

**Office Building
Specification Book**

Unit # 107

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OFFICE BUILDING
SECTION 05410
LOAD-BEARING METAL STUD SYSTEM
PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Load-bearing metal stud system for interior framing and load-bearing and non-load bearing exterior framing as shown on Drawings and as specified.

1.02 SYSTEM DESCRIPTION

A. Design Requirements: Design structural members in accordance with AISI "Specification for the Design of Cold-formed Structural Steel." 1. Maximum allowable deflection: a. Walls receiving gypsum wallboard finishes: L/120. b. Walls receiving plaster and brittle finishes, including EIFS and stucco: L/240. c. Walls receiving ceramic tile finishes: L/360. 2. Design system to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges. 3. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

1.03 SUBMITTALS

A. Product Data: Submit Manufacturer's Specifications, design data and installation instructions.
B. Shop Drawings: Submit Drawings showing layout, dimensions and construction details.
C. Certificates: 1. Submit Mill Certification with shipment to verify chemical composition, yield strength, tensile strength, elongation and coating thickness. Include listing of applicable ASTM standards specified in this section and comparison of ASTM requirements to actual materials provided to jobsite. 2. Submit Manufacturer's certification that products furnished meet or exceed the specified design requirements.

1.04 QUALITY ASSURANCE

A. Welding: Performed by certified welders in compliance with AWS D1.3 Structural Welding Code Sheet Steel.
B. Regulatory Requirements: Manufacturers shall have current ICBO or CABO evaluation report.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Exercise care during unloading, storage and erection to avoid damage. Dumping on the ground is not permitted.
- B. Support material stored at the site completely free of the ground, and cover to avoid damage from the elements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements: 1. American Studco, Inc. 2. Gold Bond Building Products Div., National Gypsum. 3. Unimast, Inc. 4. Western 5. CEMCO 6. Dietrich Industries

2.02 MATERIALS

- A. Studs, Track, Bracing and Bridging: Conform to ASTM C955. 1. ASTM A653, G60 hot-dip galvanized coating. 2. Minimum structural properties: In accordance with General Structural Notes.
- B. Track: Channel shaped; same width as studs, for tight fit; solid web, galvanized or painted to match studs, gage per General Structural notes.
- C. Bracing, Furring, Bridging: Formed galvanized sheet steel; channel shaped. Provide CRC - 1-1/2 inch bridging, gage per General Structural notes.
- D. Plates, Gussets, Clips: Galvanized formed steel, thickness determined for conditions encountered, Manufacturer's standard shapes.
- E. Fasteners and Attachments: 1. Sheet metal: Self-drilling self-tapping screws, type appropriate for attachment detail requirements with penetration through joined materials not less than 3 exposed threads. 2. Anchorage devices to structural components: Power driven or powder actuated, drilled expansion bolts, or screws, with sleeves.

2.03 FABRICATION

- A. Fabricate assemblies of framed sections of sizes and profiles required, with framing members fitted, reinforced and braced to suit design requirements.
- B. Fit and assemble in largest practical sections for delivery to site, ready for installation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine sub surfaces to receive Work and report detrimental conditions in writing to Architect. Commencement of Work will be construed as acceptance of sub surfaces.
- B. Coordination: Coordinate with other work, which affects, connects with, or will be concealed by this Work.

3.02 ERECTION

- A. Install components in accordance with Manufacturer's instructions.
- B. Align floor and ceiling tracks; locate to wall and partition layout. Secure in place with fasteners or welding at maximum 24 inches. Coordinate installation of sealant with floor and ceiling tracks.
- C. Place studs at 16 inches o.c.; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener method unless noted otherwise.
- D. Construct corners using minimum three studs. Double stud at wall opening, door and window jambs.
- E. Erect load bearing studs one piece full length. Splicing of studs is not permitted.
- F. Erect load bearing studs, brace and reinforce to develop full strength to meet design requirements.
- G. Extend stud framing through ceiling to underside of floor or roof structure above.
- H. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
- I. Install intermediate studs above and below openings to match wall stud spacing.
- J. Provide deflection allowance in stud track, directly below horizontal building framing for non-load bearing framing.
- K. Attach cross studs or furring channels to studs for attachment of fixtures anchored to walls.
- L. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- M. Touch-up field welds and damaged galvanized surfaces with primer.

3.03 FIELD QUALITY CONTROL

A. Testing: At Owner's request, Contractor shall provide spot testing of actual properties of steel framing to verify compliance with specifications.

3.04 CLEANING

A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition in accordance with Section 01500.

END OF SECTION

OFFICE BUILDING
SECTION 07240
EXTERIOR INSULATION AND FINISH SYSTEM
PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Exterior insulation and finish wall system (EIFS) as shown on Drawings and as specified.

