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Technical Bulletin (TB-LVL-2)

Subject: Multi-ply IB LVL Fastening with TrussLok Screws
 August 2010

Murphy Company LVL (laminated veneer lumber) typically comes in 1¾" thicknesses (although 3½" thickness is also available). Each 1¾" LVL is referred to as a ply. Thus, two 1¾" LVLs is considered a two-ply assembly. When greater than 1¾" thickness is required for strength, it is necessary to fasten the multiple LVL plies together to act as a single unit. Up to four LVL plies can be fastened together. Several combinations of nailed and bolted fastening assemblies are indicated in our Murphy LVL Design Manual. There are many other possible configurations and fasteners. Not all fasteners have suitable length and properties for multi-ply fasteners, so alternate fasteners should be engineered by a design professional experienced in wood construction.

Some proprietary screws have been designed specifically for LVL multi-ply fastening. TrussLok screws, manufactured by FastenMaster, are one such fastener. The advantage over bolted fastening is that TrussLok screws are self-driving (no pre-drilling required) and can be installed from only one face of a multi-ply LVL. The screws also help draw the LVL plies together. For this reason, they are sometimes preferred even in assemblies where nailed fastening is permitted.

The following table, with notes and illustrations, can be used as a design aid for fastening Murphy LVLs with TrussLok screws. The table is for side-applied loads, but as indicated in footnote 1, if the LVL is top-loaded and the load is shared equally by all LVL plies, the minimum specified fastening schedule may be used. An example of such a top-loaded condition is I-joists continuous over an interior multi-ply LVL beam.

Multi-Ply Lvl Attachment (U.S. ASD)

Allowable Side-Loaded Uniform Load (PLF)

Fastened with TrussLok screws (installed from one face only)

