



Heber City Building Department

Accessory Apartments

This includes basement finishes that include kitchens and walk-out entrances

Effective date: 11/1/16

International Residential Code

R302.3 Two-family dwellings. *Dwelling units* in two-family dwellings shall be separated from each other by wall and/or floor assemblies having not less than a 1-hour fire-resistance rating when tested in accordance with ASTM E 119 or UL 263. Fire-resistance-rated floor/ceiling and wall assemblies shall extend to and be tight against the *exterior wall*, and wall assemblies shall extend from the foundation to the underside of the roof sheathing.

Exception:

1. A fire-resistance rating of $\frac{1}{2}$ hour shall be permitted in buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13.
2. Wall assemblies need not extend through *attic* spaces when the ceiling is protected by not less than $\frac{5}{8}$ -inch (15.9 mm) Type X gypsum board and an *attic* draft stop constructed as specified in Section R302.12.1 is provided above and along the wall assembly separating the *dwellings*. The structural framing supporting the ceiling shall also be protected by not less than $\frac{1}{2}$ -inch (12.7 mm) gypsum board or equivalent.

R302.3.1 Supporting construction. When floor assemblies are required to be fire-resistance rated by Section R302.3, the supporting construction of such assemblies shall have an equal or greater fire-resistance rating.

Note: Existing $\frac{1}{2}$ " gypsum board has **no fire rating** in and of itself.

Carefully evaluating the costs and difficulties in installing the required gypsum board may make putting in a fire sprinkler system actually more cost effective and less intrusive. However fire sprinkler systems must be throughout the entire building. (See exception #1 above.)

Plan submittals showing finished basement details.

Where the basement has an exterior access entrance (not through main level) and the finish includes a kitchen it will be considered a second dwelling. The required fire separations will be needed in order to proceed with the permit issuance. All ceilings will need to be one (1) hour assemblies and will be dictated by the ESR report for the specific floor joist MFG.

Furnace/water heater rooms shall be enclosed in a one (1) hour rated wall and the door will be 20 min. rated door. (These rooms are impossible to isolate with a rated floor ceiling assembly.)

Interior stairwells to upper levels shall be isolated with one (1) hour wall assemblies on the basement side of the wall and doors to the stair well shall be 20 min. rated doors. (This includes doors to storage under stairs.) The $\frac{1}{2}$ gypboard on the inside of the stair well (usually finished with the original house) will be acceptable.

Laundry rooms are not required in homes and therefore **will not** be a considering factor to whether or not a basement is a separate dwelling. Kitchens have facilities for sanitation (sink) and cooking (oven, cook top, range.)

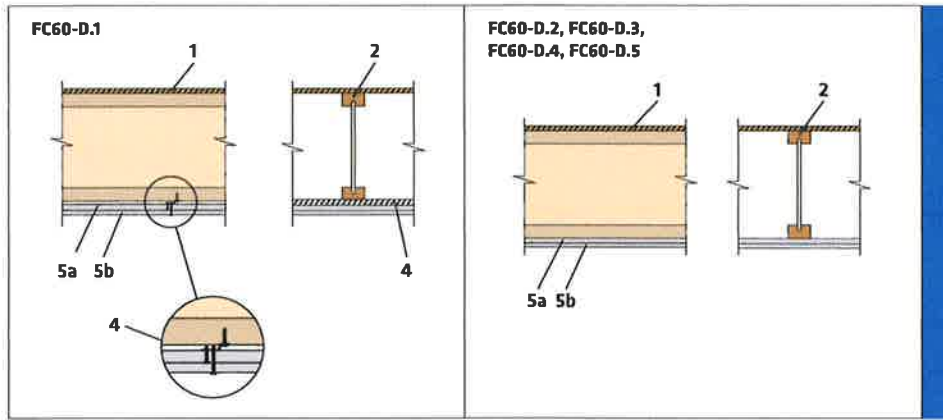
Familial relationship of occupants using the basement space **will not** be a considering factor to whether or not the basement is a separate dwelling.

Planned communities that prohibit second dwellings in basements are not restricted by the above basement considerations of additional kitchens and walk out basements.

The building codes require that an added level of protection be established for the occupants of the respective dwellings. This includes additional fire safety and the ability of the occupants to control the conditioning of their space and the ability to shut off electrical service to their spaces in the event of an emergency. Therefore the following is required for all accessory apartment requests.

