to remove surface blemishes.
- C. Steel and Iron: Remove oil, grease, soil, drawings and cutting compounds, flux and other detrimental foreign matter by use of solvents, emulsions, cleaning compounds, or by steam cleaning, as defined in SSPC-SP 1.
 - 1. Remove loose mill scale, rust, and paint, by hand or power tool cleaning, as defined in SSPC-SP 2 and SSPC-SP 3.
 - 2. Fill all dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel door and window frames, access panels and similar items specified to have

semi-gloss or gloss finish with patching compound. Finish flush with adjacent surfaces.

3. Spot prime all abraded and damaged areas in shop prime coat which expose the bare metal, with same type of paint used for prime coat. Feather edge of spot prime as required to produce smooth finish coat. Spot prime all abraded and damaged areas which expose the bare metal of factory finished items with paint as recommended by the manufacturer.
- D. Zinc-Coated (Galvanized) Metal: Surfaces specified to be painted shall be cleaned of all grease, oil and other deterrents to paint adhesion, with toluene, xylene or similar solvents in accordance with SSPC-SP 1.
 1. Spot prime all abraded and damaged areas of zinc-coating which expose the bare metal, using zinc rich paint on hot-dip zinc-coated items and zinc dust primer on all others.
- E. Gypsum Drywall: Remove dust, dirt, and other deterrents to paint adhesion.
 1. Fill holes, cracks, and other depressions with patching compound, finished flush with adjacent surface, with texture to match texture of adjacent surface.

3.3 APPLICATION:

- A. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
- B. Unless otherwise specified, paint shall be applied in three coats; prime, body, and finish. When the two coats succeeding the prime coat are the same, the first coat applied over the primer shall be considered as the body coat, the second coat as the finish coat.
- C. Before application of body and finish coats, surfaces shall be primed, except as otherwise specified. For primers to be used for field application, see Article, PRIMERS.
- D. Additional field applied prime coats over shop or factory applied prime coats are not required, except for structural steel which shall have a field applied prime coat in addition to the shop prime coat.
- E. Retouch damaged and abraded painted surfaces before applying succeeding coats.
- F. Apply each coat evenly and in full covering body.
- G. Not less than 48 hours shall elapse between application of succeeding coats, except as allowed by the manufacturer's printed instructions, and approved by the Engineering Officer.
- H. Finish painted surfaces shall have solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.

- I. To prevent the items from sticking in the shut position, operable items such as access doors and similar items shall not be painted when in the closed position.
- J. Painted or otherwise finished surfaces of wood doors, including top and bottom edges, which are cut for fitting or for other reason shall be given two coats of primer.
- K. Paint may be applied by brush or roller, except as otherwise specified.
- L. Spray painting will not be allowed.

3.4 PRIMERS

- A. After surface preparation, apply prime coat to various materials as follows:

NOTE: Prime coat is not required for acrylic emulsion and latex emulsion finish.

- 1. Steel and iron: Primer as per manufacturer.
- 2. Zinc-coated steel and iron: Zinc dust primer.
- 3. Drywall: Latex primer.

3.5 INTERIOR FINISHES:

NOTE: On properly prepared and primed surface, apply the following finish coats.

- A. Metal Work: Apply two coats of 100% Acrylic Semigloss (SG) on exposed surfaces, including surfaces of ferrous metal hardware, except as follows:
 - 1. Omit body and finish coats on surfaces concealed after installation.
- B. Drywall: Three coats, primer, body, finish except as follows:
- C. Wood: One coat of enamel undercoat plus one coat of 100% acrylic semigloss.
- D. All metal work shall be brush finish appearance at finish coat.

3.6 REFINISHING

- A. Existing interior work to be refinished shall include the following:
 - 1. Interior:
 - a. Existing painted surfaces of rooms, areas and spaces in which alterations occur under this contract.
 - b. All other rooms, areas and spaces noted on the drawings to be refinished.

