2012 IRC Wall Bracing Provisions
Module 6

CONTINUOUS SHEATHING METHODS
END CONDITIONS
Objectives

Upon completion of this module, you will be better able to:

• Discuss continuous sheathing methods include continuous sheathing - Wood Structural Panel, continuous sheathing at garage, continuous sheathing - portal frame.

• Explain method continuous sheathing - structural fiberboard

• Identify end conditions
Bracing: Panel Material - Continuous

Continuous Sheathing Bracing Methods:

CS-WSP - Continuously sheathed wood structural panel
CS-G - Continuously sheathed wood structural panel adjacent to garage openings
CS-PF - Continuously sheathed portal frame
CS-SFB - Continuously sheathed structural fiberboard

Table R602.10.4
Main Concepts

- Allows for narrow BWP's without hold-downs
- BWL's must be fully sheathed with wood structural panel or structural fiberboard sheathing (continuously sheathed)
Bracing: Panel Material - Continuous

**Sheathing Requirements:**
1. Sheath full height areas including gable ends
2. Sheath above and below openings
3. Adjacent openings determine minimum BWP length

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Too Narrow
Bracing: Panel Material - Continuous

Method CS-WSP

Continuous Sheathing with Wood Structural Panel

• Area above and below openings fully sheathed including gable ends
• Min 3/8" wood structural panel sheathing

Method CS-SFB

Continuous Sheathing with Structural Fiberboard

• Area above and below openings fully sheathed including gable ends
• Min 1/2" structural fiberboard sheathing

R602.10.4.2, Table R602.10.4
Bracing: Panel Material - Continuous

<table>
<thead>
<tr>
<th>Wall Bracing Parameter</th>
<th>Continuously Sheathed Wood Structural Panel CS-WSP, CS-G, CS-PF</th>
<th>Continuously Sheathed Structural Fiberboard CS-SFB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind applicability</td>
<td>&lt; 110 mph</td>
<td>≤ 100 mph</td>
</tr>
<tr>
<td>Seismic applicability</td>
<td>A - D₂</td>
<td>A - C</td>
</tr>
<tr>
<td>Permitted wall heights</td>
<td>8' to 12'</td>
<td>8' to 12'</td>
</tr>
<tr>
<td>Corner return length (both sides of corner)</td>
<td>24&quot; Min. (or hold downs at first BWP)</td>
<td>32&quot; Min. (or hold downs at first BWP)</td>
</tr>
<tr>
<td>Panel end distance</td>
<td>10'</td>
<td>10'</td>
</tr>
</tbody>
</table>

Table R602.10.4, Figure R602.10.7
**Method CS-WSP**

Full-height sheathed wall segments having a length equal or greater than Table R602.10.5 are counted toward the total bracing length.

Braced wall panel minimum length is based on wall height and height of the adjacent clear opening.
# Bracing: Panel Material - Continuous

**Method CS-WSP**

### Table R602.10.5 Minimum Length of Braced Wall Panels (in)

<table>
<thead>
<tr>
<th>Method</th>
<th>Adjacent Clear Opening Height (ft.)</th>
<th>Wall Height (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-WSP</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>64</td>
<td>24</td>
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<td></td>
<td>68</td>
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<td>80</td>
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<td></td>
<td>84</td>
<td>35</td>
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<tr>
<td></td>
<td>88</td>
<td>38</td>
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<tr>
<td></td>
<td>92</td>
<td>43</td>
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<tr>
<td></td>
<td>96</td>
<td>48</td>
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<tr>
<td></td>
<td>100</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>104</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>108</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>112</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>116</td>
<td>55</td>
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<tr>
<td></td>
<td>120</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method</th>
<th>Adjacent Clear Opening Height (ft.)</th>
<th>Wall Height (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>124</td>
<td>56</td>
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<td>128</td>
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<td></td>
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<td>66</td>
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<td></td>
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<td>66</td>
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<td>140</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>144</td>
<td>72</td>
</tr>
<tr>
<td>CS-G</td>
<td>a</td>
<td>24</td>
</tr>
<tr>
<td>CS-PF</td>
<td>&lt;120</td>
<td>16</td>
</tr>
</tbody>
</table>

---

**a.** Garage opening adjacent to method CS-G panel shall have header. Max opening height includes header height.

**b.** Max header height 10 feet, pony wall may be used above header.
Bracing: Panel Material - Continuous

Method CS-WSP

Too narrow to be counted

All panels less than 20’ apart edge to edge

R602.10.4.2 & Table R602.10.5
Bracing: Panel Material - Continuous

Method CS-G  Wood structural panel adjacent to garage opening
- Full-height sheathed wall segments to either side of garage openings
- Roof covering dead loads of 3 psf or less (seismic requirement only)
- Applied to one wall line of garage only
- Panel length = bracing length
- 4:1 aspect ratio

Garage Opening

12' Max

R602.10.4, Table R602.10.5
Bracing: Panel Material - Continuous

**Method CS-G**

Garage only (roof covering limited to 3 psf in high seismic regions only).

4:1 Aspect Ratio (24" min.)
Bracing: Panel Material - Continuous

**Method CS-PF  Continuous portal frame**

Walls on either or both sides of openings in garage may have wall segment with a maximum 6:1 height-to-length ratio.

