

WCCCD EASTERN CAMPUS POLICE AUTHORITY
OFFICE RENOVATION

ARCHITECTURAL SPECIFICATIONS

PREPARED BY:
EKKLESIA BUILDING CORPORATION
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SECTION 03300 – CAST IN PLACE CONCRETE

PART 1 GENERAL

1.01 Summary

- A. Provide cast-in-place concrete and related work necessary for a complete installation as shown, specified and required.

1.02 Related Work Specified Under Other Sections

- A. Joint Sealants - Section 07920

1.03 Products Installed But Not Furnished Under This Section

- A. Miscellaneous metal items embedded in concrete.

1.04 Submittals

- A. Submit the following to the Architect-Engineer:
1. Shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACISP-66 showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures. Indicate lap requirements and lengths, concrete cover, and bar support spacings and locations.
 2. Product data covering standard catalogue items including, but not limited to, reinforcing, admixtures, patching compounds, waterstops, curing compounds, and dry shake finish materials or other required surface treatments. If catalog is general in nature, indicate the specific items (and related accessories) proposed for use.
 3. Reports of all tests including, but not limited to, concrete materials and mix design tests.
 4. Samples of materials as requested including names, sources and descriptions.
 5. Mix design for slab on grade and mass concrete should be submitted on the mix design submittal form (at the end of the section) for Architect/Engineer approval two weeks prior to Project Meeting. Submittal shall be accompanied by field test data or trial mix results, on which the proposed mixes are based, to substantiate compliance with the Specifications.
 6. Coarse and fine aggregate test results and combined aggregate gradation.

1.05 Reference Standards

- A. American Concrete Institute (ACI), current editions.
1. ACI 302.1R "Guide for Concrete Floor and Slab Construction"

PART 2 PRODUCTS

2.01 Formwork Materials

- A. For concrete that will be exposed to view, fabricate forms of plywood or plastic coated plywood to produce a smooth concrete surface free from graining or other markings.
- B. Form release coat shall be non-residual and non-staining and shall be compatible with

protective coatings and waterproofing scheduled to be applied to concrete surfaces. Coatings shall not prevent bonding of this subsequent work to the concrete.

- C. Provide factory fabricated, adjustable in length, removable or snapoff metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal of forms. Provide ties which will leave no metal closer than 1½" to surfaces and when removed, will leave holes no larger than 1" diameter in concrete surface.

2.02 Concrete Materials

- A. Portland cement per ASTM C 150. Do not use slag cement. Cement used shall be of one brand, color, and source throughout the work.
 - 1. Type I or II for standard 28 day strength concrete.
- B. Coarse aggregate for normal weight concrete shall be crushed stone, crushed gravel, or washed gravel per ASTM C 33, including Table 2 for grading requirements and Table 3 for deleterious substances and physical property requirements.
- C. Fine aggregate shall be natural sand per ASTM C 33.
- D. Provide ASTM C33, size No. 467 aggregate for concrete slabs on grade.

2.03 Bonding Agents

- A. Use adhesive bonding method for bonding of new concrete to existing concrete. Do not use chemical retarder method. Surfaces of existing concrete shall be mechanically roughened. Use adhesive per manufacturer's recommendations.
- B. Bonding agents for concrete exposed to the weather and for interior use where bonded surface is subject to water, steam or vibration:
 - 1. BASF "Master Emaco A 660"
 - 2. Euclid Chemical Company "Euco #452 Epoxy System or Duralcrete Series"
 - 3. Sika Chemical Company "Sikadur , or Hi-Mod Series"
- C. Bonding agents for interior use not described above in foregoing paragraph:
 - 1. Dayton Superior "PVA Bonding Agent J41"
 - 2. L & M Construction Chemicals "Everbond"
 - 3. Sika Chemical Company "SikaLatex R"

2.04 Grout

- A. Regular grout shall be a mixture of natural sand fine aggregate and Portland cement, mixed with minimum amounts of water, proportioned per ASTM C 476 to produce a minimum 28 day compressive strength of 7,000 pounds per square inch.

- B. Non-shrink grout shall be premixed, non-shrink, non-metallic, consisting of aggregate base, Portland cement and sand, and with necessary plasticizers, densifiers and other control ingredients:
 - 1. BASF "Masterflow 713"
 - 2. Euclid Chemical Company "Hi-Flow Grout"
 - 3. Five Star Products Inc. "Five Star Grout"
 - 4. L & M Construction Chemicals "Crystex"

 - 5. Sika Chemical Company "Sika Grout 212 HP"

PART 3 EXECUTION

3.01 ACI-301 Reference Specification

- A. This Section is based on ACI-301 and the references therein. The following paragraphs revise and supplement ACI-301 to the extent described. Unless specified otherwise herein, provisions of ACI-301, including reference specifications therein, form a part of this Section.
- B. Referenced standards and recommended practices shall be of year of adoption or revision in effect as of date of these specifications. Standards and recommended practices referenced as footnotes in ACI-301 shall be mandatory.

3.02 Proportioning

- A. Compressive strength shall be based on 28 day strength as shown, specified or required. Use normal weight concrete unless otherwise noted. Use concrete with a minimum 4,000 psi compressive strength and 570 psi flexural strength at 28 days concrete unless otherwise shown, specified, or required.
 - 1. Slabs-on-ground shall have a minimum flexural strength of 700 pound per square inch at 28 days.

3.03 Production of Concrete

- A. Do not use concrete that cannot be placed in its final position within 90 minutes after addition of initial water to the mixture. Redosage with the specified high range water admixture can restore the target slump envelope and negate the 90 minute time limit. A hydration control admixture can be used to maintain slump up to 9 hours. A chart showing HRWR dosage required to return the slump to the approved target slump envelope shall be provided by the Concrete Producer.

3.10 Finishing of Formed Surfaces

- A. Provide smooth form finish for surfaces that will be exposed in the finish work, or will receive subsequent finish such as waterproofing, coating, etc.

3.11 Floor Slabs

- A. For floor slab work, use a CONTRACTOR specializing in this type of work. The CONTRACTOR shall use skilled workmen experienced in this work, and shall provide

labor, materials, equipment, and services to properly complete this work.

B. Slab on Grade Jointing:

1. Alternatively, Joints may be cut using a wet-blade machine. Re-apply curing compound to cut edges for proper curing.
2. Use early entry or "soff-cut" method for sawcutting joints. Perform sawcutting as soon as the slab can support the weight of the saw and operator without disturbing the final finish. Perform sawcutting within sawcut manufacturer's recommended concrete curability window. Replace manufacturer's patented anti-ravel skid plate with each new blade to avoid concrete spalling and raveling. Vacuum clean sawcut joints to remove resultant dust and debris.
3. Fill construction and control joints with epoxy or polyurea semi rigid joint filler unless otherwise noted. Delay filling of sawcut joints a minimum of 90 days after cutting. Fill full depth of joint with epoxy joint filler.

3.12 Floor Slab Finishes

A. Monolithic Concrete Finish:

1. Place, consolidate, strike off, and level concrete, eliminating high spots and low spots. Do not work concrete further until it is ready for floating. Begin floating with a hand float, a bladed power float equipped with float shoes, or a powered disk float when the bleed water sheen has disappeared and the surface has stiffened sufficiently to permit the operation.
2. Trowel to smooth, level and dense surfaces free from trowel marks, ridges and depressions.

B. Selection of Finishes:

1. Trowel finish surfaces intended to receive resilient flooring, carpeting and for exposed interior floor slabs.

C. Floor Flatness/Levelness Tolerances:

1. Measure finished concrete floors for flatness and levelness, in accordance with ASTM E 1155 "Determining Floor Flatness and Levelness" using the F-Number System.
2. Trowel finished floors shall achieve a composite F_F30/F_L25 value and a minimum F_F20/F_L17 value for an individual floor section.

3.13 Curing and Protection

A. Cure the floor surfaces by an approved 7 day moist curing method or with curing compound as defined in the following:

1. Use High Solids Acrylic Cure and Seal to cure floor surfaces scheduled to receive resilient tile, carpeting, monolithic dry shakes, exposed interior floor slabs, and all exterior slabs. (Non-yellowing type)

3.14 Repair of Surface Defects

A. Surface defects include poor joints, voids, honeycomb, stone pockets, ridges, ledges, pits, pin holes, off set, bulges, high spots, rough areas and other irregularities. Exposed surfaces shall be smooth and even, and free from surface defects. Repair of defects shall

be subject to the approval of the Architect- Engineer. Provide special attention to fine honeycomb that occurs when concrete is cast against steel and plastic, and at interior and exterior corners.

B. For floor slabs-on-grade, if flatness and levelness variations greater than specified exist, the OWNER may direct the CONTRACTOR to grind the floor to within the specified limits. Exception to this are floors with dry shake hardeners or any other finishing that could be damaged or reduced in thickness. Grinding shall not be conducted without the OWNER approval. When approved, grinding shall be accomplished as soon as possible without dislodging coarse aggregate particles or otherwise adversely affecting the quality of the concrete. Patching of low spots will not be permitted, unless done with epoxy products and only if approved by the OWNER. If the flatness or the levelness or both requirements are not met, and the slab cannot be satisfactorily repaired according to the OWNER decision, the slab shall be demolished and rebuilt at no cost to the OWNER.

3.15 Evaluation and Acceptance of Concrete

- A. In addition to requirements specified, strength results may include no more than 10 percent of tests below specified strength in order to be considered satisfactory. The strength for cylinders cured under laboratory conditions shall be 100 percent of the strength specified in ACI-301, at 28 days for concrete made with Type I or II cement, and at 7 days for concrete made with Type III cement.

End of Section

SECTION 04200 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Concrete unit masonry.
 - 2. Masonry waste disposal.
- B. Products installed but not furnished under this Section include the following:
 - 1. Hollow metal frames in unit masonry openings specified in Division 8 Section "Standard Steel Doors and Frames."
- C. Related Sections:
 - 1. Division 9 Section "Painting"

1.3 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following installed compressive strengths ($f'm$) at 28 days.
 - 1. For Concrete Unit Masonry: As follows, based on net area:
 - a. $f'm = 1500$ psi
- B. Single-Source Responsibility for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one source and by a single manufacturer for each different product required.
- C. Single-Source Responsibility for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not install until they are in an air-dried condition.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Concrete Masonry Units:
 - 2. Mortar Cement:
 - a. Essroc Materials, Inc.
 - b. Glen-Gery Corporation.
 - c. Lafarge Corporation.
 - d. Lehigh Portland Cement Co.
 - e. Riverton Corporation (The).
 - 3. Joint Reinforcement and Anchors:
 - a. AA Wire Products Co.
 - b. Dur-O-Wal, Inc.
 - c. Heckman Building Products, Inc.
 - d. Hohmann & Barnard, Inc.
 - e. Masonry Reinforcing Corp. of America.
 - f. National Wire Products Industries.
 - g. Southern Construction Products.

2.2 CONCRETE MASONRY UNITS

- A. General: Provide shapes indicated and as follows for each form of concrete masonry unit required.
 - 1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
 - 2. Provide bullnose units for outside corners, unless otherwise indicated.
- B. Concrete Masonry Units: ASTM C 90 and as follows:
 - A. Provide hollow concrete masonry units per ASTM C 90, Type I, and solid concrete masonry units per ASTM C 145, Type I.
 - B. Use masonry units of medium weight made of concrete weighing between 105 and 125 pounds per cubic foot, with normal weight aggregate per ASTM C 33 or lightweight aggregate per ASTM C 331 or a combination of the two weights.
 - C. Provide modular sized units, 8 inches by 16 inches nominal face size, of thickness indicated. Provide bullnose units, lintel units, bond-beam unit, end units, and other special shape units as required to complete the work, matching the stretcher units in size, color and texture. Provide special size units where so indicated.
 - D. Provide concrete block units for fire rated walls, partitions, shafts and other construction with a fire resistant rating of not less than that shown or required. Utilize tested block or equivalent thickness ratings of the International Building Code to achieve required fire ratings.
 - E. Fabricate lintels and bond beams from lintel units matching the stretcher units in size and texture. Fill void with 3,000 pounds per square inch, 28 day strength concrete and reinforce with ASTM A 615, grade 60 bar reinforcing of size shown. Fabricate lintel units at least 12 inches longer than width of masonry opening where exposed in the finished wall, make units to length for jointing with stretcher units in the bond pattern used in the wall.

2.3 MORTAR

- A. Mortar shall be per ASTM C 270. Use the "Proportion Specifications" method, modified as follows.
 - 1. Use only ASTM C 150, Type I Portland cement or ASTM C 91 masonry cement, or a combination of Portland and masonry cements.
 - 2. Use hydrated lime per ASTM C 207, Type S.
 - 3. Use sand per ASTM C 144.
- B. Use the following mortar types for the conditions defined.
 - 1. Type N: Interior exposed walls, firewalls, and for all other masonry block walls.
- C. Masonry Cement shall meet ASTM C91.

2.4 GROUT

- A. Grout shall be per ASTM C 476, modified as follows.
 - 1. Use only Portland cement per ASTM C 150, Type I, II or III.
 - 2. Use only hydrated lime per ASTM C 207, Type S.
 - 3. Aggregate for grout to meet ASTM C404.

2.5 REINFORCING STEEL

A. Steel Reinforcing Bars: Material and grade as follows:

1. Billet steel complying with [ASTM A 615](#).

2.6 JOINT REINFORCEMENT

A. General: Provide joint reinforcement formed from the following:

1. Stainless-steel wire, ASTM A 580, Type 304 or 316.

B. For single-wythe masonry, provide type as follows with single pair of side rods:

1. Ladder design with perpendicular cross rods spaced not more than [16 inches](#) o.c.
2. Truss design with continuous diagonal cross rods spaced not more than [16 inches](#) o.c.

C. Dowels: ASTM A 167, ASTM A 276, or ASTM A 666, Type 304 or 316; temper as required to support loads imposed without exceeding allowable design stresses.

D. Steel Drill Screws for Steel Studs: ASTM C 954 except manufactured with hex washer head and neoprene washer, [No. 10](#) diameter by length required to penetrate steel stud flange by not less than 3 exposed threads, and with the following corrosion protective coating:

1. Organic polymer coating with salt-spray resistance to red rust of more than 800 hours per ASTM B 117.

E. Stainless-Steel Drill Screws for Steel Studs: Proprietary fastener consisting of carbon-steel drill point and 300 Series stainless-steel shank, complying with ASTM C 954 except manufactured with hex washer head and neoprene washer; [No. 10](#) diameter by length required to penetrate steel stud flange by not less than 3 exposed threads.

F. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

1. Screw-Attached, Masonry-Veneer Anchors:

- a. D/A 213; Dur-O-Wal, Inc.
- b. Pos-I-Tie; Heckman Building Products, Inc.
- c. DW-10; Hohmann & Barnard, Inc.
- d. DW-10HS; Hohmann & Barnard, Inc.
- e. DW-10-X; Hohmann & Barnard, Inc.

2. Stainless-Steel Drill Screws for Steel Studs:

- a. Stainless Steel SX Fastener; Dur-O-Wal, Inc.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Use compressible filler pre-molded filler strips to fill voids between abutting masonry and other construction materials where fire-rating is not required. Closed cell neoprene, urethane or PVC, foam board stock of thickness to be under compression when in the joint, except use tubular gaskets where indicated. Gasket material to meet ASTM D 1056, Grade 2A1, compressible up to 35 percent.
 - a. Emseal Joint Systems Limited.
 - b. rogress Unlimited, Inc.
 - c. Williams Products, Inc.
- B. Sealant shall conform to the requirements of Section 07 92 00.
- C. A. Proprietary Acidic Cleaner: provide standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned. Provide products from one of the following manufacturers:
 - 1. Diedrich Technologies, Inc.
 - 2. EaCo Chem, Inc.
 - 3. ProSoCo, Inc.

2.8 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
- B. Mortar for Unit Masonry: Comply with ASTM C1329, Proportion Specification, for Mortar Cement mortar of types indicated below:
 - 1. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions, and for other applications where another type is not indicated, use type indicated below:
 - a. Type: N.
- C. Grout for Unit Masonry: Comply with ASTM C 476. Use grout of consistency indicated or, if not otherwise indicated, of consistency (fine or coarse) at time of placement that will completely fill spaces intended to receive grout.
 - 1. Use fine grout in grout spaces less than 2 inches in horizontal dimension, unless otherwise indicated.
 - 2. Use coarse grout in grout spaces 2 inches or more in least horizontal dimension, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of unit masonry. Do not proceed with installation until unsatisfactory conditions have been corrected.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of unit masonry.
- B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of thickness indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections of the Specifications.
- C. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting, where possible. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- D. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

3.3 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces of columns, walls, and arrises, do not exceed **1/4 inch in 10 feet**, nor **3/8 inch in 20 feet**. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed **1/4 inch in 20 feet**. For vertical alignment of head joints, do not exceed plus or minus **1/4 inch in 10 feet** maximum.
- B. Variation in Mortar-Joint Thickness: Do not vary from bed-joint thickness indicated by more than plus or minus **1/8 inch**, with a maximum thickness limited to **1/2 inch**. Do not vary bed-joint thickness from bed-joint thickness of adjacent course by more than **1/8 inch**. Do not vary from head-joint thickness indicated by more than plus or minus **1/8 inch**. Do not vary head-joint thickness from adjacent head-joint thickness by more than **1/8 inch**. Do not vary from collar-joint thickness indicated by more than minus **1/4 inch** or plus **3/8 inch**.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.

