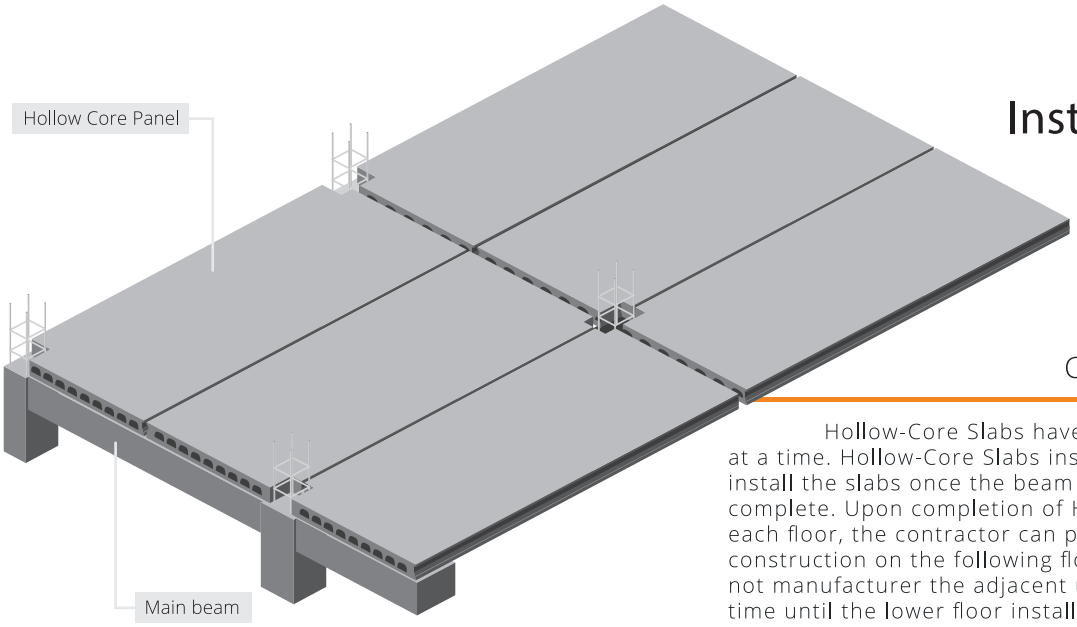
HOLLOW CORE

Installation Manual

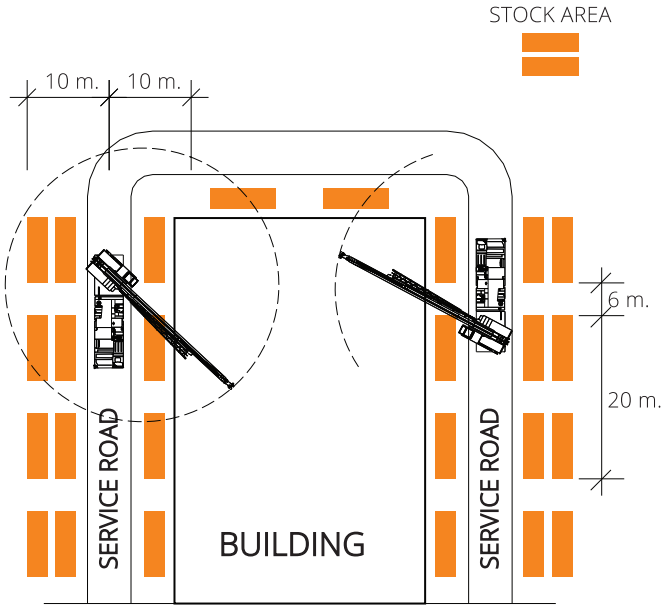
HOLLOW CORE
Installation Manual



Installation of Hollow Core floor slabs

Site Preparations
Concrete column casting

Hollow-Core Slabs have to be installed one floor at a time. Hollow-Core Slabs installation team will be able to install the slabs once the beam work of each floor is complete. Upon completion of Hollow-Core installation of each floor, the contractor can proceed with beam construction on the following floor. The contractor should not manufacturer the adjacent upper floor beams ahead of time until the lower floor installation is complete. This is due to the possibility of the buildings' beam measurements changing once the Hollow-Core is fully installed. A slight change in the beams measurement might cause the Hollow-Core Slabs to misalign. In addition, this misalignment can damage the Hollow-Core Slabs.

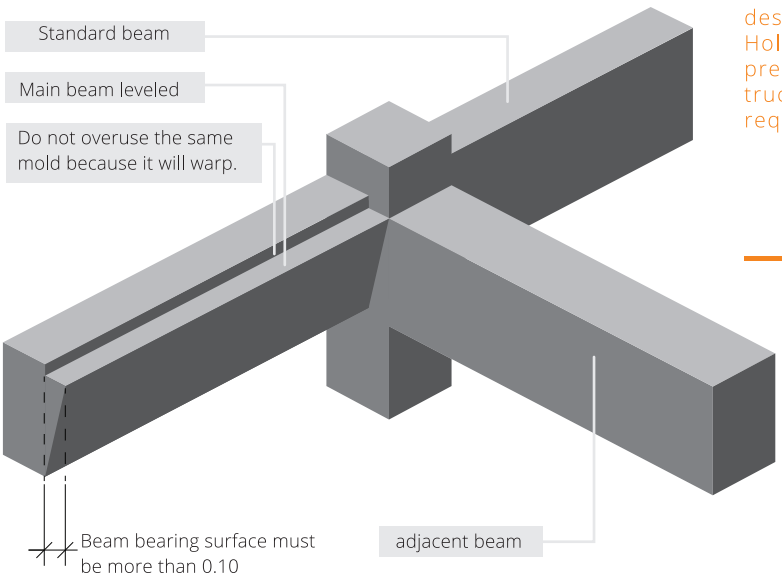


Remark: In general, we can install up to approximately 500 square meters per day if we do not encounter construction site problems.

