SYMONS

H20 Beam for Elevated Slabs

Application Guide

A WORD ABOUT SAFETY

High productivity depends on safety; even a minor accident causes job delays and inefficiency, which run up costs. That's why Symons, in the design of its systems and products, makes the safety of those people who will be working with and near the equipment one of its primary concerns. Every product is designed with safety in mind, and is tested to be certain that it will perform as intended with appropriate safety allowances. Factory-built systems such as these provide predictable strength, minimizing the uncertainty that often surrounds "hand-made," "job-shop" and "job-built" equipment.

As a result, Symons products are your best assurance of a safe operation when used properly. To insure proper use, we have published this application guide. We recommend that all construction personnel who will be involved, directly or indirectly, with the use of this product be familiar with the contents of this guide.

As a concerned participant in the construction industry, Symons also recommends that regular safety meetings be held prior to starting the forming operation, and regularly throughout the concrete placement, form stripping and erection operations. Symons personnel will be happy to assist in these meetings with discussion of safe use of the equipment, slide presentations and other formal safety information provided by such organizations as the Scaffolding, Shoring and Forming Institute.

In addition to the above meetings, all persons involved with the construction should be familiar and in compliance with applicable governmental regulations, codes and ordinances, as well as the industry safety standards developed and published by each of the following:

American Concrete Institute
American National Standards Institute
The Occupational Safety and Health Administration
The Scaffolding, Shoring and Forming Institute

Because field conditions vary and are beyond the knowledge and control of Symons, safe and proper use of this product is the responsibility of the user.

Contents

I. Product Features

In combination with post shores, tripod stands, fork heads and plywood, the H20 Wood Beams provide flexible, yet cost effective formwork for any floor lay-out, slab thickness, and shore height. The H20 Wood Beam is lightweight at just 3.36 lbs./ft. (50 kg/m). Its high-grade beam ends assure long product life.

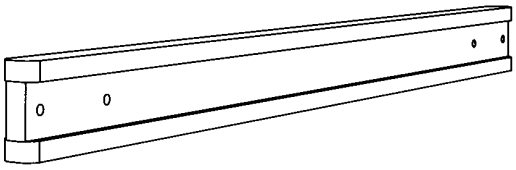

Fig 1.1 H20 Beam

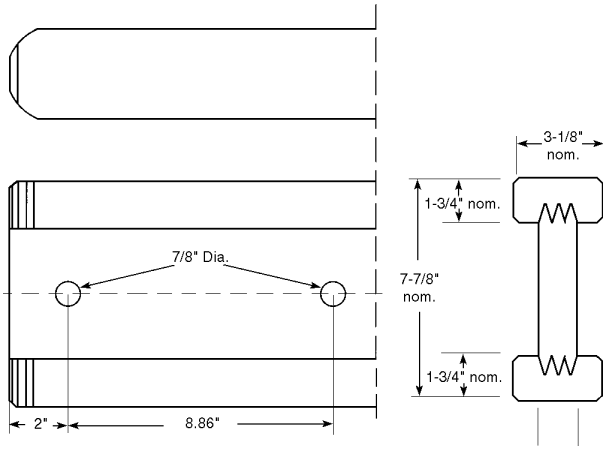

Fig. 1.2 H20 Beam End Dimensions

A. Quick Stripping

All post shores are equipped with the patented quick-release pin. With a blow of a hammer, the bolt immediately releases the slab load on the adjusting nut.

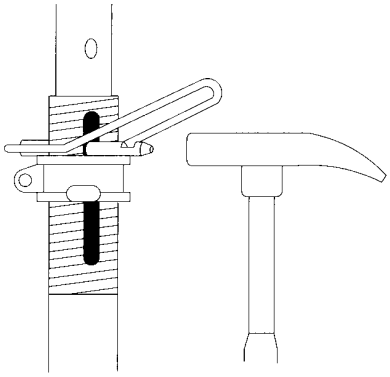

Fig. 1.3 Quick Release Pin

B. Practical Accessories

Accessory items make the H20 Wood Beam formwork an efficient, versatile system. For example, the tripod stand for post shores has legs that can be configured to fit along walls or corners, or even folded flat for transport.

