Indoor Environmental Control: Gypsum board with a paper face and a core containing carbon-based or sucrose binders that are food and habitation for mold when subject to prolonged moisture exposure gypsum.

Remove from project site gypsum board measuring above 15 percent moisture content and gypsum board subject to continuous moisture contact for over a 3 day period. This includes installed gypsum board.

Conform to Section 015730 indoor environmental control provisions.

Show 1/2 inch space from bottom of gypsum board panels and floor to prevent water exposure from wet mopping of floors.

Abuse-Resistance: At corridors and other public areas subject to abuse, consider veneer plaster systems over 1/4 or 1/2 inch thick AWI Exposure 1 plywood and abuse-resistant gypsum panels. Also, consider veneer plaster finish directly over abuse-resistant board. Weigh costs and advantages of each.

Construction Waste Recycling: Make provision for recycling gypsum products. Construction waste recycling is specified by Section 017419.

Commentary on Fire Rated Gypsum Board: Gypsum contains water molecules that off-gases when subject to heat during fire.

Type X gypsum board contains reinforcing designed to prevent gypsum board from crumbling and falling off framing due to shrinkage when water is released during fire. Release of water causes Type X gypsum board to shrink, leading eventually to failure.

Type C was a proprietary name given to gypsum board manufactured by gypsum manufacturers that contains material that expands as water is released, giving greater fire-resistance. All manufacturers supply gypsum board with Type C designation but there is no uniform terminology or reference standard for use in specifying except UL test data.

Many types of gypsum board have now been combined into one standard ASTM C1396. The following have been discontinued C36 (wall board), C37 (gypsum lath), C79 (sheathing board), C442 (shaftliner), C588 (veneer base), C630 (water-resistant board), C931 (soffit board), C960 (predecorated board), and C1395 (ceiling board).

PART 1 GENERAL

1.1 SUMMARY

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Edit to conform to meet project requirements.

***

A. Section Includes:

1. Gypsum board wall and ceiling systems.
2. Trim accessories, Joint compound, control joints, fasteners, reveal moldings, and sealants.
Edit related Sections to those referenced in body of specification section.

B. Related Sections:
1. Section 054000 - Cold Formed Metal Framing
2. Section 061000 - Rough Carpentry
3. Section 072116 - Batt and Blanket Insulation
4. Section 078400 - Firestopping
5. Section 079200 - Joint Sealers
6. Section 092216 - Non-Load Bearing Metal Wall Framing Systems
7. Section 092226 - Ceiling Suspension Systems
8. Section 092600 - Veneer Plaster
9. Section 091813 - Cementitious Backer Board
10. Section 092810 - Gypsum Backer Board
11. Section 092800 - Backing Boards and Underlayments
12. Section 092117 - Shaft Wall
13. Section 09622 - Fabric Wall Systems
14. Section 099000 - Paints and Coatings
15. Division 22 - Plumbing
16. Division 23 - Heating, Ventilating, and Air Conditioning (HVAC)
17. Division 26 - Electrical

1.2 REFERENCES

Edit reference standards to those referenced in body of specification section.

A. Reference Standards: Current edition at date of Bid.

B. ASTM International (ASTM):
2. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
3. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
4. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
5. ASTM C1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
7. ASTM C1629 - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels

C. Gypsum Association (GA): Web Site http://www.gypsum.org/
1. GA-201 - Gypsum Board for Walls and Ceilings.
2. GA-214 - Recommended Levels of Levels of Gypsum Board Finish.
3. GA-216 - Specifications for the Application and Finishing of Gypsum Board.
4. GA-226 - Application of Gypsum Board to Curved Surfaces.
5. GA-235 - Gypsum Board Typical Mechanical and Physical Properties.
6. GA-236 - Joint Treatment under Extreme Weather Conditions.
7. GA-238 - Guidelines for Prevention of Mold Growth on Gypsum Board.

D. Wall and Ceiling Bureau (WCB); Website http://wallandceilingbureau.org
1. TB-52010 - Control Joints for Gypsum Board


1.3 ADMINISTRATIVE REQUIREMENTS

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Edit sections to include coordination and sequencing as needed for completion of work

***

A. Coordination:
1. Conform to Section 013113 for coordination with work of other Sections.
2. Coordinate with Wall Type Schedule, Section 092600, Section 09255, and Section 092117 for gypsum board systems used in conjunction with work of this Section.

