

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. System Description: Provide door hardware and accessories as required for complete operational installation.
- 1. Review Drawings for door locations and types; comply with following general requirements; inform Architect where conflicts occur.
- 2. Provide hardware items with accessories complete to door function as intended, as specified, and as required by applicable codes and regulations.
- 3. Provide heavy duty commercial grade units of each type of hardware (hinges, pivots, locksets, latchsets, closers, trim) from single manufacturer unless otherwise indicated.
- 4. It is the responsibility of the Contractor to furnish proper hardware for all openings and for a complete installation, whether specified or not specified.
- B. Regulatory Requirements, Fire Rated Doors: Comply with requirements of NFPA 80 and applicable codes for fire rated door hardware; provide hardware bearing Underwriters Laboratory (UL) labels.
- 1. Doors indicated in fire rated partitions and walls shall be positive latching and self closing, with smoke gaskets.
- 2. Smoke Control in Pressurized Areas: Provide automatic door bottoms in addition to standard smoke gaskets for fire and smoke rated doors in pressurized areas such as stair wells.
- C. Regulatory Requirements, Access for Persons with Disabilities: Comply with applicable codes and regulations.
- D. Design Requirements:
  - 1. Finishes: Provide to match: other hardware on same door; hardware on other doors in same area.
  - 2. Security: Coordinate security requirements such as locking, electrically controlled hardware, and electric monitoring devices directly with Owner and Owner's security consultant.
  - 3. Complete Sets: Provide complete sets of hardware for each door considering requirements for both sides of doors and including coordinating devices and accessories normally be anticipated for specific applications.

- E. Performance Criteria (Acoustical Door Hardware): Provide acoustic hardware capable of achieving maximum possible acoustic performance, sound transmission class (STC) ratings based on door type, frame type, and hardware types specified.
- 1. Base results on verified testing of similar assemblies using ASTM E90 testing and E413 classification for rating sound insulation.
- F. Hinges and Butts: ANSI A156.1; comply with following unless otherwise indicated.

- 1. Manufacturers: Hager Hinge Co.; Lawrence Brothers Inc.; McKinney Products Co., Div of ASSA ABLOY; Stanley Hardware Division of Stanley Works.
- 2. Doors 1-3/4" Thick: 4-1/2" heavy weight, extra heavy weight ball or oilite bearing where over 40" wide.
- 3. Provide widths sufficient to clear trim projection when door swings 180 degrees.
- 4. Provide three hinges to 90" high, four hinges to 120" high for each door leaf, unless otherwise indicated.
- 5. Provide nonferrous butts with non-removable pins at exterior and locked outswinging doors, non-rising at interior doors; stainless steel where labeled; steel butts at labeled interior doors.
- 6. Provide ball bearing or oilite bearing hinges at doors with closers.
- 7. Tips: Flat button tips with matching plug unless otherwise indicated.
- G. Locking Devices: Provide of metal matching specified finish; interior parts of steel and zinc-dichromate plating, to resist rusting and corrosion; do not supply plastic, die-cast or aluminum mechanisms.
- 1. Manufacturers: Schlage Lock Co. Div. Allegion; Sargent Manufacturing Co., Division of ASSA ABLOY Group; Best Access Systems a Stanley Company.
  - a. Keyless Locks: Atam Lock/Trilogy Electronic Door Locks.
- 2. Type: Provide keyed locksets with not less than 6 pin tumbler cylinders unless higher level of security is required.
- 3. Morrise Locksets and Latchsets: ANSI A156.13, Series 1000, Grade 1, Morrise Type.
- 4. Lockset and Latchset Design: Solid lever with rose, as selected by Architect.
- 5. Backset: 2-3/4" unless otherwise indicated.
- 6. Strikes: Furnish standard strikes with extended lips where required to protect trim from being marred by latch bolt; verify type of cutouts provided in metal frames.

- H. Cylinders, Keys, and Keying: Hardware manufacturers shall provide for grand master, master key alike or key different keying as directed by Owner.
- 1. Manufacturer: Provide cylinders by lockset manufacturer unless otherwise indicated.
- 2. Interchangeable Cores: Provide cylinders with interchangeable cores unless otherwise indicated.
- 3. Provide cylinders of extruded brass bar material.
- 4. Provide construction cylinders for doors requiring locking during construction; construction cylinders shall be removed and replaced just prior to Owner occupancy.
- 5. Submit keys for final use to Owner; provide not less than two keys for each lockset, six of each type and level of masterkey, two grand master keys, and 5% extra blanks.
  - a. Key fitting rooms alike and provide two keys.
- 6. Hardware manufacturers shall key and register lock cylinders unless otherwise directed by Owner.
- 7. Key Control System: Provide key control system with identification and storage capacity suitable for Project.
  - a. Lock Boxes: Provide Knox type lock boxes where indicated and where required to comply with applicable codes and applicable authorities; types as indicated, as selected by Architect where not indicated.

