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The ASTC Ratings of Mid-rise Wood Constructions Using CertainTeed SilentFX® QuickCut Gypsum Board

CertainTeed
Report A1-007750.3
Second Edition
30 March 2018

This second edition of the report was superseded by a third edition in August 2019. The third edition is located at: https://doi.org/10.4224/40001230





Executive Summary

This second edition of this report was superseded by a third edition in August 2019. The third edition can be found through the following link: https://doi.org/10.4224/40001230

The 2015 edition of the National Building Code of Canada (NBCC) includes significant changes to the acoustic requirements for residential constructions. The 2015 edition defines the acoustic requirements in terms of the Apparent Sound Transmission Class (ASTC) rating which includes contributions from flanking transmission and therefore is a better descriptor of how well the sound insulation of a building will actually protect the inhabitants of the building from unwanted noise than the STC rating which was used in earlier editions of the NBCC. The 2015 NBCC requires an ASTC rating ≥ 47 for constructions between dwelling units.

The ASTC rating that a construction will achieve depends on the design of the building elements including the gypsum board, the framing and the thermal insulation as well as the design of the junctions between the building elements. Changes to the building elements or the junctions will change the ASTC rating.

Fifty five examples of the calculation of the ASTC rating for typical mid-rise wood constructions (single and triple staggered wood stud walls and floors constructed of I-joists) with 15.9 mm (5/8") SilentFX® QuickCut gypsum board, 15.9 mm CertainTeed Type X gypsum board and CertainTeed Sustainable fiberglass insulation are presented. All of the constructions shown in the examples have an ASTC rating which is greater than 47.

In addition to the examples for mid-rise wood framing, an example using 15.9 mm SilentFX® QuickCut gypsum board as a lining on a cross laminated timber (CLT) construction is also presented.

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1. Objective

The 2015 edition of the National Building Code of Canada (NBCC) includes significant changes to the acoustic requirements for residential constructions. Earlier editions of the NBCC described the acoustic requirements in terms of the Sound Transmission Class (STC) rating of the assemblies that separate dwellings in a building. In the 2015 edition, for constructions that separate dwelling units, the requirements based on a STC rating were replaced with new requirements based on the Apparent Sound Transmission Class (ASTC) rating. The NBCC requires that the ASTC rating is at least 47 for constructions between dwelling units. The requirements for constructions that separate dwelling units from elevator shafts or refuse chutes remained unchanged in the 2015 NBCC.

It is important to note that the ASTC rating is not interchangeable with the STC rating. The STC rating only considers the sound transmitted through the common wall or floor between rooms. The ASTC rating includes contributions from other transmission paths between the rooms (referred to as flanking paths as shown in Figure 1) and is therefore a better metric of the sound transmission that occupants in buildings will experience in practice. Since the ASTC rating includes transmission paths other than the direct transmission path, it is typically lower in numerical value than the STC rating of the common wall or floor.

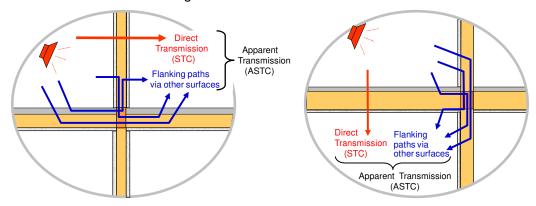


Figure 1: Comparison between STC and ASTC

The 2015 NBCC allows for three methods of demonstrating compliance with the acoustic requirements. The methods include post completion field testing, constructing buildings using the prescribed acceptable solutions found in Part 9 of the NBCC and the prediction of the ASTC rating using the prediction methods based on the standards, ISO 15712 [1] and ISO 10848 [2] and described in detail in the National Research Council Canada Research Report RR-331 *Guide to Calculating Airborne Sound Transmission in Buildings* [3]. The Report RR-331 focuses on the method of showing compliance by the prediction of the ASTC rating.

This report presents all of the laboratory measured data that is required to calculate the ASTC rating of typical mid-rise wood constructions that include the CertainTeed gypsum board and fiberglass insulation products which were evaluated for this study. The method of calculating the ASTC rating is detailed and examples of typical mid-rise wood constructions using 15.9 mm SilentFX® QuickCut gypsum board are presented. The examples include horizontal transmission for side-by-side rooms and vertical transmission for one-above-the-other rooms.

Also presented in this report are the ΔSTC ratings of linings for CLT¹ constructions which can be used to determine the ASTC ratings for CLT constructions which use the linings as explained in the National Research Council Canada Research Report RR-335 *Apparent Sound Insulation in Cross-Laminated Timber Buildings* [4].

2. ASTC Examples Summary

Fifty five examples of the calculation of the ASTC rating of mid-rise wood constructions using 15.9 mm SilentFX® QuickCut Gypsum Board directly attached to single or triple staggered stud walls are presented. The examples use the simplified method of the calculations as detailed in the National Research Council Report RR-331 to calculate the ASTC rating of side-by-side rooms and one-above-the-other rooms.

The examples include two different floor systems.

Floor system 1 is assembly FC-1 from Client Report A1-100035-02.1 available from http://doi.org/10.4224/21274579

The floor details include:

One layer of 15.9 mm (5/8") OSB directly attached to wood I-joists (type TJ1 110) 302 mm (12") deep spaced 406 mm (16") on center. Rim board (45 mm (1-3/4") thick and 302 mm deep) installed at each end of the I-joists. The cavities between the I-joists filled with 150 mm R20 glass fiber insulation. Resilient channels installed perpendicular to the wood I-joists and spaced 406 mm on center. Two layers of 12.7 mm (1/2") Type X gypsum board installed with long axis perpendicular to the resilient channels. See report A1-100035-02.1 for further details.

Floor system 2 has a UL/cUL fire resistance rating of one hour (UL/cUL Design M535). The floor details are described in UL Product Spec™ BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada: http://productspec.ul.com/document.php?id=BXUV.M535

The floor details include

One layer of 15 mm (19/32") OSB directly attached to wood I-joists (type TJ1 110) 241.3 mm (9.5") deep spaced 406 mm (16") on center. Doubled-up rim board (32 mm (1-1/4") thick and 241.3 mm deep) installed at each end of the I-joists. The cavities between the I-joists filled with 150 mm R20 glass fiber insulation. Resilient channels installed perpendicular to the wood I-joists and spaced 305 mm (12") on center. Two courses of resilient channel positioned back to back and oriented opposite at gypsum panel butt-joints. Channel splices overlapped 102 mm (4") beneath wood trusses. Base layer of 15.9 mm (5/8") SilentFX® QuickCut Drywall 1200 mm (4") wide, installed perpendicular to resilient channels. Face layer of 2.7 mm (1/2") thick x 1200 mm (4") wide CertainTeed Type C fire resistant drywall installed perpendicular to resilient channels. See reference BXUV.M535 for further details.

Note that some of the floors shown in the example include bare subfloors. The examples are shown with bare subfloors to demonstrate the minimum ASTC rating these constructions can achieve. It is expected that in practice, floor finishes such as carpeting or tile will be installed over the bare subfloor. The addition of floor finishes will in most cases achieve the same ASTC ratings or increase the ASTC ratings shown in the examples.

The ASTC ratings for the constructions in the examples are summarized in the following tables. The constructions are sorted by ASTC ratings. The constructions which achieve the highest ASTC ratings are those which use 15.9 mm SilentFX® QuickCut Drywall in both rooms.

2.1 Summary - Side-By-Side Rooms - Non-loadbearing Common Wall

Example	ASTC	Report Page	Fran	ming	Shear	Gypsum Board Directly Attached to	Floor System	Floor Topping
Number	Rating	Number	Common Wall	Flanking Walls	Wall	the Wood Studs	1 loci dystem	1 loor Topping
2	50	<u>16</u>	Single Staggered Studs	Triple Staggered Studs	No	Mix of 15.9 mm SilentFX® QuickCut Gypsum Board and 15.9 mm Type X	1	None
8	50	<u>34</u>	"	"	Yes	"	п	n
10	50	<u>38</u>	"	"	Yes	"	Ħ	Two layers of 12 mm cementitious flooring underlayment
12	50	<u>42</u>	"	"	Yes	"	п	38 mm thick gypsum concrete on a 9 mm closed cell foam
45	50	<u>28</u>	"	II	No	"	2	None
47	50	<u>46</u>	"	"	Yes	"	n	"
4	51	<u>20</u>	"	"	No	"	1	Two layers of 12 mm cementitious flooring underlayment
6	51	<u>24</u>	"	"	No	"	n	38 mm thick gypsum concrete on a 9 mm closed cell foam
7	53	<u>32</u>	"	"	Yes	15.9 mm SilentFX® QuickCut Gypsum Board	n	None
13	53	<u>48</u>	"	"	Yes	"	п	n
9	53	<u>36</u>	"	"	Yes	"	n	Two layers of 12 mm cementitious flooring underlayment
11	53	<u>40</u>	"	"	Yes	"	Ħ	38 mm thick gypsum concrete on a 9 mm closed cell foam
46	53	<u>44</u>	"	"	Yes	"	2	None
1	54	<u>14</u>	"	n	No	"	1	n

Example	ASTC	Report	Framing		Shear	Gypsum Board Directly Attached to	Floor System	Floor Topping
Number Rating	Page Number	Common Wall	Flanking Walls	Wall	the Wood Studs	Floor System		
14	54	<u>50</u>	Single Staggered Studs	Triple Staggered Studs	Yes	15.9 mm SilentFX® QuickCut Gypsum Board	1	None
3	54	<u>18</u>	11	"	No	•	"	Two layers of 12 mm cementitious flooring underlayment
5	54	<u>22</u>	11	п	No	•	11	38 mm thick gypsum concrete on a 9 mm closed cell foam
44	54	<u>26</u>	"	"	No	•	2	None

2.2 Summary - Side-By-Side Rooms - Loadbearing Common Wall

Example	ASTC		port Framing		Shear	Gypsum Board Directly Attached to	Floor System	Floor Topping
Number	Rating	Number	Common Wall	Flanking Walls	Wall	the Wood Studs	1 loor dystem	Tiodi Topping
16	48	<u>56</u>	Triple Staggered Studs	Single Staggered Studs	No	Mix of 15.9 mm SilentFX® QuickCut Gypsum Board and 15.9 mm Type X	1	None
22	48	<u>74</u>	II	"	Yes	"	п	п
18	48	<u>60</u>	II	"	No		п	Two layers of 12 mm cementitious flooring underlayment
24	48	<u>78</u>	"	"	Yes	"	n	п
20	48	<u>64</u>	"	"	No		n	38 mm thick gypsum concrete on a 9 mm closed cell foam
26	48	<u>82</u>	"	"	Yes	"	п	п
49	48	<u>68</u>	II	"	No	"	2	None
51	48	<u>86</u>	II	"	Yes	"	n	п
48	50	<u>66</u>	"	"	No	15.9 mm SilentFX® QuickCut Gypsum Board	n	п
50	50	<u>84</u>	II	"	Yes	"	n	п
15	51	<u>54</u>	"	"	No	"	1	п
21	51	<u>72</u>	"	"	Yes	"	п	"
27	51	<u>88</u>	"	"	Yes	"	п	п
28	51	<u>90</u>	"	"	Yes	"	n	n

Example	ASTC	Report	Framing		Shear Wall	Gypsum Board Directly Attached to the Wood Studs	Floor System	Floor Topping
Number Rating	Page Number	Common Wall	Flanking Walls					
17	51	<u>58</u>	Triple Staggered Studs	Single Staggered Studs	No	15.9 mm SilentFX® QuickCut Gypsum Board	1	Two layers of 12 mm cementitious flooring underlayment
23	51	<u>76</u>	"	"	Yes	"	"	"
19	51	<u>62</u>	"	"	No		"	38 mm thick gypsum concrete on a 9 mm closed cell foam
25	51	<u>80</u>	n	"	Yes	•	"	п

2.3 Summary - Rooms One-above-the-Other

Example	ASTC	C Report	Frai	ming	Shear	Gypsum Board Directly Attached to	E	E. T.	
Number	Rating	Page Number	Floor	Walls	Wall	the Wood Studs	Floor System	Floor Topping	
53	49	108	I-Joists	Single and Triple Staggered	No	Mix of 15.9 mm SilentFX® QuickCut Gypsum Board and 15.9 mm Type X	2	None	
55	49	<u>126</u>	"	"	Yes	"	"	"	
52	50	<u>106</u>	"	"	No	15.9 mm SilentFX® QuickCut Gypsum Board	п		
54	50	<u>124</u>	"	"	Yes	"	"	"	
30	52	<u>96</u>	"	"	No	Mix of 15.9 mm SilentFX® QuickCut Gypsum Board and 15.9 mm Type X	1		
36	52	<u>114</u>	"	"	Yes	"	n	"	
29	52	<u>94</u>	u	11	No	15.9 mm SilentFX® QuickCut Gypsum Board	n		
35	52	<u>112</u>	"	11	Yes	"	n		
41	52	<u>128</u>	"	11	Yes	"	"		
42	52	130	"	"	Yes	11	11	u u	
32	55	100	"	"	No	Mix of 15.9 mm SilentFX® QuickCut Gypsum Board and 15.9 mm Type X	п	Two layers of 12 mm cementitious flooring underlayment	
38	55	<u>118</u>	"	"	Yes	"	"		
31	56	<u>98</u>	II	"	No	15.9 mm SilentFX® QuickCut Gypsum Board	н		
37	56	<u>116</u>	"	11	Yes	"	n		

Example	ASTC	Report			Shear	Gypsum Board Directly Attached to			
	Rating	Page Number	Floor	Walls	Wall	the Wood Studs	Floor System	Floor Topping	
34	61	<u>104</u>	I-Joists	Single and Triple Staggered	No	Mix of 15.9 mm SilentFX® QuickCut Gypsum Board and 15.9 mm Type X	1	38 mm thick gypsum concrete on a 9 mm closed cell foam	
40	61	<u>122</u>	"	"	Yes	"	11	n	
33	63	<u>102</u>	"	"	No	15.9 mm SilentFX® QuickCut Gypsum Board	n	"	
39	63	120	"	"	Yes	"	n .		

3. Standard Scenarios for the ASTC Examples

For the purposes of this report, the ASTC ratings of mid-rise wood constructions are calculated using the Standard Scenarios presented in the National Research Council Canada Research Report RR-331 for side-by-side and one-above-the-other rooms. The Standard Scenario rooms are shown in Figure 2 and Figure 3.

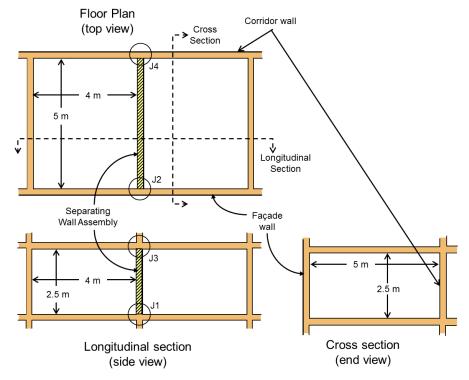


Figure 2: Standard Scenario from the NRC Research Report RR-331 for "horizontal room pair" case where the rooms are side-by side with a separating wall assembly between the rooms.

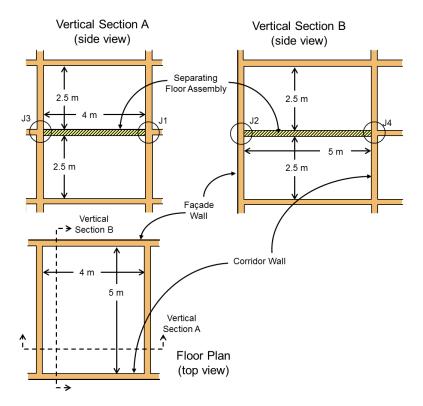


Figure 3: Standard Scenario from the NRC Research Report RR-331 for "vertical room pair" case where one of the pair of rooms is above the other with a floor/ceiling assembly between the two rooms.

The pertinent dimensions and junction details of the Standard Scenario rooms are:

- For horizontal room pairs (rooms are side-by-side) the separating wall is 2.5 m high by 5 m wide, the flanking floors and ceilings are 4 m by 5 m and the flanking walls are 2.5 m by 4 m.
- For vertical room pairs (one room is above the other) the separating floor/ceiling is 4 m by 5 m and the flanking walls in both rooms are 2.5 m high.
- In general, it is assumed that the junctions at one side of the room (at the separating wall if rooms are side-by-side) are cross junctions, while one or both of the other two junctions are T-junctions. This enables the examples to illustrate the typical differences between the two common junction cases.
- For a horizontal room pair, the separating wall has T-junctions with the flanking walls at both the façade and corridor sides and cross junctions at the floor and ceiling.
- For a vertical room pair, the façade wall has a T-junction with the separating floor, but the
 opposing corridor wall has a cross junction, as do the other two walls.

Deviations from the dimensions shown in the Standard Scenarios can change the ASTC ratings.

4. ASTC Examples

Examples of the calculation of the ASTC ratings of mid-rise wood constructions are shown in the following sections. The examples use the simplified method of the calculations as detailed in the National Research Council Report RR-331.

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4.1 Side-by-Side Rooms: Non-Load Bearing Single Staggered Stud Separating Wall Assembly

				Construction		
Example Number	ASTC Rating	Wallboard Room 1	Wallboard Room 2	Floor System	Floor Topping Room 1	Floor Topping Room 2
1	54	One layer of 15.9 mm SilentFX® QuickCut Gypsum Board	One layer of 15.9 mm SilentFX® QuickCut Gypsum Board	1	None	None
2	50	"	One layer of 15.9 mm CertainTeed Type X gypsum board	"	None	"
3	54	=	One layer of 15.9 mm SilentFX® QuickCut Gypsum Board	=	Two layers of 12 mm cementitious flooring underlayment	"
4	51	"	One layer of 15.9 mm CertainTeed Type X gypsum board	"	n	"
5	54	"	One layer of 15.9 mm SilentFX® QuickCut Gypsum Board	"	38 mm thick gypsum concrete on a 9 mm closed cell foam	"
6	51	"	One layer of 15.9 mm CertainTeed Type X gypsum board	"	"	"
44	54	"	One layer of 15.9 mm SilentFX® QuickCut Gypsum Board	2	None	None
45	50	"	One layer of 15.9 mm CertainTeed Type X gypsum board	n	ч	"

Example 1: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly fixed to the wood studs of all walls.
- One layer of 15 mm OSB on the floors.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

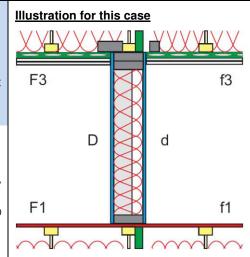
- Triple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

- · Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

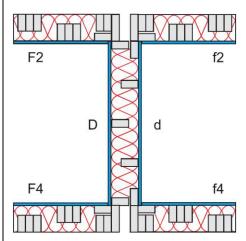
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels.

(Side view of Junctions 1 and 3).



Junction of a single staggered stud separating wall with side walls of triple staggered studs. One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Plan view of Junction 2 or 4).

Example 1	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	54
JI C Dd	Report A1-00/730.2 Appendix B	J-4
unction 1 - Seperating wall and t	he floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	77
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f1	RR-331 Eq. 1.5	77
Flanking STC for Junction 1		69
lunction 2 Comments 1 - 1 - 1	he flewking well accessibility	
lunction 2 - Separating wall and t Flanking Path Ff_2	ne nanking wan assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC situ,F2,f2	RR-331 Eq. 1.5	76
Flanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	79
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	79
Flanking STC for Junction 2		73
rialiking STC for Junction 2		/5
Junction 3 -Seperating wall and th	ne ceiling assembly	
Flanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	77
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	75
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f3	RR-331 Eq. 1.5	75
Flanking STC for Junction 3		71
Junction 4 - Separating wall and t Flanking STC for Junction 4 - Same as J		73
0		
ASTC due to Direct plus Flanking 1	ransmission RR-331 Equation 1.4	54

Example 2: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board fixed to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X fixed to the wood studs in the other room.
- One layer of 15.9 mm OSB on the floors.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to one side of the wood studs and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

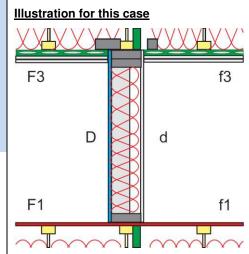
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

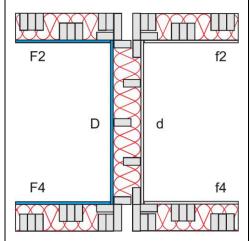
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on one side. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the studs on the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of a single staggered stud separating wall with side walls of triple staggered studs. One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room. (Plan view of Junction 2 or 4).

Example 2	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	51
or o pa	neporent convocatinppenants	
unction 1 - Seperating wall and t	he floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
Flanking Path Fd_1		
Flanking STC $_{lab,F1,d}$	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	68
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f1	RR-331 Eq. 1.5	70
Flanking STC for Junction 1		64
Junction 2 - Separating wall and t	he flanking wall assemblies	
flanking Path Ff_2	ine manking wan assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	73
Flanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	67
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	74
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f 2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		69
<u> </u>		
Junction 3 -Seperating wall and th	ne ceiling assembly	
Flanking Path Ff_3	Poport A1 007750 2 Appoinding Cond D	
Flanking STC _{lab,F3,f3} Normalization Correction	Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5	66 3.98
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	70
r tuniting 51 6 situ,F3,f3	111 331 Eq. 1.3	,,
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	67
Flanking Path Df_3		
Flanking STC $_{lab,D,f3}$	Report A1-007750.2 Appendix B,C and D	65
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f3	RR-331 Eq. 1.5	69
Flanking STC for Junction 3		64
lunation A. Conquettion well	ho flouking wall assambling	
Junction 4 - Separating wall and t Flanking STC for Junction 4 - Same as J		69
ASTC due to Direct plus Flanking 1	ransmission RR-331 Equation 1.4	50

Example 3: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly fixed to the wood studs of all walls.
- Topping of cementitious flooring in one room.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- · Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

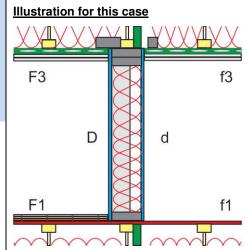
- Triple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

<u>Junction 3: Top Junction (separating wall / ceiling) with:</u>

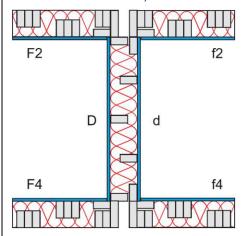
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of two layers of 12 mm cementitious underlayment flooring installed on top of 12 mm wood fiber board underlayment in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of a single staggered stud separating wall with side walls of triple staggered studs. One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Plan view of Junction 2 or 4).

Example 3	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	
31 C Dd	Reportal 607730.2 Appendix B	54
unction 1 - Seperating wall and the	floor assembly	
lanking Path Ff_1		
Flanking STC $_{lab,F1,f1}$	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	72
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	75
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	79
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f1	RR-331 Eq. 1.5	77
Flanking STC for Junction 1		70
hunsking 2 Commission II 111	Souling wall goes white-	
lunction 2 - Separating wall and the Flanking Path Ff 2	TIANKING WAII ASSEMBLIES	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	76
Flanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	79
rtunking STC situ,F2,d	NN-551 Eq. 1.5	79
Flanking Path Df_2		
Flanking STC $_{lab,D,f2}$	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	79
Flanking STC for Junction 2		73
Junction 3 -Seperating wall and the	reiling assembly	
Flanking Path Ff_3	cenning assembly	
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	77
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	75
Flanking Path Df_3		
_	Report A1-007750.2 Appendix B,C and D	71
Flanking STC $_{lab,D,f3}$ Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	75
,		
Flanking STC for Junction 3		71
Junction 4 - Separating wall and the		
	ection 2	73
Flanking STC for Junction 4 - Same as Jur		

Example 4: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board fixed to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X fixed to the wood studs in the other room.
- Topping of cementitious flooring in one room.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to one side of the wood studs and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

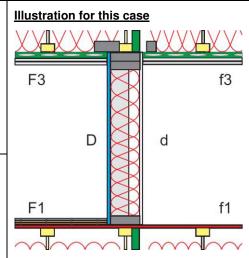
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

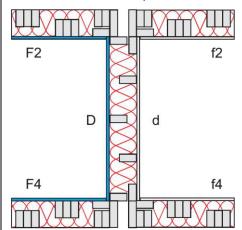
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on one side. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the studs on the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of single staggered stud separating wall with side walls of triple staggered studs. One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room. CertainTeed Type X gypsum board directly attached to the wood studs in the other room. (Plan view of Junction 2 or 4).

