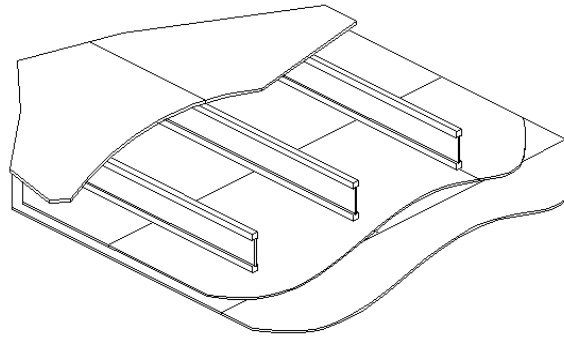


Appendix A

**BOISE CASCADE, L.L.C.
BCI® and AJS® Fire Rated Assembly Details**

BCI® Assembly 1 (1 Hour Fire Rated Assembly, 2 Layers of 5/8" Gypsum)
The following fire resistant designs are listed in accordance with ASTM-E119 and CAN/ULC-S101

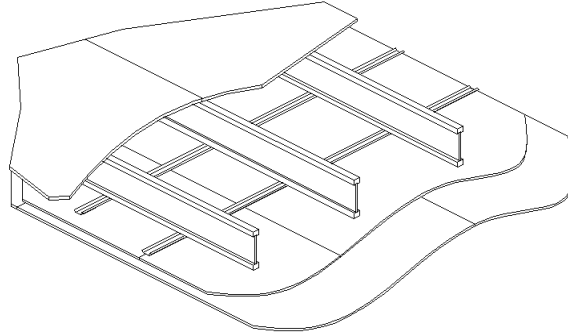


- Finished Flooring: Minimum 23/32 inch (18 mm) thick, tongue and groove sheathing, having exterior glue, on joists spaced at a maximum of 24 inches (610 mm) on center. A modified contact construction adhesive shall be applied to the top of the joists prior to placing sheathing. The sheets shall be installed with their long edge perpendicular to the joists with end joints centered over the top flange of joists and staggered one joist spacing with adjacent sheets. Except for a minimum nail size of 8d common, flooring shall be installed per code requirements.
- Insulation (optional, except as required for sound rating): 9-1/2" max glass fiber insulation fitted between the joists.
- Structural Members: Minimum 9 ½ inch (241 mm) deep BCI® joists spaced a maximum of 24 inches (610 mm) on center. Minimum flange dimensions are 1 1/8 inch (29 mm) thick by 1 ½ inch (38 mm) wide. Holes in webs for ducts or wiring are limited to those noted in the code evaluation report.
- Resilient Channels: Attached perpendicular to the bottom flange of the joists with one 1 ¼ inch (32 mm) Type S drywall screw. Channels are spaced a maximum of 16 inches (406 mm) on center, 24 inches (610 mm) on center when joists are spaced a maximum of 16 inches (406 mm) on center.
- Gypsum Wallboard Ceiling: Two layers of 5/8 inch (16 mm) Type X gypsum wallboard attached with the long edge perpendicular to the joists as follows:
 - Wallboard Layer 1: The first layer of wallboard is attached to the bottom flange of the joists using 1 ¼ inch (32 mm) Type W or S drywall screws at 24 inches (610 mm) on center. The end joints of the wallboard shall be centered on the bottom flange of the joist and shall be staggered the equivalent of two joist spacings with those of adjacent sheets. I.E. joists at 24 inches (610 mm) on center, offset is 48 inches (1219 mm).
 - Wallboard Layer 2: The second layer of wallboard is attached to the bottom flange of the joists through the first layer using 1 7/8 inch (48 mm) Type W or S drywall screws spaced 12 inches (305 mm) on center. The longitudinal joints of the second layer of wallboard shall be offset 24 inches (610 mm) from those of the first layer. The end joints shall be centered on the bottom flange of the joists and offset a minimum of one joist spacing from those of the first layer. I.E. joists at 24 inches (610 mm) on center, offset is 24 inches (610 mm). Additionally, the second layer of wallboard is attached to the first layer with 1 ½ inch (38 mm) Type G drywall screws at 12 inches (305 mm) on center, placed 2 inches (51 mm) either side of the end joints of the second layer.
 - Ceiling attachment with Resilient Channels: The ceiling is attached as described above except use 1 3/8 inch (35 mm) long Type S screws and 1 3/4 inch (44 mm) Type S screws for the first and second layer, respectively.
- Finish System (not shown): The face layer joints shall be covered with tape and coated with joint compound. Screw heads shall also be covered with joint compound.