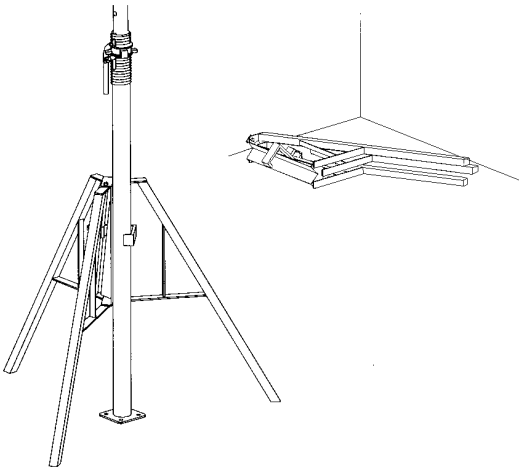

Fig. 1.4 Tripod

II. Deck Components

A. H20 Wood Beam

The 20 cm high H20 Wood Beams come in seven lengths from 9' to 21', in 2' increments. H20 Wood Beams are utilized as both joists and stringers.

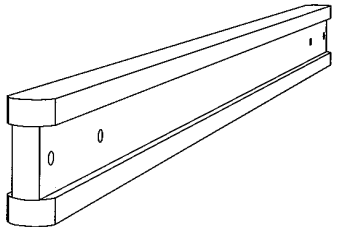

Fig. 2.1 H20 Wood Beam

B. Post Shore

350 and 550 Post Shores are completely galvanized inside and out including external threads.

350: L = 6' 6" - 11' 5" nominal

550: L = 10'1" - 18' nominal

Inner tube diameter: 2.45" nominal

Outer tube diameter: 3" nominal

All shores are complete with quick-release pins. One tap with the hammer is usually enough to release the shore from its load.

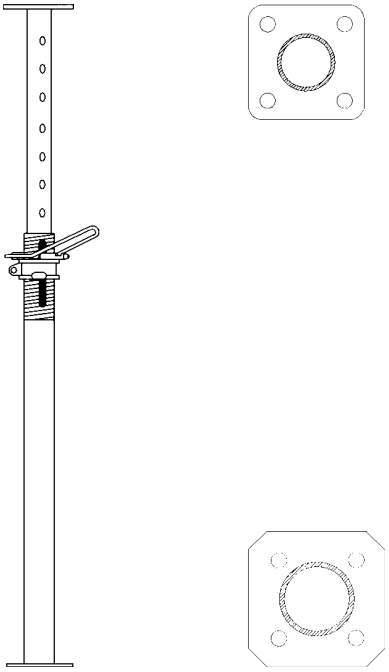

Fig. 2.3 Post Shore Dimensions

C. Post Shore Tripod

The Post Shore Tripod is designed for steadying the 350 and 550 Post Shores during erection procedures (maximum 3" diameter post).

The Hinged design accommodates common angular patterns, such as 90, 180 and 360 degrees. It also folds flat for transport.

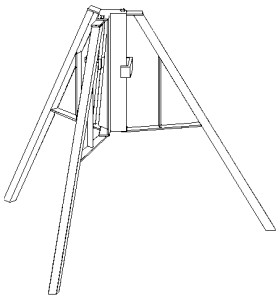

Fig. 2.3 Tripod

D. Swivel Clamp

The 1.9" to 3" Swivel Clamp allows attachment of additional bracing to 350 and 550 post shores.

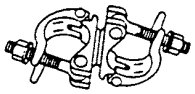

Fig. 2.4 Swivel Clamp

E. 2-Way Fork Head

The Fork Head retains one or two beams, depending on which direction the head faces.

F. Intermediate Support Head
This head is used on individual stringers when additional support is needed between post shores with Fork Heads.

G. T-Spring Bolt
Secures the Fork head or Intermediate Support head to the post shore through the holes down the side of the inner tube.

H. Post Shore Sleeve
The post shore sleeve adapts the wider top opening of the 550 Post Shore to accommodate the Fork head and Intermediate Support heads.