- 1. Close: ANSI and other products of manufacturer; full rack arrangement type with seal spring and non-freezing hydraulic fluid.
- 1. Manufacturers: Lockmasters LCN Allegion/4000 Series; Norton Division, ASSA ABLOY/7500 Series; Dorma Door Controls/8900 Series Full Cover; Natch/8501; Stanley/QDC21FX, SNx689 or 8551.
- 2. Provide controls for regulating closing, latching, speeds and back check.
- 3. Arm type: Provide individual conditions, as approved; supply parallel-arm closers at reverse bevel doors and where doors swing full 180 degrees.
- 4. Mount closers on room side or pull side unless otherwise indicated.

- 5. Sizes: Adjustable, comply with applicable laws and regulations regarding maximum door opening force.
- 6. Design: ANSI Modern Type with Cover, unless otherwise indicated.
- J. Thresholds, Stops, Trim, and Miscellaneous Hardware: Provide as indicated, as specified, as included in Hardware Schedule, and as required for complete installation.
  - 1. Manufacturers: Glynn-Johnson Co. Div. Allegion; National Guard Products; Pemko Mfg. Co. Div. ASSA ABLOY; Zero International, Inc.; Don-Jo, Trimco; or manufacturers listed on Drawings.
  - 2. Door Stops: Required at all doors; locate as indicated, as required to minimize trip hazard and obstruction as approved and where not otherwise indicated.
  - 3. Weather-Stripping: Provide continuous weather-stripping at top and sides of exterior doors.
  - 4. Fire Rated Gaskets: Provide continuous fire rated gaskets at top and sides of fire rated doors.
  - 5. Pulls: Provide with bolts to secure from opposite door face; provide with pull plates unless otherwise indicated.
  - 6. Kick Plates: Height indicated by 1" less than door width; minimum 0.050" thick; provide as indicated, where not otherwise indicated provide as directed by Owner based on AHC recommendations.

**2.2 ACCESSORIES**

- A. General: Provide complete hardware with accessories as required for doors and applications indicated.
- B. Templates: Furnish templates or physical hardware items to manufacturers concerned sufficiently in advance to avoid delay in Work.
- C. Reinforcing Units: Furnished by door manufacturer, coordinated by hardware manufacturer.
- D. Fasteners: Furnish as recommended by manufacturer and as required to install secure hardware.
  - 1. Finish: Match hardware.
  - 2. Furnish screws for items applied on gypsum board sufficiently long to provide solid connection to framing.
- E. Through Bolts: Through bolts, hex bolts, and grommet nuts are not permitted.
- F. Electrical and Mechanical: Make provisions and coordinate requirements for mechanical and electrical devices in connection with hardware.

**2.3 FINISHES**

- A. General: Provide following finishes except where otherwise indicated.
- B. Typical: BHMA 626 (US26D), satin chromium plated.
- C. Closers: Manufacturer's standard aluminum finish.
- D. Thresholds: BHMA 628 (US28), satin aluminum, clear anodized.
- E. Kick Plates: BHMA 630 (US32D), satin finished stainless steel.
- F. Other Items: Provide manufacturer's standard finishes matching similar hardware types on same door, and maintain acceptable finish considering anticipated use.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install finish hardware specified under this section; coordinate with manufacturer and installation of doors and frames.
- B. Fit hardware prior to painting. Remove for painting of doors and frames before final installation of hardware.
- C. Install hardware in accordance with manufacturer's instructions.
- D. No extra cost will be allowed because of changes or corrections necessary to facilitate installation of hardware.

**3.2 MOUNTING POSITIONS**

- A. General: Heights given are center line heights from finished floor; comply with following unless otherwise required by applicable codes or regulations.
  - 1. Locks and Latches: 38" to center of lever.
  - 2. Door Pulls: 42" to center of grip.
  - 3. Push Plate: 42"; coordinate with pull location.
  - 4. Push-Pull Bar: 42" to center of bar.
  - 5. Top Hinge: To jamb manufacturer's standard, not greater than 10" from head of frame to center line of hinge.
  - 6. Bottom Hinge: To jamb manufacturer's standard, but not greater than 12-1/2" from floor to center line of hinge.
  - 7. Intermediate Hinges: Equally spaced between top and bottom hinges and from each other.
  - 8. Hinge Morrise on Door Leaf: 1/4" to 5/16" from top side of door.
  - 9. Dead Bolt: Not more than 44" from floor to operating lever.
- B. Standards: Comply with recommendations of Builders Hardware Manufacturers Association, subject to approval, for heights not indicated.

**3.3 ADJUSTING**

- A. Qualified hardware supplier's or manufacturer's representatives shall inspect installation after the adjustments.
  - 1. Adjust closers, locks, and electrical components.
- 2. Deliver hardware for maintenance and future adjustments to Owner's Representative.

**3.4 HARDWARE SCHEDULE**

- A. The Hardware Schedule/Groups shall be prepared by an Architectural Hardware Consultant hired by Contractor.
  - 1. AHC to examine Drawings and Specifications and furnish proper hardware for door openings.

**END OF SECTION**

**SECTION 08 71 15 - LOW ENERGY DOOR OPERATORS**

**1. GENERAL**

**1.1 SUMMARY**

- A. Section Includes: Provide low energy automatic door operators for swinging doors, with accessories as required for complete operational installation; system to open and close door upon receipt of an actuating signal.
- B. Related Sections:
  - 1. Section 08 41 00: Entrances and storefronts, including standard hardware.
  - 2. Division 26: Final electrical connections.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate low energy door operators with doors, frames, door hardware, and surrounding construction.
- B. Pre-Installation Meeting: Convene not less than one week prior to commencing work of this Section. Require attendance of those directly affecting work of this Section.
  - 1. Review installation procedures and coordination required with related work.

**1.3 SUBMITTALS**

- A. Product Data: Furnish manufacturer's literature and maintenance data.
- B. Shop Drawings: Indicate pertinent dimensioning, general construction, materials and finishes, component connections, anchorage methods and locations and hardware; indicate exposed fasteners for specific approval.
  - 1. Templates and Diagrams: Furnish templates, diagrams, and data necessary for proper installation of closers to fabricators of related work and coordinate.
- C. Samples: Furnish samples of each exposed finish.

**1.4 QUALITY ASSURANCE**

- A. Installer Qualifications: Firm with minimum five years successful experience installing door operator units similar to type specified and acceptable to operator manufacturer.

**PART 2 - PRODUCTS**

- 2.1 SYSTEMS MANUFACTURERS
  - A. Horton Automatics/Series 7000; LCN/4600 Series Electrically Powered Auto-Equalizer; Dor-O-Matic, Inc./Senior-Swing Automatic Operation; Tormax Automation/Motion 1301.
- 2.2 MATERIALS
  - A. System Description: Provide low energy automatic door operators for swinging doors, with accessories.
  - B. Regulatory Requirements: Comply with applicable codes.
    - 1. Power Failure: Doors shall not exceed 50 pounds force to set door in motion and shall not exceed 5 pounds force for pushing or pulling doors open when force applied to latch side of door.
  - C. Performance Criteria: Provide operators complying with applicable portions of ANSI A156.19, designed for doors of types indicated to operate.
  - D. System Description: Provide low energy automatic door operators for swinging doors, with accessories as required for complete operational installation; system to open and close door upon receipt of an actuating signal.
  - E. Low Energy Door Operators: Complete operator system including door operator, controls, and attachment system designed for type of doors indicated and complying with requirements of ANSI A156.19 for low energy power operated door operators.

- F. Control: As indicated, as selected by Architect from manufacturer's full range of flush wall mounted push-button control units where not otherwise indicated.
  - 1. Provide controls on each side of every door with an operator, number, size, type, and locations as indicated and as required by applicable codes and regulations to ensure access for persons with disabilities.
- 2.3 FABRICATION
  - A. Fabrication: Provide each automatic door operator as complete, shop fabricated unit.
    - 1. Complete the fabrication, assembly, finishing, application of hardware and other work before shipment, to greatest extent possible.
    - 2. Disassemble only to extent necessary of shipment and installation.
  - B. Complete cutting, fitting, forming, drilling and grinding of metal work prior to cleaning and finishing. Remove arises from cut edges and ease edges and corners to radius of approximately 1/64".
  - C. Conceal fasteners unless otherwise approved by Architect.
  - D. Reinforce work as necessary for performance requirements, and for support to structure.
  - E. Separate dissimilar metals with bituminous paint or plastic separators to prevent corrosion; separate metal surfaces at contact points with non-metallic separators to prevent "galvanic" or "leakage" of current.
  - F. Finish: Custom painted finish to match Section 08 41 00 - Entrances and Storefronts finish.
    - 1. Preparation: After fabrication, prepare surfaces for finishing in accordance with manufacturer's recommendation.

