

# Product Information Bulletin 259

## **Advantage ICF System – 2012 OBC Prescriptive Requirements**

## Product Information Bulletin

BULLETIN NO.	259
ISSUED:	September 12, 2014
REPLACES:	October 4, 2007

### 2012 Ontario Building Code Prescriptive Requirements for ICF Construction

(see also attached Detail Dwgs. D.0.1, D.0.2 & D.0.3)

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Prescriptive requirements for construction of concrete walls using insulating concrete forming (ICF) systems are provided in the 2012 Ontario Building Code (2012 OBC) for ICF construction that results in solid concrete walls of uniform thickness over the height – i.e. floor to floor height of a below grade or above grade wall – and width of the wall section.

The Advantage ICF System<sup>®</sup> combines rigid expanded polystyrene (EPS) insulation panels with a web and interlock connector system that results in a concrete wall of uniform thickness. The EPS insulation panels in the Advantage ICF System stay in place permanently to provide an insulated cast-in-place concrete wall resulting in a superior, energy efficient building envelope.

The table below summarizes requirements related to ICF foundation wall applications.

Foundation ICF Wall Applications – Code References
Sentence 9.3.1.1.(4) – General requirements for <b>flat insulating concrete form walls</b> not exceeding 2 storeys in <b>building height</b> and having a maximum floor to floor height of 3 m.
Sentences 9.13.2.4.(3) ( <b>dampproofing</b> ) and 9.13.3.4.(3) ( <b>waterproofing</b> ) – ICF surface preparation prior to application.
Clause 9.15.1.1.(1)(c) – General requirements for <b>footings</b> and <b>foundations</b> related to ICF foundation walls
Article 9.15.3.3. – Application of <b>footing width and area</b> requirements
Article 9.15.3.4. – Calculation of basic <b>footing width and area</b>
Article 9.15.3.5. – Adjustments to <b>footing width and area</b> for exterior walls
Sentence 9.15.3.8.(1) – <b>Footing</b> thickness
Sentence 9.15.3.9.(1) – <b>Step footings</b>
Sentence 9.15.4.1.(1) – Reference to <b>CAN/ULC-S701</b> for EPS insulation used in ICF systems
Sentence 9.15.4.2.(2) – Minimum <b>foundation</b> wall thickness for ICF wall
Sentence 9.15.4.2.(3) – Required <b>lateral support</b> at top & bottom for ICF foundation wall
Sentence 9.15.4.3.(5) – <b>Lateral support</b> at the <b>top</b> of <b>foundation</b> wall using floor joists or floor system installed according to Article 9.20.17.5.
Sentence 9.15.4.4.(1) – <b>Lateral support</b> at <b>bottom</b> of <b>foundation</b> wall using shear key in footing & floor framing at the top of wall <b>or</b> 15M dowels extending out of the footing @ 1.2 m.
Article 9.15.4.5. and Tables 9.15.4.5.A. to 9.15.4.5.C. – <b>Reinforcement</b> for ICF walls
Sentences 9.20.17.5.(2) and (3) – <b>Size and attachment</b> requirements for <b>ledger boards</b> used for support of floor joists
Table 9.20.17.5. – <b>Anchor bolt spacing</b> for the connection of ledger boards

The table below summarizes requirements related to ICF walls not in contact with the ground (above-grade) to a maximum of two storeys in **building height**. The code defines **building height** (in storeys) as the number of **storeys** contained **between the roof and the floor of the first storey**. The **first storey** is defined as the uppermost storey having its **floor level** not more than 2 m above grade.

Above Grade ICF Wall Construction – Code References
Clause 9.20.1.1.(1)(b) – <b>General requirements</b> for ICF above-grade walls
Article 9.20.17.1. – <b>Thickness</b> of flat ICF walls
Article 9.20.17.2. – <b>Reinforcement</b> for ICF walls
Article 9.20.17.3. – <b>Openings</b> in non-load bearing ICF walls (see detail D.0.3 – Figure 1)
Article 9.20.17.4. – <b>Openings</b> in load bearing ICF walls (see detail D.0.3 – Figure 2)
Article 9.20.17.5. – <b>Framing</b> supported on ICF walls either on the side or on top
Sentence 9.20.17.5.(2) – <b>Size and attachment</b> requirements for <b>ledger boards</b> used for support of floor joists
Sentence 9.20.17.5.(3) and Table 9.20.17.5 – <b>Size and attachment</b> requirements for <b>anchor bolts</b> used to attach <b>ledger boards</b>
Sentence 9.20.17.5.(4) – <b>Floor joists supported on top</b> of ICF walls in accordance with Article 9.23.6.1.
Article 9.20.17.6. – <b>Anchoring of roof framing</b> to the top of ICF walls and attachment of <b>roof framing to top plates</b> in accordance with Table 9.23.3.4
Article 9.20.17.7. – <b>Protection from Precipitation and Damage</b>

