

## SECTION 06 12 19

### SHEAR WALL PANELS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Prefabricated wood based shear panels designed and constructed to resist vertical (gravity) loads and resist lateral in-plane and out-of-plane loads resulting from wind or earthquakes in wood-framed wall construction.

##### 1.2 RELATED SECTIONS

- A. Section 03 30 00 – Cast-In-Place Concrete – Concrete provides support or anchorage.
- B. Section 04 05 00 – Common Work Results for Masonry – Masonry provides support or anchorage.
- C. Section 04 20 00 – Unit Masonry – Unit Masonry provides support or anchorage.
- D. Section 05 12 00 – Structural Steel Framing – Steel provides support or anchorage.
- E. Section 06 10 00 – Rough Carpentry – Wood supported by fastenings or providing support or anchorage.

##### 1.3 REFERENCES

- A. ASTM A36 – Carbon Structural Steel
- B. ASTM A449 – Hex. Cap Screws, Bolts and Studs, Steel, Heat Treated
- C. ASTM A563 – Carbon and Alloy Steel Nuts
- D. ASTM A653 – Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process
- E. ASTM A1011 – Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability and Ultra-High Strength
- F. ASTM D1761 – Mechanical Fasteners in Wood
- G. ASTM F436 – Hardened Steel Washers
- H. ASTM F680 – Standard Test Method for Nails
- I. ASTM F1554 – Anchor Bolts, Steel
- J. ASTM F1575 – Standard Test Method for Determining Bending Yield Moment of Nails
- K. ASTM F1667 – Driven Fasteners: Nails, Spikes, and Staples
- L. SAE J403 – Carbon Steel
- M. SAE J429 – Externally Threaded Fasteners
- N. SAE J995 – Steel Nuts
- O. ICC-ES ESR-1387 – Structural Composite Lumber
- P. ICC-ES AC155 – Acceptance Criteria for Hold-Downs (Tie-Downs) Attached to Wood Members
- Q. ICC-ES AC130 – Acceptance Criteria for Prefabricated Wood Shear Panels
- R. ICC-ES AC233 – Acceptance Criteria for Wood Screws

## 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to job site in manufacturer's or distributor's packaging undamaged, complete with installation instructions.
- B. Protect and handle materials in accordance with manufacturer's recommendations to prevent damage or deterioration.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturer: Simpson Strong-Tie<sup>®</sup> Company Inc.

### 2.2 MATERIALS

- A. Steel:
  - 1. Sheet: ASTM A36, ASTM A653, ASTM A1011
  - 2. Fasteners: ASTM A449, ASTM F1554, ASTM F1667, SAE J403, SAE J429
  - 3. Nuts: ASTM A563, SAE J995
  - 4. Washers: ASTM F436
- B. Lumber:
  - 1. 1.55 E TimberStrand<sup>®</sup> Laminated Strand Lumber (LSL)
- C. Finishes:
  - 1. Electro-plated galvanized, G90
  - 2. Orange Enamel

### 2.3 FABRICATION

- A. Shop assembly to occur per the manufacturer's approved production drawings.
- B. Fabrication tolerances per manufacturer.
- C. The manufacturer's identification shall be stamped into the metal or wood part and a label may be attached to the part with adhesive.

### 2.4 TESTING

- A. Testing to determine allowable loads shall be performed as per ICC-ES Acceptance Criteria 130 (AC130).
- B. Testing shall be conducted under the supervision of an independent laboratory.
- C. Manufacturer to provide code testing data on all products that have been code tested upon request.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. The panels shall be installed on supporting structural members per the manufacturer's instructions.
- B. Verify that the dimensions of the supporting member are sufficient to receive the specified panels.

