NYC BUILDINGS

NYC Department of Buildings
280 Broadway, New York, NY 10007
Patricia Lancaster, FAIA, Commissioner
(212) 566-5000, TTY: (212) 566-4769

Report of Materials and Equipment Acceptance Division

Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use subject to the terms and conditions contained herein.

MEA 101-00-E Vol.6

1.0 MANUFACTURER

LOUISIANA-PACIFIC CORPORATION
2706 HIGHWAY 421 NORTH
WILMINGTON, NORTH CAROLINA 28401
910.762.9878
www.lpcorp.com

2.0 TRADE NAME

LPI 18, LPI 20W, LPI 20, LPI 20X1.5 (Also known as LPI 20PLUS), LPI 20X1.7, LPI 32W (Also known as LPI 32PLUS), LPI 32 AND LPI 42X1.8 (Also known as LPI 42PLUS) Series Wood I-JOISTS and RIM BOARDS

3.0 PRODUCT

Wooden I-joists, with flanges made of kiln-dried, solid sawn lumber and webs of oriented strand board structural panels. The I-joist series, depths and flange sizes are given in Table 1.

4.0 USES

LPI Wood I-Joists are intended for structural applications such as, but not limited to, floor joists, roof joists, blocking panels and rim joists.

5.0 DESCRIPTION

5.1 Pertinent Code Sections

Pertinent code sections for the LPI Wood I-Joists are: Article 7 Wood, Section 27-617 and Reference Standard RS-10, Section 27-133 Alternate or Equivalent Material.

5.2 General

LPI Wood I-Joists have structural wood flanges and a single web as specified in the approved Quality Assurance Manual (herein referred to as the Manual) that contains the manufacturing standards. Web sections are end-jointed together to form a continuous web. Web end joints shall be of the types specified in the Manual. The web-flange connection is made by inserting the beveled edge of the web into a groove centered in the wide face of the flange member.

The flange sizes, depths and manufacturing tolerances of the I-joists shall be as specified in the Manual.

5.3 Materials

5.3.1 Flanges

The flange material is solid sawn lumber that meets the requirements noted in the Manual.

5.3.2 Webs

Webs are at least 3/8-inch-thick (9.5 mm) for the 9-1/2 inch to 16 inch I-joist depths and 7/16-inch-thick (11.1 mm) for the 18 inch (457 mm) to 24 inch (610 mm) I-joist depths and comply with U.S. Voluntary Product Standard PS 2-92 and the Manual.

5.3.3 Adhesive

Adhesives are exterior wet use types complying with ASTM D2559 and shall be of the types specified in the Manual.

5.3.4 Quality Assurance Manuals

All LPI Wood I-Joists are manufactured under a strict Quality Assurance Program outlined in the below Quality Assurance Manuals:

1. Quality Assurance Manual for LPI 18, LPI 20W, LPI 20, LPI 20X1.5 (also known as LPI 20Plus) and LPI 20X1.7 Series I-Joists, July 18, 2005.
2. Quality Assurance Manual for LPI 32W (also known as LPI 32Plus), LPI 32 and LPI 42X1.8 (also known as LPI 42Plus) Series I-Joists, July 18, 2005.

6.0 DESIGN AND INSTALLATION

6.1 Design

LPI Wood I-Joists must be designed in accordance with Tables 1 to 9 of this report, except that appropriate design load(s), deflection limitation(s) and other performance standards of the New York City Building Code shall apply. The following conditions also apply:

1. Web stiffeners are optional when the LPI Wood I-Joists are designed in accordance with Tables 1 to 8, except when any of the following conditions are encountered:
   a. Bird's mouth cuts. See Figure 6, Detail 6.
   b. Where sloped joist hangers support I-joists.
   c. Where joist hangers do not laterally support the I-joist's top flange.
   d. When required by Table 1 due to actual reaction loads.
2. The tabulated maximum resistive moments given in Table 1 for I-joist shall not be increased by any code allowed repetitive member use factor.
3. An analytical approach for the location and size of I-Joist web holes, including use of the LP design software can be used in lieu of the hole chart tables or web hole equations noted in this report, provided the hole calculations are reviewed and approved by a professional engineer. Size and location of allowable web holes are noted in Tables 2A, 2B, 3A, and 3B for the LPI 18 Series I-joists, and in Tables 4A, 4B, 4C, 4D, 5A, 5B, 5C and 5D for all other LPI Series I-joists described in this report. Web hole equations are noted in Tables 6 and 7 for the LPI 18 and other LPI Series I-joists, respectively. If the engineer uses the LP design software for web hole design, the engineer must provide proper reference to the software. Figure 1 shows the web hole drawings.
4. For the purpose of nailed connections, such as a wood structural panel connection to an I-joist top flange, the assumed specific gravity for the flange material shall be 0.42.

6.2 LPI I-Joist Rim Board Applications

The LPI I-Joists are recognized for use as rim boards as shown in Figure 4, Detail 2. For the purpose of this report, rim boards are defined as continuously supported structural members, either located at the joist elevation in an end bearing wall or located parallel to the joist framing, that are the full depth of the joist space and are used for any of the following purposes:

1. Transfer, from above to below, of all vertical loads at the rim board location. Allowable vertical loads are noted in Figure 4.
2. Provide diaphragm attachment (sheathing to the top edge of rim board).
3. Transfer of maximum 230 plf (3358 N/m) in-plane lateral loads from the diaphragm to the wall plate below. See Figure 4 for shear transfer details.
4. Provide lateral support to the joist or rafter (resistance against rotation) through attachment to the joist or rafter.

6.3 Installation

LPI Wood I-Joists are installed using details shown in Figures 1 to 8 of this report.

1. All I-joist top flanges must be laterally supported, and the ends must be restrained to prevent rollover. This support is normally provided by diaphragm sheathing attached to the top flange and to an end wall or shear-transfer panel capable of transferring 50 pounds per foot (730 N/m). Blocking or cross-bracing with equivalent strength may also be used.
2. Sheathing attachment to the I-joist flanges shall not exceed the nail sizing and minimum spacing requirements given in Table 8 of this report.
3. I-joist attachment to supports shall not exceed the nail sizing and minimum spacing requirements given in Table 8 of this report.
4. Bridging may be omitted in floor and roof joist applications. Bracing is required during construction in accordance with the manufacturer's instructions.
5. The material, size, and attachment of web reinforcement shall be as illustrated and described in Figure 7 of this report.
6. Details are directed towards proper installation of all LPI wood I-joists. Other considerations, such as diaphragm connections, nailing and load transfers, require supplementary consideration by the responsible engineer.
7. Handling and Storage:
   a. Unload I-joists carefully, by lifting. Support the bundles to reduce excessive bowing. Individual I-joists should be handled in a manner that prevents physical damage to the I-joist during measuring, cutting, erection, etc. I-joists should be handled vertically and not flatwise.
   b. I-joists should remain stored in wrapped and strapped bundles, stacked no more than 12 feet high, using blocking supports between bundles spaced no more than 10 feet apart.
   c. I-joists must not be stored in contact with the ground, or have prolonged exposure to the weather
   d. When I-joist are stored out of doors or exposed to wet weather conditions during construction, the user shall inspect I-joists for flange-web separation, swelling and warping and replaced if so damaged.

6.4 One-Hour Fire-Resistance-Rated Floor-Ceiling Assembly

The single-layer floor or roof deck consists of 23/32-inch (18.3 mm) thick tongue-and-groove APA-rated plywood sheathing, Sturd-I-Floor or equivalent (Exposure 1 or Exterior glue), over LPI I-joists spaced up to 24 inches (610 mm) on center. In lieu of the 23/32-inch (18.3 mm) thick floor sheathing, 19/32-inch (15.1 mm) thick sheathing with a ¾-inch (19.1 mm) thick fill of Gyp-Crete is acceptable.

The cavity may be insulated with optional 3-1/2-inch (89 mm) thick R-11 glass fiber insulation batts. If the glass fiber insulation batts are used, the insulation must be installed between I-joists with stay wires placed a minimum of 12 inches (305 mm) on center. Stay wires ends shall be ¾ inch (19.1 mm) above the lower surface of the bottom flanges. Insulation shall be pulled down to completely cover the I-joist web. RCI resilient channels, attached to the bottom flange of the I-joists with the gypsum wallboard attached to the channel, are options, provided the channels are spaced up to 16 inches (406 mm) on center.

The ceiling consists of two layers of ½ -inch (12.7 mm) thick Type X gypsum board attached to the I-joist's bottom flange. Long edges of sheathing must be perpendicular to the I-joists with staggered end joints. The first layer of gypsum wallboard is attached perpendicular to the I-joists, with end joints staggered, using 1-5/8-inch (41.3 mm) long Type W screws spaced 12 inches (305 mm) on center. The second layer of gypsum wallboard is attached perpendicular to the I-joists. All joints are staggered from the first layer, using 2-1/4-inch (57 mm) long Type W screws spaced 12 inches (305 mm) on center on the I-joists, and 1-1/2-inch (38 mm) long Type G screws spaced 16 inches (406 mm) on center between the I-joists. The second layer must be finished with joint tape and compound. See Figure 8 for additional details.

6.5 Sound Ratings

The systems in Section 6.4 have the sound transmission and impact insulation classification noted in Table 9 of this report.

7.0 IDENTIFICATION

LPI Wood I-Joists shall be identified with the Louisiana-Pacific Corporation name or logo; the quality control agency name or logo (APA-The Engineered Wood Association), the report number (MEA-101-00-E); the mill number and the date of fabrication.

8.0 EVIDENCE SUBMITTED

Tests - Flange Tension Tests, EI and Moment Capacity Tests, Shear Capacity Tests, Multiple Span Bearing Capacity Tests, Minimum End Bearing Tests, Round Web Opening Shear Capacity Tests, and Rectangular Web Opening Shear Capacity Tests.

Laboratory - In-house testing was performed by Louisiana-Pacific Corporation and was witnessed by a representative of PFS Corporation, Intertek Testing Services or APA-The Engineered Wood Association. Tables and drawings contained in this report were prepared by Louisiana-Pacific Corporation and sealed by Daniel Michael McGee, P.E., New York State License No. 04103.

Test Reports for LPI wood I-joists are as follows:

1. LPI 32 Series I-Joists: Tension, EI, Bending, Moment, Deflection, Creep, K-factor, MOE and Web Hole Tests.
2. LPI 32 Series I-Joists: Single and Multiple Span Shear.
3. LPI 20 Series I-Joist General Specifications: Test Reports, Sample Calculations and Data.
4. Qualification Test Data for LPI 20 Series- 14" Depth.
5. Qualification Test Data for LPI 20 Series- 16" Depth.
6. Qualification Test Data for LPI 20X1.5 (20Plus) Series.
7. Qualification Test Data for LPI 20X1.7 Series- 16" Depth.
8. Qualification Test Data for LPI 20X1.7 Series- Revised Moment Design Values.
9. Qualification Test Data for LPI 20X1.7 Series I-Joists Manufactured by LP Hines.
10. Confirmation Test Data for LPI 20X1.7 Series I-Joists Manufactured by LP Wilmington.
11. Confirmation Test Data for LPI 20X1.7 Series I-Joists Manufactured by Les Chantiers de Chibougamau.

12. Confirmation Test Data for LPI 32 Series I-Joists Manufactured by LP Illinois.
13. Confirmation Test Data for LPI 32 Series I-Joists Manufactured by LP Wilmington.
14. Confirmation Test Data for LPI 20X1.7 and 32 Series I-Joists, having Ashland Isocet finger-joint adhesive. Manufactured by Les Chantiers de Chibougamau.
15. Confirmation Test Data for LPI 20 Series I-Joists Manufactured by LP Illinois.
16. Confirmation Test Data for LPI 20 Series I-Joists Manufactured by LP Wilmington.
17. Confirmation Test Data for LPI 20, 20X1.7 and 32 Series I-Joists Manufactured by LP Larouche.
18. Confirmation Test Data for LPI 20X1.7 and 32 Series I-Joists Manufactured by Jager-Bolton.
19. Qualification Test Data for LPI 42X1.8 (LPI 42Plus) Series.
20. Sound Transmission Loss and Impact Sound Transmission Test Data by NU Laboratories, Inc.
21. ASTM E 119 Fire Endurance Test of a Wood I-Joist Floor-Ceiling and Roof-Ceiling Assembly by PFS Corporation.

9.0 CONDITIONS OF USE

The LPI I-Joists described in this report shall comply with this report and are subject to the following conditions:

1. The LPI wood I-joists shall be designed in accordance with this report. Details provided in Figures 1 through 8 and Tables 1 through 9 of this report must be confirmed for applicability for each project. Engineering calculations may be required. The following items should be considered when submitting calculations to the building official: lateral support, vertical support, connections (including selection of joist hangers), lateral force resistance, location and size of web holes and applied loads and spans.

2. Structural designs using LPI I-Joists shall conform to the manufacturer's specifications except that appropriate design load(s), deflection limitation(s) and other performance standards of the New York City Building Code shall apply.

3. Where a one-hour fire-resistance rating is required, construction shall comply with Section 6.4 of this report.

4. Where sound transmission and impact requirements are required by the codes, construction shall comply with Section 6.5 and Table 9 of this report.

5. The I-joists must be installed in accordance with this report and the manufacturer's installation details. Installation details may require supplementary consideration as noted in Section 6.3.

6. The I-joists are manufactured in accordance with the Quality Assurance Manuals with third-party inspections by APA-The Engineered Wood Association at the Louisiana-Pacific Corporation Engineered Wood Products facilities in Wilmington, North Carolina, Red Bluff, California, Larouche, Quebec, Canada, St. Prime, Quebec, Canada and at the Jager Building Systems facility in Bolton, Ontario, Canada and at the Les Chantiers de Chibougamau, Limited, facility in Chibougamau, Quebec, Canada.

10.0 RECOMMENDATIONS

That the LPI I-Joists be accepted on the condition that all uses, locations and installations shall comply with the applicable requirements of the New York City Building Code and Technical Policy and Procedure Notice #8, 1992 dated August 19, 1992 (attached) and on further condition that:

1. Structure designs using wood I-joists shall conform to the manufacturer's specifications except that appropriate design load(s), deflection limitation(s) and other performance standards of the New York City Building Code shall apply.

2. When stored outdoors or exposed to wet weather conditions during construction, be inspected by the user for flange-web separation, swelling or warping and be replaced if so damaged.

3. Glue used shall not delaminate during a fire.

4. Wood I-Joists shall be used in locations that will ultimately be protected from the weather and be marked "Exposure 1", indicating the exposure durability as defined in PS 2-92, "Performance Standards for Wood-Based Structural Use Panels."

5. The size of any cutouts in the web of the joist shall not exceed the manufacturer's recommendations.

6. The cutting of openings for ducts, pipes, conduits, etc. in wood I-joists shall be subject to a controlled inspection.

7. Firestopping shall be provided between the ceiling and the floor or roof above and shall be divided into approximately equal areas not greater than 500 square feet.

8. The building permit applicant shall notify the Fire Department of the proposed installation of wood I-joists prior to the Building Department issuance of a construction permit. Evidence of such notification shall be a certifying statement submitted on Form TR-1, Technical Report, reading as follows:

> I hereby state that I have mailed a copy of this statement to the Fire Department, Bureau of Fire Prevention, Technology Management Unit, as notification of the proposed installation of wood I-joists at this location.

This statement shall be placed on the reverse side of the form in the lower right-hand box.

The copy of the completed Form TR-1 shall be mailed to the address at:

> Chief-In-Charge of the Bureau of Fire Prevention
> Fire Department
> Bureau of Fire Prevention
> Technology Management Unit
> 9 MetroTech Center
> Brooklyn, New York 11201-3857

All shipments and deliveries of such material shall be provided with a permanent marking suitably placed, certifying that the material shipped or delivered is equivalent to those tested and accepted for use, as provided for in Section 27-131 of the Building Code.