The following notes provide additional information related to design and installation of wall construction using the Advantage ICF System:

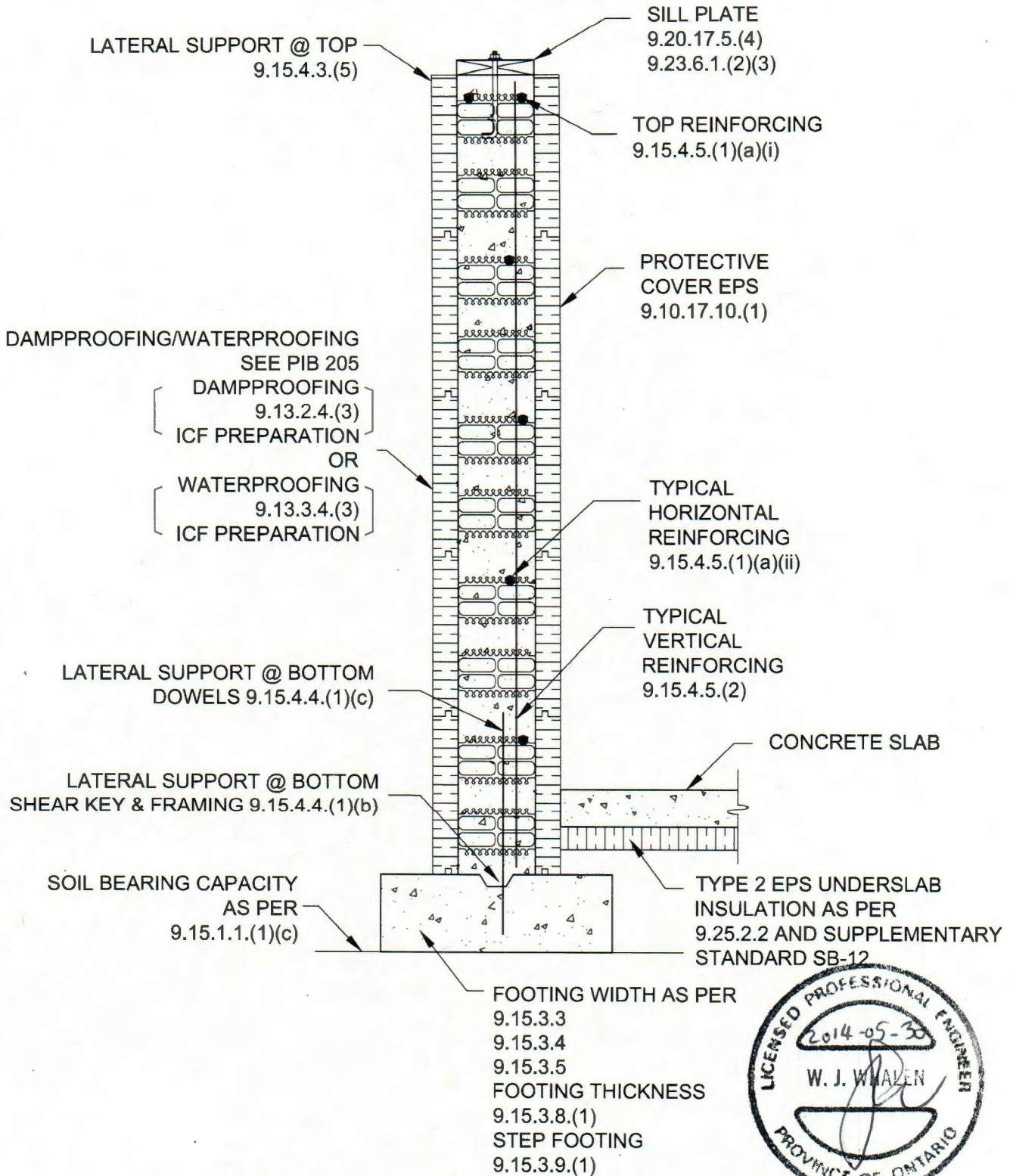
1. For design conditions beyond the scope of the referenced building code provisions refer to the **Advantage ICF System Design Manual**.
2. The **Advantage ICF System Installation Manual** provides additional information on the construction of ICF walls.
3. Sentence 9.25.3.2. states that sheet and panel-type materials intended to provide the principal resistance to air leakage shall have an air leakage characteristic not greater than 0.02 L/(s•m<sup>2</sup>) at 75 Pa. Article 9.25.5.1. related to properties and position of materials in the building envelope references 2012 OBC, Appendix A, Table A-9.25.5.1.(1) which provides typical air leakage characteristics for a number of common building materials and indicates that the air leakage characteristic for 50 mm thick reinforced concrete is negligible.
4. Article 9.25.4.2. related to vapour barrier materials has been revised to add a new Sentence 9.25.4.2.(6) indicating that where insulation functions as the vapour barrier, it shall be sufficiently thick to meet the vapour material requirements.