Example 4		Reference	Value
Direct STC Rating of Path Dd			
STC _{Dd}	Rep	oort A1-007750.2 Appendix B	51
unction 1 - Seperating wall and t	he floor assemb	ly	
Flanking Path Ff_1			
Flanking STC $_{lab,F1,f1}$	Report	A1-007750.2 Appendix B,C and D	68
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}		RR-331 Eq. 1.5	72
Flanking Path Fd_1			
Flanking STC _{lab.F1.d}	Report	A1-007750.2 Appendix B,C and D	66
Normalization Correction	·	RR-331 Eq. 1.5	3.98
Flanking STC situ,F1,d		RR-331 Eq. 1.5	70
Flanking Path Df_1			
Flanking STC _{lab,D,f1}	Poport	A1-007750.2 Appendix B,C and D	66
	Report		3.98
Normalization Correction Flanking STC _{situ,D,f1}		RR-331 Eq. 1.5 RR-331 Eq. 1.5	3.98 70
Flanking STC for Junction 1			66
Junction 2 - Separating wall and t	he flanking wal	assemblies	
Flanking Path Ff_2			
Flanking STC _{lab,F2,f2}	Report	A1-007750.2 Appendix B,C and D	66
Normalization Correction		RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}		RR-331 Eq. 1.5	73
Flanking Path Fd_2		44 0077F0 2 4	67
Flanking STC _{lab,F2,d}	Report	A1-007750.2 Appendix B,C and D	67
Normalization Correction		RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}		RR-331 Eq. 1.5	74
Flanking Path Df_2			
Flanking STC _{lab,D,f2}	Report	A1-007750.2 Appendix B,C and D	68
Normalization Correction		RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}		RR-331 Eq. 1.5	75
Flanking STC for Junction 2			69
rianking STC for Junction 2			05
Junction 3 -Seperating wall and tl	ne ceiling assem	bly	
Flanking Path Ff_3			
Flanking STC _{lab,F3,f3}	Report	A1-007750.2 Appendix B,C and D	66
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}		RR-331 Eq. 1.5	70
Flanking Path Fd_3			
Flanking STC _{lab,F3,d}	Report	A1-007750.2 Appendix B,C and D	63
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,d		RR-331 Eq. 1.5	67
Elanking Bath Df 2			
Flanking Path Df_3	Panart	A1-007750.2 Appendix B,C and D	65
Flanking STC _{lab,D,f3} Normalization Correction	report		
Flanking STC _{situ.D.f3}		RR-331 Eq. 1.5 RR-331 Eq. 1.5	3.98 69
Flanking STC for Junction 3			64
Junction 4 - Separating wall and t	he flanking wal	assemblies	
Flanking STC for Junction 4 - Same as			69
ASTC due to Direct plus Flanking ¹	Transmission	RR-331 Equation 1.4	51

Example 5: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly fixed to the wood studs of all walls.
- Topping of 38 mm thick gypsum concrete in one room.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

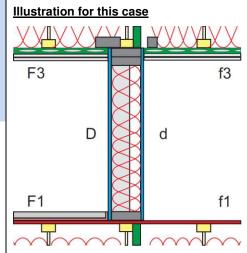
- Triple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

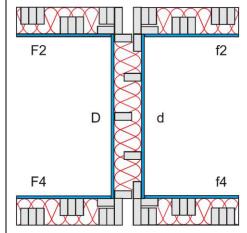
- · Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of a single staggered stud separating wall with side walls of triple staggered studs. One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Plan view of Junction 2 or 4).

Example 5		Reference	Value
Direct STC Rating of Path Dd	D		F4
STC _{Dd}	Rep	ort A1-007750.2 Appendix B	54
unction 1 - Seperating wall and t	he floor assemb	ly	
Flanking Path Ff_1			
Flanking STC $_{lab,F1,f1}$	Report A	A1-007750.2 Appendix B,C and D	73
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}		RR-331 Eq. 1.5	77
Flanking Path Fd_1			
Flanking STC _{lah.F1.d}	Report A	A1-007750.2 Appendix B,C and D	81
Normalization Correction	·	RR-331 Eq. 1.5	3.98
Flanking STC situ,F1,d		RR-331 Eq. 1.5	85
Flanking Path Df_1			
	Donort	11 0077F0 2 Annandiy D C and D	72
Flanking STC _{lab,D,f1}	keport A	A1-007750.2 Appendix B,C and D	73
Normalization Correction Flanking STC _{situ,D,f1}		RR-331 Eq. 1.5 RR-331 Eq. 1.5	3.98
Prunking STC situ,D,f1		MN-331 Eq. 1.3	
Flanking STC for Junction 1			74
Junction 2 - Separating wall and t	he flanking wall	assemblies	
Flanking Path Ff 2			
Flanking STC _{lab,F2,f2}	Report A	A1-007750.2 Appendix B,C and D	69
Normalization Correction	перыт	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}		RR-331 Eq. 1.5	76
Flanking Path Fd_2		14 007770 2 4 1 1 1 0 0 1 0	70
Flanking STC _{lab,F2,d}	Report A	A1-007750.2 Appendix B,C and D	72
Normalization Correction		RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}		RR-331 Eq. 1.5	79
Flanking Path Df_2			
Flanking STC _{lab,D,f2}	Report A	A1-007750.2 Appendix B,C and D	72
Normalization Correction		RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}		RR-331 Eq. 1.5	79
Flanking STC for Junction 2			73
rialiking STC for Junction 2			/3
Junction 3 -Seperating wall and th	ne ceiling asseml	oly	
Flanking Path Ff_3			
Flanking STC _{lab,F3,f3}	Report A	A1-007750.2 Appendix B,C and D	73
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,f3		RR-331 Eq. 1.5	77
Flanking Path Fd_3			
Flanking STC _{lab,F3,d}	Report A	A1-007750.2 Appendix B,C and D	71
Normalization Correction	•	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}		RR-331 Eq. 1.5	75
Elanking Dath Df 3			
Flanking Path Df_3	Ponort /	11 007750 2 Appendix P. Cand D	71
Flanking STC _{lab,D,f3}	keport A	A1-007750.2 Appendix B,C and D	71
Normalization Correction Flanking STC Situp. 13		RR-331 Eq. 1.5 RR-331 Eq. 1.5	3.98 75
r tuniting 51 6 situ,D,f3		352 241 213	,5
Flanking STC for Junction 3			71
Junction 4 - Separating wall and t	he flanking wall	assemblies	
Flanking STC for Junction 4 - Same as			73
ASTC due to Direct plus Flanking 1	Transmission	RR-331 Equation 1.4	54

Example 6: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board fixed to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X fixed to the wood studs in the other room.
- Topping of 38 mm thick gypsum concrete in one room.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to one side of the wood studs and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

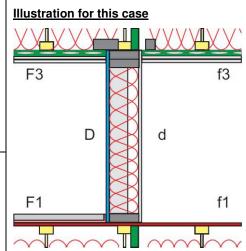
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavities.

<u>Junction 3: Top Junction (separating wall / ceiling) with:</u>

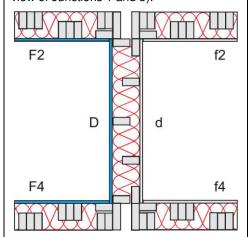
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on one side. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the studs on the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of a single staggered stud separating wall with side walls of triple staggered studs. One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room. (Plan view of Junction 2 or 4).

Direct STC Rating of Path Dd STC_{Dd} unction 1 - Seperating wall and the Flanking Path Ff_1 Flanking $STC_{lab,F1,f1}$ Normalization Correction	Report A1-007750.2 Appendix B floor assembly Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5 RR-331 Eq. 1.5	51
function 1 - Seperating wall and the Flanking Path Ff_1 Flanking STC lab,F1,f1	floor assembly Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5	JI
lanking Path Ff_1 Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5	
Flanking STC _{lab,F1,f1}	RR-331 Eq. 1.5	
	RR-331 Eq. 1.5	
Normalization Correction		73
	RR-331 Eq. 1.5	3.98
Flanking STC situ,F1,f1		77
•		
Flanking Path Fd_1		
Flanking STC $_{lab,F1,d}$	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC $_{situ,F1,d}$	RR-331 Eq. 1.5	75
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
	RR-331 Eq. 1.5	70
Flanking STC situ,D,f1	nn-551 Eq. 1.5	/0
Flanking STC for Junction 1		68
Junction 2 - Separating wall and the	flanking wall assemblies	
Flanking Path Ff 2	3	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eg. 1.5	6.99
Flanking STC situ,F2,f2	RR-331 Eq. 1.5	73
1 tuning 01 0 situ,F2,f2	MIT-331 Eq. 1.3	/3
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	67
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	74
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC $_{situ,D,f2}$	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		69
Junction 3 -Seperating wall and the	ceiling assembly	
Flanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	67
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	65
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	69
·		
Flanking STC for Junction 3		64
lunction 4 - Separating wall and the		
Flanking STC for Junction 4 - Same as Jun	ction 2	69
ASTC due to Direct plus Flenking Tre	nemicsion PR 221 Equation 1.4	F4
ASTC due to Direct plus Flanking Tra	nsmission RR-331 Equation 1.4	51

Example 44: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly fixed to the wood studs of all walls.
- Fire rated floor BXUV.M535¹ with a bare 15 mm OSB subfloor.²

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

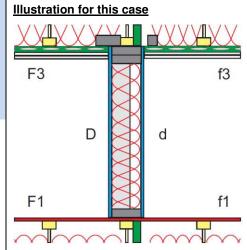
- Triple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

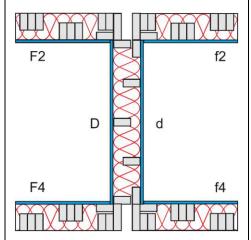
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of a base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on resilient channels.

(Side view of Junctions 1 and 3).



Junction of a single staggered stud separating wall with side walls of triple staggered studs. One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Plan view of Junction 2 or 4).

Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situs F1d RR-331 Eq. 1.5 76	Example 44	Reference	Value
		Report A1-007750.2 Appendix B	54
		and the first an	
Reports A1-007750.2 and A1-012057.1 63		seperating wall and the floor assembly	
Normalization Correction RR-331 Eq. 1.5 3.98		Reports A1-007750 2 and A1-012057 1	63
Flanking STC tabF1d Reports A1-007750, 2 and A1-012057.1 72		·	
Planking Path Fd_1			
Reports A1-007750.2 and A1-012057.1 72	t continuity 51 5 stru,F 1,f 1	1111 331 Eq. 1.3	07
Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situs F1.d RR-331 Eq. 1.5 76	Flanking Path Fd_1		
Flanking STC situs Flat RR-331 Eq. 1.5 76	Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	72
Flanking STC	Normalization Correction	RR-331 Eq. 1.5	3.98
Reports A1-007750.2 and A1-012057.1 72	Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	76
Reports A1-007750.2 and A1-012057.1 72	Flanking Path Df 1		
Normalization Correction RR-331 Eq. 1.5 3.98		Reports A1-007750 2 and A1-012057 1	72
Flanking STC for Junction 1 Flanking STC for Junction 1 Flanking STC for Junction between the separating wall and the flanking wall assemblies Flanking Path Ff 2 Flanking Path Ff 2 Flanking STC labF2/2 Report A1-007750.2 Appendix B, C, and D Flanking STC situsF2,f2 RR-331 Eq. 1.5 Flanking STC labF2,d RR-331 Eq. 1.5 Flanking STC labP1,2 Flanking STC labP1,2 Flanking STC labP1,2 RR-331 Eq. 1.5 Flanking STC labP1,2 RR-331 Eq. 1.5 Flanking STC labP3,7 RR-331 Eq. 1.5 Flanking STC labF3,7 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Flanking STC labF3,7 RR-331 Eq. 1.5 RR			
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Flanking Path F1_2 Flanking STC lab_F2_f2 Flanking STC lab_F3_f3 Fla	· •	351 Eq. 115	
Flanking Path Ff_2	Flanking STC for Junction 1		66
Flanking Path Ff_2	Junction 2 - Junction between the s	separating wall and the flanking wall assemblies	
Report A1-007750.2 Appendix B, C, and D 69		3	
Normalization Correction RR-331 Eq. 1.5 6.99	Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B, C, and D	69
Flanking Path Fd_2	Normalization Correction	1	6.99
Report A1-007750.2 Appendix B, C, and D 72	Flanking STC $_{situ,F2,f2}$	RR-331 Eq. 1.5	76
Report A1-007750.2 Appendix B, C, and D 72			
Normalization Correction RR-331 Eq. 1.5 6.99		Depart A1 0077F0 2 Appendix B. C. and D.	72
Flanking Path Df 2			·-
Flanking Path Df_2 Report A1-007750.2 Appendix B, C, and D 72		·	
Flanking STC lab,D,f2Report A1-007750.2 Appendix B, C, and D72Normalization CorrectionRR-331 Eq. 1.56.99Flanking STC situ,D,f2RR-331 Eq. 1.579Flanking STC for Junction 273Junction 3 - Junction between the seperating wall and the ceiling assemblyFlanking Path Ff_3Flanking Path Ff_3Flanking STC lab,F3,f3Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98Flanking STC situ,F3,dReports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98Flanking STC situ,F3,dReports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98Flanking STC lab,D,f3Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98Flanking STC for Junction 369Junction 4 - Junction between the separating wall and the flanking wall assembliesFlanking STC for Junction 4 - Same as Junction 273	Flanking SIC situ,F2,d	RR-331 Eq. 1.5	/9
Normalization Correction RR-331 Eq. 1.5 Reports A1-007750.2 and A1-012057.1 RR-331 Eq. 1.5 RR-33	Flanking Path Df_2		
Normalization Correction RR-331 Eq. 1.5 Reports A1-007750.2 and A1-012057.1 RR-331 Eq. 1.5 RR-33	Flanking STC _{lab.D.f.2}	Report A1-007750.2 Appendix B, C, and D	72
Flanking STC for Junction 2 Junction 3 - Junction between the seperating wall and the ceiling assembly Flanking Path Ff_3 Flanking STC lab,F3,f3 Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,F3,f3 Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC lab,F3,d RR-331 Eq. 1.5 74 Flanking STC situ,F3,d RR-331 Eq. 1.5 74 Flanking Path Df_3 Flanking STC lab,D,f3 Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 74 Flanking STC lab,D,f3 Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,D,f3 RR-331 Eq. 1.5 74 Flanking STC for Junction 3 69 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2	Normalization Correction	RR-331 Eq. 1.5	6.99
Junction 3 - Junction between the seperating wall and the ceiling assembly Flanking Path Ff_3 Flanking STC lab,F3,f3 Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,F3,f3 RR-331 Eq. 1.5 Flanking STC lab,F3,d Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC lab,F3,d RR-331 Eq. 1.5 74 Flanking STC situ,F3,d RR-331 Eq. 1.5 74 Flanking Path Df_3 Flanking Path Df_3 Flanking STC lab,D,f3 Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC lab,D,f3 RR-331 Eq. 1.5 3.98 Flanking STC situ,D,f3 RR-331 Eq. 1.5 74 Flanking STC for Junction 3 69 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2	Flanking STC $_{situ,D,f2}$	RR-331 Eq. 1.5	79
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Flanking Path Ff_3Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98 $Flanking STC_{situ,F3,f3}$ RR-331 Eq. 1.574Flanking Path Fd_3Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98 $Flanking STC_{lab,F3,d}$ RR-331 Eq. 1.574Flanking STC $_{situ,F3,d}$ RR-331 Eq. 1.574Flanking Path Df_3Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98 $Flanking STC_{lab,D,f3}$ Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98 $Flanking STC_{situ,D,f3}$ RR-331 Eq. 1.574Flanking STC for Junction 369Junction 4 - Junction between the separating wall and the flanking wall assemblies73	Tranking STC 101 Junetion 2		73
Flanking STC $_{lab,F3,f3}$ Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98 $Flanking STC$ $_{situ,F3,f3}$ RR-331 Eq. 1.574Flanking Path Fd_3Flanking STC $_{lab,F3,d}$ Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98 $Flanking STC$ $_{situ,F3,d}$ RR-331 Eq. 1.574Flanking Path Df_3Flanking STC $_{lab,D,f3}$ Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98 $Flanking STC$ $_{situ,D,f3}$ RR-331 Eq. 1.574Flanking STC for Junction 369Junction 4 - Junction between the separating wall and the flanking wall assembliesFlanking STC for Junction 4 - Same as Junction 273		seperating wall and the ceiling assembly	
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Flanking STC lab,F3,dReports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98Flanking STC situ,F3,dRR-331 Eq. 1.574Flanking Path Df_3Flanking STC lab,D,f3Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98Flanking STC situ,D,f3RR-331 Eq. 1.574Flanking STC for Junction 3G9Junction 4 - Junction between the separating wall and the flanking wall assembliesFlanking STC for Junction 4 - Same as Junction 273	Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	74
Flanking STC lab,F3,dReports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98Flanking STC situ,F3,dRR-331 Eq. 1.574Flanking Path Df_3Flanking STC lab,D,f3Reports A1-007750.2 and A1-012057.170Normalization CorrectionRR-331 Eq. 1.53.98Flanking STC situ,D,f3RR-331 Eq. 1.574Flanking STC for Junction 369Junction 4 - Junction between the separating wall and the flanking wall assembliesFlanking STC for Junction 4 - Same as Junction 273	Flanking Path Fd_3		
Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,F3,d RR-331 Eq. 1.5 74 Flanking Path Df_3 Flanking STC lab,D,f3 Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,D,f3 RR-331 Eq. 1.5 74 Flanking STC for Junction 3 69 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 73		Reports A1-007750.2 and A1-012057.1	70
Flanking STC situ,F3,d RR-331 Eq. 1.5 74 Flanking Path Df_3 Flanking STC lab,D,f3 Reports A1-007750.2 and A1-012057.1 RR-331 Eq. 1.5 3.98 Flanking STC situ,D,f3 RR-331 Eq. 1.5 74 Flanking STC for Junction 3 69 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 73		·	3.98
Flanking STC lab,D,f3 Reports A1-007750.2 and A1-012057.1 70 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,D,f3 RR-331 Eq. 1.5 74 Flanking STC for Junction 3 69 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 73	Flanking STC _{situ,F3,d}		
Flanking STC _{lab,D,f3} Reports A1-007750.2 and A1-012057.1 Reports A1-007750.2 and A1-012057.1 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 Flanking STC for Junction 3 G9 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 73	Flanking Path Df 3		
Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,D,f3 RR-331 Eq. 1.5 74 Flanking STC for Junction 3 69 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 73	Flankina STC tab D 62	Reports A1-007750 2 and A1-012057 1	70
Flanking STC situ,D,f3 RR-331 Eq. 1.5 74 Flanking STC for Junction 3 69 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 73			
Flanking STC for Junction 3 69 Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 73			
Junction 4 - Junction between the separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 73		·	
Flanking STC for Junction 4 - Same as Junction 2 73	Flanking STC for Junction 3		69
Flanking STC for Junction 4 - Same as Junction 2 73	Junction 4 - Junction between the s	separating wall and the flanking wall assemblies	
ASTC due to Direct plus Flanking Transmission DD 224 Continue 4.4			73
	ASTC due to Direct plus Flenking To	ansmission RR-331 Section 1.4	54

Example 45: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- . Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board fixed to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X fixed to the wood studs in the other room.
- Fire rated floor BXUV.M535¹ with a bare 15 mm OSB subfloor.²

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to one side of the wood studs and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

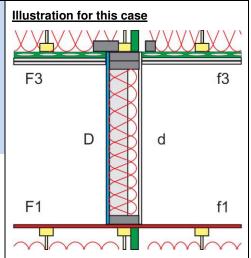
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

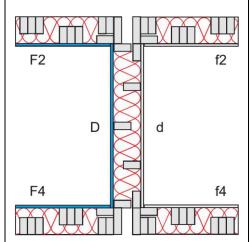
- · Joists oriented parallel to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on one side. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the studs on the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of a base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board resilient installed on channels. (Side view of Junctions 1 and 3).



Example 45	Reference	Value
Direct STC Rating of Path Dd		
Laboratory Measured STC Rating	Report A1-007750.2 Appendix B	51
lunction 1 - Junction between the s	seperating wall and the floor assembly	
Flanking Path Ff_1		
Flanking STC $_{lab,F1,f1}$	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	66
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	68
Flanking STC for Junction 1		62
	eparating wall and the flanking wall assemblies	
Flanking Path Ff_2	D 1110000000000000000000000000000000000	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B, C, and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	73
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B, C, and D	67
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	74
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B, C, and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		69
lunction 2 - lunction between the	seperating wall and the ceiling assembly	
Flanking Path Ff_3	eperating wan and the tening assembly	
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	61
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	65
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	67
Flanking STC for Junction 3		61
lunction 4 - lunction hetween the s	separating wall and the flanking wall assemblies	
	charactup man and the nanking man assemblies	
	nction 2	69
Flanking STC for Junction 4 - Same as Ju	nction 2	69

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4.2 Side-By-Side Rooms - Non-Load Bearing Single Staggered Stud Separating Wall Assembly with Shear Elements

	4070		(Construction		
Case Number	ASTC Rating	Wallboard Room 1	Wallboard Room 2	Floor System	Floor Topping Room 1	Floor Topping Room 2
7	53	One layer of 15.9 mm SilentFX® QuickCut gypsum board fixed to 15.9 mm Plywood	One layer of 15.9 mm SilentFX® QuickCut gypsum board	1	None	None
8	50	11	One layer of 15.9 mm CertainTeed Type X gypsum board	"	None	"
9	53	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board	"	Two layers of 12 mm cementitious flooring underlayment	u
10	50	11	One layer of 15.9 mm CertainTeed Type X gypsum board	"		"
11	53	п	One layer of 15.9 mm SilentFX® QuickCut gypsum board	"	38 mm thick gypsum concrete on a 9 mm closed cell foam	"
12	50	п	One layer of 15.9 mm CertainTeed Type X gypsum board	"	,	"
46	53	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board	2	None	и
47	50	п	One layer of 15.9 mm CertainTeed Type X gypsum board	и	и	и
13	53	One layer of 15.9 mm SilentFX® QuickCut gypsum board on all walls. One layer of 15.9 mm plywood directly fixed to one side of the common partition.		1	None	11
14	54	QuickCut gypsum One layer of 15 directly fixed to the	9 mm SilentFX® board on all walls. 5.9 mm plywood e walls on one side rooms.	и	и	и

Example 7: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room
- One layer of 15 mm OSB on the floors.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

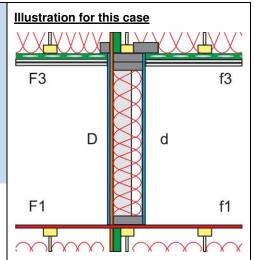
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