Storage and Preparations

Once construction planning is complete, the contractor shall submit construction drawings, installation schedule and designated position for Hollow-Core Slabs to be installed. The contractor shall provide adequate space for Hollow-Core truck and crane on installation day. The storage area and designated install position should be of minimal proximity to each other. Special roads are required to be paved in order to support the weight of the Hollow-Core delivery trucks and cranes. The installation area will need to be kept clear of obstructive and unnecessary objects.

Remark: The contractor will be required to prepare a proper designated storage area for the Hollow-Core at least 2 days prior to delivery. The contractor shall inform the installation team of a delivery schedule at least 3 days prior to the desired date. In case of limited space on construction sites, Hollow- Core panels may be installed without site storage preparations. The panels can be lifted from the delivery truck and installed. For this service a special arrangement is required prior to delivery.

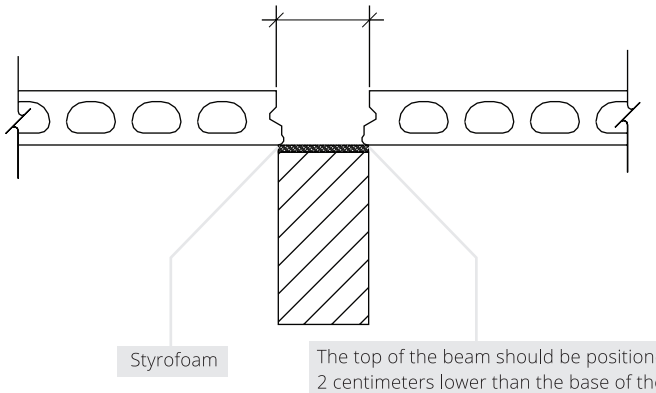


Beam with Hollow Core bearing surface

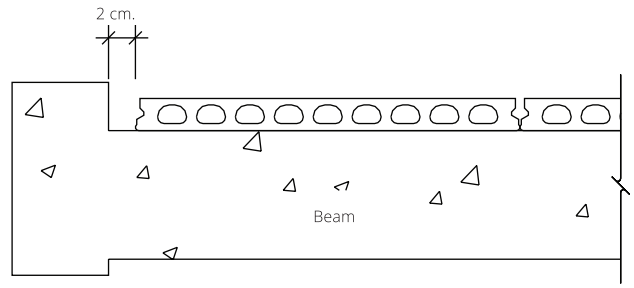
Beam Preparations for Hollow-Core Slabs

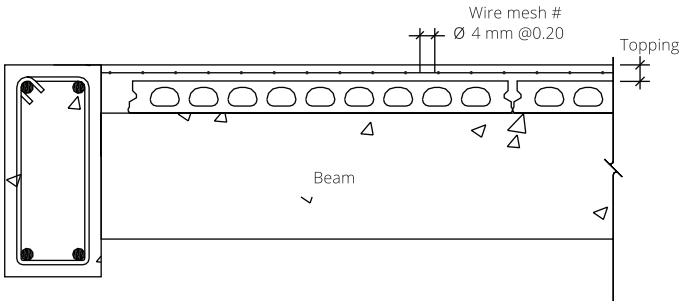
1. The beam must be aligned correctly with an error allowance of +/-2 centimeters.
2. The beam's level must be positioned correctly according to the proposed plan.
3. The bearing surface of the beam must be smooth and leveled. The contractor may use a margin trowel to smoothen the beam's surface.

Spacing out the two panels accordingly is highly recommended. Concrete can be poured into the space/gap or bricks can be laid along this area.



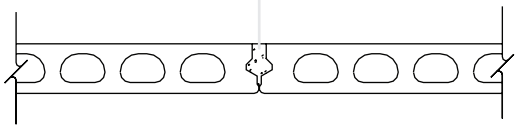
Normal beam



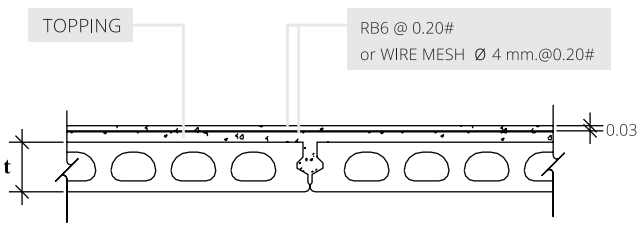


Beam adjacent to the Hollow Core Slabs

Grout the gap between the two Hollow Core Panels with mortar or concrete key grouting.



GROUTING



The Baring Surface

The baring surface of the beams supporting the Hollow-Core panels must be built according to the design and must have a smooth and clear surface (they must be free of any debris and foreign objects.) 2 centimeters of extra space between the Hollow-Core panels and the adjacent vertical surface of the beam is recommended to ensure a proper fit.

Hollow-Core Placement

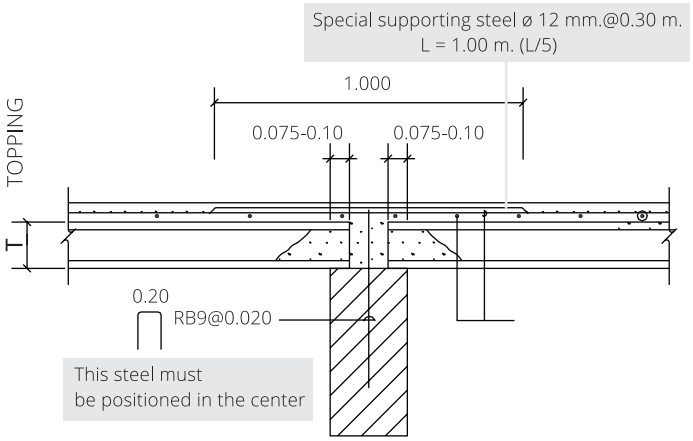
1. Once the Hollow-Core panels are placed in their proper positions, the contractor must inspect, clean and make any needed adjustments to prevent cracks in the panels.
2. Shear Key must be welded prior to grouting to prevent unnecessary debris and objects from accumulating in the area.
3. Place a 6mm. wire mesh with a #0.20 m gap on top of the Hollow-Core panel before concrete topping in accordance to a 1:2:4 ratio. The compressive strength of the concrete should be no less than 240kg/square meter. A margin trowel may be used to smoothen the topping surface.
4. After the topping concrete is poured, it must be cured for at least 24 hours.

