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Mack Planking Pre-Installation FAQs

Q1: *How should rebar be positioned in a masonry wall for the planks* ?
A1: Mack recommends that the rebar be placed at the spacing as designated on Mack's approved shop drawings. Most often, rebar size and spacing is designated as #4 bar, 4-foot on center for plank-to-wall rebar and #5, 4-foot on center for rebar that is continuous up through the wall. Mack is typically not responsible for rebar that must be grouted into the wall before the plank is set. Refer to Mack's approved shop drawings, as we will designate on those drawings what rebar that we are responsible for providing and installing.

It is very important that the rebar be positioned in such a way that it does not interfere with the bearing of the planks (see Fig. 1). This also means that grouted masonry cores should be struck off level with the top of the block.

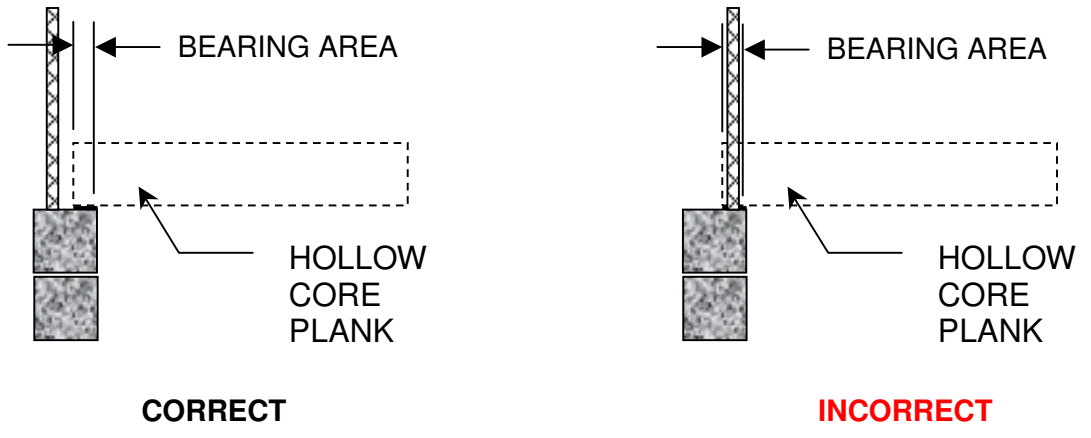

Figure 1.

Q2: *How should the steel be prepared for the plank* ?
A2: Mack insists that all steel be properly secured, braced and welded (as applicable) prior to setting. Free-standing columns that support or run past the plank should be temporarily secured with guy wires or braced to prevent them from becoming out of plumb during the plank erection.

Q3: *How soon before you can set the plank* ?
A3: Mack recommends at least two days of cure on grout-filled masonry walls before plank erection. Plank can be set on steel immediately after the steel is secured properly.