B. Preinstallation Conference: Arrange, in accordance with Section 013119 two weeks prior to beginning work of this Section.
1. Walk job and determine full extent level of quality for work.
2. Coordinate gypsum board pre installation conference with veneer plaster pre installation conference as specified in Section 092600.
1.4 SUBMITTALS

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Edit to specify submittals required for type and scope of project. Consider field mock-ups as a way to limit submittals and determine quality standard.

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A. Submit under provisions of Section 013300.
B. Product Data: Manufacturer's published descriptive literature for gypsum board types, trim accessories, and control joints pertinent to this Section.
   1. Recycled Content: Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
   2. Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site.
C. Test Data: ASTM E 119 Certified testing lab Design for each proprietary fire-resistant wall and ceiling assembly listing manufacturers and products. Unlisted manufacturers and products not accepted.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. Company with minimum 5 years documented experience.
   2. Able to supply complete and tested systems conforming to code.
B. Installer Qualifications:
   1. Company specializing in work of this section with documented experience in commercial quality work of comparable scope.
   2. Recommended as qualified installer by WCB prior to Bid, or accepted by Architect.
C. Mock-Up: Conform to provisions of Section 014300.
   1. Install 8 square foot minimum mock-ups of gypsum board finish and control joints.
   2. Approved mock-ups may be incorporated into Work and become standard for approved workmanship and finishes.
D. Sustainability Standards Certifications: Conform to Section 018113 for documentation of LEED Credits contributing to Certification of Project under USGBC LEED-NC 3.0 Green Building Rating System California Green Building Standards Code.
   1. Recycled Content: Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.
   2. Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Conform to Section 016510, GA-238, GA-801, and manufacturer's instructions.
B. Deliver materials in original unbroken containers or bundles bearing name of manufacturer and brand.
C. Verify products undamaged before acceptance at Project Site. Do not use products with visible signs of mold growth and damage.
1.7 FIELD CONDITIONS

A. Temperature, Ventilation and Moisture: Conform to GA - 216 and manufacturer's instructions. Maintain temporary controls to regulate heating, ventilating, moisture, and humidity levels. Do not begin taping and finishing until following conditions are achieved.
   1. Building: Fully enclosed and free of standing water. Watertight roofing and wall envelope systems in place, except where Architect accepts water and mold resistant gypsum board.
   2. Temperature: Between 50 and 95 degrees F for minimum 48 hours.
   3. Gypsum Board Moisture Content: 0.4 percent on gypsum scale (12 percent on wood scale).
   4. Wood Substrate Moisture Content: Maximum 16 percent.

B. Lighting: Sufficient temporary lighting to perform work to achieve specified finishes.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Georgia Pacific Corp. (GP)
   1. Web Site http://www.gpgypsum.com

B. United States Gypsum Corp. (USG)
   1. Web Site http://www.usg.com

C. CertainTeed Gypsum, Inc.
   1. Web Site http://www.certainteed.com

D. Temple-Inland Gypsum Products
   1. Web Site http://www.templeinland.com/BuildingProducts/Gypsum

E. National Gypsum
   1. Website http://www.nationalgypsum.com

F. Pabco Gypsum
   1. Website http://www.pabcogypsum.org

G. Substitution Requests: Submit for approval under provisions of Section 012500.

2.2 REGULATORY REQUIREMENTS

A. Conform with Section 014100 for code compliance requirements related to this Section.

B. Conform to requirements for tested fire rated assemblies.
   2. UL, Fire Resistance Directory, or Intertek Testing Services (WHi).
   3. IBC Chapter 25, including Section 2506, 2508, 2509 and related tables.
   4. ICC Evaluation Reports and Standards.

2.3 PERFORMANCE / DESIGN CRITERIA

A. Gypsum Board Products: Conform to general provisions of ASTM C1396.
   1. Ends square cut and edges tapered.
   2. Gypsum Board at Non-Rated Assemblies: 1/2 inch thick.
   3. Gypsum Board at Fire-Resistive Rated Assemblies: 5/8 inch thick, UL labeled, and conforming to ICC ES Report for Type X or Type C.
4. Mold-Resistant Interior Panels: Conform to general provisions of ASTM C1658 or ASTM C1396. Test to ASTM D3273 with Rating of 10 or Test to ASTM G21 with Score of 0.