I. Assembly Fork
Simplifies the placement and removal of H20 Wood Beams by extending worker reach.

J. Product Codes and Weights

Product Code	Description	Weight
WOOD BEAMS		
SW865039	Wood Beam (H20) 39'	131.2
SW865021	Wood Beam (H20) 21' - *Purple*	70.7
SW865019	Wood Beam (H20) 19' - *Light Blue*	63.9
SW865017	Wood Beam (H20) 17' - *Orange*	57.2
SW865015	Wood Beam (H20) 15' - *Red*	50.5
SW865013	Wood Beam (H20) 13' - *Green*	43.7
SW865011	Wood Beam (H20) 11' - *White*	37.0
SW865009	Wood Beam (H20) 9' - *Dark Blue*	30.3

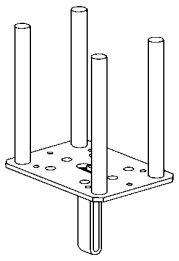

Fig. 2.5 Fork Head

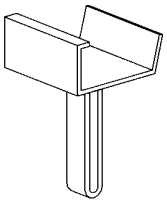

Fig. 2.6 Intermediate Support Head

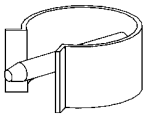

Fig. 2.7
T-Spring Bolt

Fig. 2.8
Post Shore Sleeve

Fig. 2.9
Assembly Fork

III. Use and Erection for Decks

System erection begins with assembling post shore components which will be placed at proper layout distances. *(Important: See Maximum Allowable Stringer Beam Span table, and Post Shore Capacity table in section VI for slab support design information.)*

A. Attach 2-Way Fork Head to Post Shores

To begin system setup, a 2-Way Fork Head must be attached to a post shore (either the 350 or the 550). If the 550 post shore is utilized, a Post Shore Sleeve is first inserted in the hole at the top of the post shore.

The Fork Head is inserted, and the T-Spring Bolt is pushed into a hole in the side of the post shore to secure the head.

Adjust the post shore at roughly the required dimension while it lays flat.

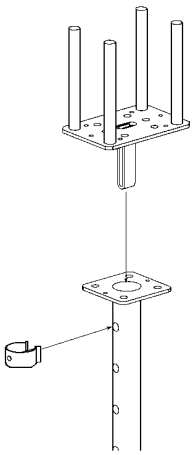

Fig. 3.1 Attaching Fork Head to Post Shore

B. Attach Tripod to Post Shores

Tripods stabilize post shores during erection procedures. The post shoe is set in the open stand and secured by the clamping loop with a gentle blow of a hammer. The Tripod can be used with either post shore type.

The support legs of the Tripod permit an optimal fit, even in the corners of the structure.

After the H20 Wood Beam formwork erection is completed, the Tripod can be removed. They must remain in place at the end of each stringer beam until post shore lateral bracing has been installed and tied into the existing structure, such as columns or walls.

The Tripod can be folded flat for convenient storage and easy transport.