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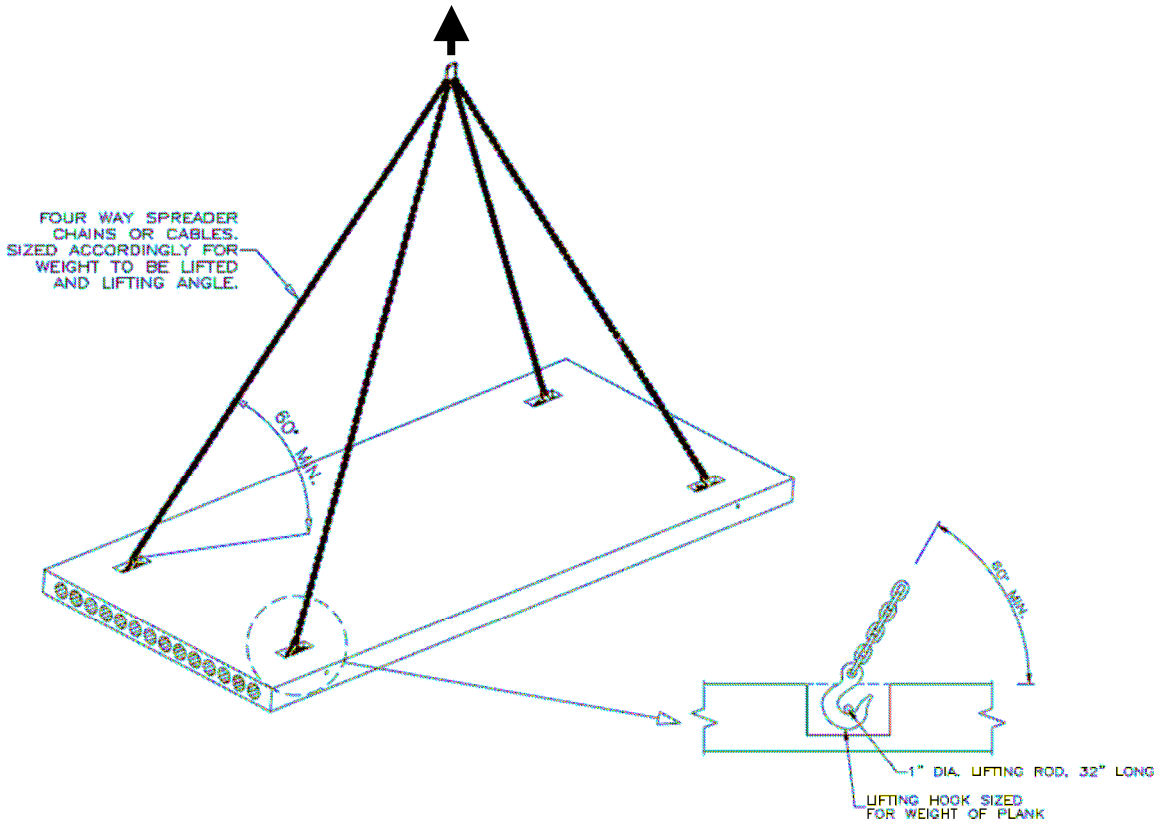
Q4: *How should the planks be lifted / handled* ?
A4: Planks are most commonly set utilizing a four-point top pick with a suitably sized 4-leg chains or cables due to the large width of plank that Mack manufactures. Typically, 3/8" hooks and chains are used for the 8" hollow core (HC) product, and ½" hooks and chains are used for the 10" HC product. Extremely small pieces of HC may have only 1, 2, or 3 pick points, dependent upon size.



Planks are sometimes also provided without lifters when provided in 50" widths or less. In this case, the plank must be slung properly to be lifted and set. Chain, cable or nylon slings may be used as chokers. Chokers placed around the planks should be a minimum of 16 feet in length, with one choker at each end of the plank approximately 2-4 feet in from the end of the plank. On planks ranging in lengths from 0 to 25 feet in length, spreader cables from the crane hook to the chokers a minimum of 20 feet in length. On planks 25 feet to 45 feet use spreaders a minimum of 30 feet in length. Where headroom is an issue, a spreader beam can be used.

DO NOT pick up any planks with just one choker around the middle of the plank. The plank *will* break, as they are not designed to be loaded in that manner.