- B. Except as otherwise specified or noted on drawings, refinished rooms, areas and spaces shall be refinished as follows:
 - 1. Patched and damaged surfaces of walls shall receive prime, body and finish coats.
 - 2. Patched and damaged surfaces of ceilings, except prefabricated acoustical unit ceilings shall receive prime and finish coats.
 - 3. Undisturbed surfaces of patched and damaged walls and ceilings, except prefabricated acoustical unit ceilings shall receive body and finish coats.
 - 4. Undisturbed walls and ceilings, except prefabricated acoustical unit ceilings shall receive body and finish coats.
 - 5. In corridors, paint refinished walls and ceilings to the nearest natural break (i.e., corner, reveal, etc.).
 - 6. Painted doors, door frames, and all other previously painted items and trim shall receive body and finish coats.
- C. In existing rooms and areas where new prefabricated acoustical units are required, clean any existing prefabricated acoustical ceiling units free of dust, dirt, grease.
- D. In existing rooms and areas where alterations occur, clean existing stained and natural finished doors; retouch abraded surfaces and then give entire surface one coat of varnish as required to match existing. After the varnish has dried, buff with fine (Grade 4/0) steel wool to eliminate any accumulated dust particles.
- E. Workmanship: Rating work to be refinished shall have surfaces prepared and made smooth before refinishing.
 - 1. Surfaces shall be clean and dry before refinishing.
 - 2. Abraded, peeled and bare spots shall be touched-up before painting or refinishing.
 - 3. Refinishing of existing surfaces shall include preparation of surfaces to receive new finishes including removal of any existing finishes that may preclude application of new finishes. Remove all paint spots from hardware, signs, fixtures, and other similar items not required to be finished.
 - 4. Remove loose particles of dirt, dust, paint film, rust, scale, and similar deterrents to paint adhesion by scraping, brushing, sanding, vacuuming, or other suitable methods.
 - 5. Remove grease, soil, and other deterrents to paint adhesion with a cleaning compound, or solvent compatible with substrate and subsequent coats. Remove any traces of cleaning agents which will affect paint adhesion.

6. Holes, cracks, and other surface indentations shall be neatly filled with patching compound compatible with substrate and subsequent coats, appropriate for the surface texture required and finished to match adjacent surface texture.
7. Knots, pitch streaks, etc. showing through old finish shall be coated with knot sealer before refinishing.
8. Sand or dull glossy surfaces prior to painting. Sand existing paint to a feather edge so that transition between new and existing finish will not show in the finished work.
9. Workmanship and material shall be equal to that specified for new work of similar character as required to match adjoining work.

3.7 FIELD PAINTING OF MECHANICAL AND ELECTRICAL SYSTEM

- A. General: Field painting of mechanical and electrical work, consists of cleaning, touching-up abraded shop prime coats, and applying prime body and finish coats to materials and equipment which are exposed to view in the completed work, and as specified. Furnish painting for various systems as listed:
 1. Interior Plumbing (Division 15 of Specifications).
 2. Air Conditioning, Ventilating, and Heating (Division 15 of Specifications).
 3. Electrical Work (Division 16 of Specifications).
- B. Paint after all tests have been completed.
- C. Omit prime coat from all factory prime-coated mechanical and electrical equipment. Damaged surfaces of factory finished equipment shall be cleaned and refinished as directed by Project Manager.
- D. Omit painting from metal surfaces (except as otherwise specified) and insulation located above suspended ceilings, and in concealed areas such as pipe and electric closets, pipe basements, pipe tunnels and trenches, attics, roof spaces, shafts and furred spaces.
- E. Omit field painting of items of mechanical and electrical equipment as specified in Subparagraph, WORK NOT TO BE PAINTED of Article, GENERAL.
- F. Mechanical and electrical work having no color texture specified herein, shall be painted to match surrounding surfaces.
- G. Apply paint systems on properly prepared and primed surfaces as follows:
 1. Interior Locations:
 - a. Apply two coats of semigloss to the following items:

- 1) Metal under 200 degrees F of items such as bare piping, fittings, hangers and supports.
- 2) Equipment and systems such as hinged covers and frames for control cabinets and boxes, electric conduits and panel boards.
- 3) Heating, ventilating, air conditioning and plumbing equipment and machinery having neither shop prime coat nor factory finish.

