SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION:

A. This section specifies wood blocking, framing, sheathing, furring, nailers, sub-flooring, rough hardware, and light wood construction.

1.2 RELATED WORK:

A. Sustainable design requirements: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.

B. Milled woodwork: Section 06 20 00, FINISH CARPENTRY.

C. Gypsum sheathing: Section 09 29 00, GYPSUM BOARD.

1.3 1.3 SUBMITTALS:

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Sustainable Design Submittals, as described below:
   1. Postconsumer and preconsumer recycled content as specified in PART 2 – PRODUCTS.
   2. Volatile organic compounds per volume as specified in PART 2 - PRODUCTS.
   3. For composite wood products, submit documentation indicating that product contains no added urea formaldehyde.

C. Shop Drawings showing framing connection details, fasteners, connections and dimensions.

D. Manufacturer’s Literature and Data:
   1. Submit data for lumber, panels, hardware and adhesives.
   2. Submit data for wood-preservative treatment from chemical treatment manufacturer and certification from treating plants that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
   3. Submit data for fire retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
   4. For products receiving a waterborne treatment, submit statement that moisture content of treated materials was reduced to levels specified before shipment to project site.

E. Manufacturer’s certificate for unmarked lumber.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Protect lumber and other products from dampness both during and after delivery at site.

B. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.

C. Stack plywood and other board products so as to prevent warping.

D. Locate stacks on well drained areas, supported at least 152 mm (6 inches) above grade and cover with well-ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

1.5 QUALITY ASSURANCE:

A. Installer: A firm with a minimum of three (3) years’ experience in the type of work required by this section.

1.6 GRADING AND MARKINGS:

A. Any unmarked lumber or plywood panel for its grade and species will not be allowed on VA Construction sites for lumber and material not normally grade marked, provide manufacturer's certificates (approved by an American Lumber Standards approved agency) attesting that lumber and material meet the specified the specified requirements.

1.7 APPLICABLE PUBLICATIONS:

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.

B. American Forest and Paper Association (AFPA):
NDS-15.....National Design Specification for Wood Construction
WCD1-01.....Details for Conventional Wood Frame Construction

C. American Institute of Timber Construction (AITC):
A190.1-07.....Structural Glued Laminated Timber

D. American Society of Mechanical Engineers (ASME):
B18.2.1-12(R2013).....Square and Hex Bolts and Screws
B18.2.2-10.....Square and Hex Nuts
B18.6.1-81(R2008).....Wood Screws

E. American Plywood Association (APA):
E30-11.....Engineered Wood Construction Guide

F. ASTM International (ASTM):
A653/A653M-13 .....Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process
C954-11.....Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs from 0.033 inch (2.24 mm) to 0.112-inch (2.84 mm) in thickness
C1002-14.....Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Metal Studs
D198-14.....Test Methods of Static Tests of Lumber in Structural Sizes
D2344/D2344M-13.....Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates
D2559-12a.....Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions
D3498-03(R2011) .....Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems
D6108-13.....Test Method for Compressive Properties of Plastic Lumber and Shapes
D6109-13.....Test Methods for Flexural Properties of Unreinforced and Reinforced Plastic Lumber and Related Products
D6111-13a.....Test Method for Bulk Density and Specific Gravity of Plastic Lumber and Shapes by Displacement
D6112-13.....Test Methods for Compressive and Flexural Creep and Creep-Rupture of Plastic Lumber and Shapes
F844-07a(R2013).....Washers, Steel, Plan (Flat) Unhardened for General Use

F1667-13 ..... Nails, Spikes, and Staples

G. American Wood Protection Association (AWPA):
AWPA Book of Standards

H. Commercial Item Description (CID):
A-A-55615 ..... Shield, Expansion (Wood Screw and Lag Bolt Self Threading Anchors)

I. Forest Stewardship Council (FSC):
FSC-STD-01-001(Ver. 4-0)FSC Principles and Criteria for Forest Stewardship

J. Military Specification (Mil. Spec.):
MIL-L-19140E..... Lumber and Plywood, Fire-Retardant Treated

K. Environmental Protection Agency (EPA):
40 CFR 59(2014) ..... National Volatile Organic Compound Emission Standards for Consumer and Commercial Products

L. Truss Plate Institute (TPI):
TPI-85..... Metal Plate Connected Wood Trusses

M. U.S. Department of Commerce Product Standard (PS)
PS 1-95 ..... Construction and Industrial Plywood

PS 20-10 ..... American Softwood Lumber Standard

N. ICC Evaluation Service (ICC ES):
AC09 ..... Quality Control of Wood Shakes and Shingles

AC174 ..... Deck Board Span Ratings and Guardrail Systems (Guards and Handrails)

PART 2 - PRODUCTS

2.1 LUMBER:

A. Unless otherwise specified, each piece of lumber must bear grade mark, stamp, or other identifying marks indicating grades of material, and rules or standards under which produced.
   1. Identifying marks are to be in accordance with rule or standard under which material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
   2. Inspection agency for lumber approved by the Board of Review, American Lumber Standards Committee, to grade species used.

B. Structural Members: Species and grade as listed in the AFPA NDS having design stresses as shown.

C. Lumber Other Than Structural:
   1. Unless otherwise specified, species graded under the grading rules of an inspection agency approved by Board of Review, American Lumber Standards Committee.
   2. Framing lumber: Minimum extreme fiber stress in bending of 7584 kPa (1100 PSI).
   3. Furring, blocking, nailers and similar items 101 mm (4 inches) and narrower Standard Grade; and, members 152 mm (6 inches) and wider, Number 2 Grade.
   4. Board Sub-flooring: Shiplap edge, 25 mm (1 inch) thick, not less than 203 mm (8 inches) wide.

