PRODUCT GUIDE

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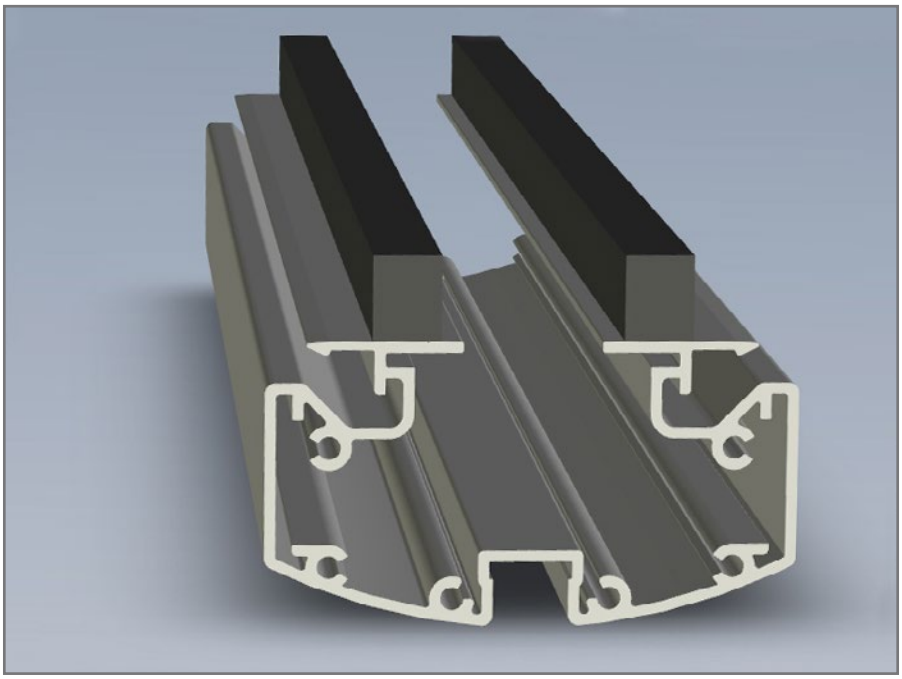
DIRTT



WALLS
STC PERFORMANCE

INSTALL GUIDE - 16Aug2018

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Introduction

This document is a product guide and overview for **Sound Transmission Class (STC) Performance** regarding DIRTT solutions. This document includes information on design intent, and expected outcomes. Examples of STC Guides can be found at the end of this document (see Figures 7 & 8).

All installation questions should be directed to your DIRTT Project Manager (PM) or a DIRTT Field Technician (contact information is on your '**DIRTT CARES**' card). Send email inquiries to **info@dirtt.net**.

1. STC Overview

WHAT IS STC?

Sound Transmission Class. The STC is a single-number rating of a material's, or an assembly's, ability to resist airborne sound transfer at predetermined frequencies. A partition is given an STC rating by measuring its transmission loss over a range of 16 different frequencies between 125-4000 Hz; this range is consistent with the frequency range of speech. In general, a higher STC rating blocks more noise from transmitting through a partition.

HOW IS DIRTT STC DETERMINED?

DIRTT STC ratings are determined by testing predefined wall "specimens" to ASTM E90 standard in a controlled laboratory environment.

The laboratory test consists of two Reverberation Chambers; a Transmission Chamber and a Receiving Chamber (see Figure 1). Between the two Chambers is an 8'-0" high x 9'-0" wide (2.44m x 2.74m) opening (see Figure 2). DIRTT walls are installed within the opening filling the void (see Figure 3). Utilizing calibrated equipment in the control room, sound is then pushed through speakers in the Transmission Chamber (in 16 different frequencies) and recorded with microphones in various locations in the Receiving Chamber. By comparing the transmitted decibel (dB) levels to the recorded dB levels the sound loss can be measured and an STC rating established.

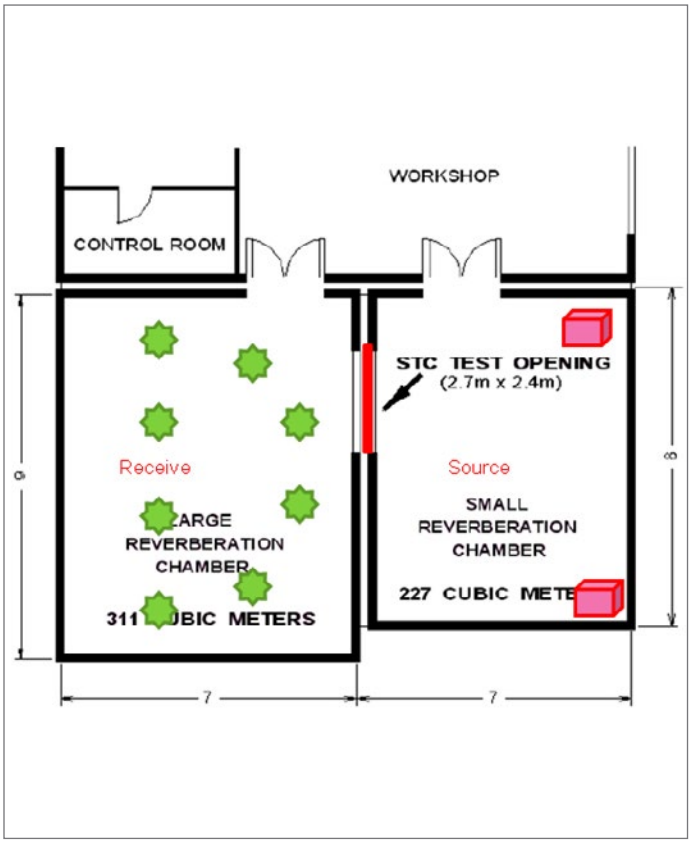


Figure 1: Receiving Chamber on left side and Transmission Chamber on right side.

Figure 2: 8'-0" high x 9'-0" wide (2.44m x 2.74m) opening between Chambers.

Figure 3: DIRTT walls installed to fill chamber to chamber opening.

WHAT DOES IT TAKE TO INCREASE THE STC RATING OF A WALL?

The measurement of noise is calculated in a logarithmic scale measured in dB. STC is roughly the dB reduction in noise a partition can provide. Perceived loudness doubles for every 10 dB; therefore, 30 dB is two times as loud as 20 dB and 40 dB is four times as loud as 20 dB.

It is important to understand that STC performance cannot be accurately estimated or extrapolated from individual material STC values. STC ratings can only be achieved through laboratory testing to ASTM E90. It is the combination of materials, insulation and reverberation cavities within a wall that determine the acoustic performance of a wall.

Through multiple test specimens, it has been determined that STC performance of DIRTT partitions can be improved by addressing connections to base building elements (perimeter enhancements), by manipulating insulation thickness, and by adding mass to the outer tiles. See applicable test results on following pages.

NOTE: Subtle variations in STC performance may occur where alternative materials are used to replace those listed in the specimen descriptions of each report.

WHAT IS A FIELD STC TEST?

A field STC test is conducted on-site after all walls are installed. This test will take into consideration any leaks in flanking paths such as dropped ceilings, raised floors, uninsulated connecting base building walls, doors, HVAC, lighting, etc.; if not treated these flanking paths could dramatically influence the sound performance of the environment. Field STC test results are proven to test below those determined in a controlled laboratory environment directly due to leaks in flanking paths, because these flanking paths are controlled “by others”. DIRTT will continue to promote sound masking as a solution to offset sound leaks.

OTHER TERMS

- NOISE REDUCTION COEFFICIENT (NRC):
  Represents sound absorption of the surface of a specific material (not assembly) which determines the reverb or liveliness of a room.
- WEIGHTED SOUND REDUCTION INDEX (Rw):
  Rw is a single-number rating of a material’s or an assembly’s ability to resist airborne sound transfer at the frequencies 100-4000 Hz. Based on feedback from our sound consultant Rw is more commonly used in Europe; it is also included in our STC reports.
- WHAT’S THE DIFFERENCE BETWEEN Rw & STC?
  Both are laboratory test results and directly equivalent, however, STC was originally intended for measuring internal sound transmission such as the human voice (high frequency). Whereas, Rw uses airborne sound and is viewed as being more appropriate for rating the attenuation of external low frequency noise, such as traffic.

NOISE CRITERION

Noise Criterion is a single number rating that reflects the loudness within a room or space. This would be affected by the ceiling height, material, and finish; the floor finish; the room size, and wall finishes, as well as all flanking paths. This rating can only be determined in the field, after the product is installed, similar to a field STC test.

NOTE: DIRTT provides a wall partition system that can be specified in a wide variety of sizes, heights, finishes and applications that are defined “by others” and therefore can only respond to specific sound testing at the component level. DIRTT will respond to Noise Criterion by supplying specific STC test reports for the applicable pretested assembly. The project acoustical consultant can then determine if the walls will meet the requirement. Alternatively, DIRTT can provide a mock-up reflecting actual project conditions, at the expense of the client, so the product can be evaluated locally.

2. DIRTT Performance - Solid Walls

DIRTT has tested many configurations, mainly monolithic, to achieve the best possible performance. Site installation, base building construction, and any variations in materials or construction from those configurations tested will impact the STC results experienced on location when compared with the STC lab test results established for specific assemblies.

SOLID WALL STC TEST RESULTS (APRIL 2014)

TYPICAL DETAILS (ALL TESTS)

Solid Wall Frame
½” (13mm) Monolithic MDF Tiles (both sides) with Foam Strip
1” (25mm) Exposed Low Profile Santoprene (TPE) Base Trim (both sides)
1” (25mm) - 1.5 pounds per cubic foot (pcf) density Ultratouch Natural Cotton Fiber Insulation by Bonded Logic (varying built up layers)
Base Cavity filled with insulation (as above)
Typical wall to wall connections; Links, Zippers
Wallflower connection to opening (sides)
Ceiling Track connection at opening (top)
Typical Wallflower Trim and Ceiling Trim

SOLID WALL 18 STC - MICRO-PERFORATED VENEER ON MDF (BOTH SIDES) - MEANU REPORT #1403S1

Tile Finish Side A (Source Side):	Micro-Perforated Veneer
Tile Finish Side B (Receiver Side):	Micro-Perforated Veneer
Insulation Layers:	QTY 1
Perimeter Enhancements:	No

SOLID WALL 33 STC - CHROMACOAT ON MDF (ONE SIDE) MICRO-PERFORATED VENEER ON MDF (OPPOSITE SIDE) - MEANU REPORT #1403S1

Tile Finish Side A (Source Side):	Chromacoat
Tile Finish Side B (Receiver Side):	Micro-Perforated Veneer
Insulation Layers:	QTY 1
Perimeter Enhancements:	No

SOLID WALL 39 STC - CHROMACOAT ON MDF (ONE SIDE) MICRO-PERFORATED VENEER ON MDF (OPPOSITE SIDE) - MEANU REPORT #1403S1

Tile Finish Side A (Source Side):	Chromacoat
Tile Finish Side B (Receiver Side):	Micro-Perforated Veneer
Insulation Layers:	QTY 3
Perimeter Enhancements:	Yes (see Section 4 of this report - no Antler treatment applied)

SOLID WALL 38 STC - CHROMACOAT ON MDF (BOTH SIDES) - MEANU REPORT #1403S2

Tile Finish Side A (Source Side):	Chromacoat
Tile Finish Side B (Receiver Side):	Chromacoat
Insulation Layers:	QTY 1
Perimeter Enhancements:	No

SOLID WALL 42 STC - CHROMACOAT ON MDF (BOTH SIDES) - MEANU REPORT #1403S3

Tile Finish Side A (Source Side):	Chromacoat
Tile Finish Side B (Receiver Side):	Chromacoat
Insulation Layers:	QTY 1
Perimeter Enhancements:	Yes (see Section 4 of this report - no Antler treatment applied)

SOLID WALL 43 STC - CHROMACOAT ON MDF (BOTH SIDES) - MEANU REPORT #1403S3

Tile Finish Side A (Source Side):	Chromacoat
Tile Finish Side B (Receiver Side):	Chromacoat
Insulation Layers:	QTY 2
Perimeter Enhancements:	Yes (see Section 4 of this report - no Antler treatment applied)

SOLID WALL 39 STC - CHROMACOAT ON MDF (BOTH SIDES) - MEANU REPORT #1403S2

Tile Finish Side A (Source Side):	Chromacoat
Tile Finish Side B (Receiver Side):	Chromacoat
Insulation Layers:	QTY 3
Perimeter Enhancements:	No

SOLID WALL 45 STC - CHROMACOAT ON MDF (BOTH SIDES) - MEANU REPORT #1403S3

Tile Finish Side A (Source Side):	Chromacoat
Tile Finish Side B (Receiver Side):	Chromacoat
Insulation Layers:	QTY 3
Perimeter Enhancements:	Yes (see Section 4 of this report - no Antler treatment applied)

SOLID WALL 45 STC - MAGNETIC MARKERBOARD ON MDF (BOTH SIDES) - MEANU REPORT #1403S4

Tile Finish Side A (Source Side):	Chromacoat
Tile Finish Side B (Receiver Side):	Chromacoat
Insulation Layers:	QTY 3
Perimeter Enhancements:	Yes (see Section 4 of this report - no Antler treatment applied)

NOTES:

1. Testing results indicated above show a 4-6 STC point gain when perimeter enhancements are used to inhibit gaps at base building connections.
2. Test results show equal or improved STC performance by modifying one layer of 1” (25mm) thick insulation FROM: Johns Mannville 1” (25mm) thick 0.75 to 1 pcf density glass fiber batt insulation TO: 1” (25mm) thick 1.5 pcf Ultratouch Natural Cotton Fiber Insulation by Bonded Logic in combination with the switch to the Santoprene (TPE) flexible base trim.
3. Each additonal layer of 1” (25mm) insulation increases performance by 1 STC point per layer.
4. Magnetic Markerboard Tiles performed the same as Chromacoat Tiles (any finish on MDF of equal thickness would perform similarly).

Solid Wall STC TESTING (NOVEMBER 2009) continue on next page

SOLID WALL STC TEST RESULTS (NOVEMBER 2009)

TYPICAL DETAILS (ALL TESTS)

Solid Wall Frame
1” (26mm) thick - 0.75 to 1 pcf density Johns Mansville Glass Fiber Batt Insulation (varying built up layers)
Base Cavity filled with insulation (as above)
Typical wall to wall connections; Links, Zippers
Wallflower connection to opening (sides)
Ceiling Track connection at opening (top)
Typical Wallflower Trim and Ceiling Trim
Perimeter Enhancements (see section 4 of this report)

SOLID WALL 45 STC - MEANU REPORT 09-05

Tile Style:	Monolithic - ½” (13mm) MDF Tiles (both sides) - Chromacoat Finish
Base style:	Tile Scribed to Floor (⅛” Closed Cell Foam Tape applied to cut tile edge - creating seal to floor)
Insulation Layers:	QTY 1

SOLID WALL 50 STC - MEANU REPORT 09-05B

Tile Style:	Monolithic - ⅜” (10mm) MDF Tiles with ⅛” (3mm) Mass Loaded Vinyl adhered to full tile backside of tile (full coverage) - Chromacoat Finish (both sides)
Base style:	Tile Scribed to Floor (⅛” Closed Cell Foam Tape applied to cut tile edge - creating seal to floor)
Insulation Layers:	QTY 3

SOLID WALL 39 STC - MEANU REPORT 09-05E (CONFIG #6)

Tile Style:	Monolithic - ½” (13mm) MDF Tiles (both sides) - Chromacoat Finish
Base style:	Standard Base Trim (1” exposed PVC Base Trim)
Insulation Layers:	QTY 2

SOLID WALL 44 STC - MEANU REPORT 09-05E (CONFIG #7)

Tile Style:	Monolithic - ½” (13mm) MDF Tiles (both sides) -Chromacoat Finish with added ⅜” thick x ½” wide (10mm x 13mm) Closed Cell Foam (CSF) tape strip continuous across Tile bottom (backside) to seal Tile to Base Trim/frame
Base style:	Standard Base Trim (1” exposed PVC Base Trim)
Insulation Layers:	QTY 2

SOLID WALL 40 STC - MEANU REPORT 09-05E (CONFIG #8)

Tile Style:	Monolithic - ½" (13mm) MDF Tiles (both sides) -Chromacoat Finish with added ⅜" thick x ½" wide (10mm x 13mm) CSF tape strip continuous across Tile bottom (backside) to seal Tile to Base Trim / frame
Base style:	Standard Base Trim (1" exposed PVC Base Trim)
Insulation Layers:	QTY 1

NOTES:

Monolithic Tiles vs. Segmented Tiles: DIRTT tested two identical specimens with the only variation being the addition of Tile and Furniture Mounts (Antlers) - ⅜" (10mm) tile gaps at 30" (762mm) Above Finished Floor (AFF) to reflect a typical desk top height, and at 5'-8" (1.73m) AFF to reflect a typical overhead cabinet height at its top. These Antlers were introduced on both sides of the wall (back-to-back) creating a segmented tile elevation. The Antlers were also treated with 1⁄16" (2mm) thick continuous closed cell foam tape to ensure the tiles sealed against the frame horizontals. The results showed an overall STC reduction of 3 STC points where the tiles were segmented or 1.5 STC points per back-to-back Antler condition. Using standard frame-to-frame connections achieved a 50 STC rating; this proves that PVC Zippers can perform to at least this level.

3. DIRTT Performance - Glass Walls

SINGLE PANE GLASS WALL

When addressing STC ratings of single pane glass walls it is largely recognized that the best the wall can perform acoustically will be limited by the properties of the materials being used. Hence, the independent STC rating of the specified finish material must be considered to "estimate" best wall performance. Refer to table below for assigned STC ratings for varying glass thicknesses and types (see Figure 4).

Glass Product	Nominal Thickness mm	Construction Detail mm	STC Ratings
Single pane	3		24
	4		29
	5		29
	6		30
	8		30
	10		31
	12		32
Laminated	6.4	3-.4-3	33
	8.4	4-.4-4	35
	10.4	5-.4-5	36
Insulated Glass Units	13	3-6-4	27
	15	3-8-4	28
Double Windows	110 (4.3")	6-100-4	46
	160 (6.3")	6-150-4	47
	214 (8.4")	10-200-4	49
Glass Blocks	80	190x190x80	40

Figure 4: Glass STC ratings.

DOUBLE GLASS WALL

When two panes of glass are separated by an air space, the STC rating can vary based on the material, and material thickness specified, as well as the dimensional gap between the panes. For this reason two different Double Glass (Evil Twin) configurations were tested to determine how they would perform. See below for results.

DOUBLE GLASS WALL 37 STC - MEANU REPORT 09-05C

Standard Double Glass (Evil Twin) Extrusions with monolithic ¼" (6mm) clear tempered glass both sides, standard exposed PVC Base.

DOUBLE GLASS WALL 39 STC - MEANU REPORT 09-05C

Standard Double Glass (Evil Twin) Extrusions with monolithic ¼" (6mm) laminate glass on one side and ⅜" (10mm) on the other side, standard exposed PVC Base.

4. Perimeter Enhancements

STEP 1: Wallflower with CSF tape applied to full height of extrusion. QTY 1 layer of ¼" thick x ½" wide (6mm x 13mm) CSF tape on either side of Wallflower back (broken at centerline) + QTY 1 layer of ½" thick x ½" wide (13mm x 13mm) CSF tape on either side of the first Wallflower extrusion drop (see Figure 5).

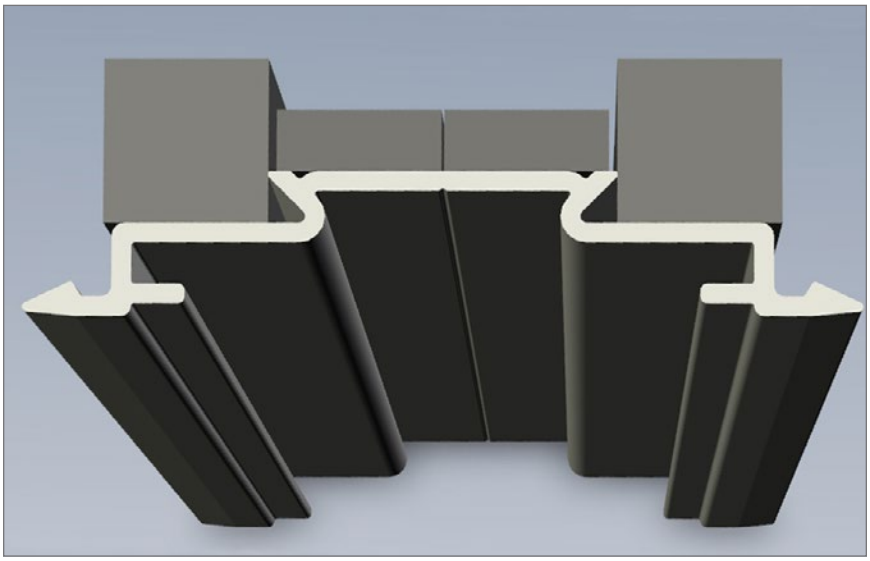


Figure 5: Wallflower with CSF tape applied to full height of Extrusion.

STEP 2: Wallflower with CSF tape applied to full height of Extrusion (see Figure 6). QTY 1 layer of ¼" thick x ½" wide (6mm x 13mm) CSF tape on either side of Wallflower back (broken at centerline) + QTY 1 layer of ½" (13mm) diameter closed cell backer rod on either side of first Wallflower extrusion drop (Figure 5).

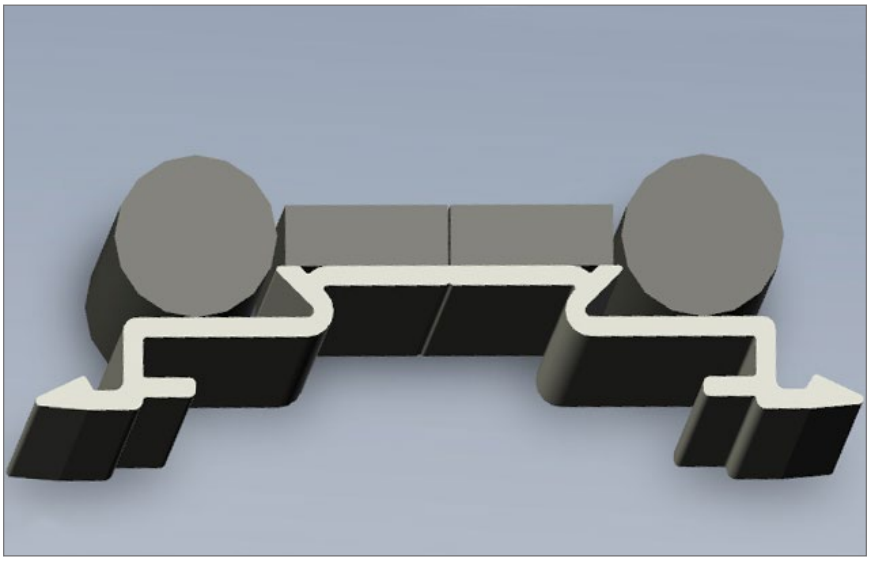


Figure 6: Wallflower with CSF tape applied to full height of Extrusion. Option to Figure 1.

STEP 3: QTY 1 layer of ⅛" thick x ½" wide (3mm x 13mm) CSF tape applied continuously to top of Ceiling Track on both sides of track centerline (see Figure 7). Fill Ceiling Track void with batt insulation.

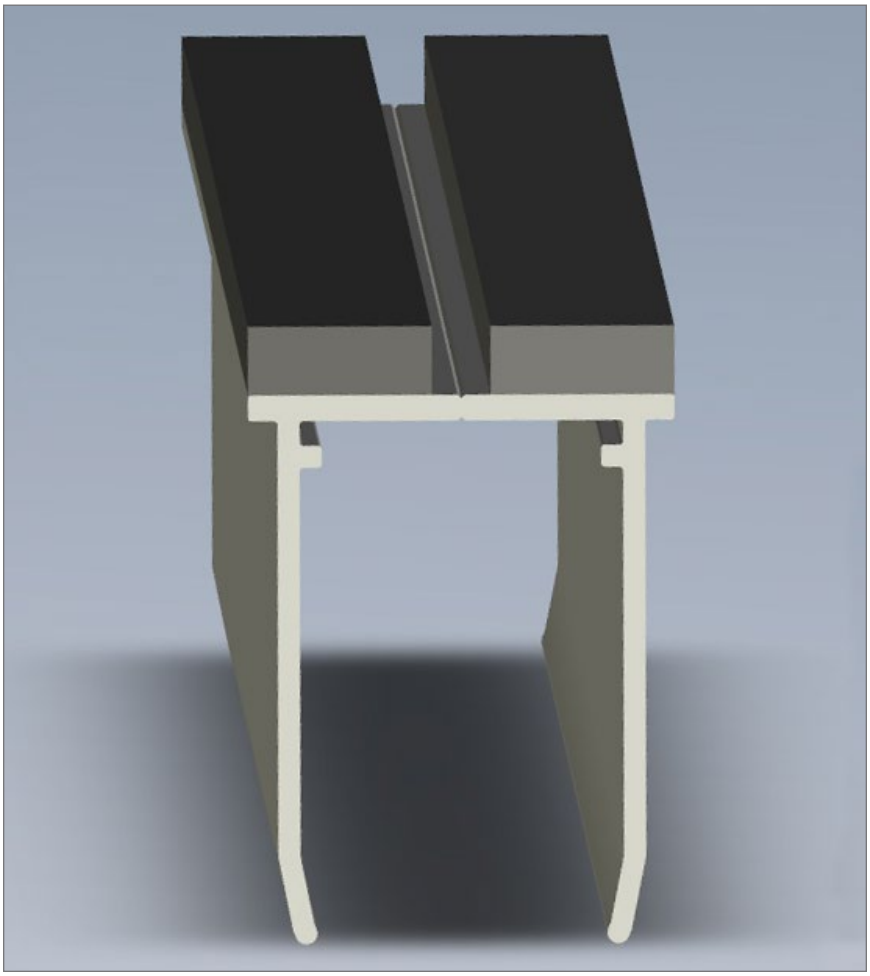


Figure 7: Ceiling Track enhancement.

STEP 4: Apply QTY 1 layer of ⅝" thick x ½" wide (16mm x 13mm) CSF tape continuously to top of Glass Wall Horizontal extrusion on either side of Ceiling Track gap. CSF tape should be positioned on top Flanges so top Horizontal is capable of engaging Ceiling Track as well as to allow for Ceiling Trim engagement (see Figure 8).

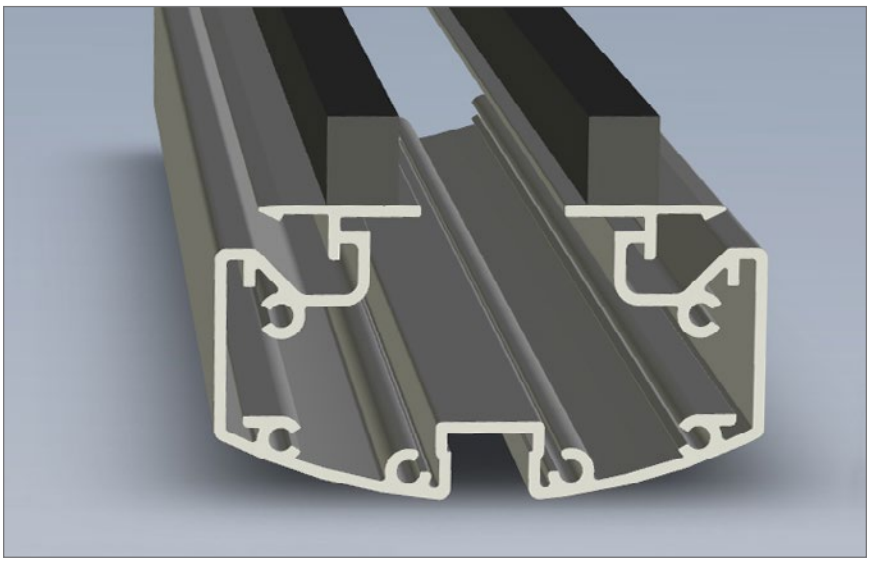


Figure 8: Glass Wall enhancement.

STEP 5: Apply QTY 1 layer of ⅝" thick x ½" wide (16mm x 13mm) CSF tape continuously to top of Solid Wall Horizontal extrusion on either side of Ceiling Track gap. CSF tape should be positioned on top Flanges so top Horizontal is capable of engaging Ceiling Track as well as to allow for Ceiling Trim engagement (see Figure 9).

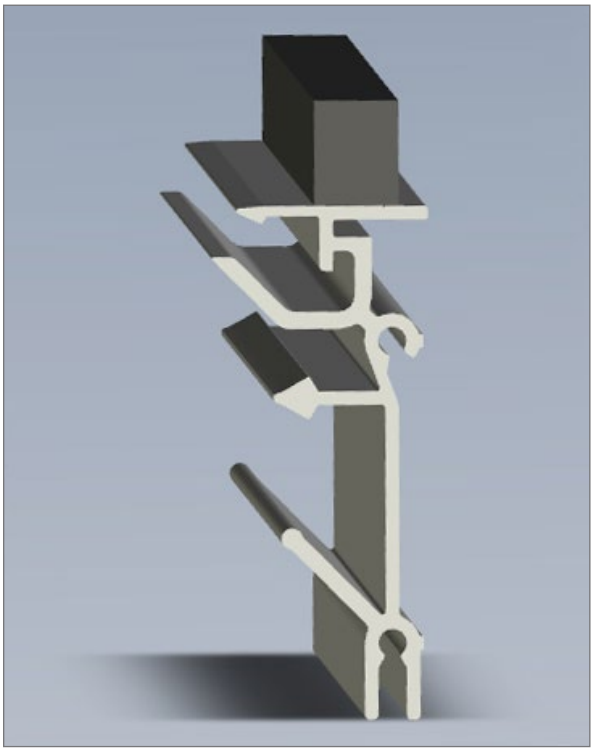


Figure 9: Solid Wall enhancement.

STEP 6: Apply 1/16" (2mm) CSF tape to Horizontal extrusions behind tiles; press tiles to fit over CSF tape for seal. This is at Antler and Thief extrusions (see Figure 10).

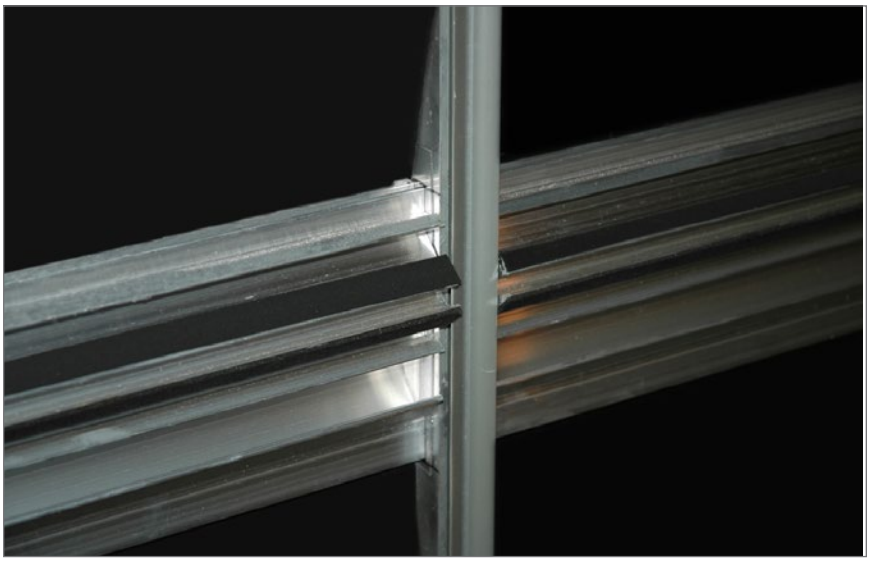


Figure 10: CSF tape applied to Horizontal extrusions behind tiles.

STEP 7: Apply ¼" thick x 1" wide (6mm x 25mm) CSF tape applied continuously to underside of base track (see Figure 11). CSF tape inserts are required at all frame to frame, and frame to base building connections above and below Zipper ends, or where light gaps appear. Where there's light penetration, there's sound loss.

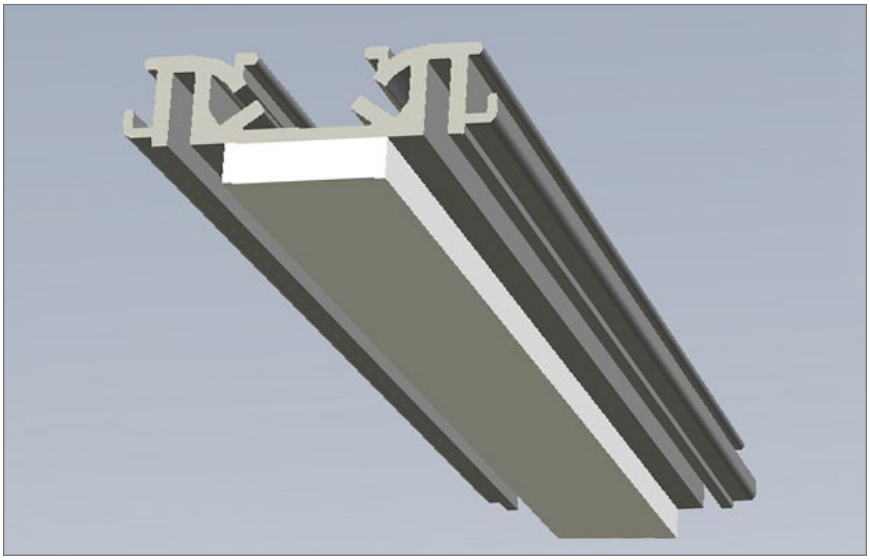


Figure 11: Base Track enhancement.

5. DIRTT Performance - Sound Doors

DIRTT has not tested any doors to ASTM E90 to date; however, testing the solid core wood slab style butt hinge door has been considered with and without an automatic door bottom. Therefore, until further notice our stance on STC performance of DIRTT doors is as follows:

A claim could be made that DIRTT doors would perform to the same standard as previously tested doors with similar composition; however, much of the STC performance of door/frame assembly is attributed to tight fitting gasketing applied around the perimeter of the door frame which seals the door to frame when the door is closed.

This does not prevent the use of a pretested Customer's Own Material (COM) sound door solution provided "by others" with applicable aftermarket perimeter gasketing (as applied in the relative door sound test solution of the selected vendor) which would mount and seal to the DIRTT door frame, inclusive of aftermarket door threshold and door bottom. For an example of a pre-tested door/frame configuration that would meet 40 STC refer to diagram below (see Figure 12). These components would be sourced locally by the DIRTT Partner.

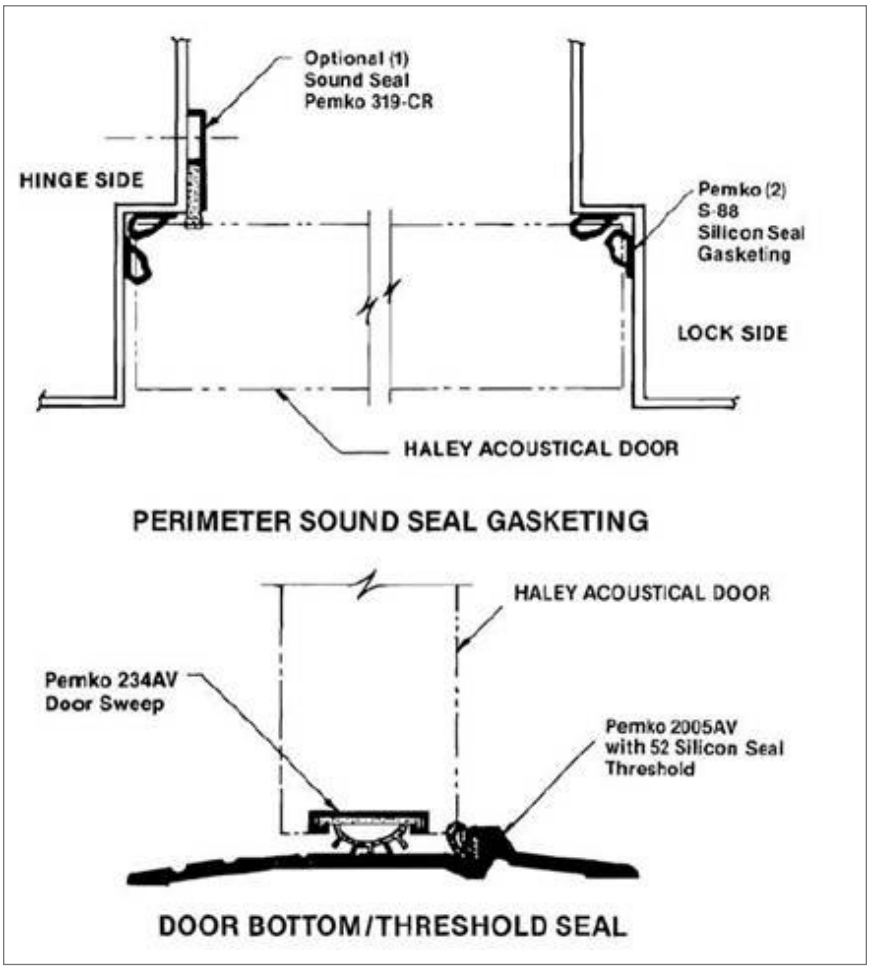


Figure 12: Example of 40 STC door frame Gasketing.

If the door and gasketing is considered as a pretested COM solution (meeting the STC requirement) provided “by others”, only the door frame and connections need to be addressed.

As it pertains to DIRTT’s untested door frame, the Double Glass wall has tested to a 39 STC rating with 10mm + 6mm laminate glass (test results attached); this implies the hollow aluminum wings perform at least to a 39 STC level. The Butt Hinge Door Frames have a thicker wall thickness and should outperform the glass wall wings.

Standard Zippers were used in the DIRTT Solid Wall STC tests that yielded a 50 STC result; this would imply that these Zippers perform at least to this level.

With that said, if a pretested COM door solution with specific gasketing is utilized, DIRTT provides a dimensional platform for these components to be installed. DIRTT’s current door frame stop (see Figure 13) does not allow for simple application for aftermarket gasketing. However, a new stop can be developed that will provide the appropriate platform for this interface (see Figures 14-16)

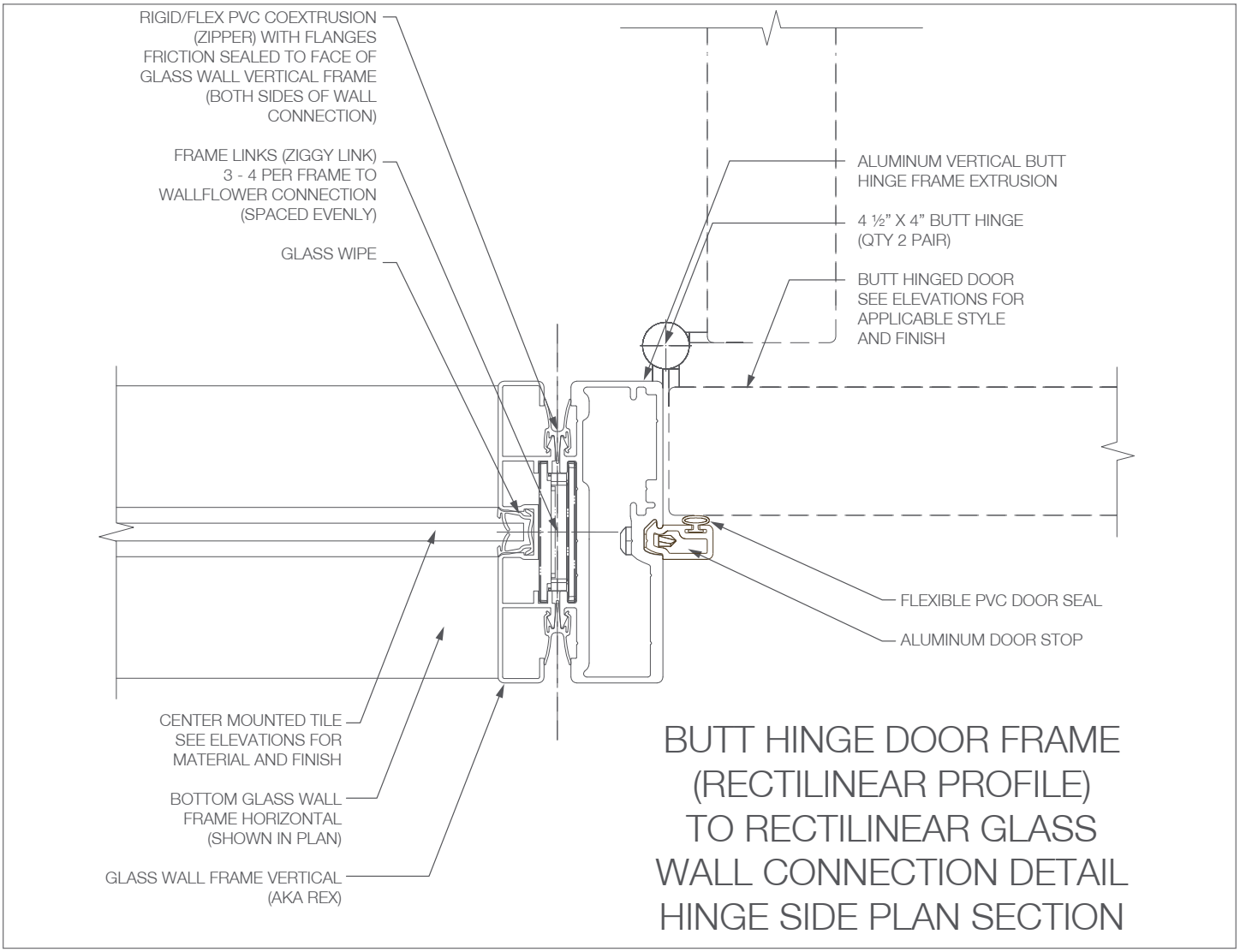


Figure 13: Butt Hinge Door Frame with Standard Stop.

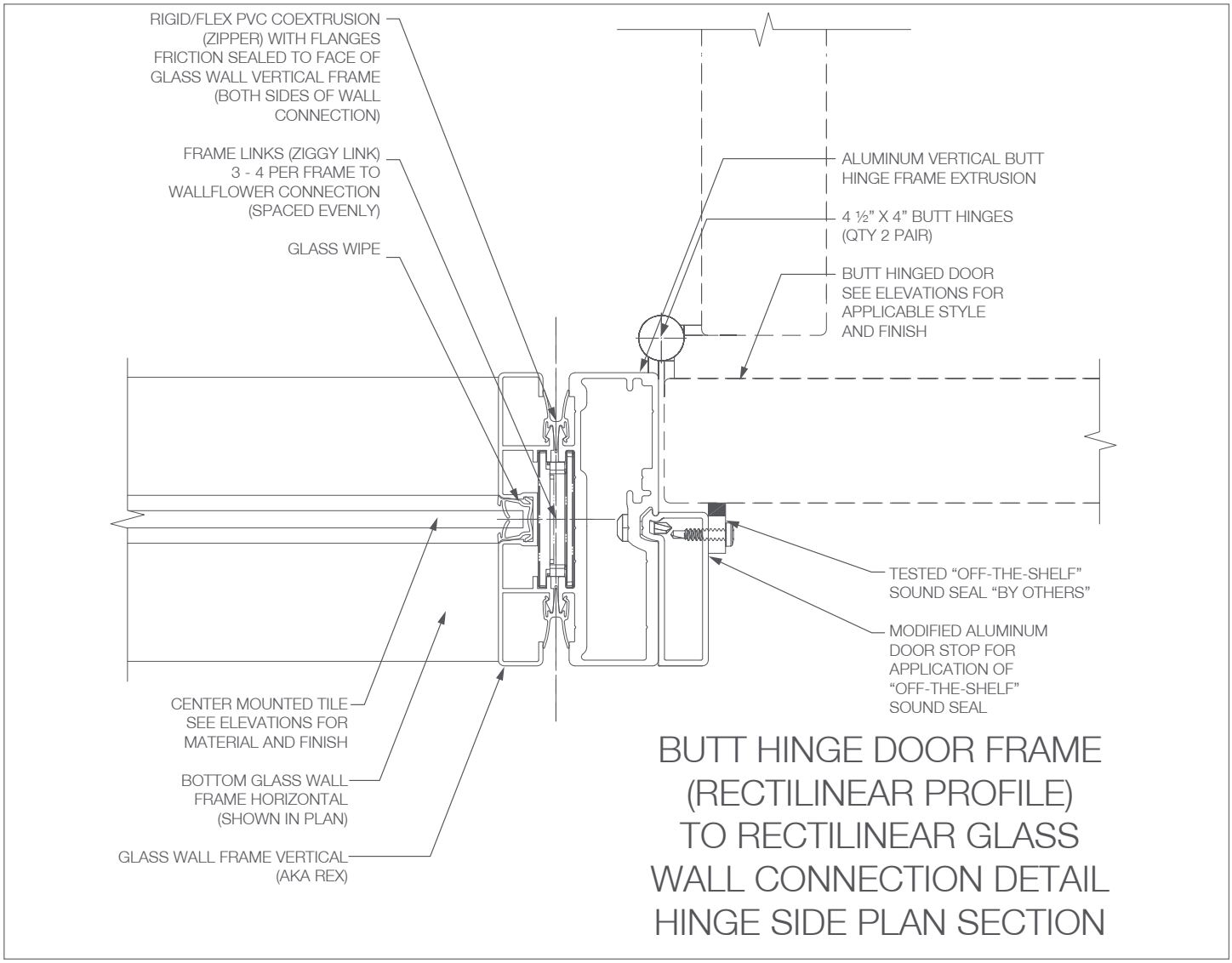


Figure 14: Butt Hinge Door Frame with Custom Stop.

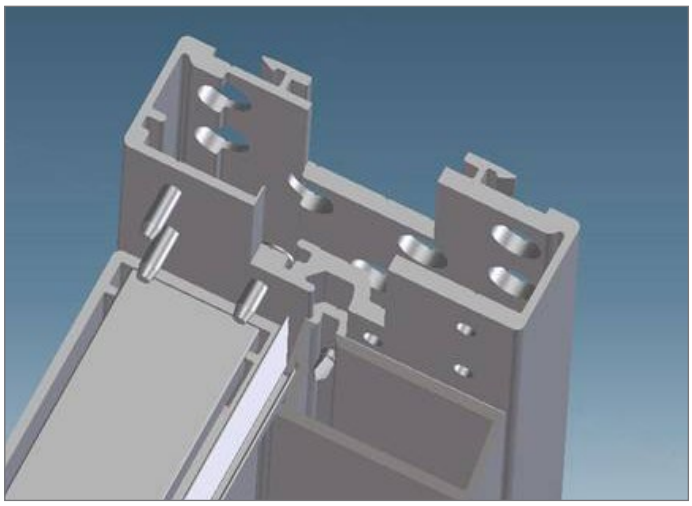


Figure 15: Exploded view of modified Butt Hinge Stop for application of aftermarket Gasketing.

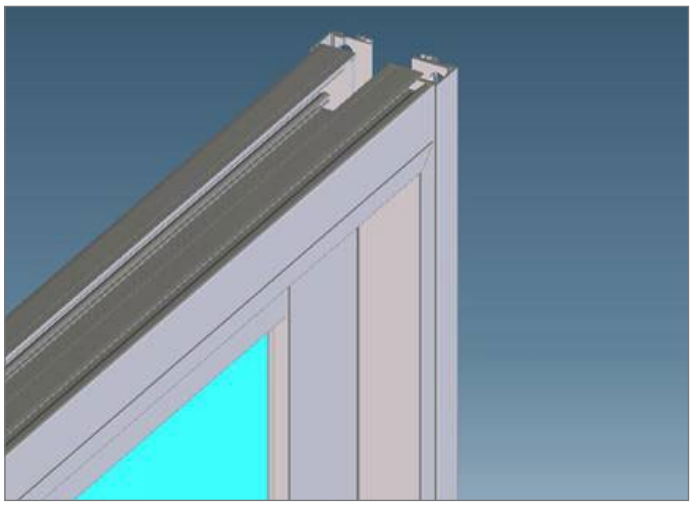


Figure 16: Assembled view of modified Butt Hinge Stop for application of aftermarket Gasketing.

HALEY
ARCHITECTURAL DOORS

ACOUSTICAL DOOR STC 40 AND STC 50

OVERVIEW

Acoustically rated, sound-retardant doors are used extensively in performing arts centers, concert halls, movie theaters, broadcast and recording studios, offices, health and medical centers. They are also critical to aerospace and defense installations as well as other industrial locations where noise control and/or privacy is required.

Current testing is being performed under ASTM E90-87 and ASTM E413-73 (reapproved 1980), which defines performance characteristics more precisely than older previous standards because of technological advances. In practically all cases involving tests made prior to 1983, acousticians regard these test results as obsolete and recommend the rejection of doors tested prior to 1983.

The obsolescence and lack of validity is due to the introduction within the past few years of changes to testing standards and of technological improvement to sound transmission and reception equipment. All Haley sound-retardant products are certified to the latest E90-87 test standard.

Specification writers and architects should be aware that acoustical testing is done under ideal conditions and to be assured of achieving similar results in the field will require close supervision of the design, construction and installation of all components involved. The walls, ceilings, ventilation systems, door frames, doors and gasketing must be installed properly to maintain the acoustical integrity of the sound controlled area.

SOUND TRANSMISSION TESTING

The test conducted to determine the acoustical rating of doors is done according to ASTM E90 which outlines the procedure for measuring sound transmission loss.

The Sound Transmission Loss (STL) is measured at 1/3 octave test frequencies — 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000 H_z (Hertz or cycles per second).

The Sound Transmission Class (STC) rating is derived by plotting the transmission loss curve for a particular type of door construction, at each of the 16 frequencies. The STL curve is then compared to a standard curve, established by ASTM E413-75, and the rating is determined when the test curve falls within the allowable parameters of the applicable standard curve.

There are two primary requirements which must be met for each STC classification. When the STL test curve is compared to the standard curve, there can be no STL, at any given frequency, which falls below the standard transmission loss measurement by more than +8dB (decibles). In addition, the summation of all STL measurements which fall below the standard curve cannot exceed +32dB.

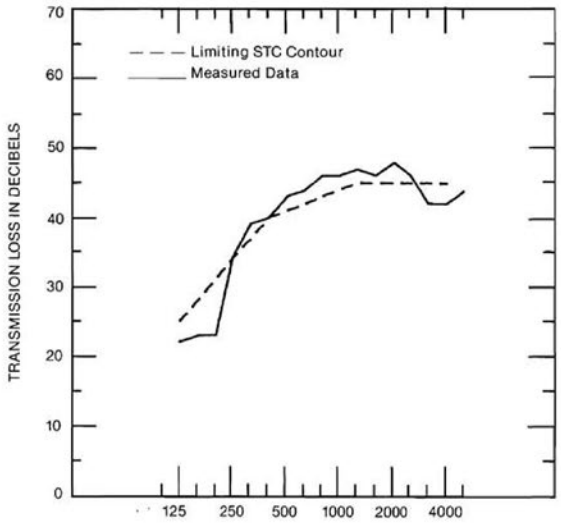
SINGLE NUMBER RATING SYSTEM

It would be impractical to try and compare a given product's performance at each frequency tested because of the difficulty in identifying the frequency of each noise source. For convenience in selection and comparing performance of similar products, a single number rating system has been developed: Sound Transmission Class (STC). This rating system can be used to determine if a wall, ceiling or door will offer sufficient resistance to sound transmission, so the transmitted sound level will fall below the desired level. Actually, it is seldom necessary or economically feasible to specify a door capable of preventing all sound transmissions. Due to the "masking" effect of normal background noise, sound transmitted through a wall or door assembly will be inaudible or "masked" if its intensity level is below the level of the receiving room.

The following table provides an indication of the effectiveness of various STC ratings in reducing the transmission of speech from room to room.

STC	Speech Heard Through Wall or Floor
30	Loud speech can be understood fairly well
35	Loud speech audible but not intelligible
42	Loud speech audible as a mumur
45	Some loud speech barely audible
48	Hearing strained to note loud speech
50	Loud speech not audible

TRANSMISSION LOSS REPORT



FREQUENCY IN HERTZ

1/3 OCT BND CNTR FREQ	125	160	200	250	315	400	500	630	800
TL in dB	22	23	23	34	39	40	43	44	46
95% Confidence in dB	2.48	1.38	1.29	1.15	0.90	0.97	0.49	0.60	0.69

1/3 OCT BND CNTR FREQ	1000	1250	1600	2000	2500	3150	4000	5000	STC
TL in dB	46	47	46	48	46	42	42	44	41
95% Confidence in dB	0.58	0.40	0.49	0.37	0.50	0.41	0.48	0.58	

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
STC = SOUND TRANSMISSION CLASS

TEST SPECIMEN

The door achieving the STC-41 rating was a 3'-0" × 7'-0" × 1¾" flush door with wood veneer doorskins and a special sound deadening core. The perimeter of the door was equipped with sealing devices as described in this brochure. Standard hardware was used, consisting of a cylindrical lock and heavy duty full mortised hinges.

Any other construction, hardware configuration, or deviation from the test specimen could produce a different rating.

Figure 17: Acoustical Door STC 40 and STC 50 Guide.

HALEY ARCHITECTURAL DOORS

ACOUSTICAL DOOR STC 40 AND STC 50

INSTALLATION INSTRUCTIONS

The performance of an acoustical door depends on the compatibility and quality of the installation of all the components including the wall, door frame, gasketing, hardware and door.

The installer must first note the perimeter clearances, positioning of the gasketing and adjustment of the bottom door seal

Haley's acoustical doors require a 3/32" clearance between the jamb of the frame and the hinge edge of the door, with a 1/4" clearance at the top of the door and the lock edge. The clearance at the bottom of the door should be 3/8" - 7/16" from the finish floor or 1/8" - 3/16" from the top of the threshold to the bottom of the door.

The lock edge should have a (3°) or 1/8" in 2" bevel. The hinge edge, top of door and door bottom should be square.

The frame must be plumb and square. The wall construction, door frame and installation of the frame should be accomplished in a manner to provide an assembly of a Sound Transmission Class (STC) rating equal to or greater than the specified classification of the door.

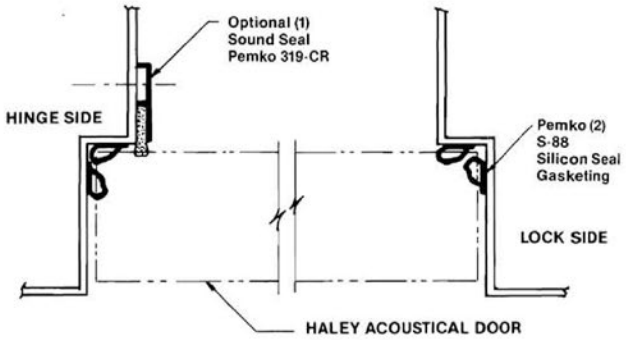
The gasketing positioned as shown in the details and hand trimmed to provide a tight, leak-proof seal in the frame rabbet or silicon caulking to the underside of the threshold and the joint where the threshold butts against the door jamb.

Hardware notes: The weight of Haley's STC door is approximately 9 lbs. per square foot. A 3070 door will weigh about 200 lbs. Therefore, heavyweight ball bearing hinges or Roton's 780-224 HD continuous hinges are required to properly support and swing the door.

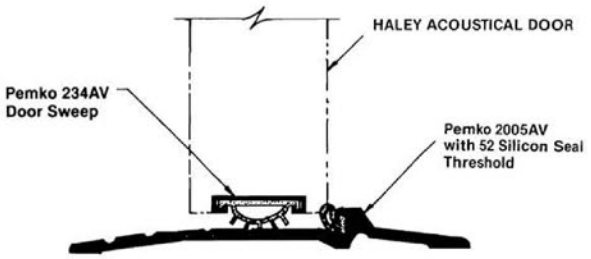
Lights (glazing) are not recommended. STC ratings shown are based on doors without cutouts. Any glass light (using acoustical rated glass) will somewhat reduce overall performance. Louvers are not permitted.

Acoustical doors in pairs must have solid mullion fully grouted with gasketing identical to single doors.

ACOUSTICAL DOOR GASKETING
(Supplied with Door)



PERIMETER SOUND SEAL GASKETING



DOOR BOTTOM/THRESHOLD SEAL

PERIMETER SEAL NOTES

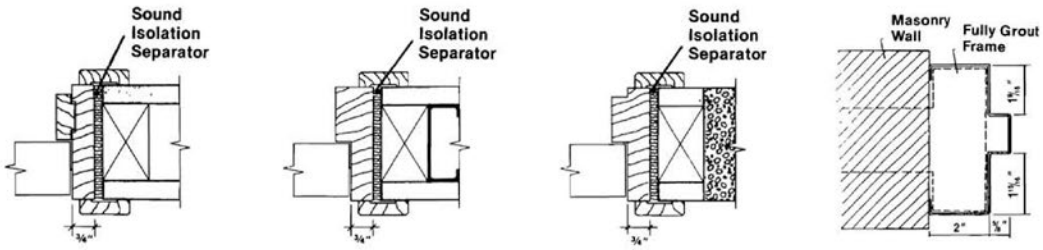
1. Haley's standard gasketing package includes a Pemko 2005 threshold, a 234AV door sweep/door bottom, and S-88 Silicon Seal gasketing. Doors tested with this package achieved a rating of STC-40.

   With the **addition** of surface applied door seal, Pemko 319-CR, the same acoustical door achieved an STC-41 rating. The 319-CR seals can be supplied if an STC-41 rating is required.

2. Position the S-88 Silicon Seal gasketing as shown. Note the difference between the gasketing placement on the hinge side and the lock side.

The door bottom-to-threshold seal is very important. The installer should check the flatness and level of the finish floor. Any uneveness may require an adjustment to the undercut of the door.

TYPICAL WOOD & HOLLOW METAL FRAMES



Applied Tee Stop Profile
Shown in Sound Rated
Wood Stud Wall

Double Rabbet Profile
Shown in Sound Rated
Masonry Wall

Single Rabbet Profile
Shown in Sound Rated
Steel Stud Wall

Masonry Construction
with Butted Frame Detail

The sound rating of the wall and door frame installation must equal or exceed the expected STC rating of the door and gasketing.

Figure 18: Acoustical Door STC 40 and STC 50 Guide.