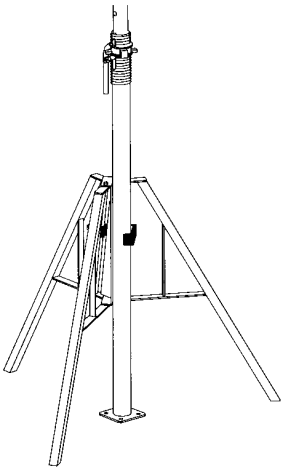

Fig. 3.2 Tripod Attached to Post Shore

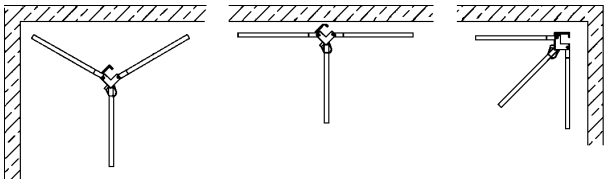

Fig. 3.3 Tripod Leg Configurations

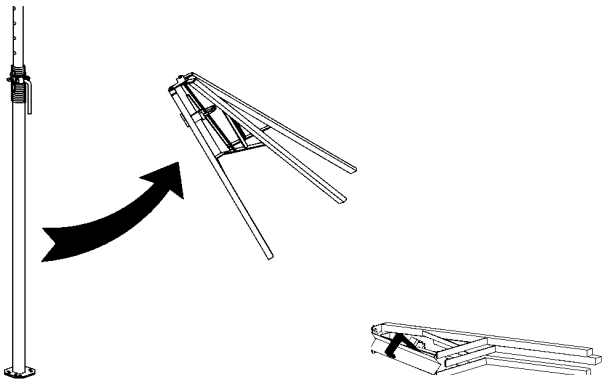

Fig. 3.4 Tripod Removal and Folded Flat

C. Place Stringer Beams

Once the post shores are in place, stringer beams are placed in the Fork Heads. Assembling Forks extend worker reach to make this an easier operation.

After stringer beams are in place, post shores should be adjusted for floor level to ceiling height, slab thickness, and maximum load capacity.

When Intermediate Supports are required, the post shore assembly swings into place under the stringer beam and adjusted for stringer beam height.

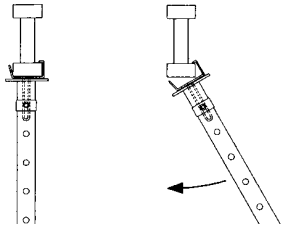

Fig. 3.6 Positioning Intermediate Supports

D. Position Joist Beams and Plywood Panels

Position joists with the Assembly Fork. *(Refer to Table 1: Maximum Allowable Plywood Span and Table 2: Maximum Allowable Joist Span in Span Section IV for spacing information.)*

Joist ends must extend past stringers.

Plywood panels are placed on top of the joist beams and tacked into place. A joist must be located at every plywood butt joint.

> **Caution:** Guardrails must be erected on the open edges of the structure as required by local, state, and federal regulations.