- B. Lay walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.
- C. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
 - 1. One-half running bond with vertical joint in each course centered on units in courses above and below.
- D. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- E. Stopping and Resuming Work: Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar prior to laying fresh masonry.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow concrete masonry units as follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. For starting course spread out full mortar bed, including areas under cells.
 - 3. Maintain joint widths indicated, except for minor variations required to maintain bond alignment. If not indicated, lay walls with 3/8-inch joints.
- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.

3.6 HORIZONTAL-JOINT REINFORCEMENT

- A. General: Provide continuous horizontal-joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcing a minimum of 6 inches.
 - 1. Space reinforcement not more than 16 inches o.c.
 - 2. Provide reinforcement in mortar joint 1 block course above and below wall openings and extending 12 inches beyond opening.
- B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 CONTROL JOINTS

- A. General: Install controlin unit masonry where indicated. Build-in related items as the masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Fit bond-breaker strips into hollow contour in ends of block units on one side of control joint. Fill the resultant core with grout and rake joints in exposed faces.
 - 2. Install 3/8 inch control joint with backer rod and sealant on both sides at abutment with existing concrete masonry.

3.8 LINTELS

- A. Provide masonry lintels where shown and where openings of more than 24 inches for block size units are shown without structural steel or other supporting lintels.
 - 1. Provide precast lintels made from concrete matching concrete masonry units in color, texture, and compressive strength and with reinforcement bars indicated or required to support loads indicated. Cure precast lintels by same method as CMU.
- B. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.9 INSTALLATION OF REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
 - 1. Construct formwork to conform to shape, line, and dimensions shown. Make sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
 - 1. Do not exceed the following pour heights for fine grout:
 - c. For minimum widths of grout spaces of 2-1/2 inches or for minimum grout space of hollow unit cells of 2-1/2 by 3 inches.
 - 2. Do not exceed the following pour heights for coarse grout:
 - c. For minimum widths of grout spaces of 2-1/2 inches or for minimum grout space of hollow unit cells of 3 by 3 inches.
 - 3. Provide cleanout holes at least 3 inches in least dimension for grout pours over 60 inches in height.
 - a. Provide cleanout holes at each vertical reinforcing bar.

3.10 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units; install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point-up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for application of sealants.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears prior to tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 - 4. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
 - 5. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain present on exposed surfaces.
- E. Protection: Provide final protection and maintain conditions that ensure unit masonry is without damage and deterioration at time of Substantial Completion.

3.11 MASONRY WASTE DISPOSAL

- A. Recycling: Undamaged, excess masonry materials are Contractor's property and shall be removed from the Project site for his use.
- B. Disposal as Fill Material: Dispose of clean masonry waste, including broken masonry units, waste mortar, and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.
- C. Excess Masonry Waste: Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste and legally dispose of off Owner's property.

END OF SECTION 04200

PART 1 - GENERAL

1.1 Section Includes

A. Furnish and install wood, and related work, necessary for complete installation shown, specified, and required.

1.2 General

A. Provide rough carpentry required for project including, but not limited to:

1. Utility panels.
2. Framing with dimension lumber.
3. Hangers.
4. Wood blocking, cants, and nailers.
5. Sheathing.

. Each piece of lumber shall bear official trademark and grade of manufacturer's association or inspection bureau under which it was manufactured and graded showing grade species and moisture content. Lumber shall be seasoned, surfaced 4 sides and kiln or air dried to moisture content specified in association's rules, except moisture content shall not exceed 19 percent.

1.3 Related Sections

A. Section 075419 - Single Ply PVC Roofing

1.4 Reference Standards

- A. American Lumber Standards Committee (ALSC)
- B. American Plywood Association (APA)
- C. American Society of Testing and Materials (ASTM)

1.5 Submittals

A. Submit product data on lumber and plywood grade, and preservative treatment proposed.

1.6 Delivery, Storage and Handling

A. Deliver and store lumber, and plywood at project site in manner to minimize exposure to moisture migration and damage. Defective or damaged materials shall be replaced by Contractor at no cost to Owner.

B. Exercise special care in storing, handling and installation of preservative treated lumber and plywood to prevent moisture absorption of items.

PART 2 - PRODUCTS

2.1 Preservative-Treated Materials

A. Use preservative treated wood for rough carpentry wood on project that come in contact with concrete, masonry or metal. Kiln-dry pieces after treatment. Preservative pressure treatment shall be per AWPA U1, Use Category UC4B, Commodity Specification A (lumber) or B (plywood). Each piece shall bear AWPA Mark. Perform milling along grain of wood prior to preservative pressure treatment.

1. Arch Wood Protection, Inc.
2. Hoover Treated Wood Products, Inc.
3. Osmose, Inc. - Wood Preserving Division
4. Viance, Inc.

2.2 Dimension Lumber

A. Joists, Rafters, and Other Framing Not Listed Above: Construction or No. 1 grade and following species:

1. Douglas fir-larch; WCLIB or WWPA.
2. Douglas fir-larch (north); NLGA.

2.3 Miscellaneous Lumber

A. Provide lumber for support or attachment of other construction, including following:

1. Blocking.
2. Nailers.

2.4 Plywood Backing Panels

A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2 inch thick.

2.5 Hangers

2.6 Fasteners

A. Where rough carpentry is in contact with ground or exposed to weather, provide fasteners with hot-dip zinc coating (ASTM A 153) or fasteners fabricated from Type 304 stainless steel (AISI).

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating (ASTM A 153) or fasteners fabricated from Type 304 stainless steel (AISI).

B. Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

C. Use fastening materials of types appropriate for conditions encountered, including wood to wood, wood to masonry or concrete, and wood to metal. Use carriage bolts for securing blocking, nailers and framing. Bolt holes in steel work will be provided at 24 inches on center, unless different spacing is required and information is received prior to fabrication of steel work. Welded stud bolts and nuts may be used for securing wood to structural framing.

1. Nails and staples shall be galvanized carbon steel, per Federal Specification FF-N-105B.

2. Screws shall be galvanized carbon steel per Federal Specification FF-S-107C and natural bright finish carbon steel per Federal Specification FF-S-IIIC.

3. Bolts, washers, expansion shields, and nuts shall be zinc-coated carbon steel, per Federal Specification FF-B-561C, FF-B-575C, FF-W-92A, FF-B-588C and FF-N-836D.

4. Bar or strap anchors shall be ASTM A 36 carbon steel 1/8 inch thick unless otherwise noted, hot-dipped galvanized, with 2.0 ounce zinc coating per square foot of surface, per ASTM A 123.

5. Threaded studs shall be for securing wood nailers or other items as noted, complete with nut and washer.

D. Wood Screws: ASME B18.6.1.

PART 3 - EXECUTION

3.1 Installation

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Do not use materials with defects that impair quality of rough carpentry or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative treated lumber and plywood.
- D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with following:
 - 1. CABO NER-272 for power-driven fasteners.
 - 2. Published requirements of metal framing anchor manufacturer.
 - 3. Table 602.3(1), "Fastener Schedule for Structural Members," and Table 602.3(2), "Alternate Attachments," in International Residential Code latest addition or local applicable code.

3.2 Blocking, And Nailer Installation

- A. Nailers, blocking, framing, and rough lumber not otherwise specified shall be WWPA "Utility, Number 3" or better, Douglas Fir.
- B. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- C. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build anchor bolts into masonry during installation of masonry work. Where possible, secure anchor bolts to formwork before concrete placement.
- D. Provide permanent grounds of dressed, pressure preservative treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 Wood Framing Installation

- A. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.

3.4 Rafter Framing Installation

A. Rafters: Notch to fit exterior wall plates and (toe nail or) use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

3.5 Nailers, Blocking And Anchors

A. Provide rough hardware required to complete this work, including attachments of wood to wood, wood to masonry or concrete and wood to metal. Counterbore holes for nuts and bolt heads, and countersink screws so as to be flush. Drill holes in lumber for bolts. Furnish rough hardware items, loose, that are scheduled to be preset in masonry or concrete, to expedite installation of work.

B. In pressure treated wood, drill undersize holes for screws and nails to prevent splitting of wood members.

C. For treated members, after any members are cut in field, apply brush coat of same material used in shop, to re-seal surface.

D. Provide wood furring and grounds where required for installation of other items such as wood cabinets, counters, and shelving.

E. Provide nailers, blocking, framing, and other rough lumber necessary for complete installation.

F. Provide plywood utility panels in telephone equipment rooms, electrical equipment rooms and elsewhere as required for mounting of equipment. Neatly install panels, with close butted joints where more than one sheet is required. Expansion bolt panels to concrete or masonry substrates.

G. Anchor wood members to concrete, masonry or steel as shown, or required, complete with anchor bolts, expansion shields, plates, washers and similar items. Where size and spacing are not shown or noted, secure members with 1/2 inch diameter bolts; not less than 2 for each individual piece; and at not more than 24 inches on center, maximum, for continuous members. Provide washers under bolt heads and nuts. Provide nailers and blocking in long lengths to minimize joints. When joints are necessary, join pieces without projecting edges.

H. Cut and fit components accurately. Install lengths to minimize excessive joints. Install members plumb and true to line and level.

End of Section

SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Laminate-clad shelving cabinets and work stations(plastic-covered casework).
 - 2. Plastic-laminate work stations countertops.

1.3 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction prior to woodwork installation.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcing specified in other Sections.
- C. Samples for initial selection of the following in the form of manufacturer's color charts consisting of actual units or sections of units showing the full range of colors, textures, and patterns available for each type of material indicated.
 - 1. Plastic laminates.

1.5 QUALITY ASSURANCE

- A. Quality Standard: Except as otherwise indicated, comply with the following standard:
 - 1. WIC Quality Standard: "Manual of Millwork" of the Woodwork Institute of California for grades of interior architectural woodwork, construction, finishes, and other requirements.
- B. Fire-Test-Response Characteristics: Provide materials with the following fire-test-response characteristics as determined by testing identical products per ASTM test method indicated below by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify fire-retardant-treated material with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.
 - 1. Surface-Burning Characteristics: Not exceeding values indicated below, tested per ASTM E 84 for standard time period (10 minutes).
 - a. Flame Spread: 75.
 - b. Smoke Developed: 450.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.
- B. Do not deliver woodwork until painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."

1.7 PROJECT CONDITIONS

- A. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.
 - 2. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

1.8 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.
- B. Hardware Coordination: Distribute copies of approved schedule for cabinet hardware specified in Division 8 Section "Door Hardware" to fabricator of architectural woodwork; coordinate cabinet shop drawings and fabrication with hardware requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide materials that comply with requirements of the WIC quality standard for each type of woodwork and quality grade indicated, unless otherwise indicated.
 - 1. Medium-Density Fiberboard: ANSI A208.2.
 - 2. Thickness:
 - a. Support wall at workstation 1 1/2 inch
 - b. Support wall at shelving base cabinet, 3/4 inch
- B. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated in the Work include, but are not limited to, the following:
 - a. Formica Corporation.
 - b. Laminart.
 - c. Nevamar Corp.
 - d. Pioneer Plastics Corp.
 - e. Westinghouse Electric Corp.; Specialty Products Div.
 - f. Ralph Wilson Plastics Co.
- C. Adhesive for Bonding Plastic Laminate: Contact cement.

2.2 CABINET HARDWARE AND ACCESSORY MATERIALS

- A. Cabinet Hardware Schedule: Refer to schedule at end of this Section for cabinet hardware required for architectural cabinets.

2.3 INSTALLATION MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1 for applicable requirements.
 - 1. For metal framing supports, provide screws as recommended by metal-framing manufacturer.
- C. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- D. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.

2.4 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Provide interior woodwork complying with the referenced quality standard and of the following grade:
 - 1. Grade: Custom.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.
- C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of cabinets and edges of solid-wood (lumber) members $\frac{3}{4}$ inch thick or less: $\frac{1}{16}$ inch
 - 2. Edges of rails and similar members more than $\frac{3}{4}$ inch thick: $\frac{1}{8}$ inch
 - 3. Corners of cabinets and edges of solid-wood (lumber) members and rails: $\frac{1}{16}$ inch
 - 4. BASE/TOE shall be INTEGRAL (constructed as an integral part of the cabinet body).

2.5 LAMINATE-CLAD WORK STATIONS

- A. Quality Standard: Comply with WIC Section 15, "Plastic-Covered Casework."
 - 1. Grade: Custom.
- B. WIC Construction Style: Style A Frameless.
- C. WIC Construction Type:
 - a. support walls-1 1/2 inch thick Type I
- D. WIC Drawers: Fabricate with front, bottom, and back rabbeted in sides and secured with glue and mechanical fasteners as follows:
 - 1. Front Style: Flush overlay.
 - a. drawer height: 4 inch
 - b. drawer sides & back: 3/8" inch thick MDF
 - c. drawer bottom: 1/4 inch thick MDF
 - 2. WIC Drawer Front Style: Lipped.
 - a. drawer face: 1/2 inch thick MDF with 1/8" deep groove
- E. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other than Tops: GP-50, 0.050-inch nominal thickness.
 - 2. Vertical Surfaces: GP-28, 0.028-inch nominal thickness.
 - 3. Edges: GP-28, 0.028-inch nominal thickness matching laminate in color, pattern, and finish.
- F. Materials for Semiexposed Surfaces: Provide surface materials indicated below:
 - 1. Surfaces Other than Drawer Bodies: High-pressure decorative laminate, Grade GP-28.
 - 2. Drawer Exterior Sides and Backs: Solid hardwood lumber, shop finished.
 - 3. Drawer Bottoms: High-pressure decorative laminate, Grade GP-50
 - 4. Drawer Interior Sides and Backs: High-pressure decorative laminate, Grade GP-28
- G. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. Provide Architect's selections from laminate manufacturer's full range of colors and finishes in the following categories:
 - a. Solid colors.
 - b. Solid colors, with core same color as surface.

2.6 LAMINATE-CLAD SHELVING CABINET

- A. Quality Standard: Comply with WIC Section 15, "Plastic-Covered Casework."
 - 1. Grade: Custom.

- B. WIC Construction Style: Style A Frameless.

- C. WIC Construction Type: 3/4 inch thick Type I multiple self-supporting units rigidly joined together.

- D. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other than Tops: GP-50, 0.050-inch nominal thickness.
 - 2. Vertical Surfaces: GP-28, 0.028-inch nominal thickness.
 - 3. Edges: GP-28, 0.028-inch nominal thickness matching laminate in color, pattern, and finish.

- E. Materials for Semiexposed Surfaces: Provide surface materials indicated below:
 - 1. High-pressure decorative laminate, Grade GP-28.

- F. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. Provide Architect's selections from laminate manufacturer's full range of colors and finishes in the following categories:
 - a. Solid colors.
 - b. Solid colors, with core same color as surface.

2.7 COUNTERTOPS

- A. Quality Standard: Comply with applicable WIC section indicated below:
 - 1. WIC Section 14, "Wood Casework."
 - 2. WIC Section 16, "Laminated Plastic Countertops, Splashes and Wall Paneling."
 - 3. Grade: Custom.

 - 4. Strip Thickness: 1-1/2 inch

- B. Type of Top: High-pressure decorative laminate complying with the following:

1. Grade: GP-50, 0.050-inch nominal thickness.
2. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - a. Provide Architect's selections from manufacturer's full range of colors and finishes in the following categories:
 - 1) Solid colors, with core same color as surface.
3. Edge Treatment: Same as laminate cladding on horizontal surfaces.
4. Core Material: 1 1/2 inch thick Medium-density fiberboard.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

3.2 INSTALLATION

- A. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.
- B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches
- C. for plumb and level (including tops).
- D. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- F. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
 1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 2. Maintain veneer sequence matching of cabinets with transparent finish.

- G. Tops: Anchor securely to base units and other support systems as indicated. Calk space between backsplash and wall with specified sealant.
 - 1. Install countertops with no more than **1/8 inch in 96-inch** sag, bow, or other variation from a straight line.
 - 2. Secure backsplashes to tops with concealed metal brackets at **16 inches** o.c.

- H. Refer to Division 9 Sections for final finishing of installed architectural woodwork.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion.

3.5 CABINET HARDWARE AND ACCESSORY SCHEDULE

- A. Pulls: Wire pulls, **4 inches** long, **5/16 inches** in diameter.
- B. Drawer Slides: top-mounted, full-extension, soft closing, zinc-plated steel drawer slides with steel ball bearings, complying with BHMA A156.9, Grade 1 and rated for the following loads:
 - 1. Pencil Drawer Slides: **45 lbf**
- C. Grommets for cable passage through countertops: **2 inch** OD black, molded-plastic grommets with 1 **3/4-inch** hole and black plastic cap with slot for wire passage.

END OF SECTION 06402

SECTION 0710 – THERMAL INSULATION

PART 1 -GENERAL

1.0 Scope

A. Furnish and install building thermal insulation, and related work, necessary for a complete installation as indicated, specified, or required.

1.1 Submittals

A. Submit product data covering catalog items. If catalog is general in nature, indicate the specific items and related accessories proposed for use.

PART TWO – PRODUCTS

2.0 General

A. Provide insulation necessary for a thermal barrier throughout the affected area. The systems are described in the following paragraphs:

1. Reinforced foil-faced thermal batt and blanket glass fiber insulation above ceilings and soffits and in metal studs walls as a thermal barrier.

2.1 Materials

A. Reinforced-Foil-Faced, Glass-Fiber Blanket and Batt Insulation: ASTM C 665, Type III (reflective faced), Class A (faced surface with flame-spread index of 25 or less per ASTM E 84); Category 1 (membrane is vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene. Provide units in 16- or 24-inch widths to suit framing spacing and in depths as required to completely fill framing cavities, unless otherwise indicated. Provide 3-inch thick insulation with R-11 thermal resistance and 6-inch thick insulation with R-19 thermal resistivity For fire-rated assemblies, comply with requirements of tested assembly design..