- Show how the required one hour fire separation is achieved.
½ hour if the entire building is fire sprinkled. See the International Residential Code for the specifics. (See above)
- All doors opening between the two dwellings or the fire separation must also be self closing and latching fire rated doors with a 20 minute rating.
- Furnace rooms and interior stair walls must be one hour rated and separate the two dwellings with rated doors.

The following are some of the joist mfg details on how to achieve the one-hour rating. Please select the correct mfg and submit the information for that design.



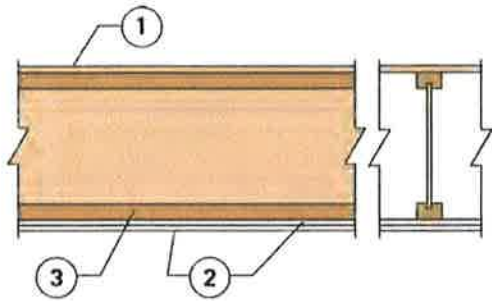
LPI Joist's

ONE-HOUR DOUBLE LAYER FLOOR/CEILING ASSEMBLIES ¹		FC60-D.1	FC60-D.2	FC60-D.3	FC60-D.4	FC60-D.5			
1. Floor Sheathing²		23/32" T & G wood structural panel, nailed	23/32" T & G wood structural panel, nailed	23/32" T & G wood structural panel, nailed	23/32" wood structural panel, glued and nailed	1/2" wood structural panel, glued and nailed			
2. LP I-Joist	Series	All	18, 20Plus, 32Plus, 36, 42Plus, 52Plus, 56		18, 20Plus, 32Plus, 36, 42Plus, 52Plus, 56	All			
	Depth (min.)	9-1/2"	9-1/4"	9-1/4"	9-1/2"	No flange, web and depth requirement			
	Flange Depth (min.)	1-5/16"	1-1/2"	1-1/2"	1-1/2"				
	Flange Area (min.)	1.95 in ²	2.25 in ²	2.25 in ²	2.25 in ²				
	Web Thickness (min.)	3/8"	3/8"	3/8"	3/8"				
	Spacing (max.)	24" o.c.	24" o.c.	24" o.c.	24" o.c.				
3. Insulation		none	none	none	Optional - 3-1/2" unfaced fiberglass for sound control only	none			
4. Channels³	Galvanized Steel Type	0.019" thick resilient channels	none	none	Optional - resilient channels installed for sound control only	none			
	Spacing	16" o.c.			16" o.c.				
	Attachment	1-5/8" Type S drywall screw per joist ⁴							
5. Gypsum Wallboard⁵	5a	Base Layer Thickness (min.) & Type	1/2" Type X	1/2" Type X	1/2" Type C	1/2" Type X	5/8" Type X		
		Attachment to joist/channel (drywall screw)	To channels with 1-1/4" Type S at 12" o.c.	1-5/8" Type S at 12" o.c.	1" Type S at 12" o.c.	1-5/8" Type W at 12" o.c.	1-1/4" Type S or Type W at 24" o.c.		
	5b	Face Layer Thickness (min.) & Type	1/2" Type X	1/2" Type X	1/2" Type C	1/2" Type X	5/8" Type X or veneer base		
		Attachment to joist/channel (drywall screw)	1-5/8" Type S at 12" o.c. to channels through base layer	2" Type S at 12" in field, 8" o.c. at edges to bottom flange through base layer	1-5/8" Type S at 12" o.c. to bottom flange through base layer on intermediate joists and 8" o.c. at end joints.	2-1/4" Type W 12" o.c. to bottom flange or channels when installed	1-7/8" Type S or Type W at 12" o.c. at joints and intermediate joist		
		Attachment to base layer (drywall screw)	1-1/2" Type G screw at 8" o.c. at 1-1/2" from face layer end joints	1-1/2" Type G screw at 8" o.c. at 6" from face layer end joints.	1-1/2" Type G screw at 8" o.c., 6" from end, staggered at 4"	1-1/2" Type G screw at 8" o.c. and 6" from each end joint	1-1/2" Type G screw at 12" o.c.		
Finish system (not shown)		Wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound							
References	LP				Intertek Listing LP/FCA 60-01 (FC-477)				
	IBC ⁶ DCA 3	Item No. 27-1.1 WJ-1.6	Item No. 26-1.1	WJ-1.5	ICC-ES ESR-1305 Fig. 3 in Section 4.6	Item No. 21-1.1			
Sound & Impact Rating		With Channels		Without Channels		Without Channels		With Channels	
		STC	IIC	STC	IIC	STC	IIC	STC	IIC
Without Gypsum	Cushioned Vinyl	-	-	-	-	46	40	50	43
	Carpet & Pad	54	68	-	-	47	68	49	73
With Gypsum	Cushioned Vinyl	-	-	-	-	52	43	53	48
	Carpet & Pad	58 ⁷	59 ⁷	49 ⁷	55 ⁷	51	72	51	77