### 3.2 INSTALLATION

- A. All specified fasteners must be installed according to the manufacturer's instructions.
- B. Install all specified fasteners before loading the prefabricated wood shear panel.
- C. For all framing members other than the prefabricated wood shear panel, wood shrinkage shall be taken into account.
- D. Do not overload by exceeding the manufacturer's catalog allowable load values.
- E. Use proper safety equipment.
- F. Drilling, sawing, sanding or machining wood products generates wood dust, a substance known to the state of California to cause cancer. For more information on Prop 65, visit [www.oehha.ca.gov](http://www.oehha.ca.gov).
- G. Choose the correct template from the manufacturer, required for proper bolt placement.
- H. The prefabricated wood shear panels shall be installed directly on concrete foundations, masonry foundations or walls, or steel beams per the manufacturer's instructions. There may be a reduction in allowable load if a prefabricated wood shear panel is installed on a masonry foundation or a steel beam.
- I. Concrete installation: The Prefabricated wood shear panel must be installed directly on a concrete foundation over two anchor bolts per the manufacturer's instructions. The panel holdowns must be secured to the anchor bolts with high strength nuts.
- J. Masonry or steel installation: Installation of the prefabricated wood shear panels on masonry walls or foundations or steel beams may be permitted, subject to the approval of the code official based on calculations and details prepared by the registered design professional.
- K. Field trimming or drilling must be performed in accordance with the manufacturer's allowable guidelines.
- L. The top of the prefabricated wood shear panel may be field cut up to a 45-degree slope to accommodate rake wall applications per the manufacturer's instructions.
- M. Prefabricated wood shear panels may also be used in 2x6 wall framing. Install with wall flush to one face of the framing and add furring to the opposite side.
- N. Prefabricated wood shear panels may be installed with solid or multi-ply headers per the manufacturer's instructions.
- O. The top of the prefabricated wood shear panel must be attached to wood top plates or a beam with shear transfer plates (WSW-TOW), per the manufacturer's instructions.
- P. The maximum shim thickness between the top of the prefabricated wood shear panel and the top plates or header is 7/8".
- Q. Garage Portal System: Installation of the prefabricated wood shear panels with the portal frame connection kit (WSW-PK) shall be per the manufacturer's instructions. The kit is included with all panels 100" or less in height and must be ordered separately for panels over 100-inches tall. The WSW-PS straps shall be attached to the prefabricated wood shear panel and to the wood header with 10d x 2½" (0.148" x 2 ½") minimum nails. The header must span continuously across the length of the panel. Single-wall portal header support shall be installed per the manufacturer's instructions.
- R. Balloon Framing Installation: Install panels per the manufacturer's instructions. For panels over 18 ft. tall, a minimum of one nominal 2-by-6, spruce-pine-fir stud grade or better stud must be installed on each side of the panel using 10d common (0.148" x 3") nails at 16" on center. Alternate full height members may be required by the registered design professional. The attachment to the full height studs and at the top and bottom of the balloon-framed panels must be per the manufacturer's or registered design professional's instructions.
- S. Two-story stacked installation: Installation of the stacked prefabricated wood shear panels shall be per the manufacturer's instructions. The second-story panel height must include the wall height plus the total depth of the floor system; verify panel height per manufacturer's instructions. The second-story panel shall be the same width as the first story panel. The multi-story connection kit (WSW-MSK), which contains an LSL bearing block and holdowns with pre-attached bolts must be installed. The LSL bearing block shall be inserted between the double top plate and second story panel. The MSK holdowns shall be attached to the first story panel with 10d x 2½" minimum nails and to the second story panel with the washers and nuts supplied with the upper panel.

- T. Anchor bolt nuts should be finger-tight plus  $\frac{1}{8}$  turn with a wrench. Do not use an impact wrench to tighten nuts on the anchor bolts.
- U. Nail tools with hole-locating mechanisms may be used to attach approved connectors to the prefabricated wood shear panel as required by the manufacturer.

### **3.3 FIELD QUALITY CONTROL**

- A. Determine that the proper part is being used in the correct application and has been fabricated by the approved manufacturer by observation of the stamp into the metal part and/or the adhesive label on the product denoting part and manufacturer name.
- B. Before substituting another brand, confirm load capacity based on published testing data and calculations per Section 2.4. The engineer/designer of record shall evaluate and give written approval for substitution prior to installation.