**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Provisions of Division 01 apply to this section.

B. Section Includes:

1. Gypsum board, sheathing and tile backer systems and accessory components as indicated.

C. Related Sections:

1. Section 05 41 00: Structural Metal Studs.

2. Section 06 10 00: Rough Carpentry.

3. Section 07 90 00: Joint Sealants.

4. Section 05 45 00: Metal Support Assemblies.

**1.02 SYSTEM DESCRIPTION**

A. Design Requirements: Provide systems capable of resisting deflection as required by CBC and authorities having jurisdiction.

B. Regulatory Requirements: Comply with CBC requirements for design and installation.

**1.03 SUBMITTALS**

A. Shop Drawings: Submit Shop Drawings indicating complete suspension system including connections, anchorage, and trim features.

B. Material Samples: Submit 18 inch x 18 inch Samples of the texture coat of gypsum board panels with edges taped.

C. Product Data: Submit manufacturer's catalog data for each product proposed for installation.

**1.04 QUALITY ASSURANCE**

A. Comply with following as a minimum requirement:

1. ASTM C474 - Standard Test Methods for Joint Treatment Materials for Gypsum Board Construction.
2. ASTM C475 – Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
3. ASTM C514 – Standard Specification for Nails for the Application of Gypsum Board.
4. ASTM C840 – Standard Specification for Application and Finishing of Gypsum Board.
5. ASTM C919 – Standard Practice for Use of Sealants in Acoustical Applications.
6. ASTM C954 – Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 inch to 0.112 inch in Thickness.
7. 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.
8. ASTM C1047 – Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
9. ASTM C1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
10. ASTM C1178 – Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
11. ASTM 1325 – Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.
12. ASTM C1396 – Standard Specification for Gypsum Board.
13. ASTM C1629 - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
14. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
15. ASTM D3274 - Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation.
16. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
17. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
18. ASTM E695 - Standard Method for Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading.
19. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
20. Underwriters Laboratories (ULI) requirements and listings for fire-rated materials and products classification.
21. GA 214 - Gypsum wallboard finish shall conform to requirements of GA 214, Application and Finishing of Gypsum Panel Products, published by the Gypsum Association, and as specified herein.
22. GA 600 - Gypsum wallboard shall conform to requirements of GA 600 Fire Resistance Design Manual, published by the Gypsum Association.
23. American National Standards for the Installation of Ceramic Tile.
24. ANSI A118.9 - Specification for Cementitious Backer Units.

B. Qualifications: Installer shall have a minimum 5 years experience in installing and finishing gypsum board.

C. CHPS Low-Emitting Materials table: Materials submitted must meet the CHPS Low-Emitting criteria and be listed as Low-Emitting on the following web site: [www.CHPS.net](http://www.CHPS.net).

**1.05 DELIVERY, STORAGE AND HANDLING**

A. Deliver materials in original, factory sealed packages, containers or bundles bearing brand name and name of manufacturer.

B. Materials shall be kept dry. Gypsum wallboard shall be neatly stacked flat; avoid sagging and damage to edges, ends, and surfaces.

C. Fire-rated materials shall have fire classifications numbers attached and legible.

D. Provide all means necessary to protect gypsum board systems before, during, and after installation.

E. Gypsum wallboard showing any evidence of water damage shall not be installed. Gypsum wallboard showing evidence of water damage after installation shall be removed and replaced.

**PART 2 – PRODUCTS**

**2.01 ACCEPTABLE MANUFACTURERS**

A. Georgia-Pacific, National Gypsum Co., U.S. Gypsum Co., James Hardie, or equal.

**2.02 MATERIALS**

A. Gypsum Board Type X (fire**-**resistant): 5/8 inch thick, 4 feet wide and up to 16 feet long conforming to ASTM C1396 with long edges tapered.