Qualified Adhesives for use in BCI® Joists		
Flange-to-Flange Endjoint	Web-to-Flange Joint	Web-to-Web Endjoint
Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322 or WD3-A325 / UX-100)	Phenol-Resorcinol-Formaldehyde Emulsion Polymer Isocyanate - (Ashland Isoset WD3-A322/CX-47)	Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322/UX-100) Emulsion Polymer Isocyanate - (Ashland Isoset WD3-A322/CX-47) Phenol-Resorcinol-Formaldehyde

BCI® Assembly 2 (1 Hour Fire Rated Assembly, 2 Layers of 1/2" Gypsum)

The following fire resistant designs are listed in accordance with ASTM-E119 and CAN/ULC-S101

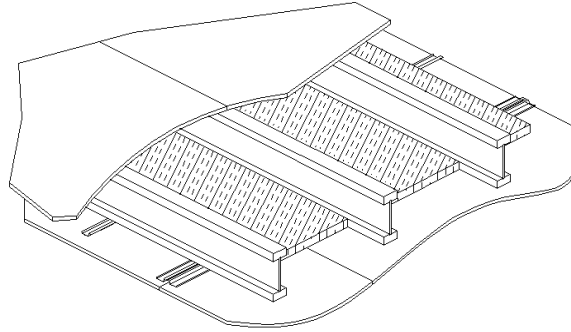


- Finished Flooring: Minimum 23/32 inch (18 mm) thick, tongue and groove sheathing, having exterior glue, on joists spaced a maximum of 24 inches (610 mm) on center. A modified contact construction adhesive shall be applied to the top of the joists prior to placing sheathing. The sheets shall be installed with their long edge perpendicular to the joists with end joints centered over the top flange of joists and staggered one joist spacing with adjacent sheets. Except for a minimum nail size of 8d common, flooring shall be installed per code requirements.
- Insulation (optional, except as noted for sound rating): Maximum 3-1/2" Glass fiber insulation fitted between the joists.
- Structural Members: Minimum 9 ½ inch (241 mm) deep BCI® joists spaced a maximum of 24 inches (610 mm) on center. Minimum flange dimensions are 1 1/8 inch (29 mm) thick by 1 ½ inch (38 mm) wide. Holes in webs for ducts or wiring are limited to those noted in the code evaluation report.
- Resilient Channels (optional, except as noted for sound rating): Attached perpendicular to the bottom flange of the joists with one 1 ¼ inch (32 mm) Type S drywall screw. Channels are spaced a maximum of 16 inches (406 mm) on center.
- Gypsum Wallboard Ceiling: Two layers of ½ inch (13 mm) Type C gypsum wallboard attached with the long edge perpendicular to the joists as follows:
 - Wallboard Layer 1: The first layer of wallboard is attached to the bottom flange of the joists using 1 ¾ inch (44 mm) Type W or S drywall screws at 12 inches (305 mm) on center. The end joints of the wallboard shall be centered on the bottom flange of the joist and shall be staggered the equivalent of two joist spacings with those of adjacent sheets. I.E. joists at 24 inches (610 mm) on center, offset is 48 inches (1219 mm).
 - Wallboard Layer 2: The second layer of wallboard is attached to the bottom flange of the joists through the first layer using 2 inch (51 mm) Type W or S drywall screws spaced 12 inches (305 mm) on center on intermediate joists and 8 inch (203 mm) on center at end joints. The longitudinal joints of the second layer of wallboard shall be offset 24 inches (610 mm) from those of the first layer. The end joints shall be centered on the bottom flange of the joists and offset a minimum of one joist spacing from those of the first layer. I.E. joists at 24 inches (610 mm) on center, offset is 24 inches (610 mm). Additionally, the second layer of wallboard is attached to the first layer with 1 ½ inch (38 mm) Type G drywall screws at 8 inches (203 mm) on center, placed 6 inches (152 mm) either side of the end joints of the second layer.
 - Ceiling attachment with Resilient Channels: The ceiling is attached as described above except use 1 ¼ inch (32 mm) and 1 5/8 inch (41 mm) Type S screws spaced at 12 inches (305 mm) on center for the first and second layer, respectively. End joints of the first layer shall be centered on the resilient channels. End joints of the second layer shall be centered between resilient channels and attached to the first layer with 1 ½ inch (38 mm) Type G drywall screws at 12 inches (305 mm) on center with 1 ½" (38 mm) end distance.