1. CertainTeed Corporation "CertaPro Thermal FSK-25 Faced Batts"
2. Johns Manville "Flame Resistant FSK-25 Faced Batts"
3. Owens-Corning Fiberglas Corporation "Flame Spread 25 Fiberglas Insulation"
4. Thermafiber, Inc. "FS-25"

PART 3 – EXECUTION

3.0 Installation

A. Furnish and install thermal batt insulation in areas where indicated on drawings. Use insulation of widths to tightly fit stud spacing and in as long lengths as practical. Wedge batts between metal studs, with ends butted tightly together and to adjacent construction and sides fitted tightly to sides of studs and adjacent construction, to provide a continuous thermal barrier free of voids.

Install galvanized wire lacing to hold insulation batts in place without sagging. Cut insulation to fit tightly to studs and adjacent surfaces. Pack insulation around items piercing the insulation plane.

1. Install vapor barrier faced batts with vapor barrier side toward heated areas; seal insulation joints, and all penetrations of the vapor barrier, with vapor barrier tape.

3.1 Adjusting and Patching

A. Inspect insulation installed as part of the work of this Section, just prior to its being concealed or covered by subsequent construction and also at completion of the project before acceptance by the OWNER.

B. Repair or remove and replace any insulation that has become torn, displaced, water soaked, or otherwise damaged so that it will not function as a thermal barrier for that type of insulation or as a sound barrier for the sound-attenuating blankets.

End of Section

PART 1 - GENERAL

1.1 Scope

- A. Furnish and install single ply, fully adhered TPO roofing system over substrate. Provide related work, necessary for a complete installation as shown, specified, and required.

1.2 Submittals

- A. Submit product data covering catalog items. If catalog is general in nature, indicate the specific items (and related accessories) proposed for use.

1.3 Project Conditions

- A. Coordinate the installation of insulation, roofing sheets, flashings, stripping, etc. so that insulations and felts are not exposed to precipitation or exposed overnight.
- B. Cold Weather Application: When ambient temperatures will fall below 45 degrees Fahrenheit during installation, comply with manufacturer's recommended cold-weather installation procedures. Store adhesives in a heated, ventilated area with temperature maintained between 50 degrees Fahrenheit and 80 degrees Fahrenheit.

1.4 Warranty

- A. Furnish to the OWNER an accurately written guarantee, in an approved form, warranting the single ply TPO roofing and base flashing against failure or leakage of any kind, and covering both labor and materials for a period of 15 years from the date of final acceptance of the project. Cover in the guarantee all defects in materials and their method of installation which may cause system failure for No Dollar Limit (NDL). Correctly and completely state in the guarantee the size of roof area, type of roofing, location with respect to the overall building, Manufacturer's Specification Numbers, total lengths of flashing guaranteed, and other pertinent facts concerning the roof construction.
- B. Repair or replace any or all portions of work which fails during guarantee period, promptly and at no cost to the OWNER, using methods and materials as specified for the initial construction. Repair work shall not be done on a patch basis. Temporary repairs done during inclement weather must be replaced with permanent work, complying with the initial construction specified, as soon as weather permits. Should the signer of the guarantee fail, or refuse, on reasonable notice (24 hours) to correct such failures as may occur, or to replace temporary repairs with permanent work, the OWNER may employ other means to correct the situation at the expense of the CONTRACTOR.

1.5 Project Quality Assurance

- A. Installer's Field Supervision: Installer must maintain a full time supervisor / foreman on jobsite during times that roofing work is in progress. Supervisor must have a minimum of 5 years' experience in roofing similar to nature and scope of this project.

1.6 Product Delivery, Storage and Handling

A. Deliver materials in original containers and packages with all seals and labels, including UL, ASTM, and manufacturers labels intact for identification. Distribute materials temporarily stored on the roof to stay within the live load limits of the roof construction. Open flame equipment will not be allowed on the roof.

B. Distribute materials temporarily stored on the roof to stay within the live load limits of the roof construction.

PART 2 - PRODUCTS

2.1 Roofing System

A. Furnish and install a single ply reinforced elastomeric TPO (polyvinyl chloride) sheet membrane, fully adhered or mechanically fastened, non-ballasted roofing system with hot-air welded seams, complete with roof insulation, base flashing system and other accessories and trim specified or required. Roofing system complete with insulation and flashings must conform to FM Class 1, and fully adhered or fastened to meet the minimum windstorm classification required for the project type and location. Products shall be sourced from same manufacturer as the roofing system or be compatible and approved by the roof system manufacturer.

B. Sheet membrane shall be minimum 0.060 inch (60 mils) thick, manufactured of white polyvinyl chloride and reinforced with polyester scrim to provide a one piece sheet, ASTM D 6878 internal fabric or scrim reinforced, uniform, flexible, or fabric backed TPO sheet. Provide products from one of the following manufacturers:

1. Carlisle SynTec Incorporated.
2. Firestone Building Products.
3. GAF Materials Corporation.
4. Johns Manville.
5. Sarnafil Inc.

C. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

D. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

E. Roofing System Uplift Design: Roof system shall be tested by a qualified testing agency to resist minimum uplift pressures as defined by the International Building Code or as indicated on Structural Drawings. Provide increased insulation fasteners at corners and perimeters for increased uplift loading at those locations.

F. Solar Reflective Index: If project is LEED Certified, provide SRI of not less than 78 when calculated according to ASTM E 1980, or meet the requirements of DOE's Energy Star "Roof Products Qualified Product List" for low slope applications.

G. Exterior Fire-Test Exposure: ASTM E 108 or UL 790 Class A for applications and roof slopes indicated and by a qualified testing agency. Identify products with labels of applicable testing agency.

- H. Contact bonding adhesive as provided by roofing manufacturer, compatible with and bondable to all vertical surfaces to which membrane is to be bonded.
- I. Seam sealer for sealing exposed edge of lap splices as provided by roofing manufacturer.

2.2 Miscellaneous Roof System Accessories

- A. Self-adhered flashing

PART 3 - EXECUTION

3.1 General

A. Prepare substrates in accordance with manufacturer's written instructions. At a minimum, include the following:

1. Clean dust, debris and other deleterious materials from substrates.
2. Remove sharp projections from concrete surface.

B. Perform all work per roofing material manufacturer's printed Specifications for the specified roofing system as modified by these Specifications, and per approved shop drawings. Use experienced workmen only. Plan and conduct the work so that each area of the roof system begun one day is completed the same day, including insulation, membrane, base flashing, and roof penetration flashing. Where entire roof area cannot be completed in a day's operations, install temporary roof cut-off strips to prevent rain and moisture from getting under the roofing and contacting the insulation.

3.2 Installation of Roof Membrane

A. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

B. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially dry before installing roofing. Do not apply to splice area of roofing.

C. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions, to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.
2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

- D. Prior to final payment, a representative of the single ply TPO sheet membrane roofing system manufacturer, the OWNER and the CONTRACTOR shall examine the membrane installation to ascertain its completeness, correctness, and conformance with the Contract Documents. If it is found that a portion of the work does not comply with the Contract Documents, such work will be rejected and shall be removed and replaced at no additional cost to the OWNER.

End of

Section

PART 1 - GENERAL

1.1 Scope

A. Furnish and install sealant, caulking and related work, necessary for a complete installation as shown, specified, and required.

1.2 Related Work in Other Sections

- A. Section 03300 – Cast-In-Place Concrete for sealants in concrete floors.
- B. Section 04200 – Unit Masonry for backer rod.
- C. Section 07840 – Fire-stopping for fire rated penetrations and sealant systems.
- D. Section 08800 – Glass and Glazing for glazing sealants.
- E. Section 12364 – Sealant for stone countertop

1.3 Submittals

- A. Submit product data covering catalog items. If catalog is general in nature, indicate the specific items (and related accessories) proposed for use. Indicate manufacturer's recommended temperature limitations for installations and suitability of adjacent surfaces for particular application.
- B. Submit samples or color charts of all items requiring color selection.

1.4 Guarantee

A. Furnish to the OWNER a written guarantee warranting caulking and sealing work against leakage, cracking, crumbling, melting, shrinkage, running, loss of adhesion, or staining of any kind for a period of 2 years from date of final acceptance of the project, covering all defects in materials and workmanship. State that caulking and sealing work that becomes defective or leaks, during the guarantee period, will be repaired, promptly, to the requirements of these Specifications and at no cost to the OWNER.

1.5 Product Delivery, Storage and Handling

A. Deliver packaged materials to the project site in their original unopened containers, packages and bundles, bearing labels that identify manufacturer's name, brand name, and grade or type.

PART 2 - PRODUCTS

2.1 Materials

- A. All sealant and caulking products shall be silicone free.
- B. Two-part polysulfide sealant shall be in non-sag formulation type, per ASTM C 920, Type M, Class 25, for Non-Traffic (NT) use. Furnish in standard colors as selected. Provide products from one of the following manufacturers:
 - 1. Pecora Corporation
 - 2. Sonneborn (Degussa Building Systems)

C. Caulking compound shall be acrylic latex calk, non-sag, one-part latex base calk. Furnish in standard colors as selected. Provide products from one of the following manufacturers:

1. Tremco

D. Primer shall be types recommended by the compound manufacturers to provide adhesion of the compounds to, and to prevent staining of, adjacent surfaces for all conditions encountered on the project.

E. Bond preventative material shall be types recommended by the sealant compound manufacturer to prevent bonding of compound to back surface of recess, for all conditions encountered on the project.

F. Sealant backing shall be ASTM C 1330, Type C, closed cell with surface skin, or Type B, bicellular material with a surface skin. Provide backing in diameters 1/16 inch to 1/8 inch larger than width of joints in which it is installed. Sealant or caulking compound shall not bond to back-up material.

G. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90. Provide products from one of the following manufacturers:

1. Dayton Superior Specialty Chemicals.
2. USG Corporation

PART 3 - EXECUTION

3.1 General

A. Fill with sealant compound interior joints throughout that are subject to movement. The principal locations are as follows:

1. Joints between metal door and adjacent construction.
2. Interior joints between adjacent pre-cast concrete construction.
3. Joints between different materials in exterior walls.
4. Control joints in masonry walls.
5. Locations where sealant is required or shown on drawings.

B. Fill with caulking compound all joints on interior of building that are not subject to movement and that require filling for appearance or sanitary reasons. The principal locations are as follows:

1. Joints between metal frames of all kinds and adjacent construction, in interior walls and partitions.
2. Joints at perimeter of plumbing fixtures, including toilets, sinks and similar locations.
3. Locations where caulk is required or shown on Drawings.

C. Do not install compounds when ambient air temperature is less than 40 degrees Fahrenheit or when recesses are wet or damp. Provide temporary heated enclosures to comply with this requirement. Protect adjacent exposed finished surfaces from damage, by masking or other approved means, prior to performing work. Remove protection when no longer required and clean adjacent, exposed surfaces of any compound deposited upon such surfaces.

3.2 Installation

- A. Prepare joints to receive compound and verify suitability. Failure of compound in the future, due to claimed unsuitability of joint, will not be valid. Installation of compound is considered as evidence that joint is suitable to receive compound.
- B. Depth of recess to receive compounds are not to exceed a dimension greater than $\frac{1}{2}$ the joint width up to a maximum of $\frac{1}{2}$ inch. Where depth of recess is in excess of specified depth, place sealant backing material in the recess, forced into place under compression, to provide the specified recess depth. Where depth of recess is less than specified depth, cut the back surface of recess to the specified recess depth. Where sealant will contact materials at the back of the recess, install a bond breaker of a type approved by the sealant manufacturer for the application.
- C. Recesses are to be dry when compounds are installed. Where depth of recess for sealants is at proper depth, apply bond-preventive material to back surface of recess. Prime recesses, in accordance with the compound manufacturer's recommendations, to develop proper mechanical adhesion of compound to recess surfaces.
- D. Use materials as received from the manufacturers, without additives or adulterations. Use one manufacturer's product for each kind of product specified. Mix two-component compound until the compound is thoroughly and uniformly blended and install compound prior to start of hardening or curing cycle.
- E. Fill joints completely, regardless of variation of joint widths, and to full depth as prepared, at no extra cost to the OWNER. Sealant and caulking compounds must have full and uniform contact with, and adhesion to, side surfaces of recess.
- F. Finish face of compound in recesses smooth and even. At recesses in angular surfaces, finish the compound with a flat face, flush with face of material at each side. At recesses in flush surfaces, finish the compound with a concave face, flush with face of material at each side. Compound may be tooled, provided that such tooling does not damage the seal nor tear the compound. Surface of compounds shall be free from dirt, stain or other defacements and shall be uniform in color.
- G. Clean adjacent surfaces and remove excess sealants or compounds from around joint. Take care to avoid staining adjacent surfaces. Remove excess compounds promptly with proper solvents if so required.

End of Section

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes steel doors and frames.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 4 Section "Unit Masonry" for building anchors into and grouting frames in masonry construction.
 - 2. Division 8 Section "Flush Wood Doors" for hollow-core and solid-core wood doors installed in steel frames.
 - 3. Division 8 Section "Door Hardware" for door hardware.
 - 4. Division 8 Section "Glazing" for glass in steel doors and sidelights.
 - 5. Division 9 Section "Painting" for field painting primed doors and frames.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Shop Drawings showing fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

1.4 QUALITY ASSURANCE

- A. Provide doors and frames complying with ANSI/SDI 100 "Recommended Specifications for Standard Steel Doors and Frames" and as specified.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
- B. Inspect doors and frames on delivery for damage. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect; otherwise, remove and replace damaged items as directed.

- C. Store doors and frames at building site under cover. Place units on minimum **4-inch-** high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If cardboard wrappers on doors become wet, remove cartons immediately. Provide minimum **1/4-inch** spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Steel Doors and Frames:
 - a. Amweld Building Products, Inc.
 - b. Benchmark Commercial Doors.
 - c. Ceco Door Products.
 - d. Copco Door Co.
 - e. Curries Co.
 - f. Deansteel Manufacturing Co.
 - g. Fenestra Corp.
 - h. Kewanee Corp.
 - i. Mesker Door, Inc.
 - j. Pioneer Industries.
 - k. Republic Builders Products.
 - l. Steelcraft.
 - 2. Prefinished Interior Steel Frames:
 - a. Dunbarton Corp. (Rediframe Products).
 - b. Timely Industries.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheets: Carbon steel complying with **ASTM A 366**, commercial quality, or **ASTM A 620**, drawing quality, special killed.
- B. Supports and Anchors: Fabricated from not less than **0.0478-inch** thick steel sheet;
- C. Inserts, Bolts, and Fasteners: Manufacturer's standard units.

2.3 DOORS

- A. Steel Doors: Provide **1-3/4-inch-** thick doors of materials and ANSI/SDI 100 grades and models specified below, or as indicated on Drawings or schedules:

1. Interior Doors: Grade II, heavy-duty, Model 2, seamless design, minimum 0.0478-inch-thick cold-rolled steel sheet faces.
 2. Interior Doors: Grade III, extra heavy-duty, Model 2, seamless design, minimum 0.0598-inch-thick cold-rolled steel sheet faces.
- B. Door Louvers: Provide louvers according to SDI 111C for interior doors where indicated, with blades or baffles formed of 0.0239-inch-thick cold-rolled steel sheet set into minimum 0.0359-inch-thick steel frame.
1. Sight-Proof Louvers: Stationary louvers constructed with inverted V-shaped or Y-shaped blades.

2.4 FRAMES

- A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, according to ANSI/SDI 100, and of types and styles as shown on Drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 0.0478-inch-thick cold-rolled steel sheet.
1. Fabricate frames with mitered and continuously welded corners.
 2. Fabricate frames for interior openings over 48 inches wide from 0.0598-inch thick steel sheet.
- B. Door Silencers: Drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.

2.5 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site. Comply with ANSI/SDI 100 requirements.
1. Internal Construction: One of the following manufacturer's standard core materials according to SDI standards:
 - a. Unitized steel grid.
 - b. Vertical steel stiffeners.
 2. Clearances: Not more than 1/8 inch at jambs and heads, except not more than 1/4 inch between non-fire-rated pairs of doors. Not more than 3/4 inch at bottom.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel sheet.
- C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold steel sheet.

- E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- F. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI 107 and ANSI A115 Series specifications for door and frame preparation for hardware.
- G. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.
- H. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
- I. Glazing Stops: Minimum 0.0359-inch- thick steel or 0.040-inch- thick aluminum.
 - 1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
 - 2. Provide screw-applied, removable, glazing beads on inside of glass, louvers, and other panels in doors.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

2.7 STEEL SHEET FINISHES

- A. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.

1. Except for frames located in existing concrete, masonry, or gypsum board assembly construction, place frames before constructing enclosing walls and ceilings.
 2. In masonry construction, install at least 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T-shaped anchors.
 3. At existing concrete or masonry construction, install at least 3 completed opening anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Set frames and secure to adjacent construction with bolts and masonry anchorage devices.
 4. In metal-stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In steel-stud partitions, attach wall anchors to studs with screws.
- C. Door Installation: Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI 100.

3.2 ADJUSTING AND CLEANING

- A. Prime Coat Touchup: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

END OF SECTION 08110

SECTION 08211 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Solid-core doors with hardboard faces.
 - 2. Shop priming flush wood doors.
- B. Related Sections include the following:
 - 1. Division 8 Section "Glazing" for glass view panels in flush wood doors.
 - 2. Division 9 Section "Exterior Wood Stains."