- No hold-downs required
- OK on raised floor
- Top of header at 10' max
- Top of wall at 12' max
- Panel length = bracing length

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Garage Opening

10' max
(12' max with pony wall)

H/6

Fully sheathed dwelling

R602.10.6.4
Bracing: Panel Material - Continuous

Method CS-PF

Garage only, story above permitted.

6:1 Aspect Ratio (16" min.)

FULLY SHEATHED
Bracing: Panel Material - Continuous

Figure R602.10.6.4

Method CS-PF
## Bracing: Panel Material - Continuous

### Methods PFH, PFG and CS-PF

Table R602.10.6.4: Tension Strap Capacity Required for Resisting Wind Pressures Perpendicular to Method PFH, PFG and CS-PF Braced Wall Panels

<table>
<thead>
<tr>
<th>MINIMUM WALL STUD FRAMING NOMINAL SIZE AND GRADE</th>
<th>MAXIMUM PONY WALL HEIGHT (feet)</th>
<th>MAXIMUM TOTAL WALL HEIGHT (feet)</th>
<th>MAXIMUM OPENING WIDTH (feet)</th>
<th>BASIC WIND SPEED (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>2 × 4 No. 2 Grade</td>
<td>0</td>
<td>10</td>
<td>18</td>
<td>1000</td>
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<tr>
<td></td>
<td>1</td>
<td>10</td>
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<td></td>
<td>16</td>
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<td>9</td>
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<td>16</td>
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<td>3200</td>
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<td></td>
<td>18</td>
<td>3175</td>
<td>3850</td>
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</table>
Bracing: Panel Material - Continuous

Methods PFH, PFG and CS-PF cont.

Table R602.10.6.4 cont.: Tension Strap Capacity Required for Resisting Wind Pressures Perpendicular to Method PFH, PFG and CS-PF Braced Wall Panels

<table>
<thead>
<tr>
<th>MINIMUM WALL STUD FRAMING NOMINAL SIZE AND GRADE</th>
<th>MAXIMUM PONY WALL HEIGHT (feet)</th>
<th>MAXIMUM TOTAL WALL HEIGHT (feet)</th>
<th>MAXIMUM OPENING WIDTH (feet)</th>
<th>BASIC WIND SPEED (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 × 4 No. 2 Grade</td>
<td>4</td>
<td>12</td>
<td>9</td>
<td>85</td>
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<td></td>
<td>16</td>
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<td></td>
<td>Exposure B</td>
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<td></td>
<td>Tension strap capacity required (lbf)</td>
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<tr>
<td>2 × 6 Stud Grade</td>
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<td>12</td>
<td>9</td>
<td>1000</td>
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<td>16</td>
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<td>18</td>
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<td></td>
<td>3125</td>
</tr>
</tbody>
</table>
Bracing: Panel Material - Continuous
Method CS-SFB – Continuous Sheathing with Structural Fiberboard

- Wall minimum length based on wall height and height of adjacent clear opening
- Maximum wall height = 12’
- Length requirements for braced wall panels in Table R602.10.5
  - Same minimum bracing length requirements as CS-WSP
  - Same aspect ratio (opening height limits) as CS-WSP
Bracing: Panel Material - Continuous

Method CS-SFB

R602.10.5.1
Bracing: Panel Material - Continuous

Method CS-SFB

- Too narrow to be counted

3:1

6:1

6:1

~2.4:1

32" BWP

65% to 85% H

0% to 65% H

65% to 85% H

40" BWP
Bracing: End Conditions

R602.10.7 End Conditions for Braced Wall Lines with Continuous Sheathing

End Conditions – 5 separate options

- WSP return panel and corner panel – 24” minimum
- SFB return panel and corner panel – 32” minimum
End Condition 1

- Braced wall panel at end of BWL
- Return panel on perpendicular wall
Bracing: End Conditions

End Condition 2

- Braced wall panel at end of BWL
- 800 lb hold-down in lieu of a return panel fastened to the corner stud

CONTINUOUSLY SHEATHED BRACED WALL LINE

END CONDITION 2
End Condition 3

- Minimum 48” braced wall panel
- No return required
Bracing: End Conditions

End Condition 4

- Minimum 24 in. or 32 in. corner panel
- Minimum 24 in. or 32 in. return panel on perpendicular wall

* SEE REQUIREMENTS
End Condition 5

- 800 lb hold-down in lieu of a braced wall panel at the end of the BWL,
- Hold-down may be fastened to end of the first BWP.
- Return panel on perpendicular wall or hold-down
Bracing: Panel Material - Continuous

Continuous Sheathing Corner Requirements

Minimum required corner detail

CS-WSP = 24"
CS-SFB = 32"

Figure R602.10.7
Bracing: End Conditions

Table R602.3(1) Item 8 - Corner Stud Requirements

- Corner Stud Requirements

- Gypsum

- 16d nail at 12" o.c.

- BWP Material or Infill

- Gypsum

- 16d nail at 12" o.c.

- BWP Material or Infill
Summary

This module covered:

– Continuous sheathing methods:
  – Continuous sheathing - Wood structural panel
  – Continuous sheathing at garage
  – Continuous sheathing - Portal frame
    • All use OSB or plywood

• Continuous Sheathing - Structural Fiberboard
  – Uses structural fiberboard sheathing.

• End conditions for continuous sheathing along braced wall lines.
  – Required at the end of the braced wall
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