D. Sizes:
   1. Conforming to PS 20.

2. Size references are nominal sizes, unless otherwise specified, actual sizes within manufacturing tolerances allowed by standard under which produced.

E. Moisture Content:
1. Maximum moisture content of wood products is to be as follows at the time of delivery to site.
   a. Boards and lumber 50 mm (2 inches) and less in thickness: 19 percent or less.
   b. Lumber over 50 mm (2 inches) thick: 25 percent or less.

F. Fire Retardant Treatment:
1. Comply with Mil Spec. MIL-L-19140.
2. Treatment and performance inspection, by an independent and qualified testing agency that establishes performance ratings.

G. Preservative Treatment:
1. Do not treat Heart Redwood and Western Red Cedar.
2. Treat wood members and plywood exposed to weather or in contact with plaster, masonry or concrete, including framing of open roofed structures; sills, sole plates, furring, and sleepers that are less than 610 mm (24 inches) from ground; nailers, edge strips, blocking, crickets, curbs, cant, vent strips and other members provided in connection with roofing and flashing materials.
3. Treat other members specified as preservative treated (PT).
4. Preservative treat by the pressure method complying with AWPA Book use category system standards U1 and T1, except any process involving the use of Chromated Copper Arsenate (CCA) or other agents classified as carcinogenic for pressure treating wood is not permitted.

2.2 PLASTIC LUMBER:

A. General:
1. Allowable loads and spans, as documented in evaluation reports or in information referenced in evaluation reports, are not to be less than design loads and spans indicated on contract documents.
2. Restricted to exterior use only.

B. Composite Plastic Lumber: Shapes made from a mixture of cellulose fiber and polyethylene or polypropylene.
1. Provide lumber with a minimum of 75 percent recycled content with a minimum of 25 percent post-consumer recycled content.
2. Shear Parallel to Length: Maximum 6894 kPa (1,000 psi) in accordance with ASTM D2344/D2344M.
3. Density: ASTM D6111.
4. Compressive Strength:
   a. Secant Modulus: Minimum 482,633 kPa (70,000 psi) in accordance with ASTM D6108.
   b. Stress at 3 percent strain: Minimum 10,342 kPa (1,500 psi) in accordance with ASTM D6108.
   c. Compression Parallel to Grain: Minimum 20,684 kPa (3,000 psi) in accordance with ASTM D6112.
   d. Compression Perpendicular to Grain: Minimum 6,894 kPa (1,000 psi) in accordance with ASTM D6112.
5. Flexural Strength: Minimum 13,789 kPa (2,000 psi) in accordance with ASTM D6109.
6. Tensile Strength: Minimum 8618 kPa (1,250 psi) in accordance with ASTM D198.
7. Surface Texture: Smooth.
8. Color: White.

C. All-Plastic Lumber: Shapes made from high-density polyethylene (HDPE), PVC, polystyrene, or cellular PVC with no cellulose fiber.

1. Provide lumber with a minimum of 75 percent recycled content with a minimum of 25 percent of post-consumer recycled content.
2. Shear Parallel to Length: Maximum 6,894 kPa (1,000 psi) in accordance with ASTM D2344/D2344M.
3. Density: ASTM D6111.
4. Compressive Strength:
   a. Secant Modulus: Minimum 482,633 kPa (70,000 psi) in accordance with ASTM D6108.
   b. Stress at 3 percent strain: Minimum 10,342 kPa (1,500 psi) in accordance with ASTM D6108.
   c. Compression Parallel to Grain: Minimum 20,684 kPa (3,000 psi) in accordance with ASTM D6112.
   d. Compression Perpendicular to Grain: Minimum 6,894 kPa (1,000 psi) in accordance with ASTM D6112.
5. Flexural Strength: Minimum 13,789 kPa (2,000 psi) in accordance with ASTM D6109.
6. Tensile Strength: Minimum 8618 kPa (1,250 psi) in accordance with ASTM D198.
7. Surface Texture: Smooth.
8. Color: White.

2.3 PLYWOOD:

A. Comply with PS 1.

B. Bear the mark of a recognized association or independent inspection agency that maintains continuing control over quality of plywood which identifies compliance by veneer grade, group number, span rating where applicable, and glue type.

C. Sheathing:
1. APA rated Exposure 1 or Exterior; panel grade CD or better.
2. Wall sheathing:
   a. Minimum 9 mm (11/32 inch) thick with supports 406 mm (16 inches) on center and 12 mm (15/32 inch) thick with supports 610 mm (24 inches) on center unless specified otherwise.
   b. Minimum 1200 mm (48 inches) wide at corners without corner bracing of framing.
3. Roof sheathing:
   a. Minimum 9 mm (11/32 inch) thick with span rating 24/0 or 12 mm (15/32 inch) thick with span rating for supports 406 mm (16 inches) on center unless specified otherwise.
   b. Minimum 15 mm (19/32 inch) thick or span rating of 40/20 or 18 mm (23/32 inch) thick or span rating of 48/24 for supports 610 mm (24 inches) on center.

D. Underlayment:
1. APA rated Exposure 1 or Exterior, panel grade C-C Plugged.
2. Minimum 6 mm (1/4 inch) thick or greater over plywood subflooring and 9 mm (3/8 inch) thick or greater over board subflooring, unless otherwise shown.

2.4 STRUCTURAL-USE PANELS:

A. Comply with APA E30.

B. Bearing the mark of a recognized association or independent agency that maintains continuing control over quality of panel which identifies compliance by end use, Span Rating, and exposure durability classification.

C. Wall and Roof Sheathing:
1. APA Rated sheathing panels, durability classification of Exposure 1 or Exterior Span Rating of 16/0 or greater for supports 406 mm (16 inches) on center and 24/0 or greater for supports 610 mm (24 inches) on center.