Qualified Adhesives for use in BCI® Joists		
Flange-to-Flange Endjoint	Flange-to-Web Joint	Web-to-Web Endjoint
Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland Isoaset WD3-A322 or WD3-A325 / UX-100)	Phenol-Resorcinol-Formaldehyde Emulsion Polymer Isocyanate - (Ashland Isoaset WD3-A322/CX-47)	Polyurethane Emulsion Polymer - (Ashland Isoaset WD3-A322/UX-100) Emulsion Polymer Isocyanate - (Ashland Isoaset WD3-A322/CX-47) Phenol-Resorcinol-Formaldehyde

BCI® Assembly 3 (1 Hour Fire Rated Assembly, 1 Layer of 5/8" Gypsum)

The following fire resistant designs are listed in accordance with ASTM-E119 and CAN/ULC-S101

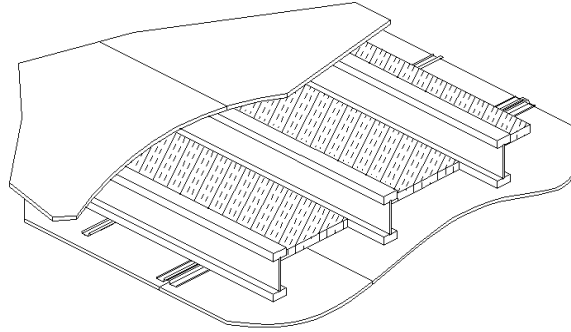


- Finished Flooring: Minimum 23/32 inch (18 mm) thick, tongue and groove sheathing, having exterior glue, on joists spaced a maximum of 24 inches (610 mm) on center. A modified contact construction adhesive shall be applied to the top of the joists prior to placing sheathing. The sheets shall be installed with their long edge perpendicular to the joists with end joints centered over the top flange of joists and staggered one joist spacing with adjacent sheets. Except for a minimum nail size of 8d common, flooring shall be installed per code requirements.
- Insulation: Nominal 1-1/2 inch (38 mm) thick, minimum 2.8 pcf (45 kg/m³) mineral fiber insulation batts. Batts shall be installed parallel with the joists, friction-fitted between the sides of the I-joist flanges. The ends of the batts shall be centered over resilient channels.
- Structural Members: Minimum 9 ½ inch (241 mm) deep BCI® joists spaced a maximum of 24 inches (610 mm) on center. Minimum flange dimensions are 1 1/2 inch (38 mm) thick by 3-1/2 inch (59 mm) wide. Holes in webs for ducts or wiring are limited to those noted in the code evaluation report.
- Resilient Channels: Minimum 0.019 inch (0.5 mm) thick galvanized steel resilient channels, attached perpendicular to the I-joists using 1 5/8 inch (41 mm) long Type W drywall screws. Resilient channels spaced 16 inches (406 mm) on center and doubled at each wallboard end joint extending to the next joist beyond each joint.
- Gypsum Wallboard: 5/8 inch (16 mm) thick Type C gypsum wallboard. The wallboard shall be installed with the long edge perpendicular to the furring channels and fastened to each channel with minimum 1 1/8 inch (28.5 mm) long Type S screws spaced 12 inches (305 mm) on center. End joints of wallboard staggered a minimum of two joist spacings. I.E. joists at 24 inches (610 mm) on center, offset is 48 inches (1219 mm).
- Finish System (not shown): The face layer joints shall be covered with tape and coated with joint compound. Screw heads shall also be covered with joint compound.