1.02 SYSTEM DESCRIPTION

A. Design Requirements: 1. At all locations the insulation board shall be completely encapsulated by the reinforcing mesh and adhesive or substrate. 2. Separate insulation board from interior of building by minimum 1/2 inch gypsum sheathing or equivalent thermal barrier material which will limit the average temperature rise of the unexposed surface to not more than 250 degrees F. after 15 minutes of fire exposure when subjected to the ASTM E119 time-temperature curve. Install thermal barrier in a manner assuring its remaining in place for a minimum fire exposure of 15 minutes. 3. Insulation Board: Use and maximum thickness shall be in accordance with applicable building code requirements. Length and slope of inclined surfaces shall follow guidelines listed below: a. Minimum slope: 6 inches of rise in 12 inches of horizontal projection. b. Maximum length of slope: 2.3 times the thickness of the insulation. c. Inclined surfaces shall not be used for areas as defined as roofs by building codes. 4. Substrate Systems: Engineered to withstand applicable loads including live, dead, positive and suction wind, seismic, etc. Bond strength, fastener strength and connection strength shall be analyzed and engineered. Maximum deflection under positive or suction full design loads of substrate system shall not exceed 1/240th of span. 5. Sheathing substrates shall be oriented with their strong axis perpendicular to the supporting framing. 6. Expansion Joints: Install continuous expansion joints at the following locations: a. Where expansion joints occur in the substrate. b. Where building expansion joints occur. c. At floor lines in wood frame construction. d. Where the EIFS abuts other materials. e. Where the substrate changes. f. Where significant structural movement occurs, such as at: 1) Changes in roof lines. 2) Long continuous elevations. 3) Changes in building shape and structural systems.

g. Expansion and contraction of the field applied EIFS and adjacent materials shall be taken into account in the design of expansion joints, with proper consideration given to sealant properties, installation conditions, temperature range, coefficient of expansion of materials, joint width-to-depth ratios, etc. 7. Details: Follow EIFS manufacturer's latest published information for standard detail treatments. Corners shall be reinforced by wrapping the standard reinforcing mesh around the corner from both directions for a minimum of 8 inches as recommended by the manufacturer. Openings shall be reinforced using a 9 inch wide strip of standard reinforcing mesh laid at a 45 degree angle to the opening corner as recommended by the manufacturer.

1.03 SUBMITTALS

A. Product data.

B. Samples: Provide color and texture sample for Architect's approval. Each sample shall be prepared using the same tools and techniques proposed for the actual installation.

C. Test Reports: Submit copies of ICBO Research Report verifying the performance of the EIFS.

D. Certificates: Submit a copy of applicator's current certificate of approval from EIFS manufacturer for this Project.

1.04 MAINTENANCE

A. Furnish the following maintenance materials: 1. For each finish and color, one can of finish. 2. One can of adhesive. 3. 20 square feet of standard reinforcing mesh. 4. 20 square feet of insulation board.

1.05 QUALITY ASSURANCE

A. Qualifications: Journeymen qualified in the trowel trades and trained by EIFS manufacturer at an applicator school shall perform Application of EIFS materials.

B. Regulatory Requirements: 1. Insulation Board: Listed in the UL Building Materials Directory and have Flame Spread and Smoke Developed rating of not greater than 25 and 450, respectively, in accordance with ASTM E84. 2. EIFS: Approved for use by ICBO as described in current ICBO Research Committee Report.

C. Composite Mock-Ups: 1. Construct composite mock-up sample of area indicated on exterior elevations shown in the drawings. Coordinate with other trades. 2. Construct the sample panel, using job site materials.

3. The sample wall shall provide a standard of workmanship, range of color and texture, and shall include flashings, control joints and sealant system. 4. Construct successive sample panels until the standard is approved. 5. When accepted, sample wall shall be the standard of comparison for the remainder of the work. 6. Upon completion of the project, remove the sample wall from the site and dispose in a legal manner.

1.06 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials to site in manufacturer's original unopened packaging with labels intact.

B. Storage: Adequately protect against damage while stored at the site.

C. Handling: Comply with manufacturer's instructions.

1.07 PROJECT/SITE CONDITIONS.

A. Environmental Requirements: 1. Ambient air temperature shall be 40 degrees F. or greater and rising at the time of installation of the EIFS materials, and remain so for at least 24 hours thereafter. 2. For EIFS installation in ambient temperatures less than 40 degrees F., maintain supplementary heat for at least 24 hours after EIFS installation. Subsequent to installation of the EIFS, the wall shall remain free of residual moisture.

1.08 WARRANTY

A. Provide manufacturer's Complete 5 year warranty covering both labor and materials used in system, and substrate.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Products equaling or exceeding quality requirements of the specified product, of the following manufacturers, as follows or as approved are acceptable for bidding: 1. Dryvit System, Inc., West Warwick, RI. 2. Synergy, Inc., Cranston RI 3. STO Industries, Rutland, VT. 4. United States Gypsum Co., Chicago, IL. 5. Simplex Products Div., Adrian, MI.

