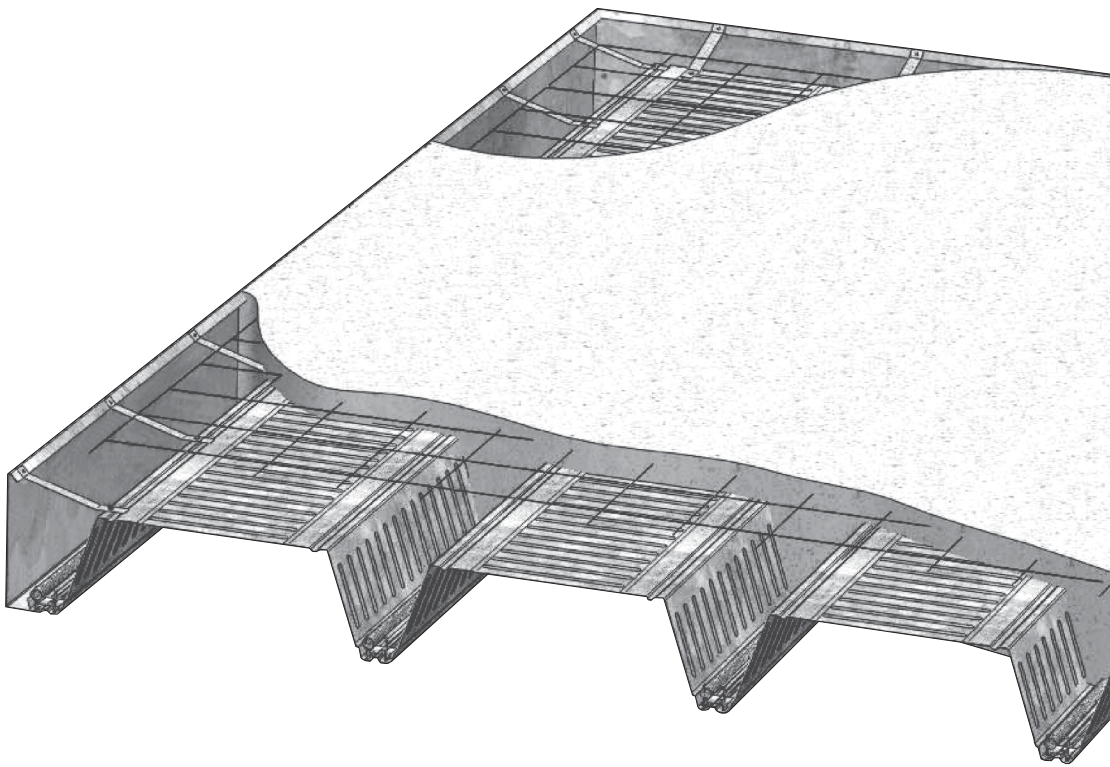




ComSlab® INSTALLATION MANUAL



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1. INTRODUCTION

ComSlab® - A Long Span Composite Floor System.

ComSlab® is a combination of deep steel decking and a concrete cover slab that have cured together and bonded structurally as one element. The ComSlab® system from Bailey incorporates deep profile galvanized metal deck, standard concrete and single bar reinforcement to produce structurally efficient floor systems suitable for a wide range of building applications.

ComSlab® is manufactured under UL & ULC classification and listed in UL & ULC directories for 1 & 2 Hour Rated Design Assemblies.

This manual is intended to serve as an aide and basic guide of recommended techniques for the safe and proper installation of the ComSlab® Composite Floor System. It is not intended to supersede local building codes and project specific design. Installation must be performed in compliance with local code requirements and safety standards. Every actual installation must be done in accordance with contract documents, specifications and appropriate installation drawings. Therefore, while the information in this manual has been prepared in accordance with generally recognized engineering principles and accepted construction practices, the guidelines are intended as recommended techniques to be followed and can only be used to the extent that they do not conflict with applicable codes, contract documents and direction of the engineer of record. In the event of any conflict between this manual and any legal regulations, such regulations shall apply and this manual shall only supplement as applicable.

2. SAFETY

This installation manual is intended to serve as an aide and basic guide of recommended techniques for the proper sequence and placement of ComSlab® components. This manual is not intended to prescribe safety procedures.

Safe erection practices may be defined and made mandatory by federal, provincial, state and/or local regulations, as well as good construction practices. Serious injury can result from failure to familiarize and comply with all applicable safety requirements. Maintaining a clean, tidy and organized project site is recognized as being an important factor towards safety and successful project completion.

2.1 WORKING WITH COMSLAB® DECK

2.1.1 PLACING COMSLAB® DECK ON STRUCTURE

Do not set bundles of decking on the structure without first verifying that the structure has sufficient strength and stability to safely support the concentrated weight of the panels and the weight of the installation crew.

2.1.2 ComSlab® AS A WORKING PLATFORM

To ensure the working platform is safe and to prevent deck damage, the ComSlab® panels should be attached to the end bearing closures and the side lap washers connected as soon as possible. The platform can be extended in any convenient direction. However, specific job requirements need to be considered to determine ComSlab® panel erection starting points and erection progression. Other trades should not be present on the working platform or the area immediately below the working platform during the erection process. Care should also be taken when cutting bundle straps to prevent any items dropping onto personnel or equipment. Workers should be instructed on all aspects of ComSlab® Composite Floor System safety before any ComSlab® panels are installed.

2.1.3 CONCENTRATED LOADS DURING CONSTRUCTION

Composite steel deck is designed primarily to support uniformly distributed load. Care should be taken to avoid excessive concentration of loads during concrete placement. Point loads that occur in concentrated areas, prior to the pouring of concrete, can be caused by heavy equipment, ladders or platform feet, etc., and may cause panel deformation or even panel failure leading to the possibility of personal injury. It should also be noted that ComSlab® deck bundles, and bundles of reinforcement bar, should be placed perpendicular to panel direction to avoid unnecessary concentrated loads.

2.1.4 SLICK SURFACES

The surfaces of ComSlab® panels, despite the inclusion of embossments and other proprietary features, can become very slippery when wet or covered with snow or ice. Even blowing sand or heavy dust can make the panel surfaces difficult to walk on.

ComSlab® panels are coated with a water based lubricant to assist in the manufacturing process. Although designed to evaporate or wash away, the lubricant on newly un-bundled panels can be slick, especially during periods of light rain or dew.

Caution must be exercised under wet conditions to prevent slipping and falling. If workers must be working with the panels during these conditions, non-slip footwear is required.

2.1.5 ELECTRICAL CONDUCTANCE

Metal panels are excellent electrical conductors. One potential cause for injury is the contact of metal panels with power lines during handling and erection. The location of all power lines must be noted and, if possible, flagged. The erection process must be routed to avoid accidental contact with all power lines and high voltage services and equipment. All tools and power chords must be properly insulated and grounded and the use of approved ground fault circuit breakers is recommended.

2.1.6 SHARP EDGES

Some edges of the ComSlab® panels and trims can be razor sharp and can cause serious injuries if protective hand gear is not worn. Proper care should be taken so others are not injured when moving panels and trims.

2.17 SECURING MATERIALS

All ComSlab® panels, after being laid and aligned, shall be properly secured in place prior to leaving the jobsite at the end of each working day. All loose bundles of panels and trims should be secured at the completion of each working day.

2.1.8 HANDLING MATERIALS IN STRONG WINDS

Do not attempt to move panels in strong winds. Wind pressure can easily cause a person to lose their balance and fall. Wind lift on a panel can be greater than the weight of the person carrying the panel.

2.1.9 SAFETY BARRIERS

Assuming workers are appropriately tied off during panel installation, safety barriers would not be required. Barriers are normally required afterwards including at the time of concrete placement. Proper care should be taken with respect to providing safety barriers at all floor perimeters, openings and discontinued areas due to incomplete construction.

2.1.10 ALERTNESS

Most ComSlab® installations are done on an elevated structure and the danger of falling is always present. Falls may occur at any time and at any location. Alertness is essential. Ladders should be securely tied to the structural frame or the scaffolding. Stairs, if available, should be rigidly attached to the building frame.

3. TOOLS AND EQUIPMENT

Tools that will often be required include:

- Circular saw (typically gas powered) with abrasive blade suitable for cutting sheet steel
- Screw guns intended for self-drilling and/or self-tapping screws
- Hex socket heads, 5/16" and 3/8" magnetic
- Socket extension, 6 inches
- Drill motor, 3/8"
- Drill bits to suit substrate
- Guns to suit any shot-fired pins being used
- Steel measuring tapes, 12', 50', 100'
- Brooms
- Utility knife
- Power source and extension cords
- Laser Level (with leveling, point to point)
- Alignment Laser Tool
- Ladders
- Scaffolds
- Safety equipment as required by all applicable regulations.

Additionally, hoisting equipment is necessary to unload and position the ComSlab® panels for site storage and erection. The equipment must have sufficient capacity and reach to place the material where it will be required for efficient erection.

4. MATERIAL RECEIVING

There must be proper access to the structure for the deck delivery. The access must be adequate to support the lifting equipment and the delivery trucks. Lifting equipment must be capable of safely lifting the deck bundles and have sufficient reach to properly place the bundles onto the structure.

4. MATERIAL RECEIVING (continued from pg. 4)

Material should be checked as it is received. Bundles should be counted and the tags checked. The Bill of Lading should be checked to verify trailer contents. Small packages are sometimes carried in the trailer side boxes. Check to see if all items are present.

Any material shortages or damage at the time of delivery should be noted and clearly marked on the Bill of Lading prior to signing. Notify Bailey Metal Products Limited immediately of any conflicts.

5. STORAGE AND PROTECTION

If ground storage is required, the ComSlab® bundles should be stored off the ground with one end elevated to provide drainage. Long panel bundles should also be blocked to provide sagging. Bundles should be protected against condensation with a ventilated water-proof covering. Bundles should be stacked so that there is no danger of tipping, sliding, rolling, shifting or material damage.

Bundles should be checked for tightness so wind cannot work the panels apart. Tightness should be periodically checked and additional securement should be used as necessary. Bundles should be stored away from chemically corrosive substances (salt, cement, fertilizer), away from materials that could contaminate the surface (diesel fuel, oil, paint, grease) and away from areas of heavy site traffic.

Please note, when storing panels on the structure itself, the structural frame must be properly braced to receive these bundles. ComSlab® accessories should be stored in a secure area, protected from damage, weather and theft.

6. HOISTING COMSLAB® PANELS

All ComSlab® panels being hoisted to the working level shall be adequately banded and carefully slung employing steel wire rope and a choker type sling or multi-lift beams so that shifting and excessive tipping will not occur and so the lifting device will not damage the ComSlab® panels. All bundles should be tag-lined during the ascent of the hoisting operation. Bundles should be placed as to avoid overloading the supporting structure. All lifting equipment must be adequate for the job. Workers should be instructed to keep the load in sight until it is safely placed on the structure. The bundles should be landed in proper position and orientation for convenient installation. Bundles which have been unbanded must be secured to prevent individual panels from being blown off the structure. Do not stand under loads being hoisted. Use proper hand signals to crane operators. Make sure bundles are secure before cutting bands.

7. SITE TIDINESS

Keeping a litter free workplace is recognized as being an important factor in jobsite safety and successful job completion. All ComSlab® steel panel cuttings, strapping, packaging material and other debris pertaining to composite steel deck should be removed from the floor area each working day and disposed of in a suitable manner; preferably for recycling. Keeping the ComSlab® panels free of debris and other foreign material will ensure the panels are safe to walk on. It should be noted, when installing clean galvanized steel ComSlab® panels on sunny days, sunglasses and sunburn protection are recommended.

8. INSTALLATION

8.1 END CLOSURES

To minimize grout loss at the profile ends during concrete placement, End Closures are used to contain the concrete. In addition, End Closures provide strength to prevent web crippling at the end of the deck panel and also provide proper alignment of the decking during construction. End Closures shall be fastened to the support structure at maximum intervals of 610 mm (24 in.), using self-drilling fasteners, shot-fired pins, concrete screws (depending on the structural frame type) or as specified by the engineer of record.

8.2 PLACING OF ComSlab® DECK

Install ComSlab® panels progressively (male to female overlap) and fasten at 350 mm (13.8 in.) on center with Side-lap Washers and self-drilling fasteners.

8.3 INSIDE TRIMS

At longitudinal supports where deck low is appropriately positioned near edge of support, fasten deck low to continuous support with self-drilling fasteners, shot-fired pins or concrete screws at 610 mm (24 in.) on center. Where deck low is not appropriately positioned, cut deck on top flange and fasten to Inside Trim Closure (Z shape) at 610 mm (24 in.) maximum. Inside Trim Closure is fastened to continuous longitudinal support with self-drilling fasteners, shot-fired pins or concrete screws at 610 mm (24 in.) on center.

