Multi-Ply Girders

Girders are trusses specially designed to carry extra loads from framing and equipment. Sometimes a single ply girder truss is insufficient to carry the entire load, so the Truss Designer specifies a multiple ply girder. This girder is made of similar trusses built and fastened together to act as one unit to support the load. **Multi-ply girders can perform according to the design only if all plies are properly attached together.**

**Ply-to-Ply Connection Requirements**

Always check the Truss Design Drawing for the girder ply-to-ply connection requirements. They are listed in the fastener schedule and will specify the type, size and on center spacing of fasteners to use with that particular multi-ply girder. For example, the nailing schedule for this three-ply girder is:

**Good Installation Practices**

- If possible, fasten girder plies together before lifting into place.
- Attach framing members or loads only after all girder plies are in place and properly attached. This avoids overloading the girder ply closest to the load.
- Truss-to-girder connection information will be on the Truss Design Drawing of the carried truss.
Guidelines

- Fasteners may be nails, bolts or specially designed screws depending on the amount of load and number of girder plies.

- Follow AF&PA’s National Design Specification® (NDS®) for Wood Construction for fastener end and edge distance requirements to prevent splitting of lumber.

- Ply-to-ply connection guidelines for girder trusses are included in ANSI/TPI 1 National Design Standard for Metal Plate Connected Wood Truss Construction.

Girder trusses up to 3 plies can be fastened together with nails. Nail schedule is for each additional ply.

Girders up to 4 plies can be connected with specially designed high strength screws. Install screws so heads are on the same side as the load, in 2 or 3 ply applications. Pre-drilling may be required in high-density material.

Two ply floor trusses may also be attached with screws.

Bolt girders with 4 or more plies.

Maximum 5 plies for girders supporting loads on one side.

Bolt locations must not interfere with hardware or framing. Pre-drill all bolt holes. Use washers at bolt head and nut. Nails may also be required.

Maximum 6 plies for girders supporting loads on both sides.

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