B. Specifications are based upon products as manufactured by Pleko Therm System, Tempe, AZ.

2.02 MATERIALS

A. Gypsum Sheathing: ASTM C79, 5/8 inch thick, T & G edges, or Dens-Glass Gypsum Sheathing as manufactured by Georgia-Pacific.

B. Sheathing Fasteners: Corrosion resistant, with anti-corrosive coating capable of withstanding no more than 5 percent red rust after 500 hours of Salt Spray Tests in accordance with ASTM B117. Size and type as used in wind load tests.

C. Adhesives: Pleko Therm Adhesive, 100% acrylic polymer dispersion with a quartz or silica aggregate that is field blended with Type I or Type II Portland Cement 1:1 by weight.

D. Insulation Board: Expanded polystyrene, ASTM C578 Class II, aged (air dried) for 6 weeks at 68 degrees F. minimum, or for 5 days at 140 degrees F. before use. 1. Flame Spread (ASTM E84 or UL 723): Less than 25. 2. Average Density: 1.0 pound per cubic foot. 3. K-value: 0.23 per inch. 4. Thickness: 1 1/2" at surfaces with reveals and 3/4" at surfaces without reveals, or as indicated. 5. Size: 24" x 48".

E. Standard Reinforcing Mesh: Treated, balanced, open weave, glass fiber type, minimum weight of 4 oz./yd., available in 38 inch and 9 inch widths.

F. High Impact Armor Mesh: Treated, balanced, open weave, glass fiber type, minimum weight of 20 oz./yd., available in 38 inch widths (21 ounce/square yard weight).

G. Finish: Factory mixed, acrylic based, integral color and texture to be "fine". 1. Color no. 1: Shall match Ameritone #2D44C Barron Brown paint color. 2. Color no. 2: Shall match Benjamin Moore #1033 paint color.

H. Portland Cement: ASTM C150, Type I or II.

I. Water: Clear, potable, and free of all foreign matter.

J. Sealant System: Shall be one of the following: 1. Tremco Dymeric Plus, with Primer No. 1. 2. Pecora Dynatrol II with Type P75 Primer. 3. Dow-Corning 790 with 1200 Primer and Ethafoam Backer Rod.

K. Soffit vent: Fry reglet EIFS. Soffit vent PCS-75-V-300, prime and paint to match EIFS color.

2.03 MIXES

A. Adhesive: 1. Use clean container, free of foreign substance, for mixing and preparing material. Do not use container, which has been used for or cleaned with a petroleum product. 2. Use a mixer similar to Goldblatt Jiffler Mixer No. 15311H7, powered by 1/2 inch drill 400-500 RPM. 3. Measure a given weight of adhesive into a container, and an equal weight of Portland cement into another container. 4. While stirring the adhesive, add small amounts of Portland cement in increments to obtain a final ratio of one-to-one by weight. Continue stirring until the mixture is homogenous.

5. Small amounts of water may be added to the adhesive mixture to adjust workability. The mixture shall not be "watered down." 6. A period of 5 minutes shall elapse after the initial mixing, then the mixture shall be tempered by stirring again. 7. Use mixture immediately after tempering. Pot life is the same as plaster-like materials and depends on ambient temperature and humidity conditions and substrate. Keep container closed when not in use. 8. Under no circumstances use additives, or materials of any kind such as rapid binders, antifreeze, accelerators, fillers, or pigments.

B. Finish Coating: 1. Thoroughly stir coating with a clean high speed mixer as specified above until a uniform workable consistency is obtained. 2. A small amount of water may be added to adjust workability. Coating shall not be "watered down." Maximum water, 8 ounces per pail. 3. Under no circumstances use additives, or materials of any kind such as rapid binders, antifreeze, accelerators, fillers, or pigments. 4. Apply coating immediately after mixing. Keep container closed when not in use. Pot life depends on ambient temperature and humidity conditions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: 1. Representative of the EIFS manufacturer shall inspect and approve gypsum substrate prior to the application of insulation, as well as the insulation prior to application of the finish. 2. Masonry, concrete and brick substrates shall be flat within 1/4 inch within any 4 feet. Follow manufacturer's recommendations for application of additive or leveling coat to assure a smooth surface.

3.02 APPLICATION

A. Gypsum Sheathing: Install gypsum sheathing over framing using one inch self-tapping screws spaced 8 inches o.c. at bearings and panel edges.

B. Insulation Board: 1. Begin application at the base from firm, permanent or temporary support. 2. Apply adhesion to clean hard surface. 3. Apply board with long edge oriented horizontally with its joints offset with respect to the substrate joints and using a running bond pattern. 4. Precut insulation board as required to fit openings, corners and projections. 5. Stagger vertical joints and interlock at corners. 6. Insulation board pieces smaller than 24" x 48" may be used, such as at corners. In all cases the perimeter of the insulation board shall have the 2 inch ribbon per the Ribbon and Dab Method. Maintain 32 percent minimum contact area.