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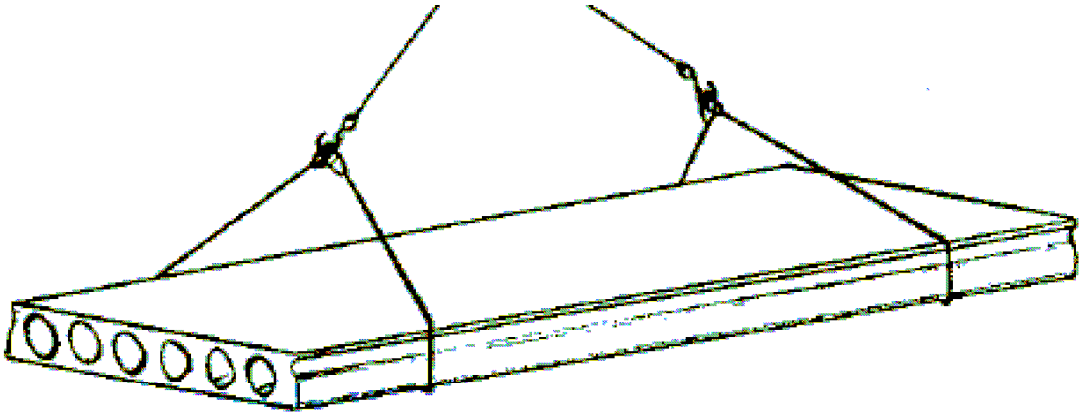
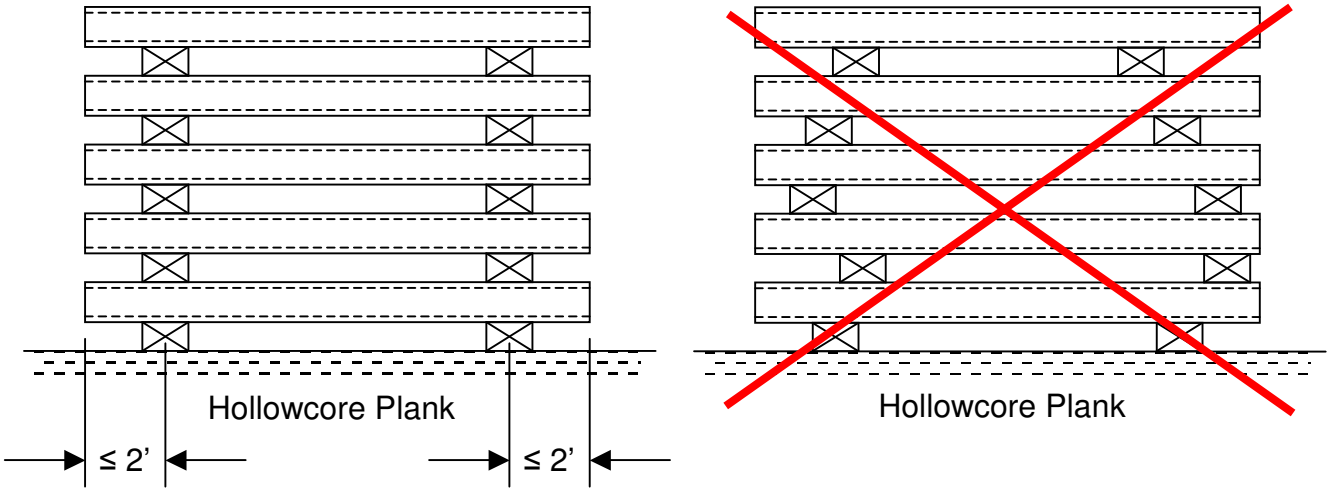


The erector is responsible for determining size and load capacity of any spreaders, chokers, cables or any devices used in the erection of precast. Any precast planks broken due to improper handling not recommended by Mack Industries, Inc. will be replaced at cost to the erector or purchaser of the plank.

Planks 0 to 12 feet in length may be picked up with a forklift or telescoping loader. Ensure the forks are set a minimum of 4'-0" apart and the set of forks is centered on the plank.

Q5: *How should the planks be stored on site* ?
A5: If planks are to be stacked on the ground, the boards must be kept in a straight vertical line on each end of the plank. Boards should be placed no further than 2 feet in from each end. If stacking planks on soft ground, ensure bottom boards do not sink and the bottom plank does not touch the ground. The bottom boards must rest under load parallel with each other to prevent twisting or torsion of the planks. Stack planks no more than 5 slabs high. Do not flip units over or on side for any reason.



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Q6: *What / How will you grout* ?
A6: The erector (Mack or otherwise) is typically responsible for grouting all precast-to-precast seams and any lifting device pockets. This includes end-to-end and keyway grout seams as well. If coordinated with the Mack, we may help you by grouting the perimeter of a floor or area if a pour stop or soldier course of block is provided for us by the GC. We will grout by hand, pouring bucket or concrete pump depending upon the size of the set, amount of grouting, elevation, conditions, etc. Seams will be filled and excess will be removed by a either a shovel or a stiff broom. We will leave the grout level with the top of the plank unless instructed otherwise.

Q7: *What kind of grout will you use* ?
A7: Mack's standard mix design is a 3500 psi strength cement and sand/fines grout mix (no course aggregate). A 6% air-entraining admixture is also added for outdoor or unprotected applications. It is provided at approximately a 6" slump to properly grout. Superplasticizer (not water) may be added on-site to improve workability/flowability. We recommend and use this mix unless specifications state differently.

Q8: *How long will it take* ?
A8: If Mack is erecting your job, we can set 6,000 to 10,000 SF per day. This is dependent upon weather and site conditions, set start time, plank elevation, and the type of structure. Grouting usually requires an additional day per 24,000 SF of planking, weather permitting. Welding, if required, will be done as the setting, conditions, and weather permits. Often, welding can be done after the job is complete and will not interfere with other trades working in the area.