IB 2.0E - 3100Fb LVL (1.75" THICK EACH PLY) SG=0.50

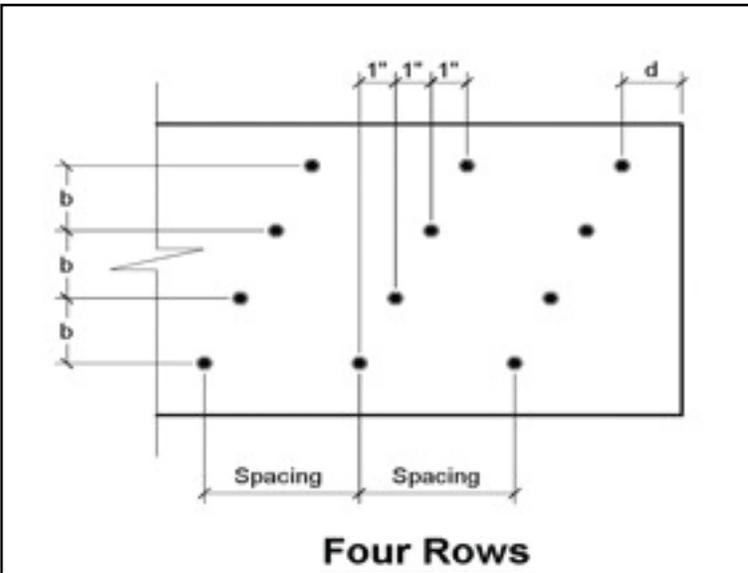
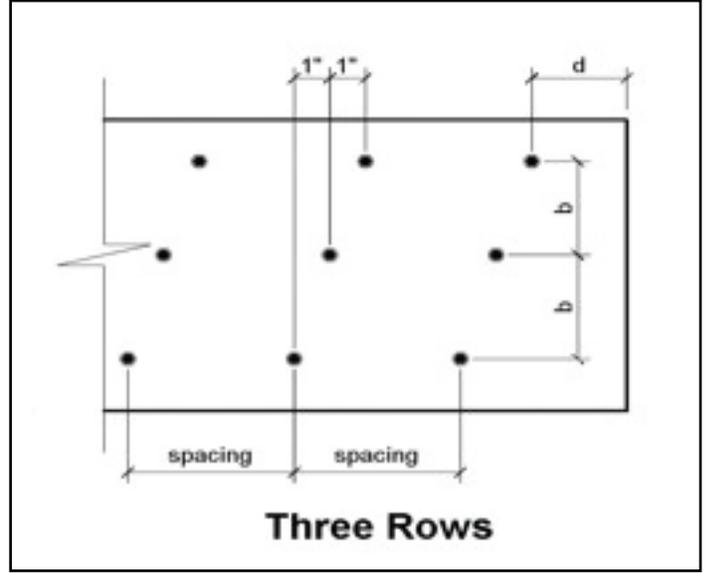
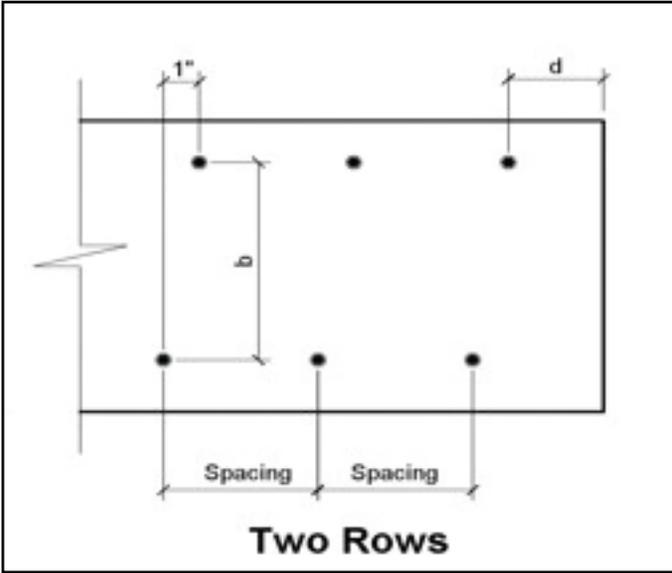
TrussLok Screw Size	Rows	2	3	4	2	3	4	Applied loading
	Spacing	24	24	24	12	12	12	
EWS338-F3.3	2 - PLYS	516	774	1032	1032	1548	2064	One side only
EWS005-F5.0	3- PLYS	387	581	774	774	1161	1548	One side only
EWS670-F6.7	4- PLYS	344	516	688	688	1032	1376	One side only

- Notes:
1. Tables above are for LVL ply-to-ply attachment to act as a single unit at side-applied uniform loads. For top-loaded conditions, loaded equally on each ply, use minimum 2 rows of screws at maximum 24" O.C. Spacing.
 2. Table values indicate maximum capacity in pounds per linear foot (plf) for floor loading (cd=1.0). For roof loading, multiply table values by 1.15.
 3. Trusslok screw minimum spacings: observe 1½" edge distance, minimum end distance, d = 4", minimum vertical spacing between screws, b = 3". Stagger rows horizontally 1" minimum.
 4. Trusslok screws, manufactured by fastenmaster, with 0.228" Nominal diameter (root diameter 0.215", F_y = 202,200 psi). A qualified registered professional must design capacities for other, spacing, and configurations.
 5. Side framing must be properly fastened to LVL per hanger manufacturer's requirements.
 6. Verify adequacy of beam in uniform load tables prior to using these tables.
 7. Use minimum two rows of trusslok screws for 7¼" to 11⅞" LVL beam depths and minimum three rows of trusslok screws for 14" to 24" LVL beam depths. For less than 7¼" LVL beam depth, contact Murphy Company.



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Refer to table and notes on other side for conditions.



This technical bulletin is intended for use with Murphy Company products and offers general guidelines for topics that may not be covered in our literature. Appropriateness of details for a specific project should be evaluated by a qualified designer. This technical bulletin may be periodically updated. Check our website to ensure that you have the most recent version.

Design data and drawings courtesy of J. Mark Bartel, P.E., P.Eng.

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