C. Adhesive Mixture: 1. Ribbon and Dab Method (Masonry Substrates): By trowel apply ribbon of mixed adhesive to one surface of insulation board. Ribbons shall be 2 inches wide x 3/8 inch thick around the entire perimeter of each board. The adhesive shall not be applied to the ends of the insulation board. Apply 8 dabs of adhesive mixture 4 inches diameter x 3/8 inch thick to the area within the perimeter ribbon. A minimum of 32 percent of the insulation board surface shall be in contact with the adhesive mixture. 2. Notched Trowel Method: Apply beads of adhesive mixture to one surface of the insulation board using a notched trowel having an edge profile meeting EIFS manufacturer's requirements. The beads shall stand out 3/8 inch from the surface of the insulation board. Apply ribbons of adhesive mixture 2" wide x 3/8" thick around entire perimeter of the insulation board using a trowel. Adhesive mixture shall not be applied to the ends of the insulation board. Use this method for gypsum sheathing substrates only.

D. Mesh: 1. Reverse roll as necessary to remove the tendency of the mesh to curl. 2. Standard Mesh Base Coat: a. Using a stainless steel trowel, apply the adhesive mixture to the surface to a uniform dry thickness of 1/16 inch. Apply base coat in 2 applications. b. Immediately embed the standard reinforcing mesh into the wet adhesive mixture using a trowel. c. Smooth the surface of the adhesive mixture with a trowel until the reinforcing mesh is fully embedded. d. The pattern of the mesh shall not be visible beneath the surface of the adhesive mixture. e. Lap reinforcing mesh pieces a minimum of 2-1/2 inches on all sides, working from the center to the edge while smoothing out wrinkles. f. A period of 24 hours shall elapse to allow the base coat to form a positive bond. g. Protect base coat from damage and weather while curing. 3. Heavy Duty Mesh Basecoat: Provide the following at ground floor applications and facades exposed to abnormal stress or deliberate impacts. a. Using a stainless steel trowel, apply the adhesive mixture to the surface to a uniform thickness of 3/32 inch. b. Immediately embed the high impact armor mesh into the wet adhesive mixture using a trowel. c. Smooth the surface of adhesive mixture with a trowel until heavy duty reinforcing mesh is fully embedded. d. The pattern of the mesh shall not be visible beneath the surface of the adhesive mixture. e. Ends of adjacent heavy-duty mesh pieces shall be tightly butted, not lapped. f. Work heavy-duty mesh into the adhesive mixture, working from the center to the edge while smoothing out wrinkles. g. A period of 24 hours shall elapse to allow the base coat to form a positive bond. h. Protect base coat from damage and weather while curing.

i. Examine the surface of the first layer after curing for projections, loose strands of heavy duty mesh, and correct to produce a flat surface. j. Apply a second layer consisting of adhesive mixture and standard reinforcing mesh over the heavy-duty mesh as specified above.

E. Finish: 1. Apply finish continuously and in one operation to the entire wall surface. 2. Maintain a wet edge. 3. The finish shall not be allowed to set up in a distinct area. 4. Employ sufficient manpower, scaffolding and equipment to ensure a continuous operation and a uniform appearance. 5. Work shall proceed toward the joints and corners. 6. Use clean plastic float for floating. 7. A small amount of clean, potable water may be used to adjust the workability of the finish. Maximum 8 ounces per pail. 8. Until dry, protect the finish from airborne contamination due to dust and soot, and from weather and other damage. 9. Finish Texture: "Fine" as acceptable to Architect.

F. Sealant: 1. System materials shall be fully cured prior to sealant installation. 2. Color of sealant shall be as selected. 3. Joint design and surface preparation shall be based on sealant manufacturer's recommendations and project conditions. 4. Follow additional requirements contained in EIFS manufacturer's detailed sealant specification.

3.03 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: During construction the work shall be inspected by the EIFS manufacturer or authorized representative.

3.04 CLEANING

A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition in accordance with Section 01500.

END OF SECTION

OFFICE BUILDING
SECTION 09100
METAL SUPPORT SYSTEMS
PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Formed metal stud framing, furring, suspension systems and accessories as shown on Drawings and as specified.

1.02 SUBMITTALS

A. Product Data: Submit data describing standard framing member materials and finish, product criteria, load charts, limitations, and installation instructions.

B. Certificates: Mill Certification shall be provided with shipment to verify chemical composition, yield strength, tensile strength, elongation and coating thickness. Include listing of applicable ASTM standards specified in this section and comparison of ASTM requirements to actual materials provided to jobsite.

