SECTION 06170

PREFABRICATED STRUCTURAL WOOD

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Laminated veneer lumber (LVL).

B. Laminated strand lumber (LSL).

C. Prefabricated wood joists (I-Joists).

D. Rim boards.

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Stud wall bracing and sheathing.

B. Section 07260 - Vapor Retarders: Vapor retarder on exterior walls and in crawl space.

1.3 REFERENCES

A. International Code Council (ICC-ES):
1. LVL Report Number: ESR-2403
2. LSL Report Number: ESR-2403
3. I-Joist Report Number: ESR-1305.
4. I-Joist APA Product Report Number: PR-L238

B. Canadian Construction Materials Centre (CCMC):
1. LVL Report Number: 11518-R.
2. LSL Report Number: 13319-R.
3. I-Joist Report Number: 12412-R.
4. APA Rated Rim Board Report Number:13308-R.

C. American Society for Testing and Materials International (ASTM):
1. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.4 SYSTEM DESCRIPTION

A. Design Requirements:
1. Provide engineered wood products and installed systems which have been engineered, manufactured, fabricated and installed to meet the specified performance requirements.

2. Regulatory Requirements and Approvals: Provide engineered wood products meeting the requirements of the referenced building code compliance reports.

B. Performance Requirements:
   1. Deflection Requirements:
      a. Live load deflection limit of no more than 1/600 of span or a maximum of [Specify deflection.] inches of deflection.
      b. Live load deflection limit of no more than 1/480 of span or a maximum of [Specify deflection.] inches of deflection.
      c. Live load deflection limit of no more than 1/360 of span or a maximum of [Specify deflection.] inches of deflection.
      d. Live load deflection limit as indicated on drawings.
      e. Total load deflection limit of no more than 1/360 of span or a maximum of [Specify deflection.] inches of deflection.
      f. Total load deflection limit of no more than 1/240 of span or a maximum of [Specify deflection.] inches of deflection.
      g. Total load deflection limit of no more than 1/180 of span or a maximum of [Specify deflection.] inches of deflection.
      h. Total load deflection limit as indicated on drawings.
   2. Assembly Fire Resistance Rating (ASTM E119): Members and connections required of this section are an integral part of required fire resistance assemblies indicated or required by the design.
      a. Provide members and connections to comply with fire rated assembly indicated of 1 hour.
      b. Provide members and connections to comply with fire rated assembly indicated of 2 hours.
      c. Provide members and connections to comply with fire rated assembly scheduled.
   3. Assembly Sound Transmission Class (STC) (ASTM E90): Members and connections required of this section are an integral part of required sound privacy assemblies indicated or required by the design.
      a. Provide members, connections and details to comply with sound privacy indicated of [Specify required STC.].
   4. Assembly Impact Isolation Criteria (IIC) (ASTM E90): Members and connections required of this section are an integral part of required sound privacy assemblies indicated or required by the design.
      a. Provide members, connections and details to comply with sound privacy indicated of [Specify required IIC.].

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Design Data: Submit design calculations signed and sealed by a professional engineer registered in the state of the Project location.

D. Test Reports: Upon request provide current structural, fire and sound test reports from recognized testing laboratories.

E. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.

F. Shop Drawings: Provide drawings indicating member type by manufacturer's series, size, location and connection details.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. Having a minimum 5 years experience manufacturing components comparable to or exceeding requirements of project.
   2. Having sufficient capacity to produce and deliver required materials without causing delay in the Work.

