

Concrete Deck Forming System Installation Manual & Field Guide

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EPS-Deck Canada

www.eps-deck.com



EPS-DECK FIELD GUIDE

Thank you for considering EPS-Deck for your next project.

This installation manual includes product specific recommendations for the correct installation of EPS-Deck in North America as well as some generally accepted construction standards and best practices used in conventional concrete forming. We have assembled what we feel are the most useful tips and tricks to help ensure a smooth installation, but we realize that occasionally a situation may arise, which may not be described in this manual.

When you encounter any situation that is not covered in this guide, we ask that you call our support hot line for guidance.

By reading and understanding all the chapters of this manual you will increase your productivity and reduce errors and construction cost over runs.

Although we provide engineering guidelines, we strongly recommended that you work with an Architect and or an Engineer of Record for the design of your project. Also consult with the local building department prior to commencing any work to ensure code compliance.

EPS-Deck is above all else, committed to the successful use of our insulated flooring/roofing systems. This installation guidebook has been reviewed by industry experts and engineers and along with our support will help you reach your goals.

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Limited Warranty:

EPS-Deck Components Limited Warranty. **EPS-Deck** warrants that its products conform to their published specifications and are free from manufacturing defects. If the customer believes that the products have defects, the customer will return samples of the defective products at their expense to **EPS-Deck** and upon **EPS-Deck** being satisfied that the products have defects, **EPS-Deck** will replace the defective products or refund the purchase price of materials, at **EPS-Deck**'s option.

This warranty shall be exclusive and in lieu of any other representation or warranty, express or implied, including those arising by statute, operation of law, custom of trade or otherwise. Without limiting the generality of the foregoing, **EPS-Deck** assumes no responsibility and makes no other representation or warranty, express or implied, whether arising by statute, operation of law, custom of trade or otherwise, as to the merchantability or fitness for a particular purpose of its Products or the performance or results of an installation using its Products.

The Buyer hereby irrevocably waives any and all rights with respect to any implied terms or warranties under any law or legislation whether now or hereafter in effect

CAN/ULC S701 and CAN/ULC S 102.2

Surface Burning Characteristics of Building Materials

EPS-Deck meets requirements flame spread (<25) and smoke development (<450) as per CAN/ULC S701 and CAN/ULC S 102.2

Copies of these reports are available on request.

Limited Scope and Application

This manual is written with the assumption that the installer has basic construction knowledge and a good understanding of the requirements for suspended slab form work carpentry, bracing, shoring, concrete placement and finishing methods, as well as the ability to read and understand plans and build according to the construction documents. Accordingly, these procedures should be considered as guidelines only and should be supplemented by consulting with the EOR (Engineer of Record) or building official.

If help is needed for specific situations or questions in the field, the installer should contact the EPS-Deck technical support department or a local representative. In all cases, an engineered shoring design should be utilized, and shoring should stay in place until the EOR authorizes its removal.

In the case of multi-story construction, specifications for re-shoring should be followed exactly.

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Conditions:

Shoring and Bracing: Installer is responsible for the design and correct installation of shoring of E-Deck forms in accordance with ACI (American Concrete Institute) 347-04 “Guide to Formwork for Concrete” or current applicable codes. Any variance from these standards must be provided and certified in advance by a structural engineer, licensed for the jobsite location and specifications.”

Reinforced Concrete: Installer is responsible for placement of all reinforcing steel in accordance with ACI (American Concrete Institute) 318-05 “Building Code Requirements for Structural Concrete” or current applicable codes. Any variance from those standards must be provided and certified in advance by a Structural Engineer, licensed by the jobsite location and specifications.”

For additional information please go to [Terms & Conditions](#)

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1 EPS-Deck Product Overview

1.1 The EPS-Deck System

EPS-Deck is a light weight, stay-in-place, concrete form designed to create reinforced concrete “T-beam and slab” floors, decks and roofs.