C. Manufacturer's letter: Manufacturer shall provide letter stating that the material supplied to the specific project meets or exceed the performance standards listed in these specifications.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C 754 requirements. B. Maximum deflection of all walls shall be L/360.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements: 1. American Studco Inc. 2. Gold Bond Building Products Div., National Gypsum. 3. Unimast, Inc. 4. Western 5. CEMCO 6. Dietrich Industries

2.02 FRAMING MATERIALS

A. Studs, Runners and Furring Channels: 1. ASTM C 645, electro-galvanized to meet ASTM A 591, manufactured from steel supplied in accordance with ASTM A 446, Grade A; ASTM A 525, G60 designation galvanized sheet steel. 2. Thickness: 25 (0.45mm) gauge for studs and

runners, and 25 gage (0.45mm) for channels. Furnish 20 gauge studs at single layer gypsum board receiving ceramic tile finish and for walls over 14 feet high. Adjust gauge as required for maximum deflection as described in Part 1.

B. Studs: C-shaped, non-load bearing rolled steel, punched for utility access, of size shown on Drawings.

C. Ceiling Runners: Cold or hot-rolled steel, meet ASTM C 754. Deflection track runner shall have 2½" legs.

D. Hanger and Tie Wire: Meet ASTM C 754.

E. Furring and Bracing Members: Of same gauge, material and finish as studs, thickness to suit purpose.

F. Clips, Brackets: Galvanized wire or sheet metal designed for attachment of furring members.

G. Fasteners: GA 203, self-drilling, self-tapping screws.

H. Anchorage Devices: Power driven, powder actuated, drilled expansion bolts or screws with sleeves as required for positive anchorage.

I. Acoustic Sealant: As specified in Section 09250.

J. Primer: FS TT-P-645, for touch-up of galvanized surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are ready to receive Work.

B. Verify field measurements are as shown on Drawings.

C. Verify that rough-in utilities are in proper location.

D. Beginning of installation means acceptance of substrate.

3.02 METAL STUD ERECTION

A. Install stud framing in accordance with ASTM C 754.

B. Align and secure top and bottom runners at 24 inches (600mm) o.c. Place two beads of acoustic sealant between runners and substrate where indicated on drawings.

C. Fit runners under and above openings; secure intermediate studs at spacing of wall studs.

D. Connect studs to tracks using fastener method.

E. Door Opening Framing: Install double studs at doorframe jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.

- F. Blocking: Nail wood blocking to studs. Bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, and hardware.
- G. Coordinate installation of bucks, anchors, blocking, electrical and mechanical Work placed in or behind partition framing.
- H. Splice studs with 8 inch (200mm) nested lap, secure each stud flange with flush head screw.
- I. Construct corners using minimum three studs.
- J. Brace stud framing system and make rigid.
- K. Coordinate erection of studs with requirements of door and window frame supports and attachments.
- L. Align stud web openings.
- M. Refer to Drawings for indication of partitions extending to ceiling only and for partitions extending through ceiling to structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.
- N. Coordinate placement of insulation in multiple stud spaces made inaccessible after stud framing erection.

3.03 WALL FURRING INSTALLATION

- A. Erect wall furring for direct attachment to concrete, brick masonry and concrete walls.
- B. Erect furring channels vertically. Secure in place on alternate channel flanges at maximum 24 inches (600mm).
- C. Space furring channels maximum 16 inches (400mm) on center, not more than 4 inches (100mm) from floor and ceiling lines, and butting walls.
- D. Install furring channels directly attached to concrete and brick masonry and concrete walls, as applicable in accordance with Manufacturer's instructions.
- E. Erect freestanding metal stud framing tight to concrete, concrete and brick masonry walls, attached by adjustable furring brackets in accordance with Manufacturer's instructions.

3.04 ACOUSTICAL AND FIRE RATINGS

- A. Install framing and furring as required for indicated acoustical and fire ratings.

3.05 CEILING FRAMING INSTALLATION

- A. Install in accordance with ASTM C 754.

- B. Coordinate location of hangers with other Work.
- C. Install ceiling framing independent of walls, columns and above-ceiling work.
- D. Reinforce openings in ceiling suspension system, which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches (600mm) beyond each end of openings.
- E. Laterally brace entire suspension system.
- F. No hanger support shall be allowed from roof deck.
- G. At steel beams, joists or other steel construction wrap hangers around, inset through, or clip or bolt to the supports, so as to develop the full strength of the hangers.
- H. At lights or other openings that interrupt the main runner or furring channels reinforce grillage with 3/4 inch (19mm) cold-rolled channels, wire tied atop and parallel to the main runner channels.
- I. Do not bridge control and expansion joints with metal furring. Provide separate supports on each side of joint.
- J. Fabricate and bend curved furring to required curves and radii in the shop.
- K. Compression posts shall be installed on 96 square feet intervals, starting at 4'-0" from each wall.