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

C. Mock-Up: Provide a mock-up for evaluation of visually critical members and connections surface preparation techniques and application workmanship.
   1. Finish areas and connection details designated by Architect.
   2. Do not proceed with remaining work until workmanship, connection details, and finish are approved by Architect.
   3. Correct mock-up as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.
   1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
   2. Keep materials dry and store on a hard, dry, level surface not in contact with the ground.
   3. Store materials in wrapped and strapped bundles stacked no more than 10 feet (3 m) high.
   4. Support bundles to prevent excessive bowing. Support and separate bundles with dimension lumber spaced no more than 10 feet (3 m) apart. Keep supports in line vertically.
   5. Handle individual pieces in a manner to prevent physical damage during measuring, cutting and erection.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 WARRANTY

A. Manufacturer shall provide material warranty:
   1. Warranty Period: Lifetime Limited Warranty beginning with date of substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: LP Building Products, which is located at: 414 Union St. Suite 2000 ; Nashville, TN 37219; Toll Free Tel: 888-820-0325; Email: marketing.center@LPCorp.com Web: www.LPCorp.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 LAMINATED WOOD VENEER LUMBER (LVL)

A. Product: LP SolidStart Laminated Veneer Lumber (LVL) by LP Building Products.
   1. Material: Ultrasonically and visually graded veneers arranged to specific patterns so that naturally occurring defects have no concentrated effect on the member's performance. Waterproof adhesive, bonded under pressure and heat.
   2. Water Resistant Coating:
      a. No coating required.
      b. Provide manufacturer's proprietary SiteCoat coating.
   3. Member: LVL.
      a. Grade (Bending/Modulus of Elasticity):2900Fb-2.0E.
      b. Grade (Bending/Modulus of Elasticity): 2400Fb-1.7E.
      c. Grade (Bending/Modulus of Elasticity): 2250Fb-1.5E.
      d. Thickness: 1-1/2 inches (38 mm).
      e. Thickness: 1-3/4 inches (44.5 mm).
      f. Depth: 3-1/2 inches (89 mm).
      g. Depth: 5-1/2 inches (140 mm).
      h. Depth: 7-1/4 inches (184 mm).
      i. Depth: 9-1/4 inches (235 mm).
      j. Depth: 9-1/2 inches (241 mm).
      k. Depth: 11-1/4 inches (286 mm).
      l. Depth: 11-7/8 inches (302 mm).
      m. Depth: 14 inches (356 mm).
      n. Depth: 16 inches (406 mm).
      o. Depth: 18 inches (457 mm).
      p. Depth: 20 inches (508 mm).
      q. Depth: 22 inches (559 mm).
      r. Depth: 23-7/8 inches (606 mm).
      s. Plies: 1.
      t. Plies: 2.
      u. Plies: 3.
      v. Plies: 4.
   4. Member: LVL Billet Beam.
      a. Grade (Bending/Modulus of Elasticity):2900Fb-2.0E.
      b. Thickness: 3-1/2 inches (89 mm).
      c. Thickness: 5-1/4 inches (133 mm).
      d. Thickness: 7 inches (178 mm).
      e. Depth: 3-1/2 inches (89 mm) only with the 3-1/2" Thickness.
      f. Depth: 5-1/2 inches (140 mm) only with the 5-1/4" Thickness.
      g. Depth: 7-1/4 inches (184 mm).
      h. Depth: 9-1/2 inches (241 mm).
      i. Depth: 11-7/8 inches (302 mm).
      j. Depth: 14 inches (356 mm).
      k. Depth: 16 inches (406 mm).
      l. Depth: 18 inches (457 mm).
      m. Plies: 1.
      n. Plies: 2.

2.3 LAMINATED WOOD STRAND LUMBER (LSL)

A. Product: LP SolidStart Laminated Strand Lumber (LSL) by LP Building Products.
   1. Material: Strands arranged parallel to the finished product's length. MDI, bonded and

cured under pressure and heat.
a. Water Resistant Coating:
b. Proprietary edge and end seal coating.
c. Water Resistant Coating: No coating required.