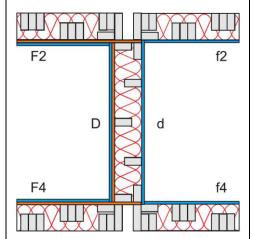
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 7	Reference	Value
Direct STC Rating of Path Dd	Daniel A4 007750 2 Average div D	F2
STC _{Dd}	Report A1-007750.2 Appendix B	53
unction 1 - Seperating wall and the	floor assembly	
lanking Path Ff_1		
Flanking STC $_{lab,F1,f1}$	Report A1-007750.2 Appendix B,C and	D 66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and	D 74
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	78
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and	D 73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	3.98
T turning 51 C situ,D,f1	M(351 Eq. 1.5	
Flanking STC for Junction 1		69
Junction 2 - Separating wall and the	flanking wall assemblies	
Junction 2 - Separating wall and the Flanking Path Ff 2	manking wan assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and	D 69
Normalization Correction	RR-331 Eq. 1.5	6.99
	•	76
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	76
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and	D 72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	79
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and	D 72
Normalization Correction	RR-331 Eq. 1.5	6.99
	RR-331 Eq. 1.5	79
Flanking STC _{situ,D,f2}	nn-551 Eq. 1.5	79
Flanking STC for Junction 2		73
Junction 3 -Seperating wall and the	ceiling assembly	
Flanking Path Ff_3	D 144 007770 2 11 5 5 1	D -
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and	
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	77
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and	D 72
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,d	RR-331 Eq. 1.5	76
Flanking Path Df_3	Donort A1 007750 2 A P D C P	D 74
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and	
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	75
Flanking STC for Junction 3		71
Junction 4 - Separating wall and the		72
Junction 4 - Separating wall and the Flanking STC for Junction 4 - Same as Jur		73

Example 8: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X gypsum board directly attached to the wood studs in the other room.
- One layer of 15 mm OSB on the floors.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

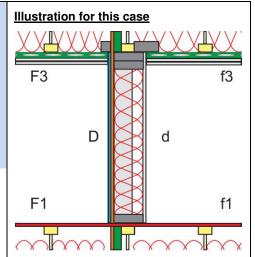
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

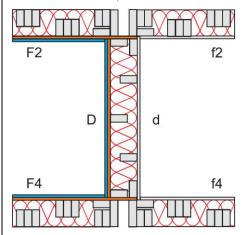
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm CertainTeed Type X gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 8	Reference	Value
Direct STC Rating of Path Dd	Depart A4 0077F0 2 Appared in D	F0
STC _{Dd}	Report A1-007750.2 Appendix B	50
unction 1 - Seperating wall and th	e floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
lanking Path Fd_1		
Flanking STC _{lab.F1.d}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction		3.98
Flanking STC _{situ.F1.d}	RR-331 Eq. 1.5 RR-331 Eq. 1.5	73
r terenting of a situ, F1, a	332 24. 2.3	,,,
lanking Path Df_1		
Flanking STC $_{lab,D,f1}$	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f} 1	RR-331 Eq. 1.5	75
lanking STC for Junction 1		67
unction 2 - Separating wall and th	e flanking wall assemblies	
Flanking Path Ff_2 Flanking STC _{lab,F2,f2}	Poport A1 007750 2 Apport 4:- B C 4 D	66
	Report A1-007750.2 Appendix B,C and D	
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	73
lanking Path Fd 2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	73
Tambina Bash Df 3		
Flanking Path Df_2	D 144 007770 2 4 1' D C 1 D	60
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
lanking STC for Junction 2		69
unction 3 -Seperating wall and th	e ceiling assembly	
Flanking Path Ff_3	Panert A1 0077F0 2 Arrandin B Com LS	72
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	77
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	67
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	71
Named on Broke DC 2		
Flanking Path Df_3	Panart A1 0077F0 2 Arrandin B Com LS	
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction Flanking STC _{Situ.D.f.3}	RR-331 Eq. 1.5 RR-331 Eq. 1.5	3.98 73
r turning 51 G situ,D,f3	nn 331 Eq. 1.3	7.5
lanking STC for Junction 3		68
unation A. Congretine well and the	o flooking well assembliss	
unction 4 - Separating wall and th		69
lanking STC for lunction 4 - Same as I		
Flanking STC for Junction 4 - Same as J		

Example 9: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- . Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room.
- Topping of cementitious flooring in one room.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

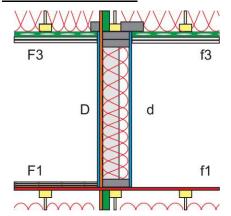
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

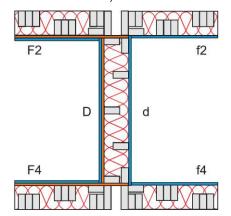
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a single staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 9	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	53
SIC Dd	Report A1-00//30.2 Appendix B	33
lunction 1 - Seperating wall and t	he floor assembly	
Flanking Path Ff_1		
Flanking STC $_{lab,F1,f1}$	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F1,f1	RR-331 Eq. 1.5	72
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	76
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	80
Flanking Path Df_1		
Flanking STC $_{lab,D,f1}$	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f1	RR-331 Eq. 1.5	77
Flanking STC for Junction 1		70
Junction 2 - Separating wall and t	he flanking wall assemblies	
Flanking Path Ff_2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	76
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	79
Flanking Path Df_2		
Flanking STC $_{lab,D,f2}$	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	79
Flanking STC for Junction 2		73
Junction 3 -Seperating wall and th	ne ceiling assembly	
Flanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	77
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	76
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	75
Flanking STC for Junction 3		71
Junction 4 - Separating wall and t	he flanking wall assemblies	
Flanking STC for Junction 4 - Same as J		73
ACTO due to Diversity of the Co		
ASTC due to Direct plus Flanking T	ransmission RR-331 Equation 1.4	53

Example 10: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- · Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X gypsum board directly attached to the wood studs in the other room.
- Topping of cementitious flooring in one room.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

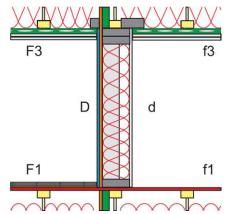
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

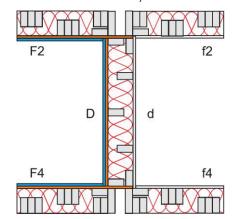
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.





Junction of a single staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm CertainTeed Type X gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1). The wall also connects with a ceiling of two lavers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 10	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	50
STC Da	Report AT 667730.2 Appendix B	30
unction 1 - Seperating wall and t	he floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	68
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	72
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	75
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	75
lanking STC for Junction 1		69
unction 2 - Separating wall and t	ho flanking wall assemblies	
unction 2 - Separating wall and the Flanking Path Ff_2	ne naming wan assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	73
lanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	73
lanking Path Df 2		
	Report A1-007750.2 Appendix B,C and D	68
Flanking STC _{lab,D,f2} Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
. 3		
lanking STC for Junction 2		69
unction 3 -Seperating wall and th	ne ceiling assembly	
lanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	77
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	67
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	71
lanking Path Df 3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f} 3	RR-331 Eq. 1.5	73
Flanking STC for Junction 3		68
Turning of Chor suffiction o		00
unction 4 - Separating wall and t		-
lanking STC for Junction 4 - Same as J	function 2	69
ASTC due to Direct plus Flanking T	Fransmission RR-331 Equation 1.4	50

Example 11: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- · Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room.
- Topping of 38 mm thick gypsum concrete in one room.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

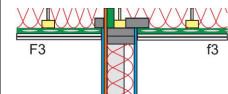
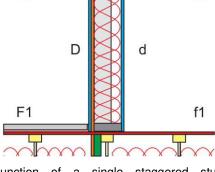
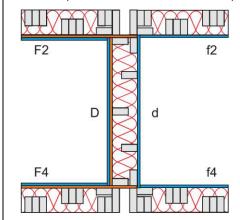


Illustration for this case



Junction of a single staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1). The wall also connects with a ceiling of two lavers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Direct STC Rating of Path Dd		
STC _{Dd}	Report A1-007750.2 Appendix B	53
Du		
unction 1 - Seperating wall and the	floor assembly	
Flanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	77
lanking Path Fd_1		
Flanking STC $_{lab,F1,d}$	Report A1-007750.2 Appendix B,C and D	81
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	85
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	77
Flanking STC for Junction 1		74
ation 3 Consusting	fleating well assemblish	
unction 2 - Separating wall and the land the lan	nanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	76
<u> </u>	·	
Flanking Path Fd_2	Depart A4 0077F0 2 Appropriation D Count D	72
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	79
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	79
Flanking STC for Junction 2		73
Junction 3 -Seperating wall and the	coiling assembly	
Flanking Path Ff 3	tening assembly	
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	77
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	76
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	75
Flanking STC for Junction 3		71
lunction 4 - Separating wall and the	flanking wall assemblies	
Flanking STC for Junction 4 - Same as Jun	ction 2	73

Example 12: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- . Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X gypsum board directly attached to the wood studs in the other room.
- Topping of 38 mm thick gypsum concrete in one room.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

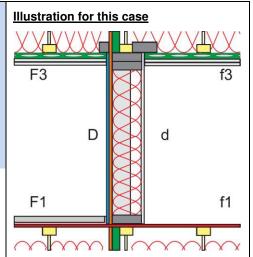
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

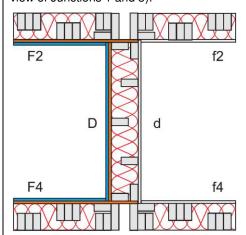
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm CertainTeed Type X gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-ioists with one laver of 15 mm OSB in both rooms. Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 12	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	50
SIC Dd	Report A1-00/750.2 Appendix 6	50
unction 1 - Seperating wall and th	ne floor assembly	
Flanking Path Ff_1		
Flanking STC $_{lab,F1,f1}$	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	77
lanking Path Fd 1		
Flanking STC _{lab.F1.d}	Report A1-007750.2 Appendix B,C and D	77
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	81
Flanking Path Df_1	Daniel A4 0077F0 2 Augustaliu D C and D	74
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	75
lanking STC for Junction 1		72
unction 2 - Separating wall and th	ne flanking wall assemblies	
lanking Path Ff_2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	73
lanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	73
rtunting 31 6 stru,F2,a	1111 331 Eq. 1.3	/3
lanking Path Df_2		
Flanking STC $_{lab,D,f2}$	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
lanking STC for Junction 2		69
unction 3 -Seperating wall and th Flanking Path Ff 3	e ceiling assembly	
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	77
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	67
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	71
lanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f} 3	RR-331 Eq. 1.5	73
lanking STC for Junction 3		68
unction 4 - Separating wall and th		
lanking STC for Junction 4 - Same as J	unction 2	69

Example 46: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- . Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room
- Fire rated floor BXUV.M535¹ with a bare 15 mm OSB subfloor.²

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

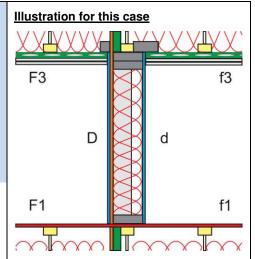
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

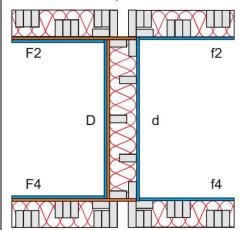
- · Joists oriented parallel to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-ioists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of a base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 46	Reference	Value
Direct STC Rating of Path Dd		
Laboratory Measured STC Rating	Report A1-007750.2 Appendix B	53
unction 1 - Junction between the s	eperating wall and the floor assembly	
Flanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	72
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	76
Flanking Path Df_1	D	70
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	72
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	76
lanking STC for Junction 1		66
	annual and the flex live and t	
	eparating wall and the flanking wall assemblies	
Flanking Path Ff_2 Flanking STC _{lab,F2,f2}	Deposit A4 007770 2 Assessed 5 0 0 10	
	Report A1-007750.2 Appendix B, C, and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	76
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B, C, and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	79
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B, C, and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f 2}	RR-331 Eq. 1.5	79
Flanking STC for Junction 2		73
Talking STC for Junction 2		73
	eperating wall and the ceiling assembly	
Flanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	70
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	74
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	70
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	74
lanking Path Df 3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	70
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	74
Janking STC for lunching 2		CO
Flanking STC for Junction 3		69
unction 4 - Junction between the s	eparating wall and the flanking wall assemblies	
Flanking STC for Junction 4 - Same as Jun	nction 2	73
	ansmission RR-331 Section 1.4	53

Example 47: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- . Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X gypsum board directly attached to the wood studs in the other room.
- Fire rated floor BXUV.M535¹ with a bare 15 mm OSB subfloor.²

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

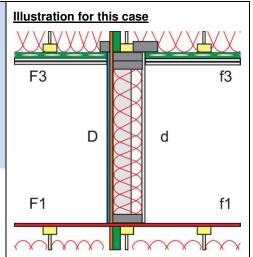
- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

Junction 3: Top Junction (separating wall / ceiling) with:

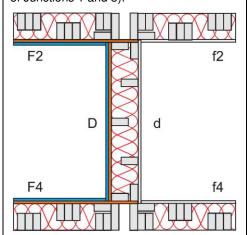
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm CertainTeed Type X gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of a base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 47	Reference	Value
Direct STC Rating of Path Dd aboratory Measured STC Rating	Report A1-007750.2 Appendix B	50
unction 1 - Junction between the so lanking Path Ff_1	eperating wall and the floor assembly	
Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
steamenty 51 5 situ,F 1,J 1	MX 331 Eq. 113	- 07
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	68
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	72
lanking Path Df 1		
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	70
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	74
lanking STC for Junction 1		65
Turning of C for June 1011 1		- 05
	eparating wall and the flanking wall assemblies	
Flanking Path Ff_2	D 144 007770 2 4 11 5 6 1 5	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B, C, and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	73
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B, C, and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	73
Flanking Path Df_2		
Flanking STC $_{lab,D,f2}$	Report A1-007750.2 Appendix B, C, and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		69
	eperating wall and the ceiling assembly	
Flanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	70
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	74
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	70
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	68
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	72
Flanking STC for Junction 3		67
	eparating wall and the flanking wall assemblies	60
Flanking STC for Junction 4 - Same as Jur	iction 2	69

Example 13: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- . Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs on one side of the separating wall.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs on the other side of the separating wall and the studs of the other walls
- One layer of 15 mm OSB on the floors.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- · Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

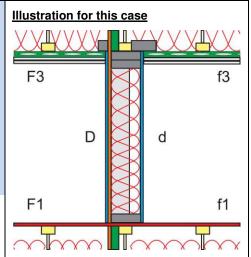
- Triple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

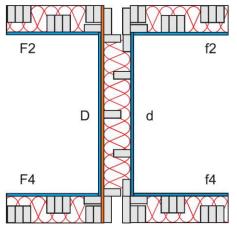
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the studs on one side (D). One layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on the other side A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 13	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	53
SIC Dd	Report A1-00/750.2 Appendix B	33
unction 1 - Seperating wall and t	he floor assembly	
Flanking Path Ff_1		
Flanking STC $_{lab,F1,f1}$	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	77
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	74
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	78
Flanking STC for Junction 1		69
unction 2 - Separating wall and t	he flanking wall assemblies	
Flanking Path Ff_2	•	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	75
lanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	77
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	79
lanking STC for Junction 2		72
unction 3 -Seperating wall and th	ne ceiling assembly	
lanking Path Ff_3	,	
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	77
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	75
lanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	76
Flanking STC for Junction 3		71
unction 4 - Separating wall and t	he flanking wall assemblies	
Flanking STC for Junction 4 - Same as J		72
ACTC due to Direct when Florald	Transmission DD 224 Fauret	FO
ASTC due to Direct plus Flanking T	ransmission RR-331 Equation 1.4	53

Example 14: Rooms side-by-side - Non-loadbearing Separating Wall

- Simplified Method.
- . Common single staggered wood stud wall.
- . All other walls are triple staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs of walls F4 and f4.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs on the studs of the other walls.
- One layer of 15 mm OSB on the floors.

Separating wall assembly (non-loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed R12 Sustainable Insulation® in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- · Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2: (separating wall /abutting side wall) with:

- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

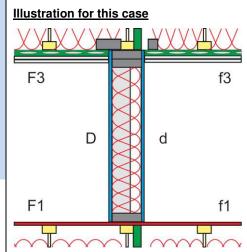
- Joists oriented parallel to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Junction 4: (separating wall /abutting side wall) with:

- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

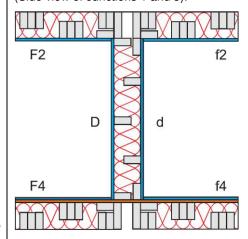
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a single staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels.

(Side view of Junctions 1 and 3).



Example 14	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	54
STC _{Da}	Report AT 607750.2 Appendix B	
unction 1 - Seperating wall and the	ne floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
lanking Path Fd_1		
Flanking STC $_{lab,F1,d}$	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	77
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	77
Flanking STC for Junction 1		69
unation 2 Consusting wall and the	as flowlying well assemblies	
unction 2 - Separating wall and th lanking Path Ff_2	ic naming wan assembles	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	73
lanking Path Fd 2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	77
Flanking Path Df_2	D 144 007750 3 A 1' D C 1D	70
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	77
Flanking STC for Junction 2		70
unction 3 -Seperating wall and th	e ceiling assembly	
lanking Path Ff_3	<u> </u>	
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	77
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	75
lanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f} 3	RR-331 Eq. 1.5	75
lanking STC for Junction 3		71
		,-
unction 4 - Separating wall and th		70
Flanking STC for Junction 4 - Same as J	unction Z	70
	ransmission RR-331 Equation 1.4	54

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4.3 Side-by-Side Rooms - Load Bearing Triple Staggered Stud Separating Wall Assembly

Example	ASTC	Wallboard Room 1	Wallboard Room 2	Floor System	Floor Topping Room 1	Floor Topping Room 2
15	51	One layer of 15.9 mm SilentFX® QuickCut gypsum board	One layer of 15.9 mm SilentFX® QuickCut gypsum board	1	None	None
16	48	11	One layer of 15.9 mm CertainTeed Type X gypsum board	11	"	11
17	51	п	One layer of 15.9 mm SilentFX® QuickCut gypsum board	11	Two layers of 12 mm cementitious flooring underlayment	ıı
18	48	11	One layer of 15.9 mm CertainTeed Type X gypsum board	11	=	n
19	51	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board	11	38 mm thick gypsum concrete on a 9 mm closed cell foam	п
20	48	11	One layer of 15.9 mm CertainTeed Type X gypsum board	11	"	11
48	50	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board	2	None	None
49	48	11	One layer of 15.9 mm CertainTeed Type X gypsum board	11	11	11

Example 15: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly fixed to the wood studs of all walls.
- One layer of 15 mm OSB on the floors.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-ioists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

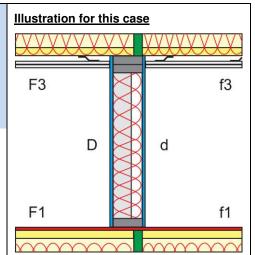
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

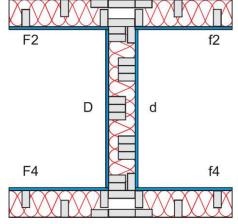
- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs with side walls of single staggered studs with one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs. (Plan view of Junction 2 or 4).