**PART 3 - EXECUTION**

- 3.1 EXAMINATION
  - A. Examine areas and conditions under which automatic doors are to be installed; do not proceed with work until unsatisfactory conditions have been corrected.
- 3.2 INSTALLATION
  - A. Comply with manufacturer's recommendations and installation instructions for installation.
  - B. Set units plumb, level and true to line, without warp or rack of frames or doors; anchor securely in place. Separate aluminum from sources of corrosion or electrolytic action at points of contact with other materials.

- 3.3 ADJUSTING
  - A. After operation of completed installation equivalent to three days use, readjust door operators and controls for optimum operating condition and safety. Lubricate operating equipment.

**END OF SECTION**

- SECTION 08 83 00 - FRAMELESS MIRRORS
- PART 1 - GENERAL
- 1.1 SUMMARY
  - A. Section Includes: Provide frameless mirrors with accessories as required for complete installation.
- 1.2 REFERENCES
  - A. Glass Association of North America (GANA): Glazing Manual and Sealant Manual.
- 1.3 SUBMITTALS
  - A. Product Data: Furnish for mirror glass.
  - B. Samples: Furnish samples of mirror glass with finished edges and corners.
- 1.4 WARRANTY
  - A. Correction of Work Period: Extend to not less than two years. Replace mirrors which exhibit signs of desilvering or signs of distortion.

**PART 2 - PRODUCTS**

- 2.1 SYSTEMS MANUFACTURERS
  - A. United States Gypsum Co.; USG Corp.; National Gypsum Co.; Georgia-Pacific Corp.; Pabco Gypsum; Canadian Gypsum Company (CGC); Westroc Industries, Ltd.; Temple-Inland.
- 2.2 MATERIALS
  - A. System Description: Provide gypsum board assemblies including gypsum board, light gage metal framing, suspension system for gypsum board systems, joint treatment, acoustical accessories, and general accessories.
    - 1. Systems Responsibility: Provide products manufactured by or recommended by manufacturer of gypsum board to maintain single-source responsibility for system.
  - B. Performance Requirements: Perform gypsum board systems work in accordance with recommendations of ASTM C754 and ASTM C840 unless otherwise specified.
    - 1. Loads: Comply with International Building Code requirements for design of framing for gypsum board systems.
    - 2. Deflection: Maximum L/240 typical, L/360 where tile is indicated.
  - C. Regulatory Requirements:
    - 1. Fire-Rated Assemblies: Provide systems listed in applicable code or by Underwriter's Laboratory, Gypsum Association (GA) File No's in GA-600 Fire Resistance Design Manual or as listed by applicable authorities.
    - 2. Seismic Requirements: Comply with code requirements for bracing where Project is within a seismic zone.
  - D. Framing: Comply with ASTM C754, 20 gage and lighter unless otherwise indicated; provide gages as recommended by manufacturer for spans and loads indicated and as required by applicable codes.

- 1. Studs: ASTM C645, screw-type Cee-shaped; thickness or gage identification color coded per ASTM C955.
- 2. Shaft Walls: Cee-T or Cee-H shaped studs.
- 3. Runners: Match studs.
- 4. Furring Members: ASTM C645, screw-type, hat-shaped.
- 5. Sound Rated Assemblies: Provide resilient channels where indicated and where required to provide required sound transmission classifications.
- 6. Channels: ASTM C754.
- 7. Hangers: ASTM A641, Class 1 wire not less than sizes in Table No. 5 of ASTM C754 and as required by applicable codes; hanger rods, flat hangers, and angle-type hangers as required.
- 8. Suspension System: ASTM C635, suspension system composed of main beams and cross furring members interlocking to form supporting network; recommended by gypsum board system manufacturer.
- 9. Fasteners and Anchorage: As recommended by gypsum board system manufacturer.

