System Number	Rating	Description	Sheet Number
METAL PIPE/CONDUIT PENETRATIONS			
F-C-1074	1 HR	WOOD FLOOR ASSEMBLY - METAL PIPE/CONDUIT - SEALANT ONLY	SHEET 1
W-L-1049	1 & 2 HR	GYPSUM WALL - SINGLE METAL PIPE/CONDUIT - SEALANT ONLY	SHEET 1
W-L-1168	1 & 2 HR	GYPSUM WALL - MULTIPLE METAL PIPES/CONDUITS - RECTANGULAR OPENING - SEALANT ONLY	SHEET 1
W-L-1251	1 & 2 HR	GYPSUM SHAFT WALL - METAL PIPE/CONDUIT - METAL SLEEVE - SEALANT & BACKING	SHEET 1
INSULATED METAL PIPE PENETRATIONS			
F-C-5043	1 HR	WOOD FLOOR ASSEMBLY - INSULATED METAL PIPE - SEALANT ONLY	SHEET 1
W-L-5014	1 & 2 HR	GYPSUM WALL - METAL PIPE WITH GLASS FIBER INSULATION	SHEET 2
W-L-5054	1 & 2 HR	GYPSUM WALL - METAL PIPE WITH AB/PVC (FOAM RUBBER) INSULATION	SHEET 2
W-L-5262	1 & 2 HR	GYPSUM SHAFT WALL - METAL PIPE WITH GLASS FIBER INSULATION	SHEET 2
PLASTIC PIPE/CONDUIT PENETRATIONS			
F-C-2032	1 HR	WOOD FLOOR ASSEMBLY - MAX 2" PLASTIC PIPE - SEALANT ONLY	SHEET 2
F-C-2253	1 HR	WOOD FLOOR ASSEMBLY - MAX 3" PLASTIC PIPE - WRAP STRIP & SEALANT	SHEET 2
F-C-2158	1 HR	WOOD FLOOR ASSEMBLY - MAX 4" PLSATIC PIPE - OPTIONAL BRANCH PIPE - COLLAR & SEALANT	SHEET 3
F-C-2322	1 HR	WOOD FLOOR ASSEMBLY - CLOSET FLANGE, MAX 4" PLASTIC DRAIN - SEALANT ONLY	SHEET 3
F-C-2320	1 HR	WOOD FLOOR ASSEMBLY - TUB DRAIN WITH OVERFLOW - PLYWOOD/GYPSUM PATCH + SEALANT	SHEET 3
W-L-2241	1 & 2 HR	GYPSUM WALL - MAX 2" PLASTIC PIPE - SEALANT ONLY	SHEET 3
W-L-2248	1 & 2 HR	GYPSUM WALL - MAX 3" PLASTIC PIPE - WRAP STRIP TUCK-IN	SHEET 3
W-L-2237	1 & 2 HR	GYPSUM WALL - MAX 4" PLASTIC PIPE - FIRESTOP COLLARS	SHEET 3
W-L-2257	2 HR	GYPSUM SHAFT WALL - MAX 4" PLASTIC PIPE - FIRESTOP COLLAR	SHEET 3
CABLE PENETRATIONS (NOT IN CONDUIT)			
F-C-3010	1 HR	WOOD FLOOR ASSEMBLY - CABLES - MAX 3" DIA. HOLE - SEALANT ONLY	SHEET 4
W-L-3210	1 & 2 HR	GYPSUM WALL - OPTIONAL SLEEVE - SEALANT & BACKING	SHEET 4
W-L-3377	1, 2, 3 & 4 HR	GYPSUM WALL - SINGLE EZ-PATH SERIES 22, 33, 44, 44+ (FOR FREQUENT CABLE ADDS/MOVES/CHANGES)	SHEET 4
W-L-3379	1 & 2 HR	GYPSUM WALL - ONE OR MORE CABLES UP TO 1/2" DIA - CABLE GROMMET RFG2	SHEET 4
W-L-3178	1 & 2 HR	GYPSUM SHAFT WALL - CABLES - METAL SLEEVE - SEALANT & BACKING	SHEET 4
DUCT PENETRATIONS (WITHOUT DAMPERS)			
F-C-7014	1 HR	WOOD FLOOR ASSEMBLY - MAX 4" DUCT - SEALANT ONLY	SHEET 5
F-C-7023	1 HR	WOOD FLOOR ASSEMBLY - RECTANGULAR DUCT - SEALANT ONLY	SHEET 5
W-L-7025	1 & 2 HR	GYPSUM WALL - MAX 100" X 100" DUCT - SEALANT & ANGLES	SHEET 5
W-L-7026	1 & 2 HR	GYPSUM WALL - MAX 24" DIA. ROUND DUCT - SEALANT ONLY	SHEET 5
W-L-7029	1 & 2 HR	GYPSUM WALL - MAX 24" X 24" DUCT - SEALANT ONLY	SHEET 5
W-L-7145	1 & 2 HR	GYPSUM WALL - INSULATED RECTANGULAR DUCT - SEALANT & BACKING	SHEET 6
W-L-7179	1 & 2 HR	GYPSUM WALL - INSULATED ROUND DUCT - SEALANT ONLY	SHEET 6
W-L-7066	1 & 2 HR	GYPSUM SHAFT WALL - MAX 6" DIA. ROUND DUCT THRU SLEEVE - SEALANT & BACKING	SHEET 6
W-L-7090	1 & 2 HR	GYPSUM SHAFT WALL - MAX 8" X 8" DUCT, NO SLEEVE - SEALANT & BACKING	SHEET 6
W-L-7252	1 & 2 HR	GYPSUM SHAFT WALL - MAX 12" X 12" DUCT THRU SLEEVE - SEALANT & BACKING	SHEET 6
W-L-7238	1 & 2 HR	GYPSUM SHAFT WALL - MAX 24" X 40" DUCT, NO SLEEVE - FYREFLANGE GASKET	SHEET 6
W-L-7253	1 & 2 HR	GYPSUM SHAFT WALL - STEEL STRUT, CHANNEL, CABLE OR THREADED ROD	SHEET 7
LARGE OPENINGS & MIXED PENETRANTS			
F-C-8029	1 HR	WOOD FLOOR ASSEMBLY - RECTANGULAR OPENING - MULTIPLE PIPES & CABLES - SEALANT ONLY	SHEET 7
F-C-8021	1 HR	WOOD FLOOR ASSEMBLY - A/C LINE SETS - MAX 4.5" DIA. HOLE - SEALANT ONLY	SHEET 7
W-L-8117	1 & 2 HR	GYPSUM WALL - A/C LINE SETS - SEALANT + WRAP STRIP + COLLAR	SHEET 7
W-L-8025	1 & 2 HR	GYPSUM WALL - A/C LINESET - SEALANT ONLY	SHEET 7
W-L-8026	1 & 2 HR	GYPSUM WALL - LARGE OPENING, MIXED PENETRANTS - SEALANT & BACKING	SHEET 8
W-L-8050	1 & 2 HR	GYPSUM WALL - LARGE OPENING, MIXED PENETRANTS - PILLOWS + SEALANT OR PUTTY	SHEET 8
ELECTRICAL & UTILITY BOXES			
CLIV.R14288	1 & 2 HR	GYPSUM WALL - ELEC BOX - PUTTY PADS OR ELEC BOX INSERTS	SHEET 8
W-L-1448	1 & 2 HR	GYPSUM WALL - PULL OR JUNCTION BOX - SEALANT ONLY	SHEET 9
W-L-7307	1 & 2 HR	GYPSUM WALL - ELEC, UTILITY OR MED GAS VALVE BOX - E-WRAP	SHEET 9

UL FIRE RESISTANCE DIRECTORY NOMENCLATURE

Through Penetrations

First letter represents what is being penetrated:

F = Floor
W = Wall
C = Floors or Walls (combined)

Second letter(s) provide more information about the floor or wall:

A = Concrete Floors with a min thickness that is Less than or Equal to 5".
B = Concrete Floors with a min thickness that is Greater than 5".
C = Framed Floors
E = For-Ceiling Assemblies consisting of Concrete with Membrane Protection.
J = Concrete or Masonry Walls with a min thickness that is Less than or Equal to 8".
L = Framed Walls

Four digit number describes the penetrating item(s):

0000-0999 = Blank Openings
1000-1999 = Metal Pipe, Conduit, or Tubing
2000-2999 = Non-Metallic Pipe, Conduit, or Tubing
3000-3999 = Cables
4000-4999 = Cable Trays
5000-5999 = Insulated Pipes
6000-6999 = Miscellaneous Electrical (Busway)
7000-7999 = Miscellaneous Mechanical
8000-8999 = Mixed Penetrating Items
9000-9999 = Reserved for Future Use

Example: C-AJ-1150

C = Floor or Wall Penetration
A = Concrete Floor that is 5" or less
J = Concrete or Masonry Walls that are 8" or less
1150 = Metal Pipe, Conduit, or Tubing

Joint Systems

First letter identifies the type joint:

CJ = Floor
FF = Wall
WW = Floors or Walls (combined)
FW = Floor to Wall
HW = Head to Wall
BW = Bottom of Wall

Second letter(s) provide more information about the floor or wall:

S = No Movement (Static)
D = Allows Movement (Dynamic)

Four digit number describes the joint width:

0000-0999 = Less than or Equal to 2"
1000-1999 = Greater than 2" and Less than or Equal to 6"
2000-2999 = Greater than 6" and Less than or Equal to 12"
3000-3999 = Greater than 12" and Less than or Equal to 24"
4000-4999 = Greater than 24"

Example: HW-D-0757

HW = Head to Wall
D = Allows Movement (Dynamic)
0757 = Less than or Equal to 2"

GENERAL NOTES:

1. Refer to section 07 84 00 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.
2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   - Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
3. If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Engineering Judgments shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
4. References:
   - UL Fire Resistance Directory; Current Edition or UL Product iQ™
   - NFPA 101 Life Safety Code
   - All governing local and regional building codes
   - Intertek Directory of Building Products
5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479), ASTM E1966 (UL 1479), ASTM 1966 (UL 2079), ASTM E2307, or ULC-S115 (as required) in tested assemblies that provide a fire rating equal to that of the surrounding construction.

PROJECT NAME:
PROJECT_NAME:

PROJECT LOCATION:
PROJECT_LOCATION:

ARCHITECT/CONSULTANT:
ARCHITECT/CONSULTANT:

TITLE: Typical Firestop Details - Wood Frame-Slab on Grade

Specified Technologies Inc.
210 Evans Way Somerville, NJ 08876

STI.

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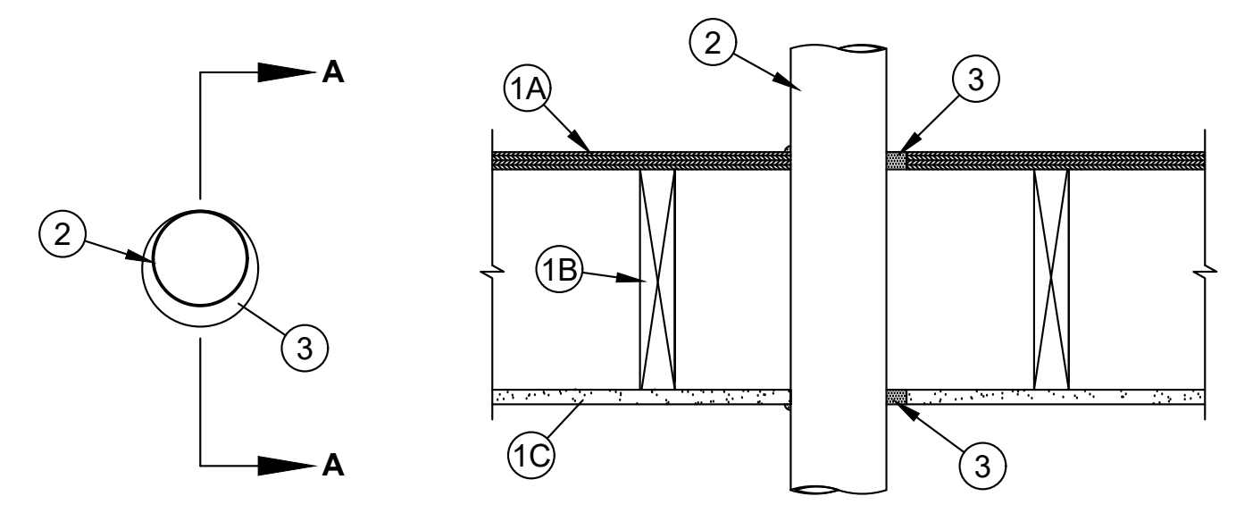
Website:www.stifirestop.com

INDEX

Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. F-C-1074**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 Hr and 2 Hr (See Item 1)	F Ratings - 1 Hr and 2 Hr (See Item 1)
T Ratings - 1/4, 1/2 and 1 Hr (See Item 2)	FT Ratings - 1/4, 1/2 and 1 Hr (See Item 2)
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 Hr and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Ratings - 1/4, 1/2 and 1 Hr (See Item 2)
	L Rating At Ambient - Less Than 5.1 L/s/m2
	L Rating At 400 F - Less Than 5.1 L/s/m2



Section A-A

1. **Floor - Ceiling Assembly -** The 1 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Designs in the UL Fire Resistance Directory. The 2 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511 or L536 in the UL Fire Resistance Directory. **The F and FH Ratings of the firestop system are equal to the fire rating of the floor-ceiling assembly**. The general construction features of the floor assembly are summarized below:
   - A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Diam of opening to be max 1 in. (25 mm) larger than diam of pipe. As an alternate, the opening may be square-cut with a max dimension 1 in. (25 mm) greater than the diam of the pipe.
   - B. **Wood Joists -** Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   - C. **Gypsum Board* -** Thickness, type, number of layers and fasteners as required in the individual Floor-Ceiling Design. Diam of opening to be max 1 in. (25 mm) greater than diam of pipe.
   - D. **Furring Channel -** (Not Shown) - In 2 hr fire-rated assemblies, resilient galv steel furring channels installed perpendicular to wood joists between base and face layers of gypsum board (Item C). Furring channels spaced max 24 in. (610 mm) OC with additional short lengths of furring channel installed adjacent to and max 3 in. (76 mm) from two opposing sides of penetrant.

1A. **Chase Wall -** (Optional, Not Shown) - The through penetrant (Item 2) may be routed through a single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1 in. (25 mm) greater than the diameter of the through penetrant (Item 2). The chase wall shall include the following construction features:
   - A. **Studs -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
   - B. **Sole Plate -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening is to be max 1 in. (25 mm) larger than diam of pipe. As an alternate, the opening may be square-cut with a max dimension 1 in. (25 mm) greater than the diam of the pipe. Plates may be discontinuous over opening, terminating at two opposing edges of opening. Max length of discontinuity is 5-1/2 in. (140 mm).
   - C. **Top Plate -** The single or double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), or one or two nom 2 by 6 in. (51 by 152 mm), or one or two sets of parallel 2 by 4 in. (51 by 102 mm), lumber plates, tightly butted. Diam of opening is to be max 1 in. (25 mm) larger than diam of pipe. As an alternate, the opening may be square-cut with a max dimension 1 in. (25 mm) greater than the diam of the pipe. Plates may be discontinuous over opening, terminating at two opposing edges of opening. Max length of discontinuity is 5-1/2 in. (140 mm).
   - D. **Steel Plate -** When lumber plates are discontinuous, nom 1-1/2 in. (38 mm) wide No. 20 gauge (or heavier) galv steel plates shall be installed to connect discontinuous lumber plates and to provide a form for the fill material. Steel plates sized to lap 2 in. (51 mm) onto each discontinuous lumber plate and secured to lumber plates with steel screws or nails.
   - E. **Gypsum Board* -** Min. 1./2 in. thick rated or non-rated gypsum board.

2. **Through Penetrant -** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the opening. Annular space to be min 0 in. (point contact) to max 1 in. (0 to 25 mm). Penetrant to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of metallic pipe, conduit or tubing may be used:
   - A. **Steel Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   - B. **Iron Pipe -** Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   - C. **Conduit -** Nom 4 in. (102 mm) diam (or smaller) steel conduit, steel electrical metallic tubing or flexible steel conduit.
   - D. **Copper Pipe or Tube -** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.

   The T, FT and FTH Ratings are 1/4 hr when copper pipe or tube is used in 1 hr fire-rated assemblies. The T, FT and FTH Ratings are 1/2 hr when copper pipe or tube is used in 2 hr fire-rated assemblies. When steel pipe, iron pipe, steel conduit or flexible metal piping (Item 2A) is used, T, FT and FTH Ratings are 1 hr.

2A. **Through Penetrating Product* - Flexible Metal Piping -** As an alternate to Item 2, one nom 2 in. (51 mm) diam (or smaller) steel flexible metal pipe to be installed either concentrically or eccentrically within the firestop system. Annular space to be min 0 in. (point contact) to max 1 in. (0 to 25 mm). Penetrant to be rigidly supported on both sides of floor-ceiling assembly.