EPS-Deck is manufactured in Ontario, Canada with plans to expand the availability regionally across North America through a network of independent EPS manufacturers.



EPS-Deck is made of expanded polystyrene (EPS) insulation, with an inserted 18 gauge cold-rolled “C” channel stud at 12" o.c. The studs are attached to the EPS form work at 4' o.c. and when shoring is placed beneath and perpendicular to the studs it makes for a very sturdy shoring system able to support workers and the uncured concrete during the construction phase.



Once the concrete has reached its design strength the shoring can be removed. The EPS-Deck forms then are left in place to function as insulation, while the 18-gauge studs can be used to attach ceiling or wall finishes.

2 EPS-Deck Features & Options

EPS-Deck panels will create an insulated EPS concrete form in thicknesses from 6" to 15" and in widths of 2' and 4' in any length up to 52'.

Large billets of Type 2 EPS are wire cut into panels which are available in thicknesses from 6" to 15" as well as accessory EPS-Deck components including EPS-Deck rebar chairs as well as EPS-Deck mesh or mesh/PEX support track. The panels are then cut to length and fitted with an 18ga metal C channel.



Each order includes our mesh support track as well as rebar chairs all of which are cut from the waste materials left over from production of the EPS-Deck panels.

EPS-Deck panels create an insulated concrete form in thicknesses from 6" to 15" and in widths of 2' or 4' and in any length up to 53'.



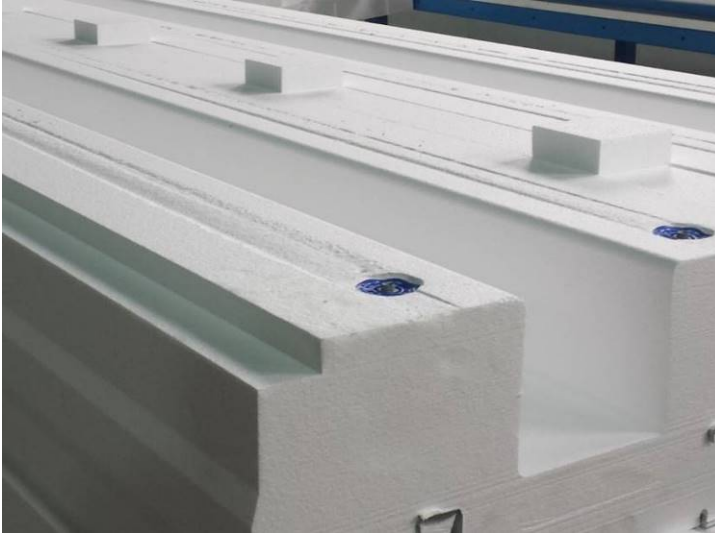
EPS-Deck includes a built-in mechanical tie-back (CeilingLock) to the concrete floor when spans reach 20ft or more (see Section 3.3 for more details).

The steel studs in EPS-Deck are used to support drywall on the bottom of the deck, via metal furring strips that are fastened to the bottom of the steel studs. Once you get spans past 20', it could be argued that the steel stud is no longer strong enough on its own to support the drywall, so the Ceiling Lock is fastened to the top of the steel stud to mechanically fasten the stud back into the concrete at span midpoint – the Ceiling Lock sticks up into the concrete, so when the concrete is poured, the Ceiling Lock (and screw that connects it to the stud below) are firmly embedded in the concrete, thus locking the ceiling to the concrete.