B. Abuse-Resistant and Impact Resistant Interior Panels:

1. Surface Abrasion Resistance: Test to ASTM C1629 and ASTM D4977 for maximum surface damage:
   a. Level 1: 0.126 inch (3.2mm).
   b. Level 2: 0.059 inch (1.5mm).
   c. Level 3: 0.010 inch (0.3mm).

2. Surface Indentation: Test to ASTM C1629 and ASTM D5420 for indentation resistance.
   a. Level 1: 0.150 inch (3.8mm).
   b. Level 2: 0.100 inch (2.5mm).
   c. Level 3: 0.50 inch (1.3mm).

   a. Level 1: 90 ft-lbs (122 J).
   b. Level 2: 195 ft-lbs (265 J).
   c. Level 3: 300 ft-lbs (408 J).

   a. Level 1: 50 ft-lbs (68 J).
   b. Level 2: 100 ft-lbs (136 J).
   c. Level 3: 150 ft-lbs (204 J).

2.4 MATERIALS

A. Paper Faced Gypsum Board: Conform to ASTM C1396.

1. GP ToughRock.
2. USG Sheetrock.
4. Temple-Inland, Inc. Gypsum Board
5. Pabco Gypsum Flame Curb

B. Moisture and Mold-Resistant Gypsum Board:

1. GP Dens-Armor Plus, glass mat facings on front and back and moisture-resistant core.
2. GP ToughRock Mold-Guard<moisture-resistant paper face>
3. USG Fiberock Aqua Tough, unfaced, solid moisture-resistant core.
4. USG Sheetrock Mold Tough<moisture-resistant core and paper face>
5. CertainTeed Gypsum, Inc.: ProRoc Moisture and Mold Resistant with M2Tech
6. Temple-Inland GreenGlass Interior Board, glass mat facings on front and back and moisture-resistant core.
7. Pabco Gypsum Mold Curb

C. Moisture, Mold, and Abuse-Resistant Gypsum Board: Tested for mold resistance in conformance to ASTM D3273 (Rating of 10) or ASTM G21 (Score of 0), and conforming to ASTM C1629 Classifications for abuse-resistance (Levels I, II, or III).

1. GP Dens-Armor Plus AbuseGuard.
   a. Surface Abrasion: Level 3.
   b. Indentation Resistance: Level 1.

2. USG Sheetrock Mold Tough AR
   a. Surface Abrasion: Level 2
b. Indentation Resistance: Level 2
c. Soft-Body Impact: Level 1

3. USG Fiberock Aqua Tough Interior Panel.
   a. Surface Abrasion: Level 2.
   b. Surface Indentation: Level 2.

4. CertainTeed Gypsum, Inc.: ProRoc Extra Abuse Type X Gypsum Board with M2Tech
   a. Surface Abrasion: Level 2.
   b. Indentation Resistance: Level 1.
   d. Hard Body Impact: Level 1

5. Temple-Inland, Inc.: ComfortGuard Abuse-Resistant Mold-Resistant board
   a. Surface Abrasion: Level 2.
   b. Indentation Resistance: Level 1
   c. Soft Body Impact: Level 1
   d. Hard Body impact: Level 1

   1. GP Dens-Armor Plus Impact-Resistant.
      a. Surface Abrasion: Level 3 (0.126 inch abraded depth)
      b. Surface Indentation: Level 1 (0.150 inch indentation)
      c. Soft Body Impact: Level 3 (300 ft-lbs)
      d. Hard Body Impact: Level 2 (100 ft-lbs)
   2. USG Fiberock Aqua Tough with Tuff Hide Primer Sealer
      a. Surface Abrasion: Level 3
      b. Surface Indentation: Level 2
      c. Soft Body Impact: Level 3
      d. Hard Body Impact: Level 2
   3. Temple-Inland, Inc.: ComfortGuard Impact-Resistant Mold-Resistant board
      a. Surface Abrasion: Level 2
      b. Surface Indentation: Level 1
      c. Soft Body Impact: Level 3
      d. Hard Body Impact: Level 3

E. High Impact Hard Body Impact Gypsum Board Panel: ASTM C1278. <consider as replacement for veneer plaster using surfacer, as instructed by manufacturer>
   1. USG Fiberock Very High Impact (VHI)
      a. Surface Abrasion: Level 2
      b. Surface Indentation: Level 2
      c. Soft Body Impact: Level 3
      d. Hard Body Impact: Level 3

F. Ceramic Tile Backer Board: As specified Section 092810 091813.

2.5 ACCESSORIES
A. Joint Materials: As recommended by gypsum board manufacturer for intended purpose.
   1. Tape: Manufacturer’s standard paper tape. Fiberglass tape not accepted.
   2. Compound: Manufacturer’s standard.
3. Conform to GA-201 and GA-216 for reinforcing tape, joint compound, adhesive, and water.
4. Do not use topping compounds for embedding tape or as first coat over trims and fasteners.