3.06 CLEANING

- A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition in accordance with Section 01500.

END OF SECTION

OFFICE BUILDING
SECTION 09250
GYPSUM BOARD
PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Gypsum board and joint treatment as shown on the Drawings and as specified.

1.02 SYSTEM DESCRIPTION

A. Acoustic Attenuation for Interior Partitions as indicated on drawings and Section 09530.

1.03 SUBMITTALS

- A. Product Data: Submit data on gypsum board, joint, finish and accessories.
- B. Samples: Submit sample of textured finish prior to application.
- C. Reports: Submit fire test report for fire rated assemblies, and acoustical performance test reports for acoustically-rated assemblies.

1.04 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in Gypsum Board Systems Work with 2 years documented experience and approved by Manufacturer.
- B. Regulatory Requirements: Conform to applicable code for fire rated assemblies, in conjunction with Section 09100 as follows: 1. Fire rated partitions: Listed assembly by UL U411, U465 and HW-D-0003.
- C. Comply with applicable specification recommendations of GA-216 and GA-600 as published by the Gypsum Association.

1.05 DELIVERY, STORAGE AND HANDLING

A. Comply with GA-216 and Manufacturer's directions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Furnish products of one of the following Manufacturers, except as approved by the Architect, subject to compliance with Specification requirements: 1. Domtar Gypsum of Domtar Inc. 2. Georgia-Pacific Corp. 3. Gold Bond Building Products Div., National Gypsum Co. 4. United States Gypsum Co.

2.02 GYPSUM BOARD MATERIALS

- A. Standard Gypsum Board: ANSI/ASTM C36; 5/8 inch (16mm) thick, maximum permissible length; ends square cut, tapered edges.
- B. Fire Rated Gypsum Board: ANSI/ASTM C36; fire resistive type, UL rated; 5/8 inch (16mm), maximum permissible length; ends square cut, tapered edges.
- C. Moisture Resistant Gypsum Board: ANSI/ASTM C630; 5/8 inch (16mm) thick, maximum permissible length; ends square cut.
- D. Gypsum Backing Board: ANSI/ASTM C442; standard type; 5/8 inch (16mm) thick; square edges, ends square cut, maximum permissible length.
- E. Gypsum Sheathing Board: ANSI/ASTM C79; moisture resistant type; 5/8 inch (16mm) thick, maximum permissible length; ends square cut, square edges; water repellent paper faces.
- F. Ceramic Tile Backer Board: As specified in Section 09310 - Ceramic Tile.

2.03 ACCESSORIES

- A. Adhesive: ASTM C557.
- B. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board, as recommended by Board Manufacturer.
- C. Corner Beads: GA216; Type CB; electro-galvanized steel.
- D. Edge Trim: GA216; Type L & U bead; electro-galvanized steel and Type LC rolled- formed zinc.
- E. Control Joint: U.S. Gypsum No. 093, roll-formed zinc.
- F. Joint Materials: ANSI/ASTM C475; reinforcing tape, joint compound, adhesive, water, and fasteners. For coated board and gypsum sheathing, use material recommended by Board Manufacturer.
- G. Screws: ASTM C1002 for steel drill screws. Type G for fastening to gypsum board, Type S for fastening to light gauge steel framing and Type W for fastening to wood framing.
- H. Wall Texture: As manufactured by USG or LaHabra Inc., multi-purpose, pre-packaged, non-asbestos type.
- I. Reveal: Fry drywall reveal molding, 1/2" x 1/2", DRM-50-50, primed and painted same color as adjacent wall.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that site conditions are ready to receive Work and opening dimensions are as instructed by the Manufacturer.

B. Beginning of installation means acceptance of substrate.

3.02 GYPSUM BOARD INSTALLATION

A. Install gypsum board in accordance with GA-201 and GA-216, and Manufacturer's instructions as applicable.

B. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.

C. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.

D. Exterior applications: 1. Erect exterior gypsum sheathing horizontally, with edges butted tight and ends occurring over firm bearing. 2. Erect exterior gypsum soffit board perpendicular to supports with staggered end joints over supports.

E. Use screws when fastening gypsum board to metal and wood furring or framing.

F. Double Layer Applications: 1. Use gypsum backing board for first layer, placed perpendicular to framing or furring members. 2. Use fire rated gypsum backing board for fire rated partitions. 3. Place second layer perpendicular to first layer. 4. Offset joints of second layer from joints of first layer. 5. Secure second layer to first with adhesive and sufficient support to hold in place. Apply adhesive in accordance with Manufacturer's instructions.

G. Treat cut edges and holes in moisture resistant gypsum board with sealant.

H. Place control joints consistent with lines of building spaces as indicated on Drawings and as recommended by Board Manufacturer.

I. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

3.03 JOINT TREATMENT

A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.