Grouting (To be completed to the contractor)

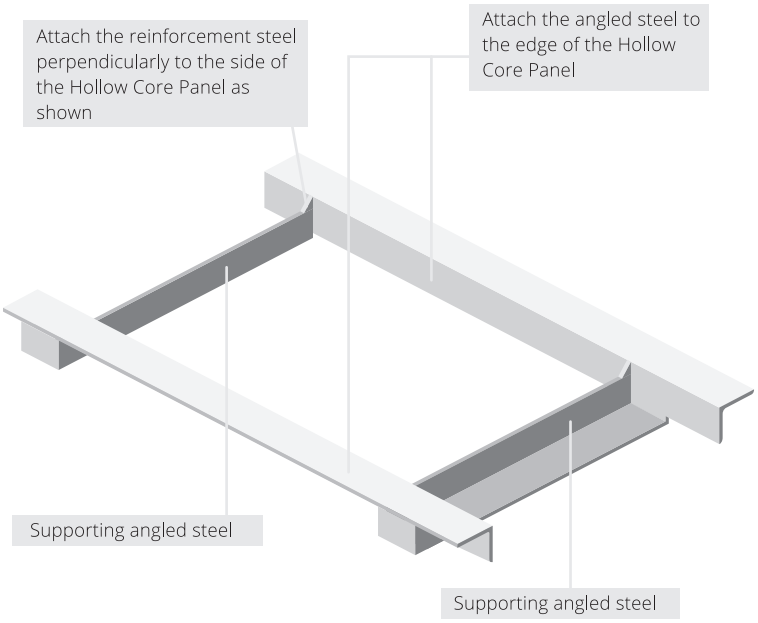
Mortar is a construction material used to connect sections of pre-cast concrete, fill voids, and seal joints. Mortar is composed of cement, water, and sand mixed in a 1:1:4 ratio accordingly. Grouting helps spread the load between precast panels.

Grouting Procedure

1. Vacuum and thoroughly clean the joints of debris
2. Prepare and the grout according to its proper instructions.
3. Pour water into the joints
4. Load and apply the mixed grout using the grout float. Use a margin trowel to smoothen mortar. Joints under the panel should be smoothened while mortar is wet for consistency in the quality of grout.
5. Spread the grout properly and ensure all open cavities are filled. In case of roof floor, grouting should be performed before concrete topping (within 30 minutes) to ensure that mortars are evenly mixed with concrete topping. This property helps prevent water leakage.
6. Clean off excess grout.



Reinforce both the edge of
the Hollow Core Panel
and the concrete topping with steel.



Wire Mesh Placement

After Hollow-Core Slabs are placed and grouting is completed, the contractor shall clean unnecessary objects before place the wire mesh or steel support prior to pouring the topping concrete.

Concrete Topping

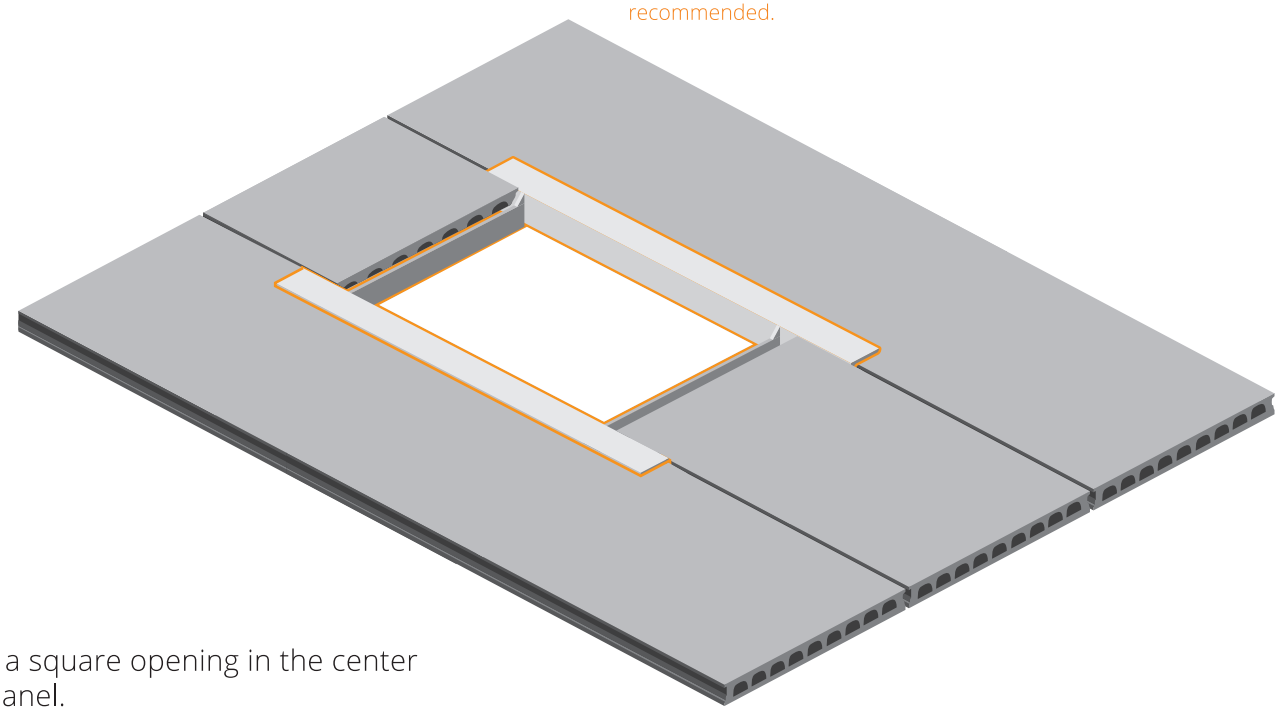
After the wire mesh is placed in accordance to the design specifications, water may be used to clean unnecessary debris prior to pouring the topping concrete.