1.3 SUBMITTALS

- A. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
 - 1. Indicate dimensions and locations of mortises and holes for hardware.
 - 2. Indicate dimensions and locations of cutouts.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.
- B. Quality Standard: Comply with the following standard:
 - 1. WIC Quality Standard: WIC's "Manual of Millwork" for grade of door, core, construction, finish, and other requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's written instructions.
1. Individually package doors in cardboard cartons and wrap bundles of doors in plastic sheeting.
 2. Comply with WIC's Technical Bulletin 420-R for delivery, storage, and handling of doors.

1.7 WARRANTY

- A. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form, signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup, or twist) more than $1/4$ inch in a 42-by-84-inch section or that show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span, or do not comply with tolerances in referenced quality standard.
1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 2. Warranty shall be in effect during the following period of time after the date of Substantial Completion:
 - a. Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Flush Wood Doors:
 - a. Algoma Hardwoods Inc.
 - b. Ampco Products, Inc.
 - c. Buell Door Co.
 - d. Chappell Door Co.
 - e. Eagle Plywood & Door Manufacturing, Inc.
 - f. Eggers Industries; Architectural Door Division.
 - g. Graham Manufacturing Corp.
 - h. Haley Brothers, Inc.
 - i. Ideal Wood Products, Inc.
 - j. IPIK Door Co., Inc.
 - k. Marlite.
 - l. Mohawk Flush Doors, Inc.
 - m. Oshkosh Architectural Door Co.
 - n. Poncraft Door Co.
 - o. Vancouver Door Company, Inc.
 - p. V-T Industries Inc.
 - q. Weyerhaeuser Co.

2.2 DOOR CONSTRUCTION, GENERAL

A. Doors for Opaque Finish: Comply with the following requirements:

1. Grade: Custom.
2. Faces: Hardboard.

2.3 SOLID-CORE DOORS

A. Interior Hardboard-Faced Doors: Comply with the following requirements:

1. Core: Glued-block core.
2. Construction: Hardboard faces glued directly to core with stiles and rails bonded to core, then entire unit abrasive planed before faces are applied.

2.5 LOUVERS AND LIGHT FRAMES

A. Wood Frames for Light Openings: As follows:

1. Wood Species: Same species as door faces.
2. Profile: Manufacturer's standard shape.

2.6 FABRICATION

A. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.

1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

B. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.

1. Light Openings: Trim openings with moldings of material and profile indicated.

2.7 SHOP PRIMING

A. Doors for Opaque Finish: Shop prime exposed portions of doors for paint finish with one coat of wood primer specified in Division 9 Section "Painting."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine installed door frames before hanging doors.
 - 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
 - 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Division 8 Section "Door Hardware."
- B. Manufacturer's Written Instructions: Install wood doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
- C. Field-Finished Doors: Refer to the following for finishing requirements:
 - 1. Division 9 Section "Exterior Wood Stains."

3.3 ADJUSTING AND PROTECTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Refinish or replace doors damaged during installation.
- C. Protect doors as recommended by door manufacturer to ensure that wood doors are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08211

SECTION 08305 - ACCESS DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of access doors:
 - 1. Ceiling access doors.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 9 Section "Acoustical Tile Ceilings" for access tile in suspended or furred acoustical tile ceilings.

1.3 SUBMITTALS

- A. Product data for each type of access door assembly specified, including details of construction relative to materials, individual components, profiles, finishes, and fire-protection ratings (if required).

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain access doors for entire Project from one source and by a single manufacturer.
- B. Size Variations: Obtain Architect's acceptance of manufacturer's standard size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

- A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment, and indicate on schedule specified under "Submittals" Article.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. Acudor Products Inc.
 2. Bar-Co, Inc. Div., Alfab, Inc.
 3. Cesco Products.
 4. Elmdor Manufacturing Co.
 5. J.L. Industries.
 6. Karp Associates, Inc.
 7. Larsen's Manufacturing Co.
 8. Milcor, Inc.
 9. Nystrom, Inc.
 10. The Williams Bros. Corporation of America.

2.2 MATERIALS

- A. Steel Sheet: [ASTM A 366](#) commercial-quality, cold-rolled steel sheet with baked-on, rust-inhibitive primer.

2.3 ACCESS DOORS

- A. Recessed Doors for Acoustical Tile Ceilings: Units consisting of frame with no exposed trim, recessed door to receive tile, hardware, and complying with the following requirements:
1. Frame: [0.0897-inch](#)- thick steel sheet.
 2. Door: [0.0598-inch](#)- thick steel sheet, recessed [1 inch](#).
 3. Hinge: Concealed, pivoting-rod type.
 4. Locks: Flush to finished surface, key-operated cylinder lock.

2.4 FABRICATION

- A. General: Manufacture each access door assembly as an integral unit ready for installation.
- B. Steel Access Doors and Frames: Continuous welded construction. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
- C. Recessed Panel Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling.
1. Furnish recessed panel doors for concealed installation in acoustic tile ceiling systems.
- D. Locking Devices: Furnish number required to hold door in flush, smooth plane when closed.
1. For recessed panel doors, provide access sleeves for each locking device. Furnish plastic grommets and install in holes cut through finish.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Advise Installers of other work about specific requirements relating to access door installation, including sizes of openings to receive access door and frame, as well as locations of supports, inserts, and anchoring devices. Furnish inserts and anchoring devices for access doors that must be built into other construction. Coordinate delivery with other work to avoid delay.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions for installing access doors.
- B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finished surfaces.

3.3 ADJUST AND CLEAN

- A. Adjust hardware and panels after installation for proper operation.
- B. Remove and replace panels or frames that are warped, bowed, or otherwise damaged.

END OF SECTION 08305

SECTION 08331 - COILING COUNTER DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of overhead coiling doors:
 - 1. Counter doors.

1.3 DEFINITIONS

- A. Operation Cycle: One complete cycle of a door begins with the door in the closed position. The door is then moved to the open position and back to the closed position.

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide overhead coiling doors capable of withstanding the effects of gravity loads and the following loads and stresses without evidencing permanent deformation of door components:
- B. Operation-Cycle Requirements: Design overhead coiling door components and operator to operate for not less than 20,000 cycles.
 - 1. Include tamperproof cycle counter.

5 SUBMITTALS

- A. Product Data: For each type and size of overhead coiling door and accessory. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes. Provide roughing-in diagrams, operating instructions, and maintenance information. Include the following:
 - 1. Setting drawings, templates, and installation instructions for built-in or embedded anchor devices.
 - 2. Motors: Show nameplate data and ratings; characteristics; mounting arrangements; size and location of winding termination lugs, conduit entry, and grounding lug; and coatings.

- B. Shop Drawings: For special components and installations not dimensioned or detailed in manufacturer's data sheets.
 - 1. Wiring Diagrams: Detail wiring for power, signal, and control systems. Differentiate between manufacturer-installed and field-installed wiring and between components provided by door manufacturer and those provided by others.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for units with factory-applied finishes.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who is an authorized representative of the overhead coiling door manufacturer for both installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain coiling counter doors through one source from a single manufacturer.
 - 1. Obtain operators and controls from the coiling counter door manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide coiling counter doors where required, with manual push-up/pull-down operation.
- B. Provide fire-resistant labeled doors as required. For doors exceeding maximum label size, provide doors that are UL approved under the "Oversize Certificate of Inspection" procedure.

2.2 MANUFACTURERS

- A. Provide between-the-jambs type counter doors, where required.
 - 1. The Cookson Company
 - 2. Cornell Iron Works, Inc.
 - 3. Overhead Door Corporation
 - 4. Wayne-Dalton Corp.
- B. Fabricate counter doors of interlocking stainless steel slats of flat profile standard with the manufacturer, of minimum 22 gauge stainless steel with Number 4 finish, with each end of every slat fitted with endlocks designed to hold curtain in alignment and baffle air infiltration around curtain and guide. Reinforce bottom of curtain with tubular stainless steel bar fitted with slide-bolt jamb lock. Provide stainless steel guides.
- C. Provide for counter doors a rectangular shaped hood, formed of minimum 24 gage stainless steel with a Number 4 finish, complete with brackets.
- D. Provide push-up operation to operate each door, when unlocked, by pushing upward and pulling downward by hand on lift handles on bottom bar as standard with the manufacturer.

- E. Provide a UL label indicating the rating for each overhead coiling steel door, including frame, fabricated for use in a fire-rated opening. Provide each labeled door with automatic closing operation in event of a fire. Furnish automatic closing operation so that normal operation of the door is not affected. Connect automatic closing devices to smoke detector or to building fire alarm.

2.3 FIRE LABELED DOORS

- A. When specified on a project specific basis provide a Fire Labeled Overhead Coiling Door. Provide door with automatic closing operation in event of a fire. The automatic closing device shall be thermally controlled by a 160 degrees Fahrenheit fusible link arrangement located on each side of wall and as agreed to by OWNER's Underwriters.
- B. Furnish automatic closing operation so that normal operation of the door is not affected. Door shall be easily and readily returned to normal operation upon replacement of the fusible link.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install the doors and door accessories, per the manufacturer's printed instructions and approved shop drawings. Provide required brackets, fastening devices, hangers, bolts, etc. Secure all parts in place in a rigid manner.
 - 1. Fire Labeled Doors: Install according to NFPA 80.
 - a. Install linkage assembly thru wall sleeve and install fusible link on each side of wall so that the breaking of either link will automatically close the door.
- B. Perform drilling, tapping and cutting of frames and other work required to install new doors, frames, operators, hardware, fittings, etc., and provide necessary bolts, anchors, inserts, and supplementary framing and supports required to complete the work.
- C. Install units to fit tight at edges of jambs and heads of frames and ensure smooth operation under all conditions of operation. Leave in proper condition in all respects, to the satisfaction of the OWNER.

3.2 LUBRICATION

- A. Upon completion of installation, lubricate moving parts before operation.
- B. Grease sprockets, bearings, cables, link chains and guides. Lubricant shall be as recommended by manufacturer who shall furnish the OWNER a list of lubricants for OWNER's future use, together with all required data for giving proper maintenance recommendations.

3.3 DEMONSTRATION

- A. Test new and relocated doors and demonstrate the operation to the satisfaction of the OWNER at time of acceptance of completed work.

END OF SECTION 08331

SECTION 08710 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

- B. This Section includes the following:

1. Hinges.
2. Key control system.
3. Lock cylinders and keys.
4. Lock and latch sets.
5. Bolts.
6. Push/pull units.
7. Protection plates.

- C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 8 Section "Standard Steel Doors and Frames" for silencers integral with hollow metal frames.
2. Division 8 Section "Flush Wood Doors" for factory prefitting and factory premachining of doors for door hardware.

- D. Products furnished but not installed under this Section include:

1. Final replacement cores and keys to be installed by Owner.

1.3 HARDWARE ALLOWANCE

- A. Contractor's responsibilities shall be as follows:

1. Submittals: Coordinate and process submittals for door hardware in same manner as submittals for other work.

1.4 SUBMITTALS

- A. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
 - a. Type, style, function, size, and finish of each hardware item.
 - b. Name and manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
 - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for hardware.
 - g. Door and frame sizes and materials.
 - h. Keying information.
 - 2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Butts and Hinges:
 - a. Bommer Industries, Inc.
 - b. Cal-Royal Products, Inc.
 - c. Hager Hinge Co.
 - d. Lawrence Brothers, Inc.
 - e. McKinney Products Co.
 - f. H. Soss & Company.
 - g. Stanley Hardware, Div. Stanley Works.

2. Key Control System:
 - a. Key Control Systems, Inc.
 - b. Telkee Inc.

3. Cylinders and Locks:
 - a. Arrow Lock Manufacturing Co.
 - b. Best Lock Corp.
 - c. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - d. Falcon Lock Co.
 - e. Sargent Manufacturing Company.
 - f. Schlage Lock, Div. Ingersoll-Rand Door Hardware Group.
 - g. Yale Security Inc.

4. Bolts:
 - a. Builders Brass Works Corp.
 - b. Glynn-Johnson Corp.
 - c. Hager Hinge Co.
 - d. H. B. Ives, A Harrow Company.
 - e. Quality Hardware Mfg. Co., Inc.; Div. Newman Tonks, Inc.
 - f. Stanley Hardware, Div. Stanley Works.

5. Push/Pull Units:
 - a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - d. Hager Hinge Co.
 - e. Hiawatha, Inc.
 - f. H. B. Ives, A Harrow Company.
 - g. Triangle Brass Manufacturing Company (Trimco).

6. Kick Plates:
 - a. Baldwin Hardware Corp.
 - b. Brookline Industries, Div. Yale Security Inc.
 - c. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
 - d. Hager Hinge Co.
 - e. Hiawatha, Inc.
 - f. H. B. Ives, A Harrow Company.
 - g. Triangle Brass Manufacturing Company (Trimco).

2.2 SCHEDULED HARDWARE

- A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:
1. **Manufacturer's Product Designations:** The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified under the Article "Manufacturers" in Part 2 for each hardware type, the comparable product of one of the other manufacturers that complies with requirements.

2.3 MATERIALS AND FABRICATION

- A. **Manufacturer's Name Plate:** Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. **Base Metals:** Produce hardware units of basic metal and forming method indicated using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units for finish designations indicated.
- C. **Fasteners:** Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.

2.4 HINGES, BUTTS, AND PIVOTS

- A. **Templates:** Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- B. **Screws:** Provide Phillips flat-head screws complying with the following requirements:
1. For metal doors and frames install machine screws into drilled and tapped holes.
 2. For wood doors and frames install wood screws.
- C. **Hinge Pins:** Except as otherwise indicated, provide hinge pins as follows:
2. **Out-Swing Corridor Doors with Locks:** Nonremovable pins.
 3. **Interior Doors:** Nonrising pins.
- D. **Number of Hinges:** Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches or less in height and one additional hinge for each 30 inches of additional height.

2.5 KEY CONTROL SYSTEM

- A. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150 percent of the number of locks required for the Project.
 - 1. Provide complete cross index system set up by key control manufacturer, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
 - 2. Provide hinged-panel type cabinet for wall mounting.

2.6 LOCKS, LATCHES, AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
 - 1. Provide roller type strikes where recommended by manufacturer of the latch and lock units.
- B. Lock Throw
 - 1. Provide **1/2-inch** minimum throw of latch for other bored and preassembled types of locks and **3/4-inch** minimum throw of latch for mortise locks. Provide **1-inch** minimum throw for all dead bolts.

2.7 PUSH/PULL UNITS

- A. Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation, thru-bolted for matched pairs but not for single units.

2.8 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
 - 1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
 - 2. NWWDA Industry Standard I.S.1.7, "Hardware Locations for Wood Flush Doors."
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
 - 1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Six-Month Adjustment: Approximately six months after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latchsets and locksets and of door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:
 - 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
 - 2. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.

3.3 HARDWARE SCHEDULE

- A. General: Provide hardware for each door to comply with requirements of Section "Door Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.

Hardware Set No. 1:

- 1 1/2 pair Butt hinge
- 1 Lever handle passage function Lockset

Hardware Set No. 2:

- 1 1/2 pair Butt hinge
- 2 1 Lever handle privacy function lockset with interchangeable core cyliner

Hardware Set No. 3:

- 1 1/2 pair Butt hinge
- 1 deadbolt mortise lever lockset with interchangeable core cylinder

Hardware Set No. 4:

- 1 1/2 pair Butt hinge
- 1 Lever handle passage function Lockset
- 1 10"x30" Kick Plate

Hardware Set No. 5:

- 1 Continous hinge
- 1 deadbolt mortise lever lockset with interchangeable core cylinder

Hardware Set No. 6

- 1 Continous hinge
- 1 deadbolt mortise lockset with interchangeable core cylinder
With lever handle (pull side), push plate (push side)

END OF SECTION 08710

SECTION 08800 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes glazing for the following products, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Vision lites.

1.3 DEFINITIONS

- A. Manufacturer is used in this Section to refer to a firm that produces primary glass or fabricated glass as defined in the referenced glazing standard.
- B. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's directions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated glass standard.

1.4 SUBMITTALS

- A. Product test reports for each type of glazing sealant and gasket indicated, evidencing compliance with requirements specified.

1.5 QUALITY ASSURANCE

- A. Safety Glass: Products complying with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.
 - 1. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.
- B. Single-Source Responsibility for Glass: Obtain glass from one source for each product indicated below:

1. Laminated glass of each (ASTM C 1172) kind indicated.

C. Single-Source Responsibility for Glazing Accessories: Obtain glazing accessories from one source for each product and installation method indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials to comply with manufacturer's directions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing materials manufacturer or when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Install liquid sealants at ambient and substrate temperatures above 40 deg F.

1.8 WARRANTY

A. Warranty Period: Manufacturer's standard but not less than 5 years after date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the products specified in Product Data Sheets at end of this Section.

2.2 LAMINATED GLASS PRODUCTS

A. Interlayer: Interlayer material as indicated below, in clear, and of thickness indicated with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Polyvinyl Butyral Interlayer:

- 1) Saflex, Monsanto Co.
- 2) Butacite, E. I. du Pont de Nemours & Co., Inc.

2.3 ELASTOMERIC GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
 - 1. Suitability: Comply with sealant and glass manufacturer's recommendations for selecting glazing sealants and tapes that are suitable for applications indicated and conditions existing at time of installation.
 - 2. Colors: Provide color of exposed joint sealants to comply with the following:
 - a. Match colors indicated by reference to manufacturer's standard designations.

2.4 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials involved for glazing application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85 plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side-walking).