- E. Gypsum Board: Comply with ASTM C840; maximum permissible lengths; ends square cut, tapered edges on boards to be finished; 5/8" thick unless otherwise indicated.
  - 1. Typical: ASTM C1396, Type X, fire rated gypsum board, unless otherwise indicated.
  - 2. Gypsum Core Board/Gypsum Liner Board: ASTM C442, Type X, 1/2" thick; mildew and mold resistant.
  - 3. Mold Resistant Gypsum Board: Provide in high humidity areas not covered with tile including but not limited to toilet rooms and Janitor Closets, such as USG Sheetrock Mold and Mildew Guard X; or National Gypsum/Gold Bond XP Fire-Rated Gypsum Board.
  - 4. Tile Substrates: Cementitious fiber units specified in Section 09 30 00 - Tiling.
  - 5. Cementitious Backer Units for Fiberglass Wall Panels: ANSI A118.9 Segregated Portland Cement with woven glass fiber mesh on both sides approximately 1/8" thick; UL rated for fire rated assemblies such as National Gypsum/Perma-Gard Cement Board; USG Industrial Durabond Div./Durabond Custom Building Products/Conderboard; Contractor Option Coated Glass Mat Backer Board; Georgia Pacific/DensShield; UL fire rated as required to maintain integrity of fire rated assemblies.
  - 6. Sheathing: Georgia Pacific/DensGlas GoldSilicone treated glass mat gypsum sheathing, ASTM C1177, Type X, 5/8" thick unless otherwise indicated.
- F. Gypsum Board Accessories: Comply with ASTM C840; foil backed where furred against exterior walls.
  - 1. Provide protective coated steel corner beads and edge trim; type designed to be concealed in finished construction by tape and joint compound.
  - 2. Corner Beads: Manufacturer's standard metal beads.
  - 3. Edge Trim: "J", "L", "LK", or "LC" casing beads.
  - 4. Reinforcing Tape, Joint Compound, Adhesive, Water, Fasteners: Types recommended by system manufacturer and conforming to ASTM C475.
  - 5. Joint Compound: Chemical hardening type for bedding and filling, ready-mixed or powder type for topping.
  - 6. Control Joints: Back to back casing beads. Back control joints with 4 mil thick polyethylene air seal.
  - 7. Reveals: Extruded aluminum special trim pieces in manufacturer's standard or custom shapes to conform to configurations and dimensions indicated; such as Fry Reglet Corp./Drywall Moldings or Gordon Inc./Final Forms I Drywall Trims.
- G. Acoustical Accessories:
  - 1. Acoustical Insulation: Preformed mineral fiber, ASTM C665, Type I; friction fit type without integral vapor barrier, as required to meet STC ratings indicated, or of thickness indicated.
  - 2. Acoustical Sealant: ASTM C919, type for use in conjunction with gypsum board. Paintable, non-shrinking and non-cracking where exposed, nonshrinking, nonstaining, and nonbleeding where concealed.
  - 3. Electrical Box Pads: Provide at outlet, switch and telephone boxes in walls with acoustical insulation, such as Harry A. Lowry & Associates (800.772.2521)/Lowry's Electrical Box Pads; Tremco Sheet Caulking (650.572.1656).
  - 4. Electrical Box Pad Manufacturers for Fire Rated Partitions: Hevi-Duty Nelson (800.331.7325)/Fire Rated FSP Firestop Putty Pads; Specified Technologies, Inc. (800.992.1180)/Fire Putty Pads; Hilli, Corp./Hilli Box Pads.

- H. Fire Rated Assembly Accessories: Provide materials and accessories as required to comply with fire rating requirements of UL, GA or other listing approved by applicable authorities.

**PART 3 - EXECUTION**

- 3.1 INSTALLATION
  - A. Metal Framing Erection: Erect metal framing in accordance with ASTM C754 and manufacturer's recommendations.
    - 1. Install members true to lines and levels to provide surface flatness with maximum variation of 1/8" in 10'-0" in any direction.
  - 2. Door Opening Framing: Install double studs at door frame jambs; install runners on each side of opening at frame head height between jamb studs and adjacent studs.
  - 3. Install metal framing backing where required for support of fixtures, cabinets, accessories and hardware.
  - 4. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work which is to be placed in or behind partition framing; allow time to be installed after framing is complete.
- B. Ceiling Framing Installation: Erect in accordance with ASTM C754 and manufacturer's recommendations.
  - 1. Coordinate location of hangers with other work; provide trapeze supports and steel bracing as required to support ceiling.
  - 2. Install ceiling furring independent of walls, columns, and above-ceiling work.
  - 3. Space main carrying channels at maximum 48" on center, not more than 6" from perimeter walls. Lap splices minimum 12" and secure together 2" from each end of splice.
  - 4. Place furring channels perpendicular to carrying channels at maximum 24" on center and not more than 2" from perimeter walls.
  - 5. Lap splices minimum 8" and secure together 2" from each end of splice.
  - 6. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing; extend bracing minimum 24" past each end of openings.
  - 7. Laterally brace entire suspension system.
- C. Gypsum Board Installation: Install in accordance with ASTM C840 and