OMEGA FLEX INC

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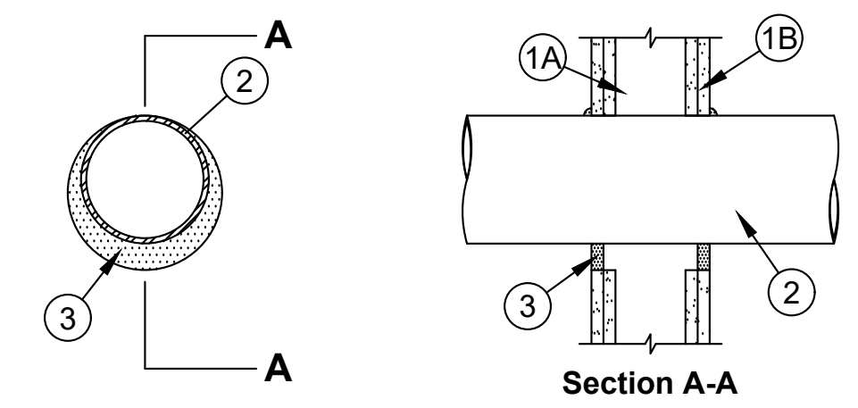
3. **Fill, Void or Cavity Material* - Sealant -** Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with bottom surface of ceiling or top plate. Min 1/4 in. (6 mm) diam bead of fill material applied at point contact location on the top surface of floor or sole plate and at the penetrant/ceiling or top plate interface.

SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant or Type WF300 Firestop Caulk

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-1049**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Rating - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   - A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   - B. **Gypsum Board* -** 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.

   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

1A. **Metallic Sleeve -** (Optional, Not Shown) - Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) to max 0.105 in. (2.7 mm) thick sheet steel. Length of steel sleeve to be equal to the thickness of wall. Longitudinal seam of sleeve welded or overlapped min 1 in. (25 mm). The ends of the steel sleeve shall be flush or recessed max 1/4 in. (6 mm) from wall surfaces.

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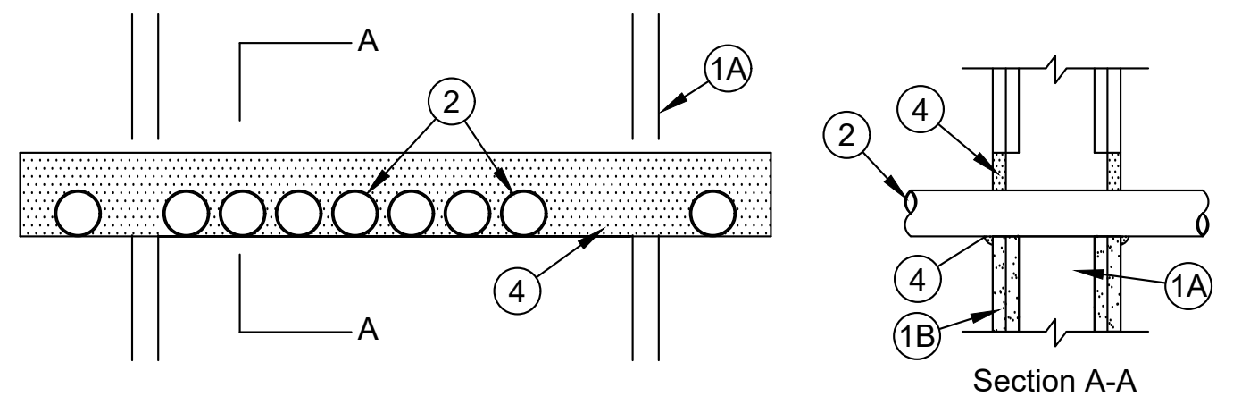
2. **Through Penetrant -** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). For maximum 16 in. (406 mm) diam (or smaller) pipes, annular space shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   - A. **Steel Pipe -** Nom 36 in. (914 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   - B. **Iron Pipe -** Nom 36 in. (914 mm) diam (or smaller) cast or ductile iron pipe.
   - C. **Conduit -** Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing, nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
   - D. **Copper Tubing -** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   - E. **Copper Pipe -** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrant and gypsum board, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.

SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-1168**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1/4, 3/4 and 1 Hr (See Items 2 and 4)	FT Ratings - 1/4, 3/4 and 1 Hr (See Items 2 and 4)
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Ratings - 1/4, 3/4 and 1 Hr (See Items 2 and 4)
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   - A. **Studs -** Wall framing shall consist of min 3-5/8 in. (92 mm) wide steel studs spaced max 24 in. (610 mm) OC.
   - B. **Gypsum Board* -** Thickness, type, number of layers and fasteners , as specified in the individual U400, V400 or W400 Series design. Max height of opening is 6 in. (152 mm). Max width of opening is 36 in. (914 mm).

   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Through Penetrants -** Multiple pipes or conduits installed in single layer array within the firestop system. The annular space between the pipes and conduits and the edges of the opening shall be min 0 in. (point contact) to max 3 in. (76 mm). The separation between pipes and conduits to be min 1/4 in. (6 mm) to max 3 in. (76 mm). Pipes and conduits to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipe or conduit may be used:
   - A. **Steel Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   - B. **Conduit -** Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit or steel electrical metallic tubing (EMT).

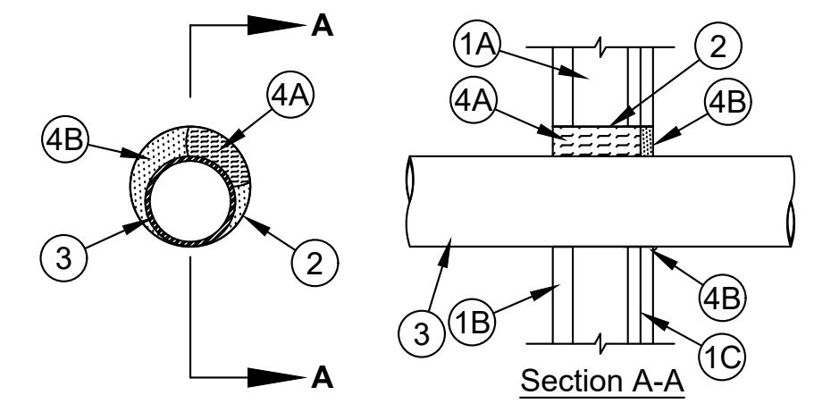
   When diam of pipe or conduit is greater than 2 in. (51 mm), T, FT and FTH Ratings are 1/4 hr. Otherwise, T, FT and FTH Ratings are 3/4 hr or 1 hr as detailed in Item 4.
3. **Forming Material -** (Optional, Not Shown) - Foam backer rod, mineral wool batt insulation or glass fiber insulation packed into opening and recessed min 5/8 in. (16 mm) from each surface of the wall to accommodate fill material.
4. **Fill Void or Cavity Materials* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material installed to completely fill annular space between pipes, conduits and gypsum wallboard flush with each surface of wall. Min 1/4 in. (6 mm) diam bead of fill material applied to the pipe/wall interface at the point contact locations on both sides of the wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal LC150 Sealant, SpecSeal Series SSS Sealant or SpecSeal LCI Sealant. **When SpecSeal LC150 Sealant is used with max 2 in. (51 mm) diam pipe or conduit, T, FT and FTH Ratings are 3/4 hr. Otherwise, when SpecSeal LCI or SpecSeal Series SSS Sealant is used with max 2 in. (51 mm) diam pipe or conduit, T, FT and FTH Ratings are 1 hr.**

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-1251**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Rating - 0 Hr



Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud shaft wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   - A. **Steel Studs -** "C-H" or "C-T" shaped studs, min 2-1/2 in. (64 mm) wide by 1-1/2 in. (38 mm) deep, fabricated from min No. 25 gauge (0.6 mm thick) galv steel, spaced max 24 in. (610 mm) OC.
   - B. **Gypsum Board* -** 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner panels installed vertically. Max diam of circular cutout in gypsum liner panel is 10 in. (254 mm).
   - C. **Gypsum Board* -** 1/2 in. or 5/8 in. (13 or 16 mm) thick, 48 in. (1.2 m) wide gypsum boards. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of circular cutout in gypsum board is 10 in. (254 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Metallic Sleeve -** Cylindrical sleeve fabricated from min No. 30 gauge (0.3 mm thick) galv sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Length of the sleeve to be equal to the thickness of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers. The ends of the steel sleeve shall be flush with each surface of the wall.
3. **Through Penetrant - -** One metallic pipe, tube or conduit installed concentrically or eccentrically within the firestop system. The annular space between the pipe, tube or conduit and the periphery of the sleeved opening to be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Pipe, tube or conduit to be rigidly supported on both sides of wall assembly. One of the following types and sizes of pipe, tube or conduit may be used:
   - A. **Steel Pipe -** Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   - B. **Iron Pipe -** Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.
   - C. **Conduit -** Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit, steel electrical metallic tubing (EMT) or flexible steel conduit.
   - D. **Copper Pipe or Tube -** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.

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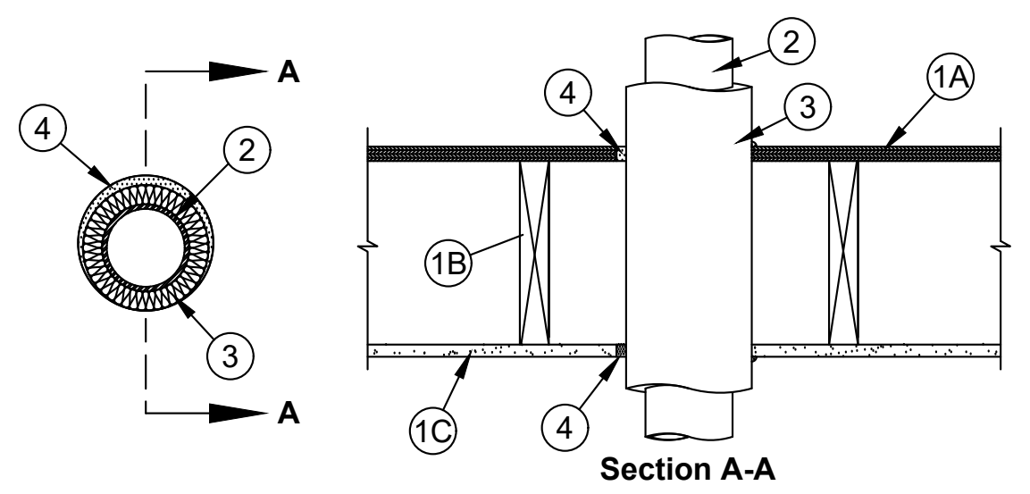
4. **Firestop System -** The firestop system consist of the following items:
   - A. **Packing Material -** Min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into sleeved opening as a permanent form. Packing material to extend throughout thickness of wall except for a 1 in. (25 mm) deep recess on the finished side of wall to accommodate the fill material.
   - B. **Fill Void or Cavity Materials* - Sealant or Putty -** Min 1 in. (25 mm) thickness of fill material applied within sleeve, flush with finished surface of wall. At the point contact location, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the penetrant/sleeve interface.

     SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, or SpecSeal Putty

     * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. F-C-5043**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings -1 and 2 Hr (See Items 1, 3A and 3D)	F Ratings - 1 and 2 Hr (See Items 1, 3A and 3D)
T Ratings - 3/4 and 1 Hr (See Item 3)	FT Ratings - 3/4 and 1 Hr (See Item 3)
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Items 1, 3A and 3D)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Ratings - 3/4 and 1 Hr (See Item 3)
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. **Floor - Ceiling Assembly -** The 1 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Designs in the UL Fire Resistance Directory. The 2 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511 or L536 in the UL Fire Resistance Directory. **The F Rating of the firestop system is equal to the fire rating of the floor-ceiling assembly**. The general construction features of the floor assembly are summarized below:
   - A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Diam of opening to be max 1 in. (25 mm) larger than diam of insulated pipe. As an alternate, the opening may be square-cut with a max dimension 1 in. (25 mm) greater than the diam of the insulated pipe.
   - B. **Wood Joists -** Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   - C. **Gypsum Board* -** Thickness, type, number of layers and fasteners as required in the individual Floor-Ceiling Design. Diam of opening is to be max 1 in. (25 mm) larger than diam of insulated metallic pipe.
   - D. **Furring Channel -** (Not Shown) - In 2 hr fire-rated assemblies, resilient galv steel furring channels installed perpendicular to wood joists between base and face layers of gypsum board (Item C). Furring channels spaced max 24 in. (610 mm) OC with additional short lengths of furring channel installed adjacent to and max 3 in. (76 mm) from two opposing sides of penetrant.

1A. **Chase Wall -** (Optional, Not Shown) - The through penetrant (Item 2) may be routed through a 1 or 2 hr fire rated single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1 in. (25 mm) greater than the diameter of the insulated pipe (Item 2). The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   - A. **Studs -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.

   - B. **Sole Plate -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 b7 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening is to be max 1 in. larger than diam of insulated metallic pipe. As an alternate for pipes insulated with max 1 in. (25 mm) thick glass fiber insulation (Item 3A), the opening may be square-cut with a max dimension 1 in. (25 mm) greater than the diam of the insulated pipe. Plates may be discontinuous over opening, terminating at two opposing edges of opening. Max length of discontinuity is 7 in. (178 mm).
   - C. **Top Plate -** The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening is to be max 1 in. larger than diam of insulated metallic pipe. As an alternate for pipes insulated with max 1 in. (25 mm) thick glass fiber insulation (Item 3A), the opening may be square-cut with a max dimension 1 in. (25 mm) greater than the diam of the insulated pipe. Plates may be discontinuous over opening, terminating at two opposing edges of opening. Max length of discontinuity is 7 in. (178 mm).
   - D. **Steel Plate -** (Not Shown) - When lumber plates are discontinuous, nom 1-1/2 in. (38 mm) wide No. 20 gauge (or heavier) galv steel plates shall be installed to connect discontinuous lumber plates and to provide a form for the fill material. Steel plates sized to lap 2 in. (51 mm) onto each discontinuous lumber plate and secured to lumber plates with steel screws or nails.
   - E. **Gypsum Board* -** Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.

2. **Through Penetrants -** One metallic pipe or tubing to be installed either concentrically or eccentrically within the opening. Penetrants to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of metallic pipe or tubing may be used:
   - A. **Steel Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   - B. **Iron Pipe -** Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   - C. **Copper Pipe or Tube -** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.
3. **Pipe Covering* -** One of the following types of pipe coverings may be used:
   - A. **Pipe and Equipment Covering Materials* -** Nom 1 or 1-1/2 in. (25 or 38 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or butt tape supplied with the product. The annular space between the insulated through penetrant and periphery of opening shall be min 0 in. (point contact) to max 1 in. (25 mm). When 1-1/2 in. (38 mm) thick insulation is used, max F Rating is 1 hr. When 1 in. (25 mm) thick insulation is used, max F Rating is 2 hr.

     See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used:
   - B. **Pipe Covering Materials* -** Max 1 in. (25 mm) thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (56 kg/m3) (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 18 AWG steel wire spaced max 12 in. (305 mm) OC. The annular space between the insulated through penetrant and periphery of opening shall be min 0 in. (point contact) to max 1 in. (25 mm).

     IIG MINWOOL L L C - High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermaloc.
   - C. **Sheathing Material* -** Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.

     See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

   - D. **Tube Insulation - Plastics# -** Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The annular space between the insulated through penetrant and periphery of opening shall be min 0 in. (point contact) to max 1 in. (25 mm). When AB/PVC insulation is used, max F Rating is 1 hr.

     See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

     When Item 3A or 3B pipe covering is used, T Rating is 1 hr. When Item 3D pipe covering is used, T Rating is 3/4 hr.

4. **Fill, Void or Cavity Material* - Sealant -** Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with bottom surface of ceiling or top plate. Min 1/4 in. (6 mm) diam bead of fill material applied at point contact location on the top surface of floor or sole plate and at the insulated metallic pipe/ceiling or top plate interface.

   SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant or Type WF300 Firestop Caulk

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

   #Bearing the UL Recognized Component Mark

GENERAL NOTES:

1. Refer to section 07 84 00 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.
2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   - Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
3. If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Engineering Judgments shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
4. References:
   - UL Fire Resistance Directory; Current Edition
   - NFPA 101 Life Safety Code
   - All governing local and regional building codes
5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479), ASTM E1966 (UL 1479), ASTM 1966 (UL 2079), ASTM E2307, or ULC-S115 (as required) in tested assemblies that provide a fire rating equal to that of the surrounding construction.