Q9: *Is there anything I should be concerned about in winter conditions* ?
A9: Yes. Mack can set plank in almost any weather except for thunderstorms and conditions that would prevent a crane or tractor-trailer from pulling onto site. However we cannot erect plank onto beams or walls that have large amounts of snow or ice on them. It must be removed prior to setting. We must also grout the planking when conditions are favorable. This usually means temperatures must be above 25°F and climbing. Also, grouting should not be conducted when it is steadily raining, as the addition of water will be detrimental to the grout.

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Q10: *Is there anything else I should do to prepare for the plank set* ?
A10: Yes. Please note the following:

- Mack is typically not responsible for providing safety measures for anyone but ourselves. Mack practices either 100% tie-off or leading edge erection utilizing controlled access areas and a safety monitor, depending upon the situation. Be prepared to cover openings/penetrations, provide safety railings or other means of fall protection as may be required after we leave site.
- Ensure a stable, level area is provided for access for the mobile crane and tractor-trailers delivering the planking.
- Please inform your other trades of the days we will be setting plank. They must stay out of the swing radius of the crane and the setting area. Also, no work should occur two floors directly below the floor we are currently setting.

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Mack Planking Post-Installation FAQs

Q1: *How soon before I can put any substantial weight on the planks*?
A1: Mack recommends that the planks not be loaded until the grout has cured to the required strength of the project, typically 3500-4000 psi. This usually means 1-3 days depending upon time of grouting, local temperatures and conditions. If planks are loaded before the grout key has cured, deformation of the key can occur; therefore a loaded plank will not share the load with neighboring plank. In addition, it may deflect under load independently.

Q2: *How much weight can I put on the deck / can I put a scissor lift or skid steer on it* ?
A2: Mack recommends that you confer with the project engineer of record as to the permissible loading. The planking (as well as the supporting structures) are engineered and manufactured to conform to the established loading specifications.

Q3: *Is there any special preparation required before I add a topping* ?
A3: Mack recommends that before applying a topping, the surface of the plank be swept clear of any and all debris, especially any residual sand left on the surface from the grouting process. Pressure washing the deck is best. Check with your topping contractor for any adhesion modifiers they may recommend for your selected product.

Q4: *Why is there water in the planks / leaking from the planks down the wall* ?
A4: A hollowcore deck system is a structural system, *not* a waterproof system. Plank exposed to the elements (snow, rain, etc.) *will* have water eventually infiltrate the grout joints and may collect at the bearing ends of the planks at the core locations. Mack recommends that once the deck is installed, that weep holes be drilled up into the ends of the planks *before* water has a chance to collect. Weep holes are ~¼" holes located at the core locations, drilled closely to the bearing ends of the plank (see Fig. 1 for core locations). A firred-out wall or drop ceiling easily hides this location. In the case of an exposed plank ceiling, where the weep holes are visible, the holes can be eventually caulked prior to painting.

Q5: *Do I need to fire-proof caulk the plank seams* ?
A5: No. Fully grouted seams, in conjunction with the planking, provide a 2-hour UL fire rated system.

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Q6: *The plans call for a specific topping thickness; but where does that apply because the planks are higher at the middle due to the camber* ?
A6: PCI (the Precast/Prestressed Concrete Institute) recommends that the specified topping thickness be uniform across the member. If this is not feasible (which is typically the case because it does not leave a level surface), then the specified topping thickness is measured at the highest point of the plank or location of maximum camber which is typically at midspan (see Fig. 2), thus creating a thicker topping at the bearing ends of the plank.