8.4 SIDE-LAP WASHERS

Since the ComSlab® deck acts compositely with the concrete, Side-Lap Washers are important connecting elements. These washers are pre-punched to receive the self-drilling fastener and are typically installed at 350 mm (13.8 in.) on center.

8.5 PERIMETER TRIMS

Perimeter trims are required for the retention of wet concrete to the correct slab thickness at floor perimeters and the designed openings. Perimeter trims are manufactured for the design slab thickness and are commonly supplied in 3 m (10 ft.) lengths of galvanized steel. Perimeter trims are usually fastened to the support structure at 610 mm (24 in.) on center using shot-fired pins, concrete screws (structural steel, concrete or masonry), self-drilling fasteners or as specified by the engineer of record.

8.6 RESTRAINT STRAPS

To assist in stabilizing the perimeter edge trim against concrete loads, the top of the edge trim is connected to the decking with Restraint Straps at approximately 400 mm (16 in.) on center using either pop rivets, self-drilling fasteners, or the supplied #8 wafer head fasteners. The Restraint Strap can be adjusted to suit the pitch and alignment of the perimeter design.

8.7 RIB REINFORCEMENT AND MESH PLACEMENT

The ComSlab® design requires single bar reinforcement to be placed in each rib trough. The bar size varies from 10M to 35M (#3 to #9), depending on spans and design loads. The bars shall be placed on Rebar Support Chairs which ensures the minimum spacing from the bottom flange to the underside of the reinforcing bars. Spacing of the Rebar Support Chairs shall be in accordance with good practice guidelines, and not exceeding 1220 mm (48 in.) on center. To ensure both vertical and horizontal stability during concrete placement, the reinforcing bars shall be tied down periodically to the Rebar Support Chairs with 1.21 mm (0.0476 in.) diameter tie wiring.

To control cracks due to shrinkage and temperature it is recommended that a minimum reinforcing mesh of 152 x 152 x MW18.7 x MW18.7 (6 x 6 x 6/6) should be placed above the top of the steel decking and positioned towards the top of the slab or as specified by the engineer of record.

8.8 TEMPORARY SUPPORTS

Where the design span exceeds the maximum unshored span of ComSlab®, the wet concrete weight and construction loads shall be supported by adding temporary supports (shoring), as designed by the engineer of record or shoring engineer. Where temporary supports are required, it is important that:

- Beams and the support structure have adequate strength to support the construction loads as designed and specified by the engineer of record or shoring engineer.
- Shoring is normally placed at midspan or at other suitable intervals, as required.
- Shoring beams shall provide a minimum bearing width of 100 mm (4 in.).
- The shoring structure shall remain in place until the concrete has reached 75% of its design strength, or as specified by the engineer of record.

8.9 CONCRETE PLACEMENT

Concrete shall be placed in accordance with CSA A23.1-09. Before starting concrete placement, the steel deck should be inspected to confirm it has been properly and completely fastened and that the deck has adequate bearing on all supports. Damaged areas must be repaired and accepted by the engineer of record prior to concrete placement. All dirt, grease and debris, which could adversely influence the composite slab performance, must be removed. All safety barriers must be in place, reinforcement bars secured and, if required, the shoring should be examined to make sure it is securely in place.

Care shall be taken to avoid concrete heaping in any area during concrete placement. Concrete should be poured from a low level to avoid impacting the deck. It should be placed uniformly over the supporting structure and spread towards the center of the deck span. If buggies are used to place the concrete, runways should be planked and the buggies should only operate on the planking. The planks should be stiff enough to transfer buggy loads without damaging the deck. Deck damage caused by riding vehicles, roll bars and other equipment, or by careless placement must be avoided.

8.10 OTHER CONSIDERATIONS

8.10.1 OPENINGS IN THE SLAB

Provision for vertical service openings within the floor slab will necessitate careful design and planning. Openings should be made through the wide crown of the profile. The openings should be boxed out prior to the pouring of the concrete, and the metal of the deck only cut once the concrete has achieved 75% of its design strength.