**NOTE:** Refer to Advantage ICF System Product Information Bulletin 209 for additional information on air barrier and vapour barrier requirements.

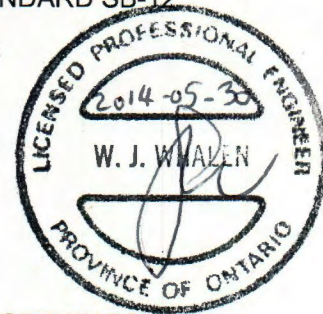
The following detail drawings attached with this bulletin provide additional assistance to identify code requirements for ICF construction:

- **D.0.1 – RESIDENTIAL FOUNDATION WALL PRESCRIPTIVE REQUIREMENT PER 2012 OBC.**
- **D.0.2 – RESIDENTIAL ABOVE-GROUND PRESCRIPTIVE REQUIREMENT PER 2012 OBC.**
- **D.0.3 – RESIDENTIAL OPENINGS REINFORCING REQUIREMENT PER 2012 OBC.**

## ICF FOUNDATION WALLS



**NOTE: SEE D.0.3 FOR REINFORCING REQUIREMENT FOR OPENINGS**



No.	REVISION DESCRIPTION	DATE	BY	CHKD	APPD



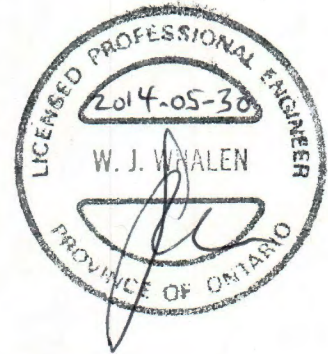
