

DIVISION 6
Wood & Plastics



SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUBMITTALS

- A. Submittals: Submit the following:
 1. Product Data for engineered wood products (LVL & PSL), underlayment, exterior sheathing, air-infiltration barriers, metal framing anchors and connectors, and construction adhesives.
 2. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses.
 3. Wood treatment data, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials.
 4. Research or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence code compliance of engineered wood products, foam-plastic sheathing, air-infiltration barriers, metal framing anchors, power-driven fasteners, and fire-retardant-treated wood.
 5. Foam sealant product literature with explanation of installation locations.

PART 2 - PRODUCTS

- A. Lumber, General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review. Provide dressed lumber, S4S, with each piece factory marked with grade stamp of inspection agency.
 1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.
 2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.
 3. See Structural Notes on drawings for material information.

- B. Pressure-Treated Framing Materials for above ground application: Preservative treatment shall be Wolmanized L³ Outdoor wood.
 - 1. Use Pressure Treated lumber only where shown on the plans. Pressure treated lumber is required for exposed framing, on exterior (perimeter) foundation walls, and on slabs-on-grade.
 - 2. All hangers, connectors, and fasteners in contact with PT lumber shall be electroplated galvanized (Simpson standard or equal).
 - 3. Apply field treatment to cut surfaces of PT lumber. Inspect each piece of lumber or plywood and discard damaged or defective pieces.

- C. Pressure-Treated Materials for below grade application: Preservative treatment shall be Alkaline Copper Quat (ACQ) with no ammonia. Verify that ammonia has not been used in the treatment process.
 - 1. Use Pressure Treated plywood only where shown on the plans. Pressure treated plywood is required for sheathing at courtyard.
 - 2. Apply field treatment to cut surfaces of PT plywood. Inspect each piece of plywood and discard damaged or defective pieces.

- D. Dimension Lumber: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
 - 1. Non-Load-Bearing Interior Partitions: Provide Stud or No. 2 grade of the following species:
 - a. Species: Spruce-Pine-Fir South (SPFs); NELMA.
 - b. Species: Spruce-Pine-Fir (SPF) NLGA.
 - 2. Load bearing Framing: See Structural Notes on Drawings.

- E. Miscellaneous Lumber:
 - 1. Provide No. 2 grade or better lumber of any species for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, and similar members.
 - 2. Provide No. 2 grade or better lumber for all blocking of trim to be covered with aluminum coil stock.

- F. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that evidence compliance with building code in effect for Project. Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.
1. Laminated-Veneer Lumber (LVL) beams & headers: Lumber manufactured by laminating wood veneers in a continuous press using an exterior-type adhesive complying with ASTM D 2559 to produce members with grain of veneers parallel to their lengths and complying with the following requirements:
 - a. Extreme Fiber Stress in Bending: 2900 psi for 12-inch nominal- (286-mm actual-) depth members.
 - b. Modulus of Elasticity: 2,000,000 psi.
 2. Parallel-Strand Lumber (PSL) beams & headers: Lumber manufactured by laying up wood strands using an exterior-type adhesive complying with ASTM D 2559, and cured under pressure to produce members with grain of strands parallel to their lengths and complying with the following requirements:
 - a. Extreme Fiber Stress in Bending: 2900 psi (20 MPa) for 12-inch nominal- (286-mm actual-) depth members.
 - b. Modulus of Elasticity: 2,000,000 psi (13 800 MPa).
 3. LVL & PSL posts: $E = 1,700,000$ psi. $F_c = 2,600$ psi. Versa-Lam or Parallam or approved equal.
- G. Wood-Based Structural-Use Panels: Provide either all-veneer, mat-formed, or composite panels complying with DOC PS 2, "Performance Standard for Wood-Based Structural-Use Panels," unless otherwise indicated. Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood," where plywood is indicated.
1. Trademark: Factory mark structural-use panels with APA trademark evidencing compliance with grade requirements.
 2. Span Ratings: Provide panels with span ratings required to suit support spacing indicated.
 3. Subflooring: Advantech, no substitutes, APA-rated sheathing, Exposure 1.
 4. Exterior Wall Sheathing: APA-rated sheathing, Exposure 1.
 5. Roof Sheathing: APA-rated sheathing, Exposure 1.

6. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant-treated plywood panels with grade, C-D Plugged Exposure 1, in thickness indicated or, if not otherwise indicated, not less than 15/32 inch (11.9 mm) thick.
 7. Plywood Underlayment for Resilient Flooring: Patriot Timber Products; SurePly Premium Underlayment or USG Fiberock Aqua-Tough.
 8. Fiberboard Underlayment: Homasote, 440 Sound Barrier, 1/2" thickness.
- H. Air-Infiltration Barrier: DuPont Tyvek Commercial Wrap, Class A smoke and flame spread per ASTM E-84-97a, 2.7 oz/yd² material weight, Water penetration resistance AATCC-127: 280 cm. Wide roll widths to be provided. Note: DuPont Tyvek Housewrap is not acceptable.
1. Seam Tape: DuPont Tyvek weatherization tape, 2-inch width, permanent acrylic adhesive.
 2. Bituminuous Flashing Tape:
 - a. Flex-Wrap Tape: DuPont Tyvek FlexWrap constructed of Tyvek, elastic material polyolefin film and highly adhesive self-sealing butyl, designed to mold and form corners.
 - b. Straight-Flash Tape: DuPont Tyvek FlexWrap constructed of Tyvek and highly adhesive self-sealing butyl, designed for straight run applications.
- I. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, in PT lumber, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.
1. Power-Driven Fasteners: CABO NER-272.
 2. Lag Screws & Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers. Hot dipped galvanized at PT lumber.
- J. Metal Framing Anchors(Hangers, Clips, etc.): Provide galvanized steel framing anchors of structural capacity, type, and size indicated and as follows:
1. Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with building code in effect for Project.

2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.
 3. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 (ASTM A 653M, Z180) for interior non-PT lumber. Coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated. G185 galvanized (Simpson Z-Max or equal) at exterior and at PT lumber.
 4. Powder-Actuated Fasteners: Ramset with "RamGuard" coating for corrosion resistance where used with PT lumber. Fasteners must be tested and approved for use in PT lumber.
- K. Fire-Retardant Treatment:
1. Fire-retardant treated lumber: AWPA C20.
 - a. Research or Evaluation Reports: Provide fire-retardant-treated wood acceptable to authorities having jurisdiction and for which a current model code research or evaluation report exists that evidences compliance of fire-retardant-treated wood for application indicated. Code research or evaluation stating appropriate treated-wood property modification factors must be submitted to and approved in writing by Engineer of Record.
 2. Fire-retardant treated plywood: AWPA C27.
 3. Treat the following items:
 - a. Exterior wall framing lumber.
 - b. Exterior wall sheathing.
 - c. Electrical and telephone backer boards.
 - d. Wall panels as indicated on the drawings.
 4. Provide treatment classified for use as Interior Type A, Low Hygroscopic.
- L. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.
- M. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.
- N. Foam sealant for sealing sill plates and all gaps between studs of wall panels: Great Stuff Pro, Wall & Floor Construction Adhesive.

PART 3 - EXECUTION

- A. Foam sealant applications.
 - 1. All exterior wall sill plates to be set in bed of foam sealant.
 - 2. All joints between studs of adjoining exterior wall panels shall have foam sealant installed between adjoining studs.
 - 3. Any voids in the exterior wall that are inaccessible after the framing is complete shall have the void completely filled with foam sealant during framing.

- B. Framing coordination.
 - 1. All corners of the exterior walls shall be configured so insulation may be installed in the corner after framing is complete, except as detailed otherwise in the structural drawings at the ends of shear walls.
 - 2. At all connections of the exterior wall and interior walls the wall studs of the exterior wall shall be configured to allow the installation of insulation behind the intersection of the walls, except as detailed otherwise in the structural drawings at the ends of shear walls.

- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

- D. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. CABO NER-272 for power-driven nails.
 - 2. Published requirements of metal framing anchor manufacturer.
 - 3. "Table 2304.9.12--Fastening Schedule" of the International Building Code 2000.

