

Product Information Bulletin

BULLETIN NO.	258
ISSUED:	September 12, 2014
REPLACES:	April 16, 2007

National Building Code 2010 Prescriptive Requirements for ICF Construction

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

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The National Building Code of Canada 2010 (NBC), 2006 Alberta Building Code (ABC) and 2012 British Columbia Building Code (BCBC) provide *prescriptive* requirements for construction of concrete walls using insulating concrete forming (ICF) systems to form solid concrete walls of uniform thickness over their height and width.

The Advantage ICF System[®] 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
Sentence 9.3.1.1.(4) – General requirements for flat insulating concrete form walls not exceeding 2 storeys in building height and having a maximum floor to floor height of 3 m.
Sentences 9.13.2.4.(3) (dampproofing) and 9.13.3.4.(3) (waterproofing) – ICF surface preparation prior to application.
Clause 9.15.1.1.(1)(c) – General requirements for footings and foundations related to ICF foundation walls
Article 9.15.3.3. – Application of footing width and area requirements
Article 9.15.3.4. – Calculation of basic footing width and area
Article 9.15.3.5. – Adjustments to footing width and area for exterior walls
Sentence 9.15.3.8.(1) – Footing thickness
Sentence 9.15.3.9.(1) – Step footings
Sentence 9.15.4.1.(1) – Reference to CAN/ULC-S701 for EPS insulation used in ICF systems
Sentence 9.15.4.2.(2) – Minimum foundation wall thickness for ICF wall
Sentence 9.15.4.2.(3) – Required lateral support at top & bottom for ICF foundation wall
Sentence 9.15.4.3.(5) – Lateral support at the top of foundation wall using floor joists or floor system installed according to Article 9.20.17.5.
Sentence 9.15.4.4.(1) – Lateral support at bottom of foundation wall using shear key in footing & floor framing at the top of wall or 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. – Reinforcement for ICF walls
Sentences 9.20.17.5.(2) and (3) – Size and attachment requirements for ledger boards used for support of floor joists
Table 9.20.17.5. – Anchor bolt spacing 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:
Clause 9.20.1.1.(1)(b) – General requirements for ICF above-grade walls
Article 9.20.17.1. – Thickness of flat ICF walls
Article 9.20.17.2. – Reinforcement for ICF walls
Article 9.20.17.3. – Openings in non-load bearing ICF walls (drawing D.0.3, figure 1)
Article 9.20.17.4. – Openings in load bearing ICF walls (drawing D.0.3, figure 2)
Article 9.20.17.5. – Framing supported on ICF walls either on the side or on top
Sentence 9.20.17.5.(2) – Size and attachment requirements for ledger boards used for support of floor joists
Sentence 9.20.17.5.(3) and Table 9.20.17.5 – Size and attachment requirements for anchor bolts used to attach ledger boards
Sentence 9.20.17.5.(4) – Floor joists supported on top of ICF walls in accordance with Article 9.23.6.1.
Article 9.20.17.6. – Anchoring of roof framing to the top of ICF walls and attachment of roof framing to top plates in accordance with Table 9.23.3.4
Article 9.20.17.7. – Protection from Precipitation and Damage