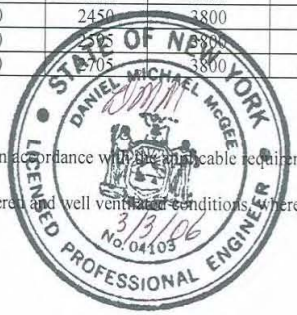
Final Acceptance June 23, 2006

Examined by Donald Gottfried SD

TABLE 1 – LIST OF PRODUCTS AND ALLOWABLE DESIGN VALUES OF I-JOISTS

JOIST SERIES	JOIST DEPTH (in)	FLANGE WIDTH (in)	MOMENT (see note 4) (lbs-ft)	EI x 10^6 (lbs-in^2)	K x 10^6 (ft-lbs./in)	SHEAR (lbs.)	END REACTION 1.5" MINIMUM BEARING LENGTH (lbs.)		INTERIOR REACTION 3.5" MINIMUM BEARING LENGTH (lbs.)	
							W/O W.S.	W/ W.S.	W/O W.S.	W/ W.S.
LPI 18	9-1/2	2-1/2	2365	142	0.355	1120	865	1120	1820	1840
	11-7/8	2-1/2	3100	248	0.435	1225	930	1225	2135	2295
	14	2-1/2	3820	371	0.508	1475	1080	1475	2205	3170
	16	2-1/2	4274	514	0.577	1635	1090	1635	2205	3365
LPI 20W	9-1/2	2-1/2	2780	176	0.358	1230	950	1230	2000	2025
	11-7/8	2-1/2	3645	300	0.438	1350	1025	1350	2350	2525
	14	2-1/2	4270	441	0.512	1620	1190	1620	2425	3490
	16	2-1/2	5028	602	0.582	1800	1200	1800	2425	3700
LPI 20	9-1/2	2-1/2	2780	176	0.358	1230	950	1230	2000	2025
	11-7/8	2-1/2	3645	300	0.438	1350	1025	1350	2350	2525
	14	2-1/2	4270	441	0.512	1620	1190	1620	2750	3490
	16	2-1/2	5028	602	0.582	1800	1200	1800	2850	3700
LPI 20X1.5	9-1/2	2-1/2	2810	185	0.358	1230	950	1230	2000	2025
	11-7/8	2-1/2	3755	318	0.438	1350	1025	1350	2350	2525
	14	2-1/2	4400	474	0.512	1620	1190	1620	2425	3490
	16	2-1/2	5050	652	0.582	1800	1200	1800	2425	3700
LPI 20X1.7	9-1/2	2-1/2	3320	206	0.358	1230	950	1230	2000	2025
	11-7/8	2-1/2	4300	345	0.438	1350	1025	1350	2350	2525
	14	2-1/2	5175	500	0.512	1620	1190	1620	2750	3490
	16	2-1/2	6000	673	0.582	1800	1200	1800	2850	3700
LPI 32W	9-1/2	2-1/2	3620	243	0.213	1250	950	1250	2000	2025
	11-7/8	2-1/2	4690	406	0.267	1350	1025	1350	2350	2525
	14	2-1/2	5645	589	0.313	1620	1190	1620	2500	3490
	16	2-1/2	6545	791	0.358	1800	1200	1800	2500	3700
LPI 32	9-1/2	2-1/2	3620	243	0.213	1250	950	1250	2000	2025
	11-7/8	2-1/2	4690	406	0.267	1350	1025	1350	2350	2525
	14	2-1/2	5645	589	0.313	1620	1190	1620	2750	3490
	16	2-1/2	6545	791	0.358	1800	1200	1800	2850	3700
LPI 42X1.8	9-1/2	3-1/2	5375	328	0.501	1305	1280	1305	3020	3500
	11-7/8	3-1/2	6965	555	0.613	1615	1280	1550	3020	3500
	14	3-1/2	8390	810	0.716	1830	1280	1620	3020	3500
	16	3-1/2	9725	1100	0.813	2020	1280	1800	3020	3500
	18	3-1/2	11000	1405	0.976	2920	1700	2305	3800	5000
	20	3-1/2	12170	1779	1.081	3260	1700	2450	3800	5000
	22	3-1/2	13335	2199	1.186	3600	1700	2595	3800	5000
	24	3-1/2	14480	2668	1.291	3855	1700	2705	3800	5000

For **SI** Units: 1 in = 25.4 mm, 1 ft = 304.8 mm, 1 ft-lb. = 1.356 N-m, 1 LB = 4.448 N, 1 in^2-lb = 0.00287 N-m^2



NOTES:

1. The moment and shear values are for normal duration of load. Duration of load adjustments may be applied in accordance with the applicable requirements of the New York City Building Code.
2. The allowable design values are for dry use conditions only. Dry use applies to products installed in dry, covered and well ventilated conditions, where the equilibrium moisture content will not exceed 16%.
3. When calculating deflection, both bending and shear deformation shall be determined:
   For bending deflection use the standard engineering formulas.
   Example: Formula for uniform load on a simple span I-joist:

$$\Delta = \frac{22.5WL^4}{EI} + \frac{WL^2}{K}$$

where:

Δ = Deflection in inches.
W = Uniform load in pounds per lineal foot (plf).
L = Design span in feet.
K = Shear deformation coefficient.
EI = Stiffness in lbs-in.^{2}.

4. Moment capacity shall **not** be increased by any code allowed repetitive member use factor.
5. W/ W.S. is with web stiffeners, W/O W.S. is without web stiffeners.

TABLE 2A – LPI 18 SERIES I-JOISTS HOLE CHART: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD, UP TO 24" OC

Joist Depth	Clear Span	Circular Holes											
		Distance from End Support						Distance from Interior Support					
		Hole Diameter						Hole Diameter					
		2"	4"	6"	8"	10"	12"	2"	4"	6"	8"	10"	12"
9-1/2"	6'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-6"	-	-	-
	8'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-6"	-	-	-
	10'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-6"	-	-	-
	12'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-9"	-	-	-
	14'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	3'-1"	-	-	-
	16'	1'-0"	1'-0"	2'-1"	-	-	-	1'-0"	2'-4"	4'-4"	-	-	-
	18'	1'-0"	1'-5"	3'-3"	-	-	-	1'-9"	3'-6"	5'-10"	-	-	-
	20'	1'-0"	2'-7"	4'-7"	-	-	-	2'-11"	4'-11"	7'-6"	-	-	-
11-7/8"	6'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	-	-
	8'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	-	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	-	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-8"	3'-5"	-	-
	16'	1'-0"	1'-0"	1'-6"	2'-6"	-	-	1'-0"	1'-6"	3'-2"	4'-9"	-	-
	18'	1'-0"	1'-0"	2'-4"	3'-8"	-	-	1'-3"	3'-1"	4'-5"	6'-3"	-	-
	20'	1'-0"	1'-7"	3'-1"	5'-1"	-	-	2'-11"	4'-5"	6'-0"	8'-0"	-	-
	22'	1'-2"	2'-10"	4'-6"	6'-2"	-	-	4'-4"	6'-0"	7'-8"	9'-4"	-	-
	24'	2'-5"	3'-8"	5'-6"	7'-3"	-	-	5'-4"	7'-2"	9'-0"	11'-5"	-	-
14"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-6"	2'-5"	3'-10"	-
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-10"	-	1'-0"	1'-1"	2'-4"	3'-11"	5'-2"	-
	18'	1'-0"	1'-0"	1'-6"	2'-9"	4'-1"	-	1'-3"	2'-8"	4'-0"	5'-4"	6'-9"	-
	20'	1'-0"	1'-1"	2'-7"	4'-1"	5'-7"	-	2'-5"	3'-11"	5'-5"	7'-0"	8'-6"	-
	22'	1'-2"	2'-3"	3'-11"	5'-0"	6'-8"	-	3'-9"	5'-5"	6'-7"	8'-3"	9'-11"	-
	24'	1'-10"	3'-8"	4'-10"	6'-8"	7'-11"	-	5'-4"	6'-7"	8'-4"	9'-7"	11'-5"	-
	26'	3'-4"	4'-7"	5'-11"	7'-11"	9'-2"	-	6'-5"	8'-5"	9'-9"	11'-8"	13'-0"	-
	28'	4'-3"	5'-8"	7'-1"	9'-2"	10'-7"	-	8'-4"	9'-9"	11'-2"	13'-4"	-	-
	30'	5'-4"	6'-10"	8'-4"	10'-7"	12'-1"	-	9'-9"	11'-3"	12'-9"	15'-0"	-	-
16"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-9"	4'-2"
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-3"	1'-0"	1'-0"	1'-11"	3'-2"	4'-4"	5'-7"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	3'-3"	4'-7"	1'-0"	2'-2"	3'-1"	4'-5"	5'-10"	7'-2"
	20'	1'-0"	1'-1"	2'-1"	3'-1"	4'-7"	6'-1"	2'-5"	3'-5"	4'-11"	6'-0"	7'-6"	9'-0"
	22'	1'-0"	1'-8"	3'-4"	4'-6"	5'-7"	7'-3"	3'-9"	4'-11"	6'-0"	7'-8"	8'-9"	10'-5"
	24'	1'-10"	3'-1"	4'-3"	5'-6"	7'-3"	8'-6"	5'-4"	6'-7"	7'-9"	9'-0"	10'-9"	12'-0"
	26'	3'-4"	4'-0"	5'-3"	6'-7"	8'-6"	9'-10"	6'-5"	7'-9"	9'-[illegible]	[illegible]'-3"	[illegible]	12'-4"	-
	28'	4'-3"	5'-8"	6'-4"	7'-9"	9'-11"	11'-3"	7'-8"	9'-1"	[illegible]'-6"	11'-[illegible]	[illegible]	14'-0"	-
	30'	5'-4"	6'-10"	7'-7"	9'-1"	10'-7"	12'-10"	9'-9"	10'-6"	[illegible]'-0"	[illegible]'-[illegible]	[illegible]	[illegible]	-

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 110 plf (e.g., 40 psf Live Load and 15 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular hole or obround hole, or to the nearest edge of a rectangular hole from the closest support.
3. Obround holes are not allowed for LPI 18 Series I-Joists.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
6. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 6).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor
10. SI Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 2B – LPI 18 SERIES I- JOISTS HOLE CHART: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD, UP TO 24" OC

Joist Depth	Clear Span	Rectangular Holes															
		Distance from End Support								Distance from Interior Support							
		Maximum Hole Dimension: Depth or Width								Maximum Hole Dimension: Depth or Width							
		2"	4"	6"	8"	10"	12"	14"	16"	2"	4"	6"	8"	10"	12"	14"	16"
9-1/2"	6'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-
	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	2'-2"	2'-9"	3'-2"	3'-10"	-	-
	10'	1'-0"	1'-0"	2'-4"	2'-10"	3'-4"	3'-10"	4'-4"	-	1'-0"	1'-11"	3'-9"	4'-3"	4'-9"	-	-	-
	12'	1'-0"	1'-10"	3'-8"	4'-0"	4'-7"	5'-2"	5'-10"	-	1'-9"	3'-7"	5'-5"	6'-0"	-	-	-	-
	14'	1'-5"	2'-10"	5'-0"	5'-4"	6'-1"	6'-9"	-	-	3'-1"	4'-10"	7'-0"	-	-	-	-	-
	16'	2'-6"	4'-1"	6'-1"	6'-11"	7'-4"	-	-	-	4'-9"	6'-5"	-	-	-	-	-	-
	18'	3'-8"	5'-6"	7'-9"	8'-2"	8'-8"	-	-	-	6'-3"	8'-1"	-	-	-	-	-	-
	20'	5'-1"	6'-7"	9'-1"	9'-7"	-	-	-	-	7'-6"	10'-0"	-	-	-	-	-	-
11-7/8"	6'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-
	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	3'-0"	3'-5"	4'-0"	-	-
	10'	1'-0"	1'-0"	1'-7"	3'-1"	3'-7"	4'-1"	4'-10"	-	1'-0"	1'-5"	2'-11"	4'-6"	5'-0"	-	-	-
	12'	1'-0"	1'-3"	2'-9"	4'-3"	4'-11"	5'-6"	-	-	1'-9"	2'-11"	4'-6"	-	-	-	-	-
	14'	1'-1"	2'-6"	3'-11"	5'-8"	6'-5"	-	-	-	3'-1"	4'-6"	5'-11"	-	-	-	-	-
	16'	2'-1"	3'-8"	5'-3"	7'-4"	7'-8"	-	-	-	4'-4"	6'-0"	7'-7"	-	-	-	-	-
	18'	3'-3"	5'-0"	6'-5"	8'-8"	-	-	-	-	5'-10"	7'-8"	-	-	-	-	-	-
	20'	4'-7"	6'-1"	8'-1"	-	-	-	-	-	7'-6"	9'-0"	-	-	-	-	-	-
	22'	5'-7"	7'-3"	9'-5"	-	-	-	-	-	8'-9"	11'-0"	-	-	-	-	-	-
	24'	7'-3"	8'-6"	10'-11"	-	-	-	-	-	10'-9"	-	-	-	-	-	-	-
14"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-7"	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-10"	4'-7"	1'-0"	1'-0"	1'-6"	2'-0"	3'-9"	4'-6"	-	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	3'-5"	4'-3"	5'-2"	-	1'-0"	1'-0"	1'-6"	2'-11"	5'-1"	6'-0"	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-6"	4'-8"	5'-8"	6'-5"	-	1'-0"	1'-0"	2'-5"	4'-6"	7'-0"	-	-	-
	16'	1'-0"	1'-0"	1'-8"	3'-8"	6'-1"	6'-11"	7'-8"	-	1'-0"	1'-6"	3'-7"	6'-0"	-	-	-	-
	18'	1'-0"	1'-0"	2'-9"	5'-0"	7'-3"	8'-2"	-	-	1'-3"	3'-1"	4'-11"	7'-8"	-	-	-	-
	20'	1'-0"	1'-7"	3'-7"	6'-1"	8'-7"	9'-7"	-	-	2'-5"	4'-5"	6'-6"	9'-0"	-	-	-	-
	22'	1'-0"	2'-10"	5'-0"	7'-3"	10'-0"	-	-	-	3'-9"	6'-0"	8'-3"	10'-5"	-	-	-	-
	24'	1'-10"	3'-8"	6'-1"	8'-6"	11'-6"	-	-	-	5'-4"	7'-2"	9'-7"	-	-	-	-	-
	26'	3'-4"	5'-3"	7'-3"	9'-10"	-	-	-	-	6'-5"	9'-1"	11'-0"	-	-	-	-	-
	28'	4'-3"	6'-4"	8'-6"	11'-3"	-	-	-	-	8'-4"	10'-6"	12'-7"	-	-	-	-	-
	30'	5'-4"	7'-7"	9'-10"	12'-10"	-	-	-	-	9'-9"	12'-0"	14'-3"	-	-	-	-	-
16"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-2"	4'-0"	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-4"	4'-1"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-8"	4'-9"	-	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-7"	5'-6"	-	1'-0"	1'-0"	1'-6"	2'-0"	4'-2"	-	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	3'-7"	6'-1"	-	-	1'-0"	1'-0"	1'-8"	3'-5"	5'-7"	-	-	-
	16'	1'-0"	1'-0"	1'-6"	2'-10"	4'-11"	7'-4"	-	-	1'-0"	1'-1"	3'-2"	5'-2"	7'-2"	-	-	-
	18'	1'-0"	1'-0"	1'-10"	4'-1"	6'-5"	8'-8"	-	-	1'-0"	2'-8"	4'-5"	6'-9"	9'-0"	-	-	-
	20'	1'-0"	1'-7"	3'-1"	5'-1"	7'-7"	-	-	-	2'-5"	3'-11"	6'-0"	8'-0"	-	-	-	-
	22'	1'-0"	2'-3"	4'-6"	6'-8"	8'-11"	-	-	-	3'-9"	5'-5"	7'-8"	9'-11"	-	-	-	-
	24'	1'-10"	3'-8"	5'-6"	7'-11"	10'-4"	-	-	-	4'-9"	7'-2"	9'-0"	11'-5"	-	-	-	-
	26'	2'-8"	4'-7"	6'-7"	9'-2"	11'-10"	-	-	-	6'-5"	8'-5"	10'-5"	13'-0"	-	-	-	-
	28'	4'-3"	5'-8"	7'-9"	10'-7"	13'-5"	-	-	-	7'-8"	9'-9"	11'-11"	-	-	-	-	-
	30'	5'-4"	6'-10"	9'-1"	12'-1"	14'-4"	-	-	-	8'-11"	11'-3"	13'-6"	-	-	-	-	-

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 110 plf (e.g., 40 psf Live Load and a 15 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular hole, or obround hole, or to the nearest edge of a rectangular hole, from the closest support.
3. Obround holes are not allowed in the LPI 18 Series I-Joists.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
6. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ⅛" clear distance is required between the hole and a flange.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 6).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor
10. SI Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

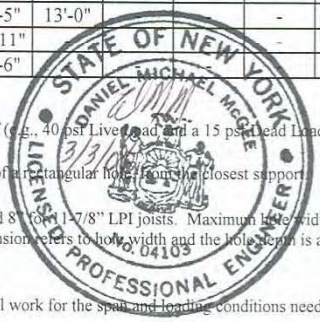


TABLE 3A – LPI 18 SERIES I-JOISTS HOLE CHART: 40 PSF LIVE LOAD, 25 PSF DEAD LOAD, UP TO 24" OC

Joist Depth	Clear Span	Circular Holes											
		Distance from End Support						Distance from Interior Support					
		Hole Diameter						Hole Diameter					
		2"	4"	6"	8"	10"	12"	2"	4"	6"	8"	10"	12"
9-1/2"	6'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-6"	-	-	-
	8'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-6"	-	-	-
	10'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-6"	-	-	-
	12'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	2'-8"	-	-	-
	14'	1'-0"	1'-0"	2'-2"	-	-	-	1'-0"	2'-5"	4'-2"	-	-	-
	16'	1'-0"	1'-8"	3'-3"	-	-	-	1'-11"	3'-7"	5'-7"	-	-	-
	18'	1'-0"	2'-9"	4'-7"	-	-	-	3'-6"	5'-4"	7'-2"	-	-	-
	20'	2'-1"	4'-1"	5'-7"	-	-	-	4'-11"	6'-6"	8'-6"	-	-	-
11-7/8"	6'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	-	-
	8'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	-	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	-	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-9"	2'-11"	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-6"	-	-	1'-0"	1'-8"	3'-1"	4'-6"	-	-
	16'	1'-0"	1'-0"	2'-1"	3'-8"	-	-	1'-6"	3'-2"	4'-4"	6'-0"	-	-
	18'	1'-0"	1'-10"	3'-3"	5'-0"	-	-	3'-1"	4'-5"	5'-10"	7'-8"	-	-
	20'	1'-7"	3'-1"	4'-7"	6'-1"	-	-	4'-5"	6'-0"	7'-6"	9'-0"	-	-
	22'	2'-10"	4'-6"	5'-7"	7'-9"	-	-	6'-0"	7'-8"	8'-9"	11'-0"	-	-
	24'	4'-3"	5'-6"	7'-3"	9'-1"	-	-	7'-2"	9'-0"	10'-9"	-	-	-
14"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-6"	2'-0"	3'-3"	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-10"	-	1'-0"	1'-4"	2'-5"	3'-5"	4'-10"	-
	16'	1'-0"	1'-0"	1'-8"	2'-10"	4'-1"	-	1'-6"	2'-9"	3'-11"	5'-2"	6'-5"	-
	18'	1'-0"	1'-5"	2'-9"	4'-1"	5'-6"	-	2'-8"	4'-0"	5'-4"	6'-9"	8'-1"	-
	20'	1'-7"	2'-7"	4'-1"	5'-1"	6'-7"	-	4'-5"	5'-5"	7'-0"	8'-0"	9'-6"	-
	22'	2'-10"	3'-11"	5'-0"	6'-8"	7'-9"	-	5'-5"	7'-1"	8'-3"	9'-11"	-	-
	24'	3'-8"	4'-10"	6'-1"	7'-11"	9'-1"	-	7'-2"	8'-4"	9'-7"	11'-5"	-	-
	26'	5'-3"	6'-7"	7'-11"	9'-2"	10'-6"	-	8'-5"	9'-9"	11'-8"	13'-0"	-	-
	28'	6'-4"	7'-9"	9'-2"	10'-7"	12'-0"	-	10'-6"	11'-11"	13'-4"	-	-	-
	30'	7'-7"	9'-1"	10'-7"	12'-1"	13'-7"	-	12'-0"	13'-6"	15'-0"	-	-	-
16"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-8"	3'-7"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-3"	1'-0"	1'-0"	2'-0"	3'-1"	4'-2"	5'-3"
	16'	1'-0"	1'-0"	1'-6"	2'-1"	3'-3"	4'-6"	1'-6"	2'-4"	3'-2"	4'-4"	5'-7"	6'-9"
	18'	1'-0"	1'-5"	2'-4"	3'-3"	4'-7"	5'-6"	2'-8"	3'-6"	4'-11"	5'-10"	7'-2"	8'-7"
	20'	1'-7"	2'-7"	3'-7"	4'-7"	5'-7"	7'-1"	3'-11"	4'-11"	6'-6"	7'-6"	8'-6"	10'-0"
	22'	2'-10"	3'-4"	4'-6"	5'-7"	7'-3"	8'-4"	5'-5"	6'-7"	7'-8"	8'-9"	10'-5"	-
	24'	3'-8"	4'-10"	6'-1"	7'-3"	8'-6"	9'-8"	7'-2"	8'-4"	9'-7"	10'-9"	12'-0"	-
	26'	4'-7"	5'-11"	7'-3"	8'-6"	9'-10"	11'-2"	8'-5"	9'-9"	11'-0"	12'-4"	-	-
	28'	6'-4"	7'-1"	8'-6"	9'-11"	11'-3"	12'-8"	9'-9"	11'-2"	12'-6"	14'-0"	-	-
	30'	7'-7"	8'-4"	9'-10"	11'-4"	12'-1"	13'-7"	11'-3"	12'-9"	14'-3"	-	-	-