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| **GYPSUM BOARD SYSTEM** | | | |
| **Panel** | **Fasteners** | **Joint Tape** | **Joint Treatment** |
| United States Gyp. Co.:  5/8" Sheetrock regular, type X, Firecode Core, or Firecode C Core Gypsum panels, as required by UL design. | Wood: 1 ¼” Type W drywall screws.  Steel: 1 ¼” Type S or S-12 drywall screw. | Sheetrock paper tape Heavy Duty to meet ASTM C 475. | Sheetrock Setting Type, Lightweight Setting, Sheetrock Taping, Topping, or All-Purpose, Sheetrock Ready-Mixed Taping, Topping, or All-Purpose, or Sheetrock Lightweight All-Purpose or Ready-Mixed - Plus 3 |
| Georgia-Pacific:  5/8" ToughRock regular, Fireguard or Fireguard C gypsum, as required by UL design. | Wood: 1 ¼” Type W drywall screws.  Steel: 1 ¼” Type S or S-12 drywall screw. | Sheetrock paper tape Heavy Duty to meet ASTM C475. | Same as above |
| National Gypsum Co.:  5/8" Gold Bond regular, Fire-Shield or Fire-Shield C gypsum wallboard, as required by UL design. | Wood: 1 ¼” Type W drywall screws.  Steel: 1 ¼” Type S or S-12 drywall screw. | ProForm Joint Tape, ProForm Multi-Flex Tape Bead, ProForm Fiberglass Mesh Tape to meet ASTM C 475. | . ProForm Multi-Use, ProForm All Purpose, ProForm Lite, ProForm Ultra, ProForm Taping, ProForm Triple-T, ProForm Topping, or ProForm Sta-Smooth, Sta-Smooth Lite, Sta-Smooth HS Joint Compound. |

**NOTE TO PROJECT ARCHITECT:** Impact resistant systems shall be used in corridors, stairways and any other areas subject to potential high abuse at all primary, elementary and secondary schools. Drawings must clearly indicate locations for each wall system used.

B. Impact Resistant Gypsum Board, Type X (fire**-**resistant): 5/8 inch thick, 4 feet wide and up to 16 feet long complying with one of the following:

1. Fire resistant rated gypsum core with additives to enhance impact resistance, faced with moisture and mold resistant paper, and complying with ASTM C1396.

2. Fire resistant, high density paperless gypsum with reinforcing fiber mesh.

3. Fire resistant fiberglass-mat faced gypsum board panels

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| GYPSUM BOARD IMPACT RESISTANT SYSTEMS | | | |
| **Panel** | **Fasteners** | **Joint. Tape** | **Joint Treatment** |
| United States Gyp. Co.:  5/8" Fiberock VHI Gypsum fiber panels. | Wood: 1 ¼” Type W drywall screws.  Steel: 1 ¼” Type S-12 drywall screw. | Sheetrock  paper tape Heavy Duty. | Sheetrock Setting compound. |
| Georgia-Pacific:  5/8” DensArmor Plus Impact Resistant Panels | Wood: 1 ¼” Type W drywall screws.  Steel: 1 ¼” Type S-12 drywall screw. | Glass mesh. | Same as above. |
| National Gypsum Co.:  5/8" Hi-Impact XP gypsum wallboard. | Wood: 1 ¼”Type W drywall screws.  Steel: 1 ¼” Type S-12 drywall screw. | Preforms joint tape. | Preform XP all-purpose joint compound. |

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| **Note To Architect:** Provide Mold Resistant Shaftwall Liner Panels and Mold Resistant Gypsum Panel System at wall shafts. |

C. Mold and Water Resistant Gypsum Board, Type X (fire**-**resistant): (Use at elevator shaft interior), 5/8 inch thick 48 inch wide, up to 16 feet long conforming to ASTM C1396 with long edges tapered.

1. Resistance to Mold Growth: Minimum score of “10” when tested in accordance to ASTM D3273 and evaluated in accordance with ASTM D3274.