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

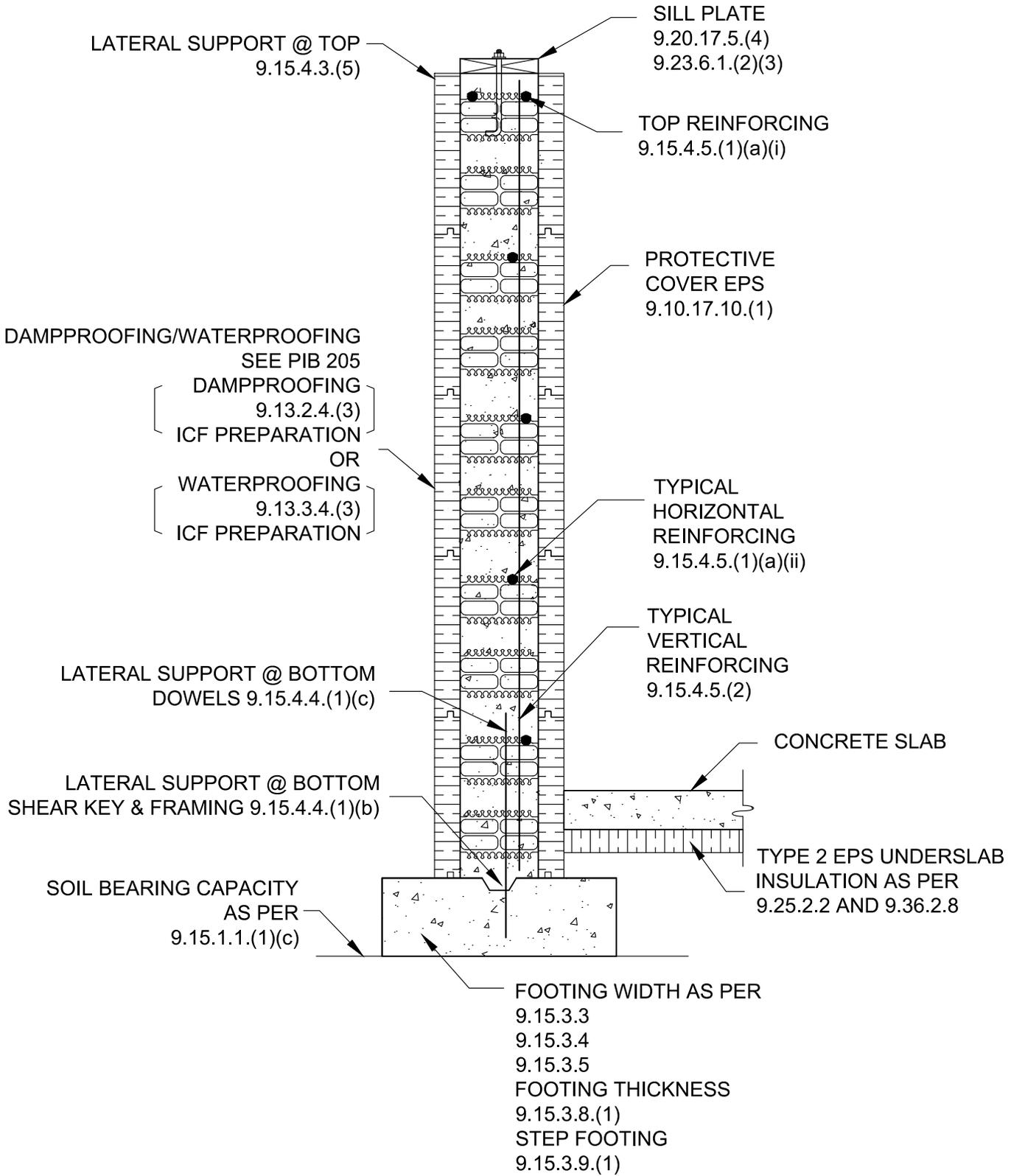
1. For design conditions beyond the scope of the referenced building code provisions refer to the **Advantage ICF System Design Manual**.
2. The **Advantage ICF System Installation Manual** provides additional information on the construction of ICF walls.
3. Article 9.25.3.2. related to air barrier system properties has been revised in the NBC 2010 and the 2012 BCBC to add a reference to a new Table A-9.25.5.1.(1) in Appendix A which indicates the air leakage characteristic for 50 mm thick concrete is negligible.
4. Article 9.25.4.2. in the NBC 2010 and 2012 BCBC 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 REQUIREMENTS PER NBC 2005 AND NBC 2010.**
- **D.0.2 – RESIDENTIAL ABOVE-GROUND PRESCRIPTIVE REQUIREMENT PER NBC 2005 AND NBC 2010.**
- **D.0.3 – RESIDENTIAL OPENINGS REINFORCING REQUIREMENT PER NBC 2005 AND NBC 2010.**