Qualified Adhesives for use in BCI® Joists		
Flange-to-Flange Endjoint	Flange-to-Web Joint	Web-to-Web Endjoint
Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322 or WD3- A325 / UX-100)	Phenol-Resorcinol-Formaldehyde Emulsion Polymer Isocyanate - (Ashland Isoset WD3-A322/CX-47)	Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322/UX-100) Emulsion Polymer Isocyanate - (Ashland Isoset WD3-A322/CX-47) Phenol-Resorcinol-Formaldehyde

BCI® Assembly 4 (45 Min. Fire Rated Assembly, 1 Layer of 5/8" Gypsum)

The following fire resistant designs are listed in accordance with ASTM-E119 and CAN/ULC-S101

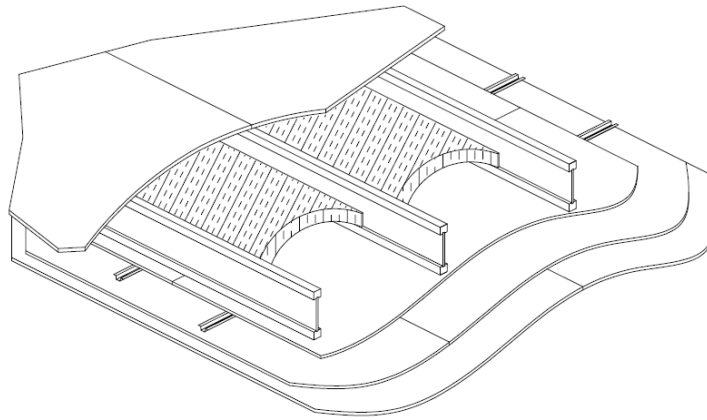


- Finished Flooring: Minimum 23/32 inch (18 mm) thick, tongue and groove sheathing, having exterior glue, on joists spaced a maximum of 24 inches (610 mm) on center. A modified contact construction adhesive shall be applied to the top of the joists prior to placing sheathing. The sheets shall be installed with their long edge perpendicular to the joists with end joints centered over the top flange of joists and staggered one joist spacing with adjacent sheets. Except for a minimum nail size of 8d common, flooring shall be installed per code requirements.
- Insulation: Nominal 3-1/2 inch (89 mm) thick, minimum 2.5 pcf mineral fiber insulation batts. Batts shall be installed parallel with the joists, on top of the furring channels and under the bottom flange of the joists, with the sides butted against the support clips. The ends of the batts shall be centered over furring channels.
- Structural Members: Minimum 9 ½ inch (241 mm) deep BCI® joists spaced a maximum of 24 inches (610 mm) on center. Minimum flange dimensions are 1-1/8 inch (28.5 mm) thick by 2 inch (51 mm) wide. Holes in webs for ducts or wiring are limited to those noted in the code evaluation report.
- Resilient Channels: Minimum 0.019 inch (0.5 mm) thick galvanized steel resilient channels, attached perpendicular to the I-joists using 1 5/8 inch (41 mm) long Type W drywall screws. Resilient channels spaced 16 inches (406 mm) on center and doubled at each wallboard end joint extending to the next joist beyond each joint.
- Gypsum Wallboard: 5/8 inch (16 mm) thick Type C gypsum wallboard. The wallboard shall be installed with the long edge perpendicular to the furring channels and fastened to each channel with minimum 1 1/8 inch (28.5 mm) long Type S screws spaced 12 inches (305 mm) on center. End joints of wallboard staggered a minimum of two joist spacings. I.E. joists at 24 inches (610 mm) on center, offset is 48 inches (1219 mm).
- Finish System (not shown): The face layer joints shall be covered with tape and coated with joint compound. Screw heads shall also be covered with joint compound.