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 130 plf (e.g., 40 psf Live Load and a 25 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular hole or obround hole, or to the nearest edge of a rectangular hole, from the closest support.3.
3. Obround holes are not allowed for LPI 18 Series I-Joists.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 7" for 11-7/8" LPI joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
6. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 6).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor
10. **SI** Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 3B – LPI 18 SERIES I-JOISTS HOLE CHART: 40 PSF LIVE LOAD, 25 PSF DEAD LOAD, UP TO 24" OC

Joist Depth	Clear Span	Rectangular Holes															
		Distance from End Support								Distance from Interior Support							
		Maximum Hole Dimension: Depth or Width								Maximum Hole Dimension: Depth or Width							
		2"	4"	6"	8"	10"	12"	14"	16"	2"	4"	6"	8"	10"	12"	14"	16"
9-1/2"	6'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-
	8'	1'-0"	1'-0"	1'-8"	2'-1"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-4"	2'-9"	3'-2"	3'-10"	-	-	-
	10'	1'-0"	1'-7"	2'-10"	3'-4"	3'-10"	4'-4"	4'-10"	-	1'-5"	2'-8"	4'-6"	5'-0"	-	-	-	-
	12'	1'-3"	2'-9"	4'-3"	4'-7"	5'-2"	5'-10"	-	-	2'-11"	4'-6"	6'-0"	-	-	-	-	-
	14'	2'-6"	3'-11"	5'-8"	6'-1"	6'-9"	-	-	-	4'-2"	5'-11"	-	-	-	-	-	-
	16'	3'-8"	5'-3"	6'-11"	7'-4"	-	-	-	-	6'-0"	7'-7"	-	-	-	-	-	-
	18'	4'-7"	6'-5"	8'-2"	-	-	-	-	-	7'-2"	9'-0"	-	-	-	-	-	-
	20'	6'-1"	7'-7"	9'-7"	-	-	-	-	-	9'-0"	-	-	-	-	-	-	-
11-7/8"	6'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-
	8'	1'-0"	1'-0"	1'-6"	2'-3"	2'-8"	3'-3"	3'-8"	-	1'-0"	1'-0"	2'-2"	3'-7"	4'-0"	-	-	-
	10'	1'-0"	1'-1"	2'-4"	3'-7"	4'-1"	4'-7"	-	-	1'-2"	2'-5"	3'-9"	-	-	-	-	-
	12'	1'-0"	2'-2"	3'-5"	4'-11"	5'-6"	-	-	-	2'-8"	3'-10"	5'-5"	-	-	-	-	-
	14'	2'-2"	3'-3"	4'-8"	6'-5"	6'-9"	-	-	-	4'-2"	5'-7"	7'-0"	-	-	-	-	-
	16'	3'-3"	4'-6"	6'-1"	7'-8"	-	-	-	-	5'-7"	7'-2"	-	-	-	-	-	-
	18'	4'-7"	5'-11"	7'-3"	-	-	-	-	-	7'-2"	8'-7"	-	-	-	-	-	-
	20'	5'-7"	7'-1"	9'-1"	-	-	-	-	-	9'-0"	-	-	-	-	-	-	-
	22'	7'-3"	8'-4"	10'-7"	-	-	-	-	-	10'-5"	-	-	-	-	-	-	-
	24'	8'-6"	9'-8"	11'-6"	-	-	-	-	-	12'-0"	-	-	-	-	-	-	-
14"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-9"	3'-5"	4'-0"	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-10"	3'-7"	4'-1"	-	1'-0"	1'-0"	1'-6"	2'-5"	4'-3"	5'-0"	-	-
	12'	1'-0"	1'-0"	1'-6"	2'-2"	4'-0"	4'-11"	5'-6"	-	1'-0"	1'-0"	2'-0"	3'-10"	6'-0"	-	-	-
	14'	1'-0"	1'-0"	1'-6"	3'-3"	5'-4"	6'-5"	-	-	1'-0"	1'-8"	3'-5"	5'-3"	-	-	-	-
	16'	1'-0"	1'-0"	2'-6"	4'-6"	6'-11"	7'-8"	-	-	1'-6"	3'-2"	4'-9"	6'-9"	-	-	-	-
	18'	1'-0"	1'-10"	3'-8"	5'-11"	8'-2"	-	-	-	2'-8"	4'-5"	6'-3"	8'-7"	-	-	-	-
	20'	1'-7"	3'-1"	5'-1"	7'-1"	9'-7"	-	-	-	3'-11"	6'-0"	8'-0"	10'-0"	-	-	-	-
	22'	2'-10"	4'-6"	6'-2"	8'-4"	-	-	-	-	5'-5"	7'-8"	9'-4"	-	-	-	-	-
	24'	3'-8"	5'-6"	7'-11"	9'-8"	-	-	-	-	7'-2"	9'-0"	11'-5"	-	-	-	-	-
	26'	4'-7"	6'-7"	9'-2"	11'-2"	-	-	-	-	8'-5"	10'-5"	13'-0"	-	-	-	-	-
	28'	6'-4"	7'-9"	10'-7"	12'-8"	-	-	-	-	9'-9"	11'-11"	-	-	-	-	-	-
	30'	7'-7"	9'-1"	11'-4"	14'-4"	-	-	-	-	12'-0"	13'-6"	-	-	-	-	-	-
16"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-10"	-	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-10"	4'-7"	-	1'-0"	1'-0"	1'-6"	2'-0"	3'-6"	-	-	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	3'-1"	5'-2"	-	-	1'-0"	1'-0"	1'-6"	3'-3"	5'-1"	-	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-6"	4'-8"	6'-9"	-	-	1'-0"	1'-4"	3'-1"	4'-6"	6'-8"	-	-	-
	16'	1'-0"	1'-0"	2'-1"	4'-1"	5'-8"	-	-	-	1'-1"	2'-9"	4'-4"	6'-5"	-	-	-	-
	18'	1'-0"	1'-10"	3'-3"	5'-0"	7'-3"	-	-	-	2'-8"	4'-0"	5'-10"	7'-8"	-	-	-	-
	20'	1'-7"	3'-1"	4'-7"	6'-7"	8'-7"	-	-	-	3'-11"	5'-5"	7'-6"	9'-6"	-	-	-	-
	22'	2'-3"	3'-11"	5'-7"	7'-9"	10'-0"	-	-	-	5'-5"	7'-1"	8'-9"	11'-0"	-	-	-	-
	24'	3'-8"	5'-6"	7'-3"	9'-1"	11'-6"	-	-	-	7'-2"	8'-4"	10'-9"	-	-	-	-	-
	26'	4'-7"	6'-7"	8'-6"	10'-6"	12'-5"	-	-	-	8'-5"	10'-5"	12'-4"	-	-	-	-	-
	28'	5'-8"	7'-9"	9'-11"	12'-0"	-	-	-	-	9'-9"	11'-11"	14'-0"	-	-	-	-	-
	30'	6'-10"	9'-1"	11'-4"	12'-10"	-	-	-	-	11'-3"	13'-6"	-	-	-	-	-	-

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 130 plf (e.g. 40 psf Live Load and 25 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular hole or obround hole, or to the nearest edge of a rectangular hole, from the closest support.
3. Obround holes are not allowed in the LPI 18 Series I-Joists.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI Joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
6. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 6).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor
10. **SI** Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 4A – WEB HOLE CHART (NOT INCLUDING LPI 18): 40 PSF LIVE LOAD, 15 PSF DEAD LOAD, UP TO 24" OC (CIRCULAR HOLES)

Joist Depth	Clear Span	Circular Holes (including Obround Holes)													
		Distance from End Support							Distance from Interior Support						
		Hole Diameter						Obround	Hole Diameter						Obround
		2"	4"	6"	8"	10"	12"	Hole	2"	4"	6"	8"	10"	12"	Hole
9-1/2"	6'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"
	8'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"
	10'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-0"	1'-6"	-	-	-	1'-11"
	12'	1'-0"	1'-0"	1'-6"	-	-	-	1'-8"	1'-0"	1'-0"	1'-6"	-	-	-	3'-4"
	14'	1'-0"	1'-0"	1'-6"	-	-	-	2'-10"	1'-0"	1'-0"	2'-5"	-	-	-	4'-9"
	16'	1'-0"	1'-0"	1'-8"	-	-	-	4'-0"	1'-0"	1'-6"	3'-7"	-	-	-	6'-4"
	18'	1'-0"	1'-0"	2'-9"	-	-	-	5'-3"	1'-0"	2'-8"	4'-11"	-	-	-	7'-11"
	20'	1'-0"	1'-7"	3'-7"	-	-	-	6'-6"	1'-11"	4'-5"	6'-6"	-	-	-	9'-7"
11-7/8"	6'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"
	8'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-11"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-8"	1'-0"	1'-0"	1'-6"	2'-0"	-	-	3'-4"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	2'-10"	1'-0"	1'-0"	1'-6"	2'-9"	-	-	4'-9"
	16'	1'-0"	1'-0"	1'-6"	2'-1"	-	-	4'-0"	1'-0"	1'-0"	2'-4"	3'-11"	-	-	6'-4"
	18'	1'-0"	1'-0"	1'-6"	3'-3"	-	-	5'-3"	1'-0"	2'-2"	3'-6"	5'-10"	-	-	7'-11"
	20'	1'-0"	1'-0"	2'-7"	4'-1"	-	-	6'-6"	1'-5"	3'-5"	4'-11"	7'-0"	-	-	9'-7"
	22'	1'-0"	1'-8"	3'-4"	5'-7"	-	-	7'-10"	3'-3"	4'-11"	6'-7"	8'-9"	-	-	11'-3"
	24'	1'-3"	3'-1"	4'-10"	6'-8"	-	-	9'-2"	4'-2"	5'-11"	8'-4"	10'-2"	-	-	13'-0"
14"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-4"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-5"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	2'-9"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	2'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	4'-3"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	3'-9"	1'-0"	1'-0"	1'-6"	2'-0"	3'-1"	-	5'-9"
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	5'-0"	1'-0"	1'-0"	1'-6"	3'-2"	4'-9"	-	7'-4"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	3'-8"	-	6'-3"	1'-0"	1'-3"	3'-1"	4'-5"	6'-3"	-	9'-0"
	20'	1'-0"	1'-0"	1'-7"	3'-1"	4'-7"	-	7'-7"	1'-5"	2'-11"	4'-5"	6'-0"	7'-6"	-	10'-9"
	22'	1'-0"	1'-2"	2'-10"	4'-6"	6'-2"	-	8'-11"	2'-8"	4'-4"	6'-0"	7'-8"	9'-4"	-	12'-6"
	24'	1'-3"	2'-5"	3'-8"	5'-6"	7'-3"	-	10'-4"	4'-2"	5'-4"	7'-2"	9'-0"	10'-9"	-	14'-3"
	26'	2'-0"	3'-4"	5'-3"	6'-7"	8'-6"	-	11'-9"	5'-10"	7'-1"	8'-5"	10'-5"	12'-4"	-	16'-1"
	28'	2'-10"	5'-0"	6'-4"	7'-9"	9'-11"	-	13'-2"	6'-11"	8'-4"	10'-6"	11'-11"	14'-0"	-	18'-0"
	30'	4'-7"	6'-1"	7'-7"	9'-1"	11'-4"	-	14'-8"	8'-2"	9'-9"	12'-0"	13'-6"	-	-	19'-11"
16"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-11"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-11"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-4"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-1"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-10"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-4"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-5"	6'-5"
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-7"	1'-0"	1'-0"	1'-6"	2'-4"	3'-7"	5'-2"	8'-1"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-9"	4'-1"	6'-11"	1'-0"	1'-3"	2'-2"	3'-6"	4'-11"	6'-9"	9'-9"
	20'	1'-0"	1'-0"	1'-6"	2'-7"	3'-7"	5'-1"	8'-4"	1'-5"	2'-5"	3'-11"	4'-11"	6'-6"	8'-0"	11'-6"
	22'	1'-0"	1'-2"	2'-3"	3'-4"	5'-0"	6'-8"	9'-9"	2'-8"	3'-9"	4'-11"	6'-7"	8'-3"	9'-11"	13'-4"
	24'	1'-0"	1'-10"	3'-1"	4'-10"	6'-1"	7'-11"	11'-2"	4'-2"	5'-4"	6'-7"	8'-4"	9'-7"	11'-5"	15'-2"
	26'	2'-0"	3'-4"	4'-7"	5'-11"	7'-3"	9'-2"	12'-7"	5'-2"	6'-5"	8'-5"	9'-10"	11'-7"	13'-7"	17'-1"
	28'	2'-10"	4'-3"	5'-8"	7'-1"	8'-6"	10'-7"	14'-1"	6'-11"	8'-4"	9'-9"	11'-3"	12'-9"	14'-8"	19'-0"
	30'	3'-10"	5'-4"	6'-10"	8'-4"	9'-10"	12'-1"	15'-6"	8'-2"	9'-9"	11'-3"	12'-9"	14'-5"	16'-5"	21'-0"

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 110 plf (e.g., 40 psf Live Load and 15 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular or obround hole, or to the nearest edge of a rectangular hole, from the nearest support.
3. Obround holes are (up to) full web-depth holes with semi-circular ends defined by three overlapping circular holes spaced up to 1-1/2" apart, center-to-center of holes.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI Joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
6. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange. Obround holes may be up to full web-depth.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater. **Exception**: adjacent obround holes may be spaced as close as 24" clear distance between holes.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 7).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor.
10. **SI** Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

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TABLE 4B - WEB HOLE CHART (NOT INCLUDING LPI 18): 40 PSF LIVE LOAD, 15 PSF DEAD LOAD, UP TO 24" OC (CIRCULAR HOLES)

Joist Depth	Clear Span	Circular Holes												
		Distance from End Support						Distance from Interior Support						
		Hole Diameter						Hole Diameter						
		2"	4"	6"	8"	10"	12"	14"	2"	4"	6"	8"	10"	12"	14"
18"	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-9"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-8"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-7"	6'-3"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-1"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	5'-0"	8'-0"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-4"	6'-2"	1'-0"	1'-0"	1'-6"	2'-0"	3'-3"	6'-0"	9'-4"
	24'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-3"	7'-4"	1'-0"	1'-0"	1'-6"	2'-4"	4'-9"	7'-9"	10'-10"
	26'	1'-0"	1'-0"	1'-6"	2'-0"	2'-8"	5'-3"	8'-7"	1'-0"	1'-0"	1'-6"	3'-2"	6'-5"	9'-1"	13'-0"
	28'	1'-0"	1'-0"	1'-6"	2'-0"	3'-7"	6'-5"	9'-11"	1'-0"	1'-0"	2'-0"	4'-10"	7'-8"	10'-6"	-
	30'	1'-0"	1'-0"	1'-6"	2'-4"	4'-7"	7'-7"	11'-4"	1'-0"	1'-0"	3'-8"	5'-11"	9'-0"	12'-0"	-
	32'	1'-0"	1'-0"	1'-6"	3'-3"	5'-8"	8'-11"	12'-11"	1'-0"	2'-4"	4'-9"	7'-2"	10'-5"	13'-7"	-
	34'	1'-0"	1'-0"	1'-9"	4'-4"	6'-11"	10'-4"	14'-7"	1'-0"	3'-4"	5'-11"	9'-4"	11'-11"	15'-4"	-
20"	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-0"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-6"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-11"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-4"	7'-2"
	24'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-6"	1'-0"	1'-0"	1'-6"	2'-0"	3'-6"	6'-0"	8'-5"
	26'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-0"	6'-7"	1'-0"	1'-0"	1'-6"	2'-6"	4'-6"	7'-1"	10'-5"
	28'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	5'-0"	7'-10"	1'-0"	1'-0"	1'-6"	3'-5"	6'-3"	9'-1"	11'-11"
	30'	1'-0"	1'-0"	1'-6"	2'-0"	3'-10"	6'-1"	9'-1"	1'-0"	1'-0"	2'-11"	5'-2"	7'-5"	10'-6"	13'-6"
	32'	1'-0"	1'-0"	1'-6"	2'-5"	4'-10"	7'-3"	10'-6"	1'-0"	1'-6"	3'-11"	6'-4"	8'-9"	12'-0"	15'-3"
	34'	1'-0"	1'-0"	1'-6"	3'-6"	6'-0"	8'-7"	11'-2"	1'-0"	2'-6"	5'-0"	7'-7"	10'-2"	13'-7"	17'-0"
22"	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-11"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-3"	5'-5"
	24'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-8"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-9"	6'-7"
	26'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-8"	1'-0"	1'-0"	1'-6"	2'-0"	3'-10"	5'-10"	8'-5"
	28'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-7"	5'-8"	1'-0"	1'-0"	1'-6"	2'-9"	4'-10"	7'-8"	9'-9"
	30'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-7"	6'-10"	1'-0"	1'-0"	2'-2"	4'-5"	6'-8"	9'-0"	11'-3"
	32'	1'-0"	1'-0"	1'-6"	2'-0"	3'-3"	5'-8"	8'-1"	1'-0"	1'-6"	3'-1"	5'-6"	8'-0"	10'-5"	12'-10"
	34'	1'-0"	1'-0"	1'-6"	2'-7"	4'-4"	6'-11"	9'-5"	1'-0"	2'-6"	5'-0"	6'-9"	9'-4"	11'-11"	14'-5"
	36'	1'-0"	1'-0"	1'-6"	3'-8"	5'-6"	8'-2"	10'-11"	1'-8"	3'-6"	6'-3"	8'-1"	10'-9"	13'-6"	16'-3"
	38'	1'-0"	1'-0"	1'-11"	4'-10"	6'-9"	9'-7"	12'-6"	2'-9"	4'-8"	7'-7"	9'-5"	12'-4"	15'-2"	18'-1"
24"	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-9"
	24'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-6"	5'-4"
	26'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-6"	7'-1"
	28'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-3"	1'-0"	1'-0"	1'-6"	2'-0"	4'-2"	6'-3"	8'-4"
	30'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-10"	5'-4"	1'-0"	1'-0"	1'-6"	3'-8"	5'-2"	7'-5"	9'-9"
	32'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-10"	6'-6"	1'-0"	1'-0"	3'-1"	4'-9"	7'-2"	8'-9"	11'-2"
	34'	1'-0"	1'-0"	1'-6"	2'-0"	3'-6"	6'-0"	7'-9"	1'-0"	2'-6"	4'-2"	5'-11"	8'-5"	10'-2"	12'-9"
	36'	1'-0"	1'-0"	1'-6"	2'-9"	4'-7"	7'-3"	9'-1"	1'-8"	3'-6"	5'-4"	7'-2"	9'-6"	11'-8"	14'-5"
	38'	1'-0"	1'-0"	1'-11"	3'-10"	5'-9"	7'-8"	10'-7"	2'-9"	4'-8"	6'-7"	8'-6"	11'-4"	13'-3"	16'-2"