2. Member: LSL.
a. Grade (Bending/Modulus of Elasticity): 2640Fb/ 1.75E.
b. Grade (Bending/Modulus of Elasticity): 2360Fb/ 1.55E.
c. Grade (Bending/Modulus of Elasticity): 1730Fb/ 1.35E.
d. Thickness: 1-1/2 inches (38 mm).
e. Thickness: 1-3/4 inches (44.5 mm).
f. Thickness: 3-1/2 inches (89 mm).
g. Depth: 3-1/2 inches (89 mm).
h. Depth: 5-1/2 inches (140 mm).
i. Depth: 7-1/4 inches (184 mm).
j. Depth: 9-1/2 inches (241 mm).
k. Depth: 11-7/8 inches (302 mm).
l. Depth: 14 inches (356 mm).
m. Depth: 16 inches (406 mm).
n. Depth: 18 inches (457 mm).
o. Depth: 20 inches (508 mm).
p. Depth: 22 inches (559 mm).
q. Depth: 24 inches (610 mm).
r. Plies: 1.
s. Plies: 2.
t. Plies: 3.
u. Plies: 4.

2.4 WOOD JOISTS

A. Product: LP SolidStart I-Joists by LP Building Products.
1. Member:LPI 18. Solid sawn lumber top and bottom chords permanently attached to oriented strand board webs.
a. Flange Width: 2-1/2 inches (64 mm).
b. Flange Material: Solid Sawn.
c. Depth: 9-1/2 inches (241 mm).
d. Depth: 11-7/8 inches (302 mm).
e. Depth: 14 inches (356 mm).
2. Member:LPI 20Plus. Solid sawn lumber top and bottom chords permanently attached to oriented strand board webs.
a. Flange Width: 2-1/2 inches (64 mm).
b. Flange Material: Solid Sawn.
c. Depth: 9-1/2 inches (241 mm).
d. Depth: 11-7/8 inches (302 mm).
e. Depth: 14 inches (356 mm).
f. Depth: 16 inches (406 mm).
3. Member:LPI 32Plus. Solid sawn lumber top and bottom chords permanently attached to oriented strand board webs.
a. Flange Width: 2-1/2 inches (64 mm).
b. Flange Material: Solid Sawn.
c. Depth: 9-1/2 inches (241 mm).
d. Depth: 11-7/8 inches (302 mm).
e. Depth: 14 inches (356 mm).
f. Depth: 16 inches (406 mm).
4. Member:LPI 42Plus. Solid sawn lumber top and bottom chords permanently attached to oriented strand board webs.
a. Flange Width: 3-1/2 inches (89 mm).

b. Flange Material: Solid Sawn.
c. Depth: 9-1/2 inches (241 mm).
d. Depth: 11-7/8 inches (302 mm).
e. Depth: 14 inches (356 mm).
f. Depth: 16 inches (406 mm).
g. Depth: 18 inches (457 mm).
h. Depth: 20 inches (508 mm).
i. Depth: 22 inches (559 mm).
j. Depth: 24 inches (610 mm).