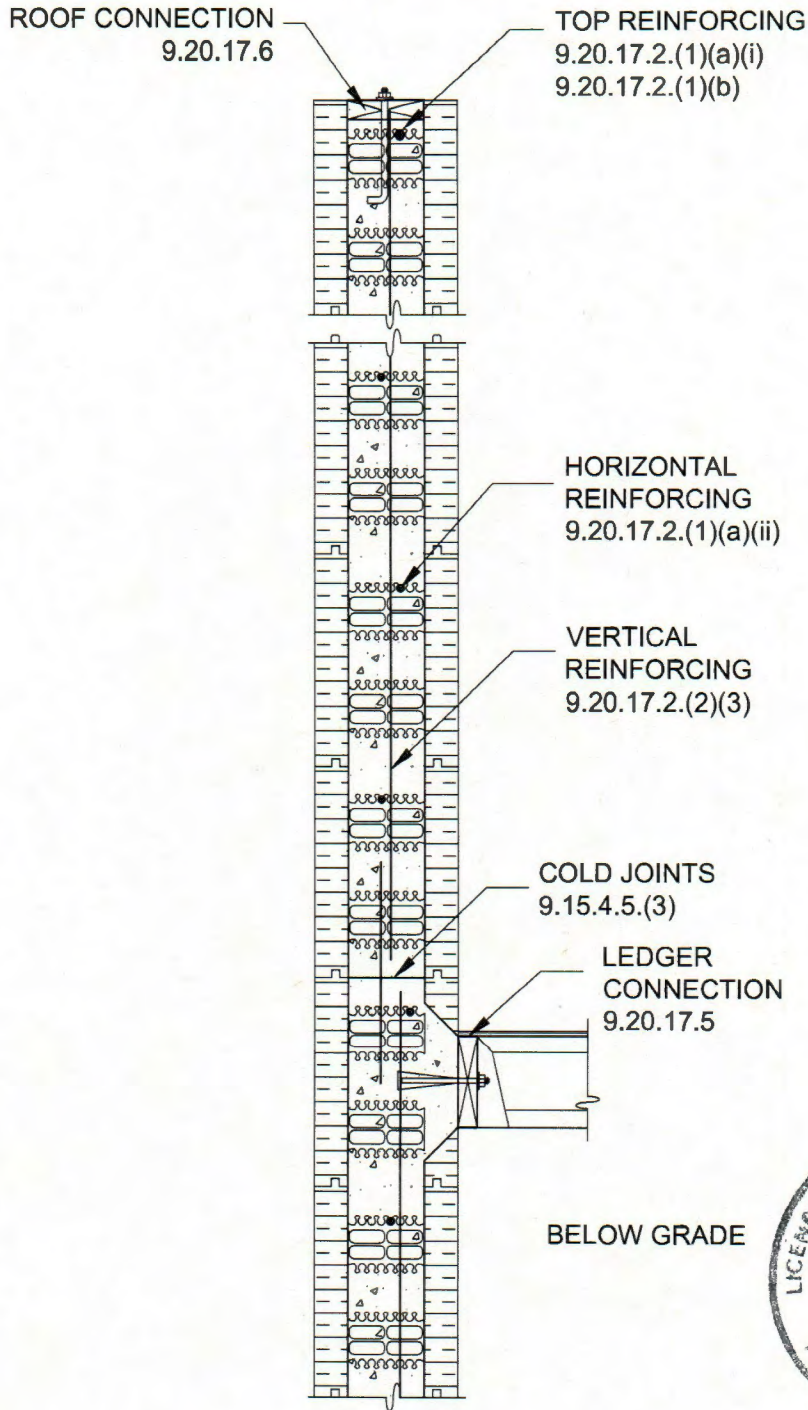
PLANT OR PROJECT: **PLASTI-FAB LTD**

**RESIDENTIAL FOUNDATION WALL  
PRESCRIPTIVE REQUIREMENT  
PER OBC 2012**

SCALE		NTS	
DESIGN	J WHALEN	DATE	DEC. 2013
DRAWN	L XIE	DATE	DEC. 2013
CHECKED	J WHALEN	DATE	DEC. 2013
DRAWING No.	REV.		
<b>D.0.1</b>			



### ABOVE-GROUND ICF WALLS



**NOTE: SEE D.0.3 FOR REINFORCING REQUIREMENT FOR OPENINGS**

No.	REVISION DESCRIPTION	DATE	BY	CHKD	APPD



PLANT OR PROJECT: PLASTI-FAB LTD -  
**RESIDENTIAL ABOVE-GROUND PRESCRIPTIVE REQUIREMENT PER OBC 2012**

SCALE		NTS	
DESIGN	J WHALEN	DATE	DEC. 2013
DRAWN	L XIE	DATE	DEC. 2013
CHECKED	J WHALEN	DATE	DEC. 2013
DRAWING No.	D.0.2		REV.

BELOW GRADE OPENING REINFORCING - SEE 9.15.4.5.(4)