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 110 plf (e.g., 40 psf Live Load and 15 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular hole, or to the nearest edge of a rectangular hole, from the closest supporting I-joist.
3. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LP Joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
4. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
5. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 7).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor.
10. SI Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 4C – WEB HOLE CHART (NOT INCLUDING LPI 18): 40 PSF LIVE LOAD, 15 PSF DEAD LOAD, UP TO 24" OC (RECTANGULAR HOLES)

Joist Depth	Clear Span	Rectangular Holes														
		Distance from End Support								Distance from Interior Support						
		Max. Hole Dimension: Depth or Width								Max. Hole Dimension: Depth or Width						
		2"	4"	6"	8"	10"	12"	14"	16"	2"	4"	6"	8"	10"	12"	14"
9-1/2"	6'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-
	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-11"	2'-4"	2'-9"	3'-5"	4'-0"
	10'	1'-0"	1'-0"	1'-10"	2'-4"	3'-1"	3'-7"	4'-1"	4'-10"	1'-0"	1'-5"	3'-3"	4'-0"	4'-6"	5'-0"	-
	12'	1'-0"	1'-3"	3'-1"	3'-8"	4'-3"	4'-11"	5'-6"	-	1'-1"	2'-11"	4'-9"	5'-5"	6'-0"	-	-
	14'	1'-0"	2'-6"	4'-3"	5'-0"	5'-8"	6'-5"	-	-	2'-5"	4'-6"	6'-8"	7'-0"	-	-	-
	16'	1'-8"	3'-8"	5'-8"	6'-6"	6'-11"	7'-8"	-	-	3'-11"	6'-0"	8'-0"	-	-	-	-
	18'	2'-9"	5'-0"	6'-10"	7'-9"	8'-2"	-	-	-	5'-4"	7'-8"	-	-	-	-	-
	20'	4'-1"	6'-1"	8'-7"	9'-1"	9'-7"	-	-	-	7'-0"	9'-0"	-	-	-	-	-
11-7/8"	6'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-
	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	2'-7"	3'-2"	3'-10"	-
	10'	1'-0"	1'-0"	1'-6"	2'-10"	3'-4"	3'-10"	4'-7"	-	1'-0"	1'-0"	2'-5"	4'-3"	4'-9"	-	-
	12'	1'-0"	1'-0"	2'-2"	4'-0"	4'-7"	5'-2"	5'-10"	-	1'-0"	2'-4"	3'-10"	5'-8"	-	-	-
	14'	1'-0"	1'-10"	3'-7"	5'-4"	6'-1"	6'-9"	-	-	2'-5"	3'-10"	5'-7"	-	-	-	-
	16'	1'-8"	2'-10"	4'-11"	6'-11"	7'-4"	-	-	-	3'-7"	5'-2"	7'-2"	-	-	-	-
	18'	2'-9"	4'-1"	5'-11"	8'-2"	8'-8"	-	-	-	4'-11"	6'-9"	8'-7"	-	-	-	-
	20'	4'-1"	5'-7"	7'-7"	9'-7"	-	-	-	-	6'-6"	8'-6"	-	-	-	-	-
	22'	5'-0"	6'-8"	8'-11"	-	-	-	-	-	8'-3"	9'-11"	-	-	-	-	-
	24'	6'-1"	7'-11"	10'-4"	-	-	-	-	-	9'-7"	11'-5"	-	-	-	-	-
14"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-4"	1'-0"	1'-0"	1'-6"	2'-0"	3'-3"	4'-0"	5'-0"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	3'-1"	4'-0"	4'-11"	5'-10"	1'-0"	1'-0"	1'-6"	2'-4"	4'-9"	5'-8"	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	4'-3"	5'-4"	6'-1"	-	1'-0"	1'-0"	1'-6"	3'-10"	6'-3"	-	-
	16'	1'-0"	1'-0"	1'-6"	2'-10"	5'-8"	6'-6"	7'-8"	-	1'-0"	1'-0"	2'-9"	5'-2"	8'-0"	-	-
	18'	1'-0"	1'-0"	1'-10"	4'-1"	6'-10"	7'-9"	-	-	1'-0"	2'-2"	4'-5"	6'-9"	-	-	-
	20'	1'-0"	1'-0"	3'-1"	5'-7"	8'-1"	9'-1"	-	-	1'-5"	3'-5"	6'-0"	8'-6"	-	-	-
	22'	1'-0"	1'-8"	3'-11"	6'-8"	9'-5"	10'-7"	-	-	2'-8"	4'-11"	7'-1"	9'-11"	-	-	-
	24'	1'-0"	3'-1"	5'-6"	7'-11"	10'-11"	-	-	-	4'-2"	5'-11"	9'-0"	11'-5"	-	-	-
	26'	2'-0"	4'-0"	6'-7"	9'-2"	12'-5"	-	-	-	5'-2"	7'-9"	10'-5"	13'-0"	-	-	-
	28'	2'-10"	5'-0"	7'-9"	10'-7"	-	-	-	-	6'-11"	9'-1"	11'-11"	-	-	-	-
	30'	3'-10"	6'-10"	9'-1"	12'-1"	-	-	-	-	8'-2"	10'-6"	13'-6"	-	-	-	-
16"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-10"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-1"	3'-10"	4'-10"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-6"	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-3"	5'-2"	-	1'-0"	1'-0"	1'-6"	2'-0"	3'-7"	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	3'-3"	5'-8"	6'-9"	-	1'-0"	1'-0"	1'-6"	3'-1"	5'-3"	-	-
	16'	1'-0"	1'-0"	1'-6"	2'-1"	4'-6"	6'-11"	-	-	1'-0"	1'-0"	2'-4"	4'-4"	6'-9"	-	-
	18'	1'-0"	1'-0"	1'-6"	3'-3"	5'-6"	8'-8"	-	-	1'-0"	1'-9"	3'-6"	5'-10"	8'-7"	-	-
	20'	1'-0"	1'-0"	2'-7"	4'-7"	7'-1"	-	-	-	1'-0"	2'-11"	4'-11"	7'-6"	10'-0"	-	-
	22'	1'-0"	1'-8"	3'-4"	5'-7"	8'-4"	-	-	-	2'-8"	4'-4"	6'-7"	8'-9"	-	-	-
	24'	1'-0"	2'-5"	4'-10"	7'-3"	9'-8"	-	-	-	3'-6"	5'-11"	7'-9"	10'-9"	-	-	-
	26'	2'-0"	4'-0"	5'-11"	8'-6"	11'-2"	-	-	-	5'-2"	7'-1"	9'-9"	12'-4"	-	-	-
	28'	2'-10"	5'-0"	7'-1"	9'-11"	12'-8"	-	-	-	6'-3"	9'-1"	11'-2"	14'-0"	-	-	-
	30'	3'-10"	6'-1"	8'-4"	10'-7"	13'-7"	-	-	-	8'-2"	10'-6"	12'-9"	-	-	-	-

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 110 plf (e.g., 40 psf Live Load and 15 psf Dead Load spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular or obround hole, or to the nearest edge of a rectangular hole, from the closest support.
3. Obround holes are (up to) full web-depth holes with semi-circular ends defined by three overlapping circular holes spaced up to 1-1/2" apart, center-to-center, max.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI Joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension referenced hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
6. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange. Obround holes may be up to full web-depth.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater. **Exception**: adjacent obround holes may be spaced as close as 24" clear distance between holes.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 7).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor.
10. **SI** Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 4D- WEB HOLE CHART (NOT INCLUDING LPI 18): 40 PSF LIVE LOAD, 15 PSF DEAD LOAD, UP TO 24" OC (RECTANGULAR HOLES)

Joist Depth	Clear Span	Rectangular Holes																
		Distance from End Support									Distance from Interior Support							
		Max. Hole Dimension: Depth or Width									Max. Hole Dimension: Depth or Width							
		2"	4"	6"	8"	10"	12"	14"	16"	18"	2"	4"	6"	8"	10"	12"	14"	16"
18"	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-7"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	6'-1"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-2"	-	-
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-8"	7'-4"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-9"	6'-0"	-	-
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-7"	8'-8"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	4'-0"	7'-2"	-	-
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-7"	6'-1"	-	-	-	1'-0"	1'-0"	1'-6"	2'-5"	5'-6"	9'-0"	-	-
	22'	1'-0"	1'-0"	1'-6"	2'-0"	3'-11"	7'-3"	-	-	-	1'-0"	1'-0"	1'-6"	3'-9"	7'-2"	10'-6"	-	-
	24'	1'-0"	1'-0"	1'-6"	2'-0"	4'-11"	8'-6"	-	-	-	1'-0"	1'-0"	2'-4"	5'-4"	8'-5"	12'-0"	-	-
	26'	1'-0"	1'-0"	1'-6"	3'-4"	6'-7"	9'-10"	-	-	-	1'-0"	1'-0"	3'-10"	6'-5"	9'-9"	-	-	-
	28'	1'-0"	1'-0"	1'-6"	4'-3"	7'-10"	11'-4"	-	-	-	1'-0"	2'-0"	4'-10"	8'-4"	11'-11"	-	-	-
	30'	1'-0"	1'-0"	2'-4"	5'-4"	9'-1"	12'-11"	-	-	-	1'-0"	3'-8"	6'-8"	9'-9"	13'-6"	-	-	-
	32'	1'-0"	1'-0"	3'-3"	6'-6"	9'-8"	13'-9"	-	-	-	2'-4"	4'-9"	8'-0"	11'-2"	15'-3"	-	-	-
	34'	1'-0"	1'-9"	4'-4"	7'-9"	11'-2"	15'-5"	-	-	-	3'-4"	5'-11"	9'-4"	12'-9"	16'-2"	-	-	-
20"	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-4"	5'-10"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-10"	6'-0"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-4"	5'-9"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-1"	6'-4"	-
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-4"	6'-11"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-4"	8'-0"	-
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-8"	6'-10"	8'-3"	-	1'-0"	1'-0"	1'-6"	2'-0"	3'-1"	5'-10"	-	-
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-7"	8'-1"	9'-8"	-	1'-0"	1'-0"	1'-6"	2'-0"	4'-5"	7'-6"	-	-
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-10"	6'-2"	9'-6"	-	-	1'-0"	1'-0"	1'-6"	3'-3"	6'-0"	9'-4"	-	-
	24'	1'-0"	1'-0"	1'-6"	2'-0"	4'-3"	7'-4"	10'-11"	-	-	1'-0"	1'-0"	1'-9"	4'-9"	7'-2"	10'-10"	-	-
	26'	1'-0"	1'-0"	1'-6"	2'-8"	5'-3"	8'-7"	12'-6"	-	-	1'-0"	1'-0"	3'-2"	5'-10"	9'-1"	12'-4"	-	-
	28'	1'-0"	1'-0"	1'-6"	3'-7"	6'-5"	9'-11"	13'-5"	-	-	1'-0"	2'-0"	4'-2"	7'-0"	10'-6"	14'-0"	-	-
	30'	1'-0"	1'-0"	1'-7"	4'-7"	7'-7"	11'-4"	-	-	-	1'-0"	2'-11"	5'-11"	9'-0"	12'-0"	-	-	-
	32'	1'-0"	1'-0"	3'-3"	5'-8"	8'-11"	12'-1"	-	-	-	1'-6"	4'-9"	7'-2"	10'-5"	13'-7"	-	-	-
	34'	1'-0"	1'-9"	4'-4"	6'-11"	10'-4"	13'-9"	-	-	-	3'-4"	5'-11"	8'-5"	11'-11"	15'-4"	-	-	-
22"	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-1"	5'-4"	6'-11"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-7"	6'-5"	8'-0"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-6"	6'-10"	8'-3"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-11"	8'-1"	-
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-7"	6'-7"	8'-1"	9'-8"	1'-0"	1'-0"	1'-6"	2'-0"	3'-5"	6'-6"	9'-6"	-
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	5'-0"	7'-10"	9'-6"	-	1'-0"	1'-0"	1'-6"	2'-8"	4'-11"	8'-3"	-	-
	24'	1'-0"	1'-0"	1'-6"	2'-0"	3'-1"	6'-1"	9'-1"	10'-11"	-	1'-0"	1'-0"	1'-6"	3'-6"	6'-7"	9'-7"	-	-
	26'	1'-0"	1'-0"	1'-6"	2'-0"	4'-8"	7'-3"	10'-6"	12'-6"	-	1'-0"	1'-0"	2'-6"	5'-2"	7'-9"	11'-1"	-	-
	28'	1'-0"	1'-0"	1'-6"	2'-10"	5'-8"	8'-6"	12'-0"	13'-5"	-	1'-0"	1'-4"	4'-2"	7'-0"	9'-9"	12'-7"	-	-
	30'	1'-0"	1'-0"	1'-7"	3'-10"	6'-10"	9'-10"	13'-8"	-	-	1'-0"	2'-11"	5'-2"	8'-3"	11'-3"	14'-3"	-	-
	32'	1'-0"	1'-0"	2'-5"	4'-10"	8'-1"	11'-4"	14'-6"	-	-	1'-6"	3'-11"	7'-2"	9'-7"	12'-10"	16'-0"	-	-
	34'	1'-0"	1'-0"	3'-6"	6'-0"	9'-5"	12'-10"	16'-3"	-	-	3'-4"	5'-11"	8'-5"	11'-0"	14'-5"	-	-	-
	36'	1'-0"	1'-10"	4'-7"	7'-3"	10'-11"	13'-7"	-	-	-	4'-5"	7'-2"	9'-10"	12'-7"	16'-3"	-	-	-
	38'	1'-0"	2'-11"	5'-9"	8'-8"	11'-6"	15'-4"	-	-	-	5'-8"	8'-6"	11'-4"	14'-3"	17'-1"	-	-	-
24"	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-1"	5'-9"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-2"	6'-10"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-2"	5'-6"	6'-10"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-0"	6'-9"	8'-1"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-7"	6'-7"	8'-1"	1'-0"	1'-0"	1'-6"	2'-0"	2'-11"	5'-6"	8'-6"	10'-0"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-11"	6'-8"	8'-4"	9'-6"	1'-0"	1'-0"	1'-6"	2'-1"	4'-4"	7'-2"	9'-11"	-
	24'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-11"	7'-11"	9'-9"	10'-11"	1'-0"	1'-0"	1'-6"	3'-6"	6'-0"	8'-5"	12'-0"	-
	26'	1'-0"	1'-0"	1'-6"	2'-0"	4'-0"	6'-7"	9'-3"	11'-2"	12'-6"	1'-0"	1'-0"	2'-6"	4'-6"	7'-1"	10'-5"	-	-
	28'	1'-0"	1'-0"	1'-6"	2'-2"	5'-0"	7'-10"	10'-7"	12'-0"	-	1'-0"	1'-4"	3'-5"	6'-3"	9'-1"	11'-11"	-	-
	30'	1'-0"	1'-0"	1'-6"	3'-1"	6'-1"	9'-1"	12'-1"	13'-8"	-	1'-0"	2'-11"	5'-2"	7'-5"	10'-6"	13'-6"	-	-
	32'	1'-0"	1'-0"	2'-5"	4'-10"	7'-3"	10'-6"	13'-9"	15'-4"	-	1'-6"	3'-11"	6'-4"	8'-9"	12'-0"	15'-3"	-	-
	34'	1'-0"	1'-0"	3'-6"	6'-0"	8'-7"	11'-2"	14'-7"	16'-3"	-	2'-6"	5'-0"	7'-7"	10'-2"	13'-7"	16'-3"	-	-
	36'	1'-0"	1'-10"	4'-7"	7'-3"	10'-0"	12'-9"	16'-4"	-	-	4'-5"	6'-3"	8'-11"	11'-8"	15'-4"	-	-	-
	38'	1'-0"	2'-11"	5'-9"	7'-8"	10'-7"	14'-4"	17'-3"	-	-	5'-8"	8'-6"	10'-5"	13'-3"	16'-2"	-	-	-

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 110 plf (e.g., 40 psf Live Load and 15 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular hole, or to the nearest edge of a rectangular hole, from the closest support.
3. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
4. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
5. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 7).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor.
10. SI Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