- required for complete installation.
- B. Frameless Mirrors: ASTM C1038, mirror quality q1 or q2, clear float glass; nominal 1/4" thick; full silver coating, copper coating and organic coating; factory treated and sealed after cutting and finishing.
  - 1. Edges: Provide edges designed to eliminate cutting potential at edges and corners commonly referred to as arised edges, as approved by Architect.
- C. Mirror Attachment:
  - 1. Bottom Supports: NAAMM No. 8 mirror polished or comparable mirror polish stainless steel angles, minimum 0.05" thickness; provide felt pads for setting mirrors on angles; provide concealed fasteners.
  - 2. Adhesive: Nontoxic type as recommended by mirror manufacturer for specific conditions and mounting surfaces, and warranted for 5 years; not less than Palmer Products/Miro-Mastic or Somer and Mal Industries/Super-Gum Grip.

**PART 3 - EXECUTION**

- 3.1 INSTALLATION
  - A. Comply with GANA Glazing Manual and mirror manufacturer instructions.
    - 1. Do not allow glass to touch metal surfaces.
  - B. Provide ventilation to coating.
  - C. Set or trim felt to face of mirror.
- 3.2 CLEANING
  - A. Remove nonpermanent labels immediately after installation.
  - B. Remove and replace mirrors which are broken, chipped, cracked, abraded or damaged during construction period, including natural causes, accidents and vandalism.

- END OF SECTION
- SECTION 09 21 00 - GYPSUM BOARD ASSEMBLIES
- PART 1 - GENERAL
- 1.1 SUMMARY
  - A. Section Includes: Provide gypsum board systems including gypsum board, light gage metal framing, suspension system for gypsum board systems, joint treatment, acoustical accessories, and general accessories for complete installation.
    - 1. Provide cementitious backer units for fiberglass wall panels; cementitious backer units for tiling are in Section 09 30 00 - Tiling.
    - 2. Cold-Formed Metal Framing: 18 gage and heavier, iron Section 05 40 00 - Cold-Formed Metal Framing; thermal insulation is in Section 07 21 00 - Thermal Insulation; gypsum sheathing is in Section 07 24 00 - Exterior Insulation and Finishing System.
  - B. Coordinating Openings: Obtain dimensions and locations from other trades and provide openings and enclosures for accessories, installed, equipment and ductwork.
- 1.2 ADMINISTRATIVE REQUIREMENTS
  - A. Delegated Design Requirements: Provide specifications necessary to ensure compliance with applicable codes and Contract Documents.
    - 1. Provide special engineering for metal framing system to ensure framing heights exceeding manufacturer's published tables (based on specified deflection limits).
    - 2. Coordinate openings: Obtain dimensions and locations from other trades and provide openings and enclosures for accessories, installed, equipment and ductwork.
- 1.3 SUBMITTALS
  - A. Product Data: Furnish manufacturer's literature for framing, insulation, gypsum board, and acoustical accessories.
  - B. Manufacturer's Certification: Furnish manufacturer's certification indicating products comply with Contract Documents and applicable codes.
  - C. Installer Qualifications: Submit if requested by Architect.
  - D. Delegated Design Certificates: Submit certification signed by structural engineer, licensed at Project location, indicating compliance with Contract Documents and code requirements.
- 1.4 QUALITY ASSURANCE
  - A. Installer Qualifications: Gypsum board installer with not less than five years successful experience installing commercial quality gypsum board assemblies with fire ratings, acoustical ratings, and No. 4 and No. 5 finishes.
  - B. Mock-Up: Provide Level 4 finish mock-up not less than 100 square feet in location acceptable to Architect. Approved mock-up may be incorporated into Project.
- 1.5 PROJECT CONDITIONS
  - A. Do not begin installation of interior gypsum board until space is enclosed, space is not exposed to other sources of water, and space is free of standing water.
  - B. Maintain areas to receive gypsum board at minimum 50 degree F for 48 hours prior to application and continuously after application until drying of joint compound is complete, comply with ASTM C840.
  - C. Immediately remove from site gypsum board for interior use exposed to water, including gypsum board with water stains, with signs of mold, and gypsum board with mildew.