ABOVE GRADE OPENING REINFORCING - SEE 9.20.17.3 AND 9.20.17.4

FIGURE 1 - OPENINGS IN NON-LOADBEARING WALLS

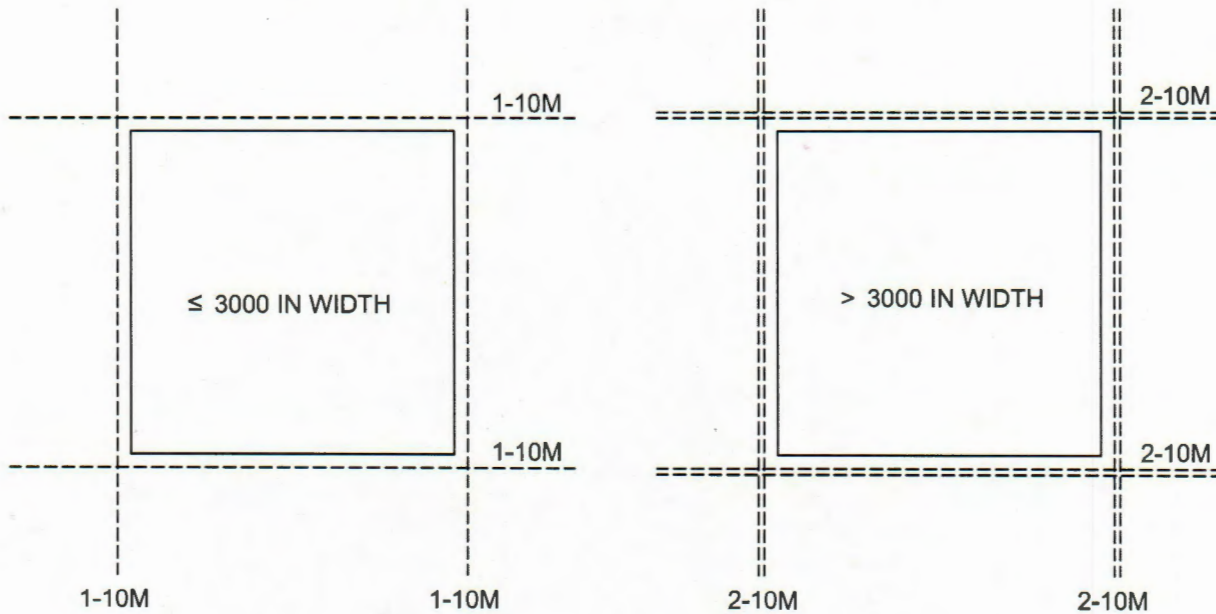
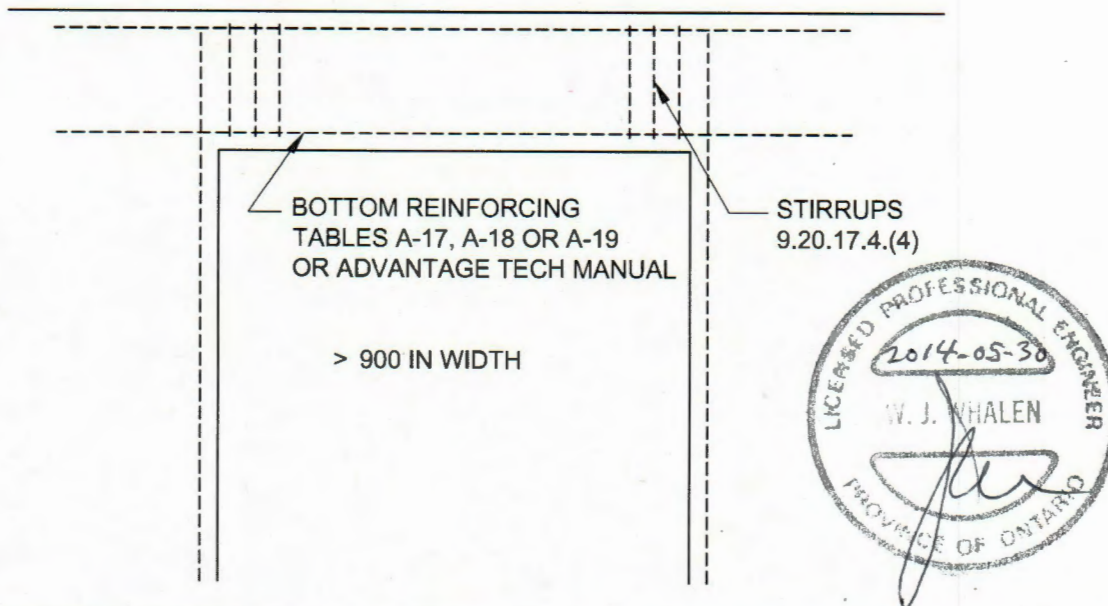


FIGURE 2 - OPENINGS IN LOADBEARING WALLS



No.	REVISION DESCRIPTION	DATE	BY	CHKD	APPD



PLANT OR PROJECT: PLASTI-FAB LTD

RESIDENTIAL OPENINGS REINFORCING REQUIREMENT PER OBC 2012

SCALE	
DESIGN	DATE
J.WHALEN	DEC. 2013
DRAWN	DATE
L.XIE	DEC. 2013
CHECKED	DATE
J.WHALEN	DEC. 2013
DRAWING No.	REV.
D.03	