NOTES:

- Floor/Ceiling assemblies may also be used in a fire-rated Roof/Ceiling application provided they are constructed per specified minimum requirements, except 15/32" square edge panels may be substituted for specified subfloor sheathing.
- Floor topping such as gypsum, lightweight or normal concrete when present provides better sound and impact rating for the assembly.
- Resilient or hat-shaped channels when present are installed perpendicular to I-joists with drywall screw.
- Per IBC requirement, DCA-3 WJ-1.6 requires 1-1/4" screw length.
- Gypsum wallboard is installed perpendicular to the I-joist, or perpendicular to channels when present.
- IBC 2012 Table 721.1(3)
- STC and IIC values estimated by David L. Adams Associates, Inc.

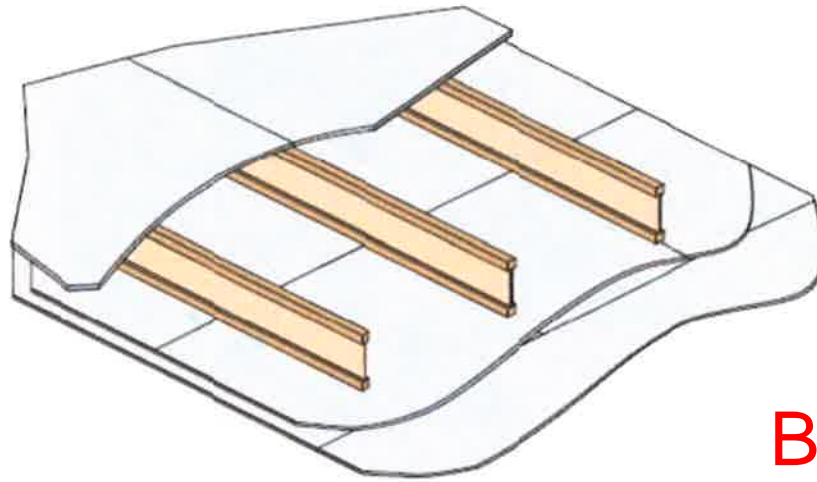
FIGURE 4B—ASSEMBLY B (One-hour Fire-resistance-rated Roof-ceiling or Floor-ceiling Assembly):



Optional resilient channels directly applied to joists or trusses at 16 inches on-center, supporting both layers of gypsum board, are necessary to achieve sound ratings.

TJI Joist's

Assembly Component		Component Specifications	Installation
1	Sheathing	<ul style="list-style-type: none"> Single layer of 48/24 span-rated, tongue-and-groove, sheathing (Exposure 1). When used as a roof-ceiling assembly, the decking is permitted to be any wood deck recognized in the code. 	<ul style="list-style-type: none"> Nailed and glued to the top of the TJI® joists. Construction adhesive conforming to ASTM D3498 must be applied to the top of the joists prior to placing sheathing. All butt joints of the sheathing must be located over framing members.
2	Gypsum Board	<ul style="list-style-type: none"> Two layers of 1/2-inch-thick NGC Gold Bond® Fire-Shield C gypsum board, or Two layers of 1/2-inch-thick USG SHEETROCK® Brand FIRECODE® C gypsum panels, or Two layers of 5/8-inch-thick, Type X gypsum board complying with ASTM C36. 	<ul style="list-style-type: none"> For TJI® joists spaced 24 inches on-center or less, attach ceiling to joist bottom flange. The first layer of gypsum board must be installed perpendicular to the TJI joists and attached using 1 5/8-inch-long, Type S screws spaced 12 inches on-center. The second layer must be installed with the joints staggered from the first layer. The second layer must be fastened to the TJI joists with 2-inch-long, Type S screws spaced 12 inches on-center in the field and 8 inches on-center at the butt joints. Type G screws, 1 1/2 inches long, must be spaced 8 inches on-center and 6 inches from each side of the transverse joints of the second layer. The second layer must be finished with joint tape and compound.
3	TJI® Joist	TJI® joist.	<ul style="list-style-type: none"> Installed in accordance with this report, with a maximum spacing of 24 inches on-center for floor-ceiling assemblies. When used in roof-ceiling assemblies, the joists are permitted to be spaced a maximum of 48 inches on-center.
(not shown)	Optional Glass Fiber Insulation	Minimum 3 1/2-inch-thick glass fiber insulation or glass fiber insulation rated R-30 or less.	<ul style="list-style-type: none"> May be installed in the joist plenum when resilient channels are used. The insulation must be placed above the resilient channels between the joist bottom flanges.
(not shown)	Optional Resilient Channels	RC-1 resilient channels spaced 16 inches on-center (may be increased to 24 inches on-center if the joists are spaced 16 inches on-center).	<ul style="list-style-type: none"> Fasten perpendicular to the TJI joists using 1-inch-long, Type S screws. When resilient channels are used, the first layer of the ceiling membrane must be installed perpendicular to the channels and attached to the resilient channels using 1-inch-long, Type S screws spaced 12 inches on-center. The second layer must be installed with the joints staggered from the first layer and attached using 1 5/8-inch-long, Type S screws. The screw spacing for the second layer of gypsum board must be a maximum of 12 inches on-center in the field and 8 inches on-center at the butt joints. Type G screws, 1 1/2 inches long, must be spaced 8 inches on-center and 6 inches from each side of the transverse joints of the second layer. The second layer must be finished with joint tape and compound.
(not shown)	Stripping	Minimum of nominal 2-by-4 construction-grade Douglas fir lumber for spans up to 5 feet.	<ul style="list-style-type: none"> In roof-ceiling assemblies in which the TJI® joists are spaced more than 24 inches on-center, the ceiling, including the resilient channels, must be applied to stripping spaced 24 inches on-center. The attachment of the ceiling membrane to the stripping members must be similar to the attachment of the ceiling membrane to the TJI® joists. Attached to the joist bottom flange using a minimum of two 10d box nails into each bottom flange. Stripping materials of equivalent strength and attachment are permitted when approved by the code official.



BCI Joist's

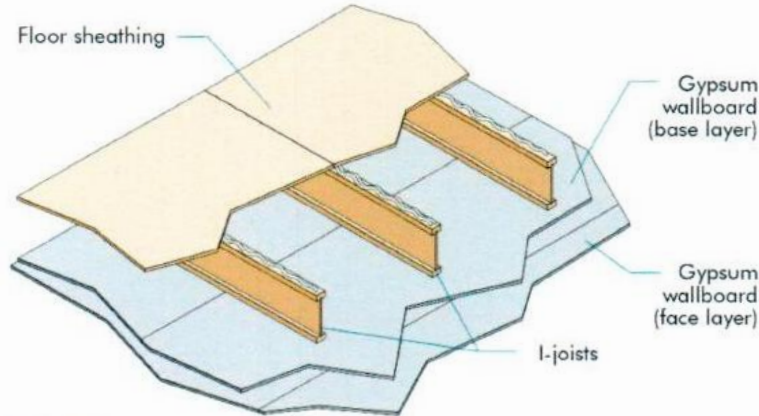
BASE ASSEMBLY		
Component	Material Specification	
Floor Topping (Optional)	Varies	
Reference sound ratings if applicable		
Floor Sheathing	Min. ²³/₃₂-inch (18 mm) T&G Wood Structural Panel	
A modified contact construction adhesive must be applied to the top surface of the I-joist top flanges prior to placing sheathing. The sheets shall be installed with their long edge perpendicular to the joists with end joists centered over the top flange of joists and staggered one joist spacing with adjacent sheets. Floor sheathing must be installed per code requirements.		
Insulation (Optional)	Max 9¹/₂-inch (241 mm) Glass Fiber Insulation	
Reference sound ratings if applicable		
Structural Members	Min. 9¹/₂-inch (241 mm) Deep Joists	
Maximum 24 inch (610 mm) on center spacing. Minimum flange dimensions of 1 ¹ / ₈ -inch (29 mm) thick by 1 ¹ / ₂ -inch (38 mm) wide.		
Resilient Channels (Optional)	Min. 0.019-inch (0.5 mm) Galvanized Resilient Channels	
Attached perpendicular to the bottom flange of the joist with 1 ¹ / ₄ -inch (32 mm) Type S drywall screws. Channels are spaced a maximum of 16 inches (406 mm), 24 inches (610 mm) on center when I-joists are spaced a maximum of 16 inches on center.		
Ceiling	(2) Layers of ⁵/₈-inch (16 mm) Type X Gypsum Wallboard	
<p>Base Layer: Install with long dimension perpendicular to joist length. Attach to the bottom flange of the joists using 1¹/₄-inch (32 mm) Type W drywall screws at 24 inches (610 mm) on center. The end joints of the wallboard must be centered on the bottom flange of the joist and must be staggered the equivalent of two joist spacings with those of adjacent sheets.</p> <p>Face Layer: Install with long dimension perpendicular to joist length. Attach to the bottom flange of the joists through the first layer using 1¹/₈-inch (48 mm) Type W drywall screws spaced at 12 inches (305 mm) on center. The longitudinal joints of this layer must be offset 24 inches (610 mm) from those of the base layer. The end joints must be centered on the bottom flange of the joists and offset a minimum of one joist spacing from those of the base layer. Additionally, face layer end joints are attached to the base layer with 1¹/₂-inch (38 mm) Type G drywall screws at 12 inches (305 mm) on center placed 2 inches (51 mm) either side of the joint.</p> <p>With Resilient Channels: attached as described above except use 1³/₈-inch (35 mm) and 1³/₄-inch (44 mm) Type S screws for the base and face layer, respectively. The end joints of the wallboard must be centered on a resilient channel and must be staggered the equivalent of two joist spacings with those of adjacent sheets.</p> <p>Finish: The face layer joints must be covered with tape and coated with joint compound. Screw heads must also be covered with joint compound.</p>		
SOUND RATING (w/ Resilient Channels)		
Components	STC	IIC
Base Assembly with Carpet and Padding	54	68
Base Assembly with 3 ¹ / ₂ " (89 mm) Insulation	55	46
Base Assembly with additional layer of ⁵ / ₈ " Sheathing and 9 ¹ / ₂ " Insulation	61	50
Base Assembly with Tarkett "Acoustiflor" vinyl and 3 ¹ / ₂ " Insulation	59	50
Base Assembly with cushioned vinyl, ³ / ₄ " Gypsum Concrete and 3 ¹ / ₂ " Insulation	67	51