- F. Install stair framing as indicated.
 - 1. Cut stringers accurately to depth required by treads and risers; do not over cut, nor reduce remaining depth of stringer below 3-1/2 inches.
 - 2. Width of adjacent treads or height of adjacent risers: 3/16 inch.
 - 3. Variation within each run between largest and smallest treads and risers: 3/8 inch.

- G. Use hot-dip galvanized or stainless-steel nails where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity.

- H. Countersink nail heads on exposed carpentry work and fill holes with wood filler.
- I. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.
- J. Installation of Structural-Use Panels: Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.
 - 1. Comply with "Code Plus" provisions of above-referenced guide.
 - 2. Fastening Methods: Fasten panels as indicated below:
 - a. Subflooring: Glue and nail to framing throughout.
 - b. Sheathing: Nail to framing.
 - c. Underlayment: Nail or staple to subflooring.
- K. Air-Infiltration Barrier: Cover sheathing with air-infiltration barrier strictly following manufacturer's written instructions.
 - 1. Install after the window installation.
 - 2. Apply air-infiltration barrier to cover upstanding flashing with 4-inch (100-mm) overlap.
- L. Field Quality Control: The Owner will employ a testing agency to perform inspections and to submit inspection reports. Inspections shall satisfy requirements of Schedule of Special Inspection Services prepared by Engineer of Record.

END OF SECTION 06100

SECTION 06192 - METAL-PLATE-CONNECTED WOOD TRUSSES

1.1 RELATED DOCUMENTS

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

1.2 GENERAL

- A. Structural Performance: Engineer, fabricate, and erect metal-plate-connected wood trusses to withstand design loads without exceeding ANSI/TPI-1 deflection limits or those shown on structural drawings.
- B. Engineering Responsibility: Engage a fabricator who uses a qualified professional engineer to prepare calculations, Shop Drawings, and other structural data for metal-plate-connected wood trusses.
- C. Submittals: In addition to Product Data, submit Shop Drawings detailing location, pitch, span, camber, configuration, and spacing for each type of truss required; lumber species, sizes, and stress grades; connector plate size, material, finish, design values, and orientation and location; and bearing details. Calculations must include member CSI ratios, member forces, actual dead and live load deflections, reactions, and plate sizes.
 - 1. Include truss Erection Drawings on 24"x36" sheets (min.) and structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation. Include all connection hardware on shop drawings.
- D. Fabricator's Qualifications: Engage a fabricator who participates in a recognized quality-assurance program that involves inspection by.; Truss Plate Institute (TPI); or other independent inspecting and testing agency acceptable to authorities having jurisdiction and Engineer.
- E. Comply with applicable requirements and recommendations of ANSI/TP1 1, "National Design Standard for Metal-Plate-Connected Wood Truss Construction," and TPI Publication Building Component Safety Information (BCSI) 1-03 "Guide to Good Practice for Handling, Installing, and Bracing of Metal Plate Connected Wood Trusses."
- F. Wood Structural Design Standard: Comply with applicable requirements of AFPA's "National Design Specification for Wood Construction" and its "Supplement."

- G. Single-Source Engineering Responsibility: Provide trusses engineered by metal-plate connector manufacturer to support superimposed dead and live loads indicated, with design approved and certified by a qualified professional engineer who is legally authorized to practice in the jurisdiction where Project is located and who is experienced in the design of metal-plate-connected wood trusses. Truss to truss connections shall be included in design.
- H. Handle and store trusses with care and comply with manufacturer's written instructions and TPI recommendations to avoid damage and lateral bending.

1.3 PRODUCTS

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Grade and Species: Provide dimension lumber of any species for truss chord and web members, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AFPA's "National Design Specification for Wood Construction" and its "Supplement."
- C. Metal Connector Plates: Fabricate connector plates from structural-quality steel sheet, zinc coated by hot-dip process complying with ASTM A 653, G60 coating designation; Grade 33 and not less than 0.0359 inch thick.
- D. Fasteners: Provide fasteners of size and type indicated that comply with requirements specified below for material and manufacture. Where truss members are exposed to weather or to high relative humidities, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of stainless steel, Type 304 or 316.
 - 1. Nails, Wire, Brads, and Staples: FS FF-N-105.
 - 2. Power-Driven Fasteners: CABO NER-272.
 - 3. Wood Screws: ASME B18.6.1.
 - 4. Lag Bolts and Screws: ASME B18.2.1.
 - 5. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- E. Metal Framing Anchors: Provide metal framing anchors with allowable design loads, as published by manufacturer, that meet or exceed those indicated, of the following metal and finish:

1. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.
- F. Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances of ANSI/TPI 1. Position members to produce design camber indicated.
 1. Fabricate wood trusses within manufacturing tolerances of ANSI/TPI 1.
- G. Connect truss members by metal connector plates located and securely embedded simultaneously into both sides of wood members by air or hydraulic press.
- H. Minimum member size used in any truss shall be 2"x4" nominal. All members shall be Grade #2 or better. Minimum plate size in roof trusses shall be 3"x4" to accommodate handling stresses.
- I. Truss manufacturer shall be approved by Engineer prior to selection.
- J. All compression webs requiring lateral bracing must be tagged on the actual truss by the manufacturer at each bracing location. Failure to do so will require field tagging by the manufacturer.

1.4 EXECUTION

- A. Install and brace trusses according to recommendations of TPI BCSI 1-03 Summary Sheet. Space trusses as indicated; install plumb, square, and true to line; and securely fasten to supporting construction.
- B. Lift trusses at designated lifting points only.
- C. Anchor trusses securely at all bearing points using metal framing anchors and fasten according to metal framing anchor manufacturer's fastening schedules and written instructions.
- D. Securely connect each truss ply required for forming built-up girder trusses. Anchor trusses to girder trusses as indicated.
- E. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
- F. Install wood trusses within installation tolerances of ANSI/TPI 1.

- G. Do not alter, cut, or remove truss members.
- H. Temporary bracing of wood trusses is solely the responsibility of the contractor. Refer to TPI publication BCSI 1-03 for all necessary temporary bracing.
- I. Return wood trusses that are damaged or do not meet requirements to fabricator and replace with trusses that do meet requirements.
- J. Field Quality Control: The Owner will employ a testing agency to perform inspections and to submit inspection reports. Inspections shall satisfy requirements of Schedule of Special Inspection Services prepared by Engineer of Record.

END OF SECTION 06192

SECTION 06200 - FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Exterior finish carpentry.
 - 2. Standing/running trim.
 - a. Items as indicated.
 - 3. Interior finish carpentry.
 - a. Standing/running trim.
 - b. Items as indicated.
- B. Related Sections:
 - 1. Blocking and grounds for attachment of woodwork: Elsewhere in Division 6.
 - 2. Wood windows with operating sash: Division 8.
 - 3. Wood doors: Division 8.
 - 4. Field finishing of woodwork: Division 9.
 - 5. Manufactured casework and its tops: Division 12.

1.3 REFERENCES

- A. ANSI A208.1-1989 -- Wood Particleboard; 1989.
- B. ASTM A 153-82(87) -- Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 1982 (Reapproved 1987).
- C. ASTM D-3359 – Adhesion.
- D. ASTM D522 – Flexibility (Cylindrical Mandrel)
- E. ASTM D-3363 – Hardness (Pencil)
- F. ASTM B-117 – Salt Spray.
- G. ASTM D-4585 – Humidity.

- H. ASTM D-2794 – Impact Resistance.
- I. AWWPA P5-91 -- Standards for Waterborne Preservatives; American Wood-Preservers' Association; 1991.
- J. HPMA HP 1983 -- American National Standard for Hardwood and Decorative Plywood; Hardwood Plywood Manufacturers Association; 1983.
- K. NBS PS 1-83 -- Construction and Industrial Plywood; U.S. Department of Commerce/National Bureau of Standards; 1984.
- L. NBS PS 20-70(86) -- American Softwood Lumber Standard; U.S. Department of Commerce/National Bureau of Standards; 1970 (Amended 1986).
- M. NEMA LD 3-1991 -- High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 1991.
- N. Rules for the Measurement & Inspection of Hardwood & Cypress; National Hardwood Lumber Association; 1990.
- O. WM 4-77 -- General Requirements For Wood Moulding; Wood Moulding and Millwork Producers (WMMP); 1985 (part of WM 7-88).