Qualified Adhesives for use in BCI® Joists		
Flange-to-Flange Endjoint	Flange-to-Web Joint	Web-to-Web Endjoint
Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322 or WD3- A325 / UX-100)	Phenol-Resorcinol-Formaldehyde Emulsion Polymer Isocyanate - (Ashland Isoset WD3-A322/CX-47)	Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322/UX-100) Emulsion Polymer Isocyanate - (Ashland Isoset WD3-A322/CX-47) Phenol-Resorcinol-Formaldehyde

BCI Assembly 5 (2 Hour Fire Rated Assembly, 3 Layers of 5/8" Gypsum)

The following fire resistant designs are listed in accordance with ASTM-E119 and CAN/ULC-S101

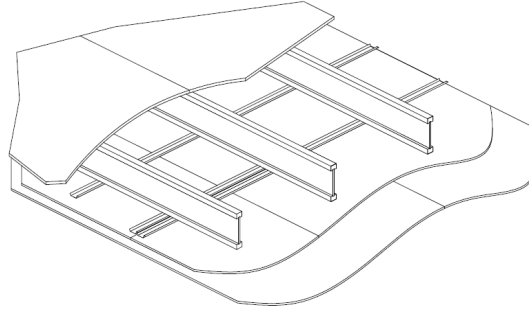


- Finished Flooring: Minimum 23/32 inch (18 mm) thick, tongue and groove sheathing, having exterior glue, on joists spaced at a maximum of 24 inches (610 mm) on center. A modified contact construction adhesive shall be applied to the top of the joists prior to placing sheathing. The sheets shall be installed with their long edge perpendicular to the joists with end joints centered over the top flange of joists and staggered one joist spacing with adjacent sheets. Except for a minimum nail size of 8d common, flooring shall be installed per code requirements.
- Insulation (optional, except when required for sound rating): 3-1/2 inch (89mm) thick unfaced fiberglass insulation fitted between I-joists supported by stay wires spaced 12 inches (305 mm) on center along the joist bottom flange.
- Structural Members: Minimum 9 1/2 inch (241 mm) deep BCI joists spaced a maximum of 24 inches (610 mm) on center. Minimum flange dimensions are 1 1/8 inch (28.5 mm) thick by 2 inch (50.8 mm) wide.
- Furring Channels: Minimum 0.0179 inch (0.45 mm) thick galvanized steel hat-shaped furring channels, attached perpendicular to the I-joists using 1-5/8 inch (41 mm) long drywall screws. Furring channels spaced 16 inches (406 mm) on center (furring channels used to support the second and third layers of gypsum wallboard).
- Gypsum Wallboard Ceiling: Three layers of minimum 5/8 inch (16 mm) Type C gypsum wallboard as follows:
 - Wallboard Base Layer: Base layer of wallboard attached to bottom flange of I-joists using 1-5/8 inch Type S drywall screws at 12 inches on center with the long dimension perpendicular to I-joists. End joints of wallboard centered on bottom flange of the I-joist and staggered from end joints of adjacent sheets.
 - Wallboard Middle Layer: Middle layer of wallboard attached to furring channels using 1 inch Type S drywall screws at 12 inches on center with the long dimension perpendicular to furring channels. End joints of wallboard centered on a furring channel, staggered from end joints of adjacent sheets and staggered from edge joints on the base layer.
 - Wallboard Face Layer: Face layer of wallboard attached to furring channels through middle layer using 1-5/8 inch Type S drywall screws at 8 inches on center with the long dimension perpendicular to furring channels. End joints of wallboard centered on a furring channel, staggered from end joints of adjacent sheets and staggered 32 inches from end joints on the middle layer. Edge joints of face layer offset 24 inches from those of middle layer.
- Finish System (not shown): The face layer joints shall be covered with tape and coated with joint compound. Screw heads shall also be covered with joint compound.