2.5 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

- A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard as required to comply with system performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine glass framing, with glazier present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, offsets at corners.
 - 2. Presence and functioning of weep system.
 - 3. Minimum required face or edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.

3.3 GLAZING, GENERAL

- A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, except where more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass from edge damage during handling and installation as follows:
 - 1. Use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass lites with flares or bevels on bottom horizontal edges so edges are located at top of opening, unless otherwise indicated by manufacturer's label.
 - 2. Remove damaged glass from Project site and legally dispose of off site. Damaged glass is glass with edge damage or other imperfections that, when installed, weaken glass and impair performance and appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
- D. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
 - 1. Locate spacers inside, outside, and directly opposite each other. Install correct size and spacing to preserve required face clearances, except where gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- D. Apply heel bead of elastomeric sealant.
- E. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- F. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.4 SEALANT GLAZING (WET)

- A. Install continuous spacers between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel weep systems until sealants cure. Secure spacers in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass. Install pressurized gaskets to protrude slightly out of channel to eliminate dirt and moisture pockets.

3.5 PROTECTION AND CLEANING

- A. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.
- B. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for build-up of dirt, scum, alkali deposits, or stains, and remove as recommended by glass manufacturer.
- C. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period.
- D. Wash glass on both faces in each area of Project not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

PRODUCT DATA SHEET 6 - LAMINATED GLASS

- A. Laminated Glass Designation: As indicated on drawings.
- B. Kind of Laminated Glass per ASTM C 1172 Kind LHS two lites of heat-strengthened Type I glass
 - 1. Clear Inner Lite: Class 1 (clear) float glass, with a thickness of 3.0 mm
 - 2. Clear Outer Lite: Class 1 (clear) float glass with a thickness of 3.0mm
 - 3. Thickness of Plastic Interlayer: 0.030 inch
 - 4. Color of Plastic Interlayer: Clear

END OF SECTION 08800

SECTION 08801 - SECURITY GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Security glazing.
 - 2. Glazing accessories.
- B. Related Sections: The following Sections contain requirements that relate to this Section.
 - 1. Division 8 Section "Steel Windows" for frames for security glazing.

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each security glazing type, including type of materials, thickness, method of test, and performance.
- C. Test reports showing compliance with specified requirements.
- D. Certification by manufacturer that products supplied comply with performance requirements specified.

1.4 QUALITY ASSURANCE

- A. Certified Safety Glazing: Category II products complying with test requirements of 16 CFR 1201 and ANSI Z97.1, certified by Safety Glazing Certification Council, and permanently labeled.
- B. Forced-Entry Resistant Performance: Provide products identical to those tested for compliance with requirements indicated per tests specified for specific glazing types.
 - 4. Applicable Standards:
 - ASTM F1 233 Class II
 - ASTM 1915 Grade 4
- C. Installer Qualifications: Engage an experienced Installer who has specialized in installing security glazing similar to that required for this Project.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect products according to manufacturer's recommendations. Specifically, avoid damage to glass edges, and prevent damage from temperature changes, sunlight, and moisture.

1.6 PROJECT CONDITIONS

- A. Keep at the Project site, for the duration of glazing operations, a copy of the each referenced document that applies to installation and each manufacturer's installation instructions.
- B. Environmental Conditions: Do not install glazing when either air or substrate temperature exceeds the range recommended by sealant manufacturer or when substrate is wet, damp, or covered with snow, ice, or frost.
- C. Install bulk sealants only at air and substrate temperatures above 40 deg F.

1.7 WARRANTY - MODIFIED IONOMER PRODUCTS

- A. Warranty: Submit a written warranty, executed by manufacturer, agreeing to replace modified ionomer laminates that delaminate within 7 years from date of Substantial Completion. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Laminated Glass and Polycarbonate/Glass Laminate Products:
 - a. Falconer-Lewistown, Inc.
 - b. Globe-Amerada Glass Co.
 - c. Laminated Glass Corporation.
 - d. Tempglass Southern.
 - e. Viracon, Inc.

2.2 SECURITY GLAZING TYPES

- A. Security Glazing Types: Provide types of units fabricated of the glazing products indicated with the security performance specified.
- B. Laminated float glass and polycarbonate sheet, with glass on both outer surfaces; 13/16 inch nominal thickness.
 - 1. Forced-Entry Resistance: H. P. White Level I or II and WMFL Level III, 30 minutes.
 - 2. Tint: Blue-green.

2.3 FABRICATION

- A. Cut or drill holes in laminated units.
- B. Grind exposed edges smooth, using methods recommended by manufacturer.

2.4 GLAZING ACCESSORIES

- A. Installation Materials--General: Select products that have appropriate performance characteristics as recommended by the Glass Association of North America (GANA) Glazing and Sealant Manuals and that are compatible with materials they will contact.
- B. Dense Compression Gaskets: Preformed neoprene, EPDM, or thermoplastic polyolefin rubber, complying with ASTM C 864; style and size so that soft gasket will be compressed at least 25 percent when glazing is fully installed.
- C. Glazing Blocks: Neoprene, EPDM, or silicone.
 - 1. Setting Blocks: 80 to 90 Shore A hardness.
 - 2. Spacers: As required to provide face and edge clearances recommended by glazing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine frames and rabbets in which glazing is to be installed for possible damaging conditions. In particular, check for conditions that would void the manufacturer's warranty.
- B. Submit Installer's report describing unacceptable conditions.
- C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean surfaces to receive glazing just before installing glazing.

3.3 INSTALLATION - GENERAL

- A. All glass should be installed in accordance with the guidelines set forth in the current edition of the Glass Association of North America (GANA) Glazing and Sealant Manuals.
- B. Protect glazing from edge and surface damage during handling and installation.
- C. Do not install glazing that has edge or surface damage or defects that reduce glazing strength or diminish appearance.
- D. Install unsymmetrical laminates with proper side out, according to their tested configuration.
- E. Permanently adhere setting and edge blocks to frame.
- F. Glazing systems should incorporate a weep system to allow moisture and water to escape the glazing channel.
- G. Applied Stops: Fasten as indicated, after glazing has been set in frame. Do not exert excess force on glazing and glazing spacers.

3.5 GASKET GLAZING (DRY)

- A. Secure compression gaskets so they will not work out under normal movement.
- B. Do not use joints in gaskets, except at corners.
- C. Miter-cut corners and seal joint with sealant.
- D. Install gaskets so they protrude slightly past face of frame.

3.6 PROTECTION AND CLEANING

- A. Apply warning tape or bands across opening without touching glazing, immediately after installing glazing in frames.
- B. Cover exposed polycarbonate surfaces with heavy paper secured with tape, without touching glazing.
- C. Do not apply tape or labels to glazing; remove temporary labels.
- D. Protect glazing during subsequent construction operations; remove dirt, contaminants, staining agents and other deposits promptly using manufacturer's recommended procedures.
- E. Clean polycarbonate surfaces using only methods recommended by manufacturer.
- F. Replace glazing that is damaged.

- G. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer that ensures that security glazing is without damage or deterioration at the time of Substantial Completion.
- H. Wash both sides of glazing not more than 10 days before inspections for Substantial Completion.

3.7 OWNER PERSONNEL INSTRUCTION

- A. Have manufacturers' maintenance instructions on hand at time of instruction.
- B. Instruct designated Owner personnel on maintaining security glazing.

END OF SECTION 08801

PART 1- GENERAL

1.0 Scope

A. The Work of this contract shall be, as described in the contract documents, which consist of Drawings and Specifications, addenda and other documents referenced in the proposal form. These documents are intended to describe a functionally complete project, including everything necessary to the proper finishing of each part of the Work. All items of Work, Goods and Services that are listed or shown, or that may reasonably be inferred from the contract documents, as being required to produce the intended result, shall be furnished. The lump sum/fixed price quotation for this Work shall include all such Goods and Services, taxes, insurance, fees, royalties, overhead, profit, incidental items, and any other related costs, required for the successful completion of contemplated Work. The amount of applicable taxes or fees shall be included and shall be identified as separate amounts in the space provided in the bid form.

End of Section

SECTION 09255 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Nonload-bearing steel framing members for gypsum board assemblies.

1.3 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 ASSEMBLY PERFORMANCE REQUIREMENTS

- A. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1.5 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product certificates signed by manufacturers of gypsum board assembly components certifying that their products comply with specified requirements.

1.6 QUALITY ASSURANCE

- A. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

1.8 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 requirements or gypsum board manufacturer's recommendations, whichever are more stringent.
- B. Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F. For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F for 48 hours before application and continuously after until dry. Do not exceed 95 deg F when using temporary heat sources.
- C. Ventilation: Ventilate building spaces as required to dry joint treatment materials. Avoid drafts during hot, dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Steel Framing and Furring:
 - a. Clark Steel Framing, Inc.
 - b. Consolidated Systems, Inc.
 - c. Dale Industries, Inc.
 - d. Dietrich Industries, Inc.
 - e. Marino/Ware (formerly Marino Industries Corp.).
 - f. National Gypsum Co.; Gold Bond Building Products Division.
 - g. Unimast, Inc.
 - 2. Gypsum Board and Related Products:
 - a. Domtar Gypsum.
 - b. Georgia-Pacific Corp.
 - c. National Gypsum Co.; Gold Bond Building Products Division.
 - d. United States Gypsum Co.

2.2 STEEL FRAMING FOR WALLS AND PARTITIONS

- A. General: Provide steel framing members complying with the following requirements:

1. Protective Coating: [ASTM A 653, G 40](#) hot-dip galvanized coating for framing members attached to and within **10 feet** of exterior walls and wet areas (kitchens, toilet rooms).
- B. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 degrees and doubled over to form **3/16-inch-** wide minimum lip (return), and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:
 1. Thickness: **0.0179 inch**, unless otherwise indicated.
 - a. For head runner, sill runner, jamb, and cripple studs at door and other openings.
 - b. In locations to receive cementitious backer units.
 - c. Where indicated.
 2. Depth: As indicated.

2.4 GYPSUM BOARD PRODUCTS

- A. General: Provide gypsum board of types indicated in maximum lengths available that will minimize end-to-end butt joints in each area indicated to receive gypsum board application.
 1. Widths: Provide gypsum board in widths of **48 inches**
- B. Gypsum Wallboard: ASTM C 36 and as follows:
 1. Type: Regular for vertical surfaces, unless otherwise indicated.
 2. Edges: Tapered.
 3. Thickness: As indicated.
- E. Water-Resistant Gypsum Backing Board: ASTM C 630 and as follows:
 1. Type: Regular, unless otherwise indicated.
 2. Thickness: As indicated.

2.5 TRIM ACCESSORIES

- A. Accessories for Interior Installation: Cornerbead, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
 1. Material: Formed metal or plastic, with metal complying with the following requirement:
 - a. Steel sheet zinc coated by hot-dip or electrolytic process, or steel sheet coated with aluminum or rolled zinc.
 2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:
 - a. Cornerbead on outside corners, unless otherwise indicated.
 - b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge trim, unless otherwise indicated.
 - c. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.

- d. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.

2.7 JOINT TREATMENT MATERIALS

- A. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
 - 1. Use pressure-sensitive or staple-attached, open-weave, glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.
- B. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
 - 1. Ready-Mixed Formulation: Factory-mixed product.
 - a. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
 - b. Topping compound formulated for fill (second) and finish (third) coats.
 - c. All-purpose compound formulated for both taping and topping compounds.

2.8 ACOUSTICAL SEALANT

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
 - 1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
- B. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:
- C. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. PL Acoustical Sealant; ChemRex, Inc.; Contech Brands.
 - b. AC-20 FTR Acoustical and Insulation Sealant; Pecora Corp.
 - c. SHEETROCK Acoustical Sealant; United States Gypsum Co.

2.9 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.
- B. Steel drill screws complying with ASTM C 1002 for the following applications:
 - 1. Fastening gypsum board to steel members less than 0.033 inch thick.
 - 2. Fastening gypsum board to gypsum board.
- C. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.
- D. Sound-Attenuation Blankets: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing).
 - 1. Mineral-Fiber Type: Fibers manufactured from slag wool or rock wool.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLING STEEL FRAMING, GENERAL

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with recommendations of gypsum board manufacturer or, if none available, with United States Gypsum Co.'s "Gypsum Construction Handbook."
- C. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement.
 - 1. Where building structure abuts ceiling perimeter or penetrates ceiling.
 - 2. Where partition framing and wall furring abut structure, except at floor.
 - a. Provide slip- or cushioned-type joints as detailed to attain lateral support and avoid axial loading.

3.3 INSTALLING STEEL FRAMING FOR WALLS AND PARTITIONS

- A. Install runners (tracks) at floors, ceilings, and structural walls and columns where gypsum board stud assemblies abut other construction.
 - 1. Where studs are installed directly against exterior walls, install asphalt felt strips gaskets between studs and wall.
- B. Installation Tolerances: Install each steel framing and furring member so that fastening surfaces do not vary more than **1/8 inch** from the plane formed by the faces of adjacent framing.
- C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
 - 1. Cut studs **1/2 inch** short of full height to provide perimeter relief.
- D. Terminate partition framing at suspended ceilings where indicated.
- E. Install steel studs and furring in sizes and at spacings indicated.
 - 1. Single-Layer Construction: Space studs **16 inches** o.c., unless otherwise indicated.
- F. Install steel studs so flanges point in the same direction and leading edge or end of each gypsum board panel can be attached to open (unsupported) edges of stud flanges first.

indicated. Attach studs to runners with **3/8-inch-** long pan head framing screws. On straight lengths at ends of arcs, place studs **6 inches** o.c. with last stud left free standing.
- G. Frame door openings to comply with GA-219, and with applicable published recommendations of gypsum board manufacturer, unless otherwise indicated. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - 1. Install 2 studs at each jamb, unless otherwise indicated.
 - 2. Install cripple studs at head adjacent to each jamb stud, with a minimum **1/2-inch** clearance from jamb stud to allow for installation of control joint.
- H. Frame openings other than door openings to comply with details indicated or, if none indicated, as required for door openings. Install framing below sills of openings to match framing required above door heads.

3.4 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

- A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.
- B. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than **1/16 inch (1.5 mm)** of open space between panels. Do not force into place.
- C. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Avoid joints other than control joints at corners of framed openings where possible.
- D. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- E. Attach gypsum panels to framing provided at openings and cutouts.
- F. Isolate perimeter of nonload-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide **1/4- to 1/2-inch- (6.4- to 12.7-mm-)** wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- G. Where STC-rated gypsum board assemblies are indicated, seal construction at perimeters, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.
- H. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.
 - 1. Space screws a maximum of **12 inches (304.8 mm)** o.c. for vertical applications.

3.7 GYPSUM BOARD APPLICATION METHODS

- A. Single-Layer Application: Install gypsum wallboard panels as follows:
 - 1. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing. Use maximum-length panels to minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of board.

3.8 INSTALLING TRIM ACCESSORIES

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
- B. Install cornerbead at external corners.
- C. Install edge trim where edge of gypsum panels would otherwise be exposed. Provide edge trim type with face flange formed to receive joint compound, except where other types are indicated.
 - 1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
 - 2. Install L-bead where edge trim can only be installed after gypsum panels are installed.

3.9 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Treat gypsum board joints, interior angles, flanges of cornerbead, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.
- B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.
- C. Apply joint tape over gypsum board joints, except those with trim accessories having flanges not requiring tape.
- D. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214.
 - 1. Level 4 for gypsum board surfaces, unless otherwise indicated.
- E. Use the following joint compound combination as applicable to the finish levels specified:
 - 1. Embedding and First Coat: Setting-type compound. Fill (Second) Coat: Setting-type compound. Finish (Third) Coat: Job-mixed, drying-type, all-purpose compound.
- F. For Level 4 gypsum board finish, embed tape in joint compound and apply first, fill (second), and finish (third) coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration.

3.10 CLEANING AND PROTECTION

- A. Promptly remove any residual joint compound from adjacent surfaces.
- B. Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure gypsum board assemblies are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 09255

SECTION 09511 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes ceilings consisting of acoustical panels and exposed suspension systems.

1.3 SUBMITTALS

- A. Product Data: For each type of product specified.

1.4 QUALITY ASSURANCE

- A. Source Limitations for Suspension System: Obtain each suspension system from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
 - 1. Obtain both acoustical ceiling panels and suspension system from the same manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.7 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
 - 1. Acoustical Ceiling Units: Full-size units equal to 2.0 percent of amount installed.
 - 2. Suspension System Components: Quantity of each exposed component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, those indicated for each designation in the Acoustical Panel Ceiling Schedule at the end of Part 3.

2.2 ACOUSTICAL PANELS, GENERAL

- A. Panel Characteristics: Comply with requirements indicated in the Acoustical Panel Ceiling Schedule at the end of Part 3, including those referencing ASTM E 1264 classifications.

2.3 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System Characteristics: Comply with requirements indicated in the Acoustical Panel Ceiling Schedule at the end of Part 3.

2.4 ACOUSTICAL SEALANT

- A. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. PL Acoustical Sealant; Chemrex, Inc., Contech Brands.