### Report A1-007750.2 Appendix B ### S1 ###	Example 15	Reference	Value
	Direct STC Rating of Path Dd		
	STC _{Dd}	Report A1-007750.2 Appendi	x B 51
	unction 1 - Sonorating wall and th	o floor assembly	
Report A1-007750.2 Appendix B,C and D 66	·	le floor assembly	
		Danast A1 0077F0 2 Appardix D	Cond D CC
Flanking STC slab_Fld			
		•	
Report A1-007750.2 Appendix B,C and D 65	Flanking SIC _{situ,F1,f1}	KK-331 Eq. 1.5	70
Internalization Correction RR-331 Eq. 1.5 S. 98 Internalization Correction RR-331 Eq. 1.5 G. 99 Internalization Correction	lanking Path Fd_1		
	Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,0	Cand D 65
Ianking Path Df_1	Iormalization Correction	RR-331 Eq. 1.5	3.98
Report A1-007750.2 Appendix B,C and D 65	Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	69
Report A1-007750.2 Appendix B,C and D 65	lanking Path Df 1		
	<u> </u>	Report A1-007750 2 Appendix B (and D 65
Flanking STC Situ,D,f1 RR-331 Eq. 1.5 69 Stanking STC for Junction 1 65 Stanking STC for Junction 2 56 Stanking STC Cab,F2,f2 Report A1-007750.2 Appendix B,C and D 78 Stanking STC Situ,F2,f2 Report A1-007750.2 Appendix B,C and D 78 Stanking STC Situ,F2,f2 Report A1-007750.2 Appendix B,C and D 73 Stanking STC Situ,F2,f2 Report A1-007750.2 Appendix B,C and D 73 Stanking STC Situ,F2,f2 Report A1-007750.2 Appendix B,C and D 73 Stanking STC Situ,F2,f2 Report A1-007750.2 Appendix B,C and D 73 Stanking STC Situ,F2,f2 Report A1-007750.2 Appendix B,C and D 73 Stanking STC Situ,D,f2 Report A1-007750.2 Appendix B,C and D 74 Stanking STC Situ,D,f2 RR-331 Eq. 1.5 6.99 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 66 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 66 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Stanking STC Situ,D,f3 Report A1-007750.2 Appendix B,C and D 64 Situh,D,f3 Report A1-007750.2 Appendix B,C and D 64 Situh,D,f3 Report A1-007750.2 Appendix B,C and D 64 Situh,D,f3 Rep	, ,		
### Company of Company			
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Stanking Path Ff_2 Report A1-007750.2 Appendix B,C and D	lanking STC for Junction 1		65
Stanking Path Ff_2 Report A1-007750.2 Appendix B,C and D	unction 2 - Separating wall and th	ne flanking wall assemblies	
Flanking STC lab.F2.f2 Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5 RR-331 Eq. 1.5 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5 RR-331 Eq. 1		<u> </u>	
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Flanking Path Fd_2			
Flanking STC tab,F2,d Report A1-007750.2 Appendix B,C and D 73 Stormalization Correction RR-331 Eq. 1.5 6.99 Flanking STC situ,F2,d RR-331 Eq. 1.5 80 Flanking Path Df_2 Report A1-007750.2 Appendix B,C and D 73 Flanking STC tab,D,f2 Report A1-007750.2 Appendix B,C and D 73 Flanking STC situ,D,f2 RR-331 Eq. 1.5 6.99 Flanking STC situ,D,f2 RR-331 Eq. 1.5 80 Flanking STC for Junction 2 76 Flanking STC situ,D,f2 RR-331 Eq. 1.5 80 Flanking STC tab,F3,f3 Report A1-007750.2 Appendix B,C and D 66 Flanking STC tab,F3,f3 RR-331 Eq. 1.5 70 Flanking STC tab,F3,f3 RR-331 Eq. 1.5 70 Flanking STC tab,F3,d Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,F3,d RR-331 Eq. 1.5 3.98 Flanking STC tab,F3,d RR-331 Eq. 1.5 68 Flanking STC tab,F3,d RR-331 Eq. 1.5 68 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 RR-331 Eq. 1.5 68 Flanking STC for Junction 3 RR-331 Eq. 1.5 68 Flanking STC for Junction 4 - Same as Junction 2 76	Flanking STC _{situ,F2,f2}	'	
Flanking STC tab,F2,d Report A1-007750.2 Appendix B,C and D 73 Stormalization Correction RR-331 Eq. 1.5 6.99 Flanking STC situ,F2,d RR-331 Eq. 1.5 80 Flanking Path Df_2 Report A1-007750.2 Appendix B,C and D 73 Flanking STC tab,D,f2 Report A1-007750.2 Appendix B,C and D 73 Flanking STC situ,D,f2 RR-331 Eq. 1.5 6.99 Flanking STC situ,D,f2 RR-331 Eq. 1.5 80 Flanking STC for Junction 2 76 Flanking STC situ,D,f2 RR-331 Eq. 1.5 80 Flanking STC tab,F3,f3 Report A1-007750.2 Appendix B,C and D 66 Flanking STC tab,F3,f3 RR-331 Eq. 1.5 70 Flanking STC tab,F3,f3 RR-331 Eq. 1.5 70 Flanking STC tab,F3,d Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,F3,d RR-331 Eq. 1.5 3.98 Flanking STC tab,F3,d RR-331 Eq. 1.5 68 Flanking STC tab,F3,d RR-331 Eq. 1.5 68 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 Report A1-007750.2 Appendix B,C and D 64 Flanking STC tab,D,f3 RR-331 Eq. 1.5 68 Flanking STC for Junction 3 RR-331 Eq. 1.5 68 Flanking STC for Junction 4 - Same as Junction 2 76			
Report A1-007750.2 Appendix B,C and D Flanking STC situ,F3,d Flanking STC lab,D,F3 Flanking STC situ,F3,d Flanking STC lab,D,F3 Flanking STC lab,D,F3 Flanking STC lab,F3,d Flanking STC lab,D,F3 Flanking STC situ,D,F3 Flanking STC situ,D,F3 Flanking STC situ,D,F3 Flanking STC situ,D,F3 Flanking STC for Junction S Flanking STC for Junction S Flanking STC for Junction S Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2			2 12 -2
Flanking Path Df_2 Flanking STC tab,D,f2 Flanking STC tab,D,f2 Report A1-007750.2 Appendix B,C and D Flanking STC situ,D,f2 RR-331 Eq. 1.5 RR-331 Eq. 1.			
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Flanking STC lab,D,f2 Report A1-007750.2 Appendix B,C and D Flanking STC situ,D,f2 RR-331 Eq. 1.5 Flanking STC for Junction 2 Flanking STC for Junction 2 Flanking STC lab,F3,f3 Flanking STC lab,F3,f3 Flanking STC lab,F3,d Flanking STC lab,F3,d Flanking STC situ,F3,d Flanking STC situ,D,f3 Flanking STC situ,D,f3 Flanking STC situ,D,f3 Flanking STC for Junction 3 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2	Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
Flanking STC situ_F3_f3 Flanking STC lab_F3_f3 Flanking STC situ_E3_f3 Report A1-007750.2 Appendix B,C and D Flanking STC lab_F3_f3 Report A1-007750.2 Appendix B,C and D Flanking STC situ_F3_f3 Report A1-007750.2 Appendix B,C and D Flanking STC situ_F3_f3 Report A1-007750.2 Appendix B,C and D Flanking STC situ_F3_f3 RR-331 Eq. 1.5 Flanking STC lab_F3_d Report A1-007750.2 Appendix B,C and D Flanking STC lab_F3_d Report A1-007750.2 Appendix B,C and D Flanking STC situ_F3_d RR-331 Eq. 1.5 Flanking STC situ_F3_d RR-331 Eq. 1.5 Flanking STC situ_F3_d RR-331 Eq. 1.5 Flanking STC lab_D_f3 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Flanking STC situ_D_f3 RR-331 Eq. 1.5 RR	Flanking Path Df_2		
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Flanking STC situ,D,f2 RR-331 Eq. 1.5 80 Flanking STC for Junction 2 Flanking STC for Junction 2 Flanking STC lab,F3,f3 Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5 RR-331 Eq		RR-331 Eq. 1.5	6.99
unction 3 -Seperating wall and the ceiling assembly Flanking Path Ff_3 Flanking STC lab,F3,f3 Report A1-007750.2 Appendix B,C and D Flanking STC situ,F3,f3 RR-331 Eq. 1.5 Flanking STC situ,F3,f3 Report A1-007750.2 Appendix B,C and D Flanking STC lab,F3,d Report A1-007750.2 Appendix B,C and D Flanking STC lab,F3,d RR-331 Eq. 1.5 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Flanking STC situ,F3,d RR-331 Eq. 1.5 Flanking STC lab,D,f3 Report A1-007750.2 Appendix B,C and D Flanking STC lab,D,f3 RR-331 Eq. 1.5 Flanking STC situ,D,f3 RR-331 Eq. 1.5 RR-	Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	80
unction 3 -Seperating wall and the ceiling assembly Flanking Path Ff_3 Flanking STC lab,F3,f3 Report A1-007750.2 Appendix B,C and D Flanking STC situ,F3,f3 RR-331 Eq. 1.5 Flanking STC situ,F3,f3 Report A1-007750.2 Appendix B,C and D Flanking STC lab,F3,d Report A1-007750.2 Appendix B,C and D Flanking STC lab,F3,d RR-331 Eq. 1.5 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Flanking STC situ,F3,d RR-331 Eq. 1.5 Flanking STC lab,D,f3 Report A1-007750.2 Appendix B,C and D Flanking STC lab,D,f3 RR-331 Eq. 1.5 Flanking STC situ,D,f3 RR-331 Eq. 1.5 RR-	Nambina CTC for househour 2		76
Flanking Path Ff_3 Flanking STC lab,F3,f3 Report A1-007750.2 Appendix B,C and D Flanking STC lab,F3,f3 RR-331 Eq. 1.5 Flanking STC situ,F3,f3 RR-331 Eq. 1.5 Flanking Path Fd_3 Flanking STC lab,F3,d Report A1-007750.2 Appendix B,C and D Flanking STC lab,F3,d RR-331 Eq. 1.5 RR-	lanking STC for Junction 2		76
Flanking STC _{lab,F3,f3} Report A1-007750.2 Appendix B,C and D Rormalization Correction RR-331 Eq. 1.5 RR-331 E	unction 3 -Seperating wall and th	e ceiling assembly	
Normalization Correction RR-331 Eq. 1.5 Report A1-007750.2 Appendix B,C and D Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5 RR-331 Eq.	lanking Path Ff_3		
Normalization Correction RR-331 Eq. 1.5 Report A1-007750.2 Appendix B,C and D Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5 RR-331 Eq.	Flanking STC lab F3 f3	Report A1-007750.2 Appendix B,0	Cand D 66
Flanking STC _{situ,F3,f3} RR-331 Eq. 1.5 Flanking Path Fd_3 Flanking STC _{lab,F3,d} Report A1-007750.2 Appendix B,C and D Sormalization Correction RR-331 Eq. 1.5 Slanking STC _{situ,F3,d} RR-331 Eq. 1.5 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Slanking Path Df_3 Flanking STC _{lab,D,f3} Report A1-007750.2 Appendix B,C and D 64 Sormalization Correction RR-331 Eq. 1.5 Slanking STC _{situ,D,f3} RR-331 Eq. 1.5 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Slanking STC for Junction 3 64 Slanking STC for Junction 4 - Same as Junction 2 76	Normalization Correction		
Flanking STC _{lab,F3,d} Report A1-007750.2 Appendix B,C and D 64 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC _{situ,F3,d} RR-331 Eq. 1.5 68 Flanking Path Df_3 Flanking STC _{lab,D,f3} Report A1-007750.2 Appendix B,C and D 64 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 68 Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 68 Flanking STC for Junction 3 64 Flanking STC for Junction 4 - Same as Junction 2 76	Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
Flanking STC _{lab,F3,d} Report A1-007750.2 Appendix B,C and D 64 formalization Correction RR-331 Eq. 1.5 3.98 Flanking STC _{situ,F3,d} RR-331 Eq. 1.5 68 Ilanking Path Df_3 Flanking STC _{lab,D,f3} Report A1-007750.2 Appendix B,C and D 64 formalization Correction RR-331 Eq. 1.5 3.98 Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 68 Ilanking STC _{situ,D,f3} RR-331 Eq. 1.5 68 Ilanking STC for Junction 3 64 unction 4 - Separating wall and the flanking wall assemblies Ilanking STC for Junction 4 - Same as Junction 2 76	lanking Path Ed. 3		
### Report A1-007750.2 Appendix B,C and D ### Granking STC situ,D,f3 ### RR-331 Eq. 1.5 ### Report A1-007750.2 Appendix B,C and D ### RR-331 Eq. 1.5 ### Report A1-007750.2 Appendix B,C and D ### RR-331 Eq. 1.5 ### RR-331 E		Report A1-007750 2 Appendix P (and D 64
Flanking STC situ,F3,d RR-331 Eq. 1.5 68 Flanking Path Df_3 Flanking STC lab,D,f3 Report A1-007750.2 Appendix B,C and D Flanking STC situ,D,f3 RR-331 Eq. 1.5 RR-331 Eq. 1.5 68 Flanking STC for Junction 3 64 Flanking STC for Junction 4 - Same as Junction 2 76			
Flanking STC _{lab,D,f3} Report A1-007750.2 Appendix B,C and D Flanking STC _{lab,D,f3} Report A1-007750.2 Appendix B,C and D Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 RR-331 Eq. 1.5 Flanking STC for Junction 3 Flanking STC for Junction 3 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2 Flanking STC for Junction 4 - Same as Junction 2			
Flanking STC _{lab,D,f3} Report A1-007750.2 Appendix B,C and D 64 Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 68 Flanking STC for Junction 3 64 Flanking STC for Junction 4 - Separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 76	riunking STC situ,F3,d	NN-331 Eq. 1.3	08
Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,D,f3 RR-331 Eq. 1.5 68 Flanking STC for Junction 3 64 Flanking STC for Junction 4 - Separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 76	lanking Path Df_3		
Normalization Correction RR-331 Eq. 1.5 3.98 Flanking STC situ,D,f3 RR-331 Eq. 1.5 68 Flanking STC for Junction 3 64 Flanking STC for Junction 4 - Separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 76	Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,0	C and D 64
Flanking STC situ,D,f3 RR-331 Eq. 1.5 68 Flanking STC for Junction 3 64 Flanking STC for Junction 4 - Separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 76	Normalization Correction	RR-331 Eq. 1.5	3.98
unction 4 - Separating wall and the flanking wall assemblies lanking STC for Junction 4 - Same as Junction 2 76	Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	68
unction 4 - Separating wall and the flanking wall assemblies Flanking STC for Junction 4 - Same as Junction 2 76	lanking STC for Junction 3		64
Flanking STC for Junction 4 - Same as Junction 2 76	<u> </u>		
NSTC due to Direct plus Flanking Transmission RR-221 Equation 1.4	lanking STC for Junction 4 - Same as J	unction 2	76
	ASTC due to Direct plus Flanking T	ransmission RR-221 Equation 1.4	E1

Example 16: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board fixed to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X fixed to the wood studs in the other room.
- One layer of 15 mm OSB on the floors

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 406 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to one side of the wood studs and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 406 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

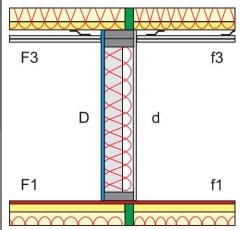
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

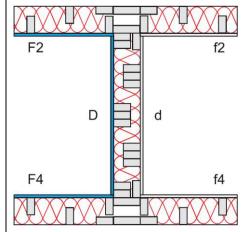
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on one side. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the studs on the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 16	Reference	Value
Direct STC Rating of Path Dd	Report A1-007750.2 Appendix B	48
STC _{Dd}	Report A1-00/750.2 Appendix B	40
unction 1 - Seperating wall and t	he floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	66
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	63
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	67
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	64
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f 1}	RR-331 Eq. 1.5	68
lanking STC for Junction 1		63
unction 2 - Separating wall and t	he flanking wall assemblies	
lanking Path Ff_2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	79
lanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f 2}	RR-331 Eq. 1.5	75
lanking STC for Junction 2		72
unction 3 -Seperating wall and th	ne ceiling assembly	
lanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	66
lanking Path Df_3		
Flanking STC _{lab.D.f3}	Report A1-007750.2 Appendix B,C and D	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	67
lanking STC for Junction 3		63
unction 4 - Separating wall and t	he flanking wall assemblies	
Flanking STC for Junction 4 - Same as J		72
ACTC due to Direct when Florald	Transmission DD 224 Fauret	
ASTC due to Direct plus Flanking T	ransmission RR-331 Equation 1.4	48

Example 17: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly fixed to the wood studs of all walls.
- Topping of cementitious flooring in one room.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

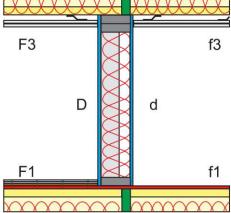
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

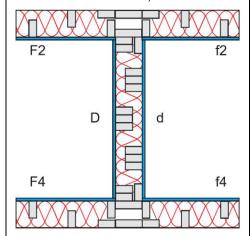
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of two layers of 12 mm cementitious underlayment flooring installed on top of 12 mm wood fiber board underlayment in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs with side walls of single staggered studs with one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs. (Plan view of Junction 2 or 4).

Example 17	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	51
31 C Dd	Report AL 607730.2 Appendix B	J.
unction 1 - Seperating wall and the	floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	68
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	72
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	67
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	71
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	65
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69
lanking STC for Junction 1		66
unction 2 - Separating wall and the	e flanking wall assemblies	
lanking Path Ff_2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	78
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	85
lanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
lanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	80
lanking STC for Junction 2		76
unction 3 -Seperating wall and the	ceiling assembly	
lanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	68
lanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	68
lanking STC for Junction 3		64
unction 4 - Separating wall and the	e flanking wall assemblies	
Flanking STC for Junction 4 - Same as Jun		76

Example 18: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board fixed to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X fixed to the wood studs in the other room.
- Topping of cementitious flooring in one room.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 406 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to one side of the wood studs and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 406 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

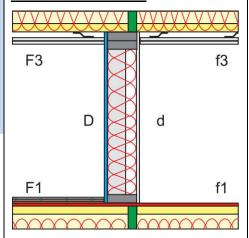
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

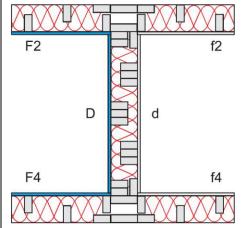
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on one side. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the studs on the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 18	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	48
SIC Dd	Report A1-00/750.2 Appendix B	40
unction 1 - Seperating wall and th	ne floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	68
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	72
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	65
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	69
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	68
lanking STC for Junction 1		65
unction 2 - Separating wall and than the stand the stand of the standard standard the standard standard the standard sta	ne flanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	79
1 1: 5 1 5 1 5		
Flanking Path Fd_2	Panart A1 0077E0 2 Annandix P. Cand D.	69
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
Flanking Path Df_2		
Flanking STC $_{lab,D,f2}$	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
lanking STC for Junction 2		72
unction 3 -Seperating wall and th	o sailing assambly	
unction 3 -Seperating wall and th	e cennig assembly	
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	66
lauking Dath Df 2		
lanking Path Df_3	Report A1-007750 2 Appendix B C and D	63
Flanking STC _{lab,D,f3} Normalization Correction	Report A1-007750.2 Appendix B,C and D	3.98
Flanking STC _{situ,D,f} 3	RR-331 Eq. 1.5 RR-331 Eq. 1.5	3.98
•	·	
lanking STC for Junction 3		63
unction 4 - Separating wall and th		
lanking STC for Junction 4 - Same as J	unction 2	72

Example 19: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly fixed to the wood studs of all walls.
- Topping of 38 mm thick gypsum concrete in one room.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

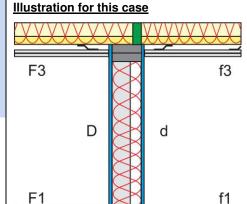
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

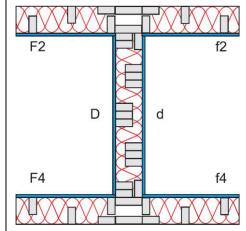
- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs with side walls of single staggered studs with one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs. (Plan view of Junction 2 or 4).

Example 19	Reference	Value
Direct STC Rating of Path Dd		
STC _{Dd}	Report A1-007750.2 Appendix B	51
Junction 1 - Seperating wall and t	he floor assembly	
Flanking Path Ff 1	ile floor assembly	
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F1,f1	RR-331 Eq. 1.5	77
Stta,1 1,j 1		
Flanking Path Fd_1		
Flanking STC $_{lab,F1,d}$	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	77
Elanking Dath Df 1		
Flanking Path Df_1	Papart A1 007750 2 Appandix B C and D	65
Flanking STC _{lab,D,f1} Normalization Correction	Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69
Filmking STC situ,D,f1	NN-331 LQ. 1.3	03
Flanking STC for Junction 1		68
Junction 2 - Separating wall and t	ne tianking wall assemblies	
Flanking Path Ff_2	Depart A1 0077F0 2 Appendix D C and D	70
Flanking STC _{lab,F2,f2} Normalization Correction	Report A1-007750.2 Appendix B,C and D	78 6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5 RR-331 Eq. 1.5	85
Flanking STC situ,F2,f2	NN-331 EQ. 1.3	65
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	80
rtanking 51 C situ,D,f 2	1111 552 Eq. 115	
Flanking STC for Junction 2		76
Junction 3 -Seperating wall and the Flanking Path Ff 3	ne ceiling assembly	
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
stru,F3,f3	551 Eq. 115	,,
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	68
Elanking Dath Df 2		
Flanking Path Df_3 Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ.D.f3	RR-331 Eq. 1.5	68
··· · · · · · · · · · · · · · · · · ·		
Flanking STC for Junction 3		64
lunction / Consusting well and a	he flanking wall assemblies	
Junction 4 - Separating wall and t		70
Flanking STC for Junction 4 - Same as .	JUNICUON Z	76
ASTC due to Direct plus Flanking 1	Fransmission RR-331 Equation 1.4	51
ASTE due to Direct plus rialikilig i	Tanomion In-531 Equation 1.4	31

Example 20: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board fixed to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X fixed to the wood studs in the other room.
- Topping of 38 mm thick gypsum concrete in one room.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 406 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

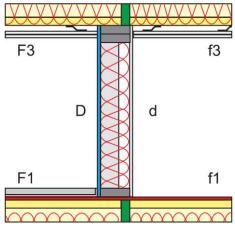
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

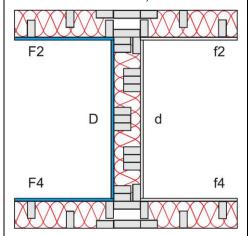
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached on one side. CertainTeed Type X gypsum board directly attached to the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 20	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	
24		
unction 1 - Seperating wall and th	e floor assembly	
Flanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	77
Flanking Path Fd_1		
Flanking STC $_{lab,F1,d}$	Report A1-007750.2 Appendix B,C and D	71
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	75
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f1	RR-331 Eq. 1.5	68
Flanking STC for Junction 1		67
unction 2 - Separating wall and the landing Path Ff 2	e flanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC situ,F2,f2	RR-331 Eq. 1.5	79
r tutiking 51 6 situ,F2,f2	MN 331 Eq. 1.3	75
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC $_{situ,D,f2}$	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		72
lunction 3 -Seperating wall and the	e ceiling assembly	
Flanking Path Ff_3	Depart A1 0077F0 2 Appendix B C and D	CC
Flanking STC _{lab,F3,f3} Normalization Correction	Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5	66 3.98
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	70
Franking 31 C situ,F3,f3	IN-331 LQ. 1.3	70
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	66
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	67
Flanking STC for Junction 3		63
		
unction 4 - Separating wall and the		
unction 4 - Separating wall and the landing STC for Junction 4 - Same as Ju		72

Example 48: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly fixed to the wood studs of all walls.
- Fire rated floor BXUV.M5351 with a bare 15 mm OSB subfloor.2

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

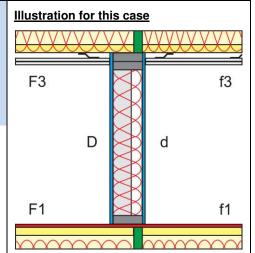
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

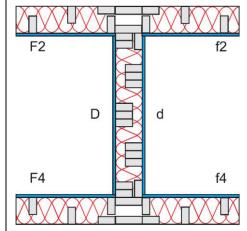
- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on both sides. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of a base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs with side walls of single staggered studs with one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs. (Plan view of Junction 2 or 4).

Example 48	Reference	Value
Direct STC Rating of Path Dd Laboratory Measured STC Rating		
•		
	eperating wall and the floor assembly	
lanking Path Ff_1 Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
stutting 51 C situ,F1,f1	MN-331 Eq. 1.3	07
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	68
lanking Path Df 1		
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	68
Flanking STC for Junction 1		63
	and the floridation will and the floridation will be a first transfer to the first transfer transfer to the first transfer transfer to the first transfer t	
unction 2 - Junction between the s Flanking Path Ff_2	eparating wall and the flanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B, C, and D	78
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ.F2.f2}	RR-331 Eq. 1.5	85
stuncing 51 ° situ,F2,f2	NN-331 LQ. 1.3	- 65
lanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B, C, and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B, C, and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f 2}	RR-331 Eq. 1.5	80
Flanking STC for Junction 2		76
lunction 3 - Junction between the s Flanking Path Ff 3	eperating wall and the ceiling assembly	
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	67
lanking Path Df_3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	67
Flanking STC for Junction 3		62
lunction 4 - Junction between the s Flanking STC for Junction 4 - Same as Jui	eparating wall and the flanking wall assemblies	76
ASTC due to Direct plus Flanking Tra	ansmission RR-331 Section 1.4	50

Example 49: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board fixed to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X fixed to the wood studs in the other room.
- Fire rated floor BXUV.M535¹ with a bare 15 mm OSB subfloor.²

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 406 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to one side of the wood studs and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 406 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

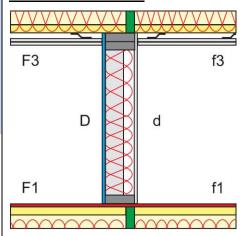
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

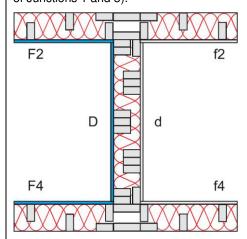
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board directly attached to the studs on one side. One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the studs on the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of a base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



D: 1070 D 1: (D 1) D 1	Reference	Value
Direct STC Rating of Path Dd Laboratory Measured STC Rating	Report A1-007750.2 Appendix B	48
,		
	perating wall and the floor assembly	
lanking Path Ff_1 Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F1,f1	RR-331 Eq. 1.5	67
tunking 51 6 situ,F1,f1	nn-331 Lq. 1.3	07
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	66
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	67
Flanking STC for Junction 1		62
unction 2 - Junction between the se Flanking Path Ff 2	parating wall and the flanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B, C, and D	72
Normalization Correction		
Flanking STC _{situ.F2.f2}	RR-331 Eq. 1.5 RR-331 Eq. 1.5	6.99 79
rtunking STC situ,F2,f2	KK-331 Eq. 1.5	79
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B, C, and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
Flanking Path Df_2		
Flanking STC $_{lab,D,f2}$	Report A1-007750.2 Appendix B, C, and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		72
	perating wall and the ceiling assembly	
Flanking Path Ff_3	D	
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	61
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	65
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	66
Flanking STC for lunction 2		C1
Flanking STC for Junction 3		61
	parating wall and the flanking wall assemblies	
lunction 4 - Junction between the se Flanking STC for Junction 4 - Same as Jun		72

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4.4 Side-By-Side Rooms - Load Bearing Triple Staggered Stud Separating Wall Assembly with Shear Elements

				Construction		
Example Number	ASTC Rating	Wallboard Room 1	Wallboard Room 2	Floor System	Floor Topping Room 1	Floor Topping Room 2
21	51	One layer of 15.9 mm SilentFX® QuickCut gypsum board fixed to 15.9 mm Plywood	One layer of 15.9 mm SilentFX® QuickCut gypsum board	1	None	None
22	48	11	One layer of 15.9 mm CertainTeed Type X gypsum board	11	None	11
23	51	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board	11	Two layers of 12 mm cementitious flooring underlayment	н
24	48	11	One layer of 15.9 mm CertainTeed Type X gypsum board	11	11	11
25	51	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board	"	38 mm thick gypsum concrete on a 9 mm closed cell foam	11
26	48	11	One layer of 15.9 mm CertainTeed Type X gypsum board	11	11	11
50	50	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board	2	None	11
51	48	п	One layer of 15.9 mm CertainTeed Type X gypsum board	11	п	11
27	51	QuickCut gypsum One layer of 15 directly fixed to	9 mm SilentFX® board on all walls. 5.9 mm plywood one side of the partition.	1	None	и
28	51	QuickCut gypsum One layer of 15 directly fixed to the	9 mm SilentFX® board on all walls. 5.9 mm plywood e walls on one side rooms.	11	11	11

Example 21: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room.
- One layer of 15 mm OSB on the floors.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

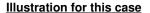
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

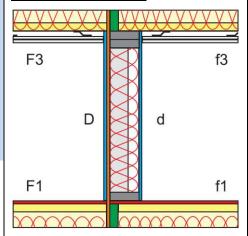
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

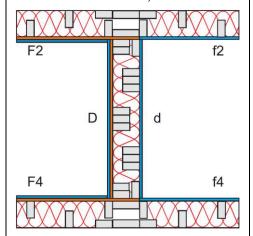
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.





Junction of a triple staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 21	Re	ference	Value
Direct STC Rating of Path Dd	5		
STC _{Dd}	Report A1-00	7750.2 Appendix B	51
unction 1 - Seperating wall and th	e floor assembly		
Flanking Path Ff_1			
Flanking STC $_{lab,F1,f1}$	Report A1-007750	0.2 Appendix B,C and D	66
Normalization Correction	RR-3	331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-3	331 Eq. 1.5	70
Flanking Path Fd_1			
Flanking STC _{lab.F1.d}	Report A1-007750	0.2 Appendix B,C and D	65
Normalization Correction	· ·	331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}		331 Eq. 1.5	69
Flanking Dath Df 1			
Flanking Path Df_1	Donort A1 007750	2 Annandiy D Cand D	CE
Flanking STC _{lab,D,f1}	· · · · · · · · · · · · · · · · · · ·	D.2 Appendix B,C and D	65
Normalization Correction Flanking STC _{situ,D,f1}		331 Eq. 1.5 331 Eq. 1.5	3.98
stru,D,f 1	HIC 3	q. 4.0	0.5
Flanking STC for Junction 1			65
Junction 2 - Separating wall and th	Indicate the second in th	lies	
Flanking Path Ff 2			
Flanking STC _{lab,F2,f2}	Report A1-007750	D.2 Appendix B,C and D	78
Normalization Correction		331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}		331 Eq. 1.5	85
Flanking Path Fd_2	D A4 007750	2.2.4	72
Flanking STC _{lab,F2,d}	·	0.2 Appendix B,C and D	73
Normalization Correction		331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-3	331 Eq. 1.5	80
Flanking Path Df_2			
Flanking STC _{lab,D,f2}	Report A1-007750	0.2 Appendix B,C and D	73
Normalization Correction	RR-3	331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-3	331 Eq. 1.5	80
Flanking STC for Junction 2			76
ridiking Sie foi Juliction 2			70
Junction 3 -Seperating wall and the	ceiling assembly		
Flanking Path Ff_3			
Flanking STC _{lab,F3,f3}	Report A1-007750	0.2 Appendix B,C and D	66
Normalization Correction	RR-3	331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-3	331 Eq. 1.5	70
Flanking Path Fd 3			
Flanking STC _{lab,F3,d}	Report A1-007750	D.2 Appendix B,C and D	64
Normalization Correction	· ·	331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}		331 Eq. 1.5	68
Flanking Path Df_3	D 1 44 00===	22 Ammandia D.C I.D.	
Flanking STC _{lab,D,f3}	· · · · · · · · · · · · · · · · · · ·	0.2 Appendix B,C and D	64
Normalization Correction		331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	KK-3	331 Eq. 1.5	80
Flanking STC for Junction 3			64
Junction 4 - Separating wall and th	e flanking wall assembl	lies	
Flanking STC for Junction 4 - Same as Ju			76
			1

Example 22: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X gypsum board directly attached to the wood studs in the other room.
- One layer of 15 mm OSB on the floors.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm. CertainTeed Type X gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

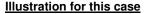
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

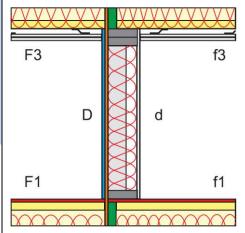
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

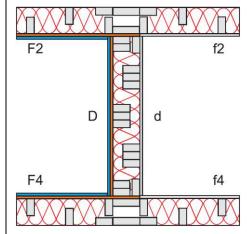
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.





Junction of triple staggered separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached on one side. CertainTeed Type X gypsum board directly attached to the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 22	Reference	Value
Direct STC Rating of Path Dd		40
aboratory Measured STC Rating		48
unction 1 - Junction between the seperating	wall and the floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Laboratory Measurement	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Laboratory Measurement	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	67
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Laboratory Measurement	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f 1}	RR-331 Eq. 1.5	68
Flanking STC for Junction 1		63
lumation 2 lumation to the control of	and the flowline well	
lunction 2 - Junction between the separating v	wall and the flanking wall assemblies	
Flanking STC _{lab,F2,f2}	Laboratory Measurement	72
Normalization Correction		
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	6.99 79
rtunking STC situ,F2,f2	RR-331 Eq. 1.5	79
Flanking Path Fd_2	_	
Flanking STC _{lab,F2,d}	Laboratory Measurement	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Laboratory Measurement	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		72
Junction 3 - Junction between the seperating	wall and the reiling assembly	
Flanking Path Ff_3	aran and the centing assembly	
Flanking STC _{lab,F3,f3}	Laboratory Measurement	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Laboratory Measurement	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	66
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Laboratory Measurement	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f} 3	RR-331 Eq. 1.5	67
Flanking STC for Junction 3		63
Junction 4 - Junction between the separating	wall and the flanking wall assemblies	
Flanking STC for Junction 4 - Same as Junction 2		72
ASTC due to Direct plus Flanking Transmission		

Example 23: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room.
- Topping of cementitious flooring in one room.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

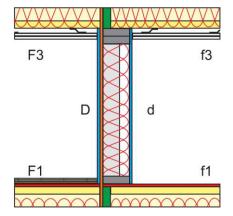
<u>Junction 3: Top Junction (separating wall / ceiling) with:</u>

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

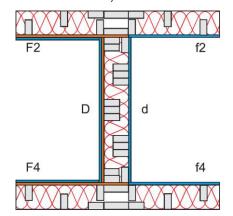
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 23Error! Reference source	e not found. Reference	Value
Direct STC Rating of Path Dd STC_{Dd}	Report A1-007750.2 Appendix B	
unction 1 - Seperating wall and the	e floor assembly	
lanking Path Ff_1 Flanking STC lab,F1,f1	Depart A1 0077F0 2 Appendix D C and D	CO
Normalization Correction	Report A1-007750.2 Appendix B,C and D RR-331 Eq. 1.5	68 3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	72
Flunking STC situ,F1,f1	nn-331 Eq. 1.3	12
lanking Path Fd_1		
Flanking STC $_{lab,F1,d}$	Report A1-007750.2 Appendix B,C and D	67
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	71
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	65
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69
Flanking STC for Junction 1		66
unction 2 - Separating wall and the Flanking Path Ff 2	e flanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	78
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC situ,F2,f2	RR-331 Eq. 1.5	85
stru,F2,f2	331 Eq. 1.3	0.5
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC $_{situ,D,f2}$	RR-331 Eq. 1.5	80
Flanking STC for Junction 2		76
lunction 3 -Seperating wall and the	e ceiling assembly	
Flanking Path Ff_3	Report A1-007750.2 Appendix B,C and D	66
Flanking STC _{lab,F3,f3} Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	70
r tunking 51 °C situ,F3,f3	MN 331 Eq. 1.3	70
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	68
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f3	RR-331 Eq. 1.5	68
Flanking STC for Junction 3		64
Turning of Citor Juriculon 3		
Junction 4 - Separating wall and the		
Claubing CTC for lunction A. Comp. on lu	nction 2	76
Flanking STC for Junction 4 - Same as Ju	<u>-</u>	

Example 24: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X gypsum board directly attached to the wood studs in the other room.
- Topping of cementitious flooring in one room.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm. CertainTeed Type X gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

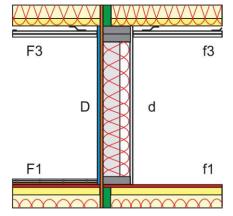
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

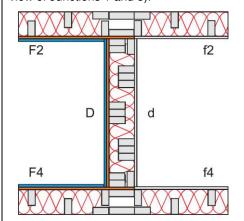
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm CertainTeed Type X gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board underlayment in one room (F1). The wall also connects with a ceiling of two lavers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 24Error! Reference source	ce not found. Reference	Value
Oirect STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	48
Di G Da	Report N2 007/30.27 Appendix B	
unction 1 - Seperating wall and th	e floor assembly	
anking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	68
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	72
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	65
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	69
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,D,f 1	RR-331 Eq. 1.5	68
lanking STC for Junction 1		65
<u> </u>		
unction 2 - Separating wall and the Flanking Path Ff 2	e flanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC situ,F2,f2	RR-331 Eq. 1.5	79
situ,F2,f2	nn-331 Ly. 1.3	/3
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		72
lunction 3 -Seperating wall and the	a calling accombly	
Flanking Path Ff 3	e cening assembly	
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	70
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F3,d	RR-331 Eq. 1.5	66
lanking Path Df 3		
	Report A1-007750.2 Appendix B,C and D	63
Flanking STC _{lab,D,f3} Normalization Correction		3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5 RR-331 Eq. 1.5	67
•		
Flanking STC for Junction 3		63
unction 4 - Separating wall and th		
Flanking STC for Junction 4 - Same as Ju	nnction 2	72

Example 25: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room
- Topping of 38 mm thick gypsum concrete in one room.

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Tipple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

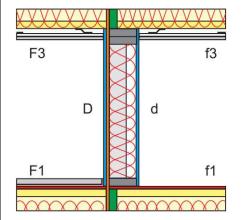
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

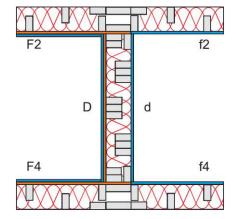
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1). The wall also connects with a ceiling of two lavers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and



Example 25		Reference	Value
Direct STC Rating of Path Dd	D		F4
STC _{Dd}	Керо	rt A1-007750.2 Appendix B	51
unction 1 - Seperating wall and t	he floor assembly	1	
Flanking Path Ff_1			
Flanking STC $_{lab,F1,f1}$	Report A:	1-007750.2 Appendix B,C and D	73
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}		RR-331 Eq. 1.5	77
Flanking Path Fd_1			
Flanking STC _{lah.F1.d}	Report A:	1-007750.2 Appendix B,C and D	73
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}		RR-331 Eq. 1.5	77
Clauding Dath Df 1			
Flanking Path Df_1	Donout A	1 0077F0 2 Annondiv D C and D	CE
Flanking STC _{lab,D,f1}	Keport A	1-007750.2 Appendix B,C and D	65
Normalization Correction Flanking STC _{situ,D,f1}		RR-331 Eq. 1.5 RR-331 Eg. 1.5	3.98
stru,D,f 1		301 Ly. 113	0.5
Flanking STC for Junction 1			68
Junction 2 - Separating wall and t	he flanking wall a	assemblies	
Flanking Path Ff 2			
Flanking STC _{lab,F2,f2}	Report A	1-007750.2 Appendix B,C and D	78
Normalization Correction	перопен	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}		RR-331 Eq. 1.5	85
Flanking Path Fd_2	D 1.4	1.007750.2.4	70
Flanking STC _{lab,F2,d}	керогі А.	1-007750.2 Appendix B,C and D	73
Normalization Correction		RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}		RR-331 Eq. 1.5	80
Flanking Path Df_2			
Flanking STC $_{lab,D,f2}$	Report A:	1-007750.2 Appendix B,C and D	73
Normalization Correction		RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}		RR-331 Eq. 1.5	80
Flanking STC for Junction 2			76
rialiking STC for Junction 2			70
Junction 3 -Seperating wall and th	ne ceiling assemb	ly	
Flanking Path Ff_3			
Flanking STC _{lab,F3,f3}	Report A:	1-007750.2 Appendix B,C and D	66
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}		RR-331 Eq. 1.5	70
Flanking Path Fd_3			
Flanking STC _{lab,F3,d}	Report A	1-007750.2 Appendix B,C and D	64
Normalization Correction		RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}		RR-331 Eq. 1.5	68
Flanking Bath Df 2			
Flanking Path Df_3	Donort A	1 007750 2 Appendix P. C and D	CA
Flanking STC _{lab,D,f3}	кероп А	1-007750.2 Appendix B,C and D	64
Normalization Correction Flanking STC _{situ.D.f.3}		RR-331 Eq. 1.5 RR-331 Eq. 1.5	3.98
stru,D,f3			35
Flanking STC for Junction 3			64
Junction 4 - Separating wall and t	he flanking wall a	ssemblies	
Flanking STC for Junction 4 - Same as			76
	Transmission	RR-331 Equation 1.4	51

81

Example 26: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X gypsum board directly attached to the wood studs in the other room.
- Topping of 38 mm thick gypsum concrete in one room.

Separating wall assembly (loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1).

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

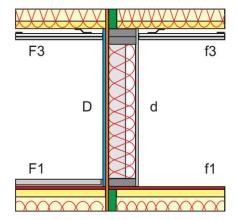
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

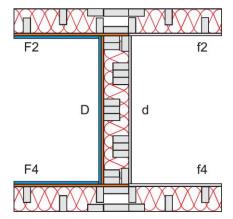
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm CertainTeed Type X gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer in one room (F1). The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 26	Reference	Value
Direct STC Rating of Path Dd STC Dd	Report A1-007750.2 Appendix B	48
SIC Dd	Report A1-00/730.2 Appendix B	40
unction 1 - Seperating wall and the	he floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	73
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	77
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	70
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	74
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	68
lanking STC for Junction 1		67
unction 2 - Separating wall and tl lanking Path Ff 2	ne nanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	79
lanking Path Fd_2		
Flanking STC _{lab.F2.d}	Report A1-007750.2 Appendix B,C and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
r tuttking 51 G situ,F2,d	MN-331 Eq. 1.3	70
lanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		72
unction 3 -Seperating wall and th	ne ceiling assembly	
lanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	66
lanking Path Df 3		
Flanking STC _{lab.D.f3}	Report A1-007750.2 Appendix B,C and D	63
Franking STC _{lab,D,f3} Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	67
Flanking STC for Junction 3		63
Turning STC TOF JURICHOFF S		03
unction 4 - Separating wall and the		70
lanking STC for Junction 4 - Same as J	unction 2	72
ASTC due to Direct plus Flanking T	ransmission RR-331 Equation 1.4	48

Example 50: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room.
- Fire rated floor BXUV.M535¹ with a bare 15 mm OSB subfloor.²

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

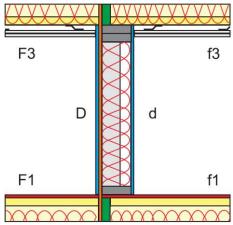
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

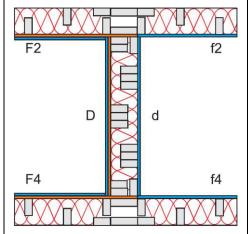
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction of a triple staggered separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-ioists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of a base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 50	Reference	Value
Direct STC Rating of Path Dd Laboratory Measured STC Rating	Report A1-007750.2 Appendix B	51
	remaking well and the fleen economic.	
lanking Path Ff 1	perating wall and the floor assembly	
Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
ttanking 51 6 situ,F1,f1	MY-331 Eq. 1.3	- 07
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	64
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	68
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	67
Flanking STC for Junction 1		63
	parating wall and the flanking wall assemblies	
Flanking Path Ff_2 Flanking STC _{lab,F2,f2}	Papart A1 0077E0 2 Assessed to D. C. and D.	70
	Report A1-007750.2 Appendix B, C, and D	78
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	85
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B, C, and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B, C, and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	80
Flanking STC for Junction 2		76
	perating wall and the ceiling assembly	
Flanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	67
Flanking Path Df 3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	66
Flanking STC for Junction 3		62
ranking STC for Junction 5		02
Junction 4 - Junction between the se	parating wall and the flanking wall assemblies	
Flanking STC for Junction 4 - Same as June	ction 2	76

Example 51: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room.
- One layer of 15.9 mm (5/8") CertainTeed Type X gypsum board directly attached to the wood studs in the other room.
- Fire rated floor BXUV.M5351 with a bare 15 mm OSB subfloor.2

Separating wall assembly (loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm. CertainTeed Type X gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in one room (F2 and F4).
- One layer of 15.9 mm CertainTeed Type X gypsum board directly attached to the wood studs in the other room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavities.

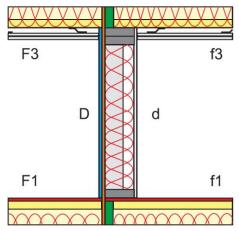
Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

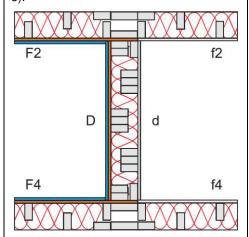
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.

Illustration for this case



Junction triple of staggered separating wall with one layer of 15.9 mm CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached on one side. CertainTeed Type X gypsum board directly attached to the other side. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of a base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 51	Reference	Value
Direct STC Rating of Path Dd aboratory Measured STC Rating	Report A1-007750.2 Appendix B	48
•		
	eperating wall and the floor assembly	
lanking Path Ff_1 Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC situ,F1,f1	RR-331 Eq. 1.5	67
tunking 51 C situ,F1,f1	NN-331 Eq. 1.3	07
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	61
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	65
lanking Path Df 1		
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	66
lanking STC for Junction 1		61
unction 2 - Junction between the s Flanking Path Ff 2	eparating wall and the flanking wall assemblies	
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B, C, and D	72
Normalization Correction		
Flanking STC _{situ.F2.f2}	RR-331 Eq. 1.5 RR-331 Eq. 1.5	6.99 79
rtunking 51 G situ,F2,f2	KK-331 EQ. 1.5	79
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B, C, and D	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B, C, and D	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		72
	eperating wall and the ceiling assembly	
Flanking Path Ff_3	Devents 44 0077F0 2	
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	60
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	64
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	61
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	65
Flanking STC for Junction 3		60
ianking STC for Junction 5		00
	eparating wall and the flanking wall assemblies	
Flanking STC for Junction 4 - Same as Jui	nction 2	72
-		

Example 27: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- · All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs on one side of the separating wall.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs on the other side of the separating wall and the studs of the other walls.
- One layer of 15 mm OSB on the floors.

Separating wall assembly (loadbearing) with:

- Staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm (2x6).
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to one side of the wood studs (D) and one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the other side of the wood studs (d).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:

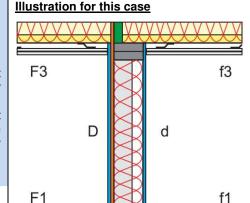
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

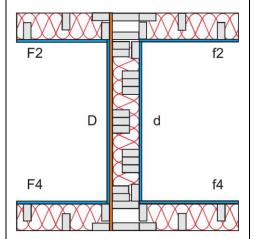
- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junction of a triple staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9mm plywood directly attached to the wood studs on one side (D). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly fixed to the wood studs on the other side (d). A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 27	Refe	erence	Value
Direct STC Rating of Path Dd	Donort A1 007	750 2 Annandiy D	F1
STC _{Dd}	Report A1-007	750.2 Appendix B	51
unction 1 - Seperating wall and t	e floor assembly		
lanking Path Ff_1			
Flanking STC $_{lab,F1,f1}$	Report A1-007750.2	2 Appendix B,C and D	66
Normalization Correction	RR-33	1 Eq. 1.5	3.98
Flanking STC situ,F1,f1	RR-33	1 Eq. 1.5	70
Flanking Path Fd_1			
Flanking STC _{lab,F1,d}	Report A1-007750.2	2 Appendix B,C and D	65
Normalization Correction	RR-33	1 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-33	1 Eq. 1.5	69
Flanking Path Df_1			
	Papart A1 007750 1	Annondiy P C and D	65
Flanking STC _{lab,D,f1} Normalization Correction	· · · · · · · · · · · · · · · · · · ·	2 Appendix B,C and D	3.98
		1 Eq. 1.5	
Flanking STC situ,D,f1	KK-33	1 Eq. 1.5	69
Flanking STC for Junction 1			65
	a		
Junction 2 - Separating wall and t	ie flanking wall assemblie	es	
Flanking Path Ff_2	B		
Flanking STC _{lab,F2,f2}	The state of the s	2 Appendix B,C and D	78
Normalization Correction		1 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-33	1 Eq. 1.5	85
Flanking Path Fd_2			
Flanking STC _{lab,F2,d}	Report A1-007750.2	2 Appendix B,C and D	73
Normalization Correction	·	1 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}		1 Eq. 1.5	80
el l' pulpta			
Flanking Path Df_2	D 144 007750		70
Flanking STC _{lab,D,f2}	· · · · · · · · · · · · · · · · · · ·	2 Appendix B,C and D	73
Normalization Correction		1 Eq. 1.5	6.99
Flanking STC situ,D,f2	RR-33	1 Eq. 1.5	80
Flanking STC for Junction 2			76
Junction 3 -Seperating wall and th	e ceiling assembly		
Flanking Path Ff_3			
Flanking STC _{lab,F3,f3}	· ·	2 Appendix B,C and D	66
Normalization Correction		1 Eq. 1.5	3.98
Flanking STC situ,F3,f3	RR-33	1 Eq. 1.5	70
Flanking Path Fd 3			
Flanking STC _{lab,F3,d}	Report A1-007750 2	2 Appendix B,C and D	64
Normalization Correction	The state of the s	1 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}		1 Eq. 1.5	68
1 tantiting 01 0 situ,F3,d	1111 33	q. -	
Flanking Path Df_3			
Flanking STC _{lab,D,f3}	Report A1-007750.2	2 Appendix B,C and D	64
Normalization Correction	· · · · · · · · · · · · · · · · · · ·	1 Eq. 1.5	3.98
Flanking STC situ,D,f3		1 Eq. 1.5	68
Elanking CTC for lunching 2			Ca
Flanking STC for Junction 3			64
Junction 4 - Separating wall and t	e flanking wall assemblie	es	
Flanking STC for Junction 4 - Same as J	unction 2		76
ASTC due to Direct plus Flanking T	ransmission RR-331	Equation 1.4	51

Example 28: Rooms side-by-side - Loadbearing Separating Wall

- Simplified Method.
- Common triple staggered wood stud wall.
- . All other walls are single staggered wood stud walls.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs of walls F4 and f4.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs on the studs of the other walls
- One layer of 15 mm OSB on the floors.

Separating wall assembly (non-loadbearing) with:

- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to each side of the wood studs.
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Subfloor of one layer of 15 mm OSB directly attached to I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.

Junction 2: (separating wall /abutting side wall) with:

- Single staggered 2x4 wood studs spaced 406 mm on center.
 Double 2x6 headers and a single 2x6 footer.
- One layer of 15.9 mm SilentFX® QuickCut Gypsum Board directly attached to the wood studs.
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

- Joists oriented perpendicular to the separating wall assembly.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.
- Two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the ceiling cavity.

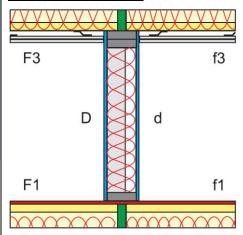
Junction 4: (separating wall /abutting side wall) with:

- Single staggered 2x4 wood studs spaced 406 mm on center.
 Double 2x6 headers and a single 2x6 footer.
- One layer of 15.9 mm SilentFX® QuickCut Gypsum Board and one layer of 15.9 mm plywood directly attached to the wood studs.
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

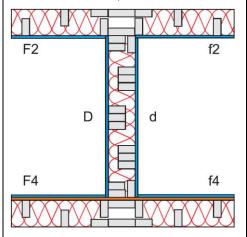
Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.





Junction of a triple staggered stud separating wall with one layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs. A floor of wood I-joists with one layer of 15 mm OSB in both rooms. The wall also connects with a ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on resilient channels. (Side view of Junctions 1 and 3).