D. Underlayment:

1. APA rated Exposure l.
2. Minimum 6 mm (1/4 inch) thick or greater over subfloor.

2.5 ROUGH HARDWARE AND ADHESIVES:

A. Anchor Bolts:
   1. ASME B18.2.1 and ASME B18.2.2 galvanized, 13 mm (1/2 inch) unless shown otherwise.
   2. Extend at least 203 mm (8 inches) into masonry or concrete with ends bent 50 mm (2 inches).

B. Miscellaneous Bolts: Expansion Bolts: C1D A-A-55615; lag bolt, long enough to extend at least 65 mm (2-1/2 inches) into masonry or concrete. Provide 13 mm (1/2 inch) bolt unless shown otherwise.

C. Washers
   1. ASTM F844.
   2. Provide zinc or cadmium coated steel or cast iron for washers exposed to weather.

D. Screws:
   1. Wood to Wood: ASME B18.6.1 or ASTM C1002.
   2. Wood to Steel: ASTM C954, or ASTM C1002.

E. Nails:
   1. Size and type best suited for purpose unless noted otherwise. Provide aluminum-alloy nails, plated nails, or zinc-coated nails, for nailing wood work exposed to weather and on roof blocking.
   2. ASTM F1667:
      a. Common: Type I, Style 10.
      b. Concrete: Type I, Style 11.
      c. Barbed: Type I, Style 26.
      d. Underlayment: Type I, Style 25.
      e. Masonry: Type I, Style 27.
      f. Provide special nails designed for use with ties, strap anchors, framing connectors, joists hangers, and similar items. Nails not less than 32 mm (1-1/4 inches) long, 8d and deformed or annular ring shank.

F. Framing and Timber Connectors:
   1. Fabricate of ASTM A653/A653M, Grade A; steel sheet not less than 1.3 mm (0.052 inch) thick unless specified otherwise. Apply standard plating to steel timber connectors after punching, forming and assembly of parts.
   2. Framing Angles: Angle designed with bendable legs to provide three (3) way anchors.
   3. Straps:
      a. Designed to provide wind and seismic ties with sizes as shown or specified.
      b. Strap ties not less than 32 mm (1-1/4 inches) wide.
      c. Punched for fastener.
   4. Timber Connectors: Fabricated of steel to shapes indicated on contract drawings.

G. Adhesives:
   1. For field-gluing plywood to lumber framing floor or roof systems: ASTM D3498.
   2. For structural laminated Wood: ASTM D2559.
   3. Adhesives to have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, (EPA Method 24).

PART 3 - EXECUTION

3.1 INSTALLATION OF FRAMING AND MISCELLANEOUS WOOD MEMBERS:

A. Conform to applicable requirements of the following:

1. AFPA NDS for timber connectors.
2. AITC A190.1 Timber Construction Manual for heavy timber construction.
3. AFPA WCD1 for nailing and framing unless specified otherwise.
4. APA for installation of plywood or structural use panels.
5. TPI for metal plate connected wood trusses.

B. Fasteners:
   1. Nails.
      a. Nail in accordance with the Recommended Nailing Schedule as specified in AFPA WCD1 where detailed nailing requirements are not specified in nailing schedule. Select nail size and nail spacing sufficient to develop adequate strength for the connection without splitting the members.
      b. Use special nails with framing connectors.
      c. For sheathing and subflooring, select length of nails sufficient to extend 25 mm (1 inch) into supports.
      d. Use 8d or larger nails for nailing through 25 mm (1 inch) thick lumber and for toe nailing 50 mm (2 inch) thick lumber.
      e. Use 16d or larger nails for nailing through 50 mm (2 inch) thick lumber.
      f. Select the size and number of nails in accordance with the Nailing Schedule except for special nails with framing anchors.
      g. Nailing Schedule; Using Common Nails:
         1) Joist bearing on sill or girder, toe nail three (3) 8d nails or framing anchor.
         2) Bridging to joist, toe nail each end two (2) 8d nails.
         3) Ledger strip to beam or girder three (3) 16d nails under each joint.
         4) Subflooring or Sheathing:
            a) 152 mm (6 inch) wide or less to each joist face nail two (2) 8d nails.
            b) Subflooring, more than 152 mm (6 inches) wide, to each stud or joint, face nail three (3) 8d nails.
            c) Plywood or structural use panel to each stud or joist face nail 8d, at supported edges 152 mm (6 inches) on center and at intermediate supports 254 mm (10 inches) on center. When gluing plywood to joint framing increase nail spacing to 305 mm (12 inches) at supported edges and 508 mm (20 inches) o.c. at intermediate supports.
         5) Sole plate to joist or blocking, through sub floor face nail 20d nails, 406 mm (16 inches) on center.
         6) Top plate to stud, end nail two (2) 16d nails.
         7) Stud to sole plate, toe nail or framing anchor. Four (4) 8d nails.
         8) Doubled studs, face nail 16d at 610 mm (24 inches) on center.
         9) Built-up corner studs 16d at 610 mm (24 inches) (24 inches) on center.
         10) Doubled top plates, face nails 16d at 406 mm (16 inches) on center.
         11) Top plates, laps, and intersections, face nail two (2) 16d.
         12) Continuous header, two pieces 16d at 406 mm (16 inches) on center along each edge.
         13) Ceiling joists to plate, toenail three (3) 8d or framing anchor.
         14) Continuous header to stud, four (4) 16d.
         15) Ceiling joists, laps over partitions, face nail three (3) 16d or framing anchor.
         16) Ceiling joists, to parallel rafters, face nail three (3) 16d.
         17) Rafter to plate, toe nail three (3) 8d or framing anchor. Brace 25 mm (1 inch) thick board to each stud and plate, face nail three (3) 8d.
         18) Built-up girders and beams 20d at 812 mm (32 inches) on center along each edge.
   2. Bolts:
      a. Fit bolt heads and nuts bearing on wood with washers.
      b. Countersink bolt heads flush with the surface of nailers.

c. Embed in concrete and solid masonry or provide expansion bolts. Special bolts or screws designed for anchor to solid masonry or concrete in drilled holes may be used.
d. Provide toggle bolts to hollow masonry or sheet metal.
e. Provide bolts to steel over 2.84 mm (0.112 inch, 11 gage) in thickness. Secure wood nailers to vertical structural steel members with bolts, placed one at ends of nailer and 610 mm (24 inch) intervals between end bolts. Provide clips to beam flanges.

3. Drill Screws to steel less than 2.84 mm (0.112 inch) thick.
   a. ASTM C1002 for steel less than 0.84 mm (0.033 inch) thick.
   b. ASTM C954 for steel over 0.84 mm (0.033 inch) thick.
4. Power actuated drive pins may be provided where practical to anchor to solid masonry, concrete, or steel.
5. Do not anchor to wood plugs or nailing blocks in masonry or concrete. Provide metal plugs, inserts or similar fastening.
6. Screws to Join Wood:
   a. Where shown or option to nails.
   b. ASTM C1002, sized to provide not less than 25 mm (1 inch) penetration into anchorage member.
   c. Spaced same as nails.
7. Installation of Timber Connectors:
   a. Conform to applicable requirements of the AFPA NDS.
   b. Fit wood to connectors and drill holes for fasteners so wood is not split.
8. Install plastic lumber with stainless steel bolts or screws; if nails are used use stainless steel spiral shank or ring shank type.

C. Set sills or plates level in full bed of mortar on masonry or concrete walls.
1. Space anchor bolts 1219 mm (4 feet) on centers between ends and within 152 mm (6 inches) of end. Stagger bolts from side to side on plates over 178 mm (7 inches) in width.
2. Provide shims of slate, tile or similar approved material to level wood members resting on concrete or masonry. Do not use wood shims or wedges.
3. Closely fit, and set to required lines.

D. Cut notch, or bore in accordance with AFPA WCD1 passage of ducts wires, bolts, pipes, conduits and to accommodate other work. Repair or replace miscut, misfit or damaged work.

E. Blocking Nailers, and Furring:
1. Install furring, blocking, nailers, and grounds where shown.
2. Provide longest lengths practicable.
3. Provide fire retardant treated wood blocking where shown at openings and where shown or specified.
4. Layers of Blocking or Plates:
   a. Stagger end joints between upper and lower pieces.
   b. Nail at ends and not over 610 mm (24 inches) between ends.
   c. Stagger nails from side to side of wood member over 127 mm (5 inches) in width.
5. Fabricate roof edge vent strips with 6 mm by 6 mm (1/4 inch by 1/4 inch) notches, 101 mm (4 inches) on center, aligned to allow for venting of and venting base sheet. Option: Texture 1-11 plywood with parallel grooves 101 mm (4 inches) o.c. may be used.
6. Unless otherwise shown, provide wall furring 25 mm by 75 mm (1 inch by 3 inch) continuous wood strips installed plumb on walls, using wood shims where necessary so face of furring forms a true, even plane. Space furring not over 406 mm (16 inches) on centers, butt joints over bearings and rigidly secure in place. Anchor furring on 406 mm (16 inches) centers.

F. Rough Bucks:
1. Install rough wood bucks at opening in masonry or concrete where wood frames or trim occur.

2. Brace and maintain bucks plumb and true until masonry has been built around them or concrete cast in place.
3. Cut rough bucks from 50 mm (2 inch) thick stock, of same width as partitions in which they occur and of width shown in exterior walls.
4. Extend bucks full height of openings and across head of openings; fasten securely with anchors specified.

G. Underlayment:
1. Where finish flooring of different thickness is used in adjoining areas, provide underlayment of thickness required to bring finish-flooring surfaces into same plane.
2. Apply to dry, level, securely nailed, clean, wood subfloor without any projections.
3. Plywood and particle underlayment are to be glue-nailed to subfloor.
4. Butt underlayment panels to a light contact with a 1 mm (1/32 inch) space between plywood or hardboard underlayment panels and walls, and approximately 9 mm (3/8 inch) between particleboard underlayment panels and walls.
5. Stagger underlayment panel end joints with respect to each other and offset joints with respect to joints in the subfloor at least 50 mm (2 inches).
6. After installation, avoid traffic on underlayment and damage to the finish surface.

H. Sheathing:
1. Provide plywood or structural-use panels for sheathing.
2. Lay panels with joints staggered, with edge and ends 3 mm (1/8 inch) apart and nailed over bearings as specified.
3. Set nails not less than 9 mm (3/8 inch) from edges.
4. Install 50 mm by 101 mm (2 inch by 4 inch) blocking spiked between joists, rafters and studs to support edge or end joints of panels.

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SECTION 06 20 00

FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Interior millwork for family prayer rooms (chapel) in hospitals.

B. Items specified:
   1. Counter Shelf.
   2. Wall Paneling.
   3. Mounting Strips, Shelves, and Rods.
   4. Chair Rail.
   5. Moldings and Staff Beads.

1.2 RELATED REQUIREMENTS

A. Adhesive, Paint, and Finish VOC Limits: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.

B. Woodwork Finish and Color: See Construction documents..

C. Fabricated Metal brackets, bench supports and countertop legs: Section 05 50 00, METAL FABRICATIONS.

D. Framing, furring and blocking: Section 06 10 00, ROUGH CARPENTRY.

E. Wood doors: Section 08 14 00, WOOD DOORS.

F. Color and texture of finish: See Construction documents..

G. Stock Casework: Section 12 32 00, MANUFACTURED WOOD CASEWORK.

H. Other Countertops: Division 11, EQUIPMENT and Division 12, FURNISHINGS.

I. Electrical light fixtures and duplex outlets: Division 26, ELECTRICAL.

1.3 APPLICABLE PUBLICATIONS

A. Comply with references to extent specified in this section.

B. ASTM International:
   1. A36/A36M-14 - Carbon Structural Steel.
   2. A53/A53M-12 - Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.
   3. A240/A240M-15b - Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
   4. B26/B26M-14e1 - Aluminum-Alloy Sand Castings.
   5. B221-14 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
   6. E84-15b - Surface Burning Characteristics of Building Materials.