ICF FOUNDATION WALLS



NOTE: SEE D.0.3 FOR REINFORCING REQUIREMENT FOR OPENINGS

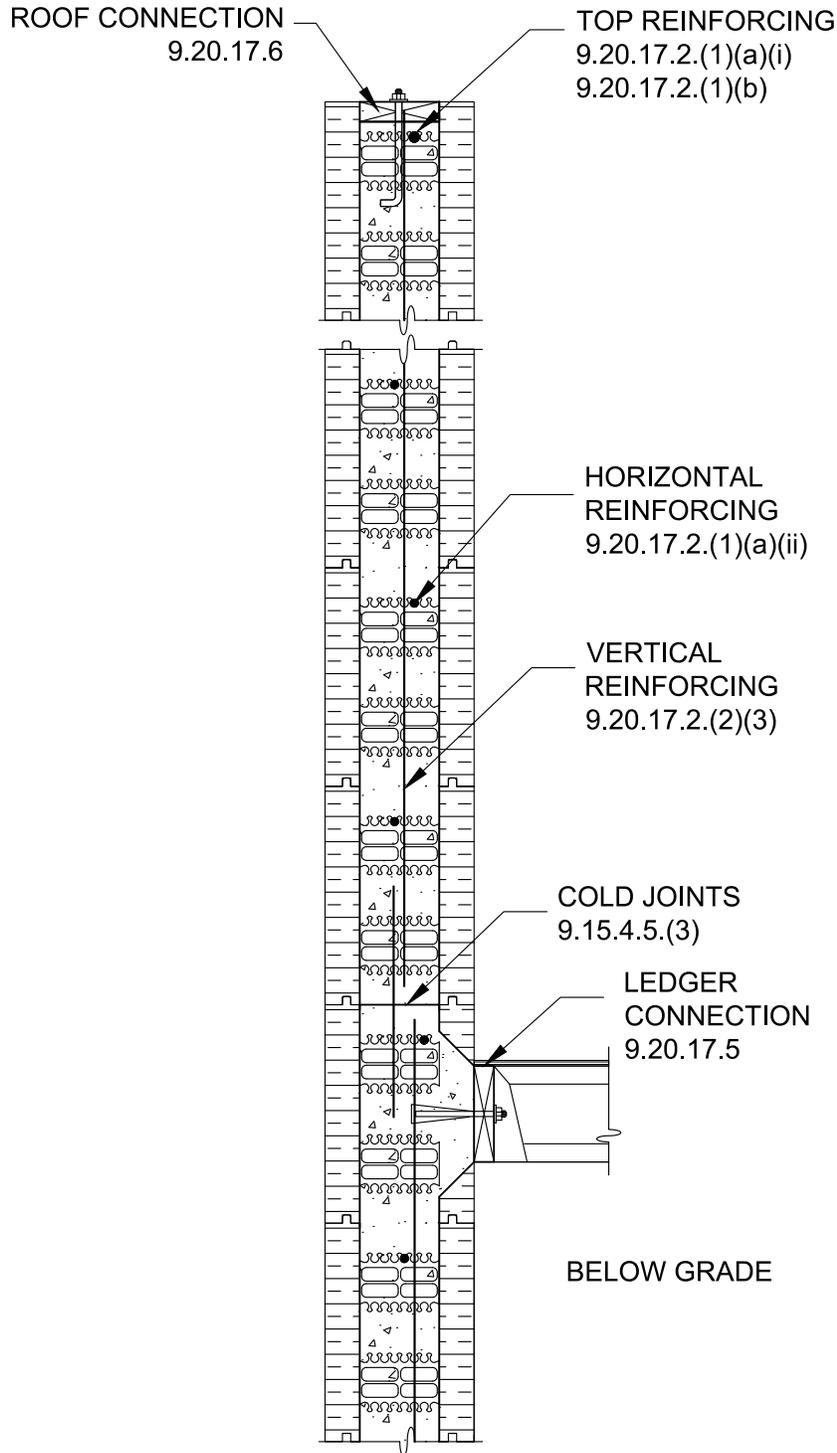
No.	REVISION DESCRIPTION	DATE	BY	CHKD	APPD



PLANT OR PROJECT: PLASTI-FAB LTD
 RESIDENTIAL FOUNDATION WALL
 PRESCRIPTIVE REQUIREMENT
 PER NBC 2005 AND NBC 2010

SCALE: NTS	
DESIGN: J WHALEN	DATE: DEC, 2013
DRAWN: L XIE	DATE: DEC, 2013
CHECKED: J WHALEN	DATE: DEC, 2013
DRAWING No. D.0.1	REV.

ABOVE-GROUND ICF WALLS



NOTE: SEE D.0.3 FOR REINFORCING REQUIREMENT FOR OPENINGS

No.	REVISION DESCRIPTION	DATE	BY	CHKD	APPD	PLANT OR PROJECT	SCALE	NTS
						ADVANTAGE ICF SYSTEM®	PLASTI-FAB LTD	
					RESIDENTIAL ABOVE-GROUND PRESCRIPTIVE REQUIREMENT PER NBC 2005 AND NBC 2010		DESIGN	DATE
							J WHALEN	DEC, 2013
							DRAWN	DATE
							L XIE	DEC, 2013
					CHECKED	DATE		
					J WHALEN	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