2. Resistance to Fungi: Maximum score of “0” when tested in accordance to ASTM G21.

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| **Panel** | **Fasteners** | **Joint Tape** | **Joint Treatment** |
| United States Gyp. Co.:  5/8" Sheetrock Mold Tough, Fire code Core, or Firecode C Core Gypsum panels. | Wood: 1 ¼” Type W drywall screws.  Steel: 1 ¼” Type S or S-12 drywall screw. | Glass Mesh. | Setting-type joint compound rated 10 when tested in accordance with ASTM D3273 and evaluated in accordance with ASTM D3274. |
| Georgia-Pacific:  5/8" Dens Armor Plus Fireguard or Fireguard C Interior Panels (Fire-Rated). | Wood: 1 ¼” Type W drywall screws.  Steel: 1 ¼” Type S or S-12 drywall screw. | Same as above. | Same as above. |
| National Gypsum Co.:  5/8" Gold Bond XP regular, Fire-Shield or Fire-Shield C gypsum wallboard. | Wood: 1 ¼” Type W drywall screws. Steel: 1 ¼” Type S or S-12 drywall screw. | Same as above. | Same as above. |

D. Gypsum Liner, Type X (fire**-**resistant): 1 inch thick 24 inch wide, up to 14 feet long, conforming to ASTM C1396 or C1658.

1. Resistance to Mold Growth: Minimum score of “10” when tested in accordance to ASTM D3273 and evaluated in accordance with ASTM D3274.

2. Resistance to Fungi: Maximum score of “0” when tested in accordance to ASTM G21.

E. Tile Backer Board, Type X (fire**-**resistant):

1. Water resistant panels, 5/8 inch thick, 4 feet wide and up to 8 feet long conforming to conforming to one of the following requirements:

a. Aggregated Portland cement board with polymer-coated, woven glass-fiber mesh embedded in front and back surfaces.

b. Fiberglass-mat faced gypsum backing board complying with ASTM C1178.

c. Cementitious board surfaced with fiberglass reinforcing mesh on front and back and complying with ANSI A118.9 and ASTM C1325.

2. Tile backer boards shall meet the following requirements:

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| GYPSUM BOARD SHAFTWALL SYSTEMS | | | |
| **Panel** | **Fasteners** | **Joint. Tape** | **Joint Treatment** |
| United States Gyp. Co.:  5/8" Mold Tough Type X Firecode Core, Gypsum panels, 3/4" Mold Tough Ultracode Core and 1" Mold Tough Liner panels. | 1 ¼”, 1 5/8”, or 2 ¼” Type S or S-12 drywall screw. | Glass Mesh. | Setting-type joint compound rated 10 when tested in accordance with ASTM D3273 and evaluated in accordance with ASTM D3274. |
| Georgia-Pacific:  5/8" ToughRock Fireguard, or ToughRock Fireguard, C gypsum board or DensArmor Plus Fireguard or Fireguard C Interior Panels (Fire-Rated) and 1” DensGlass Ultra Shaftliners panels. | 1 ¼”, 1 5/8”, or 2 ¼” Type S or S-12 drywall screw. | Same as above. | Same as above. |
| National Gypsum Co.:  5/8" Gold Bond regular, Fire-Shield or Fire-Shield C gypsum wallboard and 1" Gold Bond Fire-Shield Shaftliner. | 1 ¼”, 1 5/8", or 2 ¼”Type S or S-12 drywall screw. | ProForm XP all-purpose joint compound. | Same as above. |

a. Resistance to Mold Growth: Minimum score of “10” when tested in accordance to ASTM D3273 and evaluated in accordance with ASTM D3274.

b. Resistance to Fungi: Maximum score of “0” when tested in accordance to ASTM G21.