C. American Hardboard Association (AHA):
   1. A135.4-04 - Basic Hardboard.

D. Architectural Woodwork Institute (AWI):
   1. AWI-09 - Architectural Woodwork Quality Standards and Quality Certification Program.

E. Builders Hardware Manufacturers Association (BHMA):
   1. A156.9-10 - Cabinet Hardware.
   2. A156.11-14 - Cabinet Locks.

3. A156.16-13 - Auxiliary Hardware.

F. Federal Specifications (Fed. Spec.):
1. A-A-1922A - Shield Expansion (Calking Anchors, Single Lead).
2. A-A-1936A - Adhesive, Contact, Neoprene Rubber.
3. FF-N-836E- Nut: Square, Hexagon, Cap, Slotted, Castle, Knurled, Welding.
4. FF-S-111D(1) - Screw, Wood (Notice 1 inactive for new design).
5. MM-L-736C(1) - Lumber, Hardwood.

G. Hardwood Plywood and Veneer Association (HPVA):
1. HP1-09 - Hardwood and Decorative Plywood.

H. Military Specification (Mil. Spec):
1. MIL-L-19140E - Lumber and Plywood, Fire-Retardant Treated.

I. National Particleboard Association (NPA):
1. A208.1-09 - Wood Particleboard.

J. National Electrical Manufacturers Association (NEMA):
1. LD 3-05 - High-Pressure Decorative Laminates.

K. U.S. Department of Commerce, Product Standard (PS):
1. PS1-07 - Construction and Industrial Plywood.
2. PS20-10 - American Softwood Lumber Standard.

1.4 PREINSTALLATION MEETINGS

A. Conduct preinstallation meeting at project site minimum 30 days before beginning Work of this section.
1. Required Participants:
   a. Contracting Officer's Representative.
   b. Architect/Engineer.and Interior Designer.
   c. VA Interior Designer.
   d. Contractor.
   e. Installer.
2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.
   a. Installation schedule.
   b. Installation sequence.
   c. Preparatory work.
   d. Protection before, during, and after installation.
   e. Installation.
   f. Terminations.
   g. Transitions and connections to other work.
   h. Other items affecting successful completion.
3. Document and distribute meeting minutes to participants to record decisions affecting installation.

1.5 SUBMITTALS

A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Submittal Drawings:
1. Show size, configuration, and fabrication and installation details.
2. Millwork items - Half full size scale for sections and details 1: 50 (1/4 inch) for elevations and plans.

C. Manufacturer's Literature and Data:
1. Description of each product.
   a. Finish hardware.
   b. Sinks with fittings.

c. Electrical components.
2. List of acceptable sealers for fire retardant materials.
3. Installation instructions.

D. Samples:
1. Plastic Laminate Finished Plywood and Particleboard: 150 mm by 300 mm (6 by 12 inches) long square, each type and color.
a. Submit quantity required to show full color and texture range.
2. Approved samples may be incorporated into work.

E. Sustainable Construction Submittals:
1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
2. Low Pollutant-Emitting Materials:
a. Show volatile organic compound types and quantities.
b. Certify each composite wood and agrifiber product contains no added urea formaldehyde.

F. Certificates: Certify each product complies products comply with specifications.
1. Fire retardant treatment of materials.
2. Moisture content of materials.

G. Qualifications: Substantiate qualifications comply with specifications.
1. Fabricator with project experience list.
2. Installer with project experience list.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications:
1. Regularly fabricates specified products.
2. Fabricated specified products with satisfactory service on five similar installations for minimum five years.
a. Project Experience List: Provide contact names and addresses for completed projects.

B. Installer Qualifications:
1. Regularly installs specified products.
2. Installed specified products with satisfactory service on five similar installations for minimum five years.
a. Project Experience List: Provide contact names and addresses for completed projects.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's original sealed packaging.

B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, color, production run number, and manufacture date.

C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

D. Store products indoors in dry, weathertight conditioned facility.

E. Protect products from damage during handling and construction operations.

1.8 FIELD CONDITIONS

A. Environment:
1. Product Temperature: Minimum 21 degrees C (70 degrees F) for minimum 48 hours before installation.

2. Work Area Ambient Conditions: HVAC systems are complete, operational, and maintaining facility design operating conditions continuously, beginning 48 hours before installation until Government occupancy.
3. Install products when building is permanently enclosed and when wet construction is completed, dried, and cured.
4. Do not install finish lumber or millwork in any room or space where wet process systems such as concrete, masonry, or plaster work is not complete and dry.

B. Field Measurements: Verify field conditions affecting fabrication and installation. Show field measurements on Submittal Drawings.
1. Coordinate field measurement and fabrication schedule to avoid delay.

1.9 WARRANTY

A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

PART 2 - PRODUCTS

2.1 SYSTEM PERFORMANCE

A. Design acoustical panel complying with specified performance:
1. Surface Burning Characteristics: When tested according to ASTM E84.
a. Flame Spread Rating: 25 maximum.
b. Smoke Developed Rating: 450 maximum.

2.2 MATERIALS

A. Grading and Marking: Factory mark with grade stamp lumber and plywood of inspection agency approved by the Board of Review, American Lumber Standard Committee.

