CANADIAN
Sheet Steel Building
INSTITUTE

standard specification for

cellular steel floor

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Suite 206, Crestview Plaza, South Service Road, Port Credit, Ontario

This Standard Specification is Issued as a Guide in the Preparation of Contract Documents

1 GENERAL CONDITIONS

The General Conditions shall be and are hereby made a part of this division.

2 SCOPE

(a) **Work Included**—This contractor shall:

(i) Furnish all labour, materials and equipment necessary to fabricate, hoist into position, and erect the cellular steel floor where shown or called for on the tender drawings;

(ii) Supply and install, where necessary, to complete the work, and as shown or called for on the tender drawings, such accessories as cell closures, cover plates and flashings; and,

(iii) Cut and reinforce holes and openings up to 12-in. diameter or square, and the cutting only of holes and openings larger than 12-in. diameter or square as shown with tender drawings. Location of these openings shall be marked by the General Contractor or by the trade involved prior to completion of the erection of the cellular steel floor.

(b) **Work Excluded**

(i) Reinforcing of openings larger than 12-in. diameter or square.

(ii) Field painting of the cellular steel floor.

(iii) Cutting and drilling of holes for the attachment of suspended ceiling hangers, or for any other purpose of attachment of the work of other trades.

(iv) Bearing plates, shelf angles, diagonal supports and other structural steel required to support the cellular steel floor.

3 MATERIALS

(a) **Protection and Thickness**

The cellular steel floor shall be formed of zinc coated (galvanized) steel to ASTM Specification A446-64T, "Specification for Zinc Coated (Galvanized) Steel Sheets of Structural Quality, Coils, and Cut Lengths", Grade A with a steel core thickness of ..... (See Table I) and a Zinc Coating Class of ..... ounces per square foot total both sides (See Table II).

(b) **Miscellaneous**

Metal cover plates, cell closures, web stiffeners, and flashings shall be supplied of similar material and finish as that specified for the cellular steel floor of minimum 18 ga. (0.0478 in.) thickness.

4 DESIGN

(a) General

(i) All cellular steel floor shall be as manufactured by ..... or approved equal, and shall comply with the requirements of this Specification in all respects.

(ii) Floor units designed for use as electrical cells shall be designed strictly in accordance with the Canadian Standards Association and shall be listed by the Testing Laboratories of the Canadian Standards Association. Floor units shall be listed by Underwriters' Laboratories of Canada as steel floor and form units. Each unit shall be labelled, or marked as required by CSA and ULC indicating manufacturer testing and inspection in agreement with both of the above listings.

(b) Sectional Properties

The sectional properties of the cellular steel floor shall be determined strictly in accordance with all requirements of the National Building Code of Canada and CSA Standard S 136-1963 for "Design of Light Gauge Steel Structural Members".

(c) Design Stress

The cellular steel floor shall safely carry all specified dead and live loadings without exceeding a maximum working stress of 20,000 psi.

(d) Deflection Limitations

The deflection under live load only shall be not more than 1/360 span.

(e) Continuity

Wherever structural steel layout permits, and subject to reasonable limitations for handling, the cellular steel floor shall be designed and fabricated to span continuously over at least three spans.

(f) Shop Welding

When the upper and lower elements are assembled by welding to form a cellular unit, the spot welding spacing shall be calculated so as to develop the full horizontal shear at the plane where the upper and lower elements are joined. The design strength per weld shall be in accordance with CSA Standard S 136-1963 Section 6.2 Table IV. Spot welds shall not exceed a maximum 12-in. spacing. Spot welding shall conform to the 'Class C' requirements of CSA W55.2-1957 "Specification for Resistance Welding Practice" and equipment shall be approved by the Canadian Welding Bureau.

(g) Field Welding

All field welding shall be in accordance with the recommendations of the Canadian Sheet Steel Building Institute.

(h) Ends of Units

Ends of electrical raceway floor units, where they abut each other, shall be squared and fabricated to provide proper cell alignment and a smooth surface for the passage of wires.

5 SHOP DRAWINGS

This Contractor shall submit ..... copies of shop drawings for approval before proceeding with fabrication.

6 EXAMINATION

Before commencing erection, the structure shall be carefully examined and if any defects are found the General Contractor shall be notified at once. Work shall not commence until corrective measures have been taken.

7 STORAGE OF MATERIALS ON SITE

Cellular steel floor shall normally be delivered to the jobsite as required for erection, but if

storage becomes necessary, the bundles shall be stacked on wood blocking clear of the ground and tilted slightly to ensure that no water lies on the material. Area for storage shall be as close to the building as is practicable. Protection against damage shall be provided by the General Contractor.

8 ERECTION

(a) General

All erection shall be the responsibility of the manufacturer under a supply and erection contract and all erection work shall be carried out by the manufacturer's trained erection crews, all in accordance with the manufacturer's specifications.

(b) Placement and Adjustment

The cellular steel floor shall be placed on the supporting steelwork and adjusted to final position before being permanently secured thereto with each unit brought to a proper bearing on the supports. If supporting steelwork is not in proper alignment or at correct levels, the problem shall be reported to the General Contractor in order that the necessary corrections are made before proceeding with the work.

(c) Laying and Alignment

The cellular steel floor units shall be laid carefully to ensure that all cells are parallel and in true alignment at the ends. After alignment, the cellular steel floor units shall be fastened to the steel frame by means of 3/4 in. diameter arc welds at every alternate low flute, and at all bearing points.

(d) Cell Butting and Sidelap Securement

For electrical raceways the ends of sheets shall butt neatly. The sidelaps of adjacent units shall be mechanically clinched or secured together at 36-in. maximum centres.

(e) Flashing and End Closure

Sheet steel flashings shall be installed and welded in place to close neatly between floor units and columns. The open ends of cell runs which occur at columns, openings, etc., shall be closed with angle end closures.

(f) Longitudinal Cuts

Where cells are cut longitudinally 2-in. or more from a vertical web, the top and bottom elements of the cell shall be reinforced by a continuous web.

(g) Hole Cover and Placement

(i) Access holes provided for welding of floor units to the steel frame shall be covered with recessed cover caps properly secured in place.

(ii) Where steel cover plates are specified, this contractor shall permanently fasten the cover plates at end joints of non-electrical raceway floor units and shall temporarily fasten the cover plates at end joints of electrical raceway floor units.

(iii) Following electrical inspection, the electrical subcontractor shall permanently secure the cover plates.

9 FIELD TOUCH-UP

After the floor units are welded in place, the surface shall be inspected and all areas where zinc coating has been burned by welding, shall be covered by a paint suitable for galvanized surfaces.

10 CLEAN-UP

All debris of this trade shall be removed and the work left ready for other trades.

TABLE I — CORE THICKNESS INCREMENTS

Manufacturers' Standard Gauge Number	Core Nominal Thickness, in.
12	0.1046
13	0.0897
14	0.0747
15	0.0673
16	0.0598
17	0.0538
18	0.0478
19	0.0418
20	0.0359
21	0.0329
22	0.0299

NOTE:

(i) Cellular steel floor with single element section shall be of minimum 22 ga. (0.0299-in.) core thickness.

(ii) Cellular steel floor with two element sections shall be of minimum 20 ga. (0.0359-in.) core thickness.

(iii) Cellular steel floor used as an electrical raceway shall be of minimum

(a) 18 ga. (0.0478-in). core thickness for the upper element and 16 ga. (0.0598-in.) core thickness for the lower element when using 2½-in. cover; and

(b) 16 ga. (0.0598-in.) core thickness for both elements when using less than 2½-in. of cover.

TABLE II — COATING AND THICKNESS

Weight of Coating and Thickness to be Deducted From Coated Material to Determine Thickness of Base Metal

Coating Class, oz. per sq. ft.	Triple-Spot Test Minimum Check Limit oz. per sq. ft.	Thickness to be Deducted from coated material, in.
1.25 commercial	0.90	0.0019
Wiped Coated (Colourbond or Satincoat —in Canada only)	0.25	0.0004

NOTE:

(i) Light Commercial not available in Canada.

(ii) Steel industry practice is to use only "Wiped Coated" and Commercial Grade Zinc (Galvanized) coating. See CSSBI Technical Bulletin No. 3.