1.4 SUBMITTALS

- A. Manufactured Wood Products:
 - 1. Product data.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials for exterior woodwork under cover, off the ground, and supported to prevent warpage.
- B. Store materials for interior woodwork indoors in air conditioned spaces maintained within design temperature and humidity range.
- C. Treated Wood Products: Handle and store as recommended by treatment manufacturer.

1.6 PROJECT CONDITIONS

- A. Maintain final design temperature and humidity in areas where woodwork is installed.

- B. Fit woodwork to actual construction. If it is not possible, or practical, to take field measurements before fabricating, provide adequate installation tolerances and scribe or trim to fit.
- C. Coordinate installation of woodwork with other work to avoid damage.
- D. Coordination Data:
 - 1. Furnish treatment manufacturer's instructions for fabrication, handling, storage, installation, and finishing of treated wood materials to fabricators and installers.

PART 2 - PRODUCTS

2.1 WOODWORK

- A. Stair Wall Caps :
 - 1. Lumber species: Poplar.
 - a. Grade: Paint Grade.
 - 2. Finish: Opaque finish specified elsewhere.
 - 3. Screwed, countersunk and plugged.
- B. Window, door and misc. moldings :
 - 1. Lumber species: Pine: sugar, ponderosa.
 - a. Grade: NLMA's grading for paint grade material.
 - 2. Finish: Opaque finish specified elsewhere.
 - 3. Face-nail, countersink, and fill.
 - 4. Fingered jointed material may be used. Mitered joints at all corners. Picture frame at windows.
 - 5. All Casing: Brosco 8308 2 Round Corner Casing,
- C. Molding and Trim :
 - 1. Manufacturer based on Brosco. Others may be submitted for approval.
 - 2. Chair Rail (where shown): 8630 w/ flat shim to match wainscoting thickness where present. Provide 1x PVC behind when not with wainscoting below. Shim PVC strip for flat face. Caulk gaps between PVC and drywall.
 - 3. Wood Base; Brosco B688 Base.
 - 4. Scotia: 8059 under all wall caps and countertop overhangs.
 - 5. Crown in Common Areas including Suspended Acoustical Ceilings: 8027.
 - 6. Cased Opening Casing: 8308 2 Round Corner w/ 1x wood frame.
- D. Shelving and Closet Rod :
 - 1. Closet Rod: Brosco 8913, painted to match casing.

2. Shelving: 3/4" MDF w/ bullnose front edge, painted to match casing.
3. Center bracket of clothes rods over 3'-0" long: 3/4" MDF panel with bullnose front edge. 45° angle to wall with hole for clothes rod support. Provide cleat at wall with blocking behind.

E. Exterior Brackets:

1. Fypon, BKT10X12X4.
2. install with long dimension horizontal.
3. Provide adhesive as recommended by manufacturer.

F. Exterior Deck Rails:

1. Provide one of the following:
 - a. Nebraska Plastics, Country Estate Fence & Railing, American Aluminum Series; T-Rail, 42" high. Local supplier: Bridgewater Poly Vinyls, 508-697-7050.
 - b. Superior Aluminum Railing; Series 900 EE railing system with 901 top rail.
 - c. An equal product of another manufacturer may be submitted for approval.
 - d. A custom aluminum rail system matching manufactured rail systems above may be provided. Provide shop drawings for approval of railing system.
2. Rail to span balcony opening with out intermediate post to meet code required strength.
3. Custom color factory finished or provide unfinished for shop applied finish as follows:
 - a. Duncan; Thermoset, high performance, dry applied polyester material.
 - b. Coating warrantee: 1 year.
 - c. Submit 3"x6" samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
 - d. Shop-applied metal coatings shall be performed in a facility acceptable to the coating manufacturer.
 - e. Prepare metal and apply coating following manufacturer's recommendations.
 - f. Handle and install materials with shop-applied coatings as recommended by coating manufacturer to prevent damage to coatings prior to and after installation.
 - g. Touch-up shop-applied metal coatings and recommended by coating manufacturer.
 - h. Coatings not matching approved submittals shall be removed and replaced at no additional expense to the Owner.
4. Concealed fasteners or color matched to rail.
5. Provide necessary accessories for a complete installation.