B. Lumber:
1. Sizes:
a. Lumber Size references, unless otherwise specified, are nominal sizes, and actual sizes within manufacturing tolerances allowed by the standard under which product is produced.
b. Millwork, standing and running trim, and rails: Actual size as shown or specified.
2. Hardwood: MM-L-736, species as specified for each item.
3. Softwood: PS-20, exposed to view appearance grades:
a. Use C select or D select, vertical grain for transparent finish including stain transparent finish.
b. Use Prime for painted or opaque finish.
4. Use edge grain Wood members exposed to weather.
5. Moisture Content:
a. 32 mm (1-1/4 inches) or less nominal thickness: 12 percent on 85 percent of the pieces and 15 percent on the remainder.
b. Other materials: According to standards under which the products are produced.
6. Fire Retardant Treatment: Mil. Spec. MIL-L-19140E.
a. Treatment and performance inspection by an independent and qualified testing agency that establishes performance ratings.
b. Each piece of treated material bear identification of the testing agency and indicate performance according to such rating of flame spread and smoke developed.
c. Treat wood for maximum flame spread of 25 and smoke developed of 25.
d. Fire Resistant Softwood Plywood:
1) Grade A, Exterior, plywood for treatment.
2) Surface Burning Characteristics: When tested according to ASTM E84.
a) Flame spread: 0 to 25.
b) Smoke developed: 100 maximum.
e. Fire Resistant Hardwood Plywood:

1) Core: Fire retardant treated softwood plywood.
2) Hardwood face and back veneers untreated.
3) Factory seal panel edges.

C. Plywood:
1. Softwood Plywood: DOC PS1.
a. Plywood, 13 mm (1/2 inch) and thicker; minimum five ply construction, except 32 mm (1-1/4 inch) thick plywood minimum seven ply.
b. Plastic Laminate Plywood Cores:
1) Exterior Type, and species group.
2) Veneer Grade: A-C.
c. Shelving Plywood:
1) Interior Type, any species group.
2) Veneer Grade: A-B or B-C.
d. Other: As specified for item.

D. Plastic Laminate: NEMA LD-3.
1. Exposed Laminate Surfaces including Countertops, and Sides of Cabinet Doors: Grade HGL.
2. Cabinet Interiors including Shelving: NEMA, CLS as a minimum, with the following:
a. Plastic laminate clad plywood or particle board.
b. Resin impregnated decorative paper thermally fused to particle board.
3. Plastic Laminate Covered Wood Tops Backing: Grade HGP.
4. Postformed Surfaces: Grade HGP.

E. Stainless Steel: ASTM A240, Type 302 or 304.

F. Cast Aluminum: ASTM B26.

G. Extruded Aluminum: ASTM B221.

2.3 PRODUCTS - GENERAL

A. Provide each product from one manufacturer and from one production run.

B. Sustainable Construction Requirements:
1. Low Pollutant-Emitting Materials: Comply with VOC limits specified in Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS for the following products:
a. Non-flooring adhesives and sealants.
b. Aerosol adhesives.
c. Paints and coatings.
d. Wall base and accessories.
e. Composite wood and agrifiber.

C. Acoustical Panel: Fabric-covered glass fiber panel.
1. NRC 19 mm (3/4 inch) adhesive mounting direct to substrate.
2. Glass Fiber Panel: 25 mm (1 inch) thick minimum, self-supporting of density required for minimum NRC.
3. Fabric: Bonded directly to glass fiber panel face, flat wrinkle-free surface, stain and soil resistant.
4. Adhesive: As recommended by panel manufacturers.

2.4 FABRICATION

A. General:
1. AWI Custom Grade for interior millwork.
2. Finish woodwork, free from pitch pockets.
3. Trim, standard stock molding and members of same species, except where special profiles are shown.
4. Plywood, minimum 13 mm (1/2 inch), unless otherwise shown on Drawings or specified.

5. Edges of members in contact with concrete or masonry having a square corner caulking rebate.
6. Fabricate members less than 4 m (14 feet) in length from one piece of lumber, back channeled and molded a shown.
7. Fabricate interior trim and items of millwork to be painted from jointed, built-up, or laminated members, unless otherwise shown on Drawings or specified.
8. Plastic Laminate Work:
   a. Factory glued to either a plywood or a particle board core, thickness as shown on Drawings or specified.
   b. Cover exposed edges with plastic laminate, except where aluminum, stainless steel, or plastic molded edge strips are shown on drawings or specified. Use plastic molded edge strips on 19 mm (3/4 inch) thick or thinner core material.
   c. Provide plastic backing sheet on underside of countertops, vanity tops, thru-wall counter and sills including back splashes and end splashes of countertops.
   d. Use backing sheet on concealed large panel surface when decorative face does not occur.

B. Mounting Strips, Shelves and Rods:
1. Cut mounting strips from softwood stocks, 25 mm by 100 mm (1 by 4 inches), exposed edge slightly rounded.
2. Cut wood shelf from softwood 1 inch stock, of width shown, exposed edge slightly rounded.
   a. Option: Provide 19 mm (3/4 inch) thick plywood with 19 mm (3/4 inch) softwood edge nosing on exposed edge, slightly rounded.
3. Plastic laminate cover, 19 mm (3/4 inch) thick plywood or particle board core with plastic molded edge and end strips. Size, finish and number as shown on Drawings.
4. Rod or Closet Bar: L03131.
5. Combination Garment and Shelf Support, Intermediate Support for Closet Bar: B04051 for rods over 1800 mm (6 feet) long.

C. Plastic Laminate Counter or Work Tops:
1. Thickness: 32 mm (1-1/4 inch) thick core unless shown otherwise.
   a. Edges:
      1) Decorative laminate for exposed edges of tops, back, and endsplash, 38 mm (1-1/2 inches) wide.
      2) Plastic or metal edges for top edges less than 38 mm (1-1/2 inches) wide.
   b. Assemble backsplash and end splash to counter top.
   c. Use one piece counters for straight runs.
   d. Miter corners for field joints with overlapping blocking on underside of joint.
2. Fabricate wood counter for work benches as shown on Drawings.