- b. AC-20 FTR Acoustical and Insulation Sealant; Pecora Corp.
- c. SHEETROCK Acoustical Sealant; United States Gypsum Co.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage, and other conditions affecting performance of acoustical panel ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.
 - 1. Furnish cast-in-place anchors and similar devices to other trades for installation well in advance of time needed for coordinating other work.
- B. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with publications referenced below per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
 - 1. Standard for Ceiling Suspension System Installations: Comply with ASTM C 636.
 - 2. Install acoustical panels with undamaged edges and fitted accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
 - a. As indicated on reflected ceiling plans.
 - 3. Paint cut panel edges remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 ACOUSTICAL PANEL CEILING SCHEDULE

- A. Mineral-Base Acoustical Panels for Acoustical Panel Ceiling

ACP-1:

- 1. Classification: Panels fitting ASTM E 1264 for type and form as follows
 - a. Type III, mineral base with painted finish; 4, cast or molded
- 2. Pattern: Lightly textured 2x2 scored
- 3. Color: White
- 4. Light Reflectance Coefficient: 0.80
- 5. Noise Reduction Coefficient: NRC 0.55
- 6. Ceiling Attenuation Class: Not less than CAC 30
- 7. Edge Detail: Tegular
- 8. Thickness 5/8"
- 9. Size: 24 by 48 inches

ACP-2

- 1. Classification: Panels fitting ASTM E 1264 for type and form as follows:
 - a. Type IV, mineral base with membrane-faced overlay; Form 1, nodular; with washable vinyl-film overlay
- 2. Pattern: Lightly textured 2x2 scored
- 3. Color: White
- 4. Light Reflectance Coefficient: 0.80
- 5. Noise Reduction Coefficient: NRC 0.55
- 6. Ceiling Attenuation Class: Not less than CAC 30
- 7. Edge Detail: Tegular
- 8. Thickness 5/8"
- 9. Size: 24 by 48 inches

ACP-3

- Basis of Design:
- 1. Manufacturer: Armstrong Ceilings
- 2. Style: Metalworks SecureLock
 - a. Electrogalvanized Steel- 18 gauge thickness
 - b. Factory – applied powder- coated finish (pos-coated)
- 3. Pattern: P4 – SecureLock, Perforated
- 4. Color: White

5. Light Reflectance Coefficient: 0.80
6. Noise Reduction Coefficient: NRC 0.55
7. Ceiling Attenuation Class: Not less than CAC 30
8. Edge Detail: Square Lay-In
9. Thickness 15/16 inch
10. Size: 24 by 24 inches

B. Suspension System for Acoustical Panel Ceiling

SSG-1

- A. Wide-Face, Single-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet electrolytically zinc coated, with prefinished 15/16-inch wide flanges; other characteristics as follows:
 - a. Structural Classification: Heavy-duty system
 - b. End Condition of Cross Runners: Override (stepped) or butt-edge type, as standard with manufacturer.
 - c. Face Design: Flush face.
 - d. Cap Material: Steel or aluminum sheet as standard with manufacturer.
 - e. Cap Finish: Painted white

SSG-2

- A. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, G01 coating designation, with prefinished 15/16-inch wide metal caps on flanges; other characteristics as follows:
 - a. Structural Classification: Heavy-duty system
 - b. End Condition of Cross Runners: Override (stepped) or butt-edge type, as standard with manufacturer.
 - c. Face Design: Flush face.
 - d. Cap Material: Steel or aluminum sheet as standard with manufacturer.
 - e. Cap Finish: Painted white

SSG-3

Basis of Design:

1. Manufacturer: Armstrong Ceilings
- Style: Prelude XL 15/16" Exposed Tee, Heavy-duty system
- c. 18 gauge Hold- Down Clips
- d. Cross Tees Compression Struts

END OF SECTION 09511

SECTION 09651 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Vinyl composition floor tile.
 - 2. Resilient wall base and accessories.
- B. Related Sections include the following:
 - 1. Division 2 Sections for removing existing flooring.
 - 2. Division 3 Sections for curing compounds and other concrete treatments compatibility with carpet tile and adhesives.
 - 3. Division 9 Section "Resilient Wall Base and Accessories" for resilient wall base, reducer strips, and other accessories installed with resilient floor tiles.

1.3 SUBMITTALS

- A. Product Data: For each type of product specified.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors and patterns available for each type of product indicated.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing resilient products similar to those required for this Project and with a record of successful in-service performance.
- B. Source Limitations: Obtain each type, color, and pattern of product specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to Project site in manufacturer's original, unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

- B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 50 and 90 deg F.
- C. Store tiles on flat surfaces.
- D. Move products into spaces where they will be installed at least 48 hours before installation, unless longer conditioning period is recommended in writing by manufacturer.

1.6 PROJECT CONDITIONS

- A. Maintain a temperature of not less than 70 deg F for more than 95 deg F in spaces to receive products for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer's written recommendations specify longer time periods. After postinstallation period, maintain a temperature of not less than 55 deg F or more than 95 deg F.
- B. Do not install products until they are at the same temperature as the space where they are to be installed.
- C. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.
- D. Install tiles and accessories after other finishing operations, including painting, have been completed.
- F. Do not install flooring over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive, as determined by flooring manufacturer's recommended bond and moisture test.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
 - 1. Furnish not less than one box for each 50 boxes or fraction thereof, of each type, color, pattern, class, wearing surface, and size of resilient tile flooring installed.
 - 2. Furnish not less than 10 linear feet for each 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient accessory installed.
 - 3. Deliver extra materials to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products indicated for each designation in the Resilient Tile Flooring Schedule at the end of Part 3.

2.2 RESILIENT TILE

- A. Vinyl Composition Floor Tile: Products complying with ASTM F 1066 and with requirements specified in the Resilient Tile Flooring Schedule.

2.3 RESILIENT ACCESSORIES

- A. Vinyl Wall Base: Products complying with FS SS-W-40, Type II and with requirements specified in the Resilient Tile Flooring Schedule.
- B. Vinyl Accessory Moldings: Products complying with requirements specified in the Resilient Tile Flooring Schedule.

2.4 INSTALLATION ACCESSORIES

- A. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where installation of resilient products will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for resilient product installation and comply with requirements specified.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 3. Moisture Testing: Perform one or both of the following tests as recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb. of water/1000 sq. ft. in 24 hours.
 - b. Perform relative humidity test using a situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% relative humidity level measurement.
- C. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with resilient product manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.

- B. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- C. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 TILE INSTALLATION

- A. Fill cracks, holes and low spots to produce a smooth, even surface; use specified latex underlayment.
- B. Install all materials as recommended by the manufacturer and as specified.
- C. For installation of floor tile, center each room or area with respect to the principal permanent walls and start laying tile from such centers. Apply adhesive to substrates. Lay tiles to show grain or pattern running in one direction only. Where field pattern does not work out to full units at perimeter, lay out the pattern to provide perimeter units of equal width, but not less than half tile wide. Continue tile into recesses and closets; accurately scribe tight to interruptions and projections. Where tile is same pattern and color for adjacent rooms or areas, continue tile through doorways. Where tile is not the same in adjacent rooms or areas and no threshold is provided, install a neutral color vinyl divider strip, full width of doorway, centered under closed door.
 - 1. Where tiled floor terminates at an untiled floor, install continuous reducer strip.
- D. Install resilient base in adhesive on all vertical surfaces scheduled and indicated; continue into all recesses, closets, projections, and on toe spaces of equipment or cabinet items as required. Use longest lengths practicable.
 - 1. Field-form all corners for vinyl bases, heating and cooling base as necessary to permanently set the shape; notch and miter cove for inside corners; use long lengths to form corners so as to extend beyond corners as far as possible, but not less than 6 inch from corner.
- E. Clean resilient flooring materials upon completion of installation. Apply two separate machine-polished coats of wax on all resilient flooring materials. Apply first coat of wax immediately after cleaning; apply final coat of wax just prior to occupancy by the OWNER. When so directed, or prior to final waxing, adjust and straighten misaligned materials, replace or re-cement loose materials and replace broken, cracked, chipped or scratched materials.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. General: Install resilient accessories according to manufacturer's written installation instructions.
- B. Apply resilient wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
 - 1. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

2. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 3. Do not stretch base during installation.
 4. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
 5. Form outside corners on job from straight pieces of maximum lengths possible, without whitening at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
 6. Form inside corners on job, from straight pieces of maximum lengths possible, by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.
- C. Place resilient accessories so they are butted to adjacent materials and bond to substrates with adhesive. Install reducer strips at edges of flooring that would otherwise be exposed.

3.5 CLEANING AND PROTECTING

- A. Perform the following operations immediately after installing resilient products:
1. Remove adhesive and other surface blemishes using cleaner recommended by resilient product manufacturers.
 2. Sweep or vacuum floor thoroughly.
 3. Do not wash floor until after time period recommended by flooring manufacturer.
 4. Damp-mop floor to remove marks and soil.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by flooring manufacturer.
1. Apply protective floor polish to floor surfaces that are free from soil, visible adhesive, and surface blemishes, if recommended in writing by manufacturer.
 - a. Use commercially available product acceptable to flooring manufacturer.
 - b. Coordinate selection of floor polish with Owner's maintenance service.
 2. Cover products installed on floor surfaces with undyed, untreated building paper until inspection for Substantial Completion.
 3. Do not move heavy and sharp objects directly over floor surfaces. Place plywood or hardboard panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.
- C. Clean floor surfaces not more than 4 days before dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean products according to manufacturer's written recommendations.
1. Before cleaning, strip protective floor polish that was applied after completing installation only if required to restore polish finish and if recommended by flooring manufacturer.
 2. After cleaning, reapply polish to floor surfaces to restore protective floor finish according to flooring manufacturer's written recommendations. Coordinate with Owner's maintenance program.

3.6 RESILIENT TILE FLOORING SCHEDULE

- A. Vinyl Composition Tile VCT-1: Where this designation is indicated, provide vinyl composition floor tile complying with the following:
face size 12 inch by 12 inch, 1/8 inch thick, complying with ASTM F 1066, Class 1 (solid color) Class 2 (through pattern) with smooth wearing surface, to match colors selected by OWNER. Solid vinyl tile shall be face size 16 inch by 16 inch, 1/8 inch thick, complying with ASTM F 1700, Class I, Type A to match colors selected by architect.
1. Armstrong "Standard Excelon Multi-Color" or "Standard Excelon Imperial Texture"
 2. Congoleum "Alternatives, Choices, or CX Series"
 3. Manningham "Essentials, Designer Essentials, or Progressions"
 4. Tarkett: Azrock "Cortina", solid vinyl tile
 5. Tarkett "Expressions"
- B. Vinyl Wall Base VWB-1: Where this designation is indicated, provide vinyl wall base complying with the following:
4 inches high, 1/8 inch thick, of vinyl conforming to ASTM F 1861, type TV, Group 1 with round top, in plain color; cove type except use straight butt type (style A) in rooms and areas receiving carpet. Preformed end units shall be manufacturer's standard to match base. Match colors selected by architect. Preformed inside and outside corner units are not acceptable.
1. Burke Flooring "Mercer Vinyl Wall Base Type TV"
 2. Flexco "Vinyl Wall Base"
 3. Johnsonite "Traditional Wall Base"
 4. Roppe "Vinyl Base"
 5. VPI Corporation "Vinyl Wall Base"
- C. Vinyl Accessory Molding VAM-1: Where this designation is indicated, provide vinyl accessory molding complying with the following:
Reducer strips shall be of solid color, face width 1 inch or 1-1/4 inch, 1/8 inch thick tapered to floor on opposite edge, of homogeneous vinyl or rubber.
1. Burke Flooring "633 Tile Reducer"
 2. Flexco "192AV Tile Reducer Strip"
 3. Johnsonite "RRS-XX-C Reducer"
 4. Roppe "172 Tile Reducer"
- D. Adhesives and cements shall be waterproof, non-solvent type of brands and types recommended and guaranteed by the resilient materials manufacturers for application of resilient materials to the various types of surfaces to be covered.
1. Adhesives shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart, D (EPA Method 24).
 - a. VCT and VT Tile Adhesive: Not more than 50 g./L.
- E. Underlayment shall be latex type material as recommended by the resilient flooring manufacturer, for patching defects in substrates to receive resilient flooring material.
1. Armstrong "Latex Underlayment S-180 Series"
 2. Azrock "Latex Underlayment"
 3. Tarkett "Latex Underlayment"

END OF SECTION 09651

SECTION 09690 - CARPET TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes carpet tile and installation.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 2 Sections for removing existing flooring.
 - 2. Division 3 Sections for curing compounds and other concrete treatments compatibility with carpet tile and adhesives.
 - 3. Division 9 Section "Resilient Wall Base and Accessories" for materials and installation.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Samples for initial selection in the form of manufacturer's color charts or Samples of materials showing the full range of colors, textures, and patterns available for each type of carpet tile indicated.
- C. Samples for verification of the following products, in manufacturer's standard sizes, showing the full range of color, texture, and pattern variations expected. Prepare Samples from the same material to be used for the Work. Label each sample with the manufacturer's name, material type, color, pattern, and designation indicated on Drawings and carpet tile schedule. Submit the following:
 - 1. 12-inch Samples of each type of exposed edge stripping and accessory item.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is certified by the Floor Covering Installation Board (FCIB) or who can demonstrate compliance with FCIB certification program requirements.
- B. Single-Source Responsibility: Obtain each type of carpet tile from one source and by a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 5: "Storage and Handling."
- B. Deliver materials to Project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.
- C. Store materials on-site in original undamaged packages, inside well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity. Lay flat, with continuous blocking off ground.

1.6 PROJECT CONDITIONS

- A. Subfloor Moisture Conditions: Moisture emission rate of not more than 3 lb/1000 sq. ft./24 hours when tested by calcium chloride moisture test in compliance with CRI 104, 6.2.1, with subfloor temperatures not less than 55 deg F.
- B. Subfloor Alkalinity Conditions: A pH range of 5 to 9 when subfloor is wetted with potable water and pHydron paper is applied.

1.7 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Carpet Tile Warranty: Submit a written warranty executed by carpet tile manufacturer and Installer agreeing to repair or replace carpet tile that does not meet requirements or that fails in materials or workmanship within the specified warranty period. Failures include, but are not limited to, more than 10 percent loss of face fiber, tile curling, snags, runs, and delamination.
- C. Warranty Period: 5 years from date of Substantial Completion.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
 - 1. Carpet Tile: Before installation begins, furnish quantity of full-size units equal to 5 percent of amount installed.

PART 2 - PRODUCTS

2.1 CARPET TILE

A. Products:

Carpet Tile Designation: CT-1

1. Manufacturer: Patcraft
2. Style:10302 Vivid
3. Size: 20 by 20 inches
- 4: Color: To be selected by Architect from Manufacturer's available colors.

Carpet Tile Designation: CT-2

1. Manufacturer: Patcraft
2. Style:10302 Vivid
3. Size: 20 by 20 inches
- 4: Color: To be selected by Architect from Manufacturer's available colors.

2.2 INSTALLATION ACCESSORIES

- A. Concrete-Slab Primer: Nonstaining type as recommended by carpet tile manufacturer.
- B. Trowelable Underlayments and Patching Compounds: As recommended by carpet tile manufacturer.
- C. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated and to comply with flammability requirements for installed carpet tile as recommended by carpet tile manufacturer.
 1. Use adhesives with VOC content not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Seaming adhesive as recommended by the carpet manufacturer.
- E. Carpet vinyl edge guards shall be of thickness to suit carpet, and of color as selected by the Architect. Adhesive shall be waterproof type recommended by vinyl edge guard manufacturer for application of its product to concrete substrate. Provide shapes suitable for edging carpet where carpet terminates at bare floors and where it meets resilient floor tile, as applicable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine subfloors and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting performance of carpet tile. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Verify that subfloors and conditions are satisfactory for carpet tile installation and comply with requirements specified in this Section and those of carpet tile manufacturer.

3.2 PREPARATION

- A. General: Comply with carpet tile manufacturer's installation recommendations to prepare substrates indicated to receive carpet tile installation.
- B. Level subfloor within **1/4 inch in 10 feet (6 mm in 3 m)**, noncumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair cracks and rough areas. Fill depressions.
 - 1. Use leveling and patching compounds to fill cracks, holes, and depressions in subfloor as recommended by carpet tile manufacturer.
- C. Remove subfloor coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone.
- D. Broom or vacuum clean subfloors to be covered with carpet tile. Following cleaning, examine subfloors for moisture, alkaline salts, carbonation, or dust.
- E. Concrete-Subfloor Preparation: Apply concrete-slab primer, according to manufacturer's directions, where recommended by carpet tile manufacturer.

3.3 INSTALLATION

- A. General: Comply with CRI 104, Section 13: "Carpet Modules (Tiles)."
- B. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.
- C. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

- D. Install borders parallel to walls.

3.4 CLEANING

- A. Perform the following operations immediately after completing installation:
 - 1. Remove visible adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove protruding yarns from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.

3.5 PROTECTION

- A. General: Comply with CRI 104, Section 15: "Protection of Indoor Installation."
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure carpet tile is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 09690

PART ONE – GENERAL

1.0 Scope

A. Furnish and install building acoustic insulation, and related work, necessary for a complete installation as indicated, specified, or required.

1.1 Submittals

A. Submit product data covering catalog items. If catalog is general in nature, indicate the specific items and related accessories proposed for use.

1.2 Sequencing and Scheduling

A. Furnish and install the insulation in coordination with other work so as to not delay subsequent work. Install insulation in its proper place prior to enclosing with subsequent work.

PART TWO – PRODUCTS

2.0 General

A. Provide insulation necessary for sound attenuation. Systems include sound-attenuating batts and blankets in stud cavities of framed walls and above ceilings as an acoustic barrier.

2.1 Materials

A. Sound-attenuating blankets shall comply with ASTM C 665, Type I (blankets without membrane facing), Class B, glass fiber blanket, minimum 3 inches thick, unless otherwise indicated, and 16 or 24 inches wide to suit framing spacing. For fire-rated assemblies, comply with requirements of tested assembly design.