- G. Composite Wood Decking:
 - 1. Trex Accents; 5/4x6 Decking Planks.
 - 2. Provide FastenMaster IQ Hidden Fastening System or Tiger-Claw TC-3 Composite Fastener.
 - 3. Submit colors for selection during the submittal process. Allow for three color selections.

- H. Vinyl Privacy Lattice:
 - 1. Genova Products; Choice Lattice, Privacy w/ U-Channels & H-Channels.
 - 2. Permalatt Products, Inc; Vinyl Lattice, 1" Diagonal w/ U-Channels & H-Channels.
 - 3. Color to be selected from standard colors during construction.
 - 4. Provide accessories for a complete installation.

- I. Decorative Black Steel Gate at Courtyard Entrances:
 - 1. Certainteed; Prestige, Thru-Picket Gate w/ pyramid finial caps.
 - 2. Provide additional hardware as needed to fasten to masonry.
 - 3. Gate to have simple latching hardware operable from courtyard side.

2.2 WOOD MATERIALS

- A. Lumber: Species and grade as indicated; lumber ready for installation shall comply with WM 4, "General Requirements For Wood Molding," Wood Molding and Millwork Producers (WMMP).
 - 1. Softwood: Comply with NBS PS 20 and grade in accordance with the grading rules of the grading and inspection agency applicable to the species.
 - 2. Hardwood: Grade in accordance with National Hardwood Lumber Association grading rules.
 - 3. For transparent finish, use only solid pieces of lumber; WM 4 N-grade.
 - 4. For opaque finish, pieces which are glued up may be used; WM 4 N- or P-grade.
 - 5. Where glued-up lumber is used on exterior, use waterproof adhesive.
 - 6. Moisture content: Comply with requirements of specified inspection agencies and with manufacturer's written recommendations for moisture content of finish carpentry at relative humidity conditions existing during time of fabrication and in installation areas. Provide kiln-dried lumber.
 - 7. Provide lumber dressed on all exposed faces, unless otherwise indicated.
 - 8. Do not use twisted, warped, bowed, or otherwise defective lumber.
 - 9. Sizes indicated are nominal, unless otherwise indicated.

10. Do not mark or color lumber, except where such marking will be concealed in finish work.

B. Particleboard: ANSI A208.1, 1-M-2 or 2-M-2, or better.

2.3 MISCELLANEOUS MATERIALS

A. Wood Filler for Transparent Finish Woodwork: Match final finish color.

B. Primer: As specified in Division 9.

C. Fasteners: Style, size, material, and finish as required for the purpose.

1. For exterior use with transparent finished woodwork: Stainless steel, cadmium plated, or aluminum.

2. For exterior use with opaque finished woodwork: Nonferrous metal, stainless steel, or steel hot-dip galvanized in accordance with ASTM A 153.

D. Aluminum drip flashing and trim flashing:

1. Standard .032 vinyl coated aluminum sized for flashed trim members.

2.4 FABRICATION

A. Fabricate in sizes and shapes indicated and using details indicated.

B. Complete fabrication and assembly in shop.

1. Edges and trim to be scribed to fit may be left loose.

2. Ease edges of solid lumber members where indicated, using:

a. 1/16-inch radius for members 1 inch or less nominal thickness.

b. 1/8-inch radius for members more than 1 inch nominal thickness.

C. Work preservative-treated wood in accordance with treatment manufacturer's recommendations; treat cut surfaces as recommended by treatment manufacturer.

D. Where woodwork is indicated to be field finished, sand smooth, fill nail holes, clean thoroughly, and otherwise prepare for finishing.

E. Standing and Running Trim: Miter exposed ends of members to match profile.

1. Rout out backs of flat members over 2 inches wide, unless ends are exposed.

2. Kerf backs of flat members over 4 inches wide, except where ends are exposed.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that blocking and backings have been installed at appropriate locations for anchorage.
- B. Prime the concealed surfaces of exterior woodwork which is to be painted, using methods specified in painting section in Division 9.