Qualified Adhesives for use in BCI® Joists		
Flange-to-Flange Endpoint	Web-to-Flange Joint	Web-to-Web Endpoint
Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322 / UX-100 or WD3-A325 / UX100)	Phenol-Resorcinol-Formaldehyde Emulsion Polymer Isocyanate - (Ashland Isoset WD3-A322/CX-47)	Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322 / UX-100) Emulsion Polymer Isocyanate – (Ashland Isoset WD3-A322/CX-47)

AJS Assembly 1 (1 Hour Fire Rated Assembly, 2 Layers of 5/8" Gypsum)

The following fire resistant designs are listed in accordance with ASTM-E119 and CAN/ULC-S101

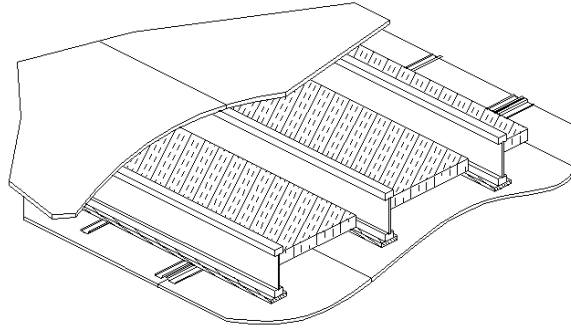


- Finished Flooring: Minimum 23/32 inch (18 mm) thick, tongue and groove sheathing, having exterior glue, on joists spaced at a maximum of 24 inches (610 mm) on center. A modified contact construction adhesive shall be applied to the top of the joists prior to placing sheathing. The sheets shall be installed with their long edge perpendicular to the joists with end joints centered over the top flange of joists and staggered one joist spacing with adjacent sheets. Except for a minimum nail size of 8d common, flooring shall be installed per code requirements.
- Insulation (optional, except as required for sound rating): Max 3-1/2" glass fiber insulation fitted between the joists.
- Structural Members: Minimum 9 1/2 inch (241 mm) deep AJS joists spaced a maximum of 24 inches (610 mm) on center. Minimum flange dimensions are 1 1/2 inch (38 mm) thick by 2 1/2 inch (63.5 mm) wide.
- Resilient Channels: Attached perpendicular to the bottom flange of the joists with one 1 ¼ inch (32 mm) Type S drywall screw. Channels are spaced a maximum of 16 inches (406 mm) on center. Resilient channels must be doubled at a layer one gypsum board end joint. The end of a board will be fastened to a resilient channel 1-1/2" from the end joint.
- Gypsum Wallboard Ceiling: Two layers of 5/8 inch (16 mm) Type C gypsum wallboard attached with the long edge perpendicular to the resilient channels as follows:
 - Wallboard Layer 1: The first layer of wallboard is attached to the bottom flange of the joists using 1 3/8 inch (35 mm) S drywall screws at 24 inches (610 mm) on center. The end joints of the wallboard must be staggered 48 inches (1219mm).
 - Wallboard Layer 2: The second layer of wallboard is attached to the bottom flange of the joists through the first layer using 1 3/4 inch (44.5 mm) Type S drywall screws spaced 12 inches (305 mm) on center. The longitudinal joints of the second layer of wallboard shall be offset 24 inches (610 mm) from those of the first layer. The end joints must be offset a minimum of 24 inches (610mm) from those of the first layer. Additionally, the second layer of wallboard is attached to the first layer with 1 ½ inch (38 mm) Type G drywall screws at 12 inches (305 mm) on center, placed 2 inches (51 mm) either side of the end joints of the second layer.
- Finish System (not shown): The face layer joints shall be covered with tape and coated with joint compound. Screw heads shall also be covered with joint compound.

Qualified Adhesives for use in AJS® Joists		
Flange-to-Flange Endjoint	Web-to-Flange Joint	Web-to-Web Endjoint
Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322 / UX-100 or WD3-A300 / UX200)	Phenol-Resorcinol-Formaldehyde Emulsion Polymer Isocyanate - (Ashland Isoset WD3-A322/CX-47)	Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland Isoset WD3-A322 / UX-100 or WD3-A300 / UX200)

AJS Assembly 2 (1 Hour Fire Rated Assembly, 1 Layer of 5/8" Gypsum w/ Wood Setting Strip)

The following fire resistant designs are listed in accordance with ASTM-E119 and CAN/ULC-S101



- Finished Flooring: Minimum 23/32 inch (18 mm) thick, tongue and groove sheathing, having exterior glue, on joists spaced a maximum of 24 inches (610 mm) on center. A modified contact construction adhesive shall be applied to the top of the joists prior to placing sheathing. The sheets shall be installed with their long edge perpendicular to the joists with end joints centered over the top flange of joists and staggered one joist spacing with adjacent sheets. Flooring shall be installed per code requirements.
- Insulation: Minimum 2 inch (51 mm) thick, minimum 3.5 pcf (56 kg/m³) mineral fiber insulation batts, Batts shall be installed parallel with the joists, supported by setting strip edges, friction-fitted between the sides of the I-joist flanges. The ends of the batts shall be centered over resilient channels.
- Structural Members: Minimum 9 1/2 inch (241 mm) deep AJS 140 joists spaced a maximum of 24 inches (610 mm) on center. Minimum flange dimensions are 1 1/2 inch (38 mm) thick by 2 1/2 inch (63.5 mm) wide. Holes in webs for ducts or wiring are limited to those noted in current code evaluation reports.
- Setting Strips: Nominal 1x4 wood setting strips centered on the bottom flange and attached with 1 1/2 inch (38 mm) long drywall screws at 24 inches (610 mm) on center.
- Resilient Channels: Minimum 0.019 inch (0.5 mm) thick galvanized steel resilient channels, attached perpendicular to the I-joists using 2 inch (51 mm) long drywall screws. Resilient channels spaced 16 inches (406 mm) on center and doubled at each wallboard end joint extending to the next joist beyond each joint.
- Gypsum Wallboard: 5/8 inch (16 mm) thick Type C gypsum wallboard installed with long dimension perpendicular to resilient channels and fastened to each channel with minimum 1 1/8 inch (29 mm) long Type S drywall screws spaced 7 inches (178 mm) on center. End joints of wallboard staggered a minimum of two joist spacings. I.E. joists at 24 inches (610 mm) on center, offset is 48 inches (1219 mm).
- Finish System (not shown): The face layer joints shall be covered with tape and coated with joint compound. Screw heads shall also be covered with joint compound.

Qualified Adhesives for use in AJS® Joists		
Flange-to-Flange Endjoint	Web-to-Flange Joint	Web-to-Web Endjoint
Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland IsoSet WD3-A322 / UX-100 or WD3-A300 / UX200)	Phenol-Resorcinol-Formaldehyde Emulsion Polymer Isocyanate - (Ashland IsoSet WD3-A322/CX-47)	Phenol-Resorcinol-Formaldehyde Polyurethane Emulsion Polymer - (Ashland IsoSet WD3-A322 / UX-100 or WD3-A300 / UX200)