1. CertainTeed Corporation "CertaPro AcoustaTherm Batts"
2. Johns Manville "Sound Control Batts"
3. Owens-Corning Fiberglas Corporation "Sonobatts or Sound Attenuation Batts"
4. Thermafiber, Inc. "SAFB Sound-Attenuation Blanket"

PART THREE – EXECUTION

3.0 Installation

A. Furnish and install sound-attenuating blanket insulation in walls and partitions where indicated, scheduled or required. Use insulation of widths to tightly fit the stud spacing and in as long lengths as practical. Wedge batts between metal studs, with ends butted tightly together and to adjacent construction and sides fitted tightly to sides of studs and adjacent construction, to provide a continuous sound barrier free of voids. Secure insulation to backside surface of one side of wall to prevent sagging; do not deform insulation so as to maintain its full-thickness efficiency. Cut insulation to fit tightly to studs and adjacent surfaces. Pack insulation around items penetrating the insulation plane.

B. Furnish and install sound-attenuating blankets on suspended ceilings in areas and rooms where indicated, scheduled or required. Lay blankets in place, as recommended by the manufacturer: Wedge blankets up tight to all vertical projections and to each other to provide a continuous sound-absorption barrier. At recessed light fixtures and other penetrations, continue blankets across the light fixtures and other items to maintain the barrier. At perimeter of each area of room, continue the blanket insulation up the walls of the plenum; secure blanket to wall with adhesive, clips or other approved means to prevent settlement.

3.1 Adjusting and Patching

A. Inspect insulation installed as part of the work of this Section, just prior to its being concealed or covered by subsequent construction and also at completion of the project before acceptance by the ARCHITECT.

B. Repair or remove and replace any insulation that has become torn, displaced, water-soaked, or otherwise damaged so that it will not function as a sound-attenuating material.

End of Section

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes surface preparation and field painting of the following:
 - 1. Exposed interior items and surfaces.
 - 2. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Prefinished items include the following factory-finished components:
 - a. Architectural woodwork and casework.
 - b. Metal lockers.
 - c. Finished mechanical and electrical equipment.
 - d. Light fixtures.
 - e. Distribution cabinets.
 - 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Ceiling plenums.
 - b. Pipe spaces.
 - 3. Finished metal surfaces include the following:
 - a. Anodized aluminum.
 - b. Stainless steel.
 - 4. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

D. Related Sections include the following:

1. Division 8 Section "Steel Doors and Frames" for shop priming steel doors and frames.
2. Division 9 Section "Gypsum Board Assemblies" for surface preparation for gypsum board.

1.3 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
2. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.

1.4 SUBMITTALS

A. Product Data: For each paint system specified. Include block fillers and primers.

1. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
2. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

1. After color selection, the Architect will furnish color chips for surfaces to be coated.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

B. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample of each type of coating and substrate required on the Project. Comply with procedures specified in PDCA P5. Duplicate finish of approved prepared samples.

1. After permanent lighting and other environmental services have been activated, apply coatings in this room or to each surface according to the Schedule or as specified. Provide required sheen, color, and texture on each surface.
 - a. After finishes are accepted, the Architect will use the room or surface to evaluate coating systems of a similar nature.
2. Final approval of colors will be from job-applied samples.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F . Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F.

1.8 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.
 - 1. Quantity: Furnish the Owner with an additional 5 percent, but not less than 1 gal. or 1 case, as appropriate, of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products indicated for each designation in the Interior Paint Schedule at the end of Part 3.

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used

to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

- D. Colors: Provide color selections made by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove and reprime.
 2. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.

- b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
- a. Blast steel surfaces clean as recommended by paint system manufacturer and according to requirements of SSPC-SP 10.
 - b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
- 1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 - 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 - 3. Use only thinners approved by paint manufacturer and only within recommended limits.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
- 1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 - 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 - 3. Provide finish coats that are compatible with primers used.
 - 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 - 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
- 1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as

recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.

2. Omit primer on metal surfaces that have been shop primed and touchup painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.

F. Mechanical items to be painted include, but are not limited to, the following:

1. Piping
2. Ductwork.

G. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

H. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

I. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:

1. The Owner may direct the Contractor to stop painting if test results show material being used does not comply with specified requirements. The Contractor shall remove noncomplying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected

paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings are incompatible.

3.5 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.
 - 2. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer.

3.7 INTERIOR PAINT SCHEDULE

- A. Concrete Masonry Units: Provide the following finish systems over interior concrete masonry block units:

PT-1: Semigloss, Alkyd-Enamel Finish: 2 finish coats over an undercoat and a filled surface.

- a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 5.0 mils (0.13 mm).
- b. Undercoat: Interior, alkyd, enamel undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).
- c. Finish Coat: Odorless, semigloss, alkyd, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).

- B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

PT-2: Low-Luster, Acrylic-Enamel Finish: 2 finish coats over a primer.

- a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).
- b. First and Second Coats: Low-luster (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).

PT-3: Semigloss, Acrylic-Enamel Finish: 2 finish coats over a primer.

- a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).
- b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

END OF SECTION 09900

SECTION 10425 - SIGNS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of signs:

- 1. Dimensional letters and numbers.

1.3 SUBMITTALS

- A. Product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.
- B. Shop drawings showing fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.
 - 1. Templates: Furnish full-size spacing templates for individually mounted dimensional letters and numbers.
- C. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.
 - 1. Dimensional Letters: Provide full-size representative samples of each dimensional letter type required, showing letter style, color, and material finish and method of attachment.

1.4 QUALITY ASSURANCE

- A. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work.

- B. UL and NEMA Compliance: Provide lighting fixtures and electrical components for illuminated signs that are labeled and listed by UL and comply with applicable NEMA standards.
- C. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.
- D. Design Concept: The Drawings indicate sizes, profiles, and dimensional requirements of signs and are based on the specific types and models indicated. Sign units by other manufacturers may be considered provided deviations in dimensions and profiles do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Manufacturers of Dimensional Letters:
 - a. Andco Industries Corp.
 - b. A.R.K. Ramos Manufacturing Company, Inc.
 - c. ASI Sign Systems, Inc.
 - d. Gemini, Inc.
 - e. Matthews International Corp.
 - f. Metal Arts.
 - g. Metallic Arts, Inc.
 - h. The Southwell Company.
 - i. Spanjer Brothers, Inc.
 - j. Vomar Products, Inc.

2.2 MATERIALS

- A. Stainless Steel Plate, Sheet, and Strip: Provide stainless steel plate, sheet, or strip, AISI Type 302, complying with requirements of ASTM A 167.
- B. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into masonry work.

2.3 DIMENSIONAL LETTERS AND NUMBERS

- A. Cutout Letters and Numbers: Cut letters and numbers from solid plate material of thickness indicated. Produce precisely cut characters with square cut, smooth edges. Comply with requirements indicated for finish, style, and size.
1. Finish: Brush Chrome
 2. Stainless Steel Sheet: 18 gage
 3. Letter Height: 8 inches.
 4. Letter Style: Helvetica.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Dimensional Letters and Numbers: Mount letters and numbers using standard fastening methods recommended by the manufacturer for letter form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish letter spacing and to locate holes for fasteners.
1. Flush Mounting: Mount letters with backs in contact with the wall surface.

3.2 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION 10425

SECTION 10505 – LOCKERS AND BENCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Wardrobe lockers
 - 2. Locker benches.
 - 3. Detention benches.
- B. Related Sections include the following:
 - 1. Division 9 Section "Painting" for finish painting of lockers.

1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of locker and bench.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
 - 1. Show locker fillers, trim, base, sloping tops, and accessories. Include locker-numbering sequence.
- C. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals specified in Division 1.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain locker units and accessories through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver lockers until spaces to receive them are clean, dry, and ready for locker installation.
- B. Protect lockers from damage during delivery, handling, storage, and installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Lyon Metal Products "Single-Tier Lockers"
 2. Penco Products Inc. "Single-Tier Lockers"
 3. Republic Storage Systems, LLC "Single-Tier Lockers"

2.2 MATERIALS

- A. A. Employee lockers shall be 12 inches wide by 18 inches deep by 72 inches high without legs, with standard louvered door, hat shelf, coat rod, and hooks as standard with the manufacturer. Provide sloping tops.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
- C. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.
- D. Anchors: Material, type, and size required for secure anchorage to each substrate.
- E. Fabricate bodies from not less than 24 gage [0.024 inch (0.61 mm) nominal thickness] un-perforated steel, flanged at all vertical connections, backs flanged on two sides, and tops, bottoms and shelves flanged on four sides.

2.3 ACCESSORIES AND HARDWARE

- A. Doors and Frames: Fabricate doors from not less than 16 gage steel [0.060 inch (1.52 mm) nominal thickness] , stretcher leveled, with vertical edges formed into channel shape and with top and bottom edges flanged back. Fabricate all doors with manufacturers standard louvered faces. Fabricate door frame from not less than 16 gage [0.060 inch (1.52 mm) nominal thickness] formed steel channels, with flanged edge to form door stop and welded at corners.
- B. Sloping Tops: Fabricate continuous sloping tops from minimum 20 gage [0.036 inch (0.91 mm) nominal thickness] steel with corner fillers and end closures for installation on standard flat-top lockers, and with finish to match the locker finish.
- C. Hinges: Minimum 2 inches long, 0.050 inch thick steel, five knuckle, full loop type, three per compartment door for single-tier lockers and two per compartment door for other types of lockers, welded to frame and bolted to door. Provide non-removable hinge pin.
- D. Locking Devices: Channel shaped steel, operating within the channel reinforcement of the door edge and engaging a latching lug assembly on the door frame at three points, opposite the door hinges. Provide prelocking type device so mechanism can be locked with door in the open position.
- E. Compartment Handles: Chrome plated, zinc casting, with fixed case and arranged for padlocking. Form handle with integral padlock strike. Handles shall comply with the guidelines of the Americans With Disabilities Act.

- F. Coat Hooks and Rod: Cadmium plated steel and attached with not less than two bolts.
- G. Number Plates: Polished chrome, nickel or aluminum with bright background and etched black numerals not less than 3/8 inch high. Attach plates to doors with rivets. Numbers as directed by ARCHITECT.
- H. End Finishing Panels: At exposed ends, scribing front fillers and all other miscellaneous trim required for a complete installation.
 - D. Continuous Metal Base: Minimum 0.0598-inch- (1.50-mm-) thick steel sheet, channel or zee profiled for stiffness, fabricated in lengths as long as practicable to enclose base and base ends of lockers, and finished to match lockers.
 - 1. Height: 4 inches (102 mm).
- I. Boxed End Panels: None.
- J. FINISH:
 - A. All steel parts shall be given a rust inhibitive treatment and a heavy coat of baked-on enamel in standard color as selected.

2.6 LOCKER BENCHES

- A. A. Wood Benches: Locker room bench tops shall be laminated hard maple or similar hardwood standard with the manufacturer, one-piece unit, of the following: 10 inches wide by 1-1/4 inches thick x 72 inches long, with rounded corners and edges and smoothly sanded surfaces. Finish with 2 coats of clear polyurethane varnish or other clear finish system standard with the manufacturer.
- B. Bench supports shall be steel pedestals for wood locker room benches, of minimum 1-1/4 inch outside diameter steel pipe or tubing with top and bottom flanges welded thereto; finish pedestals with baked enamel finish to match lockers. Bench supports shall be painted steel or black-anodized aluminum pedestals for solid plastic locker room benches, of pipe or tubing with top and bottom flanges welded; floor anchored with concealed fasteners.
 - 1. Furnish a minimum of two pedestals for each bench, with pedestal spacing not more than 72 inches o.c.

2.7 DETENTION BENCHES

- A. Bench Tops: Provide manufacturer's standard one-piece units, of the following material, 10 inches wide x 72 inches long x 1 inch depth, with rounded corners and edges and 3/4 inch intergral welded handcuff rail:
 - 1. brushed stainless steel 16 gauge thick, with tube support framing running full length of top.
- B. Pedestals: welded pedestal supports, with predrilled base fastener holes, complete with fasteners and anchors, and as follows:
 - 1. Type: Tubular steel, minimum 1-1/2-inch diameter, threaded on both ends, welded to bench support at top and bell-shaped cast base; baked-enamel finish; floor anchored with concealed fasteners.

- a. Furnish a minimum of two pedestals for each bench, with pedestal spacing not more than 72 inches o.c.

2.8 FABRICATION

- A. Unit Principle: Fabricate each locker with an individual door and frame, individual top, bottom, back, and shelves, and common intermediate uprights separating compartments.
- B. All-Welded Construction: Preassemble lockers by welding all joints, seams, and connections, with no bolts, screws, or rivets used in assembly. Grind exposed welds flush.
- D. Fabricate lockers square, rigid, and without warp, with metal faces flat and free of dents or distortion. Make exposed metal edges free of sharp edges and burrs, and safe to touch. Weld frame members together to form a rigid, one-piece assembly.
- E.
- F. Regulatory Requirements: Where metal lockers and benches are indicated to comply with accessibility requirements, fabricate to comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1.
- G. Accessible Lockers: Fabricate as follows:
 - 1. Locate bottom shelf no lower than 15 inches (381 mm) above the floor.
 - 2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches (1219 mm) above the floor.

2.9 FINISHES, GENERAL

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.10 STEEL SHEET FINISHES

- A. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond. Use manufacturer's standard methods.
- C. Powder-Coated Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard baked-polymer finish consisting of a thermosetting powder topcoat. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils (0.05 mm).
 - 1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine bases for suitable conditions where metal lockers are to be installed.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install metal lockers and accessories level, plumb, rigid, and flush according to manufacturer's written instructions.
- B. Assemble knocked-down lockers with standard fasteners, with no exposed fasteners on door faces and face frames.
- C. Connect groups of all-welded lockers together with standard fasteners, with no exposed fasteners on face frames.
- D. Anchor lockers to floors and walls at intervals recommended by manufacturer, but not more than **36 inches (910 mm)** o.c. Install anchors through backup reinforcing plates where necessary to avoid metal distortion, using concealed fasteners.
- E. Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
 - 1. Attach recess trim to recessed lockers with concealed clips.
 - 2. Attach sloping top units to lockers, with closures at exposed ends.
- F. Attach boxed end panels with concealed fasteners to conceal exposed ends of nonrecessed lockers.
- G. Attach finished end panels with fasteners only at perimeter to conceal exposed ends of nonrecessed lockers.
- H. Anchor locker benches to floors Uniformly space pedestals not more than **72 inches (1830 mm)** apart, and securely fasten to bench top and anchor to floor.

3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjust doors and latches to operate easily without binding.
- B. Clean interior and exposed exterior surfaces and polish stainless-steel and nonferrous-metal surfaces.
- C. Protect lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit locker use during construction.
- D. Touch up marred finishes, or replace locker units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

3.4 METAL LOCKER SCHEDULE

A. Metal Wardrobe Locker: Where metal lockers of this designation are indicated, provide products complying with the following:

1. Material: **Electrolytic zinc-coated steel sheet**
2. Back-Material Thickness: **0.0598 inch**
3. Side-Material Thickness: **0.0598 inch**
4. Door-Material Thickness: **0.0598 inch**
5. Locker Fabrication: **Knocked down**
6. Locker Arrangement: **Single tier**
7. Backs: **Solid**
8. Sides: **Solid**
9. Door Style: **Perforated vents**
10. Shelves: **Solid**
11. Hinges: **Side-mounted continuous**
12. Handles/Latches: **Projecting**
13. Locks: Vanguard handle
14. Accessories:
 - a. Base: **Legs with closed base**
 - b. Sloping Tops: **Continuous**
15. Color: **As selected by Architect from manufacturer's full range**

END OF SECTION 10505

SECTION 10801 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Toilet and bath accessories.
 - 2. Underlavatory guards.

1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.

1.4 QUALITY ASSURANCE

- A. Product Options: Accessory requirements, including those for materials, finishes, dimensions, capacities, and performance, are established by specific products indicated in the Toilet and Bath Accessory Schedule.

1.5 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.6 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

- B. Manufacturer's Mirror Warranty: Written warranty, executed by mirror manufacturer agreeing to replace mirrors that develop visible silver spoilage defects within minimum warranty period indicated.

- 1. Minimum Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering accessories that may be incorporated into the Work include, but are not limited to, the following:

- B. Manufacturers: Subject to compliance with requirements, provide accessories by one of the following:

- 1. Toilet Accessories:

- a. A & J Washroom Accessories, Inc.
 - b. American Specialties, Inc.
 - c. Bobrick Washroom Equipment, Inc.
 - d. Bradley Corporation.
 - e. General Accessory Manufacturing Co. (GAMCO).
 - f. McKinney/Parker Washroom Accessories Corp.

- 2. Underlavatory Guards:

- a. Brocar Products, Inc.
 - b. Truebro, Inc.

- C. Products: Subject to compliance with requirements, provide one of the products indicated for each designation in the Toilet and Bath Accessory Schedule at the end of Part 3.

2.2 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, with No. 4 finish (satin), in 0.0312-inch (0.8-mm) minimum nominal thickness, unless otherwise indicated.

- B. Mirror Glass: ASTM C 1036, Type I, Class 1, Quality q2, nominal 6.0 mm thick, with silvering, electroplated copper coating, and protective organic coating complying with FS DD-M-411.

- C. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

- D. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.

