The purpose of this bulletin is to review National Building Code (NBC) of Canada 2005 and 2010 requirements for firewalls and fire separations in relation to the Advantage ICF System. The Advantage ICF System is used to construct monolithic concrete walls having uniform thickness of either 6-inch (152-mm) or 8-inch (203-mm) thickness. Table 1 below provides information excerpted from NBC, Appendix Table D-2.1.1 regarding fire resistance ratings for monolithic concrete walls.

Table 1 – Fire-Resistance Ratings for Monolithic Concrete Walls

<table>
<thead>
<tr>
<th>Monolithic Concrete Wall Thickness</th>
<th>Fire-Resistance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum 150-mm thick Type N concrete</td>
<td>3 Hour</td>
</tr>
<tr>
<td>Minimum 171-mm thick Type N concrete</td>
<td>4 Hour</td>
</tr>
</tbody>
</table>

A concrete wall formed using the Advantage ICF System was tested by Intertek Testing Services (ITS) in accordance with test standards: CAN/ULC-S101, NFPA-251 and ASTM-E119. The test confirmed that a 6” thick concrete wall formed with the Advantage ICF System faced with standard 12.7-mm (1/2”) gypsum board mounted on the fireside would provide a 3-hour fire resistance rating. Additional information on this fire test can be found in Plasti-Fab Technical Bulletin 153-01.

The following NBC definitions will help to understand these differences:
1. **Fire separation** means a construction assembly that acts as a barrier against the spread of fire and smoke. **NOTE:** The fire-resistance rating of a fire separation may be waived in some cases on the basis of the presence of an automatic sprinkler system.
2. **Firewall** means a type of fire separation of noncombustible construction, which subdivides a building or separates adjoining buildings intended to resist the spread of fire. A firewall has a fire-resistance rating as prescribed in the Code and has structural stability to remain intact under fire conditions for the required fire-rated time.
3. **Noncombustible construction** means that type of construction in which a degree of fire safety is attained by the use of noncombustible materials for structural members and other building assemblies. Except for closures, the NBC states that required fire-resistance rating for a firewall shall be provided by masonry or concrete.

Note that the Principal differences between a fire separation and a firewall relate to the construction materials that are permitted and the requirement for a minimum fire-resistance rating.

4. A **party wall** is defined in the NBC as a wall jointly owned and jointly used by two parties under easement agreement or by right in law, and erected at or upon a line separating two parcels of land each of which is, or is capable of being, a separate real-estate entity.
   a. In a building of **residential occupancy** in which there is **no dwelling unit above another dwelling unit**, a party wall on a property line between dwelling units can be constructed as a **fire separation** having a fire-resistance rating not less than a 1 h.
   b. **Except as noted above** for residential occupancy a party wall on a property line must be constructed as a **firewall**.

As noted, the NBC requires that a **firewall** be constructed of **non-combustible construction**. The fire-resistance rating of a wall constructed with the Advantage ICF System is provided by the 152 mm or 203 mm (6” or 8”) concrete wall thickness.

Based upon the above, use of the Advantage ICF System in constructing a **firewall** must be confirmed with local code authorities at the time of building permit approval.

The following information regarding fire-resistance ratings of firewalls can be found in NBC Article 3.1.10.2.:

1. A **firewall** which separates a building or buildings with floor areas containing a **Group E or a Group F, Division 1 or 2 major occupancy** shall be constructed as a fire separation of noncombustible construction having a **fire-resistance rating not less than 4 h**, except that where the **upper portion of a firewall** separates floor areas containing **other than Group E or Group F, Division 1 or 2 major occupancies**, the fire-resistance rating of the upper portion of the firewall is permitted to be not less than 2 h.

2. A **firewall** which separates a building or buildings with floor areas containing **major occupancies other than Group E or Group F, Division 1 or 2** shall be constructed as a fire separation of noncombustible construction having a **fire-resistance rating not less than 2 h**.

**NOTE:** Major occupancy classification information can be found in NBC, Table 3.1.2.1.