DIVISION 4: Masonry
DIVISION 7: Thermal & Moisture Protection
DIVISION 9: Finishes
DIVISION 22: Plumbing
DIVISION 23: HVAC
DIVISION 26: Electrical
DIVISION 27: Communications

PROJECT NAME:
PROJECT_NAME:

PROJECT LOCATION:
PROJECT_LOCATION:

ARCHITECT/CONSULTANT:
ARCHITECT/CONSULTANT:

TITLE:
STI FIRESTOP SYSTEMS

Specified Technologies Inc.
210 Evans Way Somerville, NJ 08876
Toll Free: (800)992-1180
Phone: (908)526-8000
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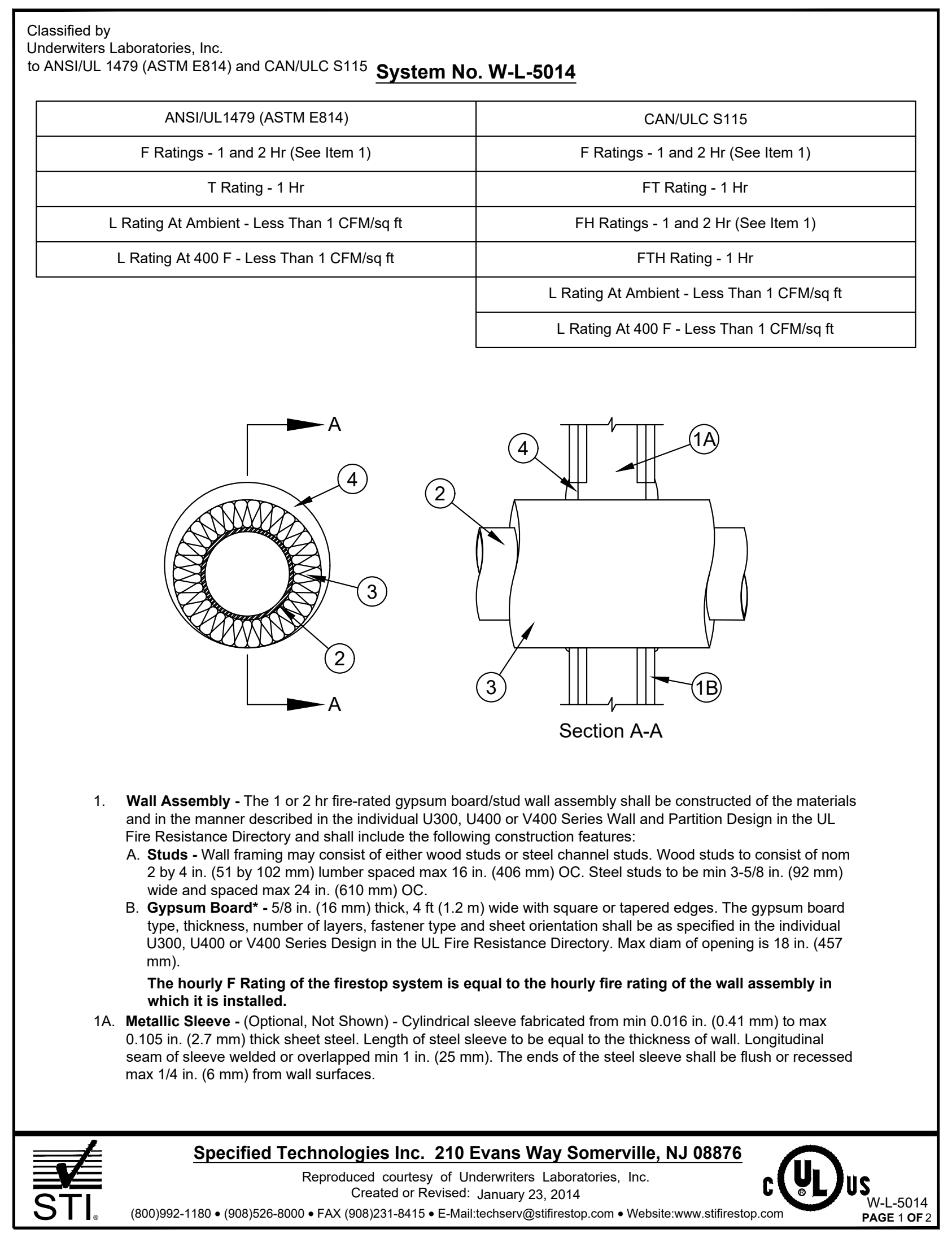


Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115

System No. W-L-5014

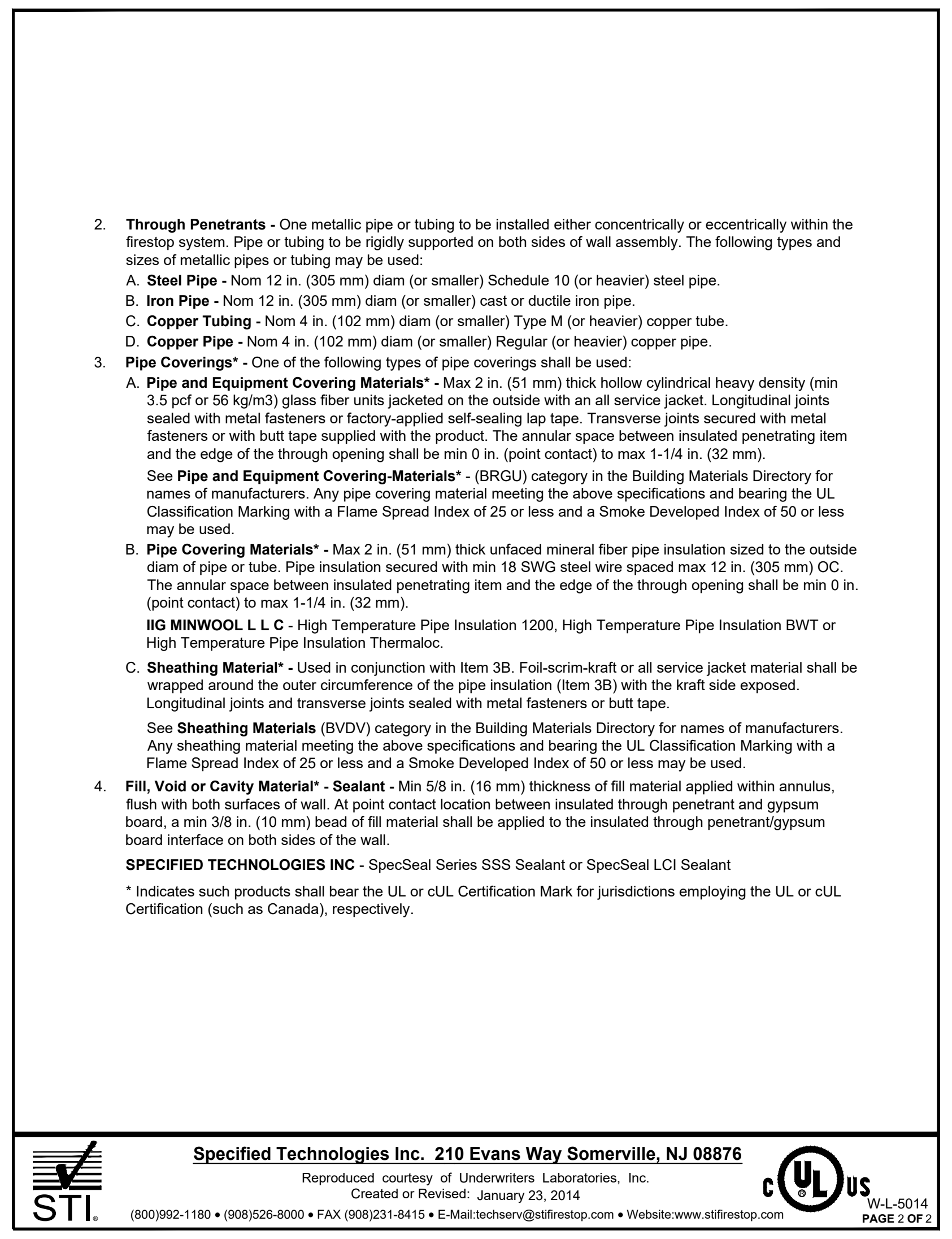
ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 1 Hr	FT Rating - 1 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 1 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft

Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.
   B. **Gypsum Board* -** 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 18 in. (457 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

1A. **Metallic Sleeve -** (Optional, Not Shown) - Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) to max 0.105 in. (2.7 mm) thick sheet steel. Length of steel sleeve to be equal to the thickness of wall. Longitudinal seam of sleeve welded or overlapped min 1 in. (25 mm). The ends of the steel sleeve shall be flush or recessed max 1/4 in. (6 mm) from wall surfaces.



2. **Through Penetrants -** One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. **Steel Pipe -** Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. **Iron Pipe -** Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. **Copper Tubing -** Nom 4 in. (102 mm) diam (or smaller) Type M (or heavier) copper tube.
   D. **Copper Pipe -** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. **Pipe Coverings* -** One of the following types of pipe coverings shall be used:
   A. **Pipe and Equipment Covering Materials* -** Max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between insulated penetrating item and the edge of the through opening shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).

   See **Pipe and Equipment Covering-Materials*** - (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

   B. **Pipe Covering Materials* -** Max 2 in. (51 mm) thick unfaced mineral fiber pipe insulation sized to the outside diam of pipe or tube. Pipe insulation secured with min 18 SWG steel wire spaced max 12 in. (305 mm) OC. The annular space between insulated penetrating item and the edge of the through opening shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).

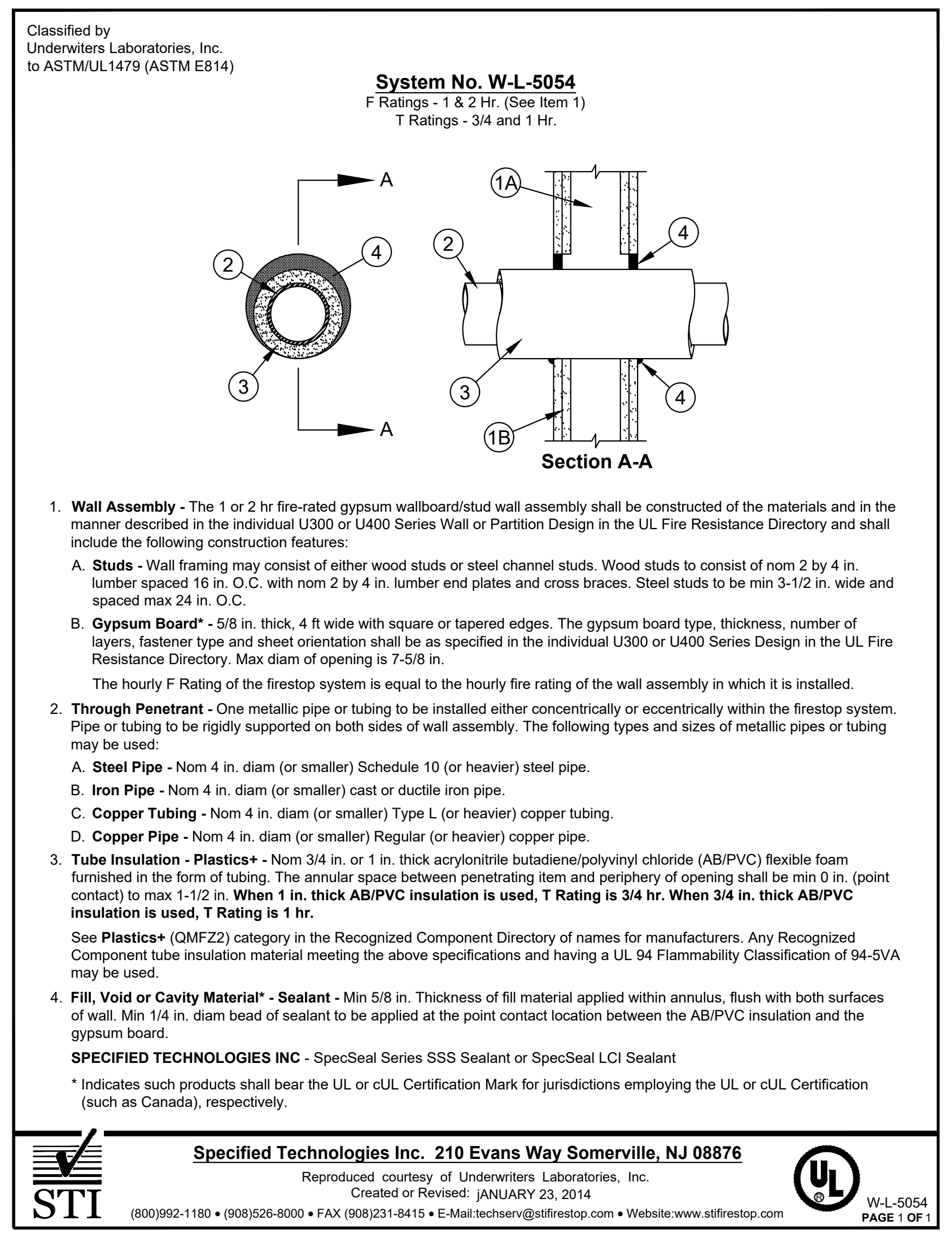
   IIG MINWOOL L L C - High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermaloc.

   C. **Sheathing Material* -** Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.

   See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At point contact location between insulated through penetrant and gypsum board, a min 3/8 in. (10 mm) bead of fill material shall be applied to the insulated through penetrant/gypsum board interface on both sides of the wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



Classified by
Underwiters Laboratories, Inc.
to ASTM/UL1479 (ASTM E814)

System No. W-L-5054

F Ratings - 1 & 2 Hr. (See Item 1)
T Ratings - 3/4 and 1 Hr.

Section A-A

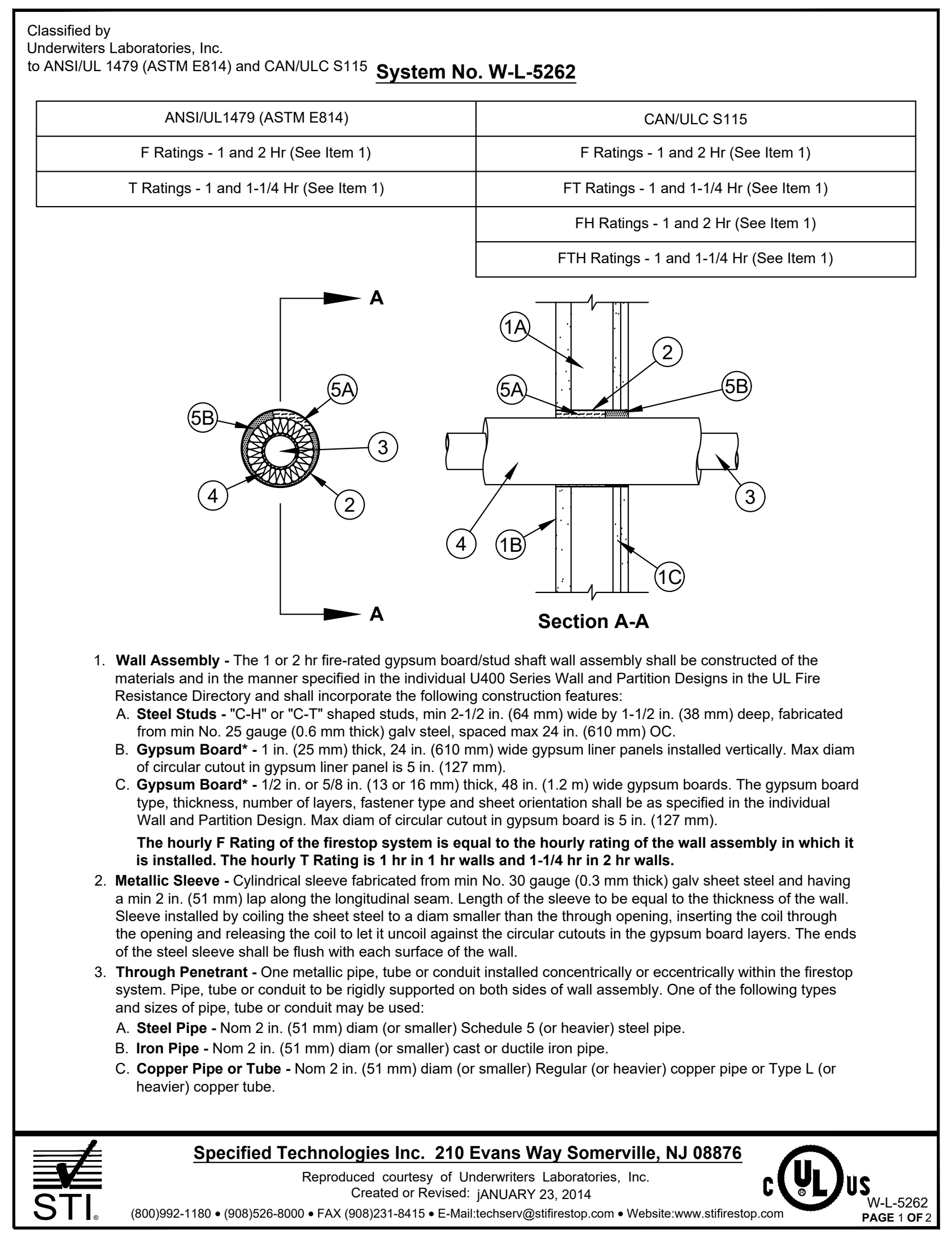
1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. O.C. with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-1/2 in. wide and spaced max 24 in. O.C.
   B. **Gypsum Board* -** 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 7-5/8 in.

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Through Penetrant -** One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. **Steel Pipe -** Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. **Iron Pipe -** Nom 4 in. diam (or smaller) cast or ductile iron pipe.
   C. **Copper Tubing -** Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
   D. **Copper Pipe -** Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Tube Insulation - Plastics+ -** Nom 3/4 in. or 1 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The annular space between penetrating item and periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. **When 1 in. thick AB/PVC insulation is used, T Rating is 3/4 hr. When 3/4 in. thick AB/PVC insulation is used, T Rating is 1 hr.**

   See **Plastics+** (QMFZ2) category in the Recognized Component Directory of names for manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. Thickness of fill material applied within annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of sealant to be applied at the point contact location between the AB/PVC insulation and the gypsum board.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115

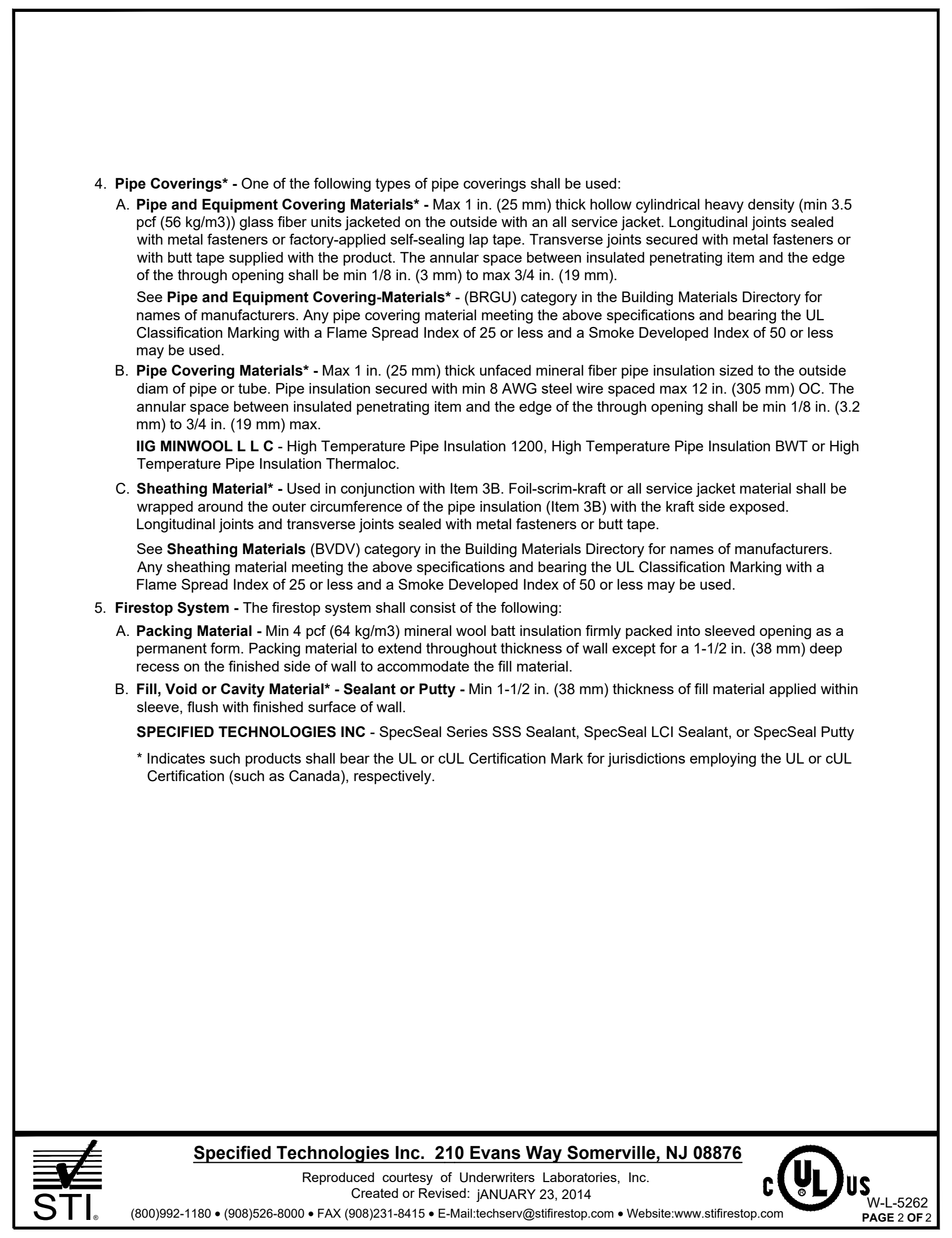
System No. W-L-5262

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 1-1/4 Hr (See Item 1)	FT Ratings - 1 and 1-1/4 Hr (See Item 1)
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Ratings - 1 and 1-1/4 Hr (See Item 1)

Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud shaft wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. **Steel Studs -** "C-H" or "C-T" shaped studs, min 2-1/2 in. (64 mm) wide by 1-1/2 in. (38 mm) deep, fabricated from min No. 25 gauge (0.6 mm thick) galv steel, spaced max 24 in. (610 mm) OC.
   B. **Gypsum Board* -** 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner panels installed vertically. Max diam of circular cutout in gypsum liner panel is 5 in. (127 mm).
   C. **Gypsum Board* -** 1/2 in. or 5/8 in. (13 or 16 mm) thick, 48 in. (1.2 m) wide gypsum boards. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of circular cutout in gypsum board is 5 in. (127 mm).

   The hourly F Rating of the firestop system is equal to the hourly rating of the wall assembly in which it is installed. The hourly T Rating is 1 hr in 1 hr walls and 1-1/4 hr in 2 hr walls.
2. **Metallic Sleeve -** Cylindrical sleeve fabricated from min No. 30 gauge (0.3 mm thick) galv sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Length of the sleeve to be equal to the thickness of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers. The ends of the steel sleeve shall be flush with each surface of the wall.
3. **Through Penetrant -** One metallic pipe, tube or conduit installed concentrically or eccentrically within the firestop system. Pipe, tube or conduit to be rigidly supported on both sides of wall assembly. One of the following types and sizes of pipe, tube or conduit may be used:
   A. **Steel Pipe -** Nom 2 in. (51 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. **Iron Pipe -** Nom 2 in. (51 mm) diam (or smaller) cast or ductile iron pipe.
   C. **Copper Pipe or Tube -** Nom 2 in. (51 mm) diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.



4. **Pipe Coverings* -** One of the following types of pipe coverings shall be used:
   A. **Pipe and Equipment Covering Materials* -** Max 1 in. (25 mm) thick hollow cylindrical heavy density (min 3.5 pcf (56 kg/m3)) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between insulated penetrating item and the edge of the through opening shall be min 1/8 in. (3 mm) to max 3/4 in. (19 mm).

   See **Pipe and Equipment Covering-Materials*** - (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

   B. **Pipe Covering Materials* -** Max 1 in. (25 mm) thick unfaced mineral fiber pipe insulation sized to the outside diam of pipe or tube. Pipe insulation secured with min 8 AWG steel wire spaced max 12 in. (305 mm) OC. The annular space between insulated penetrating item and the edge of the through opening shall be min 1/8 in. (3.2 mm) to 3/4 in. (19 mm) max.

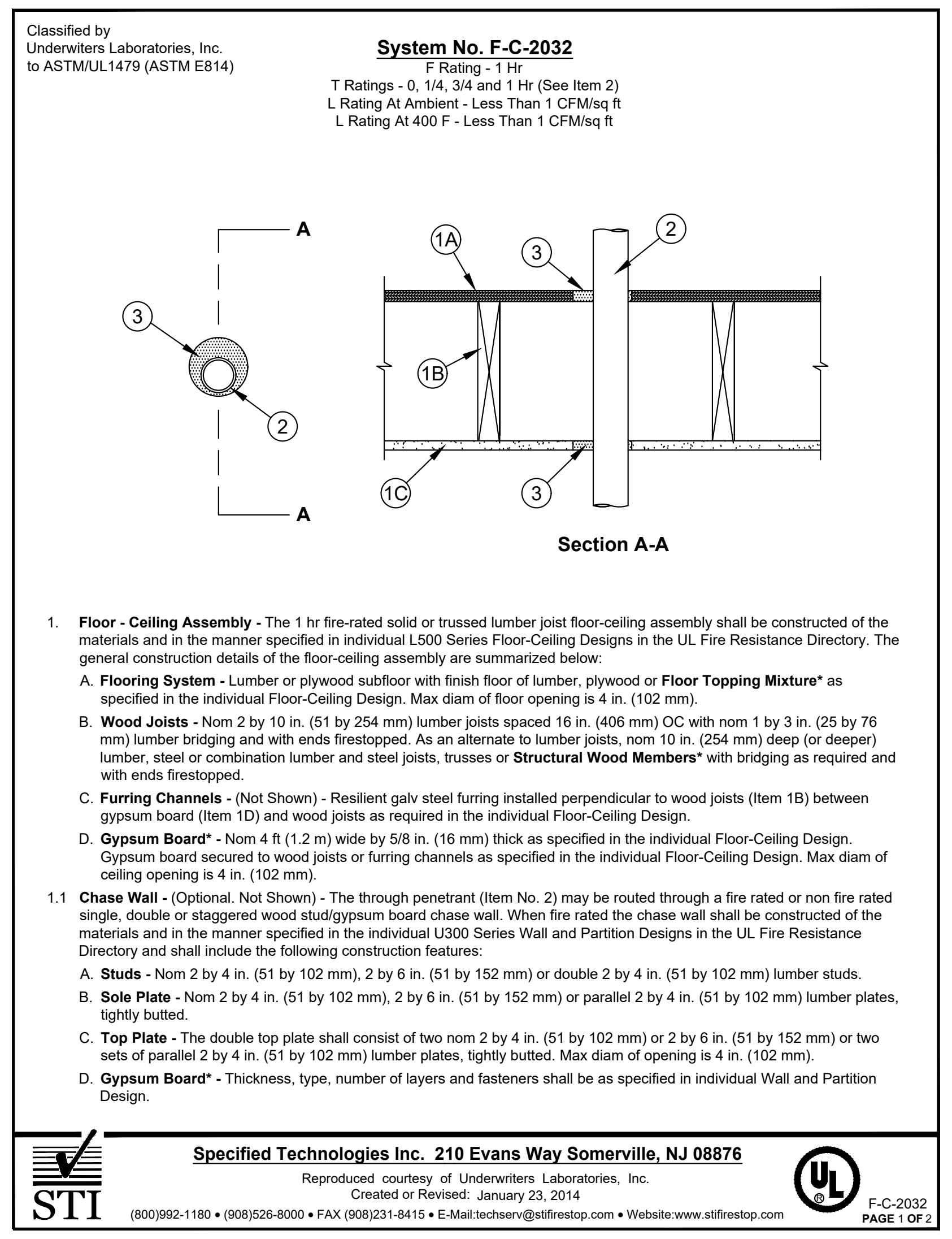
   IIG MINWOOL L L C - High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermaloc.

   C. **Sheathing Material* -** Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.

   See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
5. **Firestop System -** The firestop system shall consist of the following:
   A. **Packing Material -** Min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into sleeved opening as a permanent form. Packing material to extend throughout thickness of wall except for a 1-1/2 in. (38 mm) deep recess on the finished side of wall to accommodate the fill material.
   B. **Fill, Void or Cavity Material* - Sealant or Putty -** Min 1-1/2 in. (38 mm) thickness of fill material applied within sleeve, flush with finished surface of wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, or SpecSeal Putty

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



Classified by
Underwriters Laboratories, Inc.
to ASTM/UL1479 (ASTM E814)

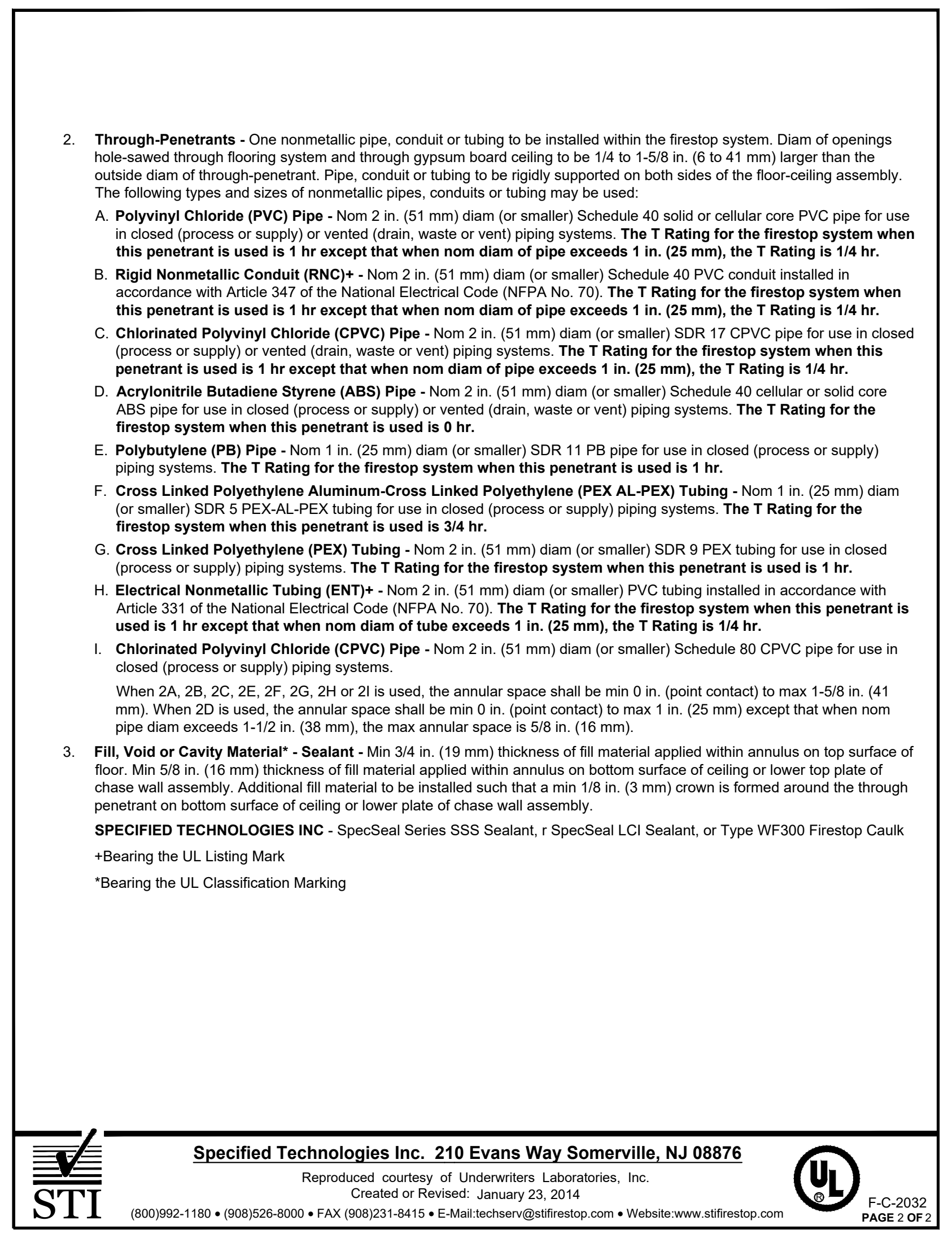
System No. F-C-2032

F Rating - 1 Hr
T Ratings - 0, 1/4, 3/4 and 1 Hr (See Item 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft

Section A-A

1. **Floor - Ceiling Assembly -** The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction details of the floor-ceiling assembly are summarized below:
   A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Max diam of floor opening is 4 in. (102 mm).
   B. **Wood Joists -** Nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging and with ends firestopped. As an alternate to lumber joists, nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   C. **Furring Channels -** (Not Shown) - Resilient galv steel furring installed perpendicular to wood joists (Item 1B) between gypsum board (Item 1D) and wood joists as required in the individual Floor-Ceiling Design.
   D. **Gypsum Board* -** Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to wood joists or furring channels as specified in the individual Floor-Ceiling Design. Max diam of ceiling opening is 4 in. (102 mm).

1.1 **Chase Wall -** (Optional. Not Shown) - The through penetrant (Item No. 2) may be routed through a fire rated or non fire rated single, double or staggered wood stud/gypsum board chase wall. When fire rated the chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or double 2 by 4 in. (51 by 102 mm) lumber studs.
   B. **Sole Plate -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted.
   C. **Top Plate -** The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm) or 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 4 in. (102 mm).
   D. **Gypsum Board* -** Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.