5. Member:LPI 52Plus. Solid sawn lumber top and bottom chords permanently attached to oriented strand board webs.
   a. Flange Width: 3-1/2 inches (89 mm).
   b. Flange Material: Solid Sawn.
   c. Depth: 9-1/2 inches (241 mm).
   d. Depth: 11-7/8 inches (302 mm).
   e. Depth: 14 inches (356 mm).
   f. Depth: 16 inches (406 mm).
   g. Depth: 18 inches (457 mm).
   h. Depth: 20 inches (508 mm).
   i. Depth: 22 inches (559 mm).
   j. Depth: 24 inches (610 mm).
6. Member:LPI 36. Laminated veneer lumber top and bottom chords permanently attached to oriented strand board webs.
   a. Flange Width: 2-1/4 inches (57 mm).
   b. Flange Material: LVL.
   c. Depth: 11-7/8 inches (302 mm).
   d. Depth: 14 inches (356 mm).
   e. Depth: 16 inches (406 mm).
   f. Depth: 18 inches (457 mm).
   g. Depth: 20 inches (508 mm).
   h. Depth: 22 inches (559 mm).
   i. Depth: 24 inches (610 mm).
7. Member:LPI 56. Laminated veneer lumber top and bottom chords permanently attached to oriented strand board webs.
   a. Flange Width: 3-1/4 inches (83 mm).
   b. Flange Material: LVL.
   c. Depth: 11-7/8 inches (302 mm).
   d. Depth: 14 inches (356 mm).
   e. Depth: 16 inches (406 mm).
   f. Depth: 18 inches (457 mm).
   g. Depth: 20 inches (508 mm).
   h. Depth: 22 inches (559 mm).
   i. Depth: 24 inches (610 mm).
8. Member:LPI 450. Laminated veneer lumber top and bottom chords permanently attached to oriented strand board webs.
   a. Flange Width: 1-3/4 inches (45 mm).
   b. Flange Material: LVL.
   c. Depth: 9-1/2 inches (241 mm).
   d. Depth: 11-7/8 inches (302 mm).
   e. Depth: 14 inches (356 mm).
9. Member:LPI 530. Laminated veneer lumber top and bottom chords permanently attached to oriented strand board webs.
   a. Flange Width: 2-1/16 inches (53 mm).
   b. Flange Material: LVL.
   c. Depth: 9-1/2 inches (241 mm).
   d. Depth: 11-7/8 inches (302 mm).

e. Depth: 14 inches (356 mm).
f. Depth: 16 inches (406 mm).

2.5 RIM BOARD

A. Product: LP SolidStart Rim Board by LP Building Products.
1. Material LP SolidStart Rim Board provides strength to the flooring system and is precision-cut to match the depths of LP SolidStart I-Joists.
2. Grade (Bending/Modulus of Elasticity): APA Rated OSB Rim Board (600/ 0.55).
a. Compression Stress Perpendicular to Grain (FC): 550.
b. Thickness: 1 inch (25 mm).
c. Thickness: 1-1/8 inches (29 mm).
d. Depth: 9-1/2 inches (241 mm).
e. Depth: 11-7/8 inches (302 mm).
f. Depth: 14 inches (356 mm).
g. Depth: 16 inches (406 mm).
h. Depth: 18 inches (457 mm).
i. Depth: 20 inches (508 mm).
j. Depth: 22 inches (559 mm).
k. Depth: 24 inches (610 mm).
l. Length: 12 feet (3658 mm).
m. Length: 16 feet (4877 mm).
3. Grade (Bending/Modulus of Elasticity): 1.35 E LVL Rim Board (1750/ 1.30).
a. Provide a cross ply LVL specifically engineered for rim board application and sized to transfer vertical loads directly to sill plate.
b. Compression Stress Perpendicular to Grain (FC): 680.
c. Thickness: 1-1/4 inches (32 mm).
d. Depth: 9-1/2 inches (241 mm).
e. Depth: 11-7/8 inches (302 mm).
f. Depth: 14 inches (356 mm).
g. Depth: 16 inches (406 mm).
h. Depth: 18 inches (457 mm).
i. Depth: 20 inches (508 mm).
j. Depth: 22 inches (559 mm).
k. Depth: 24 inches (610 mm).
l. Length: 12 feet (3658 mm).
m. Length: 16 feet (4877 mm).
4. Grade (Bending/Modulus of Elasticity): 1.35E LSL Rim Board (1730/ 1.35).
a. Compression Stress Perpendicular to Grain (FC): 750.
b. Thickness: 1-1/4 inches (32 mm).
c. Thickness: 1-1/2 inches (38 mm).
d. Depth: 9-1/2 inches (241 mm).
e. Depth: 11-7/8 inches (302 mm).
f. Depth: 14 inches (356 mm).
g. Depth: 16 inches (406 mm).
h. Depth: 18 inches (457 mm).
i. Depth: 20 inches (508 mm).
j. Depth: 22 inches (559 mm).
k. Depth: 24 inches (610 mm).
l. Length: 12 feet (3658 mm).
m. Length: 16 feet (4877 mm).

2.6 ACCESSORIES

A. Provide engineered connectors specifically designed for connection type and application.

Refer to drawings and schedules.

B. Provide nail and fastener types and sizes per member manufacturer's details and recommendations.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until supporting work has been properly prepared.

B. If supporting work is the responsibility of another installer, notify Architect of unsatisfactory work before proceeding.

3.2 PREPARATION

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

3.3 GENERAL INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install engineered wood products in compliance with approved shop drawings.

C. Conditions and Practices Not Permitted:
1. Do not place holes closer to supports than recommended by manufacturer.
2. Do not over cut holes and damage flanges.
3. Do not make holes with hammer unless a knockout is provided for this purpose.
4. Do not hammer on flange and damage joist.
5. Do not cut, notch or drill flange.
6. Do not use 16d or larger nails in flange.
7. Do not bevel cut joist ends inside edge of bearing.
8. Do not support joist on web.
9. Do not install visibly damaged joists.

3.4 JOISTS INSTALLATION

A. Accurately fit, align, securely fasten and install free from distortion or defects.

B. Conditions and Practices Required:
1. Carefully unload joists by lifting, using forklifts or cranes to avoid damage.
2. Keep joists stored in wrapped and strapped bundles stacked no more than 10 feet (3 m) high.
3. Support bundles to prevent excessive bowing. Support and separate bundles with dimension lumber spaced no more than 10 feet (3 m) apart. Keep supports in line vertically.
4. Handle individual joists in a manner to prevent physical damage during measuring, cutting and erection.
5. Handle joists vertically, not horizontally (flat).
6. Use at least 1 by 4 temporary bracing members nailed to each joist with two 8d common nails. Keep rows of bracing parallel at no more than 8 feet (2.5 m) apart.
7. Use long pieces for bracing, not short blocks. Lap ends to form a continuous line of bracing.
8. Anchor bracing at ends and at 25 feet (7.5 m) intervals into a stable end wall or an area braced by sheathing or diagonal bracing.
9. Exercise caution when removing temporary bracing when applying sheathing. Remove bracing as sheathing is attached.

10. All rim joists, blocking, connections and temporary bracing shall be installed before erectors are allowed on the structure.
11. Impose no loads other than the weight of the erectors on the structure before it is permanently sheathed.
12. After sheathing, do not exceed design loads on joists with construction materials.
13. Support joists laterally at end bearings and cantilevers.
14. I-joists shall have a minimum end bearing length of 1-1/2 inches (38 mm) for all I-joists having a depth not greater than 16 inches (406 mm) and a minimum end bearing length of 2-1/2 inches 64 mm) for all I-joists deeper than 16 inches (406 mm). All I-joists require a minimum intermediate bearing length of 3-1/2 inches (89 mm) regardless of series and depth.
15. Refer to drawings and member schedule for end bearing and interior bearing stiffener requirements.

3.5 LAMINATED VENEER LUMBER INSTALLATION

A. Install laminated veneer lumber plumb and level.

B. Accurately fit, align, securely fasten and install free from distortion or defects.

C. Temporary Bracing:
1. LVL shall be securely braced during construction. Temporary bracing shall 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 shall 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.

3.6 LAMINATED STRAND LUMBER INSTALLATION

A. Install laminated strand lumber plumb and level.

B. Accurately fit, align, securely fasten and install free from distortion or defects.

C. Temporary Bracing:
1. Securely brace LSL during construction by anchoring to the ground, foundation, a braced wall or other completed, stable section of the structure.
2. Support members laterally at end bearings and cantilevers.
3. Install all rim joists, blocking, connections and temporary bracing 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. Exercise caution when removing temporary bracing to apply sheathing.
6. After sheathing, do not exceed design loads on members with construction materials.
7. All conditions calling for notched or drilled beams must be reviewed and approved by a licensed professional engineer.

3.7 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION