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Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Listed or Classified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered as Classified, Listed, or Recognized.

Fire-resistance Ratings - ANSI/UL 263

See General Information for Fire-resistance Ratings - ANSI/UL 263

Design No. U350

BXUV.U350

April 01, 2013

Bearing Wall Rating — 2 Hr

Finish Rating — 23 min

STC Ratings — 61, 56 (See Items 7, 7A)

Load Restricted for Canadian Applications — See Guide BXUV7
1. **Wood Studs** — Double row of nom 2 by 4 in., spaced 16 in. OC with two 2 by 4 top and one 2 by 4 bottom plates. As an option, nom 2 in. by 6 in., spaced 24 in. OC with two 2 in. by 6 in. top and one 2 in. by 6 in. bottom plates may be used in lieu of 2 in. by 4 in. studs and plates. Studs effectively fire stopped. Opposite stud rows spaced 1 in. apart.

2. **Batts and Blankets** — Faced or unfaced mineral fiber insulation, 3-1/2 in. thick, nom 3.0 pcf, pressure fit in the wall cavity between stud, plates, and cross bracing.

See **Batts and Blankets** (B212) category for names of Classified manufacturers.
3. Building Units* — Building units placed with the laminate face against, and nailed to the wood framing with 1-7/8 in. long, 6d nails, spaced 6 in. OC. on the perimeter and 12 in. OC. in the field.

BARRIER TECHNOLOGY CORP — Type Blazeguard 1-Side

LOUISIANA-PACIFIC CORP — Type LP FlameBlock 1-Side

4. Gypsum Board* — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, GS12 or U305. Nom. 5/8 in. thick, 4 ft. wide board, applied vertically over building units (Item 3) or attached directly to the wood studs (Configuration B) with joints staggered from joints of building units and nailed to studs and bearing plates through the building units 8 in. OC. with 8d cement coated nails, 2-3/8 in. long, 0.113 in. shank diam. and 9/32 in. diam. head. When constructing Configuration B, 1-7/8 in. long, 8d cement coated nails spaced 8 in. OC. shall be used to fasten the gypsum board directly to the wood studs. When Item 6, resilient channels are used, gypsum panels applied vertically and screw attached with 1 in. long, self-drilling, self-tapping Type S or S-12 steel screws spaced 8 in. OC.

ACADIA DRYWALL SUPPLIES LTD (View Classification) — CKNX.R25370

AMERICAN GYPSUM CO (View Classification) — CKNX.R14196

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) — CKNX.R19374

CERTAINTEED GYPSUM CANADA INC (View Classification) — CKNX.R15187

CERTAINTEED GYPSUM INC (View Classification) — CKNX.R3660

CGC INC (View Classification) — CKNX.R19751

GEORGIA-PACIFIC GYPSUM L L C (View Classification) — CKNX.R2717

LAFARGE NORTH AMERICA INC (View Classification) — CKNX.R18482

LOADMASTER SYSTEMS INC (View Classification) — CKNX.R11809

NATIONAL GYPSUM CO (View Classification) — CKNX.R3501

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) — CKNX.R7094

PANEL REY S A (View Classification) — CKNX.R21796

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) — CKNX.R19262

TEMPLE-INLAND (View Classification) — CKNX.R6937

THAI GYPSUM PRODUCTS PCL (View Classification) — CKNX.R27517

UNITED STATES GYPSUM CO (View Classification) — CKNX.R1319

USG MEXICO S A DE C V (View Classification) — CKNX.R16089

6. **Resilient Channel** — Optional - Not Shown - For use with gypsum boards in Configuration B, 25 MSG galv steel, spaced vertically 24 in. OC, flange portion screw attached to one side of studs with 1-1/4 in. long diamond shaped point, double lead Phillips head steel screws.

7. **STC Rating** — The STC Rating of Configuration A is 61 when it is constructed as described by Items 1 through 5, except:

   A. Item 1, above - Wood Studs - Studs in opposite rows shall be staggered 8 in. OC.

   B. Item 4, above - Gypsum Board - Min. weight 2.0 psf.

7A. **STC Rating** — The STC Rating of Configuration B is 56 when it is constructed as described by Items 1 through 6, except:

   A. Item 1, above - Wood Studs - Studs in opposite rows shall be staggered 8 in. OC.

   B. Item 4, above - Gypsum Board - Min. weight 2.0 psf.

   C. Item 6, above - Resilient Channels - The gypsum board shall be attached to the studs with resilient channels.

*Bearing the UL Classification Mark* 

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Last Updated on 2013-04-01

When the UL Leaf Mark is on the product, or when the word "Environment" is included in the UL Mark, please search the [UL Environment database](http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/showpage.html?name=BXUV.U350) for additional information regarding this product's certification.

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ENGINEERING EVALUATION

UL U350 Townhouse Party Wall and U338 Attic Fire Separation
Staggered and Matching Floor Height

Project No. 10278, Revision 1

Prepared for:

Louisiana-Pacific Corporation
414 Union Street
Suite 2000
Nashville, TN

April 1, 2015
Abstract

An evaluation has been performed of the Louisiana-Pacific (LP) 2 hour party wall assembly described in Underwriter’s Laboratories Design No. U350 (Configuration B) and the conformity of UL Design No. U338 as a party wall attic fire separation. The intent of this evaluation is two-fold. First, an opinion is rendered regarding the conformity of U350 party wall designs incorporating matching and staggered floor heights in each occupancy. Second, the viability of the U338 non-loadbearing flat-framed design for use as an acceptable fire separation in the attic is addressed. Based on our review of these design listings and the relevant sections of the International Residential Code (IRC), it is our conclusion that this design meets the intent of the party wall fire separation requirements of the governing model code.

The conclusions reached by this evaluation are true and correct, within the bounds of sound engineering practice. All reasoning for our decisions is contained within this document.

Submitted by,

[Signature]

Howard Stacy
Senior Scientist/Partner
360-957-0311

Reviewed and Approved,

[Signature]

Deg Priest
President
INTRODUCTION

Louisiana-Pacific Corporation (LP) has a 2 hour double stud party wall design which is listed by Underwriter’s Laboratories under Design No. U350. This design is also listed under ICC-ES ESR-1365. LP has requested that an opinion be rendered addressing the acceptability of either staggered or matching floor heights on either side of the party wall in neighboring occupancies, as well as an assessment of the viability of an attic fire separation constructed in accordance with UL U338. The conceptual drawing provided by LP is shown below.

Figure 1. Conceptual rendering of party wall construction with staggered or matching floor heights, with a U338-based system employed as attic fire separation.

REFERENCE DOCUMENTS


[Diagram of party wall construction]
EVALUATION

The evaluation first discusses the fire resistance test performance leading to the UL listing of the LP FlameBlock 2 hour loadbearing U350 design. An analysis of its suitability for use as a 2 hour party wall separation in townhouse construction is performed. The requirement for maintaining the fire resistance continuity at the floor-to-wall connections is addressed in detail, and a discussion of the effect of the presence of either matching or staggered floor heights in neighboring occupancies is also provided.

In addition, the viability of UL Design No. U338 for use as attic party wall separations is evaluated.

The fire resistance testing of the FlameBlock assembly is described in UL Report No. 93NK17101 (Ref. 2). The test was performed with each row of studs loaded separately. The separate loading of the double frame wall was intended to keep the load on the unexposed framing (back row of studs) when the exposed framing collapsed during the fire test as a result of the fire exposure. This represented a double wall in which each framing independently supported a floor or a roof of a unit dwelling in a townhouse housing construction. The report shows that the load was removed from the wall facing the fire at 69 minutes, demonstrating the ability of the wall nearest the fire exposure to maintain a minimum fire resistance period of 1 hour, which is consistent with the code’s intent for fire protection of separate townhouse occupancies.

The UL design listing for U350 is included in Appendix A. The suitability of UL Design U350 as a party wall fire separation has been previously discussed in PAC EEV 10222, Rev. 1 (Ref. 4).

The 2012 IRC (Section R302.2) defines a “townhouse” as a single-family dwelling unit constructed in a group of three or more attached units in which each unit extends from foundation to roof and with a yard or public way on at least two sides. Each townhouse shall be considered a structurally independent building and shall be separated by a fire-resistance-rated wall assemblies meeting the requirements of Section R302.1 for exterior walls. Section R302.1 establishes that the exterior wall element for each occupancy must have a minimum fire resistance rating of 1 hour (when tested in accordance with ASTM E119 or UL 263) with exposure from both sides.

The intent of the codes where townhouse partywall fire wall constructions are concerned is to provide for containment of a fire originating in one occupancy for a period of 1 hour before allowing collapse of that “independent” structure. These walls provide a complete separation between the structurally independent occupancies. This is covered in IBC Section 706.2 which reads as follows:

“Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicated by the required fire-resistance rating or shall be constructed as double fire walls in accordance with NFPA 221.”

Party walls constructed as double fire walls in accordance with NFPA 221 are deemed to comply with IBC Section 706, providing conformity with IRC Section 302.

Compliance with Section R302.1 provides for a minimum of 1 hour fire resistance protection for the occupancy before the neighboring structure becomes exposed to fire.

In applying the LP U350 2 hour design to townhouse party wall requirements, it is important to emphasize that the UL fire resistance test results includes the fact that the wall framing on the fire exposed side resisted the effects of the test fire exposure for a minimum of 1 hour before losing the structural integrity needed to support the applied load (the load representing the floor and/or roof of the dwelling unit). With this in mind, U350 provides for the following:

1. The intent of Section R302.1 requiring two 1 hour walls is fulfilled, and the provision for structural independence is met. Fire resistance is provided from both sides of the 2 hour party wall, allowing for sufficient structural stability under fire conditions to allow collapse of the individual construction without carrying the neighboring structure with it.
2. The double “back-to-back” U350 construction complies with NFPA 221, Section 4.5, where each framed wall provides 1 hour of fire resistance before the second wall becomes involved, and the combined assembly fire resistance rating is 2 hours.

**Vertical Fire Resistance Continuity**

The codes require that fire resistance-rated party wall assembly separating townhouses must be continuous from the foundation to the underside of the roof sheathing. Figure 1 gives an example of an appropriate technique for maintaining the required fire resistance at the floor-to-wall intersection in a U350 party wall construction. For a two hour fire rated double stud party wall assembly with each wall loaded separately, the 1 hour protection imparted at the rim board intersection on each side must equal or exceed the sum of the protections provided by the ceiling membrane (if any), fire protective elements applied to the surface of the rim board and the fire resistance of the rim board itself (typically 20 minutes for 1½ inch rim board [Ref. 6]). In the case shown in Figure 1, the following time assignments can be made incorporating the “Component Additive Method” (CAM) calculation methodology described in the AWC Design for Code Acceptance DCA 4 (Ref. 6):

<table>
<thead>
<tr>
<th>Component</th>
<th>Time Assigned (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor-ceiling assembly with ½ inch regular gypsum board membrane (engineered I-joist construction assumed)</td>
<td>15 (estimated)*</td>
</tr>
<tr>
<td>Rim board protection – 1 layer of ¾ inch Type X gypsum wallboard</td>
<td>40 (Ref. 6)</td>
</tr>
<tr>
<td>1½ inch rim board</td>
<td>20 (Ref. 5)</td>
</tr>
<tr>
<td><strong>Combined assembly fire endurance rating</strong></td>
<td><strong>75</strong></td>
</tr>
</tbody>
</table>

![Diagram of rim board protection in a LP U350 “Configuration B” floor-to-wall intersection. (Code-compliant fire blocking at floor line is not shown).](image)

1 The fire resistance of the rim board is based on the length of ASTM E119 fire exposure required to achieve a char depth of the rim board at the point where the residual axial strength of the rim component is exceeded under full allowable load.

2 UL has reported a fire rating of 27 minutes for a comparable I-joist assembly with a loading representative of actual use in “Fire Service Collapse Hazard Floor Furnace Fire Experiments”, January 2012
It is necessary to note that the floor design shown in Figure 2 represents a “minimum” construction given the use of wood I-joists as supporting elements of the floor-ceiling. This is considered a “worst case” based on personal testing experience with a variety of wood-based floor constructions employing plated-trusses and solid sawn wood joists. Additional protection time would be expected with plated-truss or solid sawn constructions.

Staggered or Matching Floor Heights

When considering the 1 hour fire resistance protection needed for each occupancy, the occurrence of dissimilar floor heights is not judged to detract from the required fire resistance rating. The floor-to-wall intersection will be unaffected by the presence or absence of a similar intersection in the neighboring wall construction.

Attic Fire Separation using UL Design U338

The UL U338 design listing is provided in Appendix B. In townhouse constructions

CONCLUSIONS

The purpose of this evaluation was to analyze whether the LP U350 double wall design can be used as a code-complying 2 hour townhouse party wall fire separation. From this analysis we can successfully conclude that the U350 construction can be used to satisfy the townhouse occupancy separation requirements set forth in the IRC, IBC and NFPA 221. This double wall design has been shown by ASTM E119 / UL263 testing to provide sufficient stability to allow the structure on either side to collapse after a minimum 1 hour exposure without compromising the wall demising the neighboring occupancy.
Appendix A

Design No. U350
March 05, 2014

Bearing Wall Rating — 2 Hr
Finish Rating — 23 min

STC Ratings — 61, 56 (See Items 2, 2A, 7, 7A)

Load Restricted for Canadian Applications — See Guide BXUV7

Configuration A

Configuration B
1. **Wood Studs** — Double row of nom 2 by 4 in., spaced 16 in. OC with two 2 by 4 top and one 2 by 4 bottom plates. As an option, nom 2 in. by 6 in., spaced 24 in. OC with two 2 by 6 in. top and one 2 in. by 6 in. bottom plates may be used in lieu of 2 in. by 4 in. studs and plates. Studs effectively fire stopped. Opposite stud rows spaced 1 in. apart.

2. **Batts and Blankets** — Used to achieve the STC Ratings - Faced or unfaced mineral fiber insulation, 3-1/2 in. thick, nom 3.0 pcf, pressure fit in the wall cavity between stud, plates, and cross bracing.

See **Batts and Blankets** (BZJZ) category for names of Classified manufacturers.

2A. **Glass Fiber Insulation** — (As an alternate to Item 2, not for use with STC Ratings) — Faced or unfaced glass fiber batts 3-1/2 in. thick, nom 0.25 pcf, pressure fit in the wall cavity between stud, plates, and cross bracing may be used. If 2 by 6 in. studs (Item 1) are used, min. 5-1/2 in. of unfaced glass fiber batts, nom 0.25 pcf, pressure fit in the wall cavity between stud, plates, and cross bracing. Insulation may be applied in multiple layers to achieve final thickness.

See **Batts and Blankets** (BZJZ) category for names of Classified manufacturers.

3. **Building Units** — Building units placed with the laminate face against, and nailed to the wood framing with 1-7/8 in. long, 6d nails, spaced 6 in. OC. on the perimeter and 12 in. OC. in the field.

**BARRIER TECHNOLOGY CORP** — Type Blazeguard 1-Side

**LOUISIANA-PACIFIC CORP** — Type LP FlameBlock 1-Side

4. **Gypsum Board** — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, GS12 or U305. Nom. 5/8 in. thick, 4 ft. wide board, applied vertically over building units (Item 3) or attached directly to the wood studs (Configuration B) with joints staggered from joints of building units and nailed to studs and bearing plates through the building units 8 in. OC. with 8d cement coated nails, 2-3/8 in. long, 0.113 in. shank diam. and 9/32 in. diam. head. When constructing Configuration B, 1-7/8 in. long, 8d cement coated nails spaced 8 in. OC. shall be used to fasten the gypsum board directly to the wood studs. When Item 6, resilient channels are used, gypsum panels applied vertically and screw attached with 1 in. long, self-drilling, self-tapping Type 5 or 5-12 steel screws spaced 8 in. OC.


6. **Resilient Channel** — Optional - Not Shown - For use with gypsum boards in Configuration B, 25 MSG galv steel, spaced vertically 24 in. OC, flange portion screw attached to one side of studs with 1-1/4 in. long diamond shaped point, double lead Phillips head steel screws.

7. **STC Rating** — The STC Rating of Configuration A is 61 when it is constructed as described by Items 1 through 5, except:

   A. Item 1, above - Wood Studs - Studs in opposite rows shall be staggered 8 in. OC.

   B. Item 4, above - Gypsum Board - Min. weight 2.0 psf.

7A. **STC Rating** — The STC Rating of Configuration B is 56 when it is constructed as described by Items 1 through 6, except:

   A. Item 1, above - Wood Studs - Studs in opposite rows shall be staggered 8 in. OC.

   B. Item 4, above - Gypsum Board - Min. weight 2.0 psf.

   C. Item 6, above - Resilient Channels - The gypsum board shall be attached to the studs with resilient channels.
Appendix B

Design No. U338
September 23, 2014
Nonbearing or Bearing Wall Rating — 1 HR.
(See Items 2 and 2A)
Finish Rating — One Layer of Wallboard — Min. 20 Min.

1. Wood Studs — Nom 2 by 3 or 2 by 4 in., flat wise, spaced 24 in. O.C. max, effectively firestopped.
2. Gypsum Board* — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305. For Nonbearing Wall rating — One layer of 5/8 in. thick, gypsum board secured to each side of studs. Gypsum board applied horizontally or vertically, unless specified below, with vertical joints centered on studs, and nailed to studs and bearing plates 7 in. O.C. with 6d cement coated nails, 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam head. As an alternate, No. 6 bugle head drywall screws, 1-7/8 in. long, may be substituted for the 6d cement coated nails.
3. Joints and Nail Heads — Gypsum board joints of outer layer covered with paper tape and joint compound. Nail heads of outer layer covered with joint compound. As an alternate, nom 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard with joints reinforced with paper tape.
4. Batts and Blankets* — (Optional) — Max 1 in. thickness glass or mineral fiber batt insulation.
FOR: International Barrier Technology Inc. Watkins, MN

ON: Configuration C - Double Stud Party Wall Assembly (UL U350)

CONDUCTED: 8 December 2010

TEST METHOD

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E90-09 and E413-04, as well as other pertinent standards. Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure (NVLAP Lab Code: 100227-0). A description of the measuring technique is available separately.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the client as Configuration C - Double Stud Party Wall Assembly (UL U350). The overall dimensions of the specimen as measured were nominally 4.27 m (168 in.) wide by 2.74 m (108 in.) high and 279 mm (11 in.) thick. The specimen was installed by the manufacturer directly into the laboratory's 2.74 m (9 ft) by 4.27 m (14 ft) wood-lined steel frame and was sealed on the periphery (both sides) with dense mastic.

The description of the specimen was as follows: The test specimen consisted of two (2) two-by-four wood stud walls, each with an insulated cavity and an internal layer of 12.7 mm (1/2") thick, 15/32 Category, LP® FlameBlock® Fire-Rated OSB Sheathing and an external layer of 16 mm (5/8") Type X gypsum board on each side attached to resilient channels. A 25 mm (1 in.) airspace was maintained between the two walls. A more complete description of the specimen components follows.

Floor and Ceiling Plates: The specimen consisted of two (2) two-by-four wood stud and plate frame assemblies spaced 25 mm (1 in.) apart. Each wall had two 89 mm (3.5 in.) wide by 38 mm (1.5 in.) thick and 4.27 m (168 in.) long SPF wood top and bottom plates attached to the test frame at 610 mm (24 in.) on center with 3.3 mm (0.131 in.) diameter by 76 mm (3 in.) long cement coated nails. The total weight of the plates was 46.9 kg (103.5 lbs).

Studs: Each of the two walls consisted of eight (8) 89 mm (3.5 in.) wide by 38 mm (1.5 in.) thick and 2.63 m (103.5 in.) long SPF wood studs spaced on 406 mm (16 in.) centers. The studs were attached to the floor and ceiling plates with 3.3 mm (0.131 in.) diameter by 76 mm (3 in.)
long cement coated nails. Studs for each wall were staggered from the other. The end studs were attached to the frame the same as the floor and ceiling plates above. Horizontal bridging was provided in each cavity at 1.22 m (48 in.) from the floor using two-by-four wood and secured with 3.3 mm (0.131 in.) diameter by 76 mm (3 in.) long cement coated nails. Total weight of the studs and bridging was measured as 120.5 kg (265.8 lbs.).

Insulation: All cavities formed by the plates and studs were lined with unfaced R-13 fiberglass insulation measuring 89 mm (3.5 in.) thick and 381 mm (15 in.) wide. The total weight of the insulation was 22.1 kg (48.75 lbs).

Sheathing: On each wall a single layer of 12.7 mm (0.5 in.) thick, 15/32 Category, LP® FlameBlock® Fire-Rated OSB Sheathing was fastened vertically to the studs (internal, coating facing studs) using 2.8 mm (0.113 in.) diameter by 60 mm (2.375 in.) long smooth shank cooler nails 305 mm (12 in.) on center in the field and 152 mm (6 in.) on center at the perimeter. Total weight of the sheathing board was 230 kg (507 lbs.).

RC Deluxe Resilient Channel and Gypsum Board: On the outside of both walls, RC Deluxe (RCSD) resiliient channels were installed horizontally at 610 mm (24 in.) centers using 41 mm (1.25 in.) long Type W bugle head drywall screws at 406 mm (16 in.) on center (every stud). A single layer of 16 mm (0.625 in.) thick Type X gypsum board was applied horizontally to the channel and attached at 406 mm (16 in.) on center horizontally and 610 mm (24 in.) on center vertically using 25 mm (1 in.) long Type S bugle head drywall screws. Board joints were staggered from one side of the wall to the other as well as between layers. Screws were staggered between layers. Total weight of the Type X gypsum board as measured was 251 kg (553 lbs.). All joints were sealed with acoustical caulk and metal taped. Screw heads were covered with metal tape.

The weight of the specimen as measured was 680.4 kg (1,500 lbs.), an average of 58.1 kg/m² (11.9 lbs/ft²). The transmission area used in the calculations was 11.7 m² (126 ft²). The source and receiving room temperatures at the time of the test were 19±2°C (67±3°F) and 59±3% relative humidity. The source and receive reverberation room volumes were 178 m³ (6,298 ft³) and 177 m³ (6,255 ft³), respectively.
TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the TL test data is within the limits set by the ASTM Standard E90-09.

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STC=61

ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)
T.L. = TRANSMISSION LOSS, dB
C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT
DEF. = DEFIENCIES, dB<STC CONTOUR (SUM OF DEF = 11)
STC = SOUND TRANSMISSION CLASS

Tested by Marc Sciaky
Approved by David L. Moyer
Experimentalist Laboratory Manager

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SOUND TRANSMISSION REPORT
RAL – TL10-412

TRANSMISSION LOSS
SOUND TRANSMISSION LOSS CONTOUR

FREQUENCY (Hz)
STC= 61

TRANSMISSION LOSS
SOUND TRANSMISSION LOSS CONTOUR

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TEST REPORT

FOR: Louisiana-Pacific Corporation
Nashville, TN

ON: Configuration A - Double Stud Party Wall Assembly (UL U350)

CONDUCTED: 1 December 2010

TEST METHOD

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E90-09 and E413-04, as well as other pertinent standards. Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure (NVLAP Lab Code: 100227-0). A description of the measuring technique is available separately.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the client as Configuration A - Double Stud Party Wall Assembly (UL U350). The overall dimensions of the specimen as measured were nominally 4.27 m (168 in.) wide by 2.74 m (108 in.) high and 260 mm (10.25 in.) thick. The specimen was installed by the manufacturer directly into the laboratory's 2.74 m (9 ft) by 4.27 m (14 ft) wood-lined steel frame and was sealed on the periphery (both sides) with dense mastic.

The description of the specimen was as follows: The test specimen consisted of two (2) two-by-four wood stud walls, each with an insulated cavity and a base layer of 12.7 mm (1/2") thick, 15/32 Category, LP® FlameBlock® Fire-Rated OSB Sheathing and a face layer of 16 mm (5/8") Type X gypsum board on each side. A 25 mm (1 in.) airspace was maintained between the two walls. A more complete description of the specimen components follows.

Floor and Ceiling Plates: The specimen consisted of two (2) two-by-four wood stud and plate frame assemblies spaced 25 mm (1 in.) apart. Each wall had two 89 mm (3.5 in.) wide by 38 mm (1.5 in.) thick and 4.27 m (168 in.) long SPF wood top and bottom plates attached to the test frame at 610 mm (24 in.) on center with 3.3 mm (0.131 in.) diameter by 76 mm (3 in.) long cement coated nails. The total weight of the plates was 46.9 kg (103.5 lbs).

Studs: Each of the two walls consisted of eight (8) 89 mm (3.5 in.) wide by 38 mm (1.5 in.) thick and 2.63 m (103.5 in.) long SPF wood studs spaced on 406 mm (16 in.) centers. The studs were attached to the floor and ceiling plates with 3.3 mm (0.131 in.) diameter by 76 mm (3 in.) long cement coated nails. Studs for each wall were staggered from the other. The end studs were
attached to the frame the same as the floor and ceiling plates above. Horizontal bridging was provided in each cavity at 1.22 m (48 in.) from the floor using two-by-four wood and secured with 3.3 mm (0.131 in.) diameter by 76 mm (3 in.) long cement coated nails. Total weight of the studs and bridging was measured as 120.5 kg (265.8 lbs.).

**Insulation:** All cavities formed by the plates and studs were lined with 2.5 pcf R-13 mineral fiber insulation measuring 89 mm (3.5 in.) thick and 381 mm (15 in.) wide by 1.22 m (48 in.) high. The total weight of the insulation was 74.3 kg (163.75 lbs).

**Sheathing:** On each wall a single layer of 12.7 mm (0.5 in.) thick, 15/32 Category, LP® FlameBlock® Fire-Rated OSB Sheathing was fastened vertically to the studs (external, coating facing studs) using 2.8 mm (0.113 in.) diameter by 60 mm (2.375 in.) long smooth shank cooler nails on 305 mm (12 in.) on center in the field and 152 mm (6 in.) on center at the perimeter. Total weight of the sheathing board was 229 kg (505.5 lbs.).

**Gypsum Board:** On each wall a single layer of 16 mm (0.625 in.) thick Type X gypsum board was fastened vertically to the studs using 41 mm (1.65 in.) long Type W drywall screws on 203 mm (8 in.) on center. Total weight of the gypsum board was 250.5 kg (552.25 lbs.).

The weight of the specimen as measured was 723.8 kg (1,595.8 lbs.), an average of 61.8 kg/m² (12.7 lbs/ft²). The transmission area used in the calculations was 11.7 m² (126 ft²). The source and receiving room temperatures at the time of the test were 19±1°C (67±2°F) and 51±2% relative humidity. The source and receive reverberation room volumes were 178 m³ (6,298 ft³) and 177 m³ (6,255 ft³), respectively.
## TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the TL test data is within the limits set by the ASTM Standard E90-09.

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<th>DEF.</th>
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</table>

STC=61

## ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)
T.L. = TRANSMISSION LOSS, dB
C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT
DEF. = DEFICIENCIES, dB<STC CONTOUR (SUM OF DEF = 31)
STC = SOUND TRANSMISSION CLASS

Tested by __________________________  
Approved by __________________________

Marc Sciaky  
Experimentalist  
David L. Moyer  
Laboratory Manager
STC = 61

TRANSMISSION LOSS

SOUND TRANSMISSION LOSS CONTOUR

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