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| **Note To Architect:** Provide Tile Backer Board at restrooms and janitor rooms. At locations with wainscots, indicate mold resistant gypsum panel above tile backer board. |

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| **TILE BACKER BOARD SYSTEMS** | | | |
| **Panel** | **Fasteners** | **Joint. Tape** | **Joint Treatment** |
| United States Gyp. Co.:  5/8" DUROCK Cement Board. | Wood: 1 1/2” galvanized roofing nails or 1 1/4”  1 5/8”, or 2 1/4” DUROCK No. 8 wood screws.  Steel:1 1/4” or 1 5/8" DUROCK No. 8 screws. | DUROCK glassfiber tape. | ANSI A136.1 Type I: Organic adhesive or ANSI A118.1acrylic latex modified dry-set mortar or ANSI A118.4 Latex Portland cement mortar. |
| Georgia-Pacific:  5/8” DensShield Fireguard Tile Backer. | Wood: 1 3/4" galvanized roofing nails or 1 5/8” Buglehead corrosion resistant, course thread, drywall screws.  Steel: 1 1/4” Buglehead, corrosion resistant, fine thread, drywall screws. | 2” wide fiberglass mesh tape. | ANSI A136.1 Type I: Organic adhesive or ANSI A118.1 acrylic latex modified dry-set mortar or ANSI A118.4 Latex Portland cement mortar. |
| National Gypsum Co.:  5/8” PermaBase Brand Cement Board. | Wood: 1 1/2” galvanized roofing nails or 1 1/4” or  1 5/8”, PermaBase corrosion resistant screws.  Steel: 1 1/4” or 1 5/8” Type S-12 screws. | PermaBase mesh tape. 2” wide polymer-coated (alkali resistant) mesh tape for interior applications. 4” wide polymer coated (alkali resistant) mesh tape for exterior applications. | Treat joints andset facing material with latex-Portland cement mortar or dry-set (thin-set) mortar. Mortars shall comply with ANSI A118.1 or A118.4 standards. Type I organic adhesive meeting ANSI A-136.1 for interior use only. |
| James Hardie  Building Products Inc.:  1/2” or ¼” Hardibacker 500 Cement Board (for floor and countertop application at existing schools only). | Wood: 1 1/2" galvanized roofing nails. Wood and Steel: 1 1/4” No. 8 by 0.375 HD self drilling, corrosion resistant ribbed wafer head screws. | 2” Wide High Strength. Coated, alkali-resistant, glass fiber reinforcing tape. | ANSI A136.1 Type I: Organic adhesive or ANSI A118.1acrylic latex modified dry-set mortar or ANSI A118.4 Latex Portland cement mortar. |

1. Sheathing, Type X (fire**-**resistant): 5/8 inch thick, 4 feet wide and up to 10 feet long fiberglass-mat faced gypsum backing board complying with ASTM C1177 or ASTM C1178.

1. Resistance to Mold Growth: Minimum score of “10” when tested in accordance to ASTM D3273 and evaluated in accordance with ASTM D3274.

2. Resistance to Fungi: Maximum score of “0” when tested in accordance to ASTM G21

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| GYPSUM BOARD SHEATHING SYSTEMS | | | |
| **Panel** | **Fasteners** | **Joint. Tape** | **Joint Treatment** |
| United States Gyp. Co.:  5/8" Securock Glass-Mat Sheathing. | Wood: 1 ¼” # 6 bugle head corrosion-resistant fasteners.  Steel: 1 ¼” Type S-12 drywall screw. |  |  |
| Georgia-Pacific:  5/8” Densglass Gold Type ”X” | Wood: 1 ¼” # 6 buglehead corrosion-resistant fasteners.  Steel: 1 ¼” Type S-12 drywall screw. |  |  |
| National Gypsum Co.:  Gold Bond Brand e2XP Fire-Shield Extended Exposure Gypsum Sheathing. | Wood: 1 ¼” # 6 buglehead corrosion-resistant fasteners.  Steel: 1 ¼” Type S-12 drywall screw. |  |  |

**2.03 ACCESSORIES**

A. Metal Trim: Paper-faced metal drywall beads and trim meeting ASTM C1047, as manufactured by USG/Beadex, National Gypsum, or equal. Trim units shall be of size and type to fit gypsum board construction and shall include corner beads, casings, edge trim and other shapes indicated and required.

B. Mold Resistant Joint Compound: As recommended by board manufacturer, OnePass by CTS Cement Manufacturing Co., or equal, meeting the following requirements:

1. Minimum score of “10” when tested in accordance with ASTM D3273 and evaluated in accordance with ASTM D3274.

2. Shall conform to ASTM C475.

C. Joint Tapes: Shall conform to ASTM C475.

D. Finishing Materials:

1. High solids primer shall be SHEETROCK Brand First Coat manufactured by USG or High-build primer by Sherwin Williams, or equal.

2. Texture coat finish material shall be manufactured by U.S. Gypsum, Hamilton, or Highland Stucco and Lime Products, Inc., or equal.

E. Acoustical Sealant: Non-hardening, non-shrinking, for use in conjunction with gypsum board, as recommended by Board Manufacturer and conforming to ASTM C919.

F. Fasteners:

1. Self-drilling, self-tapping bugle-head drywall screws; in conformance to ASTM C1002. No. 6 Type S or S12, 1 1/4 inch long for metal framing,

2. Wood framing:

a) Nails: Hot dip, 11 gauge galvanized nails with 7/16 inch head and 1-1/4 inch minimum length.

b) Screws: Type W 1-1/4 inch minimum length for single-layer panels. Screws shall be furnished with a corrosion-resistant treatment.

3. Adhesive: as recommended by board manufacturer and in compliance to ASTM C557.

**PART 3 - EXECUTION**

**3.01 INSTALLATION**

A. Metal Trim:

1. Provide corner beads at outside corners and angles, metal casing where gypsum board terminates at uncased openings, metal edge trim where board edges abut horizontal and vertical surfaces of other construction.

2. Install trim in accordance with manufacturer's directions with appropriate joint compound. Install trim in longest practical pieces.

B. Gypsum Board:

1. Install gypsum board in conformance with ASTM C840.

2. Gypsum board shall be cut by scoring and breaking or by sawing, working from face side. Where board meets projecting surfaces it shall be scribed and neatly cut. Unless conditions require otherwise, gypsum board shall be installed first to ceilings, then to walls. End joints shall occur over a support. Install panels of maximum practical length so a minimum number of end joints occur.

3. End joints shall be staggered and joints on opposite sides of a partition shall be arranged to occur on different studs. Joint layout at openings shall be installed so no end joints will align with edges of openings.

4. Except where specified otherwise, fasteners shall be spaced not less than 3/8 inch from edges and ends of gypsum board. Do not stagger fasteners at adjoining edges and ends.

5. Install gypsum board vertically or horizontal as permitted by specific UL Design at walls. Fasten board with drywall screws spaced not to exceed 8 inch on centers around perimeter of boards and 8 inches on centers on intermediate studs. Space screws at 8 inches on centers along top and bottom runners. Screws shall be driven to provide screwhead penetration just below gypsum board surface without breaking surface paper. Where electrical outlet and switch boxes are indicated, provide adjustable attachment brackets between studs.

6. Install gypsum board to ceiling framing with long dimension at right angles to furring channels, or wood framing members, and fasten with specified drywall screws or nails spaced 6 inch to 7 inch on centers across board. Screws or nails shall be not less than 1/2 inch from side joints and 3/8 inch from butt end joints. Abutting end joints shall occur over furring channels and end joints of boards shall be staggered. Support cutouts or openings in ceilings with furring channels.

7. Install access doors, furnished under another section, in correct location, plumb, or level, flush with adjacent construction, and securely fastened to framing.