- 2.1 SYSTEMS MANUFACTURERS
  - A. United States Gypsum Co.; USG Corp.; National Gypsum Co.; Georgia-Pacific Corp.; Pabco Gypsum; Canadian Gypsum Company (CGC); Westroc Industries, Ltd.; Temple-Inland.
- 2.2 MATERIALS
  - A. System Description: Provide gypsum board assemblies including gypsum board, light gage metal framing, suspension system for gypsum board systems, joint treatment, acoustical accessories, and general accessories.
    - 1. Systems Responsibility: Provide products manufactured by or recommended by manufacturer of gypsum board to maintain single-source responsibility for system.
    - 2. Performance Requirements: Perform gypsum board systems work in accordance with recommendations of ASTM C754 and ASTM C840 unless otherwise specified.
      - 1. Loads: Comply with International Building Code requirements for design of framing for gypsum board systems.
      - 2. Deflection: Maximum L/240 typical, L/360 where tile is indicated.
    - 3. Regulatory Requirements:
      - 1. Fire-Rated Assemblies: Provide systems listed in applicable code or by Underwriter's Laboratory, Gypsum Association (GA) File No's in GA-600 Fire Resistance Design Manual or as listed by applicable authorities.
      - 2. Seismic Requirements: Comply with code requirements for bracing where Project is within a seismic zone.
    - 4. Framing: Comply with ASTM C754, 20 gage and lighter unless otherwise indicated; provide gages as recommended by manufacturer for spans and loads indicated and as required by applicable codes.

- 1. Studs: ASTM C645, screw-type Cee-shaped; thickness or gage identification color coded per ASTM C955.
- 2. Shaft Walls: Cee-T or Cee-H shaped studs.
- 3. Runners: Match studs.
- 4. Furring Members: ASTM C645, screw-type, hat-shaped.
- 5. Sound Rated Assemblies: Provide resilient channels where indicated and where required to provide required sound transmission classifications.
- 6. Channels: ASTM C754.
- 7. Hangers: ASTM A641, Class 1 wire not less than sizes in Table No. 5 of ASTM C754 and as required by applicable codes; hanger rods, flat hangers, and angle-type hangers as required.
- 8. Suspension System: ASTM C635, suspension system composed of main beams and cross furring members interlocking to form supporting network; recommended by gypsum board system manufacturer.
- 9. Fasteners and Anchorage: As recommended by gypsum board system manufacturer.

- E. Gypsum Board: Comply with ASTM C840; maximum permissible lengths; ends square cut, tapered edges on boards to be finished; 5/8" thick unless otherwise indicated.
  - 1. Typical: ASTM C1396, Type X, fire rated gypsum board, unless otherwise indicated.
  - 2. Gypsum Core Board/Gypsum Liner Board: ASTM C442, Type X, 1/2" thick; mildew and mold resistant.
  - 3. Mold Resistant Gypsum Board: Provide in high humidity areas not covered with tile including but not limited to toilet rooms and Janitor Closets, such as USG Sheetrock Mold and Mildew Guard X; or National Gypsum/Gold Bond XP Fire-Rated Gypsum Board.
  - 4. Tile Substrates: Cementitious fiber units specified in Section 09 30 00 - Tiling.
  - 5. Cementitious Backer Units for Fiberglass Wall Panels: ANSI A118.9 Segregated Portland Cement with woven glass fiber mesh on both sides approximately 1/8" thick; UL rated for fire rated assemblies such as National Gypsum/Perma-Gard Cement Board; USG Industrial Durabond Div./Durabond Custom Building Products/Conderboard; Contractor Option Coated Glass Mat Backer Board; Georgia Pacific/DensShield; UL fire rated as required to maintain integrity of fire rated assemblies.
  - 6. Sheathing: Georgia Pacific/DensGlas GoldSilicone treated glass mat gypsum sheathing, ASTM C1177, Type X, 5/8" thick unless otherwise indicated.
- F. Gypsum Board Accessories: Comply with ASTM C840; foil backed where furred against exterior walls.
  - 1. Provide protective coated steel corner beads and edge trim; type designed to be concealed in finished construction by tape and joint compound.
  - 2. Corner Beads: Manufacturer's standard metal beads.
  - 3. Edge Trim: "J", "L", "LK", or "LC" casing beads.
  - 4. Reinforcing Tape, Joint Compound, Adhesive, Water, Fasteners: Types recommended by system manufacturer and conforming to ASTM C475.
  - 5. Joint Compound: Chemical hardening type for bedding and filling, ready-mixed or powder type for topping.
  - 6. Control Joints: Back to back casing beads. Back control joints with 4 mil thick polyethylene air seal.
  - 7. Reveals: Extruded aluminum special trim pieces in manufacturer's standard or custom shapes to conform to configurations and dimensions indicated; such as Fry Reglet Corp./Drywall Moldings or Gordon Inc./Final Forms I Drywall Trims.
- G. Acoustical Accessories:
  - 1. Acoustical Insulation: Preformed mineral fiber, ASTM C665, Type I; friction fit type without integral vapor barrier, as required to meet STC ratings indicated, or of thickness indicated.
  - 2. Acoustical Sealant: ASTM C919, type for use in conjunction with gypsum board. Paintable, non-shrinking and non-cracking where exposed, nonshrinking, nonstaining, and nonbleeding where concealed.
  - 3. Electrical Box Pads: Provide at outlet, switch and telephone boxes in walls with acoustical insulation, such as Harry A. Lowry & Associates (800.772.2521)/Lowry's Electrical Box Pads; Tremco Sheet Caulking (650.572.1656).
  - 4. Electrical Box Pad Manufacturers for Fire Rated Partitions: Hevi-Duty Nelson (800.331.7325)/Fire Rated FSP Firestop Putty Pads; Specified Technologies, Inc. (800.992.1180)/Fire Putty Pads; Hilli, Corp./Hilli Box Pads.