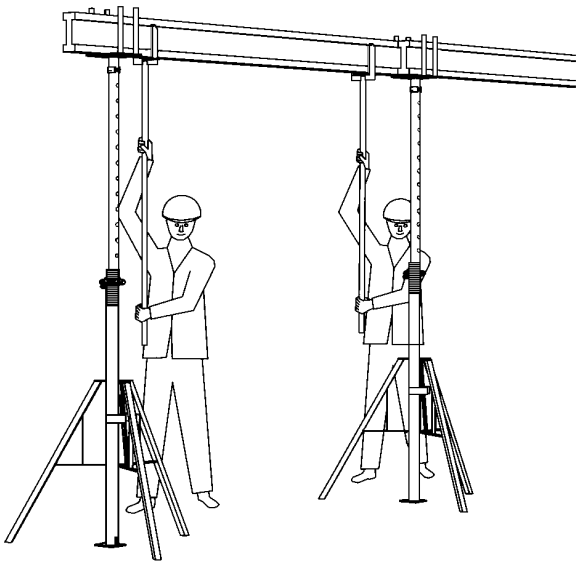

Fig. 3.5 Stringer Placement

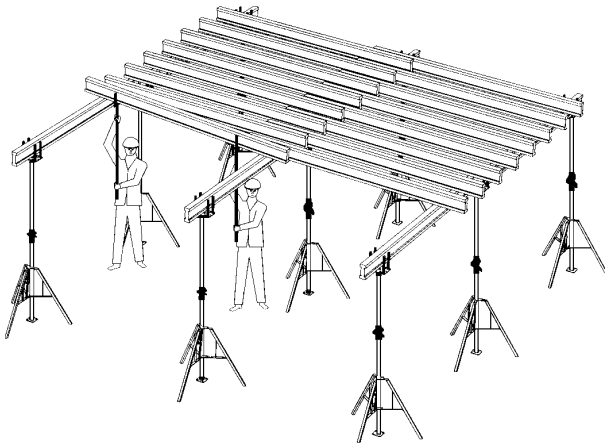

Fig. 3.7 Typical Joist Configuration

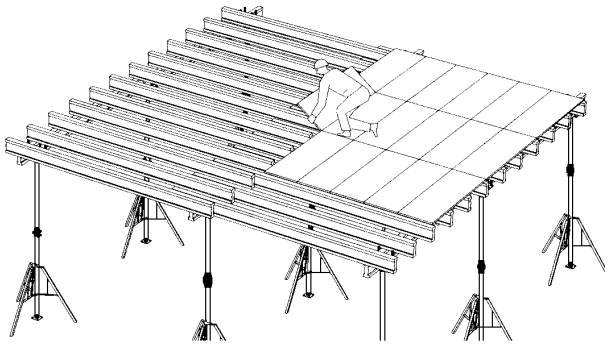

Fig. 3.8 Typical Plywood Application

Deck Assembly Procedures

1. Secure the 2-Way Fork Head in the top of post shores (Fig. 3.1).
2. Set up Tripod stands.
3. Secure the post shores in the Tripod stands (Fig. 3.2).
4. Lay the stringer beams in the Fork Heads (Fig. 3.5).
5. Place additional post shores with Intermediate Support Heads in accordance with the tables in Section IV.
6. Lay joist beams (Fig. 3.7).
7. Lay plywood panels (Fig. 3.8).