Special concrete topping procedure for the rooftop floor

The rooftop floor's direct exposure to sunlight and rain (its exposure to sudden temperature fluctuations) can cause the concrete to crack. The contractor shall follow the following procedure before pouring the topping concrete to prevent such cracking from occurring.

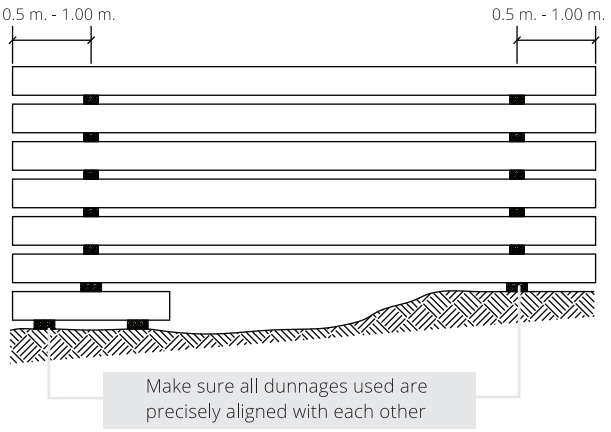
1. The topping concrete and water proofing material should be mixed and poured together in a thicker than usual consistency. The thinnest part of the topping concrete should be no less than 5 centimeters thick. Low slum should be use to alleviate cracks on concrete's surface.
2. In addition, more steel support on the topping concrete should be used. The contractor should take precaution when placing the steel support near the concrete surface because temperature fluctuates most on this outer concrete layer. The distance between the steel support and the concrete surface should be no less than 2 centimeters.
3. Mortar should be filled in no more than 30 minutes prior to the addition of the topping concrete. Make sure the topping concrete does not flow into any of the Hollow-Core gaps.
4. The slope should be correctly adjusted to prevent water from seeping into the Hollow-Core gaps.
5. Curing the concrete every 7 days is necessary.

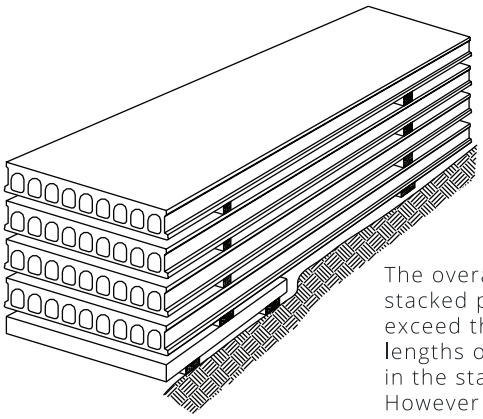
Remark: Ceiling's water leakage prevention system is highly recommended.



Cut out a square opening in the center
of the panel.

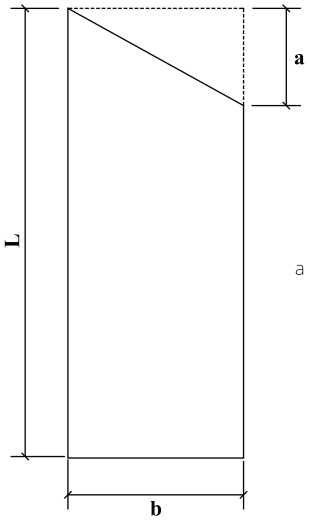
Stockpiling





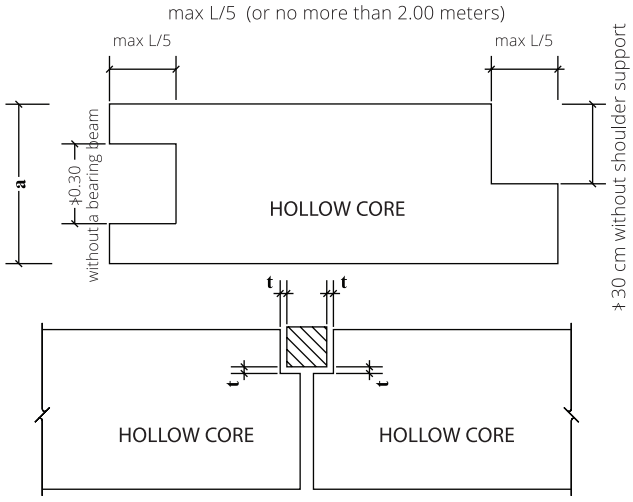
The overall height of stacked panels should not exceed the sum of the lengths of all panels used in the stack = 40 meters. However this depends on the characteristics of the ground and the size of the dunnage.

Detail for cut out



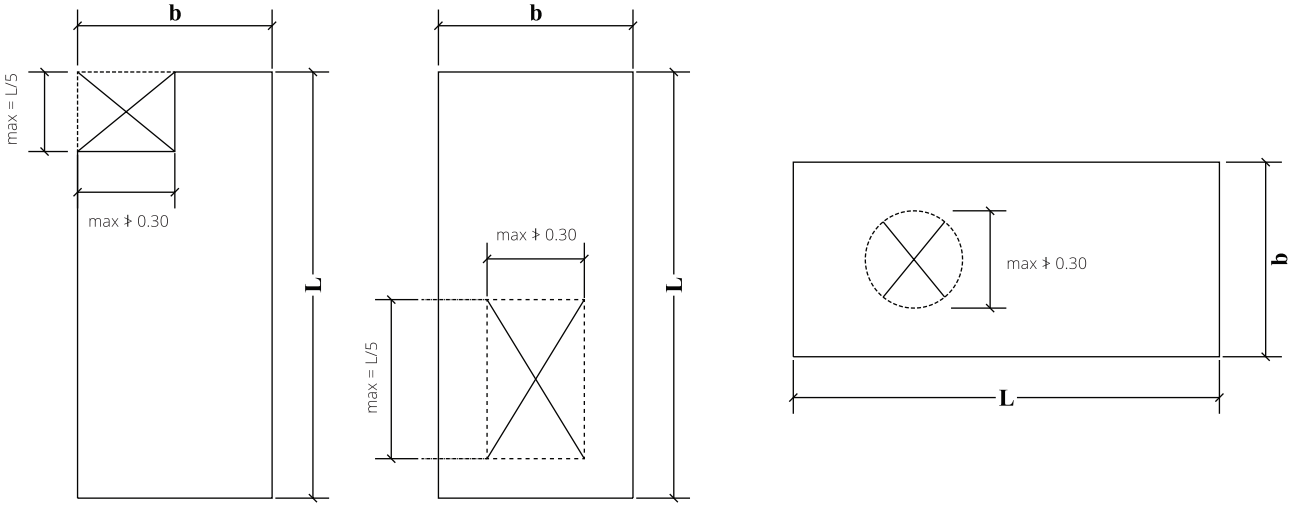
a = no more than b

Cut out for column

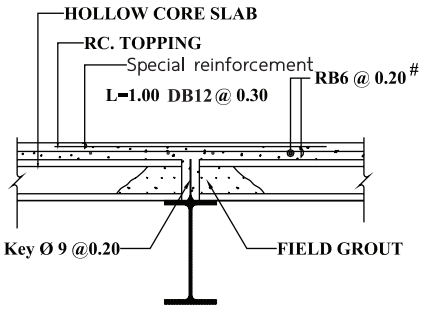


t = **25-30 mm.** (Measured from the column surface)

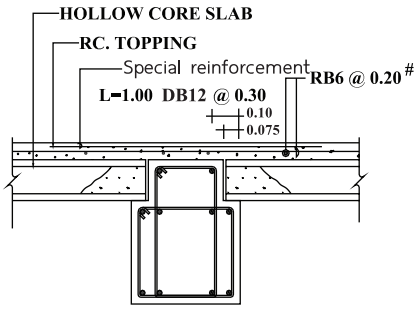
OPENING



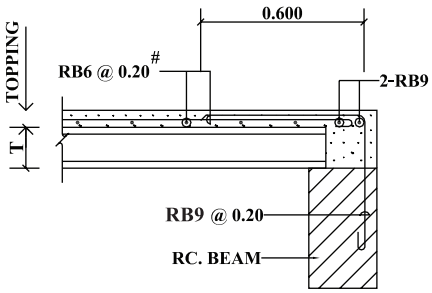
Remark : Customers will be solely responsible for opening and deconstructing the panel if needed.
Warning : Tempering with the panel structure will drastically affect its ability to bear weight. Please contact VCON before doing so.



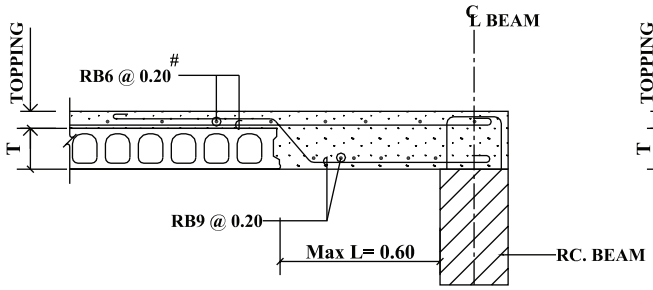
On steel beam



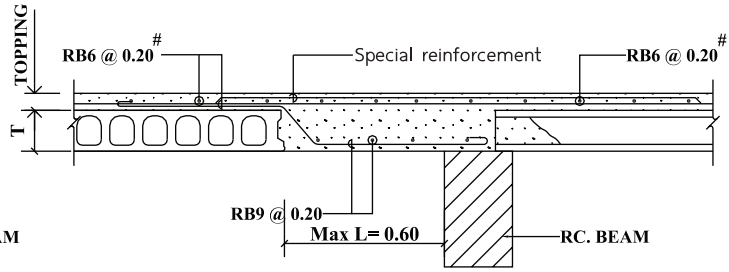
On the surface of concrete beam



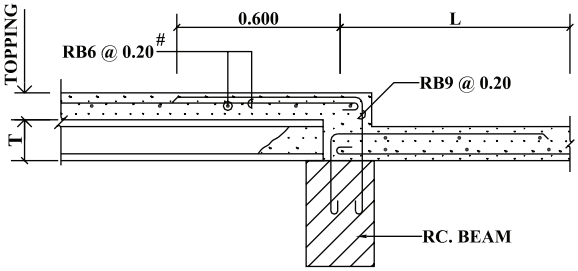
On supporting beam



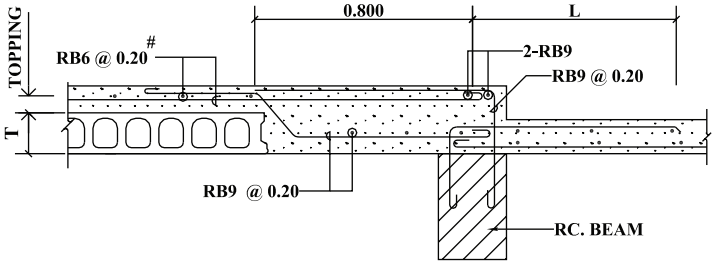
Gap at the edge beam



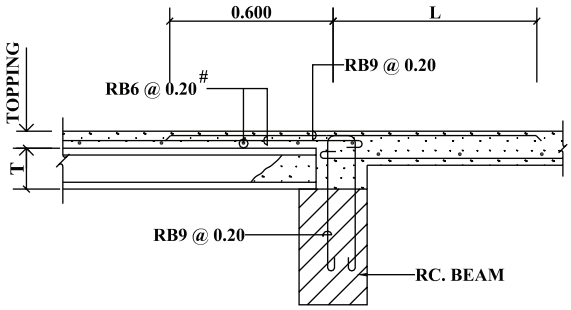
Gap at the middle beam



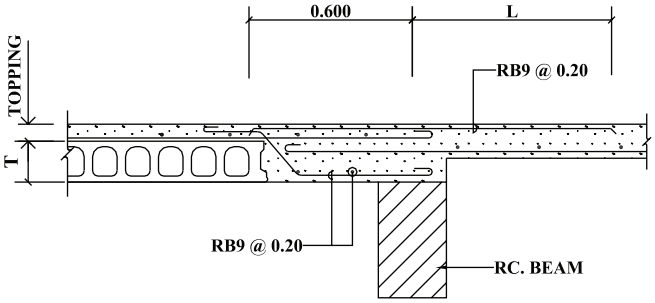
Pouring concrete descending case #1



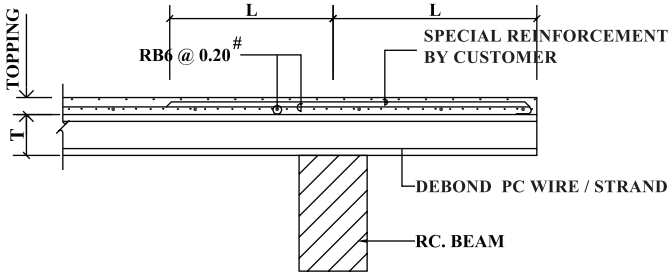
Pouring concrete descending case #2



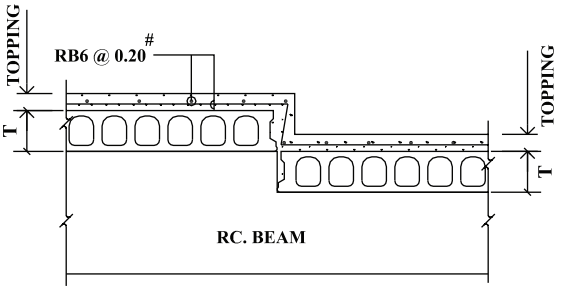
Pouring concrete case #1



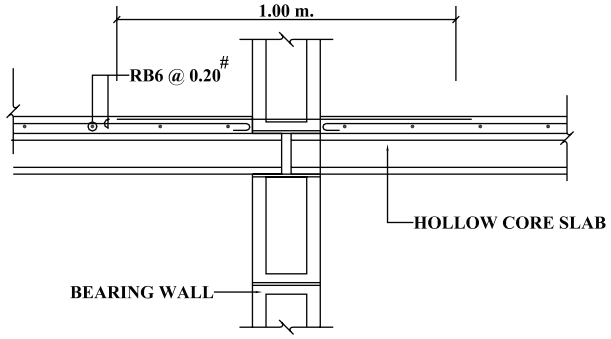
Pouring concrete case #2

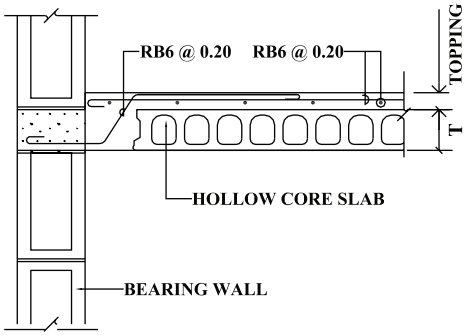


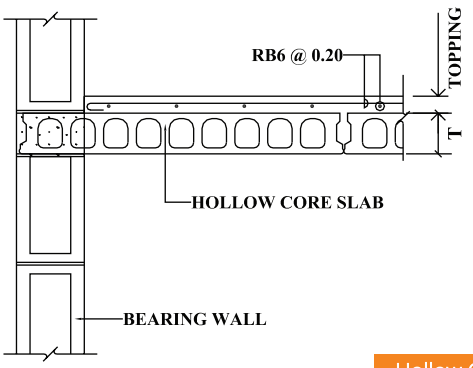
Cantilever Slab

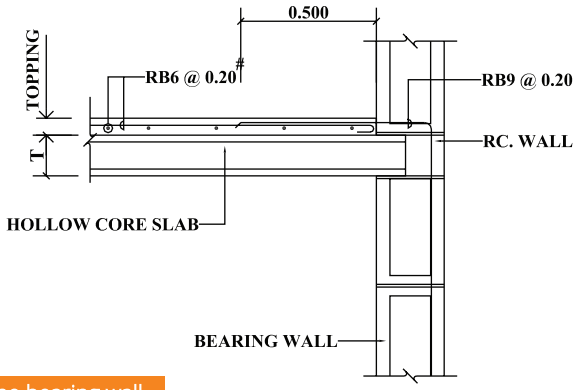


Descending floor



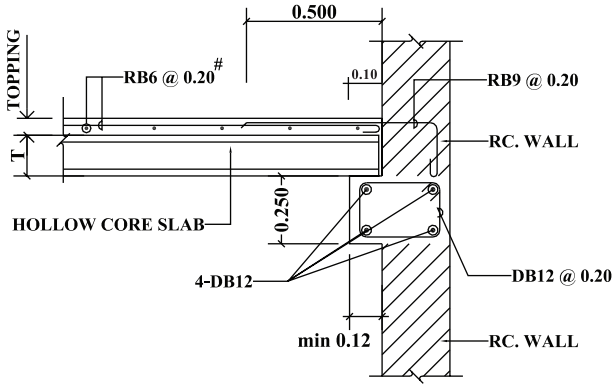




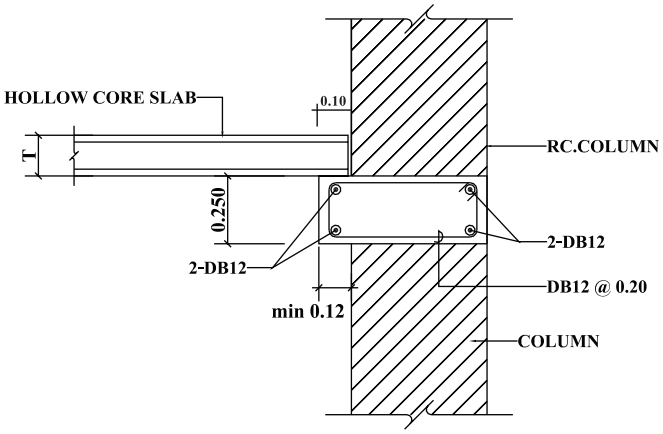


Hollow Core Slabs placed on the bearing wall

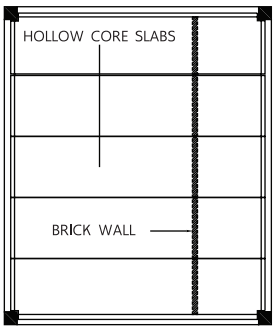
Examples of joint types to use



Hollow Core Slabs placed on wall shoulder

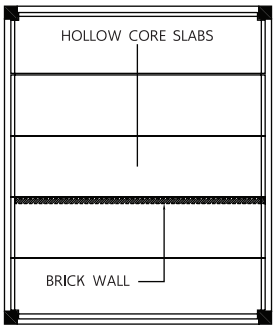


Hollow Core Slabs placed on column shoulder



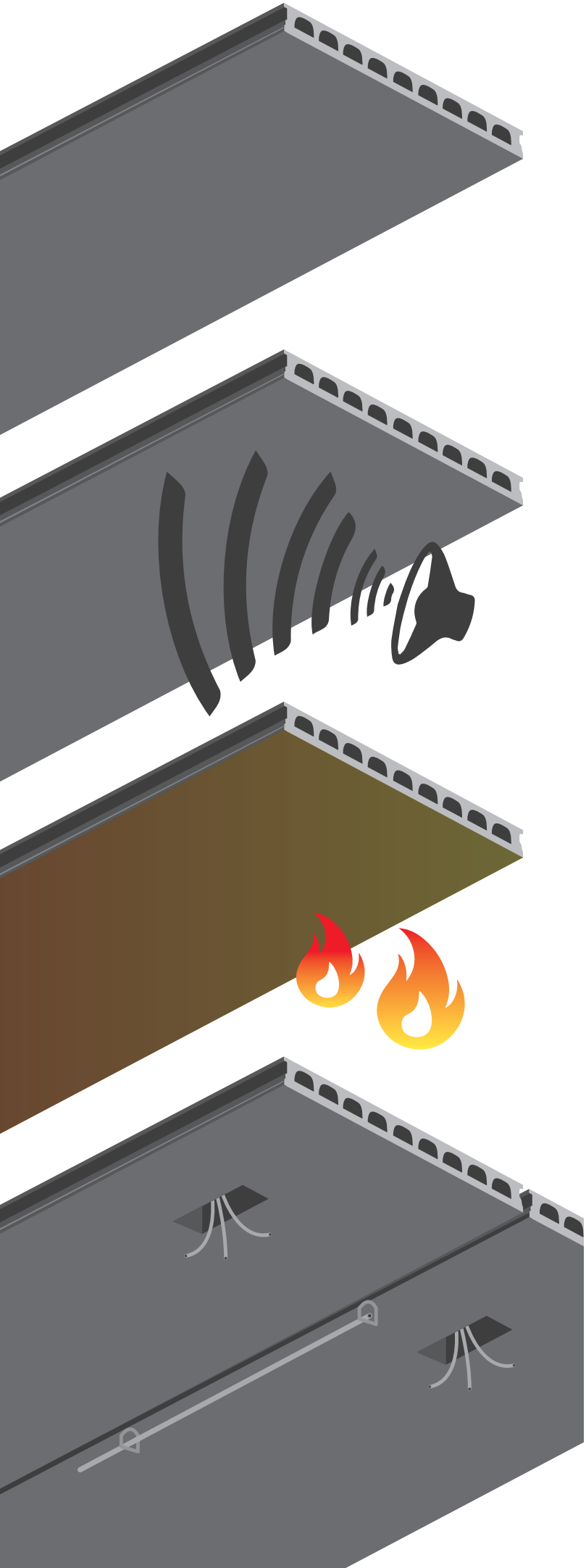
Picture A

Walls should be placed perpendicular to the panels to ensure equal distribution of weight on the panel. This design is possible (✓)



Picture B

Placing a wall parallel to the Hollow Core Slabs will lead to an unequal distribution of weight. This design is impossible (✗)



Hollow-Core Panel Specifications

1. VCON Hollow Core Precast Concrete Slab is pre-stressed with P.C. wires, commonly used as structure of building floors. VCON Hollow Core Slabs can immediately withstand weight on them without any temporary support. Generally, the width is 1.20 meters, while the thickness and the length varies depending on the type of work and beam span. Refer to the Hollow Core Load Table for thickness and size selection.

2. The Hollow Core Slab can reduce the transmission of sound waves and temperature due to its hollow characteristic. Hollow Core Slabs have excellent sound transmission characteristics associated with concrete material. Hollow Core Slabs have a surface that is smooth which can be used as a ceiling for structures.

3. Excellent fire resistance is another attribute of the hollow core slab. The amount of concrete in the hollow core panels covered enough wires to withstand fire for hours. In the case of the fire, damaged panels can be removed and reinstalled without causing damage to nearby panels.

4. The Hollow Core Slabs will eliminate the need to drill into the slab for electrical and mechanical runs. As an added benefit, the hollow characteristic provides great ventilation to the building. Because of the thin characteristic, the Hollow Core Panel can be easily drilled into and filled up solid concrete.

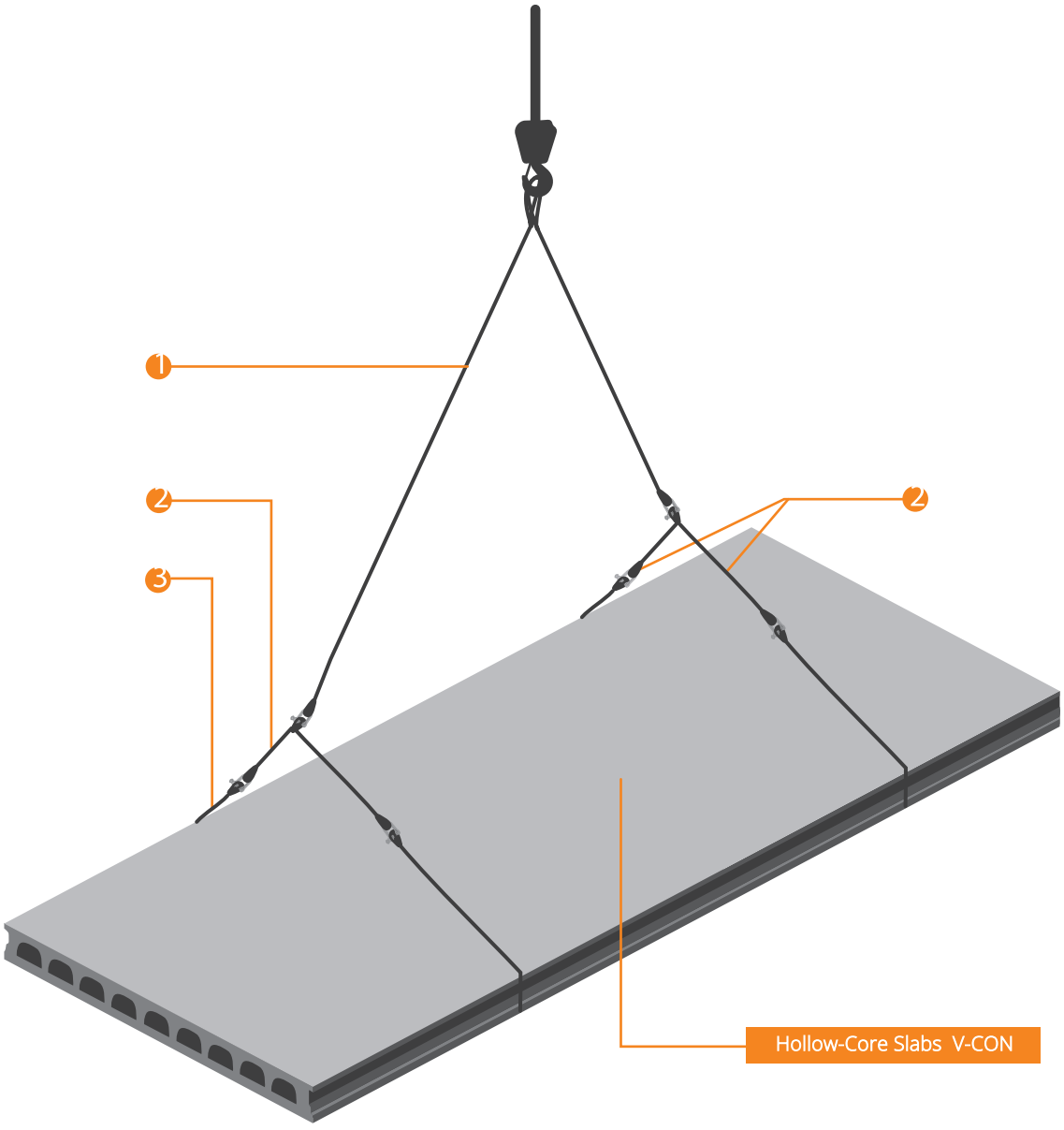
Equipment required for lifting and installation

One set of equipment contains

1	main slings size ø 5/8″	=	length 5.00-7.00 m	=	quantity 2 No.
2	supporting slings ø 3/8″ or chains	=	length 1.20 m	=	quantity 4 No.
3	carrying slings size ø 3/8″	=	length 3.50-4.00 m	=	quantity 2 No.

Remark: Use a 3-ton shackle-lifting hook.

As shown in the picture



Head Office

Tel : +66 (02) 455-0151
Fax : +66 (02) 454-0868
E-mail : vcon@vconthai.com
Address : 253 Buddhamonthon 2nd Rd., Bangpai, Bangkhae, Bangkok 10160

Cambodia Office

Tel : +855 23 5555 001
E-mail : cambodia@vconthai.com
Address : A5-8 La Seine, Diamond Island, Tonle Bassac Commune Chamkarmon District, Phnom Penh 12301 Kingdom of Cambodia

Singapore Office

Tel : +65 31384344
E-mail : vcon@vconthai.com
Address : 160 Robinson Road, #14-04 Singapore Business Federation Center Singapore 068914