

## Guide Specification 05300 Metal Composite Concrete Slab System

*This guide specification is intended as an aid to the design professional and should not be used to replace the judgment of a qualified engineer or architect. It is written on the assumption that structural design of the framing is the responsibility of the Contractor. It also assumes that division of the work between subcontractors is the responsibility of the Contractor alone, and done without reliance on the specifications.*

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### Division 5

## 05300 – Metal Composite Concrete Slab System

### Part 1 – GENERAL

#### 1.1 Scope

These specifications cover the design, manufacture, and use of the ComSlab<sup>®</sup> composite floor system.

- Furnish all materials and services for the fabrication of the ComSlab<sup>®</sup> composite floor system in accordance with these Specifications and applicable drawings. ComSlab<sup>®</sup> composite floor systems shall be manufactured and marketed by Bailey Metal Products.
- Fully co-ordinate the ComSlab<sup>®</sup> composite floor system with structural, mechanical, electrical and architectural components of the building.

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### 1.2 Code & Standard

- Design and manufacturing shall be in strict accordance with the ComSlab® composite floor systems, Bailey Metal Products, using steel conforming to the requirements of ASTM A653, Standard Specification for Steel Sheet, Zinc-coated (Galvanized) by the Hot Dip Process and Having Structural Physical Quality. Guaranteed minimum yield strength shall be 345 MPa (50 ksi) with a minimum zinc coating mass of 275 g/m<sup>2</sup> Z 275 (G90) total including both sides. Steel deck base thickness shall be either 0.914 mm (0.036 in.) or 1.22 mm (0.048 in.).
- Reinforcing steel shall meet the requirements of CSA G 30. 1809. Guaranteed minimum yield strength shall be 400 MPa (58 ksi). The clear distance of each reinforcing bar from the bottom of the steel deck shall be 40 mm (1.57 in.).
- Concrete shall have a minimum cylinder strength of 30 MPa (4.35 ksi) with a maximum aggregate size of 20 mm (0.75 in.). Normal density structural concrete used shall be 2400 kg/m<sup>3</sup> (150 lb/ft<sup>3</sup>).

### 1.3 Design

- **Strength** – Flexural design shall be by limit design principles which were used in the development of the structural load tables.
- The factored resistance under consideration, **4R s the effect of factored loads**. This is in accordance with the National Building Code of Canada 2005.
- Since the self weight of steel deck, the reinforcing bar and the concrete have been included in the structural load tables, the maximum specified load (from the appropriate structural load table) shall be: **(LL + 1.25/1.5DL)**,

Where:

LL – Specified live load

DL – Specified superimposed dead load

1.25 – Dead load factor

1.5 – Live load factor

**Serviceability** – If deflection controls, the maximum specified load (from the appropriate structural load table) shall be: **(LL + DL)**.

### 1.4 Shop Drawings

- Detailed erection drawings shall be submitted by the purchaser to the Architect, Engineer, General Contractor or representative for approval, showing material lists, mark numbers, types, locations, spacing of floor plans and accessories showing method of attachment to supporting members. Contract drawing notes relative to the

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ComSlab® composite floor system shall be considered a part of this Specification as though fully set forth herein.

- Shop drawings, prepared only from approved erection drawings, shall be used for fabrication and erection.
- Figured dimensions only shall be used. Scaling drawings shall NOT be permitted.

### 1.5 Handling & Storage

- Care shall be exercised at all times to avoid damage to ComSlab® composite floor system components during loading, storing and erecting. Damaged decking must be replaced.
- ComSlab® deck panels are supplied in bundles of up to 30 sheets. Each bundle can weigh up to 2.5 tonnes (5500 lb). Individual decking elements can twist when lifted so care shall be taken when lifting with slings or forks.
- ComSlab® deck panels shall be stored on timber supports, clear of the ground. The bundles are marked and shall be positioned on and/or in the area indicated on the layout drawings. The bundles shall be placed with the pre-punched holes in the lap on the same side, unless otherwise noted on the layout drawings.

## Part 2 – PRODUCTS

### 1.6 Products

- ComSlab® steel deck panels are fabricated using Z275 (G90) galvanized steel sheet, of either 0.914 mm (0.036 in.) or 1.22 mm (0.048 in.) in thickness.
- End Closures are fabricated using Z275 (G90) galvanized steel sheet, 1.52 mm (0.060in.) in thickness.
- Perimeter Trims are fabricated using Z275 (G90) galvanized steel sheet, 1.52 mm (0.060 in.) in thickness.
- Inside Trims are fabricated using Z180 (G60) galvanized steel sheet of either 0.914 mm (0.036 in.) or 1.22 mm (0.048 in.) in thickness, depending on the ComSlab® steel deck thickness.
- Corridor Trims are fabricated using Z180 (G60) galvanized steel sheet, 1.52 mm (0.060 in.) in thickness.
- Side-lap Washers are fabricated using Z180 (G60) galvanized steel sheet, 1.22 mm (0.048 in.) in thickness.
- Rebar Supports are fabricated using Z180 (G60) galvanized steel sheet, 0.914 mm (0.036 in.) in thickness.
- Restraint Straps are fabricated using Z180 (G60) galvanized steel sheet, minimum 0.838 mm (0.033 in.) in thickness.