8.10 OTHER CONSIDERATIONS (continued from pg. 6)

8.10.1 OPENINGS IN THE SLAB (continued from pg. 6)

The following summarizes the options that are available to the designer:

- Openings up to 300mm x 300mm can be accommodated anywhere in the slab over a crest section of the deck, normally without needing additional reinforcement.
- Openings up to 400mm wide x 1000mm long may be taken through the crest of the deep decking. Additional reinforcement may be required around the opening.
- Openings up to 1000mm wide x 2000mm long may be accommodated by removing one rib (maximum) of the decking. Fastening suitable edge trims and providing additional reinforcement to transfer forces from the discontinuous rib. The slab should be designed as a ribbed slab with decking being used as permanent formwork.
- A close grouping of penetrations transverse to the span direction of the decking should be treated as a single large opening.
- After the slab has reached 75% of the required concrete compressive strength, a nibbler, power saw or coring machine can be used to cut out openings in the top profile with the approval of the engineer of record.

8.10.2 SERVICE HOLES

Sleeves shall be fastened in place to the crest section of the deck prior to concrete placement. Subsequent cut-out of holes in the deck shall be done only after the concrete has reached 75% of its design strength, or as specified by the engineer of record.

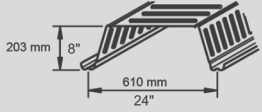
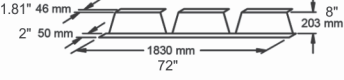
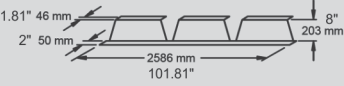
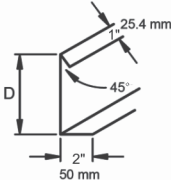
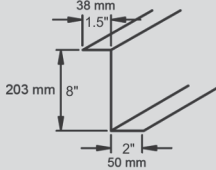
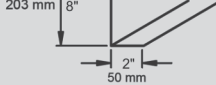
8.10.3 COLUMNS AND ComSlab® DECKING

The steel deck sheeting can be cut and fitted to accommodate various column shapes to minimize grout loss. Where no supporting steel work is provided, steel angle brackets shall be provided to support the steel decking, as specified by the engineer of record.

8.10.4 HANGER SYSTEM

The geometry of the ribs allows for the suspension of services from the profile top flange between ribs. Pre-set threaded rod hangers are easily installed before the concrete is placed. Consult your mechanical and electrical consultants, and installation contractors for accepted specifications.

9. ComSlab® STEEL DECK AND ACCESSORIES

MATERIALS	THICKNESS		WEIGHT		PACKAGING Pieces
	mm	in.	SI	Imperial	
ComSlab® STEEL DECK (Z275 FINISH) 	0.953 1.257	0.0375 0.0495	12.6 kg/m ² 16.6 kg/m ²	2.58 lb/ft ² 3.41 lb/ft ²	30 pieces per bundle cut to length
90° END CLOSURES (Z275 FINISH) 	1.37	0.054	2.98 kg/m or 5.44 kg/pc	1.75 lb/ft. or 10.5 lb/pc	50 pieces per bundle
45° END CLOSURES (Z275 FINISH) 	1.37	0.054	3.5 kg/m or 6.38 kg/pc	1.71 lb/ft. or 14.5 lb/pc	50 pieces per bundle
PERIMETER TRIMS (Z275 FINISH)  D = overall slab depth	1.37	0.054	17.7 kg/pc to 20.4 kg/pc	39 lb/pc to 45 lb/pc	10 pieces per bundle 10 ft. lengths
INSIDE TRIMS (Z180 FINISH) 	0.838 1.09	0.033 0.043	9.1 kg/pc 11.3 kg/pc	20 lb/pc 25 lb/pc	10 pieces per bundle 10 ft. lengths
CORRIDOR TRIMS (Z180 FINISH) 	1.37	0.054	13.6 kg/pc	30 lb/pc	
SIDE-LAP WASHERS (Z180 FINISH) 	1.09	0.043	11.3 kg per carton	25 lb per carton	500 pieces per carton
REBAR SUPPORTS (Z180 FINISH) 	0.838	0.033	20.4 kg per carton	45 lb per carton	300 pieces per carton
RESTRAINT STRAPS (Z180 FINISH) 	0.838	0.033	4.54 kg per bundle	10 lb per bundle	50 pieces per bundle
FASTENERS No.14 1/4 - 14 X 1" Hex S.D. Zinc SCREWS No.8 x 1/2" Wafer S.D. Zinc			1.81 kg per carton 1.81 kg per carton	4 lb per carton 4 lb per carton	300 pieces per carton 1500 pieces per carton