3.8 IDENTITY PAINTING

A. Exposed piping, piping above removable corridor ceilings, piping concealed in accessible pipe spaces, and piping behind access panels and units shall be identified to designate service as required to match existing similar service.

1. Legend shall be pressure sensitive vinyl markers or stencil applied (painted on). Place legends 40 feet apart on straight runs of piping (20 feet for medical, laboratory and dental compressed air; nitrogen; oxygen; and, nitrous oxide piping), where pipes pass through walls or floors, and adjacent to all operating accessories such as valves, regulators, strainers and cleanouts (except on valves and fittings of plumbing fixtures and equipment). Legends shall be placed to be clearly visible from operating position.
2. Color, width and placement of color band, and size and color of legend shall conform to ANSI A13.1.
3. Legend shall give name in full or in abbreviated form as follows:

Legend.....Abbreviation

Medical Compressed Air.....M.Air

Silver Recovery.....Sil. Rec.

Cold water.....C.W.

Hot Water Supply Domestic.....H.W. Sup. Dom.

Drain Line.....Drain

Oxygen.....Oxygen

Vacuum.....Vac.

Vent Line.....Vent.

3.9 PROTECTION

A. Protect all work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.

3.10 CLEAN UP

- A. Upon completion, clean paint from all hardware, glass and other surfaces and items not required to be painted.
- B. Before final inspection, any work which has become damaged or discolored shall be touched-up or refinished in a manner to produce solid even color and finish texture, free from defects.

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SECTION 09 95 10

VINYL COATED FABRIC WALLCOVERING

PART 1 - GENERAL

1.1 DESCRIPTION

Section specifies vinyl coated fabric wallcovering and installation.

1.2 SUBMITTALS

- A. Submit in accordance with Section 01340, SAMPLES AND SHOP DRAWINGS.
- B. Samples:
 - 1. Each type and pattern as specified in Section 09050, COLOR DESIGN.
 - 2. Size 1/2 yard, (45.72 m) full width of mill run.
- C. Manufacturer's Certificates:
 - 1. Compliance with CFFA W-101A.
 - 2. Wallcovering manufacture's approval of adhesive.
- D. Manufacturer's Literature and Data:
 - 1. Prime and adhesive.
 - 2. Installation instructions.
 - 3. Maintenance instructions, including recommended materials and methods for maintaining wallcovering with precautions in use of cleaning material.

1.3 QUALITY ASSURANCE

- A. Finish one complete space with each type of wallcovering showing specified colors and patterns.
- B. Use sample spaces as a standard for work throughout the project.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver in original unopened containers bearing the manufacturer's name, brand name, and product designation.
- B. Store in accordance with manufacturer's instructions.
- C. Handle to prevent damage to material.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

- B. Chemical Fabrics and Film Association, Inc., (CFFA):
W-101-A-84.....Vinyl Coated Fabric Wallcovering
- C. American Society for Testing and Materials (ASTM)
G-21-90.....Determining Resistance of Synthetic
Polymeric Materials to Fungi

PART 2 - PRODUCTS

2.1 VINYL COATED FABRIC WALLCOVERING

- A. Comply with CFFA W-101-A, Class A, Type II or 3 as selected by the Resident Engineer.
- B. Fungi Resistance: ASTM G-21, rating of 0.
- C. Factory-applied clear delustered polyvinyl-fluoride (PVF) coating:
 - 1. Minimum 0.0125 mm (1/2 mil) thickness.
 - 2. Do not include PVF coating weight in minimum total coating weight.
 - 3. Fire hazard classification with PVF coating: Class A unless specified otherwise.
 - 4. Do not specify fabric width.

2.2 ADHESIVE

- A. As recommended by the wallcovering manufacturer for use on substrate to receive wallcovering.
- B. Vermin and mildew resistant.