Example 28	Reference	Value
Direct STC Rating of Path Dd	Daniel A4 007750 2 Americalis D	F4
STC _{Dd}	Report A1-007750.2 Appendix B	51
unction 1 - Seperating wall and t	ne floor assembly	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2 Appendix B,C and D	66
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2 Appendix B,C and D	65
Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	69
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2 Appendix B,C and D	65
Normalization Correction	RR-331 Eg. 1.5	3.98
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69
lanking STC for Junction 1		65
lanking STC for Junction 1		65
unction 2 - Separating wall and the	ne flanking wall assemblies	
lanking Path Ff_2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2 Appendix B,C and D	78
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	85
lanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
lanking Path Df 2		
Flanking STC _{lab,D,f2}	Report A1-007750.2 Appendix B,C and D	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	80
lanking STC for Junction 2		76
unction 3 -Seperating wall and th	e ceiling assembly	
lanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2 Appendix B,C and D	66
Normalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2 Appendix B,C and D	64
Jormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	68
lanking Path Df 3		
Flanking STC _{lab.D.f.3}	Report A1-007750.2 Appendix B,C and D	64
Franking STC _{lab,D,f3} Iormalization Correction	RR-331 Eq. 1.5	3.98
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	68
·	·	
lanking STC for Junction 3		64
unction 4 - Separating wall and t		
lanking STC for Junction 4 - Same as J	unction 2	76
ASTC due to Direct plus Flanking T	ransmission RR-331 Equation 1.4	51

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4.5 Rooms One-above-the-Other

Example	ASTC	Floor System	Topping	Wallboard Room 1	Wallboard Room 2
29	52	1	None	One layer of 15.9 mm SilentFX® QuickCut gypsum board	One layer of 15.9 mm SilentFX® QuickCut gypsum board
30	52	11	11	11	One layer of 15.9 mm CertainTeed Type X gypsum board
31	56	11	Two layers of 12 mm cementitious flooring underlayment	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board
32	55	11	"	11	One layer of 15.9 mm CertainTeed Type X gypsum board
33	63	11	38 mm thick gypsum concrete on a 9 mm closed cell foam	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board
34	61	11	11	11	One layer of 15.9 mm CertainTeed Type X gypsum board
52	50	2	None	11	One layer of 15.9 mm SilentFX® QuickCut gypsum board
53	49		11	11	One layer of 15.9 mm CertainTeed Type X gypsum board

Example 29: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in both the upper and the lower rooms.
- One layer of 15 mm OSB directly attached to the floor joists.

Separating floor/ceiling assembly with:

- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

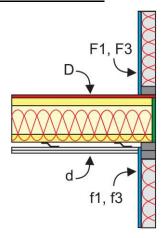
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

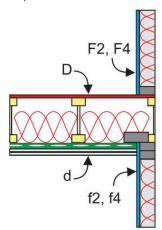
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide.

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)

Example 29	Reference	Value
Direct STC Rating of Path Dd through the Separa	ating Floor	
STC _{Dd}	Report A1-007750.2 Appendix B	53
Junction 1 - Separating floor and the flanki	ing load bearing walls	
Flanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	70
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69
Flanking STC for Junction 1		65
Junction 1 - Separating floor and the flanki	ing non-load bearing walls	
Flanking Path Ff_2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	77
Flanking Path Fd 2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	78
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	73
Flanking STC for Junction 2		71
Junction 1 - Separating floor and the flanki	ing load bearing walls	
Flanking Path Ff_3	Poport A1 007750 3	64
Flanking STC _{lab,F3,f3} Normalization Correction	Report A1-007750.2 RR-331 Eg. 1.5	6.02
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
	·	
Flanking Path Fd_3	D 00=====	
Flanking STC _{lab,F3,d}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	70
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,D,f3	RR-331 Eq. 1.5	69
Flanking STC for Junction 3		65
Junction 1 - Separating floor and the flanki	ing non-load hearing walls	
Flanking STC for Junction 4 - Same as Junction 2		71
_		
ASTC due to Direct plus Flanking Transmiss	sion RR-331 Equation 1.4	52

Example 30: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room. One layer of 15.9 mm (5/8") CertainTeed Type X directly attached to the wood studs in the lower room.
- One layer of 15 mm OSB directly attached to the floor joists.

Separating floor/ceiling assembly with:

- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f1 and f3).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

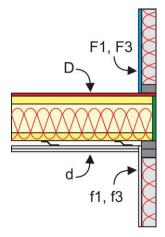
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

 $\underline{Note:}$ For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

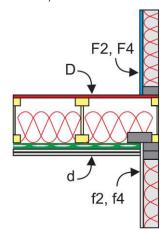
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f1 and f3). (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f2 and f4). (Side view)

Example 30 Direct STC Rating of Path Dd through the Separatir	Reference	Value
STC _{Dd}	Report A1-007750.2 Appendix B	53
unction 1 - Separating floor and the flanking	load hearing walls	
lanking Path Ff 1	, roug searing mans	
Flanking STC _{lab,F1,f1}	Report A1-007750.2	61
Jormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
lanking Path Fd_1		
Flanking STC _{lab.F1.d}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	69
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	61
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	67
lanking STC for Junction 1		63
and the second s	and the district of the second	
unction 1 - Separating floor and the flanking lanking Path Ff 2	non-load bearing walls	
Flanking STC _{lab,F2,f2}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	71
lanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
lanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	62
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ.D.f.2}	RR-331 Eq. 1.5	69
lanking STC for Junction 2		66
aliming of e for surrection 2		
unction 1 - Separating floor and the flanking	load bearing walls	
lanking Path Ff_3	Daniel A4 007750 0	
Flanking STC _{lab,F3,f3}	Report A1-007750.2	61
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	69
lanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	61
Iormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	67
lanking STC for Junction 3		63
unction 1 - Separating floor and the flanking	non-load bearing walls	
lanking STC for Junction 4 - Same as Junction 2	,	66
CTC due to Direct who El . L. T	DD 224 F	
ASTC due to Direct plus Flanking Transmission	n RR-331 Equation 1.4	52

Example 31: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in both the upper and the lower rooms.
- One layer of 15 mm OSB directly attached to the floor joists.
- Topping of cementitious flooring.

Separating floor/ceiling assembly with:

- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

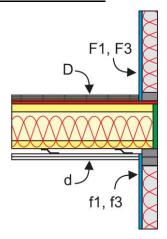
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

<u>Note:</u> For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

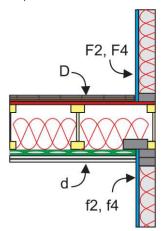
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)

Example 31 Direct STC Rating of Path Dd through the Separating	Reference	Value
STC _{Dd}	Report A1-007750.2 Appendix B	57
or of pa		
unction 1 - Separating floor and the flanking lo	oad bearing walls	
Flanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F1,f1	RR-331 Eq. 1.5	70
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2	66
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F1,d	RR-331 Eq. 1.5	72
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	65
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	71
Flanking STC for Junction 1		66
Junction 1 - Separating floor and the flanking n	on-load bearing walls	
Flanking Path Ff 2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	77
Flanking Path Fd 2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		72
Junction 1 - Separating floor and the flanking lo Flanking Path Ff_3	oad bearing walls	
Flanking STC _{lab,F3,f3}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	66
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F3,d	RR-331 Eq. 1.5	72
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	65
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	71
Flanking STC for Junction 3		66
lunction 1 - Separating floor and the flanking n	on-load bearing walls	
Flanking STC for Junction 4 - Same as Junction 2	on load searning mails	72
ASTC due to Direct plus Flanking Transmission	RR-331 Equation 1.4	56

99

Example 32: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- . Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room. One layer of 15.9 mm (5/8") CertainTeed Type X directly attached to the wood studs in the lower room.
- One layer of 15 mm OSB directly attached to the floor joists.
- Topping of cementitious flooring.

Separating floor/ceiling assembly with:

- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center..

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f1 and f3).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

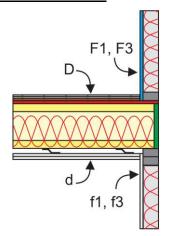
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

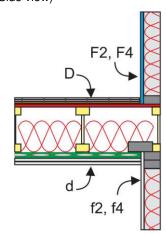
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f1 and f3). (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f2 and f4). (Side view)

Example 32 Direct STC Rating of Path Dd through the Separating Flo	Reference	Value
	Report A1-007750.2 Appendix B	57
unction 1 - Separating floor and the flanking load	d bearing walls	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	61
Iormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2	65
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	71
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69
Flanking STC for Junction 1		64
Junction 1 - Separating floor and the flanking non	-load bearing walls	
Flanking Path Ff 2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	71
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	78
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC situ,D,f2	RR-331 Eq. 1.5	71
Flanking STC for Junction 2		68
Junction 1 - Separating floor and the flanking load	d bearing walls	
Flanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2	61
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	65
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	71
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	69
Flanking STC for Junction 3		64
lunction 1 - Congrating floor and the flooring	Lload hearing walls	
Junction 1 - Separating floor and the flanking non Flanking STC for Junction 4 - Same as Junction 2	rioau Dearing Walls	68
-		

Example 33: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in both the upper and the lower rooms.
- One layer of 15 mm OSB directly attached to the floor joists.
- Topping of 38 mm thick gypsum concrete.

Separating floor/ceiling assembly with:

- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

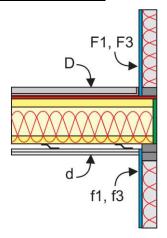
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

<u>Note:</u> For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

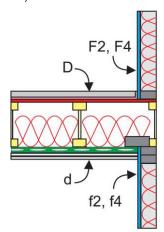
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)

Example 33 Direct STC Rating of Path Dd through the Separating Floring	Reference	Value
STC _{Dd}	Report A1-007750.2 Appendix B	68
unction 1 - Separating floor and the flanking loa	d bearing walls	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	64
Iormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2	72
Iormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	78
lanking Path Df 1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	77
lanking STC for Junction 1		69
unction 1 - Separating floor and the flanking no	n-load hearing walls	
lanking Path Ff 2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	77
Flanking Path Fd_2 Flanking STC _{lab,F2,d}		
	Report A1-007750.2	79
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	86
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	74
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	81
Flanking STC for Junction 2		75
unction 1 - Separating floor and the flanking loa	d bearing walls	
lanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	72
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	78
lanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	77
lanking STC for Junction 3		69
unction 1 Congreting floor and the floubing are	a load bassing walls	
unction 1 - Separating floor and the flanking nor lanking STC for Junction 4 - Same as Junction 2	n-ioau bearing walls	75
ASTC due to Direct plus Flanking Transmission	RR-331 Equation 1.4	63

Example 34: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room. One layer of 15.9 mm (5/8") CertainTeed Type X directly attached to the wood studs in the lower room.
- One layer of 15 mm OSB directly attached to the floor joists.
- Topping of 38 mm thick gypsum concrete.

Separating floor/ceiling assembly with:

- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f1 and f3).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

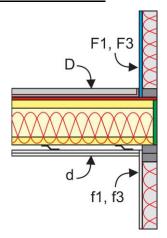
- · Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

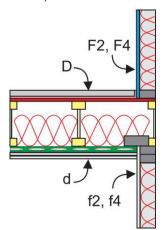
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f1 and f3). (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f2 and f4). (Side view)

Direct STC Rating of Path Dd through the Se	Reference	Value
STC _{Dd}	Report A1-007750.2 Appendix B	68
unction 1 - Separating floor and the fla	anking load bearing walls	
Flanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	61
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F1,f1	RR-331 Eq. 1.5	67
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	77
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	69
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	75
Flanking STC for Junction 1		66
Junction 1 - Separating floor and the fla	anking non-load bearing walls	
Flanking Path Ff_2		
Flanking STC _{lab,F2,f2}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	71
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	77
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	84
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	77
Flanking STC for Junction 2		70
Junction 1 - Separating floor and the fla	anking load bearing walls	
Flanking Path Ff_3	<u> </u>	
Flanking STC _{lab,F3,f3}	Report A1-007750.2	61
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	77
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	69
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	75
Flanking STC for Junction 3		66
Junction 1 - Separating floor and the fla	anking non-load bearing walls	
Junction 1 - Separating floor and the fla Flanking STC for Junction 4 - Same as Juncti		70

Example 52: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Fire rated floor BXUV.M5351 with a bare 15 mm OSB subfloor.2
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in both the upper and the lower rooms.

Separating floor/ceiling assembly with:

- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

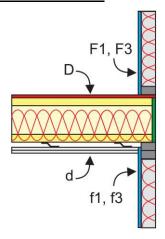
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

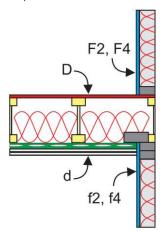
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide.

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)

Example 52	Reference	Value
Direct STC Rating of Path Dd through the		
aboratory Measured STC Rating	Report A1-012057.1	50
unction 1 - Junction between the se	parating floor and the flanking load bearing v	valls
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	69
Flanking Path Df 1		
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	68
Flanking STC for Junction 1		64
_		
lunction 2 - Junction between the se Flanking Path Ff_2	parating floor and the flanking non-load bear	ing walls
Flanking STC _{lab,F2,f2}	Paparts A1 0077E0 2 and A1 0120E7 4	70
·	Reports A1-007750.2 and A1-012057.1	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	77
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Reports A1-007750.2 and A1-012057.1	74
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	81
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Reports A1-007750.2 and A1-012057.1	65
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	72
Flanking STC for Junction 2		70
lunction 2 lunction between the co	parating floor and the flanking load bearing v	alla
Flanking Path Ff 3	parating floor and the flanking load bearing v	VallS
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
Flanking Path Fd 3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F3,d	RR-331 Eq. 1.5	69
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction		6.02
Flanking STC _{situ,D,f} 3	RR-331 Eq. 1.5 RR-331 Eq. 1.5	6.02
	·	
Flanking STC for Junction 3		64
	parating floor and the flanking non-load bear	ing walls
Flanking CTC familion All Camera and Long	ction 2	70
Flanking STC for Junction 4 - Same as Jun		
Flanking STC for Junction 4 - Same as Jun		

Example 53: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Fire rated floor BXUV.M5351 with a bare 15 mm OSB subfloor.2
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room. One layer of 15.9 mm (5/8") CertainTeed Type X directly attached to the wood studs in the lower room.

Separating floor/ceiling assembly with:

- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f1 and f3).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

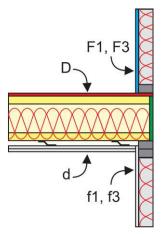
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f2 and f4).
- One layer of 89 mm thick CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

 $\underline{Note:}$ For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

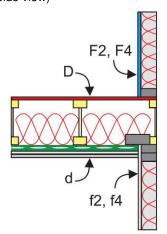
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f1 and f3). (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X directly attached to the wood studs in the lower room (f2 and f4). (Side view)

Example 53	Reference	Value
Direct STC Rating of Path Dd through the aboratory Measured STC Rating	Separating Floor Report A1-012057.1	50
aboratory weasured STC Nating	Report A1-012037.1	30
unction 1 - Junction between the se	eparating floor and the flanking load bearing v	valls
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	61
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	68
Flanking Path Df 1		
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	60
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	66
Flanking STC for Junction 1		62
	6 11 6 11	
Junction 2 - Junction between the se Flanking Path Ff_2	eparating floor and the flanking non-load bear	ing walls
Flanking STC _{lab,F2,f2}	Reports A1-007750.2 and A1-012057.1	64
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	71
· '		
Flanking Path Fd_2 Flanking STC _{lab,F2,d}	Reports A1-007750.2 and A1-012057.1	72
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	·	79
Flunking STC situ,F2,d	RR-331 Eq. 1.5	/9
Flanking Path Df_2		
Flanking STC $_{lab,D,f2}$	Reports A1-007750.2 and A1-012057.1	61
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	68
Flanking STC for Junction 2		66
lunction 3 - lunction between the sc	eparating floor and the flanking load bearing w	valle
Flanking Path Ff_3	parating noor and the hanking load bearing v	valis
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	61
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	62
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F3,d	RR-331 Eq. 1.5	68
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	60
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	66
Floring CTC for house 2		63
Flanking STC for Junction 3		62
lunction 4 lunction between the sc	eparating floor and the flanking non-load bear	ing walls
Flanking STC for Junction 4 - Same as Jun	ction 2	66

4.6 Rooms One-above-the-Other - Assemblies with Shear Elements

Example	ASTC	Floor System	Topping	Shear Element Room 1	Shear Element Room 1	Wallboard Room 1 - Directly Fixed to the Plywood	Wallboard Room 2 - Directly Fixed to the Plywood
35	52	1	None	15.9 mm plywood directly attached to the studs of all walls	15.9 mm plywood directly attached to the studs of all walls	One layer of 15.9 mm SilentFX® QuickCut gypsum board	One layer of 15.9 mm SilentFX® QuickCut gypsum board
36	52	"	11	11	11	=	One layer of 15.9 mm CertainTeed Type X gypsum board
37	56	"	Two layers of 12 mm cementitious flooring underlayment	11	11	"	One layer of 15.9 mm SilentFX® QuickCut gypsum board
38	55	"	II	11	11	"	One layer of 15.9 mm CertainTeed Type X gypsum board
39	63	"	38 mm thick gypsum concrete on a 9 mm closed cell foam	11	11	=	One layer of 15.9 mm SilentFX® QuickCut gypsum board
40	61	"	II	11	11	=	One layer of 15.9 mm CertainTeed Type X gypsum board
54	50	2	None	11	11	"	One layer of 15.9 mm SilentFX® QuickCut gypsum board
55	49	11	11	11	11	11	One layer of 15.9 mm CertainTeed Type X gypsum board

Example	ASTC	Floor System	Topping	Shear Element Room 1	Shear Element Room 1	Wallboard Room 1 - Directly Fixed to the Plywood	Wallboard Room 2 - Directly Fixed to the Plywood
41	52	1	None	15.9 mm plywood attached to studs of one loadbearing wall.	15.9 mm plywood attached to studs of one loadbearing wall.	One layer of 15.9 mm SilentFX® QuickCut gypsum board	One layer of 15.9 mm SilentFX® QuickCut gypsum board
42	52	11	11	15.9 mm plywood attached to studs of one non- loadbearing wall.	15.9 mm plywood attached to studs of one non- loadbearing wall	"	"

Example 35: Rooms one-above-the-other

SIMPLIFIED METHOD

- · Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both the upper and the lower rooms.
- One layer of 15 mm OSB directly attached to the floor joists.

Separating floor/ceiling assembly with:

- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

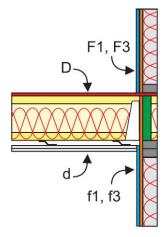
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

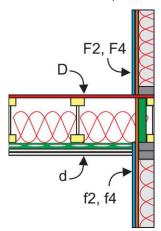
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms. (Side view)

Example 35	Reference	Value
Direct STC Rating of Path Dd through the Separat	ing Floor	
aboratory Measured STC Rating		53
unction 1 - Junction between the separatin	ng floor and the flanking load bearing	g walls
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Laboratory Measurement	63
Jormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	69
continuity of a structure 1, f 1	III 331 Eq. 1.3	- 03
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Laboratory Measurement	64
Iormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	70
lanking Path Df 1		
Flanking STC _{lab,D,f1}	Laboratory Measurement	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69
·	_	
lanking STC for Junction 1		65
unction 2 - Junction between the separatin	ng floor and the flanking non-load be	earing walls
lanking Path Ff 2		<u> </u>
Flanking STC _{lab,F2,f2}	Laboratory Measurement	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	77
tunking 51 6 situ,F2,f2	NN-331 LQ. 1.3	77
lanking Path Fd_2		
Flanking STC _{lab,F2,d}	Laboratory Measurement	76
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	83
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Laboraton, Moacurement	66
Normalization Correction	Laboratory Measurement	6.99
	RR-331 Eq. 1.5	
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	73
lanking STC for Junction 2		71
	- Classical Alex Classics - Land Landin	
unction 3 - Junction between the separatin	ig floor and the flanking load bearing	g walls
Flanking STC _{lab,F3,f3}	Laboratory Measurement	63
Normalization Correction	RR-331 Eq. 1.5	6.02
	·	
	RR-331 Eq. 1.5	69
Flanking STC situ,F3,f3	·	
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d	·	
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Flormalization Correction	RR-331 Eq. 1.5	69
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Iormalization Correction	RR-331 Eq. 1.5 Laboratory Measurement	69
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Normalization Correction Flanking STC situ,F3,d	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5	69 64 6.02
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Normalization Correction Flanking STC situ,F3,d	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5	69 64 6.02 70
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Flanking STC situ,F3,d Flanking Path Df_3 Flanking STC lab,D,f3	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5 Laboratory Measurement	69 64 6.02 70
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Normalization Correction Flanking STC situ,F3,d Flanking Path Df_3 Flanking STC lab,D,f3 Normalization Correction	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5	69 64 6.02 70 63 6.02
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Normalization Correction Flanking STC situ,F3,d Flanking Path Df_3 Flanking STC lab,D,f3 Normalization Correction	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5 Laboratory Measurement	69 64 6.02 70
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Flanking STC situ,F3,d Flanking Path Df_3 Flanking STC lab,D,f3 Flanking STC situ,D,f3	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5	69 64 6.02 70 63 6.02
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Flanking STC situ,F3,d Flanking Path Df_3 Flanking STC lab,D,f3 Flanking STC situ,D,f3 Flanking STC situ,D,f3	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5	69 64 6.02 70 63 6.02 69
Flanking STC situ,F3,f3 Flanking Path Fd_3 Flanking STC lab,F3,d Flanking STC situ,F3,d Flanking STC lab,D,f3 Flanking STC lab,D,f3 Flanking STC situ,D,f3 Flanking STC for Junction 3 Flanking STC for Junction 4 - Junction between the separating	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5	69 64 6.02 70 63 6.02 69 65
Flanking STC situ,F3,f3 Flanking Path Fd_3	RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5 Laboratory Measurement RR-331 Eq. 1.5 RR-331 Eq. 1.5	69 64 6.02 70 63 6.02 69

Example 36: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room. One layer of 15.9 mm (5/8") CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room.
- One layer of 15 mm OSB directly attached to the floor joists.

Separating floor/ceiling assembly with:

- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center..

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F1 and F3). CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f1 and f3).
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

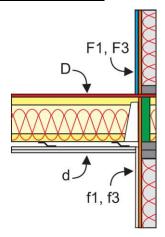
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f2 and f4).
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity

<u>Note:</u> For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

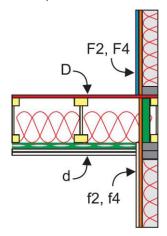
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly and 15.9 mm plywood attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f1 and f3). (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f2 and f4). (Side view)

Example 36 Direct STC Rating of Path Dd through the Sep	Reference	Value
STC_{Dd}	Report A1-007750.2 Appendix B	53
unction 1 - Separating floor and the fla	nking load bearing walls	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	61
Iormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	69
lanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	62
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	68
Flanking STC for Junction 1		63
Junction 1 - Separating floor and the fla	nking non-load bearing walls	
Flanking Path Ff_2	<u> </u>	
Flanking STC _{lab,F2,f2}	Report A1-007750.2	65
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	72
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	69
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	76
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	70
Flanking STC for Junction 2		67
Junction 1 - Separating floor and the fla	nking load bearing walls	
Flanking Path Ff_3		
Flanking STC _{lab,F3,f3}	Report A1-007750.2	61
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	67
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	69
Flanking Path Df_3		
	Report A1-007750.2	62
Flanking STC _{lab,D,f3}	RR-331 Eq. 1.5	6.02
Normalization Correction	RR-331 Eq. 1.5	68
Normalization Correction Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	63
Flanking STC _{lab,D,f3} Normalization Correction Flanking STC _{situ,D,f3} Flanking STC for Junction 3 Junction 1 - Separating floor and the fla		
Normalization Correction Flanking STC _{situ,D,f3}	nking non-load bearing walls	

Example 37: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both the upper and the lower rooms.
- One layer of 15 mm OSB directly attached to the floor joists.
- Topping of cementitious flooring.

Separating floor/ceiling assembly with:

- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

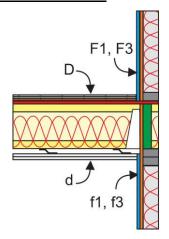
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

<u>Note:</u> For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

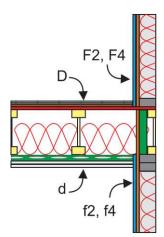
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms. (Side view)

Example 37 Direct STC Rating of Path Dd through the Se	Reference	Value
STC _{Dd}	Report A1-007750.2 Appendix B	57
unction 1 - Separating floor and the fla	nking load bearing walls	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	64
Iormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F1,f1	RR-331 Eq. 1.5	70
Flanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2	66
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F1,d	RR-331 Eq. 1.5	72
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	65
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	71
Flanking STC for Junction 1		66
Junction 1 - Separating floor and the fla	nking non-load bearing walls	
Flanking Path Ff 2	9	
Flanking STC _{lab,F2,f2}	Report A1-007750.2	70
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	77
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	73
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	80
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	68
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	75
Flanking STC for Junction 2		72
Junction 1 - Separating floor and the fla	nking load bearing walls	
Flanking Path Ff_3	<u> </u>	
Flanking STC _{lab,F3,f3}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	69
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	66
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	72
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	65
	RR-331 Eq. 1.5	6.02
Normalization Correction	RR-331 Eq. 1.5	71
	nn-331 Lq. 1.3	
Flanking STC _{situ,D,f3}	nn-331 Ly. 1.3	66
Flanking STC situ,D,f3 Flanking STC for Junction 3		66
Normalization Correction Flanking STC situ,D,f3 Flanking STC for Junction 3 Junction 1 - Separating floor and the fla Flanking STC for Junction 4 - Same as Junction	nking non-load bearing walls	66 72

Example 38: Rooms one-above-the-other

SIMPLIFIED METHOD

- · Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room. One layer of 15.9 mm (5/8") CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room.
- One layer of 15 mm OSB directly attached to the floor joists.
- Topping of cementitious flooring.

Separating floor/ceiling assembly with:

- Topping of two layers of 12 mm cementitious flooring underlayment installed on top of 12 mm wood fiber board.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F1 and F3). CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f1 and f3).
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

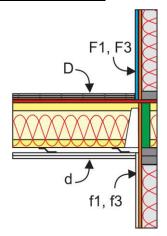
- · Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f2 and f4).
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

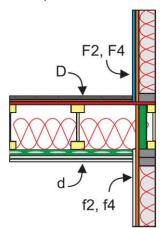
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly and 15.9 mm plywood attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f1 and f3). (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f2 and f4). (Side view)

STC Date Report Al-007750.2 Appendix B ST	Example 38 Direct STC Rating of Path Dd through the Se	Reference	Value
			57
Report A1-007750.2 61	unction 1 - Separating floor and the fl	anking load bearing walls	
Section Sect	Flanking STC _{lab,F1,f1}	Report A1-007750.2	61
		RR-331 Eq. 1.5	6.02
Flanking STC tab.F1.d Report A1-007750.2 65	Flanking STC situ,F1,f1	RR-331 Eq. 1.5	67
Normalization Correction RR-331 Eq. 1.5 6.00	Flanking Path Fd_1		
Flanking STC Interest Inter	Flanking STC _{lab,F1,d}	Report A1-007750.2	65
Flanking Path Df 1	Normalization Correction	RR-331 Eq. 1.5	6.02
Report A1-007750.2 64	Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	71
Normalization Correction RR-331 Eq. 1.5 6.00			
RR-331 Eq. 1.5 70	Flanking STC _{lab,D,f1}	Report A1-007750.2	64
Separating floor and the flanking non-load bearing walls	Normalization Correction	RR-331 Eq. 1.5	6.02
Intercept		•	70
	Flanking STC for Junction 1		64
Flanking Path Ff_2 Report A1-007750.2 65 Flanking STC Iab, F2, f2 Report A1-007750.2 65 Flanking STC Iab, F2, f2 RR-331 Eq. 1.5 6.99 Flanking STC Iab, F2, d RR-331 Eq. 1.5 72 Flanking Path Fd_2 Flanking STC Iab, F2, d Report A1-007750.2 71 Flanking STC Iab, F2, d Report A1-007750.2 72 Flanking STC Iab, F2, d RR-331 Eq. 1.5 6.99 Flanking STC Iab, F2, d RR-331 Eq. 1.5 6.99 Flanking STC Iab, F2, d RR-331 Eq. 1.5 6.99 Flanking STC Iab, F2 Report A1-007750.2 65 Flanking STC Iab, F3 RR-331 Eq. 1.5 72 Flanking STC Iab, F3, f3 Report A1-007750.2 61 Flanking STC Iab, F3, f3 Report A1-007750.2 61 Flanking STC Iab, F3, f3 Report A1-007750.2 61 Flanking STC Iab, F3, f3 RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, f3 RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, f3 RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, f3 Report A1-007750.2 65 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC Iab, F3, d RR-331 Eq. 1.5 6.00 Flanking STC	Junction 1 - Separating floor and the fl	anking non-load bearing walls	
Report A1-007750.2 65			
Normalization Correction RR-331 Eq. 1.5 6.99		Report A1-007750.2	65
Flanking STC Situ,F2,f2 RR-331 Eq. 1.5 72	1 1		6.99
Report A1-007750.2 71		•	72
Report A1-007750.2 71	Flanking Path Ed. 2		
Normalization Correction RR-331 Eq. 1.5 6.96	Flanking STC to F2 d	Report A1-007750 2	71
Flanking STC situ,F2,d RR-331 Eq. 1.5 78			
Report A1-007750.2 65		•	78
Report A1-007750.2 65	Flanking Path Df 2		
RR-331 Eq. 1.5 6.99		Report A1-007750.2	65
Flanking STC Situ,D,f2 RR-331 Eq. 1.5 72		·	6.99
Junction 1 - Separating floor and the flanking load bearing walls Flanking Path Ff_3 Flanking STC lab,F3,f3 Report A1-007750.2 61 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,F3,f3 Report A1-007750.2 65 Flanking STC lab,F3,d Report A1-007750.2 65 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,F3,d RR-331 Eq. 1.5 Flanking Path Df_3 Flanking STC lab,D,f3 Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 Flanking STC lab,D,f3 Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 Flanking STC situ,D,f3 Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 70 Flanking STC for Junction 3		•	72
Flanking Path Ff_3 Report A1-007750.2 61	Flanking STC for Junction 2		68
Flanking Path Ff_3	Junction 1 - Senarating floor and the fl	anking load hearing walls	
Normalization Correction	Flanking Path Ff_3	wiiwii iyaa seaiiig walis	
Normalization Correction	Flanking STC _{lab,F3,f3}	Report A1-007750.2	61
Flanking Path Fd_3 Report A1-007750.2 65 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,F3,d RR-331 Eq. 1.5 71 Flanking Path Df_3 Flanking STC lab,D,F3 Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,D,f3 RR-331 Eq. 1.5 70 Flanking STC for Junction 3 64 Junction 1 - Separating floor and the flanking non-load bearing walls	Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC lab,F3,d Report A1-007750.2 65 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,F3,d RR-331 Eq. 1.5 71 Flanking Path Df_3 Flanking STC lab,D,f3 Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,D,f3 RR-331 Eq. 1.5 70 Flanking STC for Junction 3 64 Junction 1 - Separating floor and the flanking non-load bearing walls	Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67
Normalization Correction RR-331 Eq. 1.5 Flanking STC situ,F3,d RR-331 Eq. 1.5 71 Flanking Path Df_3 Flanking STC lab,D,f3 Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,D,f3 RR-331 Eq. 1.5 70 Flanking STC for Junction 3 64 Hunction 1 - Separating floor and the flanking non-load bearing walls	-		
Normalization Correction RR-331 Eq. 1.5 Flanking STC situ,F3,d RR-331 Eq. 1.5 71 Flanking Path Df_3 Flanking STC lab,D,f3 Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,D,f3 RR-331 Eq. 1.5 70 Flanking STC for Junction 3 64 Junction 1 - Separating floor and the flanking non-load bearing walls	Flanking STC _{lab,F3,d}	Report A1-007750.2	65
Flanking Path Df_3 Flanking STC _{lab,D,f3} Normalization Correction RR-331 Eq. 1.5 Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 RR-331 Eq. 1.5 RR-331 Eq. 1.5 Flanking STC for Junction 3 64 Junction 1 - Separating floor and the flanking non-load bearing walls	Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{lab,D,f3} Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 70 Flanking STC for Junction 3 64 Flanking STC for Junction 3 64	Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	71
Flanking STC _{lab,D,f3} Report A1-007750.2 64 Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC _{situ,D,f3} RR-331 Eq. 1.5 70 Flanking STC for Junction 3 64 Flanking STC for Junction 3 64	lanking Path Df_3		
Normalization Correction RR-331 Eq. 1.5 6.02 Flanking STC situ,D,f3 RR-331 Eq. 1.5 70 Flanking STC for Junction 3 64 Flunction 1 - Separating floor and the flanking non-load bearing walls		Report A1-007750.2	64
Flanking STC for Junction 3 64 Function 1 - Separating floor and the flanking non-load bearing walls		RR-331 Eq. 1.5	6.02
unction 1 - Separating floor and the flanking non-load bearing walls	Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	70
	Flanking STC for Junction 3		64
	unction 1 - Separating floor and the fla	anking non-load bearing walls	
			68
ASTC due to Direct plus Flanking Transmission RR-331 Equation 1.4 55	ASTC due to Direct plus Flanking Trans	mission RR-331 Faustion 1 /	FF

Example 39: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both the upper and the lower rooms.
- One layer of 15 mm OSB directly attached to the floor joists.
- Topping of 38 mm thick gypsum concrete.

Separating floor/ceiling assembly with:

- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

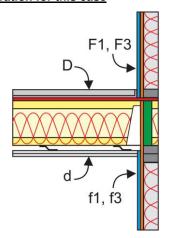
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

<u>Note:</u> For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

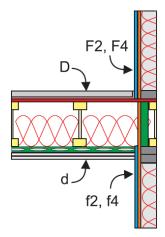
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms. (Side view)

Example 39 Direct STC Rating of Path Dd through the Sep	Reference	Value
STC_{Dd}	Report A1-007750.2 Appendix B	68
unction 1 - Separating floor and the fla	nking load bearing walls	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	64
Iormalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70
lanking Path Fd_1		
Flanking STC _{lab,F1,d}	Report A1-007750.2	72
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	78
Flanking Path Df 1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	77
Flanking STC for Junction 1		69
_		
Junction 1 - Separating floor and the flan	nking non-load bearing walls	
Flanking Path Ft_2 Flanking STC _{lab,F2,f2}	Report A1 007750 2	70
Normalization Correction	Report A1-007750.2 RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,f2}		77
rtunking 31 C situ,F2,f2	RR-331 Eq. 1.5	//
Flanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	79
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	86
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	74
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	81
Flanking STC for Junction 2		75
Junction 1 - Separating floor and the fla	nking load hearing walls	
Flanking Path Ff_3	inting roud bearing wans	
Flanking STC _{lab,F3,f3}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	69
Flanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	77
Flanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	70
Normalization Correction	RR-331 Eq. 1.5	6.02
	RR-331 Eq. 1.5	76
	·	
Flanking STC situ,D,f3		68
Flanking STC _{situ,D,f3} Flanking STC for Junction 3		68
Flanking STC situ,D,f3 Flanking STC for Junction 3 Junction 1 - Separating floor and the flat		
Flanking STC situ,D,f3		68 75

Example 40: Rooms one-above-the-other

SIMPLIFIED METHOD

- · Wood framed walls and floors.
- Wood I-joists 302 mm deep spaced 406 mm on center.
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room. One layer of 15.9 mm (5/8") CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room.
- One layer of 15 mm OSB directly attached to the floor joists.
- Topping of 38 mm thick gypsum concrete.

Separating floor/ceiling assembly with:

- Topping of 38 mm thick gypsum concrete on a 9 mm closed cell foam interlayer.
- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-ioists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F1 and F3). CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f1 and f3).
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

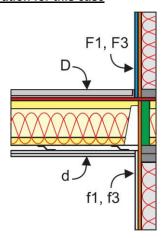
- · Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f2 and f4).
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

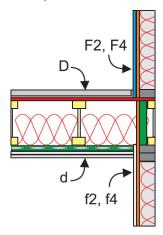
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly and 15.9 mm plywood attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f1 and f3). (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f2 and f4). (Side view)

Example 40	Reference	Value			
Direct STC Rating of Path Dd through the Sel STC_{Dd}	Report A1-007750.2 Appendix B	68			
unction 1 - Separating floor and the fla	nking load hearing walls				
lanking Path Ff 1	mking load bearing wans				
Flanking STC _{lab,F1,f1}	Report A1-007750.2	61			
Normalization Correction	RR-331 Eq. 1.5	6.02			
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	67			
talanting 51 6 strup 1, j 1	MN 331 Eq. 1.3	07			
lanking Path Fd_1					
Flanking STC _{lab,F1,d}	Report A1-007750.2	70			
Normalization Correction	RR-331 Eq. 1.5	6.02			
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	76			
lanking Path Df_1					
	anking STC _{lab,D,f1} Report A1-007750.2				
Normalization Correction	RR-331 Eq. 1.5 RR-331 Fq. 1.5				
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	75			
lanking STC for Junction 1		66			
lunching 1 Consumbing floor and the floor	uldura uran larad karadara walla				
unction 1 - Separating floor and the fla Flanking Path Ff 2	nking non-ioad bearing walls				
Flanking STC _{lab,F2,f2}	Report A1-007750.2	65			
Normalization Correction	•	6.99			
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	72			
t tanking 51 C situ,F2,f2	RR-331 Eq. 1.5	12			
Flanking Path Fd_2					
Flanking STC _{lab,F2,d}	Report A1-007750.2	77			
Normalization Correction	RR-331 Eq. 1.5	6.99			
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	84			
Flanking Path Df_2					
Flanking STC _{lab,D,f2}	Report A1-007750.2	71			
Normalization Correction	RR-331 Eq. 1.5	6.99			
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	78			
sttu,b,j 2					
Flanking STC for Junction 2		71			
Junction 1 - Separating floor and the fla	nking load bearing walls				
Flanking Path Ff_3					
Flanking STC _{lab,F3,f3}	Report A1-007750.2	61			
Normalization Correction	RR-331 Eq. 1.5	6.02			
Flanking STC situ,F3,f3	RR-331 Eq. 1.5	67			
lanking Path Fd 3					
Flanking STC _{lab,F3,d}	Report A1-007750.2	70			
Normalization Correction	RR-331 Eq. 1.5	6.02			
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	76			
Flanking Path Df_3	D				
Flanking STC _{lab,D,f3}	Report A1-007750.2	69			
Normalization Correction	RR-331 Eq. 1.5	6.02			
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	75			
Flanking STC for Junction 3		66			
unction 1 - Separating floor and the fla	nking non-load bearing walls				
Flanking STC for Junction 4 - Same as Junction	· · ·	71			

Example 54: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Fire rated floor BXUV.M5351 with a bare 15 mm OSB subfloor.2
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both the upper and the lower rooms.

Separating floor/ceiling assembly with:

- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

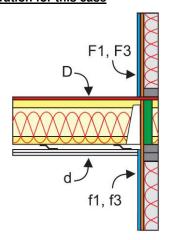
- · Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

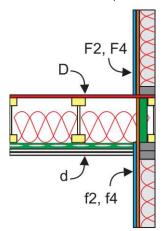
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms. (Side view)

Direct STC Rating of Path Dd through the Laboratory Measured STC Rating	Separating Floor Report A1-012057.1		
aboratory inteasured STC Rating	Report A1-012037.1		
		50	
unction 1 - Junction between the se	eparating floor and the flanking load bearing w	<i>i</i> alls	
lanking Path Ff_1			
Flanking STC _{lab,F1,f1}	Reports A1-007750.2 and A1-012057.1	63	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	69	
Flanking Path Fd_1			
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	62	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	68	
Flanking Path Df 1			
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	61	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	67	
·			
Flanking STC for Junction 1		63	
Junction 2 - Junction between the so	eparating floor and the flanking non-load bear	ing walls	
Flanking Path Ff_2			
Flanking STC _{lab,F2,f2}	Reports A1-007750.2 and A1-012057.1	70	
Normalization Correction	RR-331 Eq. 1.5	6.99	
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	77	
Flanking Path Fd_2			
Flanking STC _{lab,F2,d}	Reports A1-007750.2 and A1-012057.1	74	
Normalization Correction	RR-331 Eq. 1.5	6.99	
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	81	
Ttutking 51 C situ,F2,a	NN-331 Eq. 1.3	01	
Flanking Path Df_2			
Flanking STC _{lab,D,f2}	Reports A1-007750.2 and A1-012057.1	65	
Normalization Correction	RR-331 Eq. 1.5	6.99	
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	72	
Flanking STC for Junction 2		70	
	eparating floor and the flanking load bearing w	<i>r</i> alls	
Flanking Path Ff_3	Poports A1 007750 2 and A1 012057 1	62	
Flanking STC _{lab,F3,f3} Normalization Correction	Reports A1-007750.2 and A1-012057.1	63	
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	6.02	
1 iuiiiiiig 31 0 situ,F3,f3	RR-331 Eq. 1.5	69	
Flanking Path Fd_3			
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	62	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	68	
Flanking Path Df_3			
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	61	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	67	
Flanking STC for Junction 3		63	
Turning STC TOF JURCLION 3		03	
	eparating floor and the flanking non-load bear	ing walls	
Flanking STC for Junction 4 - Same as Jun	nction 2	70	
Turning of the formation of the desired			

Example 55: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Fire rated floor BXUV.M5351 with a bare 15 mm OSB subfloor.2
- Wall framing includes single and triple staggered wood studs.
- One layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room. One layer of 15.9 mm (5/8") CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room.

Separating floor/ceiling assembly with:

- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Wood I-joists 241 mm (9.5") deep spaced 406 mm (16") on center.
 Doubled rim boards (32 mm (1-1/4") thick and 241 mm deep) installed at each end of the I-joists.
- Subfloor of 15 mm (19/32") OSB directly attached to the I-joists.
- One layer of 152 mm thick CertainTeed R20 Sustainable Insulation® in the floor cavity.
- Resilient channels installed perpendicular to wood I-joists and spaced 305 mm (12") on center.
- Base layer of layer of 15.9 mm SilentFX® QuickCut gypsum board and a face layer of 12.7 mm (1/2") CertainTeed Type C gypsum board installed on the resilient channels on the ceiling.

<u>Junction 1&3: Loadbearing walls above and below the junction:</u>

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F1 and F3). CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f1 and f3).
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

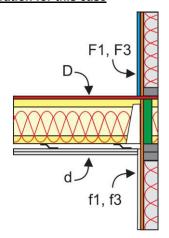
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f2 and f4).
- CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity

<u>Note:</u> For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

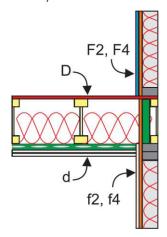
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly and 15.9 mm plywood attached to the wood studs in the upper room (F1 and F3). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f1 and f3). (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in the upper room (F2 and F4). One layer of 15.9 mm CertainTeed Type X and 15.9 mm plywood directly attached to the wood studs in the lower room (f2 and f4). (Side view)

xample 55 Reference		Value	
Direct STC Rating of Path Dd through the aboratory Measured STC Rating	Report A1-012057.1	50	
	·		
	eparating floor and the flanking load bearing v	valls	
lanking Path Ff_1	D 4 44 007750 2 4 44 042057 4		
Flanking STC _{lab,F1,f1} Iormalization Correction	Reports A1-007750.2 and A1-012057.1	6.02	
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5		
tunking STC situ,F1,f1	RR-331 Eq. 1.5	67	
lanking Path Fd_1			
Flanking STC _{lab,F1,d}	Reports A1-007750.2 and A1-012057.1	61	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	67	
lanking Path Df_1			
Flanking STC _{lab,D,f1}	Reports A1-007750.2 and A1-012057.1	60	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	66	
lanking STC for Junction 1		62	
unction 2 - Junction between the so	eparating floor and the flanking non-load bear	ing walls	
lanking Path Ff_2			
Flanking STC _{lab,F2,f2}	Reports A1-007750.2 and A1-012057.1	65	
Normalization Correction	RR-331 Eq. 1.5	6.99	
Flanking STC _{situ,F2,f2}	RR-331 Eq. 1.5	72	
lanking Path Fd_2			
Flanking STC _{lab,F2,d}	Reports A1-007750.2 and A1-012057.1	72	
Normalization Correction		6.99	
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5		
rianking SIC situ,F2,d	RR-331 Eq. 1.5	79	
Flanking Path Df_2			
Flanking STC _{lab,D,f2}	Reports A1-007750.2 and A1-012057.1	62	
Normalization Correction	RR-331 Eq. 1.5	6.99	
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	69	
Flanking STC for Junction 2		67	
rialiking STC for Junction 2		07	
unction 3 - Junction between the so	eparating floor and the flanking load bearing v	valls	
Flanking Path Ff_3			
Flanking STC _{lab,F3,f3}	Reports A1-007750.2 and A1-012057.1	61	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	67	
lanking Path Fd_3			
Flanking STC _{lab,F3,d}	Reports A1-007750.2 and A1-012057.1	61	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	67	
d l' public			
Flanking Path Df_3	Paparts A1 0077E0 2 and A1 0120E7 1		
Flanking STC _{lab,D,f3}	Reports A1-007750.2 and A1-012057.1	60	
Normalization Correction Flanking STC _{situ.D.f3}	RR-331 Eq. 1.5	6.02	
situ,D,f3	RR-331 Eq. 1.5	66	
		62	
lanking STC for Junction 3			
Flanking STC for Junction 3	prograting floor and the flexibles were lead beau		
unction 4 - Junction between the so	eparating floor and the flanking non-load bear	ing walls	
	• •		

Example 41: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Walls F1 and f1 have one layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs.
- All other walls have one layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs.
- One layer of 15 mm OSB directly attached to the floor joists.

Separating floor/ceiling assembly with:

- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to the wall.
- Triple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 3: Loadbearing wall above and below the junction:

- Floor joists oriented perpendicular to the wall.
- Triple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2&4: Non-loadbearing walls above and below the junction:

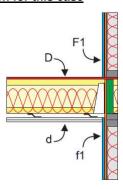
- Floor joists oriented parallel to these walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Note: For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

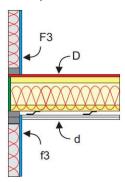
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

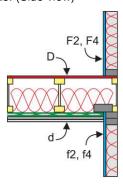
Illustration for this case



Junction 1: loadbearing side walls above and below the floor/ceiling assembly (joists are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs. (Side view)



Junction 3: loadbearing side walls above and below the floor/ceiling assembly (joists are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs. (Side view)



Junction 2 or 4: Non-loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)

Example 41	Reference	Value
Direct STC Rating of Path Dd through the Sep		53
STC _{Dd}	Report A1-007750.2 Appendix B	55
unction 1 - Separating floor and the fla	nking load bearing walls	
lanking Path Ff_1		
Flanking STC _{lab,F1,f1}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	69
Flanking Path Fd_1		
Flanking STC _{lab.F1.d}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	70
Flanking Path Df_1		
Flanking STC _{lab,D,f1}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69
Flanking STC for Junction 1		65
unction 1 - Separating floor and the fla	nking non-load bearing walls	
Flanking Path Ff_2	Report A1 007750 2	70
Flanking STC _{lab,F2,f2} Normalization Correction	Report A1-007750.2	
	RR-331 Eq. 1.5 RR-331 Eg. 1.5	6.99
Flanking STC _{situ,F2,f2}	KK-331 Eq. 1.5	//
lanking Path Fd_2		
Flanking STC _{lab,F2,d}	Report A1-007750.2	71
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	78
Flanking Path Df_2		
Flanking STC _{lab,D,f2}	Report A1-007750.2	66
Normalization Correction	RR-331 Eq. 1.5	6.99
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	73
Flanking STC for Junction 2		71
_		
unction 1 - Separating floor and the fla	nking load bearing walls	
Flanking Path Ff_3	D	
Flanking STC _{lab,F3,f3}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70
lanking Path Fd_3		
Flanking STC _{lab,F3,d}	Report A1-007750.2	64
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	70
lanking Path Df_3		
Flanking STC _{lab,D,f3}	Report A1-007750.2	63
Normalization Correction	RR-331 Eq. 1.5	6.02
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5	69
Flanking STC for Junction 3		65
unction 1 - Separating floor and the fla		
Flanking STC for Junction 4 - Same as Junctio	n 2	71
ASTC due to Direct plus Flanking Transm	nission RR-331 Equation 1.4	52

Example 42: Rooms one-above-the-other

SIMPLIFIED METHOD

- Wood framed walls and floors.
- Walls F1 and f1 have one layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs.
- All other walls have one layer of 15.9 mm (5/8") CertainTeed SilentFX® QuickCut gypsum board directly attached to the wood studs.
- One layer of 15 mm OSB directly attached to the floor joists.