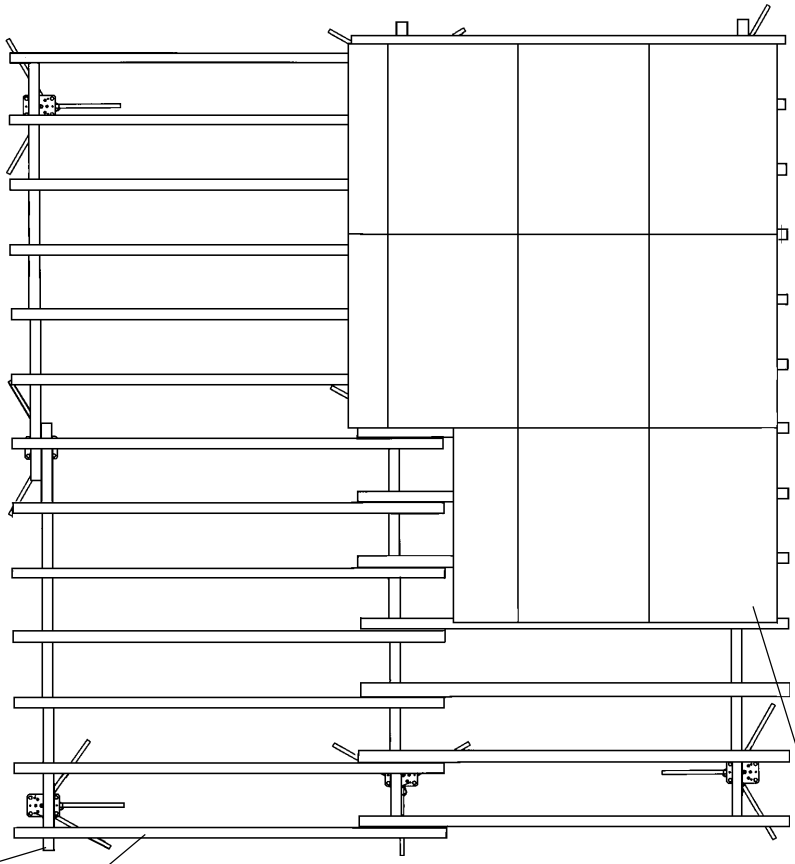

Fig. 4.1 Typical Floor Layout

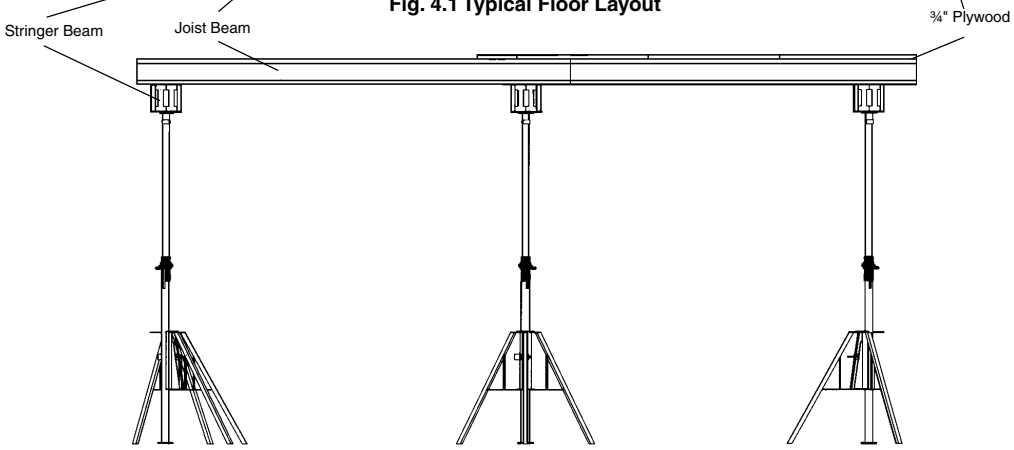

Fig. 4.2 Section of Typical Floor Layout

V. Deck Stripping

Caution: Moving and lowering system components requires strict attention to worker safety.

1. Lower the post shore by tapping the Quick-Release Pin with a hammer (Fig. 1.3). This lowers the panel about ¼" to relieve the load on the post shore. Turn the Adjustment Screw on the post twice to provide additional clearance.

2. Use the Assembly Fork to rotate joists 90 degrees onto their sides. This increases the space between the formwork and the slab.

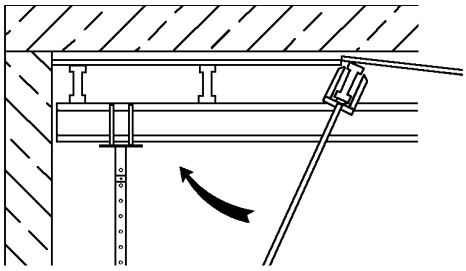

Fig. 5.1 Rotating Joist Beams

3. Push joist beams together, creating space to remove the plywood panels.

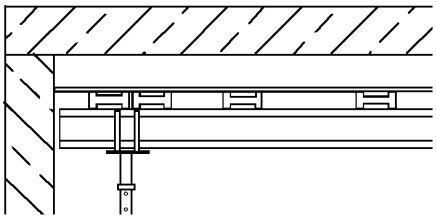

Fig. 5.2 Moving Joist Beams Aside

4. Remove plywood panels and lower through stringer beam spacing.

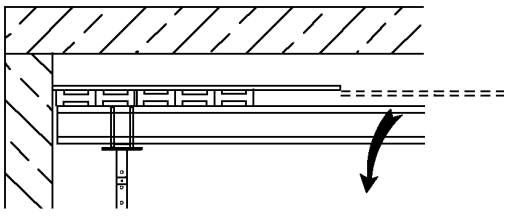

Fig. 5.3 Remove Plywood

5. Turn the joist beams diagonally and lower through stringer beam spacing. The Assembly Fork can be used to reposition and lower the joists.

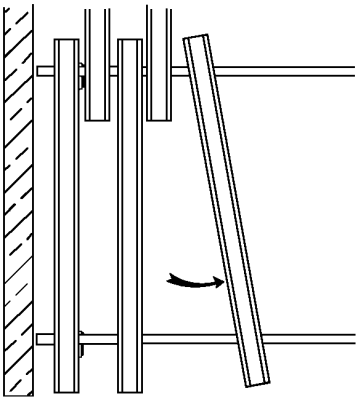

Fig. 5.4 Turn and Lower Joists

6. Lift the stringer beams out of the Fork Heads.

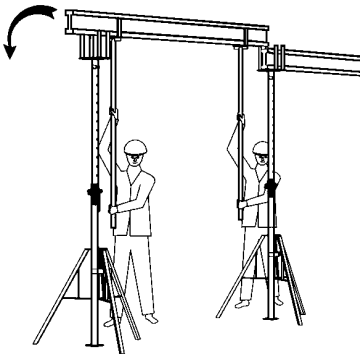

Fig. 5.5 Lift and Lower Stringers

7. Tripod stands and post shores can be separated for storage or transport.

VI. Tables for H20 Slab Support Design

Layouts of the H20 Beam Support system can be determined using the following tables.