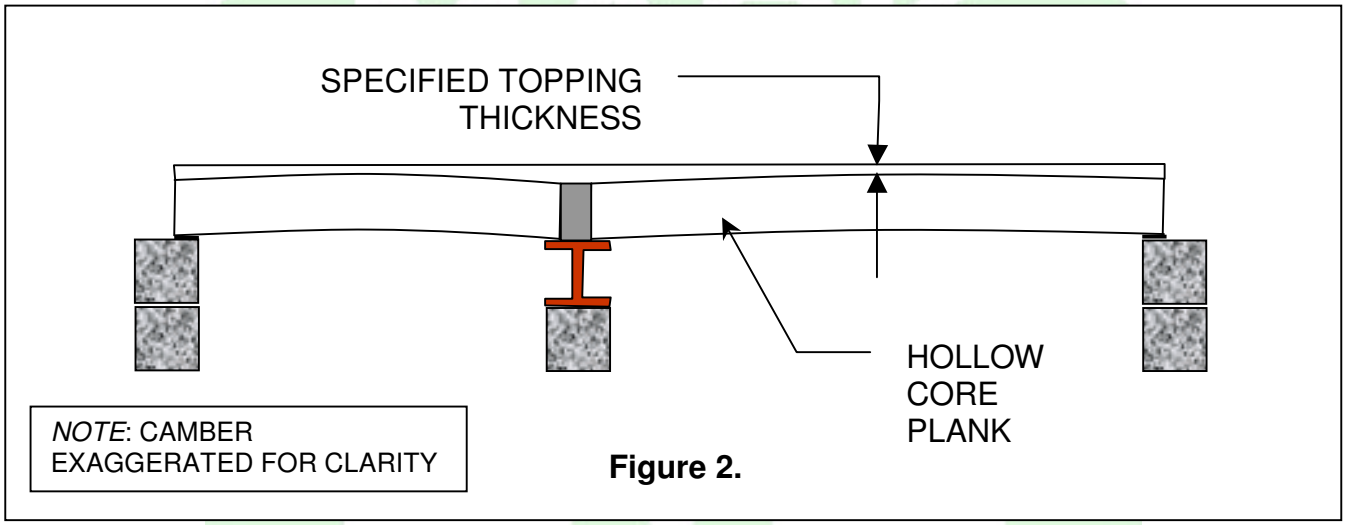

Figure 2.

Q7: *Is there anything I should be concerned about in winter conditions* ?
A7: Yes. In conditions where temperatures are consistently below freezing, some special precautions need to be taken. If wet conditions also exist as explained in Answer #4 and weep holes are not provided; over a period of time, ice may build up inside the cores. This occurrence, if left unchecked, can damage the underside of the plank due to ice's expansive nature. Although not typically a structural issue, if this occurs, spalling exposing the cores can be seen. Mack recommends the following to prevent damage to the planking:

- Tarp or otherwise cover the planking to prevent the infiltration of water.

- or -

- Drill weep holes as explained in Answer #4.

- and -

- Provide heat on the underside of the planking by means of gas-fired heaters or similar to prevent freezing of moisture inside the cores.

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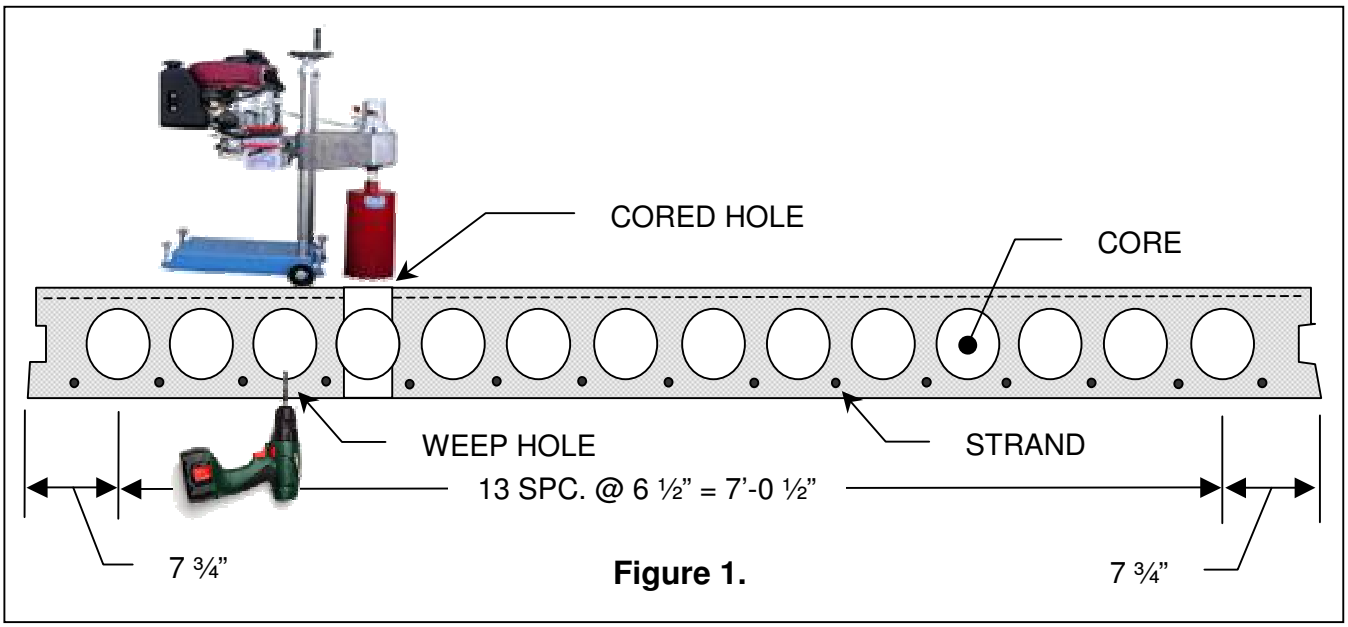

