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This MANU-SPEC™ utilizes the Construction Specifications Institute (CSI) *Manual of Practice*, including *MasterFormat™*, *SectionFormat™* and *PageFormat™*. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets (); delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies laminated veneer lumber (LVL) designed primarily for residential framing applications. These products are manufactured by LP - Engineered Wood Products. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 06170 PREFABRICATED STRUCTURAL WOOD

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Laminated Veneer Lumber.

Specifier Note: Revise paragraph below to suit project requirements. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the paragraph below. Add section numbers and titles per CSI *MasterFormat* and specifier's practice. In the absence of related sections, delete paragraph below.

- B. Related Sections:
1. Division 6 Section: Rough Carpentry.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This article does not require compliance with standard. It is a listing of all references used in this section.

1.02 REFERENCES

- A. National Evaluation Service (NES):
1. Report Number: NER-622.
- B. Canadian Construction Materials Centre (CCMC):
1. Report Number: 11518-R.
- C. International Conference of Building Officials (ICBO):
1. Report Number: ER-5004.



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Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Provide laminated veneer lumber systems with the following design properties:
1. Design Loads: (Specify design loads.).
 2. Allowable Stresses for Beams:
 - a. Grade: (2950F_b-2.0E) (2650F_b-1.9E) (2250F_b-1.5E).
 - b. Bending (F_b): (2950) (2650) (2250).
 - c. Modulus of Elasticity ($\times 10^6$): (2.0) (1.9) (1.5).
 - d. Compression (Parallel to Grain) (F_c): (3200) (2350).
 - e. Compression (Perpendicular to Grain) (F_{c⊥}): (1020) (750).
 - f. Shear (F_v): (290) (285).
 3. Section Properties:
 - a. Weight (lb/ft): (Specify weight.).
 - b. Maximum Moment (lb-ft): (Specify maximum moment.).
 - c. Maximum Shear (lb): (Specify maximum shear.).
 - d. Moment of Inertia (in⁴): (Specify moment of inertia.).
- B. Performance Requirements: Provide laminated veneer lumber and installed systems which have been manufactured, fabricated and installed to meet the following criteria:

Specifier Note: Specified maximum deflection must not exceed the deflection limit prescribed by code.

1. Deflection Requirements:
 - a. Live load deflection limit of no more than (1/600) (1/480) (1/360) (Specify limit.) of span or a maximum of (Specify deflection.) inches of deflection.
 - b. Total load deflection limit of no more than (1/360) (1/240) (1/180) (Specify limit.) of span or a maximum of (Specify deflection.) inches of deflection.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor either before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit manufacturer's product data and installation instructions.
- C. Shop Drawings: Provide drawings indicating lumber grade, size, location and connection details.
- D. Quality Assurance/Control Submittals: Submit the following:
1. Design Data: Submit design calculations signed and sealed by a professional engineer registered in (Specify state.).
 2. Test Reports: Upon request, provide (Structural) (Fire) (And) (Sound) test reports from recognized testing laboratories.
- E. Closeout Submittals: Submit the following:

1. Warranty documents specified herein.

Specifier Note: Article below should include statements of prerequisites, standards, limitations and criteria which establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 1 Quality Assurance Section.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided.

- B. Regulatory Requirements and Approvals: Provide laminated veneer lumber meeting the requirements of the following building code compliance reports. (Specify applicable requirements of regulatory agencies.).
 1. NES:
 - a. Report Number: NER-622.
 2. CCMC:
 - a. Report Number: 11518-R.
 3. ICBO:
 - a. Report Number: ER-5004.
 4. (Specify code agency name.).
 - a. (Specify report number.).

Specifier Note: Retain paragraph below if preinstallation meeting is required.

- C. Preinstallation Meetings: (Specify requirements for meeting.).

Specifier Note: Article below should include specific protection and environmental conditions required during storage. Coordinate article below with Division 1 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirement Section.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
 1. Carefully unload lumber by lifting, using forklifts or cranes to avoid damage.
 2. Keep lumber stored in wrapped and strapped bundles stacked no more than 10' high.
 3. Support bundles to prevent excessive bowing. Support and separate bundles with 2 x 4 or larger dimension lumber spaced no more than 10' apart. Keep supports in line vertically.
 4. Handle individual pieces in a manner to prevent physical damage during measuring, cutting and erection.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
 1. Keep lumber dry.
 2. Store lumber on a hard, dry, level surface.
 3. Do not store lumber in contact with the ground.
 4. Do not allow lumber to have prolonged exposure to weather.

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Specifier Note: Coordinate article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section. Use this article to require special or extended warranty or bond covering the work of this section.

1.07 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document confirmed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.

Specifier Note: Coordinate subparagraph below with manufacturer's warranty requirements.

- 1. Warranty Period: Limited lifetime warranty beginning with date of substantial completion.

PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 LAMINATED VENEER LUMBER

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

- A. Manufacturer: LP - Engineered Wood Products.
 - 1. Contact: 805 SW Broadway, Suite 1200, Portland, OR 97205-3303; Telephone: (800) 999-9105, (910) 762-9878; Fax: (910) 763-8178; E-mail: customer.support@lpcorp.com; website: www.lpcorp.com.
- B. Proprietary Products/Systems: Laminated Veneer Lumber, including the following:

Specifier Note: LVL is limited to a maximum of 4 plies for thicknesses of 1 3/4" and less and to 2 plies for all other thicknesses.

- 1. Gang-Lam LVL 2250F_b-1.5E:
 - a. Material: Ultrasonically and visually graded veneers arranged to specific patterns so that naturally occurring defects have no concentrated effect on the member's performance.
 - b. Adhesive: Waterproof adhesive, bonded under pressure and heat.
 - c. Thickness: (1 3/4") (3 1/2").
 - d. Plies: (1) (2) (3) (4).
 - e. Depth: (4 3/8") (5 1/2") (7 1/4") (9 1/2") (11 7/8") (14") (16") (18").
 - f. Water Resistant Coating: (Provide proprietary SiteCoat coating.) (No coating required).
- 2. Gang-Lam LVL 2650F_b-1.9E:
 - a. Material: Ultrasonically and visually graded veneers arranged to specific patterns so that naturally occurring defects have no concentrated effect on the member's performance.
 - b. Adhesive: Waterproof adhesive, bonded under pressure and heat.
 - c. Thickness: (1 3/4") (3 1/2").
 - d. Plies: (1) (2) (3) (4).
 - e. Depth: (9 1/2") (11 7/8") (14") (16") (18").
 - f. Water Resistant Coating: (Provide proprietary SiteCoat coating.) (No coating required).

3. Gang-Lam LVL 2950F_p-2.0E:
 - a. Material: Ultrasonically and visually graded veneers arranged to specific patterns so that naturally occurring defects have no concentrated effect on the member's performance.
 - b. Adhesive: Waterproof adhesive, bonded under pressure and heat.
 - c. Thickness: (1 3/4") (3 1/2") (5 1/4") (7").
 - d. Plies: (1) (2) (3) (4).
 - e. Depth: (9 1/2") (11 7/8") (14") (16") (18").
 - f. Water Resistant Coating: (Provide proprietary SiteCoat coating.) (No coating required).

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

Specifier Note: List characteristics of assembly, components, products or materials involved that must relate to match existing work such as matching style, material or finish, surfaces, operation and dimensions. Specify compatibility between new and existing materials.

2.03 EXISTING PRODUCTS

- A. (Specify requirements to match existing work.).

Specifier Note: Specify subordinate or secondary items that aid and assist primary products specified above or are necessary for preparation or installation of those items.

2.04 ACCESSORIES

- A. Proprietary products/systems to assist in the installation of laminated veneer lumber, including:
 1. Framing Connectors:
 - a. Manufacturer: (Simpson Strong-Tie) (USP Lumber Connectors) (MGA Connectors).
 - b. Manufacturer Type Designation: (Top-mount) (Face-mount) (45 degree skewed) (Rafter-to-ridge) (Rafter-to-plate).
 2. Nails:
 - a. Type: (Common) (Box) (Sinker).

Specifier Note: For 1 3/4" LVL manufacturer recommends 16d (3 1/2" nails). For 1 3/4" LVL manufacturer recommends 10d (3" nails).

- b. Size: (16d (3 1/2")) (10d (3")).
3. Bolts:
 - a. Type: (Specify type.).
 - b. Size: (Specify size.).
 - c. Coating: (Specify coating.).

Specifier Note: List characteristics of assembly, components, products or materials involved that must relate to match existing work such as matching style, material or finish, surfaces, operation and dimensions. Specify compatibility between new and existing MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

PART 3 EXECUTION



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Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with the instructions and recommendations of the lumber manufacturer.

Specifier Note: Specify actions to physically determine that conditions are acceptable to receive primary products of the section.

3.02 EXAMINATION

- A. Site Verification of Conditions:
1. Verify that site conditions are acceptable for installation of lumber.
 2. Do not proceed with installation of lumber until unacceptable conditions are corrected.

Specifier Note: Coordinate article below with manufacturer's recommended installation requirements.

3.03 INSTALLATION

- A. Interface with other Work: (Specify requirements for compatibility, transition, anchorage, separation, bonding, etc., as required for project.).
- B. Sequences of Operation: (Specify required sequence of operation to suit project.).
- C. Site Tolerances: (Specify allowable variation to suit project.).
- D. Install lumber in compliance with approved shop drawings.
- E. Temporary Bracing:
1. LVL must be securely braced during construction. Temporary bracing must be anchored to the ground, foundation, a braced wall or other completed, stable section of the structure.
 2. Exercise caution when removing temporary bracing when applying sheathing. Remove bracing as sheathing is attached.
 3. All rim joists, blocking, connections and temporary bracing must be installed before erectors are allowed on the structure.
 4. Impose no loads other than the weight of the erectors on the structure before it is permanently sheathed.
 5. After sheathing, do not exceed design loads on members with construction materials.
 6. Support members laterally at end bearings and cantilevers.
 7. All conditions calling for notched or drilled beams must be reviewed and approved by a licensed professional engineer.

Specifier Note: Refer to manufacturer's technical literature for information on cutting, notches and holes.

- F. Conditions and Practices Which Are Not Permitted:
1. Do not place holes closer to supports than recommended by manufacturer.
 2. Do not over cut holes.
 3. Do not make holes not in compliance with allowable hole size and location recommendations of manufacturer.
 4. Do not install visibly damaged lumber.

Specifier Note: Specify the tests and inspections required for installed or completed work.

3.04 FIELD QUALITY CONTROL

- A. Site Tests: (Specify any required site tests.).

- B. Inspection: (Specify any required inspection procedures).

Specifier Note: Specify provisions for protecting work after installation but prior to acceptance by the owner. Coordinate article below with Division 1 Execution Requirements Section.

3.05 PROTECTION

- A. Protect installed work from damage due to subsequent construction activity on the site.

END OF SECTION