3 EPS-Deck Standard Components

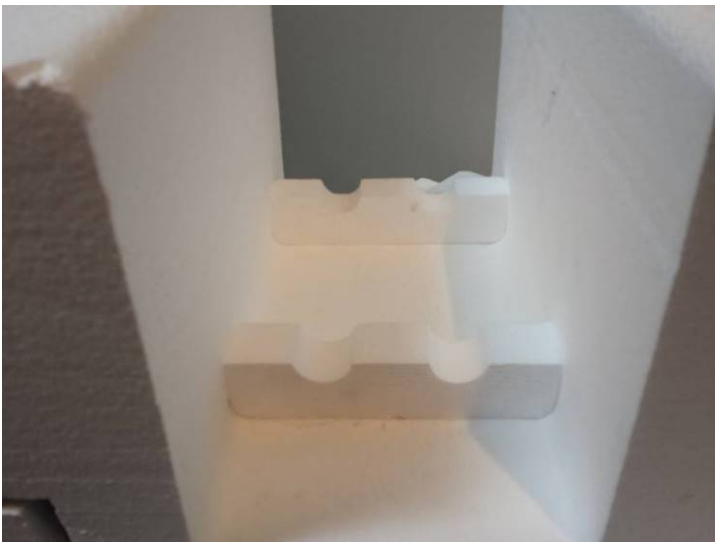
3.1 Mesh Support Track

Included with all orders is an integrated mesh support track designed to work with 6"x6", 6/6 wire mesh.



3.2 Rebar Chairs

Rebar chairs are also a standard component of the EPS-Deck system. The EPS-Deck Rebar Chairs twist lock into position in the bottom of the beams and will accommodate 10m (1/2") up to 20m (3/4") rebar.



3.3 EPS-Deck CeilingLock

Where EPS-Deck panels are longer than 20', EPS-Deck's "CeilingLock" is included which ties the 18 Ga. C-channel back to the concrete. Other EPS floor systems require this to be done on site at 7' o.c.



4 EPS-Deck Options

Specialized options unique to the EPS-Deck Concrete Deck Forming System include:

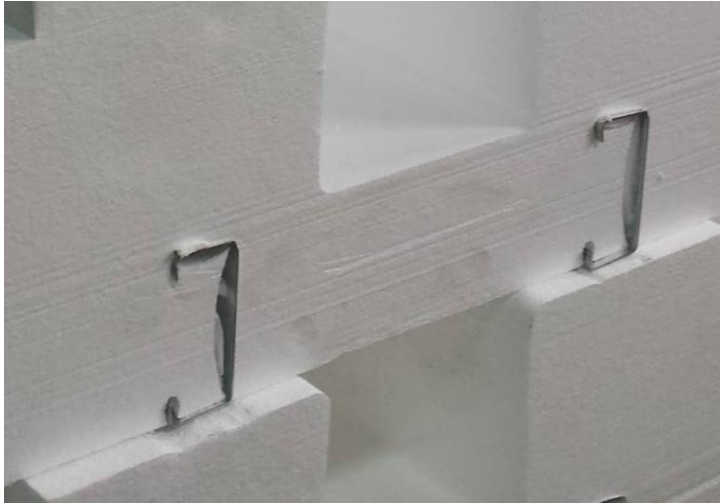
4.1 Integrated “Beaver Tail” design



The beam width increases from 6" to 9" over 8' at each end of the panels. This shape will increase the shear capacity of the beams and can replace the need for shear stirrups which are expensive and time consuming to install

4.2 Thicker Insulation below the beams

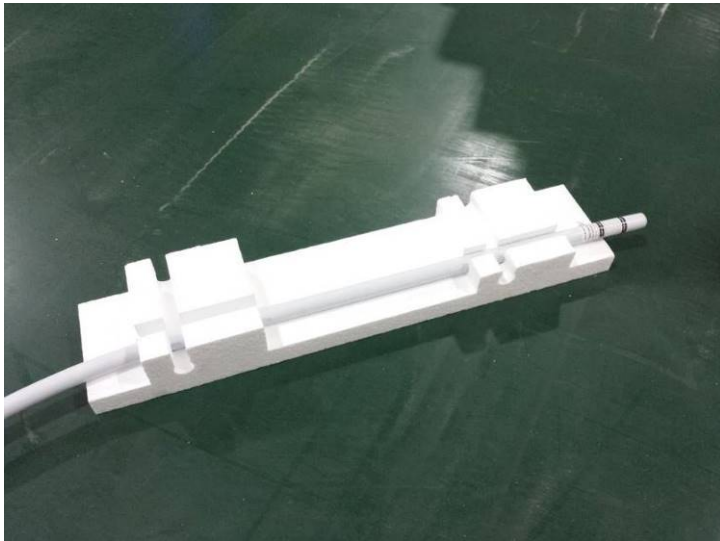
The industry standard of EPS below the beams is 2". EPS-Deck can increase this up to 6" when higher R-values are required as in a flat roof system.