2.3 FABRICATION

- A. General: One, maximum 1-1/2-inch- (38-mm-) diameter, unobtrusive stamped manufacturer logo, as approved by Architect, is permitted on exposed face of accessories. On interior surface not exposed to view or back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.
- B. General: Names or labels are not permitted on exposed faces of accessories. On interior surface not exposed to view or on back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.
- C. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.
- D. Recessed Toilet Accessories: Unless otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors and access panels with full-length, stainless-steel hinge. Provide anchorage that is fully concealed when unit is closed.
- E. Framed Glass-Mirror Units: Fabricate frames for glass-mirror units to accommodate glass edge protection material. Provide mirror backing and support system that permits rigid, tamper-resistant glass installation and prevents moisture accumulation.
 - 1. Provide galvanized steel backing sheet, not less than 0.034 inch (0.85 mm) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws. Set units level, plumb, and square at locations indicated, according to manufacturer's written instructions for substrate indicated.
- C. Install grab bars to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

3.3 TOILET AND BATH ACCESSORY SCHEDULE

- A. Paper Towel Dispenser: Where this designation is indicated, provide stainless-steel paper towel dispenser complying with the following:
1. Surface-Mounted Type: Sized for minimum of 300 C-fold or 400 multifold paper towels without using special adapters; with hinged front equipped with tumbler lockset; and with refill indicators that are pierced slots at sides or front.
- B. Toilet Tissue Dispenser : Where this designation is indicated, provide toilet tissue dispenser complying with the following:
1. Type **Double-roll dispenser with cover hinged at bottom and secured with vandal-resistant lockset.**
 2. Mounting: **Surface mounted with concealed anchorage**
 3. Material: **Stainless steel**
 4. Operation: **Noncontrol delivery with mfr's standard spindle**
 5. Capacity: **4-1/2- or 5-inch diameter-core tissue rolls**
- C. Grab Bar: Where this designation is indicated, provide stainless-steel grab bar complying with the following:
1. Stainless-Steel Nominal Thickness: Minimum **0.05 inch**
 2. Mounting: **[Concealed with manufacturer's standard flanges and anchors**
 3. Gripping Surfaces: **Manufacturer's standard slip-resistant texture**
 4. Outside Diameter: **1-1/2 inches**
- D. Mirror Unit: Where this designation is indicated, provide mirror unit complying with the following:
1. Mirror quality 1mm 304 Stainless Steel face
 2. Powder coated steel frame
 3. Recessed, tamper proof fixings
 4. 18 X 36 inches
- E. Underlavatory Guard: Where this designation is indicated, provide underlavatory guard complying with the following:
1. Insulating Piping Coverings: White, antimicrobial, molded-vinyl covering for supply and drain piping assemblies intended for use at accessible lavatories to prevent direct contact with and burns from piping. Provide components as required for applications indicated with flip tops at valves that allow service access without removing coverings.

END OF SECTION 10801

SECTION 11451 - APPLIANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Microwave ovens.
 - 2. Refrigerator
 - 3. Sink Disposal Unit
- B. Allowances: Furnish the following under the allowances indicated as specified in Division 1 Section "Allowances":
 - 1. Microwave
 - 2. Undercounter refrigerator.
 - 3. Sink Disposal Unit

1.3 SUBMITTALS

- A. Product Data: For each appliance type required indicating compliance with requirements. Include complete operating and maintenance instructions for each appliance.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is an authorized representative of the residential appliance manufacturer for both installation and maintenance of appliances required for this Project.
- B. Electrical Appliances: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- C. UL and NEMA Compliance: Provide electrical components required as part of residential appliances that are listed and labeled by UL and that comply with applicable NEMA standards.
- D. Energy Ratings: Provide residential appliances that carry labels indicating energy-cost analysis (estimated annual operating costs) and efficiency information as required by the Federal Trade Commission.

1.5 DELIVERY

- A. Deliver appliances only after utility rough-in is complete and construction in the spaces to receive appliances is substantially complete and ready for installation.

1.6 WARRANTIES

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the appliances indicated for each designation in the Residential Appliance Schedule at the end of Part 3.

2.2 APPLIANCES

- A. Microwave Oven: Freestanding microwave oven, listed by UL
- B. Undercounter Refrigerator/Freezer: Freestanding, single-door refrigerator, listed by UL
- C. Sink Disposal Unit

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for plumbing, mechanical, and electrical services, with Installer present, to verify actual locations of services before residential appliance installation.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written instructions.
- B. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

3.3 ADJUSTING AND CLEANING

- A. Test each item of residential appliances to verify proper operation. Make necessary adjustments.
- B. Verify that accessories required have been furnished and installed.
- C. Remove packing material from appliances and leave units in clean condition, ready for operation.

3.4 APPLIANCE SCHEDULE

A. Microwave Oven

- 1. Type: **Freestanding 1.5 CU. FT.** capacity microwave oven with **1000W.**
 - a. Controls: Solid-state, electronic, touch type.
 - b. Clock Type: Digital.
- 2. Standard features include the following:
 - a. Automatic defrost.
 - b. Child lockout feature.
 - c. Cooking complete reminder.
 - d. Turntable.

B. Undercounter Refrigerator

- 1. Type: Freestanding, **frost-free**
- 2. Refrigerator Storage Capacity
 - a. Fresh Food Compartment Volume: 5 Cu. Ft.
 - b. Freezer Compartment Volume 1 Cu. Ft.
- 3. Refrigerator Shelf: Two (2) glass, adjustable
- 4. Standard storage features include the following:
 - a. Fresh Food Compartment:
 - 1) **Can** container size door storage shelves.
 - 2) Vegetable crisper.
 - 3) Interior Lighting
 - b. Freezer Compartment:
 - 1) Door shelves.
 - 2) Ice storage bin.
 - 3) Two ice cube trays.
- 5. Finish: Porcelain enamel on steel.
 - a. Color: White

C. Sink Disposal Unit

1. Feed Type: Continuous
2. Horsepower: 1/2 HP, Single Phase

END OF SECTION 11451

SECTION 12372 - KITCHEN CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes wood and plastic-laminate-faced kitchen cabinets and countertops.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 11 Section "Appliances" for appliances mounted in kitchen casework.

1.3 DEFINITIONS

- A. Exposed Surfaces: Surfaces visible when drawers and opaque doors are closed; behind clear glass doors; bottoms of casework **43 inches** or more above finished floor.
- B. Semi-Exposed Surfaces: Surfaces which become visible when opaque doors are open or drawers are extended; bottoms of casework are more than **30 inches** and less than **42 inches** above finished floor.
- C. Concealed Surfaces: Surfaces considered concealed when surfaces not visible after installation; bottoms of casework less than **30 inches** above finished floor; tops of casework over **78 inches** above finished floor and not visible from an upper level; stretchers, blocking, and components concealed by drawers.
- D. Flush Overlay: Door and drawer faces cover cabinet frame with space between faces sufficient for operating clearance.

1.4 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Shop drawings for casework showing location and size, accessories, materials, finishes, and filler panels. Include fully dimensioned plans, elevations, and anchorage details to countertop and walls.
- C. Shop drawings for countertops showing sizes, shapes, edge and backsplash profiles, cutouts for plumbing fixtures, and methods of joining.

1.5 QUALITY ASSURANCE

- A. Kitchen Casework: Comply with ANSI/KCMA A161.1 and HUD "Minimum Property Standards," Housing 4910.1, paragraph 611-1.1.
 - 1. KCMA Certification: Provide kitchen casework with Kitchen Cabinet Manufacturers Association (KCMA) "Certified Cabinet" seal affixed in a semiexposed location of each unit, showing compliance with above standard.
- B. Single-Source Responsibility: Obtain kitchen casework from one source of a single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver casework as factory-assembled units, packaged individually.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Comply with casework manufacturer's written requirements for temperature and humidity conditions during storage and installation. Do not install casework until these conditions have been attained and stabilized.
- B. Field Measurements: Verify casework dimensions by field measurements. Verify kitchen casework can be installed in compliance with the original design and referenced standards.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Kitchen Casework:
 - a. Imperial Cabinet Co., Inc.
 - b. Merillat Ind., Inc.
 - c. Triangle Pacific Corp.
 - d. Yorktowne Cabinets.

2.2 CABINET MATERIALS, GENERAL

- A. Sizes, dimensions, and thicknesses as indicated in drawings.
- B. General: Provide materials that comply with requirements of the WIC quality standard for each type of woodwork and quality grade indicated, unless otherwise indicated.
 - 1. Medium-Density Fiberboard: ANSI A208.2.

- C. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated in the Work include, but are not limited to, the following:
 - a. Formica Corporation.
 - b. Laminart.
 - c. Nevamar Corp.
 - d. Pioneer Plastics Corp.
 - e. Westinghouse Electric Corp.; Specialty Products Div.
 - f. Ralph Wilson Plastics Co.
- D. Adhesive for Bonding Plastic Laminate: Contact cement.

2.6 PLASTIC LAMINATE FACE CASEWORK

- A. Face Style: Flush overlay.
- B. Face Frame: Frameless.
- C. Concealed Surfaces: Sound and dry Medium Density Fiberboard (MDF) without defects affecting strength, utility, or stability.
- D. Sides, Dividers, Tops, Bottoms, Shelves, and Stretchers: Plastic laminate GP 28 on [1/2-inch](#)-thick MDF. Provide stretchers for top of base cabinet.
- E. Back Panels: [1/8-inch](#)-thick MDF with thermoset decorative panels on interior surfaces fastened to rear edge of end panels and to top and bottom rails.
- F. Exposed Edge Treatment: Edge doors and drawer fronts with plastic laminate of same material as exposed faces.
- G. Semi-Exposed Edge Treatment: Edge top of drawer body with high-impact plastic tee edging. Edge remaining casework surfaces with plastic laminate GP 28 matching adjoining plastic laminate in color, pattern, and finish.
- H. Doors, Drawer Fronts, Fixed Panels, Toeboards, and Ends: Plastic laminate GP 50 on [5/8-inch](#)-thick MDF.
- I. Drawers: Fabricate with front, bottom, and back rabbeted in sides and secured with glue and mechanical fasteners as follows:
 1. fronts, Sides, and Backs: [1/4 inch](#)-thick MDF
 2. Bottoms: Not less than [1/4-inch](#)-thick MDF
 3. Drawer Suspension: Provide for a minimum capacity of **50 lbf**, with twin-track, side-mounted, drawer-glide suspension with nylon rollers. Provide self-closing feature and positive stop.
- J. Subbase: [3/4-inch](#)-thick.
- K. Toe Board: [5/8-inch](#)-thick attached to subbase with concealed fasteners.

2.7 CASEWORK HARDWARE

- A. General: Manufacturer's standard units complying with ANSI A156.9, of type, material, size, and finish as selected from manufacturer's standard choices.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install casework with no variations in flushness of adjoining surfaces using concealed shims. Where casework abuts other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match casework face.
- B. Install casework without distortion so that doors and drawers fit openings properly and are aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessories as indicated.
- C. Install casework level and plumb to a tolerance of [1/8 inch in 8 feet](#).
- D. Fasten unit of casework to adjacent unit and into structural support members of wall construction with #10 sheet metal or wood screws with washer head or washer.

3.2 ADJUSTING AND CLEANING

- A. Adjust hardware to center doors and drawers in openings and lubricate to provide unencumbered operation.
- B. Clean casework on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 12372

SECTION 12364 - STONE COUNTERTOPS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Stone countertops.
 - 2. Stone side and backsplashes.

1.2 REFERENCES

- A. ASTM C 119-04: Terminology Relating to Dimension Stone
- B. ASTM C 170-90 (1999): Test Method for Compressive Strength of Dimension Stone
- C. ASTM C 615-03: Specification for Granite Dimension Stone
- D. ASTM C 880-98: Test Method for Flexural Strength of Dimensional Stone

1.3 SUBMITTALS

- A. Product Data: For each [stone type,] stone accessory, and other manufactured products.
 - 1. Each stone type: Physical properties
- B. Shop Drawings: Include plans, sections, details, and attachments to other work. Show fabrication and installation details for dimension stone cladding:
 - 1. Include dimensions and profiles of stone units.
 - 2. Show locations and details of joints.
 - 3. Show locations and details of anchors and supports.
- C. Stone Samples: (2) Sets for each stone required, exhibiting the full range of color characteristics expected; not less than 12 inches square.
 - 1. Grout Samples: Full range of exposed color and texture.
 - 2. Sealant Samples: For each type and color of joint sealant required.
- D. Sealant Compatibility Test Report: Submit test report from sealant manufacturer, in accordance with Division 07 Section "Joint Sealants" stating that sealants will not stain stone.
- E. Maintenance Data: Provide maintenance manuals for stone countertops. Include stone-care products recommended by stone source

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Skilled workers who custom-fabricate stone countertops similar to work of this Project.
- B. Source Limitations for Stone: Obtain each variety of stone from a single quarry.
 - 1. Obtain each variety of stone from a single quarry, whether specified in this Section or in another Section of the Specifications.
 - 2. Make stone slabs available for Architect to examine for appearance characteristics. a. Architect will select aesthetically acceptable slabs and will indicate aesthetically unacceptable portions of slabs.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 STONE MATERIAL

A. Granite: ASTM C 615.

B. Cut stone from one block or contiguous, matched blocks in which natural markings occur.

C. Match Architect's samples.

D. Granite Type:

1. Location: Kitchen and Office Countertops
2. Finish: Polished
3. Thickness: Not less than the following:
 - b. 1-3/16 inches (+1/8" -1/16")

2.2 STONE ACCESSORIES

A. General: Use only adhesives formulated for stone and recommended by manufacturer for the application shown on Drawings.

B. Stone Adhesive: 2-part epoxy or polyester adhesive, formulated specifically for bonding stone to stone, with an initial set time of not more than 2 hours at 70 deg F, and with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Color: Match stone.

C. Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.

2.4 STONE FABRICATION, GENERAL

A. General: Fabricate stone per requirements, including Drawings and Shop Drawings.

1. Granite: NBGQA's "Specifications for Architectural Granite."

B. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.

1. Repairs that are characteristic of the varieties specified are acceptable provided they do not impair structural integrity or function and are not aesthetically displeasing, as judged by Architect.

C. Grade and mark stone for final locations to produce assembled countertop units with an overall uniform appearance.

D. Fabricate stone countertops in sizes and shapes required to comply with requirements indicated, including details on Drawings and Shop Drawings.

1. Clean sawed backs of stones to remove rust stains and iron particles.
2. Dress joints straight and at right angle to face, unless otherwise indicated.
3. Cut and drill sinkages and holes in stone for anchors, supports, and attachments.
4. Provide openings, reveals, and similar features as needed to accommodate adjacent work.
5. Fabricate molded edges with machines having abrasive shaping wheels made to reverse contour of edge profile to produce uniform shape throughout entire length of edge and with precisely formed arris slightly eased to prevent snipping, and matched at joints between units. Form corners of molded edges as indicated with outside corners slightly eased, unless otherwise indicated.
6. Finish exposed faces of stone to comply with requirements indicated for finish of each type of stone required and to match approved Samples and mockups. Provide matching finish on exposed edges of countertops, splashes, and cutouts.

E. Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

2.5 STONE COUNTERTOPS

A. General: Comply with recommendations in MIA's "Dimension Stone - Design Manual."

B. Nominal Thickness: Gage backs to provide units of identical thickness.

1. [1-3/16 inches (+1/8" -1/16")] [30 mm]

C. Edge: Straight, slightly eased at top.

D. Splashes: Provide 13/16 inch thick backsplashes and side splashes.

1. Height: As shown on Drawings.
2. Top-Edge Detail: Straight

E. Joints: Fabricate countertops in sections for joining in field, with joints at locations shown on Drawings and as follows:

1. Joints: 1/16 inch in width.

F. Cutouts and Holes:

1. Counter-Mounted Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations.
2. Fittings: Drill countertops in shop for plumbing fittings, counter mounted soap dispensers, and similar items.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates indicated to receive stone countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives. Allow stone to dry before installing.

3.3 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/16 inch in 48 inches.
- B. Variation from Level: Do not exceed 1/8 inch in 96 inches, 1/4 inch maximum.
- C. Variation in Joint Width: Do not vary joint thickness more than 1/4 of nominal joint width.
- D. Variation in Plane at Joints (Lipping): Do not exceed 1/64-inch difference between planes of adjacent units.
- E. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64-inch difference between edges of adjacent units, where edge line continues across joint.

3.4 INSTALLATION OF COUNTERTOPS

- A. Install countertops over plywood subtops with full spread of water-cleanable epoxy adhesive.
- B. Do not cut stone in field. If stone countertops or splashes require additional fabrication not specified to be performed at Project site, return to fabrication shop for adjustment.
- C. Set stone to comply with requirements shown on Drawings and Shop Drawings. Shim and adjust stone to location shown. Install countertops with uniform joints of widths shown and with edges and faces aligned.
- D. Bond joints with stone adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
- E. Space joints with 1/16-inch gap for filling with sealant. Use temporary shims to ensure uniform spacing.
- F. Install backsplash and end splash by adhering to wall with water-cleanable epoxy adhesive. Leave 1/16-inch gap between countertop and splash for filling with sealant. Use temporary shims to ensure uniform spacing.

G. Grout joints to comply with ANSI A108.10. Remove temporary shims before grouting. Tool grout uniformly and smoothly with plastic tool.

3.5 ADJUSTING AND CLEANING

A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.

B. Remove and replace stone countertops of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
2. Defective countertops.
3. Defective joints, including misaligned joints.
4. Interior stone countertops and joints not matching approved Samples and mockups.
5. Interior stone countertops not complying with other requirements indicated.

C. Replace in a manner that results in stone countertops matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.

D. Following installation and after sealants are cured, clean stone countertops using clean water and soft rags.

E. Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's instructions.

END OF SECTION 12364