3.2 INSTALLATION - GENERAL

- A. Do not begin installation of interior woodwork until potentially damaging construction operations are complete in the installation area.
- B. All items shall be installed following manufacturer's installation instructions.
Make joints neatly, with uniform appearance.
- C. Install woodwork in correct location, plumb and level, without rack or warp.
 - 1. Where adjoining surfaces are flush, install with maximum 1/16-inch offset.
 - 2. Where adjoining surfaces are separated by a reveal, install with maximum 1/8-inch offset.
- D. Conceal all shims.
- E. Cut woodwork precisely to fit.
- F. Tightly fit joints in exterior woodwork or otherwise arrange to shed water.
- G. Secure woodwork to substrate.
 - 1. On Lower Level where Type 1 construction is required, secure molding to substrate with adhesive. Wood blocking in walls at this level is not permitted.
 - 2. Where anchorage method is not indicated, conceal all fasteners where possible.
 - 3. Where exposed nailing is required or indicated, use finishing nails, countersink, and fill. Provide blocking where permitted.
- H. Preservative-Treated Wood: Fabricate and install as recommended by treatment manufacturer.
 - 1. Treat lumber cut in field as specified under Fabrication.

- I. Repair damaged and defective woodwork to eliminate visual and functional defects; where repair is not possible, replace woodwork.
- J. Standing and Running Trim: Use longest pieces available and as few joints as possible.
 - 1. Stagger joints in built-up trim members.
 - 2. Use diagonal (scarfed) joints in lengths of trim.
 - 3. Install boards cut with flat grain so bark side is exposed.
 - 4. Cope or miter at inside corners and miter at outside corners; fit tightly.
 - 5. Allowed variation in plumb and level: Not more than 1/8 inch in 8 feet.

3.3 CLEANING

- A. Clean exposed surfaces.

3.4 PROTECTION

- A. Protect woodwork from damage and maintain design environmental conditions.

END OF SECTION 06200

SECTION 06415 - STONE COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes stone countertops.
- B. Related Sections:
 - 1. Division 15 Section for sink units mounted in countertops.

1.3 SUBMITTALS

- A. Product Data: For the following:
 - 1. Each variety of stone. Include data on physical properties required by referenced ASTM standards.
 - 2. Stone accessories and other manufactured products.
- B. Shop Drawings: Include plans, sections, details, and attachments to other work.
- C. Samples for Verification:
 - 1. Provide samples prior to bidding project to verify granite quality expected.
 - 2. For each stone type indicated, in sets of Samples not less than 12 inches (300 mm) square. Include two or more Samples in each set and show the full range of variations in appearance characteristics expected in completed Work.
- D. Qualification Data: For installer and fabricator.
- E. Maintenance Data: For stone countertops to include in maintenance manuals. Include Product Data for stone-care products used or recommended by Installer, and names, addresses, and telephone numbers of local sources for products.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate stone countertops similar to that indicated for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products.
- C. Source Limitations for Stone: Obtain each variety of stone from a single quarry with resources to provide materials of consistent quality in appearance and physical properties.
 - 1. Obtain each variety of stone from a single quarry, whether specified in this Section or in another Section of the Specifications.
 - 2. Stone slabs to be consistent with samples submitted.
- D. Mockup: Build mockup to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of typical countertop as shown on Drawings.
 - 2. Approved mockup may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
- B. Store stone on wood A-frames or pallets with nonstaining separators and nonstaining, waterproof covers. Ventilate under covers to prevent condensation.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide the following countertops for the unit Kitchen:
 - 1. Base countertop with white shaker cabinets: Honed Absolute Black Granite, 1 1/4".
 - 2. Option 1 countertop with dark cherry euro style cabinets : Carrara Marble, Bianco polished, 1 1/4".
 - 3. Option 2 countertop with light cherry euro style cabinets : Green Soapstone, polished, 1 1/4".
- B. Provide the following countertops for the unit Master Baths:
 - 1. Base countertop with dark cherry euro style cabinets : Carrara Marble, Bianco polished, 1 1/4".
 - 2. Option 1 countertop with white shaker cabinets: Honed Absolute Black Granite, 1 1/4".
 - 3. Option 2 countertop with light cherry euro style cabinets : Green Soapstone, polished, 1 1/4".
- C. Each countertop shall be provided with matching backsplash and side splashes.
- D. Cut stone from contiguous, matched slabs in which natural markings occur.