- H. Fire Rated Assembly Accessories: Provide materials and accessories as required to comply with fire rating requirements of UL, GA or other listing approved by applicable authorities.

- 3.1 INSTALLATION
  - A. Metal Framing Erection: Erect metal framing in accordance with ASTM C754 and manufacturer's recommendations.
    - 1. Install members true to lines and levels to provide surface flatness with maximum variation of 1/8" in 10'-0" in any direction.
  - 2. Door Opening Framing: Install double studs at door frame jambs; install runners on each side of opening at frame head height between jamb studs and adjacent studs.
  - 3. Install metal framing backing where required for support of fixtures, cabinets, accessories and hardware.
  - 4. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work which is to be placed in or behind partition framing; allow time to be installed after framing is complete.
- B. Ceiling Framing Installation: Erect in accordance with ASTM C754 and manufacturer's recommendations.
  - 1. Coordinate location of hangers with other work; provide trapeze supports and steel bracing as required to support ceiling.
  - 2. Install ceiling furring independent of walls, columns, and above-ceiling work.
  - 3. Space main carrying channels at maximum 48" on center, not more than 6" from perimeter walls. Lap splices minimum 12" and secure together 2" from each end of splice.
  - 4. Place furring channels perpendicular to carrying channels at maximum 24" on center and not more than 2" from perimeter walls.
  - 5. Lap splices minimum 8" and secure together 2" from each end of splice.
  - 6. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing; extend bracing minimum 24" past each end of openings.
  - 7. Laterally brace entire suspension system.
- C. Gypsum Board Installation: Install in accordance with ASTM C840 and

- required for complete installation.
- B. Frameless Mirrors: ASTM C1038, mirror quality q1 or q2, clear float glass; nominal 1/4" thick; full silver coating, copper coating and organic coating; factory treated and sealed after cutting and finishing.
  - 1. Edges: Provide edges designed to eliminate cutting potential at edges and corners commonly referred to as arised edges, as approved by Architect.
- C. Mirror Attachment:
  - 1. Bottom Supports: NAAMM No. 8 mirror polished or comparable mirror polish stainless steel angles, minimum 0.05" thickness; provide felt pads for setting mirrors on angles; provide concealed fasteners.
  - 2. Adhesive: Nontoxic type as recommended by mirror manufacturer for specific conditions and mounting surfaces, and warranted for 5 years; not less than Palmer Products/Miro-Mastic or Somer and Mal Industries/Super-Gum Grip.

- 3.1 INSTALLATION
  - A. Comply with GANA Glazing Manual and mirror manufacturer instructions.
    - 1. Do not allow glass to touch metal surfaces.
  - B. Provide ventilation to coating.
  - C. Set or trim felt to face of mirror.
- 3.2 CLEANING
  - A. Remove nonpermanent labels immediately after