Figure 1.

Q8: *Where should trades core drill / is it OK / should I try to miss the strand* ?
A8: Hollowcore planking is designed to permit core drilling. Typically holes over 10" in diameter are coordinated prior to manufacture and, if so, are provided by the precaster. Field-cored holes over 10" should be verified with and approved by the engineer before proceeding. In general, all core drilling should:

- Make an attempt to miss the strand in the planking if possible.
- Be located as close to the bearing end as possible.
- Be centered at a core location for holes 6" and less (see Fig. 1 for core locations) such that strand is missed entirely.
- Be centered *over* a strand (between core centerlines) for holes over 6" such that only one strand is encountered.

This is because:

- Drilling through strand reduces the load carrying capacity of the plank.
- Strand at the end of a plank is not at full prestress; therefore it less critically affects the load carrying capacity of the member.
- Drilling through strand is more difficult and time consuming, as the strand is located between cores in the middle of the web where there is substantially more concrete. Off-center engagement of a strand and core drill can also cause binding of the core bit, making core drilling even more difficult.

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Q9: *How do I prepare or finish an exposed plank ceiling*?
A9: The ceiling should be primed with an appropriate product before painting. If the primer is sprayed on, the painting contractor should "back roll" after application to ensure all small voids and pinholes are filled. Plank seams and pin holes in the plank may be caulked if desired prior to priming. The most common finish is "popcorn" spray-applied texture paint. The finish of the plank is such that a "light" popcorn finish may be used if properly primed.

Q10: *How do I hang mechanical or electrical systems from the underside of the plank?*
A10: Options for hanging systems from the underside of the planks include shallow expansion anchors, toggle bolts, thru-bolts with a top-mounted plate, and light straps (see Fig. 3). The anchor type is to be chosen based on the direction of the loads (i.e. vertical only or vertical and horizontal) and the magnitude of the loads. The anchors are to be installed according to the manufacturer's written installation instructions and must not exceed the written allowable design loads.

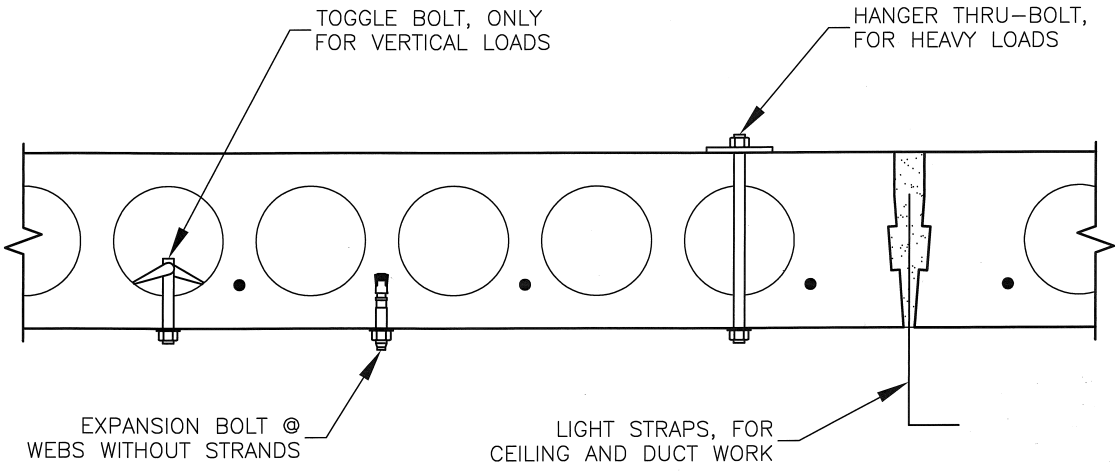

FIGURE 3