Separating floor/ceiling assembly with:

- Wood I-joists 302 mm deep spaced 400 mm on center. Rim boards (45 mm thick and 302 mm deep) installed at each end of the I-joists.
- The joists are oriented perpendicular to the loadbearing walls but not continuous across the junction.
- Subfloor of one layer of 15 mm (19/32") OSB directly attached to wood I-joists.
- One layer of 152 mm thick CertainTeed Sustainable Insulation® R20 thermal insulation in the floor cavity.
- Ceiling of two layers of 12.7 mm CertainTeed Type X gypsum board installed on the resilient channels on the ceiling.
- Resilient channels installed perpendicular to wood I-joists and spaced 400 mm on center.

Junction 1&3: Loadbearing walls above and below the junction:

- Floor joists oriented perpendicular to these walls.
- Triple staggered 38 mm x 89 mm (2x4) wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 2: Non-loadbearing wall above and below the junction:

- Floor joists oriented parallel to the wall.
- Triple staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

Junction 4: Non-loadbearing walls above and below the junction:

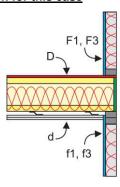
- Floor joists oriented parallel to the walls.
- Single staggered 38 mm x 89 mm wood studs spaced 400 mm on center. Double headers and a single footer 38 mm x 140 mm.
- One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs in both rooms.
- One layer of 89 mm CertainTeed Sustainable Insulation® R12 thermal insulation in the wall cavity.

<u>Note:</u> For the path/surface designations in the calculations the upper room is treated as the source room (surfaces D and F)

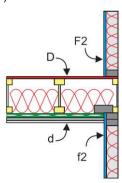
Room Parameters

- See Figure 3 of this report or Figure 1.4 of the National Research Council Report RR-331.
- The separating floor / ceiling is 4 m by 5 m.
- Walls 1 and 3 are 2.5 m high by 5 m wide.
- Walls 2 and 4 are 2.5 m high by 4 m wide

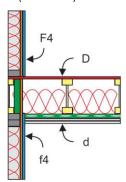
Illustration for this case



Junction 1 or 3: Loadbearing side walls above and below the floor/ceiling assembly (wood I joists of floor are perpendicular to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs in both rooms. (Side view)



Junction 2: non-loadbearing walls above and below the floor/ceiling assembly (joists are parallel to the non-loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board directly attached to the wood studs. (Side view)



Junction 4: non-loadbearing walls above and below the floor/ceiling assembly (joists are parallel to loadbearing wall). One layer of 15.9 mm SilentFX® QuickCut gypsum board and one layer of 15.9 mm plywood directly attached to the wood studs. (Side view)

Example 42 Reference Direct STC Rating of Path Dd through the Separating Floor			
		53	
STC _{Dd}	Report A1-007750.2 Appendix B	55	
unction 1 - Separating floor and the flar	nking load bearing walls		
lanking Path Ff_1			
Flanking STC _{lab,F1,f1}	Report A1-007750.2	64	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F1,f1}	RR-331 Eq. 1.5	70	
lanking Path Fd_1			
Flanking STC _{lab.F1.d}	Report A1-007750.2	64	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F1,d}	RR-331 Eq. 1.5	70	
Flanking Path Df_1			
Flanking STC _{lab.D.f1}	Report A1-007750.2	63	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,D,f1}	RR-331 Eq. 1.5	69	
Flanking STC for Junction 1		65	
Junction 1 - Separating floor and the flar Flanking Path Ff 2	iking non-load bearing walls		
Flanking STC _{lab,F2,f2}	Report A1-007750.2	70	
Normalization Correction	RR-331 Eq. 1.5	6.99	
Flanking STC _{situ.F2.f2}	RR-331 Eq. 1.5	77	
r tunking STC situ,F2,f2	MN-331 Eq. 1.3	77	
Flanking Path Fd_2			
Flanking STC _{lab,F2,d}	Report A1-007750.2	71	
Normalization Correction	RR-331 Eq. 1.5	6.99	
Flanking STC _{situ,F2,d}	RR-331 Eq. 1.5	78	
Flanking Path Df_2			
Flanking STC _{lab,D,f2}	Report A1-007750.2		
Normalization Correction	RR-331 Eq. 1.5	6.99	
Flanking STC _{situ,D,f2}	RR-331 Eq. 1.5	73	
Flanking STC for Junction 2		71	
Junction 1 - Separating floor and the flar Flanking Path Ff 3	iking load bearing walls		
Flanking STC _{lab,F3,f3}	Report A1-007750.2	64	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F3,f3}	RR-331 Eq. 1.5	70	
Flanking Path Fd_3			
Flanking STC _{lab,F3,d}	Report A1-007750.2	64	
Normalization Correction	RR-331 Eq. 1.5	6.02	
Flanking STC _{situ,F3,d}	RR-331 Eq. 1.5	70	
Flanking Path Df_3			
	Report A1 0077E0 2	63	
Flanking STC _{lab,D,f3} Normalization Correction	Report A1-007750.2		
Flanking STC _{situ,D,f3}	RR-331 Eq. 1.5 RR-331 Eq. 1.5	6.02	
	·		
Flanking STC for Junction 3		65	
lunction 1 - Separating floor and the flar	nking non-load bearing walls		
Flanking STC for Junction 4		71	
ACTO docate Direct Land	DD 224 5 11 1 2		
ASTC due to Direct plus Flanking Transmi	ission RR-331 Equation 1.4	52	

5. Linings for Cross-Laminated Timber (CLT) Walls and Floors

Mid-rise wood constructions can include not only walls and floors with timber framing, but also walls and floors made of cross-laminated timber³ (CLT) elements. CLT elements are fabricated by laminating timber elements together into panels with layers of alternating grain orientation. Typical CLT elements have three or more layers with an overall thickness ranging from 75 mm to 250 mm.

It is common practice, especially in residential buildings, to add finishing surfaces to the basic structural floor or wall assemblies – for example, gypsum board wall and ceiling surfaces that conceal both the bare CLT surfaces and building services such as electrical wiring, water pipes and ventilation ducts. The finish on walls or ceilings commonly comprises gypsum board panels, framing used to support them, and often sound absorptive material filling the interframing cavities between the gypsum board and the face of the CLT. On floors the finish may include toppings on the CLT such as concrete or a floating floor as well as flooring such as hardwood or tiles. These elements are described in ISO 15712-1 as "linings" or "liners" or "layers" or "coverings". The term "linings" is used in this report.

To characterize the change in sound transmission loss due to adding a specific lining to a CLT wall, celling or floor, a single-number rating called Δ STC is used. The procedure used to calculate the Δ STC rating is explained in Appendix A2 of the NRC Report RR-335 *Apparent Sound Insulation in Cross-Laminated Timber Buildings*.

Some key points about the Δ STC rating include:

- The Δ STC rating is a required input for calculation of the ASTC ratings using the Simplified Method.
- The values of the ΔSTC rating are calculated from experimental data
- The ΔSTC ratings for 5 ply CLT elements can also be applied to 7 ply CLT elements and vice versa.
- The ΔSTC ratings for 3 ply CLT elements can not be applied to 5 ply or 7 ply elements and vice versa. The reason is that 3 ply CLT elements have more leakage through the panels than 5 ply or 7 ply panels and the leakage is taken into account in the calculation of the ΔSTC ratings.
- The ΔSTC rating and ΔTL data can be used for walls, floors or ceilings.

The Δ STC rating for a lining of 15.9 mm SilentFX® QuickCut gypsum fixed to 38 mm x 38 mm furring strips spaced 610 mm on center and with fiberglass insulation between the furring strips are shown in Table 1 and Table 2. The one-third octave band Δ TL data for each lining for the calculation of the ASTC ratings using the Detailed Method are presented in Table 3.

5.1 ASTC Ratings for CLT Linings with SilentFX® QuickCut Gypsum Board

The Δ STC ratings are used for the calculation of the ASTC rating using the simplified method. Details about the calculation of the Δ STC ratings can be found in Appendix A2 of the NRC Report RR-335 *Apparent Sound Insulation in Cross-Laminated Timber Buildings*.

Table 1: ASTC values for linings on 3 ply CLT walls or floors

Lining for 3 ply CLT Panel	ΔSTC
One layer of 15.9 mm SilentFX® QuickCut Gypsum Board on 38 mm x 38 mm Furring Strips Spaced 610 mm on Center with 38 mm CertainTeed Fiberglass Insulation in the Cavity.	10

Table 2: ASTC values for linings on 5 or 7 ply CLT walls or floors

Lining for 5 ply or 7 ply CLT Panel	ΔSTC
One layer of 15.9 mm SilentFX® QuickCut Gypsum Board on 38 mm x 38 mm Furring Strips Spaced 610 mm on Center with 38 mm CertainTeed Fiberglass Insulation in the Cavity.	7

5.2 Change in transmission loss (ΔTL) due to linings on CLT Panels

The ΔTL ratings are used for the calculation of the ASTC rating using the detailed method.

Table 3: ΔTL values for linings on CLT walls or floors

1/3 Octave Band Center Frequency (Hz)	One layer of 15.9 mm SilentFX® QuickCut Gypsum Board on 38 mm x 38 mm Furring Strips Spaced 610 mm on Center with 38 mm CertainTeed Fiberglass Insulation in the Cavity 3-Ply CLT 5-Ply or 7-Ply CLT				
100	-6	-6			
125	3	0			
160	8	7			
200	8	9			
250	9	12			
315	10	11			
400	10	10			
500	10	8			
630	10	8			
800	11	9			
1000	11	9			
1250	12	11			
1600	13	11			
2000	13	10			
2500	12	10			
3150	12 12				
4000	13 15				
5000	15	15			

5.3 Example of a CLT Lining

The following is an example of the calculation of the ASTC ratings of a CLT construction with a lining of 15.9 mm SilentFX® QuickCut gypsum board as described in Section 5.2.

Example 43: CLT Construction - Rooms side-by-side

- CLT Floors and CLT Walls³
- Walls and ceiling have a lining of one layer of 15.9 mm SilentFX® QuickCut gypsum board on 38 mm x 38 mm furring strips spaced 610 mm on center with 38 mm CertainTeed Fiberglass Insulation in the cavity.
- Topping of 38 mm thick gypsum concrete over 13 mm wood fiber board in both rooms.

Separating wall assembly (loadbearing) with:

- 3-ply 78 mm thick CLT panel³ with mass per unit area 42.4 kg/m²
- CLT wall panels oriented so face ply strands are vertical
- Lining on each side of one layer of 15.9 mm SilentFX® QuickCut gypsum board on 38 mm x 38 mm furring Strips Spaced 610 mm on Center with 38 mm CertainTeed Fiberglass Insulation in the Cavity.

Junction 1: Bottom Junction (separating wall / floor) with:

- 5-ply 175 mm thick CLT floor panel with a mass per unit area of 92.1 kg/m², continuous through cross-junction with CLT separating wall
- CLT floor/ceiling are panels oriented so that the face ply strands are perpendicular to the load bearing CLT panels of junction 1 and 3.
- The CLT panels are connected with 90 mm equal leg angle brackets spaced 300 mm on center and nailed/screwed to both sides of separating element.
- Floor lining of 38 mm concrete over 13 mm wood fiber board.

Junction 2 or 4: Each Side (separating wall / abutting side wall) with:

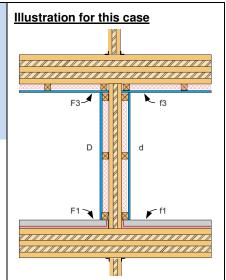
- Abutting side walls of 3-ply 78 mm thick CLT panels with a mass per unit area of 42.4 kg/m² continuous through T-junctions with the separating CLT wall panel.
- CLT side wall panels oriented so the face ply strands are vertical
- The CLT panels are connected with 90 mm equal leg angle brackets nailed/screwed to both sides of the separating element and spaced 600 mm on center.
- Lining on each side of one layer of 15.9 mm SilentFX® QuickCut gypsum board on 38 mm x 38 mm furring Strips Spaced 610 mm on Center with 38 mm CertainTeed Fiberglass Insulation in the Cavity.

Junction 3: Top Junction (separating wall / ceiling) with:

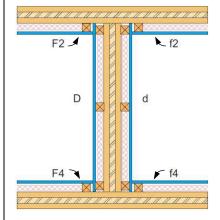
- 5-ply 175 mm thick CLT ceiling panel with a mass per unit area of 92.1 kg/m², continuous through cross-junction with CLT separating wall
- CLT floor/ceiling panels are oriented so that the face ply strands are perpendicular to the load bearing CLT panels of junction 1 and 3.
- The CLT panels are connected with 90 mm equal leg angle brackets spaced 300 mm on center and nailed/screwed to both sides of separating element.
- Lining on each ceiling of one layer of 15.9 mm SilentFX® QuickCut gypsum board on 38 mm x 38 mm furring Strips Spaced 610 mm on Center with 38 mm CertainTeed Fiberglass Insulation in the Cavity.

Room Parameters

- See Figure 2 of this report or Figure 1.3 of the National Research Council Report RR-331.
- The separating wall is 2.5 m high by 5 m wide.
- The flanking walls 2.5 m high by 4 m wide.
- The floor / ceilings are 4 m by 5 m.



Junctions 1 and 3: Cross junctions of a 78 mm thick 3-ply CLT separating wall with a 175 mm thick 5-ply CLT floor and ceiling. The walls and ceiling have a lining of one layer of 15.9 mm SilentFX® QuickCut gypsum board on 38 mm x 38 mm furring strips spaced 610 mm on center with 38 mm CertainTeed Fiberglass Insulation in the cavity. Floor lining of 38 mm concrete over 13 mm wood fiber board. (Side View)



Junctions 2 and 4: T-junction of a separating wall with side walls, all of 78 mm thick 3-ply CLT. The walls have a lining of one layer of 15.9 mm SilentFX® QuickCut gypsum board on 38 mm x 38 mm furring strips spaced 610 mm on center with 38 mm CertainTeed Fiberglass Insulation in the cavity. (Plan View)

Example 43	ISO Symbol	Reference	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	SNR
Direct STC Rating of Path Dd	D	DD 225 D CLT02	26	20	24	27	46	50	26
Sound Transmission Loss	$R_{D,lab}$	RR-335 Base-CLT03	26	28	31	37	46	50	36
Correction, Resonant Transmission	A.D.	CIL LEVE OD DO 1	0	0	0	0	0	0	
Change by Lining on source side	ΔR_D	SilentFX® QC on 38 mm furrings	3	8.7	9.8	11.3	13.1	12.8	
Change by Lining on receive side	ΔR_d	SilentFX® QC on 38 mm furrings	3	8.7	9.8	11.3	13.1	12.8	
Effect of Airborne Flanking and Leakage	_		0	0	0	0	0	0	
Direct TL in-situ	$R_{D,situ}$	ISO 15712-1, Eq. 24	31	45	51	60	72	76	55
Junction 1 (78 mm 3-ply CLT separati	ng wall / 175	mm 5-ply CLT floor)							
Flanking Path Ff_1	_								
Transmission Loss Element F1	$R_{F1,lab}$	RR-335 Base-CLT05	32	30	39	43	52	49	42
Transmission Loss Element f1	$R_{f1,lab}$	RR-335 Base-CLT05	32	30	39	43	52	49	42
Correction, Resonant Transmission F1			0	0	0	0	0	0	
Correction, Resonant Transmission f1			0	0	0	0	0	0	
TL in-situ for Element F1	$R_{F1,situ}$	ISO 15712-1 Eq 19 T_s,situ=T_s,lab	32	30	39	43	52	49	42
TL in-situ for Element f1	$R_{f1,situ}$	ISO 15712-1 Eq 19 T_s,situ=T_s,lab	32	30	39	43	52	49	42
Change by Lining on the Source Side	ΔR_{F1}	ΔTL-CLT-F03	4	11	8	21	29	32	
Change by Lining on the Receiving Side	ΔR_{f1}	ΔTL-CLT-F03	4	11	8	21	29	32	
Junction 1 - Coupling									
Vibration Reduction Index for Ff	$K_{F1,f}$	RR-335, CLT-WF-Xa-01	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Vibration Reduction Index for Fd	$K_{F1,d}$	RR-335, CLT-WF-Xa-01	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Vibration Reduction Index for Pd Vibration Reduction Index for Df	$K_{F1,d}$ $K_{D,f1}$	RR-335, CLT-WF-Xa-01	10.5	10.5	10.5	10.5	10.5	10.5	10.5
VIDIGUOII NEGUCLIOII IIIUEX IOI DI	**D,f 1	MN-333, CLT-VVF-Ad-UI	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Flanking Transmssion Loss - Path Values									
Flanking TL for Path Ff1	R_{F1f1}	ISO 15712-1 Eq 25b	45	57	60	90	90	90	67
Flanking TL for Path Fd1	R_{F1d}	ISO 15712-1 Eq 25b	50	63	67	87	90	90	73
Flanking TL for Path Df1	R_{Df1}	ISO 15712-1 Eq 25b	50	63	67	87	90	90	73
Flanking STC for Junction 1		0	43	55	59	83	85	85	65
Junction 2 (T-Junction, 78 mm 3-ply (CLT Separatin	g Wall / 78 mm 3-ply CLT Flankii	ng Wall)						
Flanking Path Ff_2		р.,							
Transmission Loss Element F2	$R_{F2,lab}$	RR-335 Base-CLT03	26	28	31	37	46	50	36
Transmission Loss Element f2	$R_{f2,lab}$	RR-335 Base-CLT03	26	28	31	37	46	50	36
Correction, Resonant Transmission F2	, _,		0	0	0	0	0	0	
Correction, Resonant Transmission f2			0	0	0	0	0	0	
TL in-situ for Element F2	$R_{F2,situ}$	ISO 15712-1 Eq 19 T_s,situ=T_s,lab	26	28	31	37	46	50	
TL in-situ for Element f2	$R_{f2,situ}$	ISO 15712-1 Eq 19 T_s,situ=T_s,lab	26	28	31	37	46	50	
Change by Lining on the Source Side	ΔR_{F2}	SilentFX® QC on 38 mm furrings	3	9	10	11	13	13	
Change by Lining on the Receiving Side	ΔR_{f2}	SilentFX® QC on 38 mm furrings	3	9	10	11	13	13	
_ · · · · · · · · · · · · · · · · · · ·	,-								
Junction 2 - Coupling									
Vibration Reduction Index for Ff	$K_{F2,f}$	RR-335, CLT-WW-Tb-01	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Vibration Reduction Index for Fd	$K_{F2,d}$	RR-335, CLT-WW-Tb-01	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Vibration Reduction Index for Df	$K_{D,f2}$	RR-335, CLT-WW-Tb-01	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Flanking Transmssion Loss - Path Values									
Flanking TL for Path Ff2	R_{F2f2}	ISO 15712-1 Eq 25b	45	57	60	90	90	90	65
Flanking TL for Path Fd2	R_{F2d}	ISO 15712-1 Eq 25b	50	63	67	87	90	90	68
Flanking TL for Path Df2	R_{Df2}	ISO 15712-1 Eq 25b	50	63	67	87	90	90	68
-									
Flanking STC for Junction 2			38	52	58	67	79	83	62
Junction 3 (Cross-Junction, 78 mm 3-	ply CLT Separ	rating Wall / 175 mm 5-plv CLT C	eiling)						
All values are the same as for Junction 1	, ,	5 , p., ser e	-01						
Flanking TL for Path Ff3	R_{F3f3}	ISO 15712-1 Eq 25b	37	58	61	67	78	86	61
Flanking TL for Path Fd3	R_{F3d}	ISO 15712-1 Eq 25b	46	64	68	75	87	90	70
Flanking TL for Path Df3	R_{Df3}	ISO 15712-1 Eq 25b	46	64	68	75	87	90	70
Flanking STC for Junction 3	-,0	- 4	36	56	59	66	77	83	60
househing A/T house's a 70 mm 2 to 1	N T C	- 14/-11 / 70 2 . 1 . 017.51	147 - 113						
Junction 4 (T-Junction, 78 mm 3-ply (Lr Separatin	g wall / 78 mm 3-ply CLT Flankii	ng Wall)						
All values are the same as for Junction 2	P	100 45743 4 5 051	42	50		70	00	00	C.F.
Flanking TL for Path Ff4	R_{F4f4}	ISO 15712-1 Eq 25b	42	56	61	70	83	86	65
Flanking TL for Path Fd4	R _{F4d}	ISO 15712-1 Eq 25b	44	58	63	72	85	88	68
Flanking TL for Path Df4	R_{Df4}	ISO 15712-1 Eq 25b	20	58 52	63 58	72 67	85 7 9	88	68
Flanking STC for Junction 4			38	52	38	6/	79	83	62
Total Flanking STC (combined transmssio	n for all of the	flanking paths)	32	48	52	62	73	77	56
ACTC due to Direct who El . Line		DD 225 511	30	42	40		70	70	
ASTC due to Direct plus Flanking Train	ISITIISSION	RR-335, Eq. 1.1	29	43	48	57	70	73	53

6. Conclusions

Examples of the calculation of ASTC ratings for mid-rise wood constructions using 15.9 mm SilentFX® QuickCut Gypsum Board as a cladding have been presented. All of the constructions in the examples meet or exceed the acoustic requirements of the 2015 National Building Code Canada.

Footnotes

- 1. UL Product Spec™ BXUV7 Fire Resistance Ratings CAN/ULC-S101 Certified for Canada http://productspec.ul.com/document.php?id=BXUV.M535
- 2. The use of floor finishes on the bare subfloor (for example a concrete topping, tiles or laminate flooring) will in most cases result in ASTC ratings which are equal to or exceed the ratings shown in the examples presented in this report.
- 3. Cross-Laminated Timber (CLT) assemblies are structural panels fabricated by bonding wood elements together in layers with alternating perpendicular orientation of the timber elements. The CLT panels evaluated in this study had adhesive bonding between the faces of timber elements in adjacent layers, but no adhesive bonding the adjacent timber elements within a given layer. There were noticeable cracks between the timber elements comprising each layer of the CLT assembly. These CLT panels could be called "Face-laminated CLT Panels" but are simply referred to as CLT panels in the body of this Report. For the 3-ply panels considered in this Report, each layer or ply has a thickness of 26 mm and is comprised of parallel wood strips whose cross section is 26x89 mm. For the 5-ply and 7-ply panels, the ply thickness increases from 26 mm to 35 mm. The testing of the unlined assemblies is presented in Section 2.1. The physical properties of the bare laminated panels are:

3-ply panels: 78 mm thick, 42.4 kg/m²
5-ply panels: 175mm thick, 91.4 kg/m²

• 7-ply panels: 245 mm thick, 130 Kg/m²

References

- [1] ISO 15712-1:2005 -- Building acoustics -- Estimation of acoustic performance of buildings from the performance of elements -- Part 1: Airborne sound insulation between rooms. Geneva, Switzerland: International Standards Organization; 2005.
- [2] ISO 10848-1:2006 -- Acoustics -- Laboratory measurement of the flanking transmission of airborne and impact sound between adjoining rooms -- Part 1: Frame document. Geneva, Switzerland: International Standards Organization: 2006.
- [3] Hoeller, C., Quirt D., Mahn J., RR-331: Guide to Calculating Airborne Sound Transmission in Buildings: 3rd Edition. Ottawa, Canada: National Research Council Canada; 2017. http://doi.org/10.4224/23002279
- [4] Zeitler B., Quirt D., Schoenwald S., Mahn J., RR-334: Apparent Sound Insulation in Concrete Block Buildings. Ottawa, Canada: National Research Council Canada; 2015. http://doi.org/10.4224/21275887