The above photo shows an EPS-Deck panel with 4" of EPS below the beam.

4.3 PEX Track

An optional component to the EPS-Deck system is a PEX Track which locks the hydronic $\frac{1}{2}$ " PEX in on top of the deck.



Installing PEX on top of the deck rather than on top of the mesh can reduce the overall concrete thickness required from 4" to 3". Check with your engineer to see what will work for your project.

5 Installing EPS-Deck

5.1 Delivery

EPS-Deck can be shipped to site provided there is adequate room for the delivery vehicle to drive in and turn around. Check with your supplier to confirm the type of vehicle that will be used. An alternate delivery site may be required if there is insufficient area at the construction site.

When unloading the EPS-Deck check the materials for damages or missing items and notify the driver and your supplier immediately of any discrepancies. EPS-Deck will make every effort to replace missing items and product that is damaged beyond use. Minor scrapes and slight damages does not make EPS-Deck unusable. Consult with EPS-Deck for the best solution before proceeding with assembly of any damaged panels.



Minor damages such as this may occur during transit but in most cases this does not make the EPS-Deck panels unusable. Consult with EPS-Deck for the best solution before proceeding with assembly of any damaged panels.

Wear protective gloves and clothing when handling EPS-Deck. The 18gauge studs installed in the panels may have sharp edges at the exposed ends which can cut skin easily if mishandled.

5.2 Storage Prior To Use

If you are not ready to use the EPS-Deck panels immediately, store them in a protected area near the job site and weigh them down to prevent them being shifted or damaged by wind.

5.3 Wall Preparation

Install any steel beams or bearing walls that the EPS-Deck will be using for support. If using temporary wood framing walls for shoring install these walls before setting your panels.

5.3.1 ICF Walls (with concrete in is recommended)

Attach a 2 x 4 around the inside perimeter at the top of the ICF wall by screwing to the webs every 2' around the inside perimeter of the wall. Make sure the 2 x 4 is level to the underside of the floor.



5.3.2 Poured Concrete or Concrete Block Walls

No perimeter 2 x 4 required.

5.4 Setting the Panels

Refer to your panel layout to determine which panels go where. Start at one end of the building working towards the other end. Make sure that the panels are oriented correctly so that the tongue from the first panel lines up with the groove from the next panel and that they are nested closely together.



Do not walk on the EPS-Deck panels until all shoring is in place.

6 Shoring

Always check with an engineer for the design of any shoring.

Maximum spacing is 6' O.C. for the lines of support which run perpendicular to the steel studs in the panels

Solid ground conditions or a previously poured concrete floor are required for support of the shoring. The use of a bottom 2 x 8 or better will help spread shoring loads and prevent the posts from pushing into the ground.

6.1 ICF Bracing as Shoring



Do not use gravity pins to secure the turnbuckles to the Strong Backs. Only use 1/2" nuts and bolts finger tightened.

If using adjustable ICF bracing for shoring it will need to sit on a 2 x 8 or better at the bottom and a 2 x 8 or better behind the steel strong back at the ceiling.

Check with manufacturers recommendations for load limits and compatibility. Always use a nut and bolt to attach the turnbuckle to the straight back not a gravity pin or straight pin.

Aluminum ICF bracing is not recommended for this application.