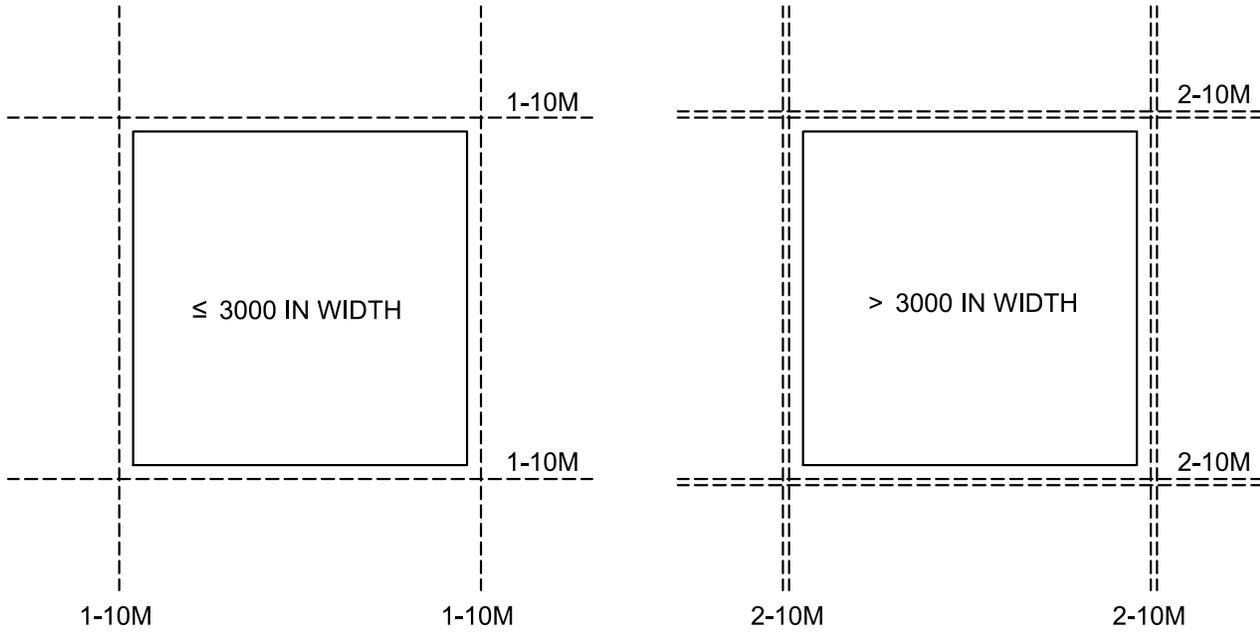
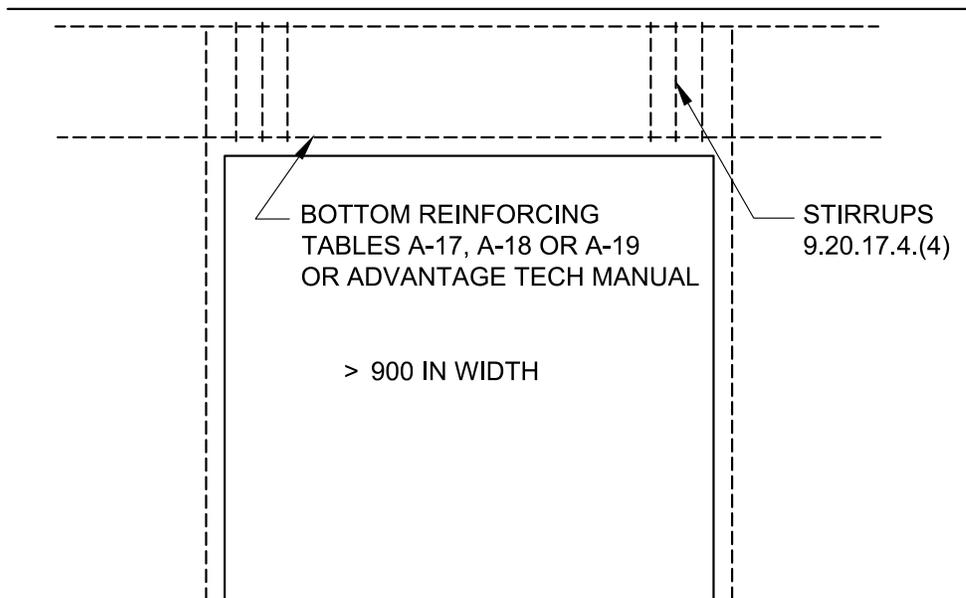


FIGURE 2 - OPENINGS IN LOADBEARING WALLS



No.	REVISION DESCRIPTION	DATE	BY	CHKD	APPD



PLANT OR PROJECT: PLASTI-FAB LTD
RESIDENTIAL OPENINGS REINFORCING REQUIREMENT PER NBC 2005 AND NBC 2010

SCALE: NTS	
DESIGN: J WHALEN	DATE: DEC, 2013
DRAWN: L XIE	DATE: DEC, 2013
CHECKED: J WHALEN	DATE: DEC, 2013
DRAWING No. D.0.3	REV.