B. Primer/Surfacer for Level 5 Finish: USG Tuff-Hide Primer-Surfacer.

C. Thermal and sound-attenuation insulation: As specified Section 072116.

D. Joint Sealant at Exposed Joints: Paintable, Non-setting, non-staining, and as specified Section 079200.

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Specify Acoustical Sealants in this Section or Section 079200.
***

E. Acoustical Sealant at Exposed Joints: Nonsag, paintable, nonstaining, latex sealant conforming to ASTM C834. Tested to ASTM E90 for reduction of airborne sound transmission through perimeter joints and openings in building construction at representative assemblies. Specified for type and quality:

F. Acoustical Sealant at Concealed Joints:
   1. Synthetic Rubber Joint Sealant: Single component, non-skinning, non-hardening, 90 percent solids, acoustical properties conforming to ASTM C919 and to ASTM E90.
   2. Water Based Siliconized Acrylic Latex:
   3. Install 2 beads under steel stud framing channel and wood plates and into 1/2 inch space between top of floor and bottom of gypsum board and plaster systems.

G. Firestopping and Smoke Sealants: As specified Section 078400.

2.6 TRIM

A. Provide trim shapes as required to cover and make neat edges.

B. Paper Faced Metal Bead and Trim: ASTM C1047, electro-galvanized steel with paper face and flanges, USG Beadex specified for type and quality.
   1. Outside corner beads
   2. Inside corners.
   3. L-type edge trims.
   4. J-shaped edge trim
   5. 3/4 inch radius corner beads.

C. Metal Trim Shapes: ASTM C1047,
   1. Galvanized steel Expanded Flange Corner Bead, L-Trim, and J-Trim
   2. Galvanized one-piece L-Trim, and J-Stop.
   3. Zinc Control Joint No. 093.

2.7 REVEAL MOLDINGS

A. Reveal Moldings: Aluminum 6063 T5 alloy with chemical conversion coating.

B. 1/2 Inch F Reveal Moldings: Fry Reglet, DRMF-625-50, 5/8 inch deep by 1/2 inch wide.


2.8 FASTENERS

A. Screws conforming to ASTM C1002. Bugle or pan head, and lengths as required for securing materials in place.
   1. Wood Framing and Backing: Type W.
2. Light Gauge Metal Framing: Type S.
3. 18 Gauge or Heavier Metal Framing: Type S-12.

B. Pneumatic Fasteners:
   1. Minimum 0.100 inch diameter.
   2. Length to penetrate minimum 1/4 inch beyond steel stud framing.
   3. Aerico 1000 corrosion-resistant coating.

PART 3 EXECUTION

3.1 EXAMINATION
   A. Verify installation conditions as satisfactory to receive work of this Section before beginning.
   B. Verify framing systems, including backing, insulation, vapor barriers, work of Division 15 and 16, and other systems ready for work of this Section.
   C. Verify work of Section 054000, Section 072116, Section 092216, and Section 09120 for metal framing, insulation installation, and vapor barrier requirements prior to beginning work of this Section.
   D. Building Envelope: Except where moisture and mold-resistant gypsum board panels are installed and accepted by Architect, conform to following:
      1. Do not begin work until building envelope is fully enclosed and temperature, ventilation, and humidity are controlled.
      2. Do not begin work under conditions that gypsum board installation may be exposed to contact with water.

3.2 PREPARATION
   A. Protect surrounding areas and surfaces to preclude damage.
   B. Avoid soiling, spatter, and damage to work of other trades. Use cover cloths, or other means of protection. Remove, clean, and repair soiled or damaged work.