6.2 Standard Scaffolding "X" Bracing



Scaffold Frames
Ready for Aluma
Beams

Standard 5' x 7' scaffold frames and crossers can be used to shore EPS-Deck with the addition of adjustable feet at the bottom and an Aluma-beam at the top.

6.3 Wood Framing Walls as Shoring



2 x 4 @16" o.c.

2 x 6 @ 24" o.c.

6 x 6 top beam or Aluma-beam and 4 x 4's or shoring jacks @ 48" o.c. 2 x 8 or better at the bottom



6.4 Perimeter Forming



Ensure the top of the perimeter forming is level to the top of finished slab well secured to the wall below and supported with 2 x 4's back to the bank. Use a string line off set 1" around the perimeter to help ensure the forms stay straight during concrete placement.





Where the perimeter of the floor will not be insulated as in a garage doorway and where the ends of the steel studs will be in contact with the concrete, cover the ends of the studs with sill gasket or a thin piece of EPS. This will prevent the studs from conducting any cold temperature from the exposed concrete back in to the building where condensation could occur.

When perimeter shoring is needed on a second floor as would be needed when building a cantilevered deck or roof and there is no way to support the back side from the ground you will need to extend a platform 2ft past the perimeter supported by angled braces back to the wall or directly to the ground below.

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You can then support the perimeter form work with 2 x 4's back to the extended platform.

7 Rebar Installation

The rebar specified for the bottom of the beams should be full length and not lap spliced. The bars should be placed in the rebar chairs provided with the chairs placed starting no closer than 2' from each end and then every 4' o.c. thereafter. The bars should extend a minimum of 3" into the area of the concrete wall beyond the EPS-Deck panels with a minimum of 2" of clearance between the ends of the rebar and the concrete wall below so the ends of the bars can be encapsulated during concrete placement.

7.1 Placing the Mesh

Install the mesh track in all the channels so that all the mesh support pads are in-line with each other. This will allow the 6x6 mesh to be consistently supported at 2' o.c. in both directions. Start the mesh track so the first mesh pad closest to the outside edge is 12" o.c. from the inside edge of the exterior perimeter form work.

Once all the mesh support track is in place you can now install the 6x6, 6/6 wire mesh. Make sure the mesh extends fully out over the top of the wall and that where the wires of the mesh cross each other that this "X" is situated at the midpoint of the supporting mesh chairs



Right



Wrong

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It is best to use 8' x 20' flat sheets and not rolled mesh. Ensure that where 2 sheets of mesh meet that they overlap by 6" and are tied with a wire tie every 2' o.c. the length of the overlap.



If top steel is also required it should now be placed on top of the wire mesh and tied at both ends to the mesh below.

8 Placing Concrete

Order the right strength and slump of concrete as specified by the engineering for your project. Place the concrete with a concrete pump for jobs where a concrete truck cannot reach the entire deck area. Alternately a conveyor truck can be used. If a wheel barrow must be utilized, cover the wire mesh with 3/4" plywood so as not to crush the mesh support.

Under no circumstances should the concrete be dropped in a pile onto the form work and then raked out. Neither the shoring nor the EPS-Deck form work has been designed to take the increased loading that this would create.

8.1 EPS-Deck 6" and 7" Panels

Start at one end and work across the floor filling the beams and the top cover at the same time. Vibrate the concrete as you go.

8.2 EPS-Deck 8" to 15" panels

Start at one end and fill in the beams first, vibrating as you go. Start back at the beginning and finish topping the floor with the specified thickness of concrete vibrating the beams and the topping together. The concrete in the beams should not be allowed to stiffen completely before the top covering concrete is placed. Only work as much area that allows the concrete to be placed in this manner.

The concrete can be stamped and or colored and sealed with any concrete sealer. Do not saw cut the slab. This is a structural slab and cannot be saw-cut unless specified by an engineer.



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Shoring should be left in place for a minimum of 28 days or until the concrete has reached its design strength or as recommended by the engineer of record.

Notes: