# FAQ*: WFCM Checklist

**Question:** I understand if a new home is built in a town in a 110 mph wind zone then the American Forest and Paper Association (AF&PA) *Wood Frame Construction Manual* can be used to prescriptively design it. I also understand that in some cases the home can be framed per the *WFCM 100 mph Guide*, if it meets certain requirements including but not limited to aspect ratio, roof height, number of stories, and exposure category (B). I have heard that Massachusetts has a "modified" checklist that can be used instead of the checklist at the end of the Guide. Is this true and what can you tell me about this "modified" checklist?

**Answer:** You are correct on the items that you have noted. MA has modified the checklist in several important ways. The MA version allows a roof with a pitch up to and including 8 in 12 to not be "counted" as a story. Further it does not require steel hold downs and straps in many locations if full height sheathing is used as defined in the MA checklist. Further, if the building will have furring strips installed in the ceiling abutting the gable wall then 2 x 4s installed on top of the ceiling joists are not required. There are other changes as well that were not noted here.
The MA version of the checklist was formulated in recognition of the highly regarded framing methods used in MA for many years and wood framing that has been used in North Carolina over the past 10 to 15 years which has performed well in severe hurricane weather in that state.

* Answers to FAQs are opinions of the BBRS Staff and do not reflect official positions or code interpretations of the BBRS.

*AWC Guide to Wood Construction in High Wind Areas: 110 mph Wind Zone*

# Massachusetts Checklist for Compliance (780 CMR 5301.2.1.1)[1]

☑ Check Compliance

**1.1 SCOPE**

Wind Speed (3-sec. gust) ..... 110 mph ____
Wind Exposure Category ..... B ____

**1.2 APPLICABILITY**

Number of Stories (a roof which exceeds 8 in 12 slope shall be considered a story) _____ stories ≤ 2 stories ____
Roof Pitch ..... (Fig 2) ..... _____ ≤ 12:12 ____
Mean Roof Height ..... (Fig 2) ..... ___ ft ≤ 33' ____
Building Width, W ..... (Fig 3) ..... ___ ft ≤ 80' ____
Building Length, L ..... (Fig 3) ..... ___ ft ≤ 80' ____
Building Aspect Ratio (L/W) ..... (Fig 4) ..... _____ ≤ 3:1 ____
Nominal Height of Tallest Opening[2] ..... (Fig 4) ..... _____ ≤ 6'8" ____

**1.3 FRAMING CONNECTIONS**

General compliance with framing connections ..... (Table 2) ..... ____

**2.1 FOUNDATION**

Foundation Walls meeting requirements of 780 CMR 5404.1
Concrete ..... ____
Concrete Masonry ..... ____

**2.2 ANCHORAGE TO FOUNDATION**[1,3]

5/8" Anchor Bolts imbedded or 5/8" Proprietary Mechanical Anchors as an alternative in concrete only
Bolt Spacing – general ..... (Table 4) ..... _____ in. ____
Bolt Spacing from end/joint of plate ..... (Fig 5) ..... _____ in. ≤ 6" – 12" ____
Bolt Embedment – concrete ..... (Fig 5) ..... ___ in. ≥ 7" ____
Bolt Embedment – masonry ..... (Fig 5) ..... _____ in. ≥ 15" ____
Plate Washer ..... (Fig 5) ..... ≥ 3" x 3" x ¼" ____

**3.1 FLOORS**

Floor framing member spans checked ..... (per 780 CMR Chapter 55) ..... ____
Maximum Floor Opening Dimension ..... (Fig 6) ..... ___ ft ≤ 12' ____
Full Height Wall Studs at Floor Openings less than 2' from Exterior Wall (Fig 6) ..... ____
Maximum Floor Joist Setbacks
Supporting Loadbearing Walls or Shearwall ..... (Fig 7) ..... ___ ft ≤ d ____
Maximum Cantilevered Floor Joists
Supporting Loadbearing Walls or Shearwall ..... (Fig 8) ..... ___ ft ≤ d ____
Floor Bracing at Endwalls ..... (Fig 9) ..... ____
Floor Sheathing Type ..... (per 780 CMR Chapter 55) ..... ____
Floor Sheathing Thickness ..... (per 780 CMR Chapter 55) ..... ____ in. ____
Floor Sheathing Fastening ..... (Table 2) .. ___d nails at ____in edge / ___ in field ____

**4.1 WALLS**

Wall Height
Loadbearing walls ..... (Fig 10 and Table 5) ..... ___ ft ≤ 10' ____
Non-Loadbearing walls ..... (Fig 10 and Table 5) ..... ___ ft ≤ 20' ____
Wall Stud Spacing ..... (Fig 10 and Table 5) ..... ___ in. ≤ 24" o.c. ____
Wall Story Offsets ..... (Figs 7 & 8) ..... ___ ft ≤ d ____

**4.2 EXTERIOR WALLS**[3]

Wood Studs
Loadbearing walls ..... (Table 5) ..... 2x___ - ___ ft ___ in. ____
Non-Loadbearing walls ..... (Table 5) ..... 2x___ - ___ ft ___ in. ____
Gable End Wall Bracing [1]
Full Height Endwall Studs ..... (Fig 10) ..... ____
WSP Attic Floor Length ..... (Fig 11) ..... ____ ft ≥W/3 ____
Gypsum Ceiling Length (if WSP not used) ..... (Fig 11) ..... ___ ft ≥ 0.9W ____
and 2 x 4 Continuous Lateral Brace @ 6 ft. o.c. .. (Fig 11) ..... ____
or 1 x 3 ceiling furring strips @ 16" spacing min. with 2 x 4 blocking @ 4 ft. spacing in end joist or truss bays ____
Double Top Plate
Splice Length ..... (Fig 13 and Table 6) ..... ___ ft ____
Splice Connection (no. of 16d common nails) ..... (Table 6) ..... ___ ____

# Massachusetts Checklist for Compliance (780 CMR 5301.2.1.1)[1]

Loadbearing Wall Connections
- Lateral (no. of 16d common nails) ..... (Tables 7) ..... ____ ____

Non-Loadbearing Wall Connections
- Lateral (no. of 16d common nails) ..... (Table 8) ..... ____ ____

Load Bearing Wall Openings (record largest opening but check all openings for compliance to Table 9)
- Header Spans ..... (Table 9) ..... ___ ft ___ in. ≤ 11' ____
- Sill Plate Spans ..... (Table 9) ..... ___ ft ___ in. ≤ 11' ____
- Full Height Studs (no. of studs) ..... (Table 9) ..... ____ ____

Non-Load Bearing Wall Openings (record largest opening but check all openings for compliance to Table 9)
- Header Spans…… ..... (Table 9) ..... ___ ft ___ in. ≤ 12' ____
- Sill Plate Spans…. ..... (Table 9) ..... ___ ft ___ in. ≤ 12" ____
- Full Height Studs (no. of studs) ..... (Table 9) ..... ____ ____

Exterior Wall Sheathing to Resist Uplift and Shear Simultaneously[4]
- Minimum Building Dimension, W
  - Nominal Height of Tallest Opening[2] ..... ___≤ 6'8" ____
  - Sheathing Type ..... (note 4) ..... _____ ____
  - Edge Nail Spacing ..... (Table 10 or note 4 if less) ..... ____ in. ____
  - Field Nail Spacing ..... (Table 10) ..... ____ in. ____
  - Shear Connection (no. of 16d common nails) (Table 10) ..... ___ ____
  - Percent Full-Height Sheathing ..... (Table 10) ..... ___% ____
    - 5% Additional Sheathing for Wall with Opening > 6'8" (Design Concepts) ..... ____
- Maximum Building Dimension, L
  - Nominal Height of Tallest Opening[2] ..... ..... ___≤ 6'8" ____
  - Sheathing Type ..... (note 4) ..... _____ ____
  - Edge Nail Spacing ..... (Table 11 or note 4 if less) ..... ____ in. ____
  - Field Nail Spacing ..... (Table 11) ..... ____ in. ____
  - Shear Connection (no. of 16d common nails) (Table 11) ..... ___ ____
  - Percent Full-Height Sheathing ..... (Table 11) ..... ___% ____
    - 5% Additional Sheathing for Wall with Opening > 6'8" (Design Concepts) ..... ____

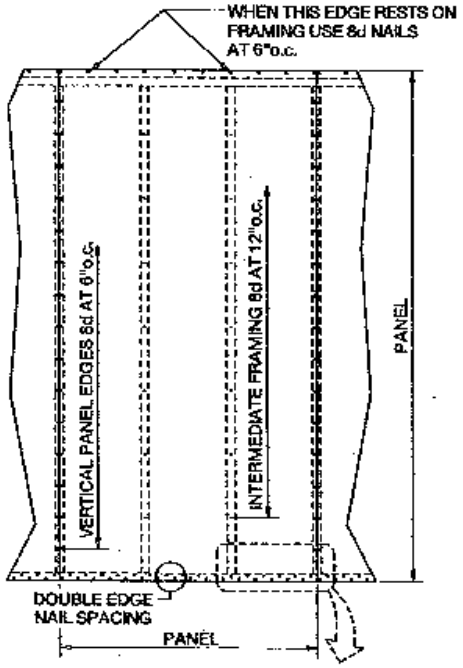
Wall Cladding
- Rated for Wind Speed? ..... ..... ____