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## Part 3 – EXECUTION

### 1.7 Execution

- Installation shall be in accordance with the latest Construction Guidelines for the ComSlab® composite floor system. Care shall be exercised to avoid damage through careless handling during unloading, storing and erecting. Suitably qualified personnel shall install ComSlab® floor components.
- End Closures shall be fixed to the support structure prior to the decking being installed, using a minimum of 2 fasteners, such as shot-fired pins or self-drilling fasteners, and using the following fastener Specifications or equivalency:

In addition to the main structural fastening, the profile top flanges are fixed to the upper flange of the End Closures using self-drilling fasteners at a frequency of 1 fastener per profile. The following fastener Specification shall be used:

No. 12 x 25.4 mm (1 in.) or better, hexagon washer head, zinc coated or equivalent. The above fasteners shall be installed using a correctly set screw gun to the data available from the fastener supplier.

- Ensure that current decking drawings are being used. The ComSlab® deck panels shall be correctly fastened at each end to the bearing wall substrate with appropriate mechanical fasteners. The ComSlab® deck panels shall bear a minimum of 50 mm (2 in.) onto the support structure.
- Perimeter Trims shall be fastened to the wall substrate in a true and plumb manner, using the appropriate fastener to suit the steel or concrete substrate at 350 mm (13.8 in.) intervals in accordance with the data available from the fastener supplier.
- Interior deck panel closures shall be fastened to the ComSlab® deck panel with a minimum of 50 mm (2 in.) overlap, fastened together with No. 12 x 25.4 mm (1 in.) or better, hexagon washer head self-drilling screws spaced at 350 mm (13.8 in.) on center. Panel closures shall be the equivalent thickness of the ComSlab® deck panel specified. Alternately, the ComSlab® panel can be cut longitudinally and overlapped a minimum of 75 mm (3 in.) and fastened together at 300 mm (12 in.) on center with 2 fasteners paired 25.4 mm (1 in.) apart.
- Side-lap Washers shall be installed at 350 mm (13.8 in.) along the bottom trough of each vault profile using No. 12 x 25.4 mm (1 in.) or better, hexagon washer head self-drilling screws. The fastener location is indicated by pre-punched holes in the male overlap. The laps shall be correctly connected together as they form a critical part of the flooring system.
- Rebar Supports shall be installed at 1220 mm (4 ft) on center maximum, to support the reinforcing bars (10 mm to 35 mm, as specified) in each vault or trough in accordance with Section 1.2 of these Specifications – 40 mm (1.57 in.) clearance.

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- Restraint Straps shall be installed 400 mm (16 in.) on center, one end to the Perimeter Trim return flange and the other end to the top of the deck panel for concrete pressure restraint during the concrete placement phase of construction.
- Shoring shall be supplied and installed by qualified personnel at the locations specified on the drawings. If in doubt, check with the supplier's technical department and the engineer of record. Shoring shall not be removed until the concrete has reached 75% of its required design strength, or as authorized by the engineer of record. Consult with the engineer of record to be sure the shoring meets the local jurisdictional requirements before placing of concrete.
- Concrete shall be placed in accordance with CAN CSA A23.1-09. Good concrete placement practices shall be carried out at all times. Refer to concrete practice guidelines before starting concrete placement.

### 1.8 Reference Documents

- CSA S136-07, "North American Specification for the Design of Cold-Formed Steel Structural Members", Canadian Standards Association, Mississauga, Ontario, October 2007.
- CSSBI S2-2008, "Criteria for the Testing of Composite Slabs", Canadian Sheet Steel Building Institute, Cambridge, Ontario, October 2008.
- CSSBI 12M-2008, "Standard for Composite Steel Deck", Canadian Sheet Steel Building Institute, Cambridge, Ontario, October 2008.
- CSSBI S3-2008, "Criteria for the Design of Composite Slabs", Canadian Sheet Steel Building Institute, Cambridge, Ontario, October 2008.
- CSA G30.18-09, "Carbon Steel Bars for Concrete Reinforcement", Canadian Standards Association, Mississauga, Ontario, 2009.
- NBC 2005, "National Building Code of Canada 2005", Issued by the Commission on Building and Are Codes, National Research Council of Canada, Ottawa, 2005.
- CSA A23.1-09, "Concrete Materials and Methods of Concrete Construction", Canadian Standards Association, Mississauga, Ontario, 2009.
- Warnock, A.C.0 "Factors Affecting Sound Transmission Loss", Canadian Building Digest No. 239, National Research Council of Canada, Ottawa, July 1985.
- "List of Equipment and Materials, Volume II, Building Materials", Underwriters' Laboratories of Canada, Scarborough, Ontario Canada, 1998.
- "Fire Resistance Directory, Volume 1, 1999", Underwriters Laboratories Inc., Northbrook, Illinois.

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### 1.9 SI-Metric to Imperial Conversions

Listed below are some common conversion factors to assist users with the information contained in this catalogue.

From SI-Metric Units to Imperial Units		Divide By
mm	in.	25.4
mm <sup>2</sup>	in. <sup>2</sup>	645.2
mm <sup>3</sup>	in. <sup>3</sup>	16 387
	in. <sup>4</sup>	416 231
m	ft	0.3048
m <sup>2</sup>	ft <sup>2</sup>	0.0929
kN	kips	4.44822
kPa (kN/m <sup>2</sup> )	psf	0.04788
kg/m	lb/ft	1.488
MPa (N/mm <sup>2</sup> )	kips/in. <sup>2</sup>	6.895
N-m	kips-in.	113

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