B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch (0.80mm).

C. Taping, filling, and sanding is not required at surfaces behind ceramic tile.

3.04 ACOUSTICAL TREATMENT

A. Install acoustical sealant in accordance with Manufacturer's instructions at sound rated walls only.

B. Install acoustical sealant where gypsum board joins other walls or surfaces at sound control partitions.

3.05 FINISHING OF GYPSUM BOARD SURFACES

A. Provide finish of gypsum board surfaces in accordance with the Gypsum Association "Recommended Specification: Levels of Gypsum Board Finish" as follows:

1. **Level 0** (Temporary Construction): No taping, finishing, or accessories required.
2. **Level 1** (Fire Taping at plenum areas above ceiling, in attics, in areas where the assembly will be concealed or in building service corridors and other areas not normally open to public view):
 - a. Joints and interior angles shall have tape embedded in joint compound.
 - b. Surface shall be free of excess joint compound.
 - c. Tool marks and ridges are acceptable.
3. **Level 2** (Water resistant gypsum backing for tile)
 - a. Joints and interior angles shall have tape embedded in joint compound and one separate coat of joint compound applied over joints, angles, fastener heads, and accessories.
 - b. Surface shall be free of excess joint compound.
 - c. Tool marks and ridges are acceptable.
4. **Level 3** (Appearance areas to receive heavy or medium texture, or where heavy grade wall coverings are to be applied):
 - a. Joints and interior angles shall have tape embedded in joint compound and 2 separate coats of joint compound applied over joints, angles, fastener heads, and accessories.
 - b. Joint compound shall be smooth and free of tool marks and ridges.
 - c. Surface to be coated with primer sealer as specified in Section 09900 prior to application of final textures.
5. **Level 4** (Appearance areas to receive light texture with flat paint, or where backed wall coverings are to be applied):
 - a. Joints and interior angles shall have tape embedded in joint compound and 3 separate coats of joint compound applied over joints, angles, fastener heads, and accessories.
 - b. Joint compound shall be smooth and free of tool marks and ridges.
 - c. Surface to be coated with primer sealer as specified in Section 09900 prior to application of final textures.
6. **Level 5** (Appearance areas to receive gloss, semi-gloss, enamel, or non-textured flat paints or where severe lighting conditions occur.):
 - a. Joints and interior angles shall have tape embedded in joint compound and 3 separate coats of joint compound applied over joints, angles, fastener heads, and accessories.
 - b. A thin skim coat of joint compound, or a material manufactured especially for this purpose, shall

be applied to the entire surface. c. The surface shall be smooth and free of tool marks and ridges. d. Surface to be coated with primer sealer as specified in Section 09900 prior to application of final textures.

B. Surfaces shall be free of dust, dirt and oil before application of texture or skim coat.

C. Produce texture finish to match approved sample, type as indicated below. 1. Smooth at Food Service areas. 2. Fine Sand.

D. Remove over spray from adjoining construction.

3.06 CLEANING

A. After completion of wallboard installation, taping and texturing, remove rubbish, excess material and equipment from building and job site, leaving floors and other surfaces clean.

B. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition in accordance with Section 01500.

3.07 PROTECTION

A. Protect Work from damage until acceptance. 1. Maintain temperature of installed gypsum board spaces in range of 55 degrees F. (13 degrees C.) to 90 degrees F. (32 degrees C.) until building is entirely closed. 2. Ventilate as required to eliminate excessive moisture.

B. Repair or replace damaged Work.

END OF SECTION

OFFICE BUILDING
SECTION 09510
ACOUSTICAL CEILINGS
PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Acoustical suspended ceilings as shown on Drawings and as specified herein.

1.02 SUBMITTALS

A. Product Data: Provide data on metal grid system components and acoustical units.

1.03 QUALITY ASSURANCE

A. Qualifications: Installer shall be approved by Manufacturer of material or system.

B. Standards: Comply with ASTM C635, "Standard Specification for Acoustical Tile and Lay-In Panel Ceilings" and ASTM C636, "Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels."

1.04 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact. Protect finished surfaces with removable wrapping or coating, which will not bond when exposed to sunlight.

B. Storage: Adequately protect against damage while stored at the site.

C. Handling: Comply with Manufacturer's instructions.

1.05 MAINTENANCE

A. Extra Materials: Provide an additional 5 percent of each type of acoustical unit installed, in unopened labeled cartons, to the Owner at completion of Work, for his maintenance use, at no additional cost. Provide, at minimum, one full carton of each type of acoustical unit.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Furnish products of the following Manufacturers, except as approved otherwise by the Architect, subject to compliance with Specification

09510-01

requirements. 1. Armstrong World Industries 2. USG Interiors, Inc.