**5.1 ROOFS**
- Roof framing member spans checked? ..... (For Rafters use AWC Span Tool, see BBRS Website) ____
- Roof Overhang ..... (Figure 19) ..... ___ ft ≤ smaller of 2' or L/3 ____
- Truss or Rafter Connections at Loadbearing Walls
  - Proprietary Connectors
    - Uplift ..... (Table 12) ..... U=____ plf ____
    - Lateral ..... (Table 12) ..... L=____ plf ____
    - Shear ..... (Table 12) ..... S=____ plf ____
- Ridge Strap Connections, if collar ties not used per page 21… (Table 13) ..... T=____ plf ____
- Gable Rake Outlooker ..... (Figure 20) ..... ___ ft ≤ smaller of 2' or L/2 ____
- Truss or Rafter Connections at Non-Loadbearing Walls
  - Proprietary Connectors
    - Uplift ..... (Table 14) ..... U=____ lb. ____
    - Lateral (no. of 16d common nails) ... (Table 14)……..L =____lb. ____
- Roof Sheathing Type ..... (per 780 CMR Chapters 58 and 59) …… ____
- Roof Sheathing Thickness ..... ..... ___ in. ≥ 7/16" WSP ____
- Roof Sheathing Fastening ..... (Table 2) ..... ___ ____

Notes:
1. This checklist shall be met in its entirety, excluding the specific exception noted in 2, to comply with the requirements of 780 CMR 5301.2.1.1 Item 1. If the checklist is met in its entirety then the following metal straps and hold downs are not required per the WFCM 110 mph Guide:
   a. Steel Straps per Figure 5
   b. 20 Gage Straps per Figure 11
   c. Uplift Straps per Figure 14
   d. All Straps per Figure 17
   e. Corner Stud Hold Downs per Figure 18a and Figure 18b
2. Exception: Opening heights of up to 8 ft. shall be permitted when 5% is added to the percent full-height sheathing requirements shown in Tables 10 and 11.
3. The bottom sill plate in exterior walls shall be a minimum 2 in. nominal thickness pressure treated #2-grade.

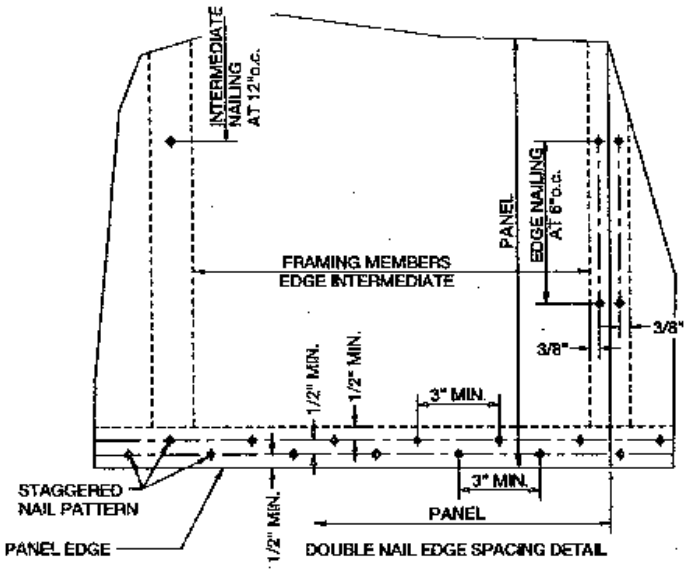
4.

a. From Tables 10 and 11 and location of wall sheathing and Building Aspect Ratio, determine Percent Full-Height Sheathing and Nail Spacing requirements
b. Wood Structural Panels shall be minimum thickness of 7/16" and be installed as follows:
    i. Panels shall be installed with strength axis parallel to studs.
    ii. All horizontal joints shall occur over and be nailed to framing.
    iii. On single story construction, panels shall be attached to bottom plates and top member of the double top plate.
    iv. On two story construction, upper panels shall be attached to the top member of the upper double top plate and to band joist at bottom of panel. Upper attachment of lower panel shall be made to band joist and lower attachment made to lowest plate at first floor framing.
    v. Horizontal nail spacing at double top plates, band joists, and girders shall be a double row of 8d staggered at 3 inches on center per figures below : Vertical and Horizontal Nailing for Panel Attachment




See Detail on Next Page

Vertical and Horizontal Nailing
for Panel Attachment




Detail
Vertical and Horizontal Nailing
for Panel Attachment