3.3 INSTALLATION
   A. Conform to ASTM C840, GA-216, and manufacturer's instructions.
   B. Corner Trim: Reinforce external corners with specified corner beads.
   C. Edge Trim: Install square edged metal trim bead at exposed edges and boundaries of areas and where abutting dissimilar materials.
   D. Reveal Trim:
      1. Install with screws at 12 inch on center in 10 foot lengths, except where shorter lengths are sufficient for dimension of wall plane.
      2. Make butt joints tight and in alignment.
      3. Miter corners.
      4. Promptly remove excess joint compound.
   E. Control Joints: Conform to WCB Tech Bulletin Control Joints and GA-234, except as otherwise indicated. Verify that required double framing is in place before installing control joints.
      1. Door and Other Openings: Install control joints at each side of wall opening and at both sides of wall, except alcoves and similar wall configurations.
      2. Continuous Wall Planes: Install control joints floor to ceiling at each 30 lineal foot of wall.
      3. Ceilings: Install across ceiling at each 50 lineal foot distance and each 2500 square foot of ceiling area.
4. Joints with Other Materials: Install where gypsum board meets masonry, concrete, and other materials, except where joints are concealed under horizontal chair rails or other trim.

F. Other Trim: Install as indicated or required for complete and finished installation.

G. Panel Joints:
   1. Layout: Design to reduce joints to minimum.
   2. Install board in maximum lengths to minimize horizontal and vertical joints.
   3. Start installation of panels at exterior wall to position butt joints as far away from exterior wall as possible.
   4. Place edges in contact and fit neatly, without forcing into place.
   5. Stagger joints on opposite sides of partitions and on same side of wall surface at adjacent joints.
   6. Maintain 1/2 inch clearance from bottom of wall panel and top of floor. Seal with acoustical sealant.
   7. In order to prevent wicking of moisture, do not let gypsum board rest on floor after installation.

H. Single Layer Systems: Install in accordance with ASTM C840. Where modified, amended, or required by fire resistive or sound isolation system, conform to the requirements of the manufacturer's tests, as approved.

I. Double Layer Systems: Install in accordance with ASTM C840, including System VIII for double layer gypsum wallboard installations applied with screws. Conform to required fire resistance standards.

J. Moisture and Mold Resistant Gypsum Board: Install at restrooms, kitchen, janitorial closets, and areas where moisture is present. Do not install as backer board for ceramic tile.

K. Ceramic Tile Backerboard: Install under provision of Section 092810 Section 091813 behind ceramic tile wall installations. Moisture resistant (green board) gypsum board not accepted as backer for ceramic tile.

L. Joint Sealant and Acoustical Sealant: Install to completely fill void between wallboard edges and adjacent surface.

M. Firestopping and Smoke Sealants: Install in accordance with Section 078400.

N. Plumbing, HVAC, and Electrical: Coordinate with Division 22, Division 23 and Division 26. Provide for installations and penetrations of ductwork, equipment, receptacles, and other work.

3.4 TRIM AND JOINT FINISHING

A. Joints and Interior Angles: Embed tape in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads, and accessories. Tool joint compound smooth and free of tool marks and ridges.
   1. Center reinforcing tape over joint and coat into compound leaving approximately 1/64 inch to 1/32 inch under tape to provide proper bond.
   2. Follow with skim coat to embed tape, but not to function as second coat.
   3. Allow embedding coat to thoroughly dry prior to application of second coat.
   4. Allow second coat to thoroughly dry.
   5. Apply third coat evenly over and extending beyond second coat on joints, feathering to smooth uniform finish.

B. Beads, Trim, Fastener and Joint Depressions:
   1. Cover with three coats of taping and joint compound. Apply in different directions making smooth transitions with adjacent surfaces.
   2. Allow sufficient drying time between coats.
   3. Leave depressions flush with surface plane.
3.5 TOLERANCES
   A. Shim panels as necessary to conform to tolerances.
   B. Between Board Faces: 1/16 inch offset.

3.6 ADJUSTING
   A. Remove and replace following gypsum board installations:
      1. Board in contact with water for over 18 hour time period.
      2. Gypsum core exhibiting dampness or water intrusion.
      3. Facing paper exhibiting delamination.
      4. Facing or core exhibiting mold growth or turning black.
      5. Board sagging or warped.
      6. Board directly exposed to water determined to be contaminated.

3.7 CLEANING
   A. Clean beads, screeds, metal base, metal trim, mechanical and electrical items, and other work.
   B. Wipe clean, leaving work ready for finish specified under other Sections.
   C. As work is completed in each space, clean all rubbish, utensils, and surplus materials from the space. Leave floors broom-clean.

3.8 SCHEDULE - LEVEL OF FINISH FOR GYPSUM BOARD SURFACES