Table 1: Maximum Allowable Plywood Span provides the center-to-center spacing of the joists and is determined by the slab thickness.

Table 2: Maximum Allowable Joist Span relates joist spacing to slab thickness

Table 3: Maximum Allowable Stringer Span & Post Shore Load determines the spacing of the post shores. The load on the post shore is indicated below the stringer span.

Table 4: Post Shore Heights and Capacities provides a way to check the Resulting Load against the Allowable Load for the chosen post at the given application height.

Table 1: Maximum Allowable Plywood Span
For typical support spacing using ¾" Plyform, Class 1 plywood.

Max. Allowable Slab Thickness (in.)		Joist Spacing	Max. Allowable Load (psf)	
L/360	L/270	(inches)	L/360	L/270
122.4"	122.4"	**8.0**	1580	1580
54.4"	54.4"	**12.0**	730	730
25.6"	28.8"	**16.0**	370	410
14.0"	18.8"	**19.2**	225	285
5.6"	8.8"	**24.0**	120	160

Notes:
1. Plywood face grain across supports.
2. Plywood is assumed continuous across 2 or more spans.
3. All "Slab Thickness" values include 50 psf live load.

Table 2: Maximum Allowable Joist Span

Concrete Thickness inches	Deflection = L/360					Deflection = L/270				
	Joist Spacing:					Joist Spacing:				
	8"	12"	16"	19.2"	24"	8"	12"	16"	19.2"	24"
6					11' - 0"					11' - 0"
7				12' - 0"	11' - 0"				12' - 0"	11' - 0"
8			12' - 0"	11' - 0"	10' - 0"			12' - 0"	12' - 0"	10' - 0"
9			11' - 0"	11' - 0"	10' - 0"			12' - 0"	11' - 0"	10' - 0"
10			11' - 0"	10' - 0"	**10' - 0"**			12' - 0"	11' - 0"	**10' - 0"**
11		12' - 0"	11' - 0"	10' - 0"	**9' - 0"**		12' - 0"	11' - 0"	10' - 0"	**9' - 0"**
12		11' - 0"	10' - 0"	10' - 0"	**9' - 0"**		12' - 0"	11' - 0"	10' - 0"	**9' - 0"**
13		11' - 0"	10' - 0"	9' - 0"	**9' - 0"**		12' - 0"	11' - 0"	10' - 0"	**9' - 0"**
14		11' - 0"	10' - 0"	9' - 0"	**8' - 0"**		12' - 0"	10' - 0"	9' - 0"	**8' - 0"**
15		11' - 0"	10' - 0"	9' - 0"	**8' - 0"**		12' - 0"	10' - 0"	9' - 0"	**8' - 0"**
16	12' - 0"	10' - 0"	9' - 0"	9' - 0"	**8' - 0"**	12' - 0"	11' - 0"	10' - 0"	9' - 0"	**8' - 0"**
17	12' - 0"	10' - 0"	9' - 0"	9' - 0"	**8' - 0"**	12' - 0"	11' - 0"	10' - 0"	9' - 0"	**8' - 0"**
18	11' - 0"	10' - 0"	9' - 0"	**8' - 0"**	**8' - 0"**	12' - 0"	11' - 0"	9' - 0"	8' - 0"	**8' - 0"**
24	10' - 0"	9' - 0"	8' - 0"	**7' - 0"**	**7' - 0"**	11' - 0"	10' - 0"	8' - 0"	**7' - 0"**	**7' - 0"**

Notes:
1. Bold numbers indicate deflection exceeds >/270 for ¾" plywood deflection limits. See Table 1: Maximum Plywood Pressure.
2. Live load is not included in deflection calculations.
3. Joist table is based on a single span condition.
4. Shaded areas within the table indicate span limited by deflection.