D. Wood Handrails:
1. AWI Premium Grade.
2. Species: Maple or Birch.
3. Fabricate in one piece and one length when practical.
4. Fabricate curved sections for ends of rails to return to wall and where rails change slope or direction.
5. Joints are permitted only where rail changes direction or slope, or where necessary for field erection or shipping.
6. Scarf or dowel all joints to provide a smooth and rigid connection. Glue all joints.
7. Fit joints, to produce a hair-line crack.
8. Completely shop fabricated according to approved shop drawings.

2.5 ACCESSORIES

A. Hardware:
1. Rough Hardware:

a. Provide rough hardware with a standard plating, applied after punching, forming and assembly of parts; galvanized, cadmium plated, or zinc-coated by electric-galvanizing process. Galvanized where specified.
b. Fasteners:
1) Bolts with Nuts: FF-N-836.
2) Expansion Bolts: A-A-1922A.
3) Screws: Fed. Spec. FF-S-111.

2. Finish Hardware:
a. Cabinet Hardware: ANSI A156.9.
1) Door/Drawer Pulls: B02011. Door in seismic zones: B03182.
2) Drawer Slides: B05051 for drawers over 150 mm (6 inches) deep, B05052 for drawers 75 mm to 150 mm (3 to 6 inches) deep, and B05053 for drawers less than 75 mm (3 inches) deep.
3) Sliding Door Tracks: B07063.
4) Adjustable Shelf Standards: B4061 with shelf rest B04083.
5) Concealed Hinges: B1601, minimum 110 degree opening.
6) Butt Hinges: B01361, for flush doors, B01381 for inset lipped doors, and B01521 for overlay doors.
7) Cabinet Door Catch: B0371 or B03172.
8) Vertical Slotted Shelf Standard: B04103 with shelf brackets B04113, sized for shelf depth.
b. Cabinet Locks: ANSI A156.11.
1) Drawers and Hinged Door: E07262.
2) Sliding Door: E07162.
c. Auxiliary Hardware: ANSI A156.16.
1) Shelf Bracket: B04041, japanned or enameled finish.
2) Combination Garment rod and Shelf Support: B04051 japanned or enamel finish.
3) Closet Bar: L03131 chrome finish of required length.
4) Handrail Brackets: L03081 or L03101.
a) Cast Aluminum, satin polished finish.
b) Cast Malleable Iron, japanned or enamel finish.
d. Steel Channel Frame and Leg supports for Counter top. Fabricated under Section 05 50 00, METAL FABRICATIONS.
e. Fabricated Wall Bench Supports:
1) Steel Angles: ASTM A36 steel with chrome finish, or ASTM A167, stainless steel with countersunk wood screws, holes at 64 mm (2-1/2 inches) on center on horizontal member.
2) Use 38 mm by 38 mm by 5 mm (1-1/2 by 1-1/2 by 3/16 inch) angle thick drilled for screw and bolt holes unless shown otherwise. Drill 6 mm (1/4 inch) holes for anchors on vertical member, maximum 200 mm (8 inches) on center between ends or corners.
3) Stainless Steel Bars Brackets: ASTM A167, fabricated to shapes shown on Drawings, Number 4 finish. Provide 50 mm by 5 mm (2 inch by 3/16 inch) bars unless shown otherwise. Drill for anchors and screws. Drill countersunk wood screw holes at 64 mm (2-1/2 inches) on center on horizontal members and minimum two 13 mm (1/4 inch) hole for anchors on vertical member.
f. Rubber or Vinyl molding:
1) Rubber or vinyl standard stock and in longest lengths practicable.
2) Design for closures at joints with walls and adhesive anchorage.
3) Adhesive as recommended by molding manufacturer.
g. Primers: Manufacturer's standard primer for steel providing baked enamel finish.

B. Adhesive:
1. Plastic Laminate: Fed. Spec. A-A-1936.

2. Interior Millwork: Unextended urea resin, unextended melamine resin, phenol resin, or resorcinol resin.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine and verify substrate suitability for product installation.

B. Protect existing construction and completed work from damage.

C. Clean substrates. Remove contaminants capable of affecting subsequently installed product's performance.

3.2 INSTALLATION

A. Installation:
1. Prime millwork receiving transparent finish and back-paint concealed surfaces.
2. Fasten trim with fine finishing nails, screws, or glue as required.
3. Set nails for putty stopping. Provide washers under bolt heads where no other bearing plate occurs.
4. Seal cut edges of fire retardant treated wood materials with a certified acceptable sealer.
5. Coordinate with plumbing and electrical work for installation of fixtures and service connections in millwork items.
6. Plumb and level items unless shown otherwise.
7. Nail finish at each blocking, lookout, or other nailer and intermediate points; toggle or expansion bolt in place where nails are not suitable.
8. Apply adhesive uniformly for full contact between wainscot and substrate.

B. Shelves:
1. Install mounting strip at back wall and end wall for shelves in closets where shown secured with toggle bolts at each end, not over 600 mm (24 inch) centers between ends.
   a. Nail Shelf to mounting strip at ends and to back wall strip at not over 900 mm (36 inches) on center.
   b. Install metal bracket, ANSI A156.16, B04041, not over 1200 mm (4 feet) centers when shelves exceed 1800 mm (6 feet) in length.
   c. Install metal bracket, ANSI A156.16, B04051, not over 1200 mm (4 feet) on centers where shelf length exceeds 1800 mm (6 feet) in length with metal rods, clothes hanger bars ANSI A156.16, L03131, of required length, full length of shelf.
2. Install vertical slotted shelf standards to studs with toggle bolts through each fastener opening. Double slotted shelf standards is acceptable where adjacent shelves terminate.
   a. Install brackets providing supports for shelf not over 900 mm (36 inches) on center and within 13 mm (1/2 inch) of shelf end unless shown otherwise.
   b. Install shelves on brackets so front edge is restrained by bracket.