2.3 EDGE GUARDS OR TRIM

- A. "J" shape with groove to receive the wallcovering.
- B. Concealed edge feathered, not less than 19 mm (3/4-inch) wide.
- C. Designed for adhesive attachment.
- D. Use Vinyl anodized extruded aluminum.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Temperatures:
 - 1. Do not perform work until surfaces and materials have been maintained at minimum of 60 degrees F. for three days before work begins.
 - 2. Maintain minimum temperatures of 60 degrees F. until adhesives are dried or cured.

B. Lighting:

1. Do not proceed unless a minimum lighting level of 15 candlepower per square foot occurs.
2. Measure light level at mid-height of wall.

C. Ventilation:

1. Provide uniform continuous ventilation in space.
2. Ventilate for a time for not less than complete drying or curing of adhesive.

D. Protect other surfaces from damage which may be caused by this work.

E. Remove waste from building daily.

3.2 SURFACE CONDITION

A. Inspect surfaces to receive wallcoverings to assure that:

1. Patches and repairs are completed.
2. Surface are clean, smooth and prime painted.

B. Do not proceed until discovered defects have been corrected by other trades and surfaces are ready to receive wallcovering.

C. Carefully remove electrical outlet and switch plates, mechanical diffusers, escutcheons, registers, surface hardware, fittings and fastenings, prior to starting work.

D. Carefully store, items for reinstallation.

3.3 APPLICATION OF ADHESIVE

A. Mix and apply adhesives in accordance with manufacturer's directions.

B. Prevent adhesive from getting on face of wallcovering.

C. Apply adhesive to wallcovering back.

3.4 WALLCOVERING INSTALLATION

A. Use wallcovering of same batch or run in an area. Use fabric rolls in consecutive numerical sequence of manufacture.

B. Install material completely adhered, smooth, clean, without wrinkles, air pockets, gaps or overlaps.

C. Extend wallcovering continuous behind non-built-in casework and other items which are close to but not bolted to or touching the walls.

D. Install wallcovering before installation of resilient base. Extend wallcovering not more than 1/4-inch below top of resilient base.

- E. Install panels consecutively in order in which they are cut from the roll including filling spaces above or below windows, doors, or similar penetrations.
- F. Do not install horizontal seams.
- G. Except on match patterns, hang fabric by reversing alternate strips, except as recommended by the manufacturer.
- H. Cutting:
 - 1. Cut on a work table with a straight edge.
 - 2. Joints or seams that are not cut clean are unacceptable.
 - 3. Trim additional selvage to achieve a color and pattern match at seams.
 - 4. Do not double cut seams on wall unless specified.
 - 5. If double cutting on the wall is necessary, place a three inch strip of Type I wallcovering under pasted edge.
 - a. Do not cut into wall surface.
 - b. After cutting, remove strip and excess adhesive from seam before proceeding to next seam.
 - c. Smooth down seam in adhesive for tight bond and joint.
- H. Trim strip-matched patterns, which are not factory pre-trimmed.
- I. Inside Corners:
 - 1. Wrap wallcovering around corner.
 - 2. Do not seam within two inches of inside corners.
 - 3. Double cut seam.
- J. Outside Corners:
 - 1. Wrap wallcovering around corner.
 - 2. Do not seam within six inches of outside corners.
 - 3. Double cut seam.

3.5 PATCHING

- A. Replace surface damaged wallcovering in a space as specified for new work.
 - 1. Replace full height of surface.
 - 2. Replace from break in plane to break in plane when same batch or run is not used. Double cut seams.

- 3. Adjoining differential colors from separate batches or runs are not acceptable.
- B. Correct loose or raised seams with adhesives to lay flat with tight bonded joint as specified for new work.

3.5 CLEANING AND INSTALLING TEMPORARY REMOVED ITEMS

- A. Remove adhesive from wallcovering as work proceeds.
- B. Remove adhesives where spilled, splashed or splattered on wallcoverings or adjacent surfaces in a manner not to damage surface from which it is removed.
- C. Reinstall previously removed finished hardware, electrical outlet and switch plates, mechanical diffusers, escutcheons, registers, surface hardware, fittings and fastenings.

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