2.02 SUSPENSION SYSTEM

- A. Ceiling Suspension System: USG Centricitee DXT, Intermediate duty with components formed from commercial quality cold rolled steel electro-zinc coated and pre-painted white enamel finish, unless noted otherwise.
- B. Main-Runners: Minimum of 1-1/2 inch (38mm) in height with an exposed capped face of 9/16 inch in width, nominally 12 feet (300mm) long.
- C. Cross-Tees: Minimum of 1-1/4 inch (32mm) in height with an exposed capped face of 9/16 inch in width.
- D. Hanger Wire: Galvanized steel conforming to Federal Specification FF-QQ-W-461, Finish 5, Class 1 annealed, and not less than 12 gage (2.0mm).
- E. Finish: Exposed faces of main and cross runners shall be a [white] baked enamel paint finish.
- F. Suspension system shall support the ceiling system specified with a maximum deflection of 1/360 of the span.
- G. Wall Moldings: 24 MSG painted steel with a minimum 9/16 inch wide lower flange, finish and configuration to match grid.
- H. Hold-Down Clips: Provide access type hold-down clips where required by Acoustical Ceiling Manufacturer for type and condition and where panels weigh less than one pound per square foot (5kg m²).

2.03 CEILING PANELS

- A. Acoustical Ceiling Panels: 1. Size: 24 inch x 24 inch x 3/4 inch Armstrong Cirrus Tegular. 2. Surface Finish: Factory applied, washable, white vinyl latex paint finish. 3. Light reflectance of LR-1 (over 75 percent), per Fed. Spec. SS-S-118B and ASTM E1264. 4. Surface Burning Characteristics: Class A per ASTM E1264 and Fed. Spec. SS-S-118B, Flame Spread 25 or under, per ASTM E-84 (UL Label). 5. NRC Range: 0.65 in suspended mounting. 6. Edge Detail: Beveled Tegular.
- B. Gypsum Core Lay-in Panels: 1. Size: 24 inch x 24 inch x 1/2 inch (600mm x 1200mm x 12mm). 2. Surface Finish: White vinyl facing, stipple pattern, wrapped at edges. 3. Light Reflectance: LR-1 (over 75 percent). 4. Surface Burning Characteristics: Class A per ASTM E1264 and Fed. Spec. SS-S-118B, Flame Spread 25 or under, per ASTM E84 (UL Label). 6. Edge: Square.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine sub surfaces to receive Work and report detrimental conditions in writing, with a copy to Architect.

Commencement of Work will be construed as acceptance of sub surfaces.

B. Verify, before proceeding with this Work, that required inspections of existing conditions have been completed.

3.02 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636 and as supplemented in this Section, and UBC Standard 25-2.

B. Install system capable of supporting imposed loads to a deflection of 1/360 maximum.

C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.

D. Install after major above-ceiling Work is complete. Coordinate the location of hangers with other Work.

E. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.

F. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

G. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches (150mm) of each corner; or support components independently.

I. Do not eccentrically load system, or produce rotation of runners.

J. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions.

K. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

3.03 INSTALLATION - ACOUSTICAL LAY-IN UNITS

- A. Install acoustical units in accordance with Manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Lay directional patterned units one way with pattern parallel to shortest room axis. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling Work is complete.
- E. Install acoustical units level in uniform plane, and free from twist, warp and dents.
- F. Cut panels to fit irregular grid and perimeter edge trim. Field rabbet panel edge. Double cut and field paint exposed edges of tegular units.
- G. Where round obstructions occur, provide preformed closers to match edge molding.

3.04 ERECTION TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/4 inch in 10 feet (6mm in 3000mm).

3.05 ADJUSTING

- A. Remove damaged or soiled panels and replace with new units, as directed by Architect.

3.06 CLEANING

- A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition in accordance with Section 01500.

OFFICE BUILDING
SECTION 09530
ACOUSTICAL INSULATION
PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Acoustical insulation ceilings and partitions as shown on Drawings and as specified.

1.02 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact. Protect finished surfaces with removable wrapping or coating, which will not bond when exposed to sunlight.

B. Storage: Adequately protect against damage while stored at the site.

C. Handling: Comply with Manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manville Building Products Group

B. Owens Corning Fiberglas

C. U.S. Gypsum Company

2.02 MATERIALS

A. Sound Control Batts: 3 inches (75mm) thick fiberglass unfaced, ASTM C665, Type 1, Class B, with a Fire Hazard Classification of 25-50 or less when tested in accordance with ASTM E-84.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install acoustical insulation batts in sound-rated stud partition walls where indicated on Drawings. Size batts for a friction fit and install in accordance with Manufacturer's recommendations.

B. Install acoustical insulation batts above lay-in ceilings, and other locations as shown on Drawings, in strict accordance with Manufacturer's printed instructions.

C. Butt ends of batts closely together and fill all voids.

3.02 CLEANING

A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition in accordance with Section 01500.

END OF SECTION