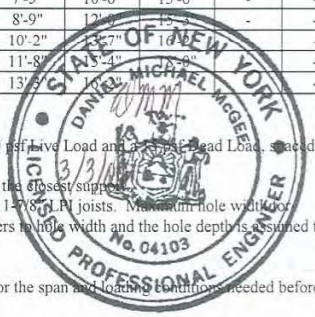

TABLE 5A – WEB HOLE CHART (NOT INCLUDING LPI 18): 40 PSF LIVE LOAD, 25 PSF DEAD LOAD, UP TO 24" OC (CIRCULAR HOLES)

Joist Depth	Clear Span	Circular Holes (including Obround Holes)													
		Distance from End Support							Distance from Interior Support						
		Hole Diameter						Obround	Hole Diameter						Obround
		2"	4"	6"	8"	10"	12"	Hole	2"	4"	6"	8"	10"	12"	Hole
9-1/2"	6'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"
	8'	1'-0"	1'-0"	1'-6"	-	-	-	1'-0"	1'-0"	1'-0"	1'-6"	-	-	-	1'-4"
	10'	1'-0"	1'-0"	1'-6"	-	-	-	1'-5"	1'-0"	1'-0"	1'-6"	-	-	-	2'-9"
	12'	1'-0"	1'-0"	1'-6"	-	-	-	2'-6"	1'-0"	1'-0"	2'-0"	-	-	-	4'-3"
	14'	1'-0"	1'-0"	1'-6"	-	-	-	3'-9"	1'-0"	1'-8"	3'-5"	-	-	-	5'-9"
	16'	1'-0"	1'-0"	2'-10"	-	-	-	5'-0"	1'-1"	3'-2"	4'-9"	-	-	-	7'-5"
	18'	1'-0"	1'-10"	3'-8"	-	-	-	6'-4"	2'-8"	4'-5"	6'-3"	-	-	-	9'-1"
	20'	1'-1"	3'-1"	5'-1"	-	-	-	7'-8"	3'-11"	6'-0"	8'-0"	-	-	-	10'-10"
11-7/8"	6'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"
	8'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-5"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	1'-5"	1'-0"	1'-0"	1'-6"	2'-0"	-	-	2'-9"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	2'-7"	1'-0"	1'-0"	1'-6"	2'-4"	-	-	4'-3"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	-	-	3'-9"	1'-0"	1'-0"	2'-5"	3'-10"	-	-	5'-10"
	16'	1'-0"	1'-0"	1'-8"	3'-3"	-	-	5'-0"	1'-0"	2'-4"	3'-7"	5'-2"	-	-	7'-5"
	18'	1'-0"	1'-5"	2'-9"	4'-1"	-	-	6'-4"	2'-2"	3'-6"	5'-4"	6'-9"	-	-	9'-1"
	20'	1'-1"	2'-1"	4'-1"	5'-7"	-	-	7'-8"	3'-5"	4'-11"	6'-6"	8'-6"	-	-	10'-10"
	22'	1'-8"	3'-4"	5'-0"	6'-8"	-	-	9'-0"	4'-11"	6'-7"	8'-3"	9'-11"	-	-	12'-7"
	24'	3'-1"	4'-10"	6'-1"	7'-11"	-	-	10'-5"	6'-7"	7'-9"	9'-7"	12'-0"	-	-	14'-5"
14"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	2'-1"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	2'-2"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	3'-7"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	3'-4"	1'-0"	1'-0"	1'-6"	2'-0"	2'-8"	-	5'-1"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	-	4'-7"	1'-0"	1'-0"	1'-8"	2'-9"	4'-2"	-	6'-8"
	16'	1'-0"	1'-0"	1'-6"	2'-1"	3'-8"	-	5'-11"	1'-0"	1'-11"	3'-2"	4'-4"	5'-7"	-	8'-4"
	18'	1'-0"	1'-0"	1'-10"	3'-3"	4'-7"	-	7'-3"	1'-9"	3'-1"	4'-5"	5'-10"	7'-2"	-	10'-1"
	20'	1'-0"	2'-1"	3'-1"	4'-7"	6'-1"	-	8'-8"	3'-5"	4'-5"	6'-0"	7'-6"	9'-0"	-	11'-11"
	22'	1'-8"	2'-10"	4'-6"	5'-7"	7'-3"	-	10'-1"	4'-11"	6'-0"	7'-8"	8'-9"	10'-5"	-	13'-9"
	24'	3'-1"	4'-3"	5'-6"	7'-3"	8'-6"	-	11'-6"	5'-11"	7'-9"	9'-0"	10'-9"	12'-0"	-	15'-7"
	26'	4'-0"	5'-3"	6'-7"	8'-6"	9'-10"	-	12'-11"	7'-9"	9'-1"	10'-5"	12'-4"	-	-	17'-7"
	28'	5'-0"	6'-4"	7'-9"	9'-11"	11'-3"	-	14'-5"	9'-1"	10'-6"	11'-11"	14'-0"	-	-	19'-6"
	30'	6'-1"	7'-7"	9'-1"	10'-7"	12'-10"	-	15'-11"	10'-6"	12'-0"	13'-6"	-	-	-	21'-6"
16"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	1'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	2'-7"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	2'-8"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-1"
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-11"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-3"	5'-8"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-2"	1'-0"	1'-0"	1'-6"	2'-5"	3'-5"	4'-6"	7'-4"
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-8"	6'-6"	1'-0"	1'-6"	2'-9"	3'-7"	4'-9"	6'-0"	9'-1"
	18'	1'-0"	1'-0"	1'-6"	2'-9"	3'-8"	5'-0"	7'-11"	1'-9"	2'-8"	4'-0"	4'-11"	6'-3"	7'-8"	10'-10"
	20'	1'-0"	1'-7"	2'-7"	3'-7"	5'-1"	6'-7"	9'-4"	2'-11"	4'-5"	5'-5"	6'-6"	8'-0"	9'-6"	12'-8"
	22'	1'-8"	2'-10"	3'-11"	5'-0"	6'-2"	7'-9"	10'-9"	4'-4"	5'-5"	7'-1"	8'-3"	9'-4"	11'-0"	14'-7"
	24'	2'-5"	3'-8"	4'-10"	6'-1"	7'-11"	9'-1"	12'-3"	5'-11"	7'-2"	8'-4"	9'-7"	11'-5"	-	16'-6"
	26'	4'-0"	5'-3"	5'-11"	7'-3"	9'-2"	10'-6"	13'-9"	7'-1"	8'-5"	9'-9"	11'-0"	13'-0"	-	18'-6"
	28'	5'-0"	6'-4"	7'-9"	8'-6"	9'-11"	12'-0"	15'-3"	9'-1"	10'-6"	11'-2"	13'-4"	-	-	20'-6"
	30'	6'-1"	7'-7"	9'-1"	9'-10"	11'-4"	12'-10"	16'-9"	10'-6"	12'-0"	12'-9"	-	-	-	22'-7"

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 130 plf (e.g., 40 psf Live Load and a 25 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular or obround hole, or to the nearest edge of a rectangular hole, from the nearest support.
3. Obround holes are (up to) full web-depth holes with semi-circular ends defined by three overlapping circular holes spaced up to 1-1/2" apart, center-to-center of holes.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LP joists. Maximum hole depth for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
6. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange. Obround holes may be up to full web-depth.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater. **Exception**: adjacent obround holes may be spaced as close as 24" clear distance between holes.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 7).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor.
10. **SI** Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 5B - WEB HOLE CHART (NOT INCLUDING LPI 18): 40 PSF LIVE LOAD, 25 PSF DEAD LOAD, UP TO 24" OC (CIRCULAR HOLES)

Joist Depth	Clear Span	Circular Holes													
		Distance from End Support							Distance from Interior Support						
		Hole Diameter							Hole Diameter						
		2"	4"	6"	8"	10"	12"	14"	2"	4"	6"	8"	10"	12"	14"
18"	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-6"
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-8"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-7"	6'-0"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-1"	1'-0"	1'-0"	1'-6"	2'-0"	2'-8"	4'-11"	7'-8"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-7"	6'-1"	1'-0"	1'-0"	1'-6"	2'-0"	3'-11"	6'-6"	9'-0"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-6"	7'-3"	1'-0"	1'-0"	1'-6"	2'-8"	5'-5"	7'-8"	11'-0"
	24'	1'-0"	1'-0"	1'-6"	2'-0"	3'-1"	6'-1"	8'-6"	1'-0"	1'-0"	1'-9"	4'-2"	6'-7"	9'-7"	-
	26'	1'-0"	1'-0"	1'-6"	2'-0"	4'-8"	7'-3"	9'-10"	1'-0"	1'-2"	3'-2"	5'-10"	8'-5"	11'-1"	-
	28'	1'-0"	1'-0"	1'-6"	3'-7"	5'-8"	8'-6"	11'-4"	1'-0"	2'-9"	4'-10"	7'-0"	9'-9"	12'-7"	-
	30'	1'-0"	1'-0"	2'-4"	4'-7"	6'-10"	9'-10"	12'-11"	1'-5"	3'-8"	5'-11"	8'-3"	11'-3"	14'-3"	-
	32'	1'-0"	1'-0"	3'-3"	5'-8"	8'-1"	11'-4"	14'-6"	3'-1"	4'-9"	7'-2"	10'-5"	12'-10"	16'-0"	-
	34'	1'-0"	1'-9"	4'-4"	6'-11"	9'-5"	12'-0"	15'-5"	4'-2"	6'-9"	9'-4"	11'-11"	14'-5"	-	-
20"	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-11"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-7"	5'-4"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-1"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	5'-0"	7'-0"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-4"	5'-7"	1'-0"	1'-0"	1'-6"	2'-1"	3'-9"	6'-0"	8'-10"
	24'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-3"	6'-8"	1'-0"	1'-0"	1'-6"	3'-6"	5'-4"	7'-9"	10'-2"
	26'	1'-0"	1'-0"	1'-6"	2'-0"	3'-4"	5'-3"	7'-11"	1'-0"	1'-0"	2'-6"	4'-6"	7'-1"	9'-1"	11'-8"
	28'	1'-0"	1'-0"	1'-6"	2'-2"	4'-3"	6'-5"	9'-3"	1'-0"	2'-0"	4'-2"	6'-3"	8'-4"	10'-6"	13'-4"
	30'	1'-0"	1'-0"	1'-7"	3'-1"	5'-4"	8'-4"	10'-7"	1'-5"	2'-11"	5'-2"	7'-5"	9'-9"	12'-0"	15'-0"
	32'	1'-0"	1'-0"	2'-5"	4'-10"	6'-6"	8'-11"	12'-1"	2'-4"	4'-9"	6'-4"	8'-9"	11'-2"	13'-7"	-
	34'	1'-0"	1'-9"	3'-6"	6'-0"	7'-9"	10'-4"	13'-9"	4'-2"	5'-11"	8'-5"	10'-2"	12'-9"	15'-4"	-
22"	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-0"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-5"	5'-6"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-11"	1'-0"	1'-0"	1'-6"	2'-0"	3'-3"	4'-11"	7'-2"
	24'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-1"	4'-11"	1'-0"	1'-0"	1'-6"	2'-4"	4'-2"	6'-7"	8'-5"
	26'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-0"	6'-7"	1'-0"	1'-0"	1'-10"	3'-10"	5'-10"	7'-9"	10'-5"
	28'	1'-0"	1'-0"	1'-6"	2'-0"	3'-7"	5'-8"	7'-10"	1'-0"	1'-4"	3'-5"	5'-7"	7'-0"	9'-1"	11'-11"
	30'	1'-0"	1'-0"	1'-6"	2'-4"	4'-7"	6'-10"	9'-1"	1'-5"	2'-11"	4'-5"	6'-8"	9'-0"	11'-3"	13'-6"
	32'	1'-0"	1'-0"	1'-8"	4'-1"	5'-8"	8'-1"	10'-6"	2'-4"	3'-11"	6'-4"	8'-0"	10'-5"	12'-10"	15'-3"
	34'	1'-0"	1'-0"	2'-7"	5'-2"	6'-11"	9'-5"	11'-2"	3'-4"	5'-11"	7'-7"	9'-4"	11'-11"	14'-5"	17'-0"
	36'	1'-0"	1'-10"	3'-8"	6'-5"	8'-2"	10'-0"	12'-9"	5'-4"	7'-2"	8'-11"	10'-9"	13'-6"	15'-4"	18'-0"
	38'	1'-0"	2'-11"	4'-10"	7'-8"	9'-7"	11'-6"	14'-4"	6'-7"	8'-6"	10'-5"	12'-4"	15'-2"	17'-1"	-
24"	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-5"
	22'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-9"	6'-0"
	24'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-8"	1'-0"	1'-0"	1'-6"	2'-0"	3'-6"	5'-4"	7'-2"
	26'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-4"	5'-3"	1'-0"	1'-0"	1'-10"	3'-2"	5'-2"	7'-1"	9'-1"
	28'	1'-0"	1'-0"	1'-6"	2'-0"	2'-10"	4'-3"	6'-5"	1'-0"	1'-4"	2'-9"	4'-10"	6'-3"	8'-4"	10'-6"
	30'	1'-0"	1'-0"	1'-6"	2'-4"	3'-10"	5'-4"	7'-7"	1'-0"	2'-11"	4'-5"	5'-11"	8'-3"	9'-9"	12'-0"
	32'	1'-0"	1'-0"	1'-8"	3'-3"	4'-10"	6'-6"	8'-11"	2'-4"	3'-11"	5'-6"	7'-2"	9'-7"	11'-2"	13'-7"
	34'	1'-0"	1'-0"	2'-7"	4'-4"	6'-0"	7'-9"	10'-4"	3'-4"	5'-0"	6'-9"	9'-4"	11'-0"	12'-9"	15'-4"
	36'	1'-0"	1'-10"	3'-8"	5'-6"	7'-3"	9'-1"	11'-10"	5'-4"	6'-3"	8'-1"	10'-7"	12'-4"	14'-5"	17'-1"
	38'	1'-0"	2'-11"	4'-10"	6'-9"	8'-8"	10'-7"	12'-6"	6'-7"	8'-6"	9'-[illegible]	12'-4"	14'-3"	16'-2"	18'-1"

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 130 plf (e.g., 40 psf Live Load and a 25 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular hole, or to the nearest edge of a rectangular hole, from the closest support.
3. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole length and the hole depth is assumed to be the maximum for that joist depth.
4. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
5. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the spans and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ⅛" clear distance is required between the hole and a flange.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 7).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor.
10. SI Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 5C- WEB HOLE CHART (NOT INCLUDING LPI 18): 40 PSF LIVE LOAD, 25 PSF DEAD LOAD, UP TO 24" OC (RECTANGULAR HOLES)

Joist Depth	Clear Span	Rectangular Holes													
		Distance from End Support								Distance from Interior Support					
		Max. Hole Dimension: Depth or Width								Max. Hole Dimension: Depth or Width					
		2"	4"	6"	8"	10"	12"	14"	16"	2"	4"	6"	8"	10"	12"	14"
9-1/2"	6'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-
	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	2'-7"	3'-0"	3'-5"	4'-0"	-
	10'	1'-0"	1'-1"	2'-7"	3'-1"	3'-7"	4'-1"	4'-7"	-	1'-0"	2'-5"	4'-0"	4'-6"	5'-0"	-	-
	12'	1'-0"	2'-2"	4'-0"	4'-3"	4'-11"	5'-6"	-	-	2'-4"	3'-10"	5'-8"	-	-	-	-
	14'	1'-10"	3'-3"	5'-4"	5'-8"	6'-5"	6'-9"	-	-	3'-10"	5'-3"	-	-	-	-	-
	16'	2'-10"	4'-6"	6'-6"	6'-11"	7'-8"	-	-	-	5'-2"	6'-9"	-	-	-	-	-
	18'	4'-1"	5'-11"	7'-9"	8'-8"	-	-	-	-	6'-9"	8'-7"	-	-	-	-	-
	20'	5'-7"	7'-1"	9'-1"	-	-	-	-	-	8'-6"	-	-	-	-	-	-
11-7/8"	6'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	-
	8'	1'-0"	1'-0"	1'-6"	2'-1"	2'-6"	3'-1"	3'-6"	-	1'-0"	1'-0"	1'-9"	3'-2"	3'-7"	-	-
	10'	1'-0"	1'-0"	1'-10"	3'-4"	3'-10"	4'-4"	4'-10"	-	1'-0"	1'-11"	3'-3"	4'-9"	-	-	-
	12'	1'-0"	1'-7"	3'-1"	4'-7"	5'-2"	5'-10"	-	-	2'-0"	3'-3"	4'-9"	-	-	-	-
	14'	1'-5"	2'-10"	4'-3"	6'-1"	6'-9"	-	-	-	3'-5"	4'-10"	6'-3"	-	-	-	-
	16'	2'-10"	4'-1"	5'-8"	7'-4"	-	-	-	-	4'-9"	6'-5"	8'-0"	-	-	-	-
	18'	3'-8"	5'-6"	6'-10"	8'-8"	-	-	-	-	6'-3"	8'-1"	-	-	-	-	-
	20'	5'-1"	6'-7"	8'-7"	-	-	-	-	-	8'-0"	9'-6"	-	-	-	-	-
	22'	6'-2"	7'-9"	10'-0"	-	-	-	-	-	9'-4"	-	-	-	-	-	-
	24'	7'-11"	9'-1"	10'-11"	-	-	-	-	-	11'-5"	-	-	-	-	-	-
14"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-10"
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-7"	3'-1"	3'-10"	4'-10"	1'-0"	1'-0"	1'-6"	2'-0"	4'-0"	4'-9"	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	3'-8"	4'-7"	5'-2"	-	1'-0"	1'-0"	1'-6"	3'-3"	5'-5"	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-10"	5'-0"	5'-8"	6'-9"	-	1'-0"	1'-0"	2'-9"	4'-10"	-	-	-
	16'	1'-0"	1'-0"	2'-1"	4'-1"	6'-6"	7'-4"	-	-	1'-0"	2'-4"	4'-4"	6'-5"	-	-	-
	18'	1'-0"	1'-5"	3'-3"	5'-6"	7'-9"	8'-8"	-	-	1'-9"	3'-6"	5'-10"	8'-1"	-	-	-
	20'	1'-0"	2'-7"	4'-7"	6'-7"	9'-1"	-	-	-	2'-11"	4'-11"	7'-0"	9'-6"	-	-	-
	22'	1'-8"	3'-4"	5'-7"	7'-9"	10'-7"	-	-	-	4'-4"	6'-7"	8'-9"	11'-0"	-	-	-
	24'	2'-5"	4'-10"	6'-8"	9'-1"	-	-	-	-	5'-11"	7'-9"	10'-2"	-	-	-	-
	26'	4'-0"	5'-11"	7'-11"	10'-6"	-	-	-	-	7'-9"	9'-9"	11'-8"	-	-	-	-
	28'	5'-0"	7'-1"	9'-2"	12'-0"	-	-	-	-	9'-1"	11'-2"	13'-4"	-	-	-	-
	30'	6'-1"	8'-4"	10'-7"	13'-7"	-	-	-	-	10'-6"	12'-9"	15'-0"	-	-	-	-
16"	8'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-5"	-
	10'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-7"	4'-4"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-11"	5'-0"	-
	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-9"	4'-11"	5'-10"	-	1'-0"	1'-0"	1'-6"	2'-8"	4'-6"	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-2"	3'-11"	6'-5"	-	-	1'-0"	1'-0"	2'-5"	4'-2"	5'-11"	-	-
	16'	1'-0"	1'-0"	1'-8"	3'-3"	5'-3"	7'-8"	-	-	1'-0"	1'-11"	3'-7"	5'-7"	7'-7"	-	-
	18'	1'-0"	1'-0"	2'-9"	4'-7"	6'-10"	-	-	-	1'-9"	3'-6"	4'-11"	7'-2"	-	-	-
	20'	1'-0"	2'-1"	3'-7"	5'-7"	8'-1"	-	-	-	2'-11"	4'-11"	6'-6"	8'-6"	-	-	-
	22'	1'-8"	3'-4"	5'-0"	7'-3"	9'-5"	-	-	-	4'-4"	6'-0"	8'-3"	10'-5"	-	-	-
	24'	2'-5"	4'-3"	6'-1"	8'-6"	10'-11"	-	-	-	5'-11"	7'-9"	9'-7"	12'-0"	-	-	-
	26'	4'-0"	5'-3"	7'-3"	9'-10"	12'-5"	-	-	-	7'-1"	9'-1"	11'-0"	-	-	-	-
	28'	5'-0"	7'-1"	8'-6"	11'-3"	13'-5"	-	-	-	9'-1"	10'-6"	12'-7"	-	-	-	-
	30'	6'-1"	8'-4"	9'-10"	12'-1"	-	-	-	-	10'-6"	12'-3"	14'-3"	-	-	-	-

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 130 plf (e.g., 40 psf Live Load and a 25 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular or obround hole, or to the nearest edge of a rectangular hole, to the closest support.
3. Obround holes are (up to) full web-depth holes with semi-circular ends defined by three overlapping circular holes spaced up to 1-1/2" apart, center-to-center of holes.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 9-7/8" for 11-7/8" LPI joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
6. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange. Obround holes may be up to full web-depth.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater. **Exception**: adjacent obround holes may be spaced as close as 24" clear distance between holes.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 7).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor
10. **SI** Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 5D- WEB HOLE CHART (NOT INCLUDING LPI 18): 40 PSF LIVE LOAD, 25 PSF DEAD LOAD, UP TO 24" OC (RECTANGULAR HOLES)

Joist Depth	Clear Span	Rectangular Holes																
		Distance from End Support									Distance from Interior Support							
		Max. Hole Dimension: Depth or Width									Max. Hole Dimension: Depth or Width							
		2"	4"	6"	8"	10"	12"	14"	16"	18"	2"	4"	6"	8"	10"	12"	14"	16"
18"	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-3"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-11"	-	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-3"	6'-9"	-	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-9"	5'-3"	-	-
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-6"	-	-	-	1'-0"	1'-0"	1'-6"	2'-0"	3'-11"	6'-10"	-	-
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-9"	6'-0"	-	-	-	1'-0"	1'-0"	1'-6"	2'-8"	5'-4"	8'-7"	-	-
	20'	1'-0"	1'-0"	1'-6"	2'-0"	4'-1"	7'-1"	-	-	-	1'-0"	1'-0"	1'-11"	4'-5"	7'-0"	10'-0"	-	-
	22'	1'-0"	1'-0"	1'-6"	2'-10"	5'-7"	8'-4"	-	-	-	1'-0"	1'-0"	3'-3"	5'-5"	8'-10"	-	-	-
	24'	1'-0"	1'-0"	1'-6"	3'-8"	6'-8"	9'-9"	-	-	-	1'-0"	2'-4"	4'-9"	7'-2"	10'-2"	-	-	-
	26'	1'-0"	1'-0"	2'-8"	4'-8"	7'-11"	11'-2"	-	-	-	1'-2"	3'-2"	5'-10"	8'-5"	11'-8"	-	-	-
	28'	1'-0"	1'-0"	3'-7"	6'-5"	9'-3"	12'-9"	-	-	-	2'-0"	4'-10"	7'-8"	10'-6"	13'-4"	-	-	-
	30'	1'-0"	2'-4"	4'-7"	7'-7"	10'-7"	14'-5"	-	-	-	3'-8"	5'-11"	9'-0"	12'-0"	15'-0"	-	-	-
	32'	1'-0"	3'-3"	5'-8"	8'-11"	12'-1"	15'-4"	-	-	-	4'-9"	7'-2"	10'-5"	13'-7"	-	-	-	-
	34'	1'-9"	4'-4"	6'-11"	10'-4"	12'-10"	-	-	-	-	6'-9"	9'-4"	11'-11"	15'-4"	-	-	-	-
20"	12'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-8"	4'-11"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-5"	-
	14'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-0"	6'-1"	-	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-2"	7'-0"	-
	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-3"	6'-6"	7'-9"	-	1'-0"	1'-0"	1'-6"	2'-0"	3'-2"	5'-7"	-	-
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-7"	7'-9"	-	-	1'-0"	1'-0"	1'-6"	2'-2"	4'-5"	7'-2"	-	-
	20'	1'-0"	1'-0"	1'-6"	2'-0"	3'-1"	6'-1"	9'-2"	-	-	1'-0"	1'-0"	1'-6"	3'-5"	6'-0"	9'-0"	-	-
	22'	1'-0"	1'-0"	1'-6"	2'-3"	4'-6"	7'-3"	10'-7"	-	-	1'-0"	1'-0"	2'-8"	4'-11"	7'-8"	10'-6"	-	-
	24'	1'-0"	1'-0"	1'-6"	3'-1"	5'-6"	8'-6"	-	-	-	1'-0"	1'-9"	4'-2"	6'-7"	9'-0"	12'-0"	-	-
	26'	1'-0"	1'-0"	2'-0"	4'-0"	6'-7"	9'-10"	-	-	-	1'-0"	3'-2"	5'-2"	7'-9"	10'-5"	-	-	-
	28'	1'-0"	1'-0"	2'-10"	5'-8"	7'-10"	11'-4"	-	-	-	2'-0"	4'-2"	7'-0"	9'-1"	12'-7"	-	-	-
	30'	1'-0"	1'-7"	3'-10"	6'-10"	9'-1"	12'-11"	-	-	-	3'-8"	5'-11"	8'-3"	11'-3"	14'-3"	-	-	-
	32'	1'-0"	3'-3"	4'-10"	8'-1"	10'-6"	13'-9"	-	-	-	4'-9"	7'-2"	9'-7"	12'-10"	15'-3"	-	-	-
	34'	1'-9"	4'-4"	6'-0"	9'-5"	12'-0"	15'-5"	-	-	-	5'-11"	8'-5"	11'-0"	14'-5"	17'-0"	-	-	-
22"	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-11"	6'-1"	7'-9"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-9"	7'-7"	-
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-8"	6'-5"	7'-9"	-	1'-0"	1'-0"	1'-6"	2'-0"	4'-0"	6'-3"	9'-0"	-
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-7"	5'-1"	7'-7"	9'-2"	-	1'-0"	1'-0"	1'-6"	2'-11"	5'-6"	8'-0"	-	-
	22'	1'-0"	1'-0"	1'-6"	2'-0"	3'-11"	6'-2"	8'-11"	10'-7"	-	1'-0"	1'-0"	2'-1"	4'-4"	6'-7"	9'-4"	-	-
	24'	1'-0"	1'-0"	1'-6"	2'-6"	4'-11"	7'-4"	10'-4"	-	-	1'-0"	1'-9"	3'-6"	6'-0"	8'-5"	10'-10"	-	-
	26'	1'-0"	1'-0"	1'-6"	4'-0"	5'-11"	8'-7"	11'-10"	-	-	1'-0"	2'-6"	5'-2"	7'-1"	9'-9"	13'-0"	-	-
	28'	1'-0"	1'-0"	2'-10"	5'-0"	7'-1"	9'-11"	13'-5"	-	-	2'-0"	4'-2"	6'-3"	9'-1"	11'-2"	-	-	-
	30'	1'-0"	1'-7"	3'-10"	6'-1"	8'-4"	11'-4"	14'-5"	-	-	3'-8"	5'-2"	7'-5"	10'-6"	12'-9"	-	-	-
	32'	1'-0"	2'-5"	4'-10"	7'-3"	9'-8"	12'-11"	-	-	-	4'-9"	7'-2"	9'-7"	12'-0"	14'-5"	-	-	-
	34'	1'-9"	3'-6"	6'-0"	8'-7"	11'-2"	14'-7"	-	-	-	5'-11"	8'-5"	11'-0"	13'-7"	16'-2"	-	-	-
	36'	2'-9"	4'-7"	7'-3"	10'-0"	12'-9"	15'-5"	-	-	-	7'-2"	9'-10"	12'-7"	15'-4"	18'-0"	-	-	-
	38'	3'-10"	5'-9"	8'-8"	10'-7"	13'-5"	17'-3"	-	-	-	8'-6"	11'-4"	14'-3"	16'-2"	-	-	-	-
24"	16'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	4'-1"	5'-4"	6'-6"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-11"	6'-5"	7'-7"
	18'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-3"	5'-6"	6'-5"	7'-9"	1'-0"	1'-0"	1'-6"	2'-0"	3'-1"	5'-4"	8'-1"	-
	20'	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	4'-1"	6'-7"	8'-1"	9'-2"	1'-0"	1'-0"	1'-6"	2'-5"	5'-0"	7'-0"	9'-6"	-
	22'	1'-0"	1'-0"	1'-6"	2'-0"	3'-4"	5'-7"	7'-10"	9'-6"	10'-7"	1'-0"	1'-0"	2'-1"	3'-9"	6'-0"	8'-10"	-	-
	24'	1'-0"	1'-0"	1'-6"	2'-0"	4'-3"	6'-8"	9'-1"	10'-11"	-	1'-0"	1'-1"	3'-6"	5'-4"	7'-9"	10'-2"	-	-
	26'	1'-0"	1'-0"	1'-6"	3'-4"	5'-3"	7'-11"	10'-6"	11'-10"	-	1'-0"	2'-6"	4'-6"	7'-1"	9'-1"	11'-8"	-	-
	28'	1'-0"	1'-0"	2'-2"	4'-3"	6'-5"	9'-3"	12'-0"	13'-5"	-	2'-0"	4'-2"	6'-3"	8'-4"	10'-6"	13'-4"	-	-
	30'	1'-0"	1'-7"	3'-1"	5'-4"	7'-7"	10'-7"	13'-8"	-	-	2'-11"	5'-2"	7'-5"	9'-9"	12'-0"	15'-0"	-	-
	32'	1'-0"	2'-5"	4'-10"	6'-6"	8'-11"	12'-1"	15'-4"	-	-	4'-9"	6'-4"	8'-9"	11'-2"	13'-7"	-	-	-
	34'	1'-9"	3'-6"	6'-0"	7'-9"	10'-4"	12'-10"	16'-3"	-	-	5'-11"	8'-5"	10'-2"	12'-9"	16'-1"	-	-	-
	36'	2'-9"	4'-7"	6'-5"	9'-1"	11'-10"	14'-6"	-	-	-	7'-2"	9'-10"	11'-8"	14'-5"	17'-1"	-	-	-
	38'	3'-10"	5'-9"	7'-8"	10'-7"	13'-5"	16'-3"	-	-	-	8'-6"	11'-4"	13'-3"	16'-2"	19'-0"	-	-	-

DESIGN ASSUMPTIONS:

1. The hole locations listed above are valid for joists supporting only uniform loads. The total uniform load must not exceed 130 plf (e.g. 40 psf Live Load and 25 psf Dead Load, spaced up to 24" oc). The uniform Dead Load must be at least 10 plf.
2. Hole location is measured from the inside face of bearing to the center of a circular hole, or to the nearest edge of a rectangular hole, from the closest support.
3. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI joists. Maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the dimension refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
4. Holes cannot be located in the span where designated "-", without further analysis by a design professional (see note 8 below).
5. Clear Span has NOT been verified for these joists and is shown for informational purposes only! Verify that the joist selected will work for the span and loading conditions needed before checking hole location.

GENERAL NOTES:

1. **CUT HOLES CAREFULLY! DO NOT OVERCUT HOLES! DO NOT CUT JOIST FLANGES!**
2. Circular and rectangular holes may be placed anywhere within the depth of the joist. A minimum ¼" clear distance is required between the hole and a flange.
3. Round holes up to 1-1/2" diameter may be placed anywhere in the web.
4. Perforated "knockouts" may be neglected when locating web holes.
5. Holes larger than 1-1/2" are not permitted in cantilevers without special engineering.
6. Multiple holes must have a clear separation along the length of the joist of at least twice the length of the larger adjacent hole, or a minimum of 12" center-to-center, whichever is greater.
7. Multiple holes may be spaced closer provided they fit within the boundary of an acceptable larger hole. Example: two 3" round holes aligned parallel to the joist length may be spaced 2" apart (clear distance) provided that a 3" high by 8" long rectangle or an 8" diameter round hole are acceptable for the joist depth at that location and completely encompass the holes.
8. Larger holes, greater uniform loads or non-uniform loads, and closer proximity to supports and other holes may be possible with further analysis (See Section 6.1.3 or the web hole shear equations listed in Table 7).
9. Not all series are available in all depths. Check availability with a local LP Engineered Wood Products distributor.
10. SI Units Conversion: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

TABLE 6 – LPI 18 SERIES I-JOISTS WEB HOLE EQUATIONS
(May be used in lieu of the web hole charts)

General Equation Form for Circular and Rectangular Holes:

Allowable Web Hole Shear (lbs) = C1 * (D – H)/D + C2 * W + C3

Where: D = Joist Depth (in.)
H = Hole Height (in.)
W = Hole Width (in.)

Equation Constants:

Circular Holes			
Joist	Equation Constants		
Depth	C1	C2	C3
≤ 16"	946	0	328
Rectangular Holes			
Joist	Equation Constants		
Depth	C1	C2	C3
9.5	554	-20.4	256
11.875	554	-20.4	256
14	977	-30.7	375
16	977	-30.7	375

DESIGN ASSUMPTIONS (SEE TABLES 2 AND 3 FOR MORE DESIGN ASSUMPTIONS):

1. The Allowable Web Hole Shear calculated from above is for normal load duration and can be adjusted for other durations.
2. The critical location for web hole shear is at the center of a circular hole, or at either edge of a rectangular hole.
3. Obround holes are not allowed in the LPI 18 series.
4. Maximum hole depth for circular and rectangular holes is Joist Depth less 4", except the maximum hole depth is 6" for 9-1/2" and 8" for 11-7/8" LPI joists. The maximum hole width for rectangular holes is 18". Where the Maximum Hole Dimension for rectangular holes exceeds the maximum hole depth, the excess refers to hole width and the hole depth is assumed to be the maximum for that joist depth.
5. Holes cannot be located any closer than 1' or 3 times the length of the hole from the inside face of the closest bearing, without further analysis by a design professional.

FOR GENERAL NOTES, SEE TABLES 2 AND 3.

TABLE 7- WEB HOLE EQUATIONS (NOT INCLUDING LPI 18)
(May be used in lieu of the web hole charts)

General Equation Form for Circular and Rectangular Holes:

Allowable Web Hole Shear (lbs) = C1 * (D – H)/D + C2 * W + C3

Where: D = Joist Depth (in.)
H = Hole Height (in.)
W = Hole Width (in.)

Equation Constants:

Circular Holes

Joist Depth	C1	C2	C3
≤ 16"	1041	0	361
18" – 24"	2489	0	88

Rectangular Holes

Joist Depth	C1	C2	C3
9-1/2"	610	-22.4	282
11-7/8"	610	-22.4	282
14"	1075	-33.8	413
16"	1075	-33.8	413
18"	1731	-52.0	599
20"	1731	-52.0	599
22"	1731	-52.0	599
24"	1731	-52.0	599

Allowable Web Hole Shear for Obround Holes:

Joist Depth	Shear (lbs)
9-1/2"	533
11-7/8"	541
14"	469
16"	424

DESIGN ASSUMPTIONS (SEE TABLES 4 AND 5 FOR MORE DESIGN ASSUMPTIONS):

1. The Allowable Web Hole Shear calculated from above is for normal load duration and can be adjusted for other durations.
2. The critical location for web hole shear is at the center of a circular hole, or at either edge of a rectangular or obround hole.
3. Holes cannot be located any closer than 1' or 3 times the length of the hole from the inside face of the closest bearing, without further analysis by a design professional.

FOR GENERAL NOTES, SEE TABLES 4 AND 5.

FIGURE 1 - WEB HOLE DRAWINGS

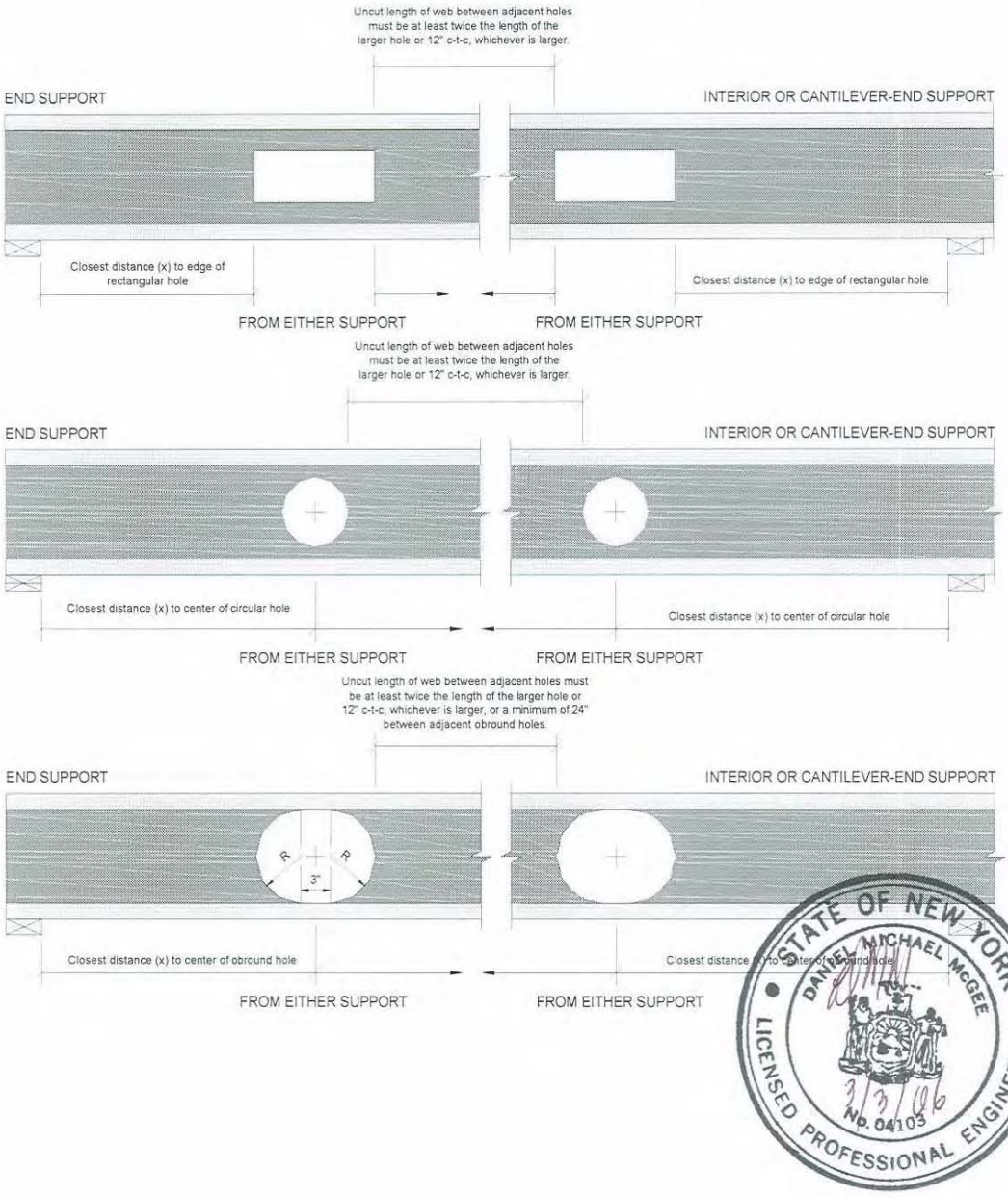

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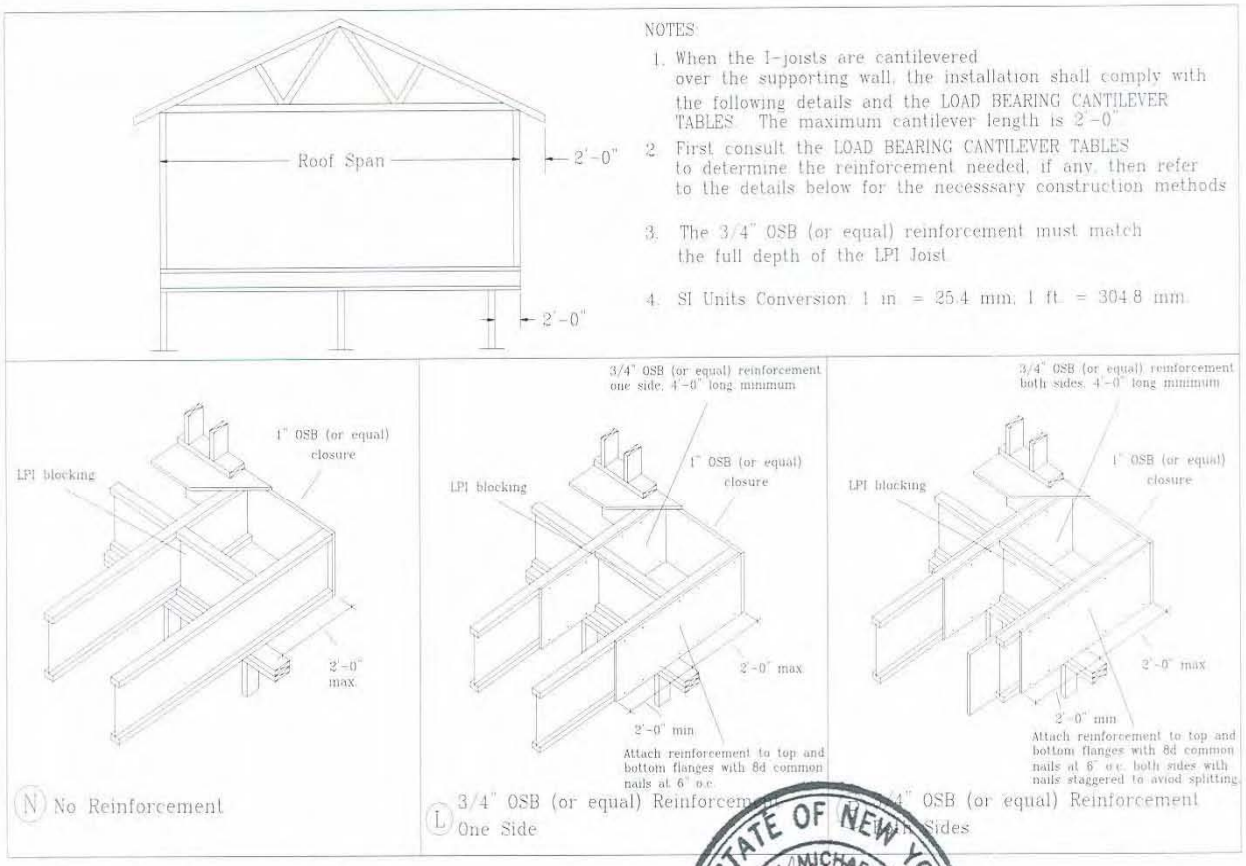
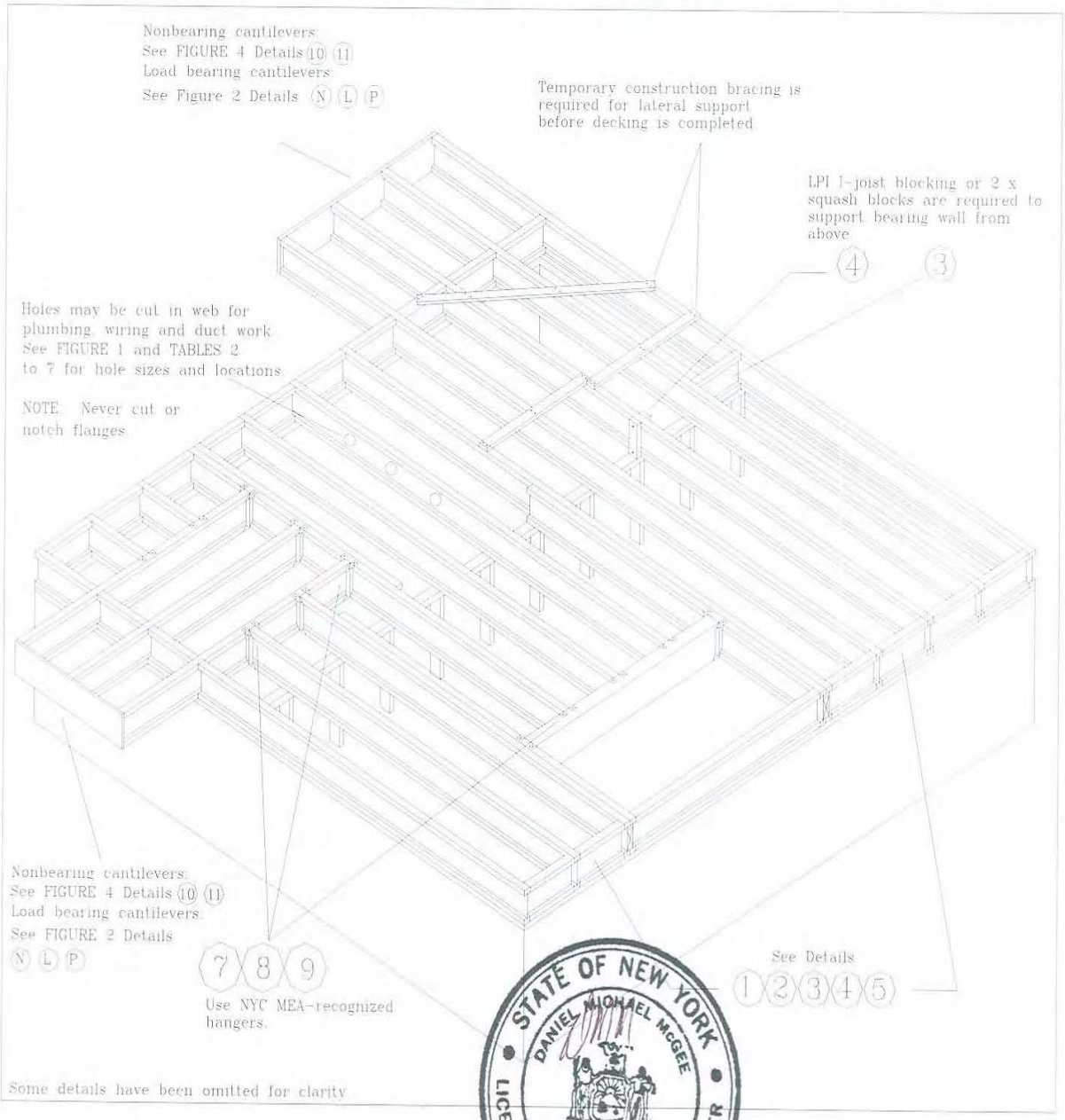
FIGURE 2 – I-JOIST LOAD BEARING CANTILEVER DETAILS



For **SI** Units: 1 in. = 25.4 mm, 1 ft. = 304.8 mm.

FIGURE 3 - TYPICAL I-JOIST FLOOR LAYOUT

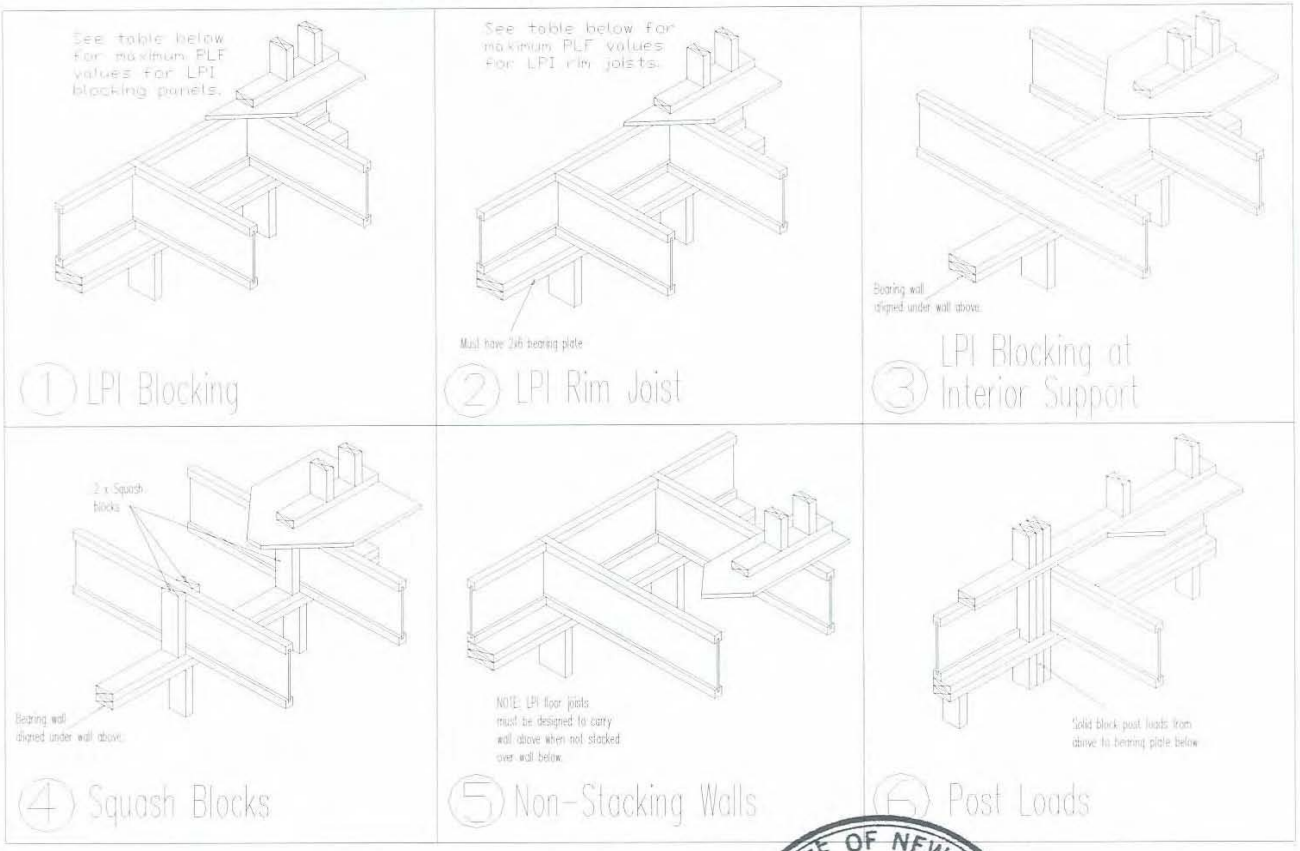


For **SI** Units Conversion: 1 in. = 25.4 mm, 1 ft. = 304.8 mm.

NOTES:

1. These instructions are offered as a guide and are typical for good practice in the handling, storage and installation of I-joists. In some instances, other or additional details may be necessary.
2. All rim joists, blocking, connections, and temporary bracing must be installed before erectors are allowed on the structure.
3. No loads other than the weight of the erectors are to be imposed on the structure before it is permanently sheathed.
4. Numbered details are noted in Figure 4.

FIGURE 4 – I-JOIST FLOOR FRAMING DETAILS



NOTES:

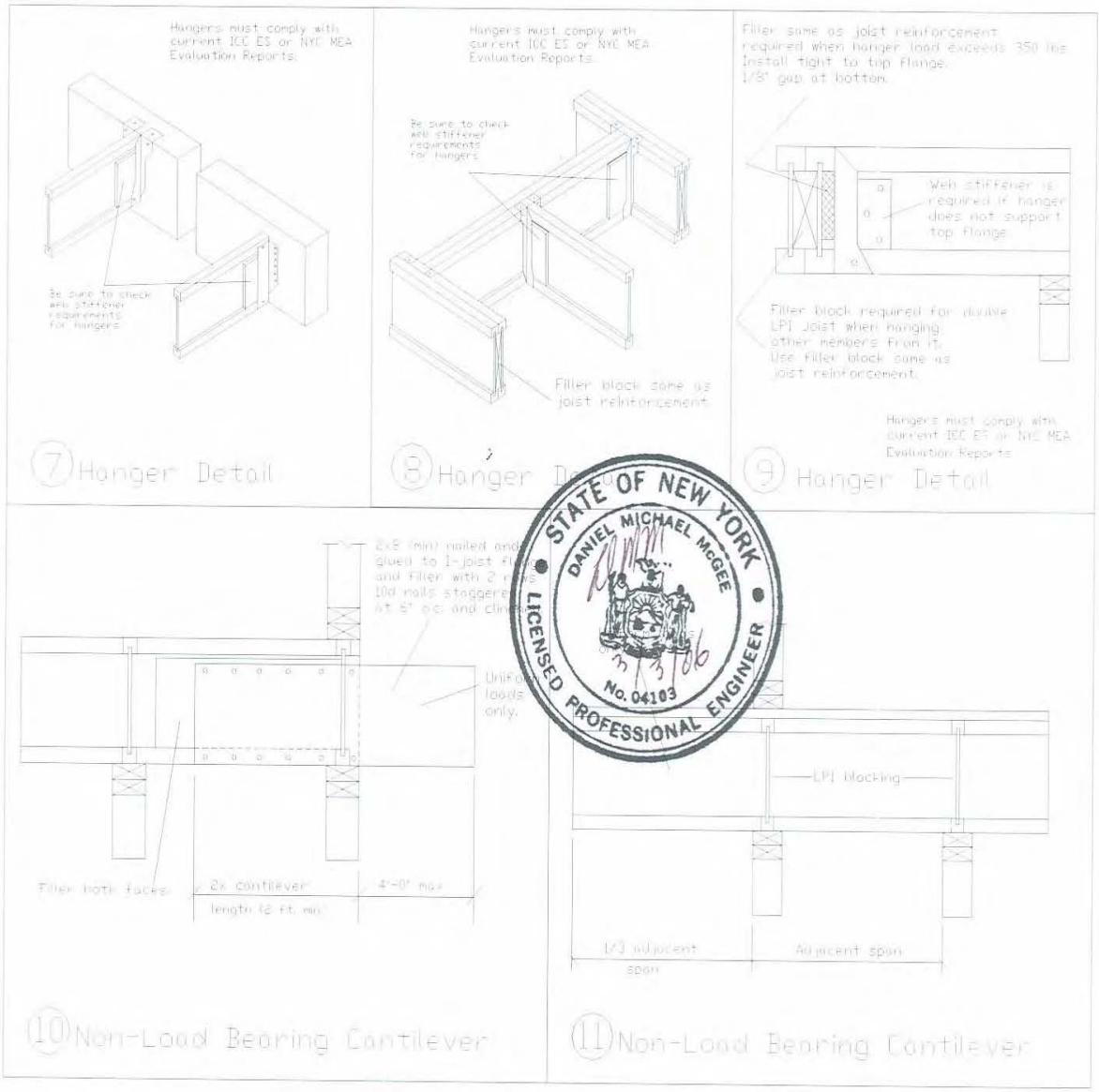
1. 1-1/2" minimum bearing is required at joist ends. 3-1/2" minimum bearings are required at intermediate supports.
2. Top and bottom flanges must be laterally retained at all supports.
3. Lateral support should be considered for bottom flange where there is no sheathing on underside.
4. Refer to Table 8 for I-joist nailing schedules.

LPI RIM JOIST OR BLOCKING PANEL MAXIMUM PLF DESIGN VALUES		
JOIST SERIES	JOIST DEPTH	MAXIMUM (PLF)
LPI 32W LPI 32 LPI 42X1.8	9-1/2"	2200
	11-7/8"	2200
	14"	1600
	16"	1500
	18"	1700
	20"	1580
	22"	1300
	24"	1100
LPI 20W LPI 20 LPI 20X1.5 LPI 20X1.7	9-1/2"	1900
	11-7/8"	1760
	14"	1600
	16"	1500

For **SI** Units: 1 in. = 25.4 mm; 1 PLF = 14.6 N/m

NOTE: The allowable shear values in pounds per foot (up to 230 PLF) for horizontal wood structural panel diaphragms with framing of nominal 2-inch thick Douglas fir-larch or southern pine are applicable to LPI Rim Joist.

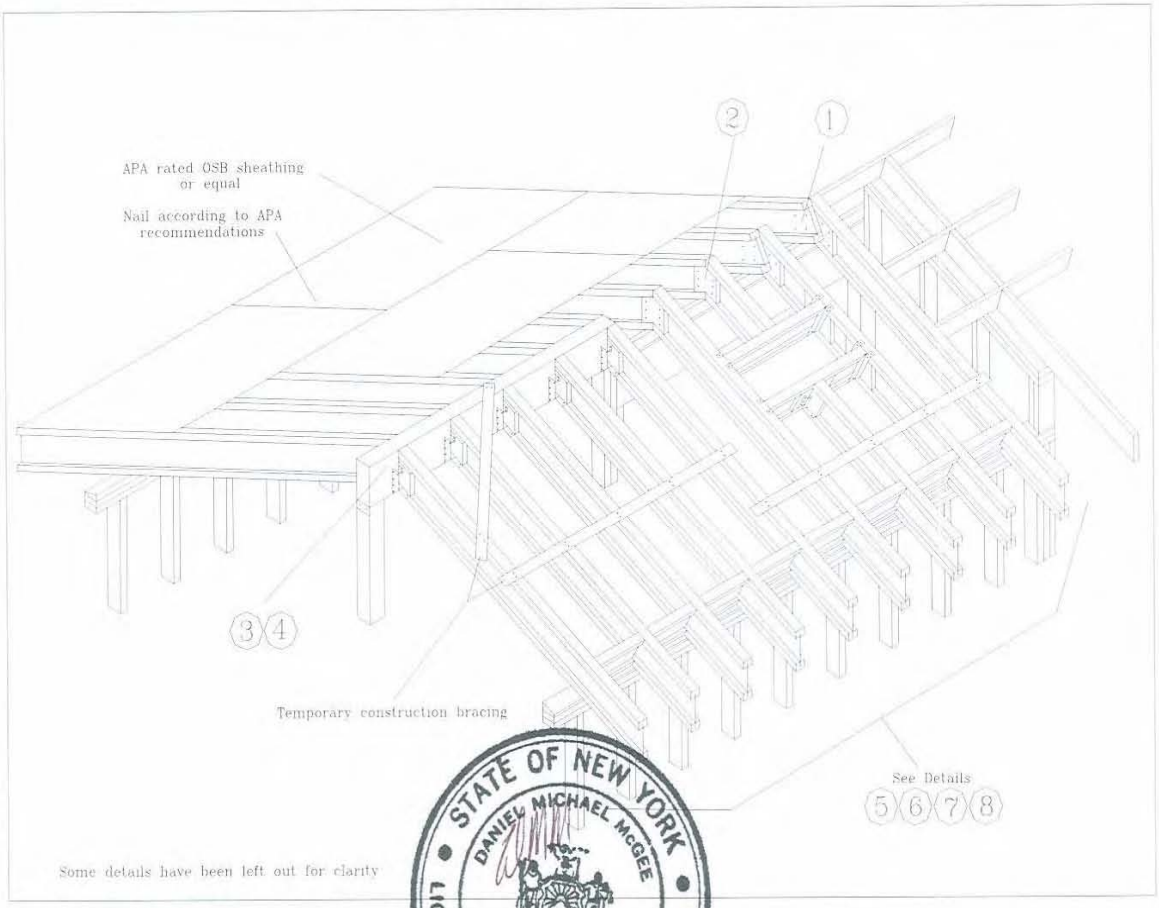
FIGURE 4 – I-JOIST FLOOR FRAMING DETAILS - (Continued)



FILLER BLOCKS:
For all I-joist series except for the LPI 42X1.8 series, use 2x lumber (minimum SPF) + 5/8-inch OSB (or equal) attached with two rows of 8d nails staggered at 6 inches on center from each side. For the LPI 42X1.8 series I-joists, use two 2x lumber (minimum SPF) attached with two rows of 10d nails staggered at 6 inches on center from each side.

FILLERS:
For all I-joist series except for the LPI 42X1.8 series, use 2 pieces of 1/2-inch OSB (or equal) attached with two rows of 8d nails staggered at 6 inches on center from each side. For the LPI 42X1.8 series, use 2x lumber (minimum SPF) attached with two rows of 10d nails staggered at 6 inches on center from each side.

FIGURE 5 - TYPICAL I-JOIST ROOF LAYOUT



For **SI** Units: 1 ft. = 304.8 mm.

NOTES:

1. These instructions are offered as a guide and are typical for good practice in the handling, storage and installation of I-joists.
2. All rim joists, blocking, connections, and temporary bracing must be installed before erectors are allowed on the structure.
3. No loads other than the weight of the erectors are to be imposed on the structure before it is permanently sheathed.
4. Numbered details are noted in Figure 6.

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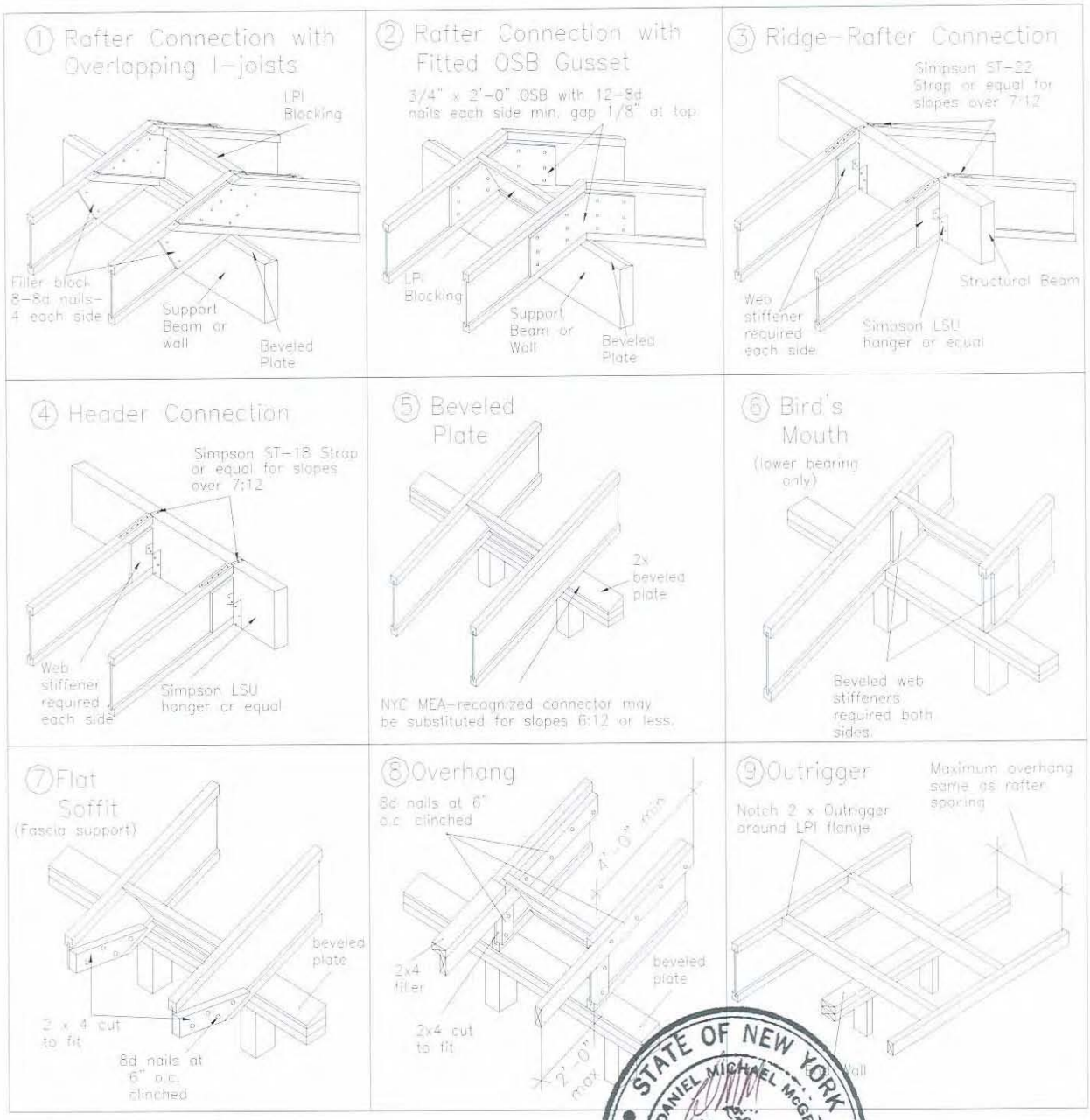
FIGURE 6 – I-JOIST ROOF FRAMING DETAILS



For **SI** Units: 1 in. = 25.4 mm; 1 ft. = 304.8 mm.

NOTES:

1. I-joist flange may be birdsmouth cut only at low end of the I-joist. Birdsmouth cut must not overhang the inside face of bearing plate. The I-joist must bear fully on plate.
2. All end bearings must be laterally supported I-joist blocking is recommended.
3. All details are valid to a maximum 12:12 slope unless otherwise noted.
4. Refer to TABLE 8 for I-joist nailing schedules.

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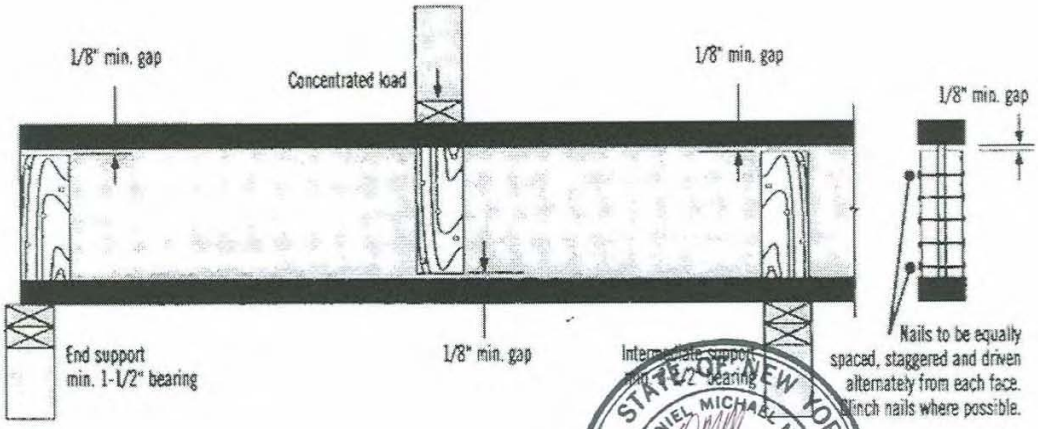
FIGURE 7 – I-JOIST WEB STIFFENER DETAILS



For **SI** Units: 1 in. = 25.4 mm; 1 ft. = 304.8 mm; 1 lbf = 4.5 N.

NOTES:

1. Web Stiffeners, when required, must be installed in pairs – one to each side of the web. In addition to the requirements noted in Table 1, web stiffeners are required at birds-mouth cut locations, at sloped hanger locations, and for lateral support of the joist when used with hangers if the sides of the hanger do not laterally support the I-joist flange.
2. Web stiffeners should be cut to fit between the flanges of the I-joist, leaving a minimum 1/8 inch gap (1 inch maximum). At bearing locations, the stiffeners should be installed tight to the bottom flange with the gap to the top flange. At locations of concentrated loads, the stiffeners should be installed tight to the top flange with the gap to the bottom flange.
3. Web stiffeners should be cut from APA-rated (or equal) OSB or plywood, or from 2x lumber or structural composite lumber.
4. Web stiffeners should be the same width as the bearing surface, with a minimum of 3-1/2 inches.
5. For all I-joist series except for the LPI 42X1.8 series, web stiffeners shall be a minimum of 23/32 inch thick. For the LPI 42X1.8 series I-joists, web stiffeners shall be a minimum of 1-1/2 inches thick.
6. For all I-joist series except for the LPI 42X1.8 series, nail web stiffeners to the I-joist with 5-8d nails, equally spaced and staggered (see drawing above). For the LPI 42X1.8 series I-joists, nail web stiffeners to the I-joist with 5-10d nails, equally spaced and staggered.

	JOIST DEPTH			
	9-1/2"	11-7/8"	14"	16"
STIFFENER HEIGHT	6-3/8"	8-3/4"	10-7/8"	12-7/8"

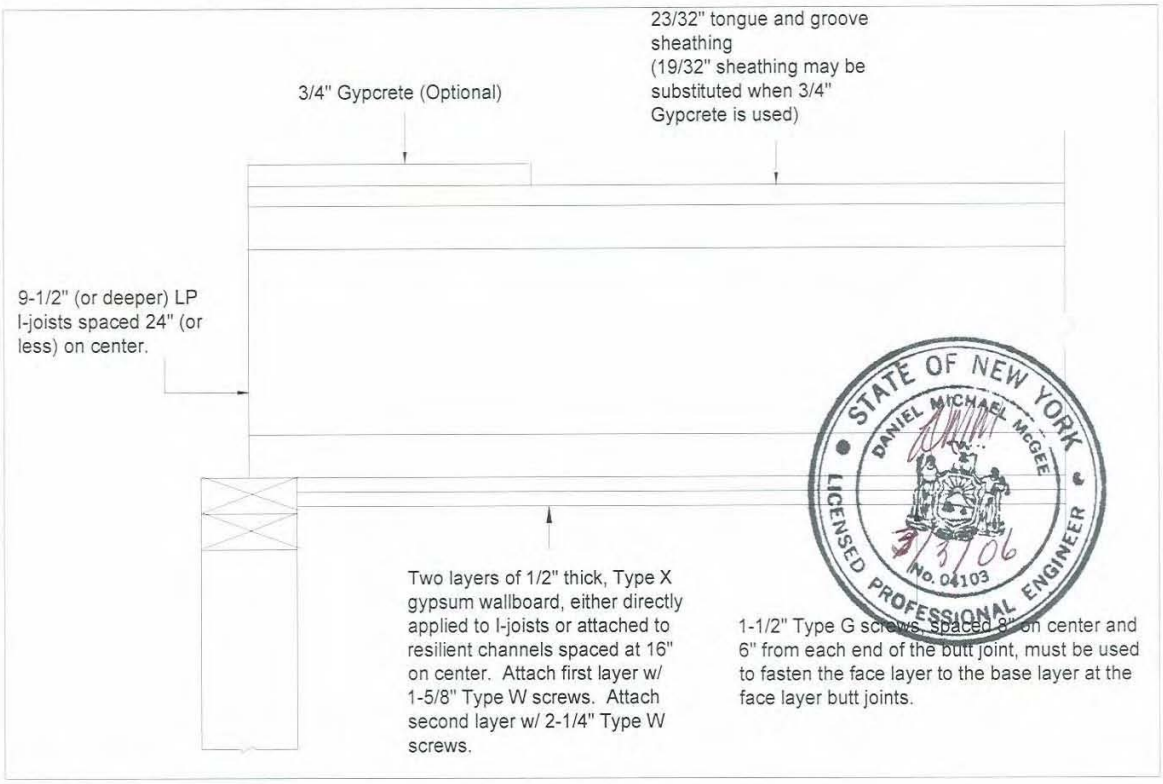
	JOIST DEPTH			
	18"	20"	22"	24"
STIFFENER HEIGHT	14-7/8"	16-7/8"	18-7/8"	20-7/8"

TABLE 8 – NAILING SCHEDULES

I-JOISTS TO SUPPORTS		
NAIL SIZE	MINIMUM DISTANCE FROM JOIST END	CLOSEST O. SPACING
8d box, common	1"	2"
10d box	1"	2"
12d box	1"	2"
16d sinker	1-1/2"	3"
SHEATHING TO I-JOIST TOP FLANGE		
8d box, common	1"	2"
10d box	1"	2"
12d box	1"	2"

For **SI** Units: 1 inch = 25.4 mm.

FIGURE 8 - ONE-HOUR FLOOR-CEILING FIRE-RESISTIVE ASSEMBLY



For **SI** Units: 1 in. = 25.4 mm.

TABLE 9 - SOUND AND IMPACT RATINGS FOR ONE-HOUR FLOOR-CEILING ASSEMBLY

FLOOR ASSEMBLY	STC	IIC
w/o GYPCRETE w/ RESILIENT CHANNEL w/ CARPET/PAD	50	50
w/ GYPCRETE w/ RESILIENT CHANNEL w/ CARPET/PAD	50	50
w/ GYPCRETE w/o RESILIENT CHANNEL w/ CARPET/PAD	50	50

NOTES:

1. Carpet is minimum 57 ounce carpet with 0.531 inch pile height and 1/2 inch thick 4 pcf density foam pad.
2. Vinyl is minimum 0.06 inch thick with cushioned vinyl minimum 0.01 inch thick wear layer.
3. Gyp-Crete is minimum 3/4 inch thick over 19/32 inch plywood.
   The plywood must be glued at tongue and groove joints and to the I-joists.
4. Cavity is insulated with 3-1/2 inch thick fiberglass batts between joists.
5. For other details see FIGURE 8.