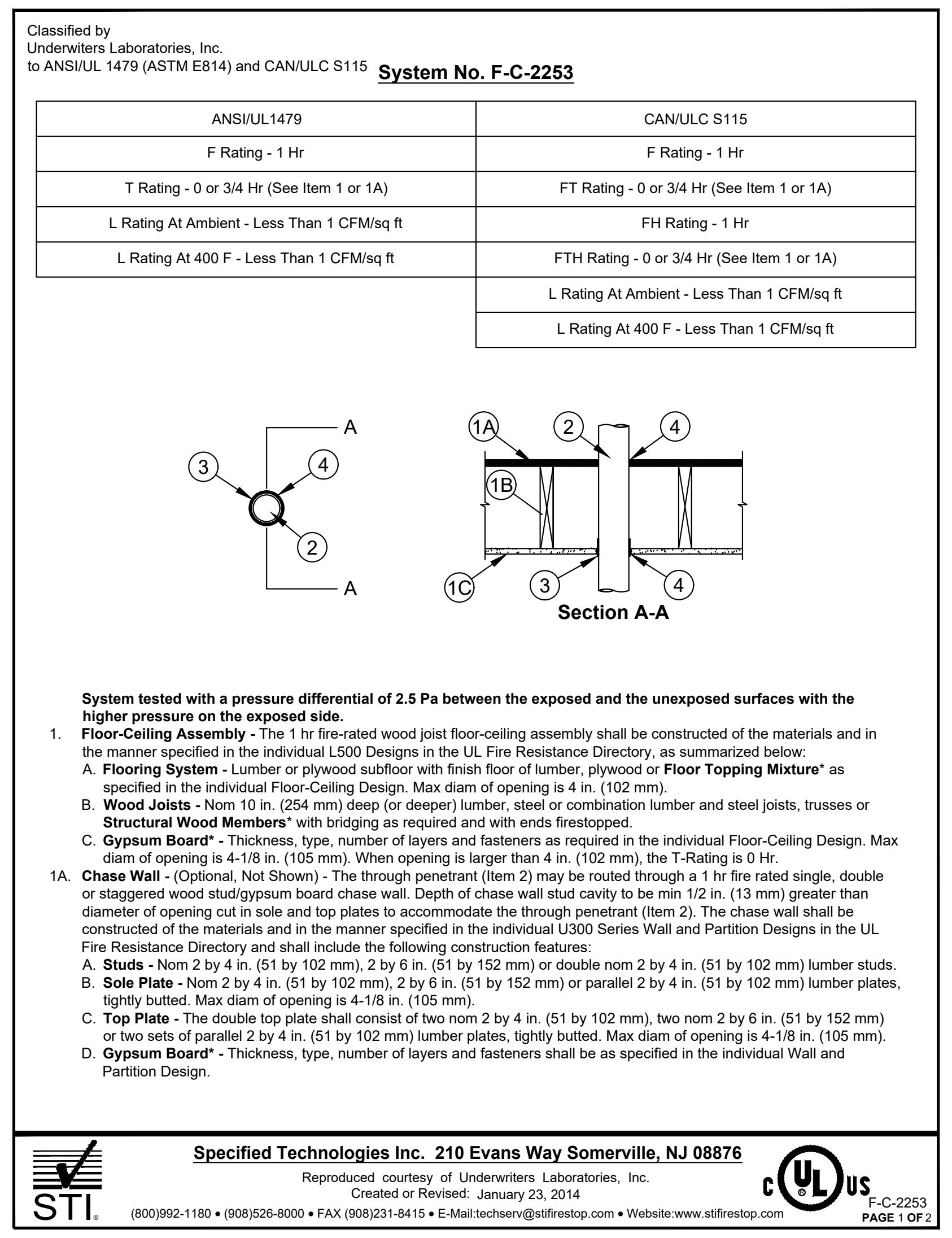
2. **Through-Penetrants -** One nonmetallic pipe, conduit or tubing to be installed within the firestop system. Diam of openings hole-sawed through flooring system and through gypsum board ceiling to be 1/4 to 1-5/8 in. (6 to 41 mm) larger than the outside diam of through-penetrant. Pipe, conduit or tubing to be rigidly supported on both sides of the floor-ceiling assembly. The following types and sizes of nonmetallic pipes, conduits or tubing may be used:
   A. **Polyvinyl Chloride (PVC) Pipe -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. **The T Rating for the firestop system when this penetrant is used is 1 hr except that when nom diam of pipe exceeds 1 in. (25 mm), the T Rating is 1/4 hr.**
   B. **Rigid Nonmetallic Conduit (RNC)+ -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70). **The T Rating for the firestop system when this penetrant is used is 1 hr except that when nom diam of pipe exceeds 1 in. (25 mm), the T Rating is 1/4 hr.**
   C. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 2 in. (51 mm) diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. **The T Rating for the firestop system when this penetrant is used is 1 hr except that when nom diam of pipe exceeds 1 in. (25 mm), the T Rating is 1/4 hr.**
   D. **Acrylonitrile Butadiene Styrene (ABS) Pipe -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. **The T Rating for the firestop system when this penetrant is used is 0 hr.**
   E. **Polybutylene (PB) Pipe -** Nom 1 in. (25 mm) diam (or smaller) SDR 11 PB pipe for use in closed (process or supply) piping systems. **The T Rating for the firestop system when this penetrant is used is 1 hr.**
   F. **Cross Linked Polyethylene Aluminum-Cross Linked Polyethylene (PEX AL-PEX) Tubing -** Nom 1 in. (25 mm) diam (or smaller) SDR 5 PEX-AL-PEX tubing for use in closed (process or supply) piping systems. **The T Rating for the firestop system when this penetrant is used is 3/4 hr.**
   G. **Cross Linked Polyethylene (PEX) Tubing -** Nom 2 in. (51 mm) diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) piping systems. **The T Rating for the firestop system when this penetrant is used is 1 hr.**
   H. **Electrical Nonmetallic Tubing (ENT)+ -** Nom 2 in. (51 mm) diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA No. 70). **The T Rating for the firestop system when this penetrant is used is 1 hr except that when nom diam of tube exceeds 1 in. (25 mm), the T Rating is 1/4 hr.**
   I. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 2 in. (51 mm) diam (or smaller) Schedule 80 CPVC pipe for use in closed (process or supply) piping systems.

   When 2A, 2B, 2C, 2E, 2F, 2G, 2H or 2I is used, the annular space shall be min 0 in. (point contact) to max 1-5/8 in. (41 mm). When 2D is used, the annular space shall be min 0 in. (point contact) to max 1 in. (25 mm) except that when nom pipe diam exceeds 1-1/2 in. (38 mm), the max annular space is 5/8 in. (16 mm).
3. **Fill, Void or Cavity Material* - Sealant -** Min 3/4 in. (19 mm) thickness of fill material applied within annulus on top surface of floor. Min 5/8 in. (16 mm) thickness of fill material applied within annulus on bottom surface of ceiling or lower top plate of chase wall assembly. Additional fill material to be installed such that a min 1/8 in. (3 mm) crown is formed around the through penetrant on bottom surface of ceiling or lower plate of chase wall assembly.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, r SpecSeal LCI Sealant, or Type WF300 Firestop Caulk

   +Bearing the UL Listing Mark

   *Bearing the UL Classification Marking



Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115

System No. F-C-2253

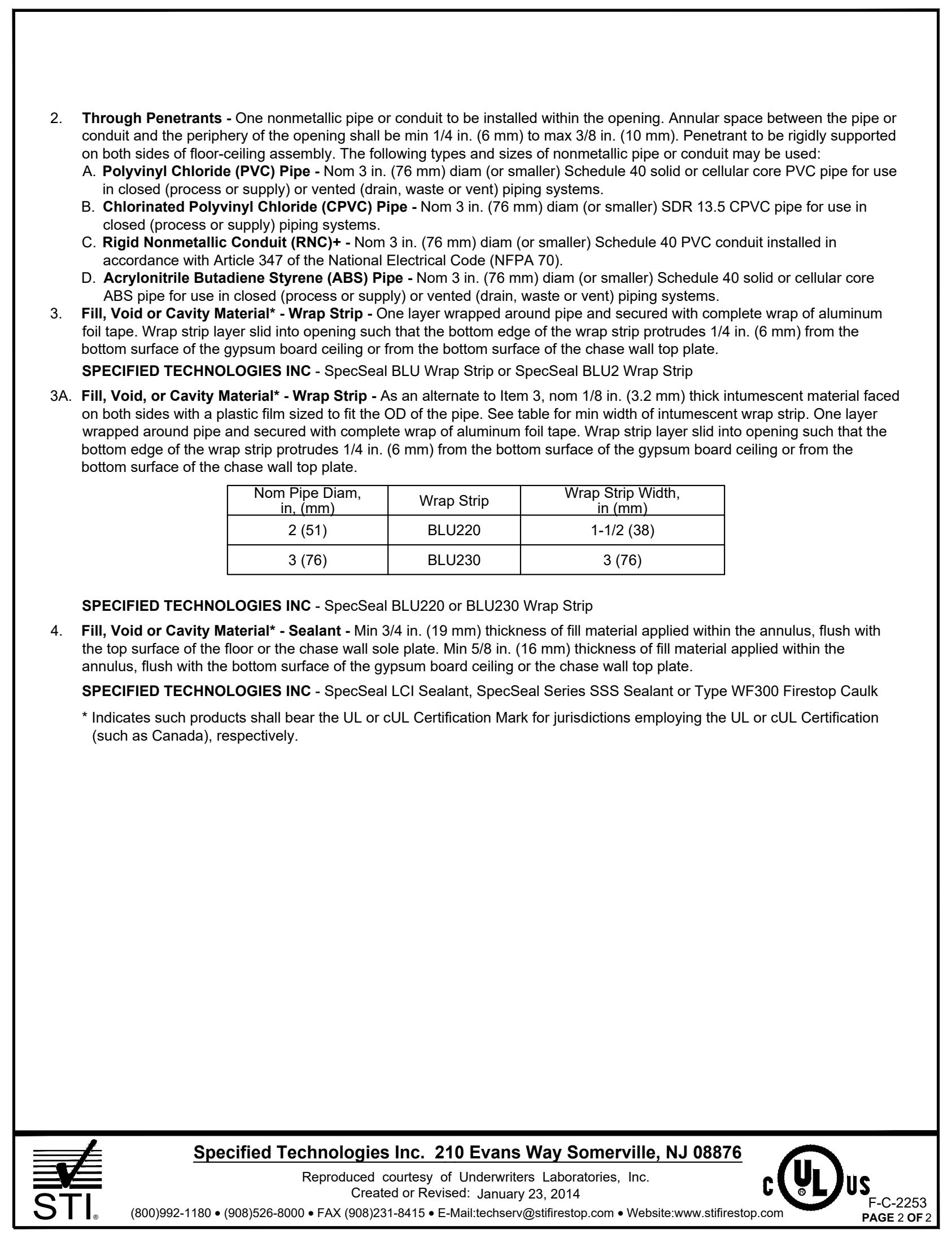
ANSI/UL1479	CAN/ULC S115
F Rating - 1 Hr	F Rating - 1 Hr
T Rating - 0 or 3/4 Hr (See Item 1 or 1A)	FT Rating - 0 or 3/4 Hr (See Item 1 or 1A)
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 1 Hr
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 or 3/4 Hr (See Item 1 or 1A)
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft

Section A-A

System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. **Floor-Ceiling Assembly -** The 1 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Designs in the UL Fire Resistance Directory, as summarized below:
   A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Max diam of opening is 4 in. (102 mm).
   B. **Wood Joists -** Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   C. **Gypsum Board* -** Thickness, type, number of layers and fasteners as required in the individual Floor-Ceiling Design. Max diam of opening is 4-1/8 in. (105 mm). When opening is larger than 4 in. (102 mm), the T-Rating is 0 Hr.

1A. **Chase Wall -** (Optional, Not Shown) - The through penetrant (Item 2) may be routed through a 1 hr fire rated single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1/2 in. (13 mm) greater than diameter of opening cut in sole and top plates to accommodate the through penetrant (Item 2). The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
   B. **Sole Plate -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 4-1/8 in. (105 mm).
   C. **Top Plate -** The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 4-1/8 in. (105 mm).
   D. **Gypsum Board* -** Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.



2. **Through Penetrants -** One nonmetallic pipe or conduit to be installed within the opening. Annular space between the pipe or conduit and the periphery of the opening shall be min 1/4 in. (6 mm) to max 3/8 in. (10 mm). Penetrant to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of nonmetallic pipe or conduit may be used:
   A. **Polyvinyl Chloride (PVC) Pipe -** Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 3 in. (76 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
   C. **Rigid Nonmetallic Conduit (RNC)+ -** Nom 3 in. (76 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
   D. **Acrylonitrile Butadiene Styrene (ABS) Pipe -** Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
3. **Fill, Void or Cavity Material* - Wrap Strip -** One layer wrapped around pipe and secured with complete wrap of aluminum foil tape. Wrap strip layer slid into opening such that the bottom edge of the wrap strip protrudes 1/4 in. (6 mm) from the bottom surface of the gypsum board ceiling or from the bottom surface of the chase wall top plate.

   SPECIFIED TECHNOLOGIES INC - SpecSeal BLU Wrap Strip or SpecSeal BLU2 Wrap Strip

3A. **Fill, Void, or Cavity Material* - Wrap Strip -** As an alternate to Item 3, nom 1/8 in. (3.2 mm) thick intumescent material faced on both sides with a plastic film sized to fit the OD of the pipe. See table for min width of intumescent wrap strip. One layer wrapped around pipe and secured with complete wrap of aluminum foil tape. Wrap strip layer slid into opening such that the bottom edge of the wrap strip protrudes 1/4 in. (6 mm) from the bottom surface of the gypsum board ceiling or from the bottom surface of the chase wall top plate.

Nom Pipe Diam, in, (mm)	Wrap Strip	Wrap Strip Width, in (mm)
2 (51)	BLU220	1-1/2 (38)
3 (76)	BLU230	3 (76)

SPECIFIED TECHNOLOGIES INC - SpecSeal BLU220 or BLU230 Wrap Strip

4. **Fill, Void or Cavity Material* - Sealant -** Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor or the chase wall sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the bottom surface of the gypsum board ceiling or the chase wall top plate.

   SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant, SpecSeal Series SSS Sealant or Type WF300 Firestop Caulk

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

GENERAL NOTES:

1. Refer to section 07 84 00 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.
2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   - Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
3. If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Engineering Judgments shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
4. References:
   - UL Fire Resistance Directory; Current Edition
   - NFPA 101 Life Safety Code
   - All governing local and regional building codes
5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479), ASTM E1966 (UL 1479), ASTM 1966 (UL 2079), ASTM E2307, or ULC-S115 (as required) in tested assemblies that provide a fire rating equal to that of the surrounding construction.

DIVISION 4: Masonry
DIVISION 7: Thermal & Moisture Protection
DIVISION 9: Finishes
DIVISION 22: Plumbing
DIVISION 23: HVAC
DIVISION 26: Electrical
DIVISION 27: Communications

PROJECT NAME:
PROJECT_NAME:

PROJECT LOCATION:
PROJECT_LOCATION:

ARCHITECT/CONSULTANT:
ARCHITECT/CONSULTANT:

TITLE:
STI FIRESTOP SYSTEMS

Specified Technologies Inc.
210 Evans Way Somerville, NJ 08876

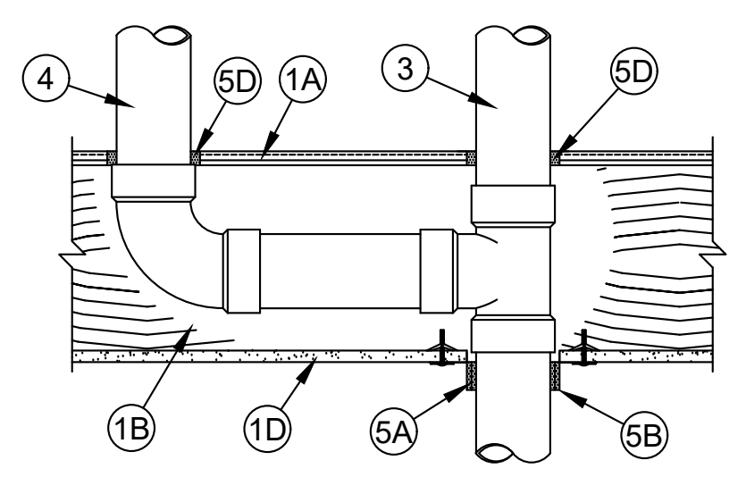
Toll Free: (800)992-1180
Phone: (908)526-8000
FAX (908)231-8415
E-Mail:techserv@stifirestop.com
Website:www.stifirestop.com

INDEX

Classified by
Underwriters Laboratories, Inc.
to ASTM/UL1479 (ASTM E814)

System No. F-C-2158

F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Item 1)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



1. **Floor-Ceiling Assembly -** The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The 2 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511 or L536 in the UL Fire Resistance Directory. **The F and T Ratings of the firestop system are equal to the rating of the floor-ceiling assembly.** The general construction features of the floor-ceiling assembly are summarized below:
   - A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Diam of opening hole-sawed in flooring shall be max 1 in. (25 mm) larger than diam of through penetrant (Item 3) or branch piping (Item 4). As an option, the opening for the branch piping (Item 4) may be rectangular, 8 in. by 12 in. (204 by 305 mm) max, for 1 hr rated assemblies only. Cutout to be patched on underside of subfloor using one layer of min 3/4 in. (19 mm) thick plywood or min 5/8 in. (16 mm) thick gypsum wallboard (Item 1C) sized to lap min 2 in. (51 mm) beyond each edge of rectangular cutout. Diam of opening hole sawed through patch to accommodate branch piping (Item 4) to be max 1 in. (25 mm) larger than diam of branch piping. Patch split into two pieces at opening hole-sawed for branch piping. Two pieces positioned around branch piping, with cut edges tightly-butted, and screw attached to the underside of subfloor using 1-1/4 in. (32 mm) long Type S steel screws spaced max 6 in. (152 mm) OC.
   - B. **Wood Joists* -** For 1 hr fire-rated floor-ceiling assemblies nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped. For 2 hr fire-rated floor-ceiling assembly, nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging with ends firestopped.
   - C. **Furring Channels -** Not Shown)-Resilient galv steel furring installed perpendicular to wood joists between first and second layers of gypsum board (Item 1D) in 2 hr fire-rated assembly.
   - D. **Gypsum Board* -** Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. First layer of gypsum board nailed to wood joists. Second layer of gypsum board (2 hr fire-rated assembly) screw-attached to furring channels. Diam of opening shall be max 1 in. (25 mm) larger than nom diam of through penetrant (Item 3).

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2. **Chase Wall -** (Optional, not shown)-The through-penetrant (Item 3) may be routed through a 1 or 2 hr fire-rated single, double or staggered wood stud/gypsum board chase wall constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and which includes the following construction features:
   - A. **Studs -** Nom 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
   - B. **Sole Plate -** Nom 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening hole-sawed in sole plate to be max 1 in. (25 mm) larger than diam of through penetrant (Item 3).
   - C. **Top Plate -** The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening shall be max 1 in. (25 mm) larger than diam of through penetrant (Item 3).
   - D. **Gypsum Board* -** Thickness, type, number of layers and fasteners shall be as specified in the individual Wall or Partition Design.
3. **Through-Penetrant -** One nonmetallic pipe to be centered within the firestop system. Pipe to be rigidly supported on both sides of floor-ceiling assembly. The annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. (0 to 13 mm). Pipe may be installed with continuous point contact where it passes through gypsum board ceiling. The following types and sizes of nonmetallic pipes may be used:
   - A. **Polyvinyl Chloride (PVC) Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 4 in. (102 mm) diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   - C. **Acrylonitrile Butadiene Styrene (ABS) Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
4. **Branch Piping -** (Optional)-One nonmetallic pipe with or without nom 4 in. (102 mm) diam (or smaller) toilet flange (not shown) connected to through penetrant (Item 3) within concealed space above ceiling and centered within opening in subfloor. The annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. (0 to 13 mm). Branch piping may terminate in a max 4 in. (102 mm) diam toilet flange that corresponds to the type of branch piping. The following types and sizes of nonmetallic pipes may be used:
   - A. **Polyvinyl Chloride (PVC) Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 4 in. (102 mm) diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   - C. **Acrylonitrile Butadiene Styrene (ABS) Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
5. **Firestop System -** The details of the firestop system shall be as follows:
   - A. **Fill, Void or Cavity Material* - Wrap Strip -** Nom 1/8 or 1/4 in. (3.2 or 6 mm) thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. or 2 in. (38 or 51 mm) wide strips. Nom 1-1/2 in. or 2 in. (38 or 51 mm) wide strips tightly wrapped around through penetrant (Item 3) with the edges butted against the underside of the gypsum board ceiling (Item 1D) or top plate of chase wall (Item 2C) around the entire perimeter of the hole-sawed opening. For nom 1/2 in. to 2 in. (13 to 51 mm) diam pipes, a min of one layer of wrap strip is required. For nom 2-1/2 in. to nom 4 in. (64 to 102 mm) diam pipes, a min of two layers of wrap strip is required. Each layer of wrap strip to be installed with butted seams, butted seams in successive layers to be staggered or aligned. Wrap strip layer(s) secured together with masking tape.

     SPECIFIED TECHNOLOGIES INC - SpecSeal RED Wrap Strip, SpecSeal RED2, SpecSeal BLU Wrap Strip or SpecSeal BLU2 Wrap Strip

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   - B. **Steel Collar -** Collar fabricated from coils of precut 0.016 in. (0.4 mm) thick (30 MSG) galv sheet steel available from wrap strip manufacturer. Collar shall be nom 1-1/2 in. or 2 in. (38 or 51 mm) deep dependent upon wrap strip width with 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs for attachment to underside of ceiling or top plate. Retainer tabs, 3/4 in. (19 mm) wide tapering down to 1/4 in. (6 mm) wide and located opposite the anchor tabs, folded 90 degrees toward through penetrant surface to maintain the annular space and to retain the wrap strips. Collar wrapped around wrap strips and through-penetrant with a 1 in. (25 mm) wide overlap along its perimeter joint and secured with a min 1/2 in. (13 mm) wide by 0.028 in. (0.7 mm) thick stainless steel hose clamp at the mid-height of the steel collar. As an alternate to the steel hose clamp, the steel collar may be secured together by means of three No. 8 steel sheet metal screws. The length of the steel screws is dependent upon the number of layers of wrap strip used within the steel collar. For steel collars incorporating a single layer of wrap strip, the length of the steel screws shall be 1/4 in. (6 mm) long. For steel collars incorporating two or more layers of wrap strip, the length of the steel screws shall be 3/8 in. (10 mm) long. Collar secured to the bottom of ceiling with min 3/16 in. (4.8 mm) diam by 2 in. (51 mm) long toggle bolts in conjunction with min 1/4 in. by 1-1/4 in. (6 by 32 mm) steel fender washers. Collar secured to bottom of chase wall top plate with min 3/4 in. (19 mm) long steel wood screws in conjunction with min 1/4 in. by 1 in. (6 by 25 mm) steel fender washers, respectively. The number of screws is dependent upon the nom diam of the through penetrant. Two screws, symmetrically located, are required for nom 1/2 in. through 2 in. (13 to 51 mm) diam through-penetrants. Three screws, symmetrically located, are required for nom 2-1/2 in. and 3 in. (64 to 76 mm) diam through-penetrants. Four screws, symmetrically located, are required for nom 3-1/2 in. and 4 in. (89 to 102 mm) diam through-penetrants. Steel collar is not required to be installed around branch piping at the underside of the flooring.
   - C. **Firestop Device* -** (Not Shown)-As an alternate to Items 5A and 5B for through-penetrant (Item 3), a firestop device consisting of a steel collar lined with intumescent material and sized to fit the specific diam of the nonmetallic pipe may be used. Firestop device to be installed on underside of ceiling or top plate in accordance with the accompanying installation instructions.

     SPECIFIED TECHNOLOGIES INC - SpecSeal Firestop Collar, SpecSeal LCC Collar or SpecSeal SSC Collar
   - D. **Fill, Void or Cavity Material* -Sealant -** Min 3/4 in. (19 mm) thickness of fill material applied within annular space around perimeter of through penetrant (Item 3) and branch piping (Item 4), flush with top surface of floor or top of chase wall sole plate. Min 1/2 in. (13 mm) diam bead applied at point contact locations at pipe/floor interface and the pipe/plate interface.

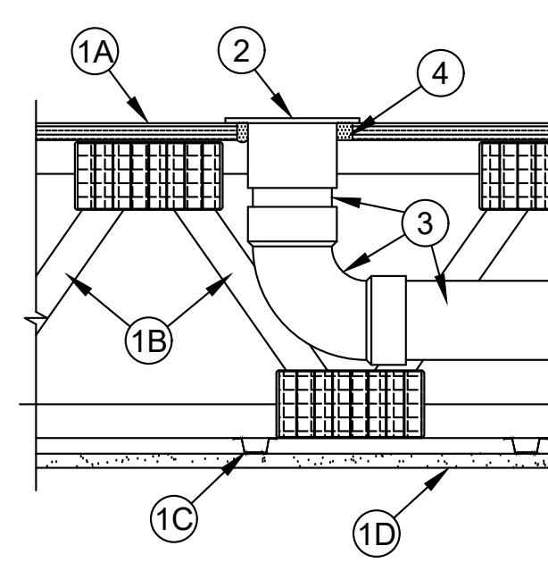
     SPECIFIED TECHNOLOGIES INC - SpecSeal Series Sealant or SpecSeal LCI Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to ASTM/UL1479 (ASTM E814)

System No. F-C-2322

F Rating - 1 Hr
T Rating - 1 Hr



1. **Floor-Ceiling Assembly -** The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, as summarized below:
   - A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Max diam of opening is 5 in. (127 mm).
   - B. **Wood Joists -** Nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging and with ends firestopped. As an alternate to lumber joists, nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists trusses or **Structural Wood Members*** with bridging as required with ends firestopped.
   - C. **Furring Channels -** (Not Shown) - Resilient galv steel furring installed perpendicular to wood joists (Item 1B) between gypsum board (Item 1D) and wood joists as required in the individual Floor-Ceiling Design.
   - D. **Gypsum Board* -** Nom 4 ft (1.22 mm) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to wood joists as specified in the individual Floor-Ceiling Design.
2. **Closet Flange -** Polyvinyl chloride (PVC) or acrylonitrile butadiene styrene (ABS) closet flange installed in hole-sawed opening in flooring system with flange secured to top of flooring with steel screws. Diam of circular opening through flooring (Item 1A) to be max 1/2 in. (13 mm) larger than outside diam of closet flange.
3. **Drain Piping -** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 PVC or ABS drain piping and fittings. Short length of pipe with 90 degree elbow fitting cemented into bottom socket of closet flange. Drain piping to soil stack cemented into elbow.
4. **Fill, Void or Cavity Material* - Sealant -** Fill material forced into annulus between closet stub and periphery opening in flooring to max extent possible, flush with bottom surface of floor. Additional fill material to be installed such that a min 3/8 in. (10 mm) crown is formed around the closet stub on bottom surface of floor.

   SPECIFIED TECHNOLOGIES INC - Type WF300 Caulk
5. **Water Closet -** (Not Shown) - Floor mounted vitreous china water closet.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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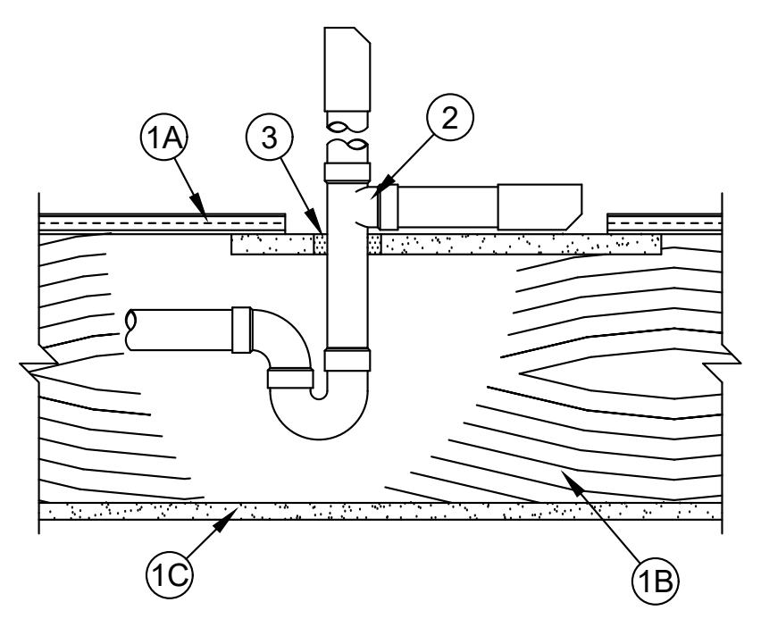
System No. F-C-2320

F Rating - 1 Hr
T Rating - 1 Hr



1. **Floor-Ceiling Assembly -** The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   - A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Rectangular cutout in flooring to accommodate the bathtub drain piping (Item 2) to be max 8 by 12 in. (203 by 305 mm). Cutout to be patched on underside of subfloor using one layer of min 3/4 in. (19 mm) thick plywood or min 5/8 in. (16 mm) thick gypsum wallboard (Item 1C) sized to lap min 2 in. (51 mm) beyond each edge of rectangular cutout. Diam of opening hole-sawed through patch to accommodate drain piping (Item 2) to be 1 in. (25 mm) larger than outside diam of drain piping and positioned such that drain piping is centered in opening. Patch split into two pieces at opening hole-sawed for bathtub drain piping. Two pieces positioned around drain piping, with cut edges tightly butted, and screw-attached to underside of subfloor with 1-1/4 in. (32 mm) long Type S steel screws spaced max 6 in. (152 mm) OC.
   - B. **Wood Joists* -** Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   - C. **Gypsum Board* -** Nom 4 ft (1.22 m) wide by 5/8 in. (16 mm) thick, attached as described in the individual Floor-Ceiling Design.
2. **Drain Piping -** Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 cellular or solid core polyvinyl chloride (PVC) or acrylonitrile butadiene styrene (ABS) pipe and drain fittings cemented together and provided with PVC or ABS bathtub waste/overflow fittings. The annular space shall be a min 3/8 in. (10 mm) to max 5/8 in. (16 mm).
3. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) depth of fill material applied within annular space, flush with both surfaces of plywood or gypsum wallboard patch.

   SPECIFIED TECHNOLOGIES INC - Type WF300 Caulk

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
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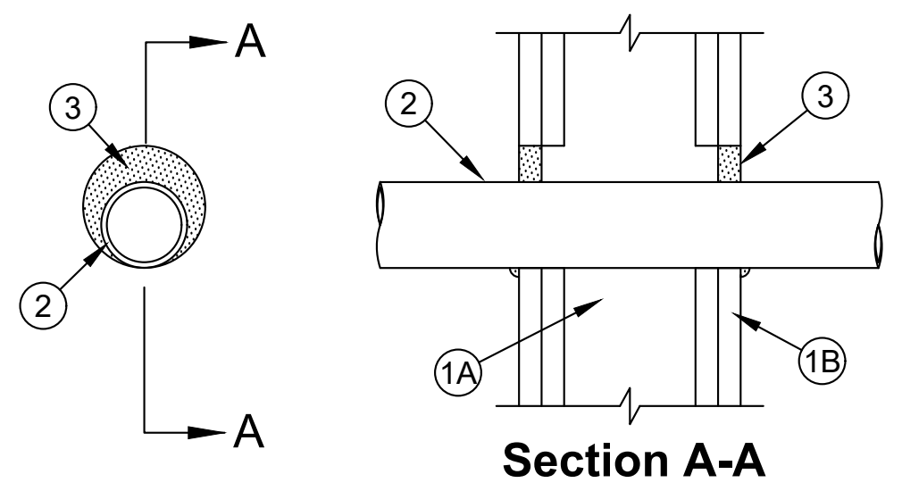
to ASTM/UL1479 (ASTM E814)

System No. W-L-2241

F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 0, 1/4, 1 and 1-3/4 Hr (See Item 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   - A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   - B. **Gypsum Board* -** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Diam of opening to be 1 in. to 1-1/8 in. (25 to 29 mm) larger than outside diam of pipe.

     The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. When Item 2G or 2H is used, the hourly F Rating is 1 hr.
2. **Through Penetrant -** One nonmetallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
   - A. **Polyvinyl Chloride (PVC) Pipe -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
   - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 or Schedule 80 CPVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
   - C. **Rigid Nonmetallic Conduit+ -** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
   - D. **Electrical Nonmetallic Tubing+ -** Nom 2 in. (51 mm) diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
   - E. **Cross Linked Polyethylene (PEX) Tubing -** Nom 1 in. (25 mm) diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

   - F. **Acrylonitrile Butadiene Styrene (ABS) pipe -** Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 1/4 in. (6 mm) to max 3/4 in. (19 mm).
   - G. **Polyvinyl Chloride (PVC) Pipe -** Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
   - H. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 3 in. (76 mm) diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

     When Item 2A or 2B is used, the T Rating is 1/4 hr. When Item 2C, 2D, or 2E is used, the T Rating is 1 hr and 1-3/4 hr for 1 hr and 2 hr fire rated walls, respectively. When Item 2F, 2G, or 2H is used, T Rating is 0 hr.
3. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. (6 mm) diam bead of fill material applied at nonmetallic pipe/gypsum board interface on both surfaces of wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant or Type WF300 Firestop Caulk (for wood studs only)

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to ASTM/UL1479 (ASTM E814)

System No. W-L-2241
F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 0, 1/4, 1 and 1-3/4 Hr (See Item 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
B. Gypsum Board* - Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Diam of opening to be 1 in. to 1-1/8 in. (25 to 29 mm) larger than outside diam of pipe.
The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. When Item 2G or 2H is used, the hourly F Rating is 1 hr.
2. Through Penetrant - One nonmetallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
A. Polyvinyl Chloride (PVC) Pipe - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
B. Chlorinated Polyvinyl Chloride (CPVC) Pipe - Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 or Schedule 80 CPVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
C. Rigid Nonmetallic Conduit+ - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
D. Electrical Nonmetallic Tubing+ - Nom 2 in. (51 mm) diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70). Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
E. Cross Linked Polyethylene (PEX) Tubing - Nom 1 in. (25 mm) diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).

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W-L-2241
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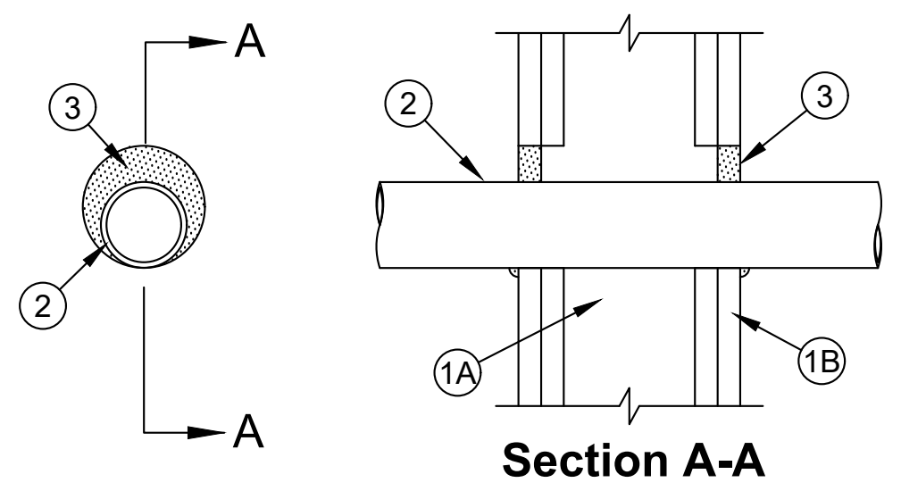

F. Acrylonitrile Butadiene Styrene (ABS) pipe - Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Annular space shall be min 1/4 in. (6 mm) to max 3/4 in. (19 mm).
G. Polyvinyl Chloride (PVC) Pipe - Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
H. Chlorinated Polyvinyl Chloride (CPVC) Pipe - Nom 3 in. (76 mm) diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems. Annular space shall be min 0 in. (0 mm, point contact) to max 1 in. (25 mm).
When Item 2A or 2B is used, the T Rating is 1/4 hr. When Item 2C, 2D, or 2E is used, the T Rating is 1 hr and 1-3/4 hr for 1 hr and 2 hr fire rated walls, respectively. When Item 2F, 2G, or 2H is used, T Rating is 0 hr.
3. Fill, Void or Cavity Material* - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. (6 mm) diam bead of fill material applied at nonmetallic pipe/gypsum board interface on both surfaces of wall.
SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant or Type WF300 Firestop Caulk (for wood studs only)
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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W-L-2241
PAGE 2 OF 2

Classified by
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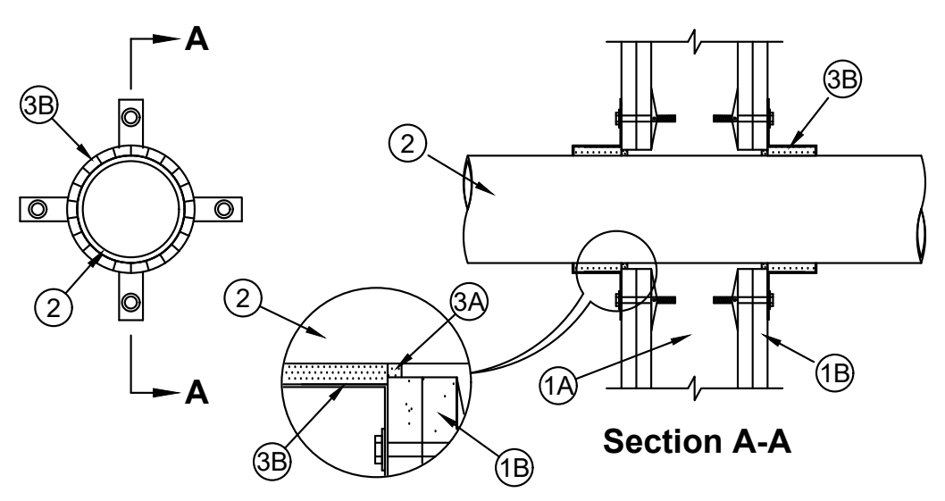
to ASTM/UL1479 (ASTM E814)

System No. W-L-2237

F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Item 1)



1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   - A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.
   - B. **Gypsum Board* -** Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Designs. For nom 2-1/2 in. diam and smaller pipes and conduits, diam of opening shall be max 1/4 in. larger than nom pipe diam. For pipes and conduits greater than nom 2-1/2 in. diam of opening shall be max 1/2 in. larger than nom pipe diam.

     The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Through Penetrants -** One nonmetallic pipe or conduit to be centered within opening with a max annular space between pipe or conduit and periphery of 1/8 in. for nom 2-1/2 in. diam and smaller pipes and conduits and 1/4 in. for pipes and conduits greater than 2-1/2 in. diam. Pipe or conduit to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes and conduits may be used.
   - A. **Polyvinyl Chloride (PVC) Pipe -** Nom 4 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 4 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   - C. **Acrylonitrile Butadiene Styrene (ABS) Pipe -** Nom 4 in. diam (or smaller) Schedule 40 solid or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   - D. **Rigid Nonmetallic Conduit+ -** Nom 4 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
3. **Firestop System -** The firestop system consists of the following:
   - A. **Fill, Void or Cavity Material* - Sealant -** Min 1/4 in. thickness applied within annulus, flush with both surfaces of wall.

     SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant
   - B. **Firestop Device* -** Galv steel collar lined with an intumescent material sized to fit the specific diam of the through penetrant. Device shall be installed around through penetrant in accordance with the accompanying installation instructions. Device incorporates anchor tabs for securement to both surfaces of wall assembly by means of 3/16 in. diam steel toggle bolts in conjunction with min 1-1/4 in. diam steel fender washers.

     SPECIFIED TECHNOLOGIES INC - SpecSeal LCC Collar or SpecSeal SSC Collar

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

+Bearing the UL Listing Mark

Classified by
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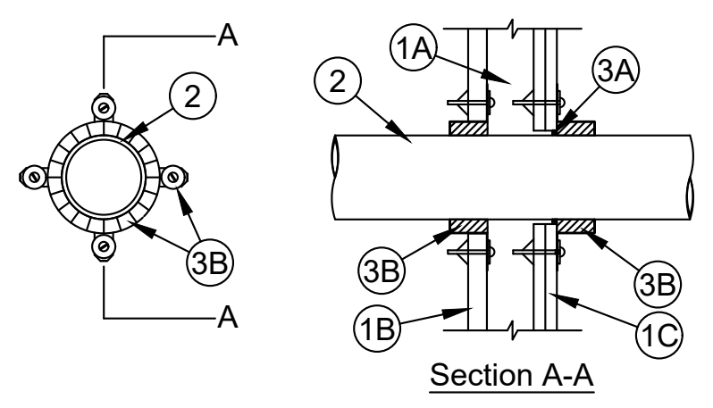
to ASTM/UL1479 (ASTM E814)

System No. W-L-2257

F Rating - 2 Hr
T Rating - 2 Hr



1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud shaft wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   - A. **Steel Studs -** "C-H" or "C-T" shaped studs, min 2-1/2 in. (64 mm) wide by 1-1/2 in. (38 mm) deep, fabricated from min No. 25 gauge (0.6 mm thick) galv steel, spaced max 24 in. (610 mm) OC.
   - B. **Gypsum Board* -** 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner panels installed vertically. Diam of circular cutout in gypsum liner panel to be equal to outside diam of firestop device (Item 3B).
   - C. **Gypsum Board* -** 1/2 in. or 5/8 in. (13 to 16 mm) thick, 48 in. (1.2 m) wide gypsum boards. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Diam of circular cutout in gypsum board to be max 1/2 in. (13 mm) larger than diam of through penetrant (Item 2).

     The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Through Penetrant -** One nonmetallic pipe or conduit installed centered within the firestop system. Pipe or conduit to be rigidly supported on both sides of wall assembly. One of the following types and sizes of nonmetallic pipe or conduit may be used:
   - A. **Polyvinyl Chloride (PVC) Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 PVC solid or cellular core PVC pipe for use in vented (drain, waste or vent) or closed (process or supply) piping systems.
   - B. **Acrylonitrile Butadiene Styrene (ABS) Pipe -** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 ABS solid or cellular core PVC pipe for use in vented (drain, waste or vent) or closed (process or supply) piping systems.
   - C. **Chlorinated Polyvinyl Chloride (CPVC) Pipe -** Nom 4 in. (102 mm) diam (or smaller) SDR17 CPVC pipe for use in vented (drain, waste or vent) or closed (process or supply) piping systems.
   - D. **Rigid Nonmetallic Conduit+ -** Nom 4 in. (102 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
3. **Firestop System -** The firestop system consist of the following items:
   - A. **Fill Void or Cavity Materials* - Sealant or Putty -** (Optional) - Min 1/4 in. (6 mm) thickness of fill material applied within annulus of gypsum board on finished side of wall.

     SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant or SpecSeal Putty
   - B. **Firestop Device* -** Firestop device sized to the specific diam of the through penetrant to be friction fit into circular cutout in gypsum liner panel from the interior of the wall. Diam of circular cutout in gypsum liner panel to be equal to outside diam of firestop device. Device shall be secured to the gypsum liner panel with min 3/16 in. (5 mm) diam steel toggle bolts or molly bolts in conjunction with 1-1/4 in. (32 mm) diam steel fender washers in accordance with the accompanying installation instructions. Second firestop device sized to the specific diam of the through penetrant installed around the through penetrant on the finished side of the wall and secured to the gypsum board with min 3/16 in. (5 mm) diam steel toggle bolts or molly bolts in conjunction with 1-1/4 in. (32 mm) diam steel fender washers in accordance with the accompanying installation instructions.

     SPECIFIED TECHNOLOGIES INC - SpecSeal Firestop Collar, SpecSeal LCC Collar or SpecSeal SSC Collar

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

GENERAL NOTES:

1. Refer to section 07 84 00 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.
2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   - · Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
3. If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Engineering Judgments shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
4. References:
   - · UL Fire Resistance Directory; Current Edition
   - · NFPA 101 Life Safety Code
   - · All governing local and regional building codes
5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479), ASTM E1966 (UL 1479), ASTM 1966 (UL 2079), ASTM E2307, or ULC-S115 (as required) in tested assemblies that provide a fire rating equal to that of the surrounding construction.

DIVISION 4: Masonry
DIVISION 7: Thermal & Moisture Protection
DIVISION 9: Finishes
DIVISION 22: Plumbing
DIVISION 23: HVAC
DIVISION 26: Electrical
DIVISION 27: Communications

PROJECT NAME:
PROJECT_NAME:

PROJECT LOCATION:
PROJECT_LOCATION:

ARCHITECT/CONSULTANT:
ARCHITECT/CONSULTANT:

TITLE:
STI FIRESTOP SYSTEMS

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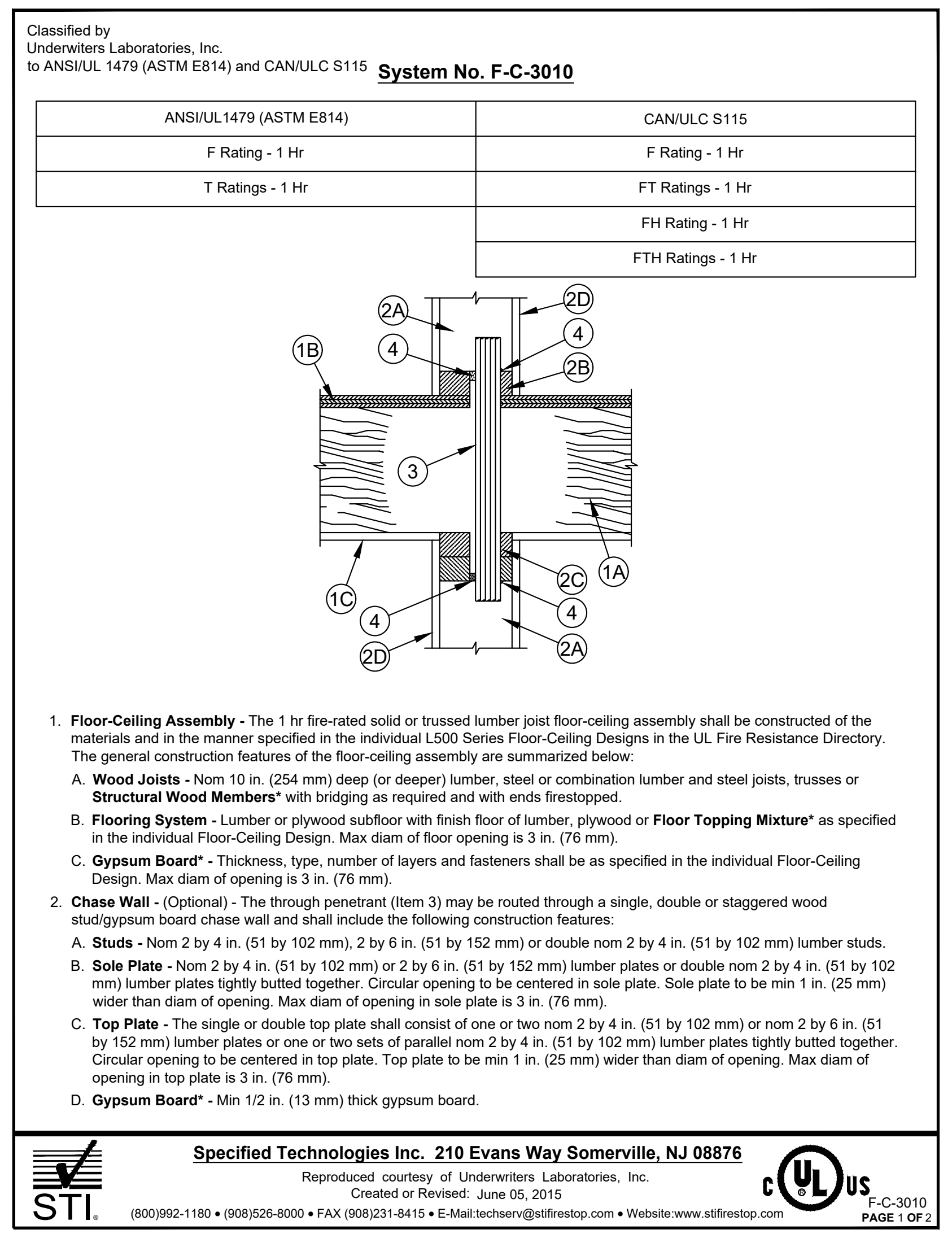
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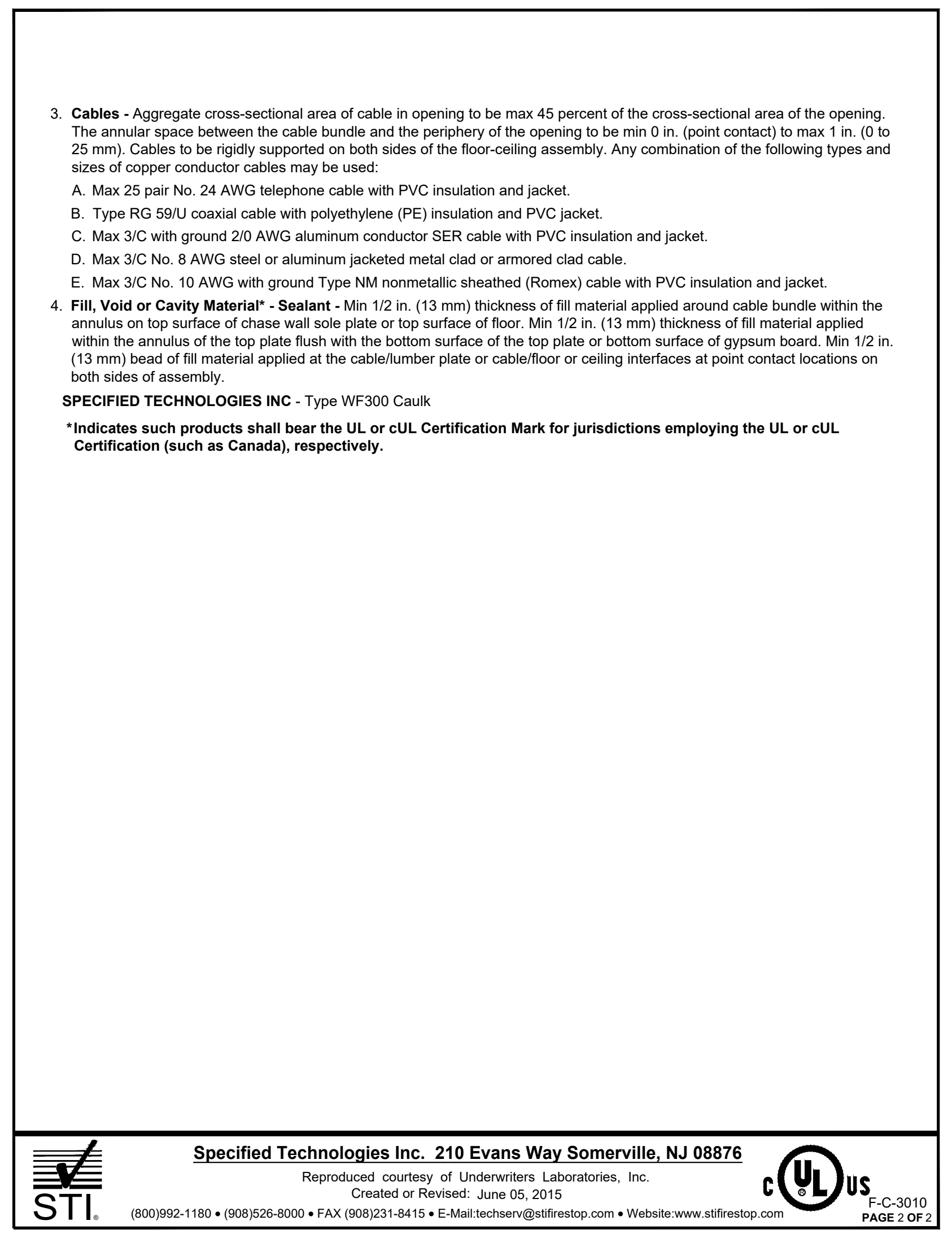