**FIGURE 2—ONE-HOUR FIRE-RESISTANCE-RATED FLOOR AND ROOF ASSEMBLY
(Two Layers ⁵/₈" Type X Gypsum Wallboard)**



Roseburg Forest Products Assembly RFP1.8 One-Hour Fire Resistance Rated Floor/Ceiling Assembly*

This fire resistance design is listed in accordance with the International Building Code (IBC)
RFPI-40S, RFPI-60S, RFPI-70, RFPI-80S, RFPI-90, RFPI-700, and RFPI-900 I-Joists



A. BASIC ASSEMBLIES

- 1) Floor Topping (Optional): Varies (reference sound ratings if applicable).
- 2) Floor Sheathing: Min. 23/32-inch (18-mm) T&G Wood Structural Panel. The sheets shall be installed with their long edge perpendicular to the joists with end joints centered over the top flange of joists. Floor sheathing must be installed per code requirements.
- 3) Structural Members: Min. 9-1/4 inches (235 mm) Deep I-Joists. Max. 24 inches (610 mm) on center spacing. Min. flange thickness of 1-1/2 inches (38 mm) and each flange area of at least 2.25 inches² (1,452 mm²). Min. web thickness of 3/8 inch (9.5 mm).
- 4) Ceiling: Two layers of 1/2-inch (13-mm) Type X Gypsum Wallboard.
 - a) Base Layer: Install with long dimension perpendicular to joist length. Attach to the bottom flange of the joists using 1-5/8-inch (41-mm) Type S drywall screws at 12 inches (305 mm) on center. The end joints of the wallboard must be centered on the bottom flange of the joist and must be staggered the equivalent of two joist spacings with those of adjacent sheets.
 - b) Face Layer: Install with long dimension perpendicular to joist length. Attach to the bottom flange of the joists through the base layer using 2-inch (51-mm) Type S drywall screws spaced at 12 inches (305 mm) on center on intermediate joists and 8 inches (203 mm) on center at end joints. Face layer end joint must not occur on the same joist as base layer end joints. The longitudinal joints of this layer must be offset 24 inches (610 mm) from those of the base layer. Additionally, face layer end joints are attached to the base layer with 1-1/2-inch (38-mm) Type G drywall screws at 8 inches (203 mm) on center placed 6 inches (152 mm) either side of the joint.
 - c) Finish: The face layer joints must be covered with tape and coated with joint compound. Screw heads must also be covered with joint compound.

B. SOUND RATING

Information not available.

C. SIMILAR ASSEMBLIES

- 1) 2009 IBC Table 720.1(3) Item 26-1.1 and 2012/2015 IBC Table 721.1(3) Item 26-1.1

* This assembly may also be used in a fire-rated roof/ceiling assembly, but only when constructed exactly as described.