2.2 ADHESIVES, GROUT, SEALANTS, AND STONE ACCESSORIES

- A. General: Use only adhesives formulated for stone and ceramic tile and recommended by their manufacturer for the application indicated.
- B. Stone Joint Splines: Stainless-steel or brass washers approximately 1 inch (25 mm) in diameter and of thickness to fit snugly in saw-cut kerf in edge of stone units.
- C. Stone Cleaner: Cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer and, if a sealer is specified, by sealer manufacturer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.
- D. 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.

2.3 STONE FABRICATION, GENERAL

- A. 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 unpleasing, as judged by Architect.
- B. Grade and mark stone for final locations to produce assembled countertop units with an overall uniform appearance.
- C. Fabricate stone countertops in sizes and shapes required to comply with requirements indicated, including details on Drawings and Shop Drawings.
 - 1. For granite, comply with recommendations in NBGQA's "Specifications for Architectural Granite."
 - 2. Clean sawed backs of stones to remove rust stains and iron particles.
 - 3. Dress joints straight and at right angle to face, unless otherwise indicated.
 - 4. Cut and drill sinkages and holes in stone for anchors, supports, and attachments.
 - 5. Provide openings, reveals, and similar features as needed to accommodate adjacent work.
 - 6. 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.
 - 7. 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.
- D. Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

2.4 STONE COUNTERTOPS

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

- B. Nominal Thickness: Provide thickness indicated, but not less than 1 1/4". Gage backs to provide units of identical thickness.
- C. Edge Detail: Straight, slightly eased at top.
- D. Splashes: Provide 3/4-inch- (20-mm-) thick backsplashes and end splashes, unless otherwise indicated.
 - 1. Height: 4 inches (100 mm).
 - 2. Top-Edge Detail: Straight, slightly eased at corner.
- E. Joints: Fabricate countertops without joints.
- F. Joints: Fabricate countertops in sections for joining in field, with joints at locations indicated and as follows:
 - 1. Splined Joints: Accurately cut kerfs in edges at joints for insertion of metal splines to maintain alignment of surfaces at joints where indicated. Make width of cuts slightly more than thickness of splines to provide snug fit. Provide at least three splines in each joint.
- G. Cutouts and Holes:
 - 1. Fittings: Drill countertops in shop for plumbing fittings, undercounter 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. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of stone countertops.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Advise installers of other work about specific requirements for placement of inserts and similar items to be used by stone countertop Installer for anchoring stone countertops. Furnish installers of other work with Drawings or templates showing locations of these items.

- B. 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 (1.5 mm in 1200 mm).
- B. Variation from Level: Do not exceed 1/8 inch in 96 inches (3 mm in 2400 mm), 1/4 inch (6 mm) 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 (0.4-mm) difference between planes of adjacent units.
- E. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64-inch (0.4-mm) difference between edges of adjacent units, where edge line continues across joint.

3.4 INSTALLATION OF COUNTERTOPS

- A. General: Install countertops over plywood subtops with full spread of water-cleanable epoxy adhesive.
- B. General: Install countertops by adhering to supports with water-cleanable epoxy adhesive.
- C. Do not cut stone in field, unless otherwise indicated. If stone countertops or splashes require additional fabrication not specified to be performed at Project site, return to fabrication shop for adjustment.
- D. Do necessary field cutting as stone is set. Use power saws with diamond blades to cut stone. Cut lines straight, true, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

- E. Set stone to comply with requirements indicated on Drawings and Shop Drawings. Shim and adjust stone to locations indicated, with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances. Install anchors and other attachments indicated or necessary to secure stone countertops in place.
- F. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Use power saws with diamond blades to cut stone. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

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. Clean stone countertops not less than six days after completion of installation, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.
- E. Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's written instructions.

END OF SECTION 06415