C. Handrails:
1. Install in one piece and one length when practical.
2. Where rails change slope or direction, install special curved sections and ends of rails to return to wall, glue all field joints.
3. Secure rails with wood screws at 450 mm (18 inches) on centers to metal balustrades top rail.
4. Install brackets within 300 mm (12 inches) of ends of handrails and at every spaced intervals between not exceeding 1500 mm (5 feet) on centers at intervals between as shown. Anchor brackets as detailed and rails to brackets with screws.

D. Install with butt joints in straight runs and miter at corners.

3.3 CLEANING

A. Remove excess adhesive before adhesive sets.

B. Clean exposed surfaces. Remove contaminants and stains.

C. Touch up damaged factory finishes.
   1. Repair painted surfaces with touch up primer.

3.4 PROTECTION

A. Protect finish carpentry from traffic and construction operations.

B. Cover finish carpentry with reinforced kraft paper, and plywood or hardboard.

C. Remove protective materials immediately before acceptance.

D. Repair damage.

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SECTION 06 44 43

POLYESTER-RESIN-STONE-COMPOSITE COLUMNS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Columns shall be Composite Fiberglass Units. Erection per drawings, manufacturers' instructions and in compliance with local codes.

1.2 RELATED DOCUMENTS

A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are located in Division 1 of the Specifications.

1.3 SUBMITTALS AND SUBSTITUTIONS

A. In accordance with Section 01 33 23.

B. Substitutions will not be considered prior to the award of the General Contract.

C. Submit shop drawings for approval showing plans, sections and details, and installation instructions covering erection, and installation hardware.

1.4 REFERENCES

A. Columns shall meet or exceed ASTM E 84-01 Class 1 Standard Test Method for Surface Burning Characteristics of Building Materials.

1.5 WARRANTY

A. At project closeout, provide to Owner or Owners Representative a copy of the manufacturer's limited warranty outlining its terms and conditions.

B. The columns shall be guaranteed by the manufacturer against defects in materials or workmanship for "Lifetime of Original Ownership" when installed and maintained according to the manufacturers installation and maintenance instructions. "Lifetime" is as long as the original owner owns the structure to which the columns are attached.

1.6 VERIFICATION OF DESIGN

A. The components indicated on the drawings show dimensions established to accomplish the Architect's intended visual result and to conform to the building's configuration. The contractor shall verify that all components that will actually be provided for the work of this section will fit the building's structural elements and conform to the visual design criteria indicated on the drawings without materially altering profiles and alignments.

B. Any installation hardware and additional support or backing components shall be provided by the installing contractor as part of the work of this section.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Melton Classics, Inc., PO Box 465020, Lawrenceville, GA 30042, 800-963-3060 www.MeltonClassics.com.

B. It is required that other manufacturers wishing to submit their products shall submit and a 3 part CSI specification and samples of each type of column, capital, and base at least fourteen (14) days prior to bid date. These products must be certified by the manufacturer to meet or exceed all, materials, technical performance tests and warranty listed on the architectural specifications for those products. The design and aesthetic appearance of the column, capital, and base are of equal importance in determining if the column shaft, capital, and base are "equal". Manufacturers and products meeting these requirements will receive a letter of approval prior to bid date of this project. Manufacturers not receiving said letter will not be considered for this product.

2.2 DESCRIPTION

A. Columns shall be Melton Classics DuraClassic™ Composite Fiberglass Columns according to following designation:

B. (Design numbers ending in “0” are plain shaft. Replace the last digit with a “5” to indicate fluted shaft ex. 205DC.) (Add “S” after DC in the design number to indicate square shaft design ex. 200DCS = Tuscan Design Plain Shaft Square).
1. Roman Ionic – 230DC
2. Columns shafts, capitals and bases shall be manufactured from fiberglass reinforced polyester resin marble composite. No polyurethane capitals or bases will be allowed.

C. Capitals and base/plinths shall be the manufacturers standard for the size and design indicated.

2.3 MATERIAL

A. Column shaft, capital and base shall be centrifugal cast fiberglass reinforced polyester resin and stone composite.

B. Column materials shall comply with ASTM E 84-01 Class 1 test specifications for Flame Spread and Smoke Development
1. Flame Spread Index (FSI) < 25
2. Smoke Developed Index (SDI) < 450

C. Column materials shall comply with ASTM E 84-01 Class 1 test specifications for Flame Spread and Smoke Development.

D. Shaft thickness shall be approximately 3/8" to 5/8" depending on diameter.

PART 3 - EXECUTION

3.1 DELIVERY, STORAGE AND HANDLING

A. Transport and handle units in a manner that avoids excessive stresses or damage, and store on a level and clean surface.

3.2 PREPARATION

A. Prior to manufacturing, dimensions and conditions not shown on the drawings will be checked by the erector for inclusion by the manufacturer.

B. Prior to installation, the erector shall check job site dimensions. Any discrepancies between design and field dimensions shall be brought to the attention of the General Contractor. Work shall not proceed until these discrepancies are corrected.

C. Lightly sand and thoroughly clean surfaces prior to installation to remove dirt and mold release prior to painting.

D. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's detailed installation instructions

B. Surface Preparation: Lightly sand all surfaces with 100 grit sand paper and clean thoroughly to remove dust.

C. Primer: Acrylic based General Purpose Primer by Sherwin Williams.

D. Finish Coat: Acrylic based Duration by Sherwin Williams or approved equal.

END OF SECTION 06 44 43

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