
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

- **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 or area requirements provided in Articles 9.15.3.4. to 9.15.3.7.
- **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 footing minimum vertical rise and spacing requirements.
- **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.
- **Article 9.20.17.5.** – Framing supported on ledger boards on the side of ICF walls per Sentences 9.20.17.5.(1) to (3) or on top of ICF walls per Sentence 9.20.17.5.(4) anchored in accordance with Article 9.23.6.1.
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:

<table>
<thead>
<tr>
<th>Clause 9.20.1.1.(1)(b)</th>
<th>General requirements for ICF above-grade walls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article 9.20.17.1.</td>
<td>Thickness of flat ICF walls</td>
</tr>
<tr>
<td>Article 9.20.17.2.</td>
<td>Reinforcement for ICF walls</td>
</tr>
<tr>
<td>Article 9.20.17.3.</td>
<td>Openings in non-loadbearing ICF walls (drawing D.0.3, figure 1)</td>
</tr>
<tr>
<td>Article 9.20.17.4.</td>
<td>Openings in loadbearing ICF walls (drawing D.0.3, figure 2)</td>
</tr>
<tr>
<td>Article 9.20.17.5.</td>
<td>Framing supported on ledger boards on the side of ICF walls per Sentences 9.20.17.5.(1) to (3) or on top of ICF walls per Sentence 9.20.17.5.(4) anchored in accordance with Article 9.23.6.1.</td>
</tr>
<tr>
<td>Article 9.20.17.6.</td>
<td>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</td>
</tr>
<tr>
<td>Article 9.20.17.7.</td>
<td>Protection from Precipitation and Damage for above-grade walls in conformance with Section 9.27.</td>
</tr>
</tbody>
</table>

The following notes provide additional information related to 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. Refer to the Advantage ICF System Installation Manual for additional information on the construction of ICF walls using the Advantage ICF System.
3. NBC 2010, 2014 ABC and 2012 BCBC, Division B, Article 9.25.3.2. (Air Barrier System Properties) includes a reference to A-9.25.5.1.(1) in Appendix A. Table A-9.25.5.1.(1) indicates the air leakage characteristic is negligible and water vapour permeance is 23 ng/(Pa·s·m²) for 50-mm reinforced concrete.
4. NBC 2010, 2014 ABC and 2012 BCBC, Division B, Article 9.25.4.2. (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 system 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

LATERAL SUPPORT @ TOP
9.15.4.3.(5)

SILL PLATE
9.20.17.5.(4)
9.23.6.1.(2)(3)

TOP REINFORCING
9.15.4.5.(1)(a)(i)

PROTECTIVE COVER EPS
9.10.17.10.(1)

DAMP PROOFING/WATERPROOFING
SEE PIB 205
9.13.2.4.(3)
ICF PREPARATION
OR
WATERPROOFING
9.13.3.4.(3)
ICF PREPARATION

TYPICAL HORIZONTAL REINFORCING
9.15.4.5.(1)(a)(ii)

TYPICAL VERTICAL REINFORCING
9.15.4.5.(2)

LATERAL SUPPORT @ BOTTOM
DOWELS 9.15.4.4.(1)(c)

CONCRETE SLAB

LATERAL SUPPORT @ BOTTOM
SHEAR KEY & FRAMING 9.15.4.4.(1)(b)

SOIL BEARING CAPACITY
AS PER
9.15.1.1.(1)(c)

TYPE 2 EPS UNDERSLAB INSULATION AS PER
9.25.2.2 AND 9.36.2.8

FOOTING WIDTH AS PER
9.15.3.3
9.15.3.4
9.15.3.5
FOOTING THICKNESS
9.15.3.8.(1)
STEP FOOTING
9.15.3.9.(1)

NOTE: SEE D.0.3 FOR REINFORCING REQUIREMENT FOR OPENINGS

---

PLANTI-FAB LTD
RESIDENTIAL FOUNDATION WALL
PRESCRIPTIVE REQUIREMENT
PER NBC 2005 AND NBC 2010

D.0.1
ABOVE-GROUND ICF WALLS

ROOF CONNECTION
9.20.17.6

TOP REINFORCING
9.20.17.2.(1)(a)(i)
9.20.17.2.(1)(b)

HORIZONTAL
REINFORCING
9.20.17.2.(1)(a)(ii)

VERTICAL
REINFORCING
9.20.17.2.(2)(3)

COLD JOINTS
9.15.4.5.(3)

LEDGER
CONNECTION
9.20.17.5

BELOW GRADE

NOTE: SEE D.0.3 FOR REINFORCING REQUIREMENT FOR OPENINGS
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


c ≤ 3000 IN WIDTH

c > 3000 IN WIDTH

FIGURE 2 - OPENINGS IN LOADBEARING WALLS

BOTTOM REINFORCING TABLES A-17, A-18 OR A-19 OR ADVANTAGE TECH MANUAL

STIRRUPS 9.20.17.4.(4)

> 900 IN WIDTH