**3.02 TOLERANCES**

A. Install gypsum board flat within 1/8 inch in 10 feet.

**3.03 JOINT TREATMENT AND FINISHING**

| Level | Joints | Interior Angles | Accessories | Fasteners | Surface |
| --- | --- | --- | --- | --- | --- |
| 1 | Tape set in compound | Tape set in joint compound |  |  | Tool marks and ridges acceptable |
| 2 | Tape set in joint compound and one separate coat of joint compound | Tape embedded in joint compound and wiped to leave a thin coat of compound over tape, and one separate coat | Covered by one separate coat of joint compound | Covered by one separate coat of joint compound | Free from excess joint compound. Tool marks and ridges acceptable. |
| 3 | After taping, cover with two separate coats of joint compound | After taping, cover with one separate coat of joint compound | Covered by 3 separate coats of joint compound | Covered by 2 separate coats of joint compound | Smooth and free of tool marks and ridges \* |
| 4 | After taping, cover with 2 separate coats of joint compound | After taping, cover with one separate coat of joint compound | Covered by 3 separate coats of joint compound | Covered by 3 separate coats of joint compound | Smooth and free of tool marks and ridges \* |
| 5 | After taping, cover with 2 separate coats of joint compound | After taping, cover with one separate coat of joint compound | Covered by 3 separate coats of joint compound | Covered by 3 separate coats of joint compound | Skim coat of joint compound applied to entire surface. Surface free from tool marks and ridges. \* |

\*At completion of specified taping and finishing, install one coat of high solids primer as specified hereafter

**Note To Architect:** Indicate levels of finish on Finish Schedule.

B. All Levels: Install tape bedding compound, tape, and finishing cement on joints in wallboard as required for specified levels of finish.

C. Levels 2 through 5:

1. Install joint cement and finishing cement over screw heads. Treat all inside corners with joint cement, tape, and finishing cement. Treat outside corners with corner beads and finishing cement.

2. Provide metal casing beads at all edges of gypsum wallboard, which abut ceiling, wall, or column finish, and elsewhere as required, such as openings, offsets, etc. Install all exposed joints, trims, and attachments non-apparent following installation of paint or other finishes. If joints and fasteners are visibly apparent, correct defects as required.

3. Seal raw edges of plumbing openings and boards that have been cut to fit with sealing compound brushed on.

4. When entire installation is completed, correct and repair broken, dented, scratched or damaged wallboard before installation of finish materials by other trades.

D. Levels 3 and 4: Install one coat of high solids primer over entire surface.

E. Level 5: Install one coat of skim coat over entire surface, followed by one coat of high solids primer over entire surface.

**3.04 REQUIRED LEVELS OF FINISH**

A. Unless otherwise indicated or specified, levels of finish required shall be as follows:

1. Level 1: Plenum areas above ceilings, insides of shafts, and other concealed areas. Taping to be as required for fire rated assemblies.

2. Level 2: Water-resistant wallboard backing for high moisture areas to be covered with a water resistant surface other than tile, vinyl or paint, i.e stainless steel cladding etc.

3. Level 3: Backing for vinyl wall covering and adhered acoustic tile. Also, provide where textured finish is indicated.

4. Level 4: Exposed painted wallboard in classrooms, utility rooms, and similar spaces not requiring Level 5 finish.

5. Level 5: Exposed, painted wallboard in offices and corridors.

**Note To Architect:** If texture coating is to be used, it must be indicated on drawings. Texture coating shall not be used in food preparation areas.

**3.05 TEXTURE COAT**

A. Spray install texture coat to interior gypsum board surfaces where indicated on Drawings.

B. Texture coat shall provide a uniform splatter pattern finish with an 80 percent minimum coverage of surface.

C. Provide protection from spray for interior surfaces of electrical boxes and wiring.

**3.06 CLEAN-UP**

A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

**3.07 PROTECTION**

A. Protect Work of this section until Substantial Completion.

**END OF SECTION**