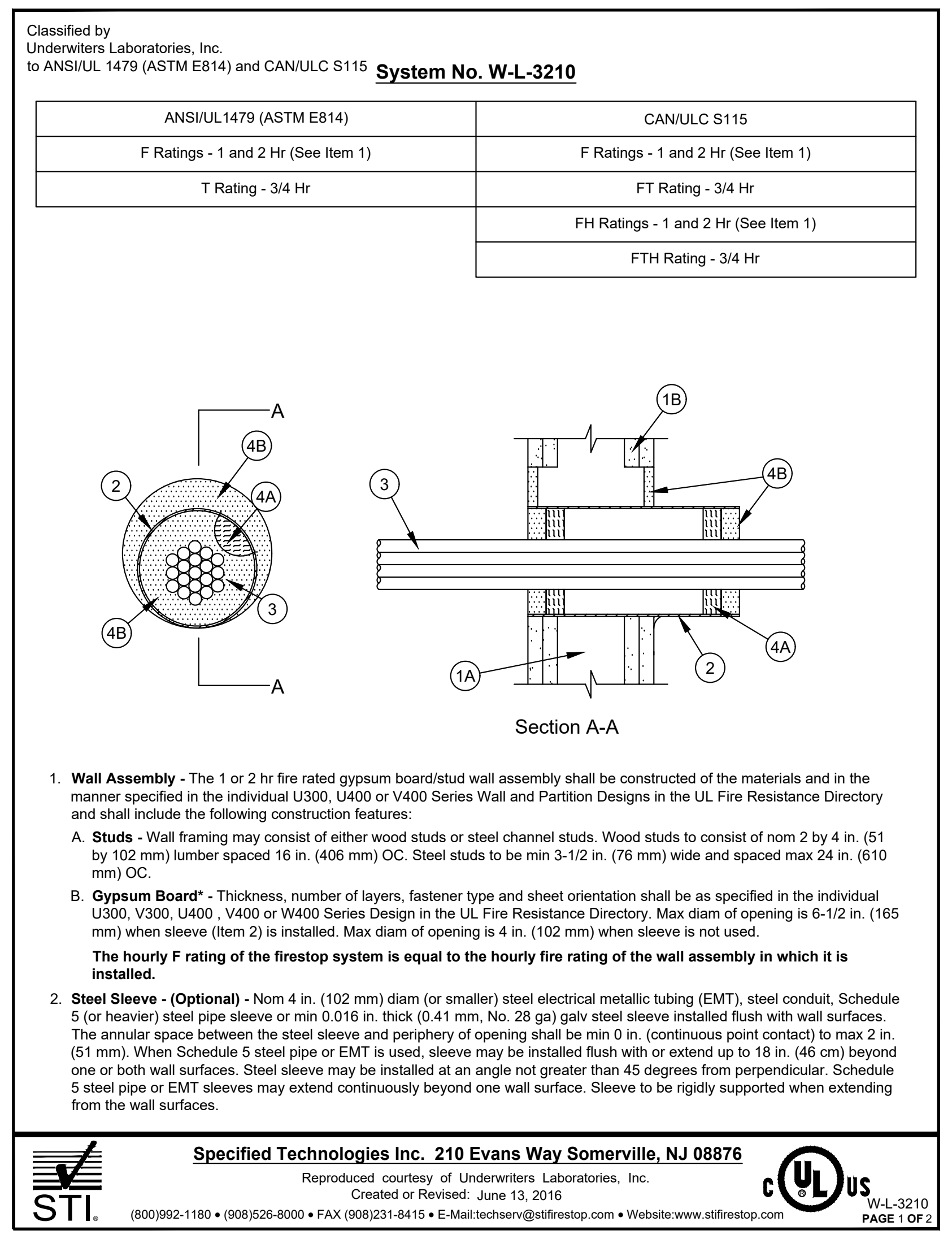
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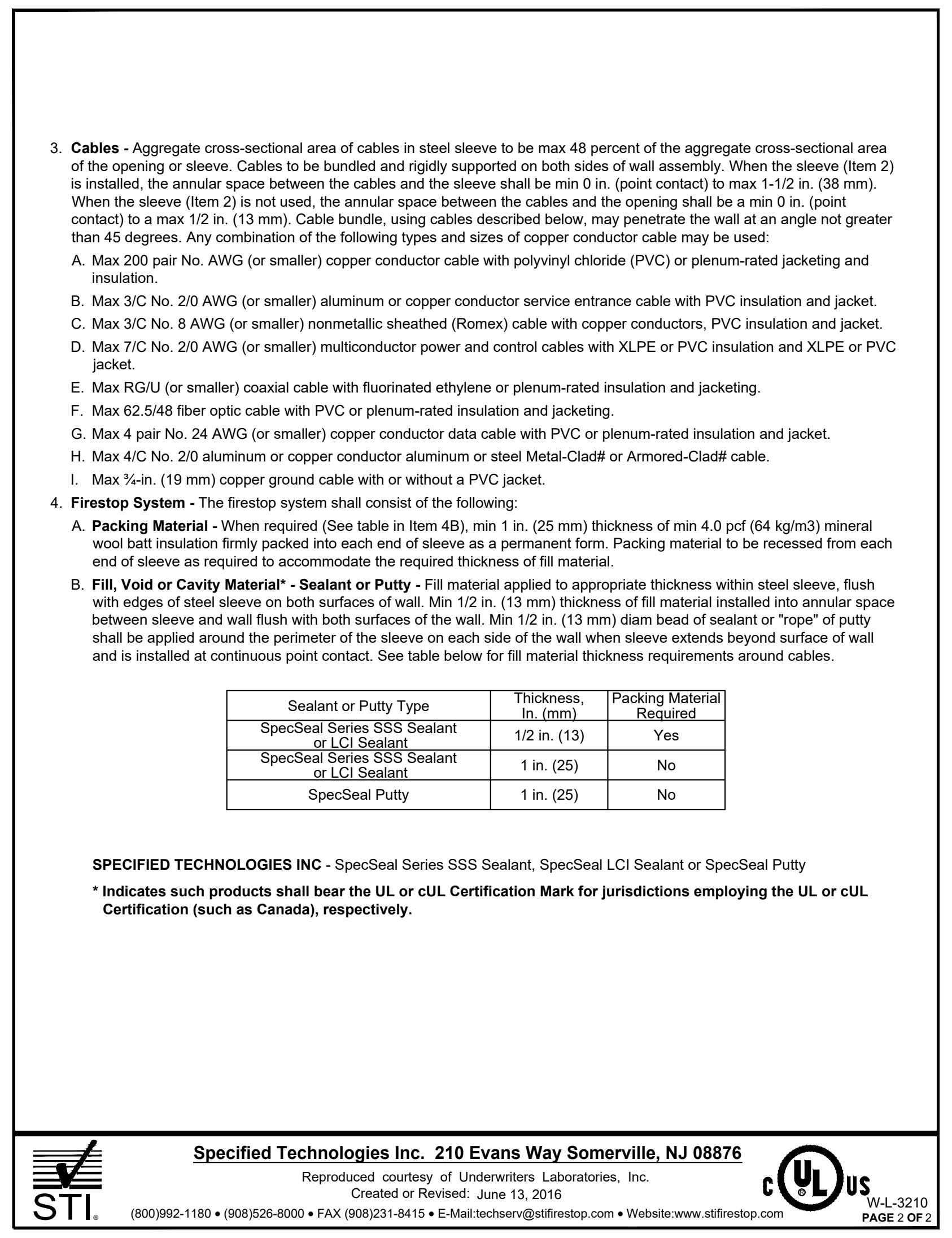

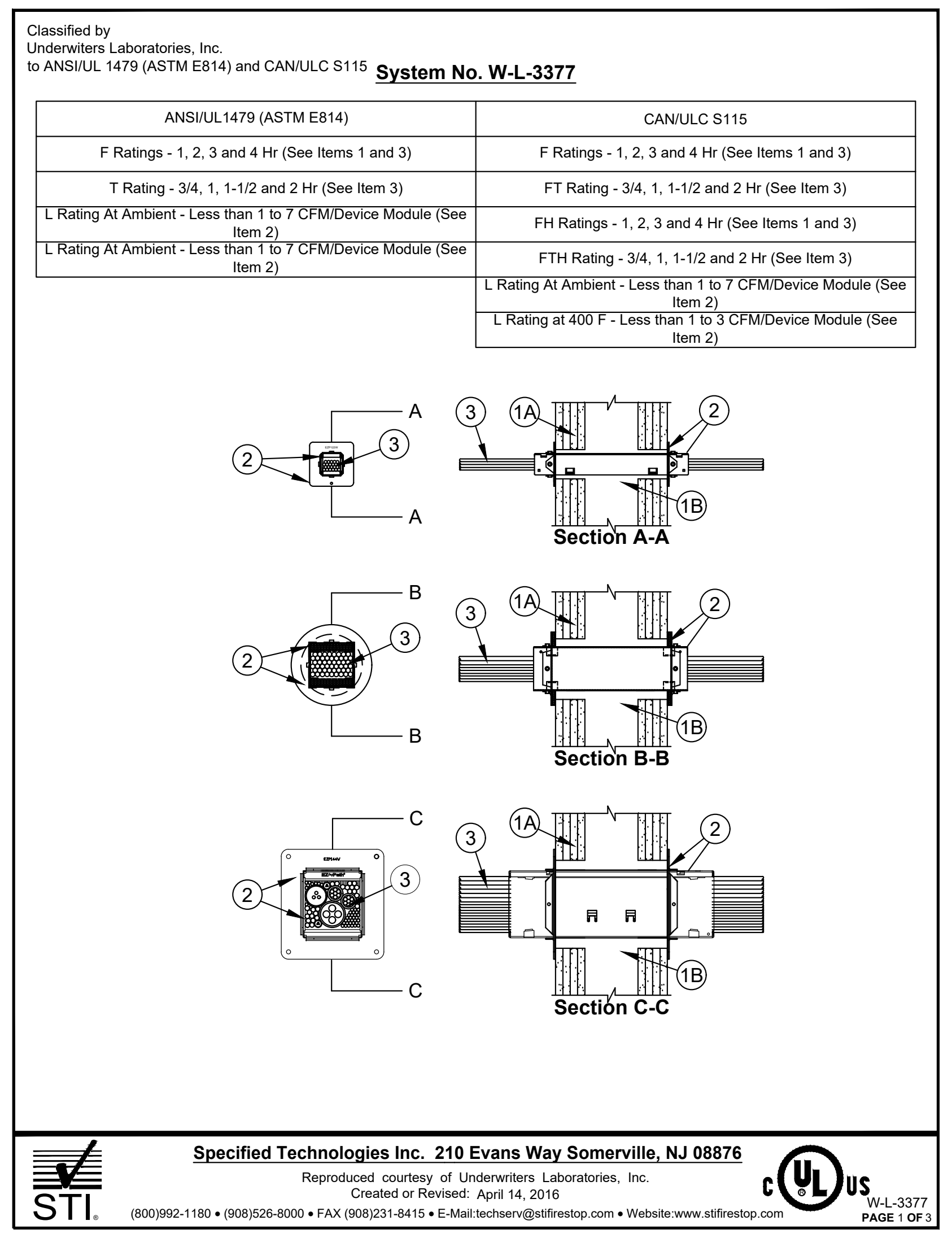
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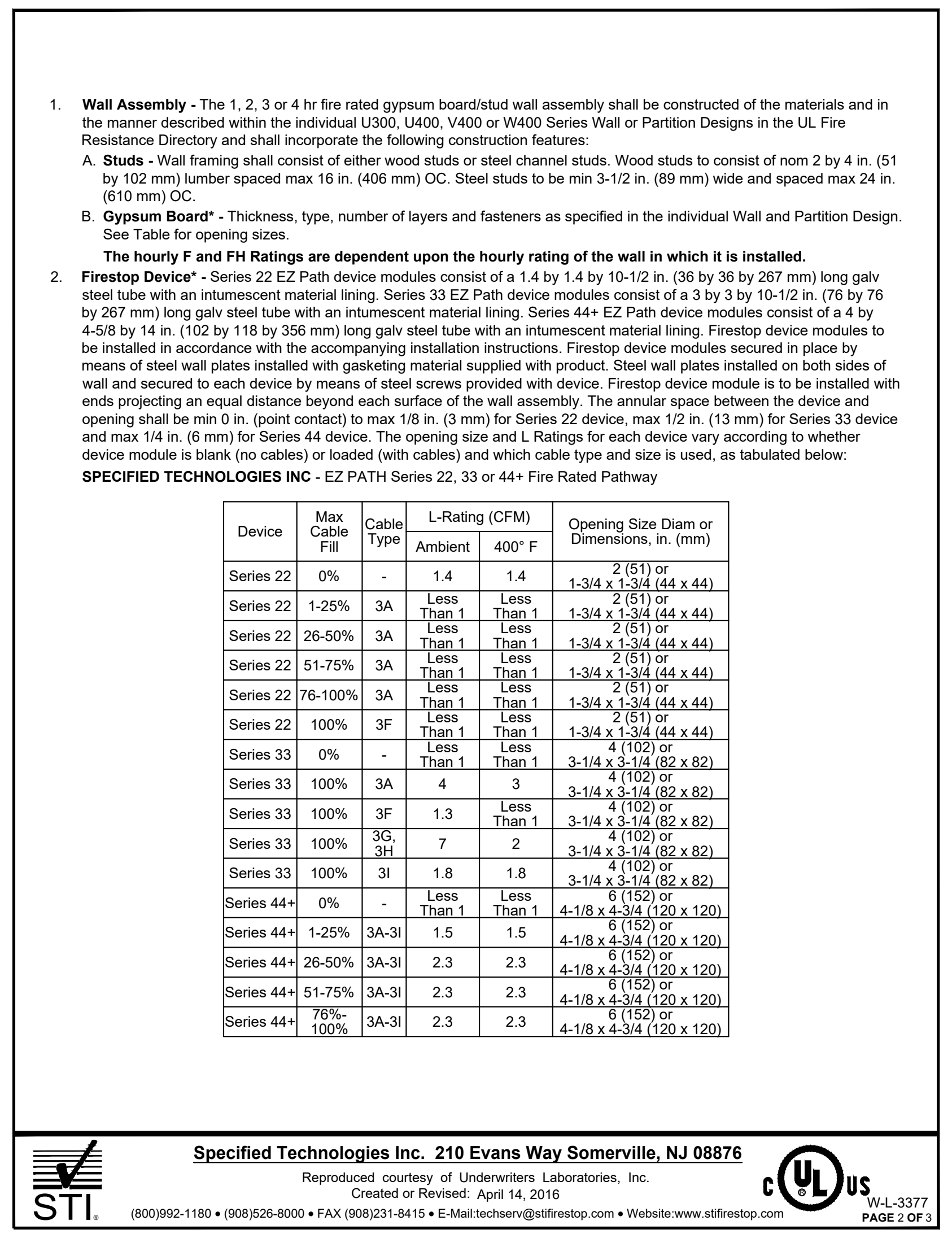

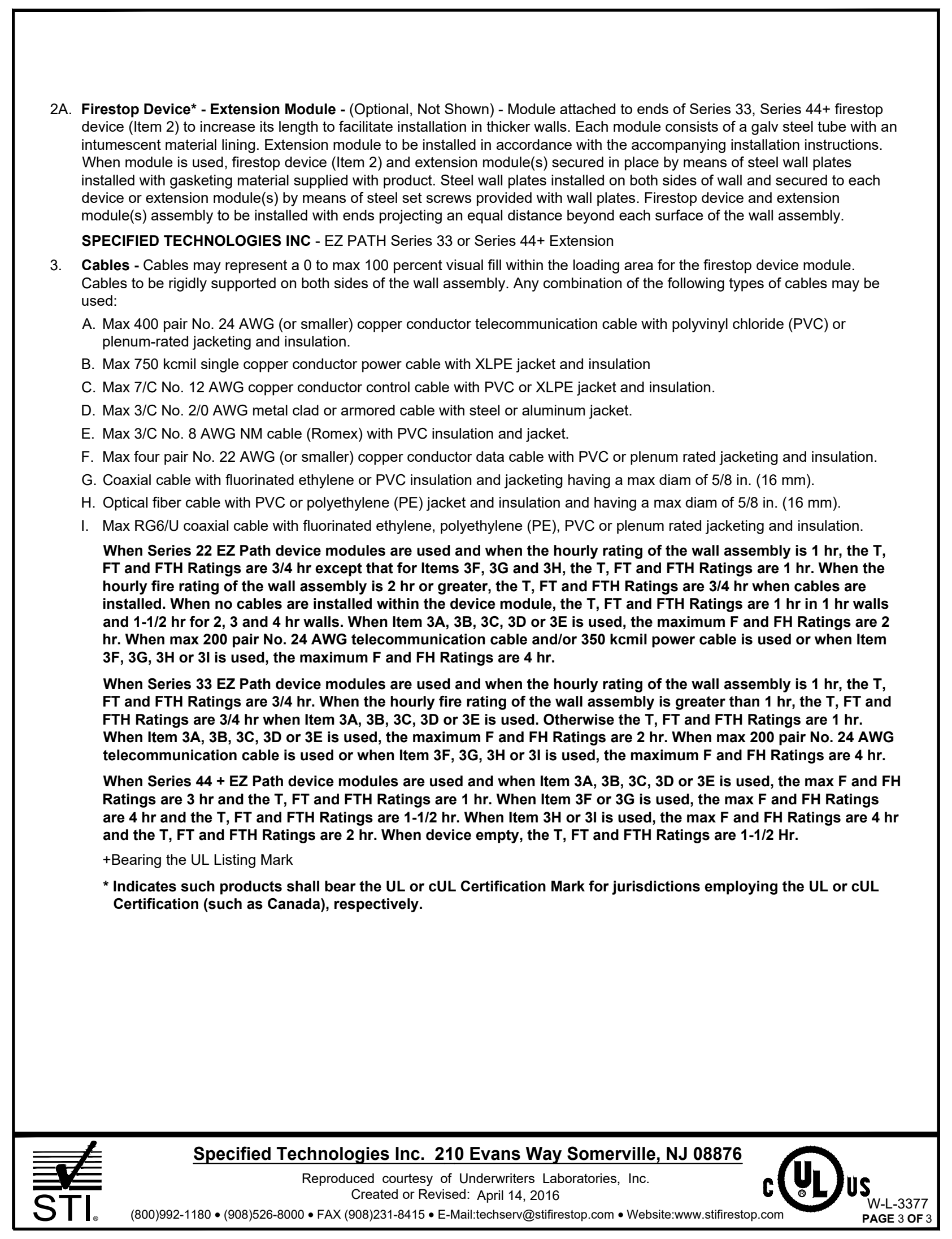

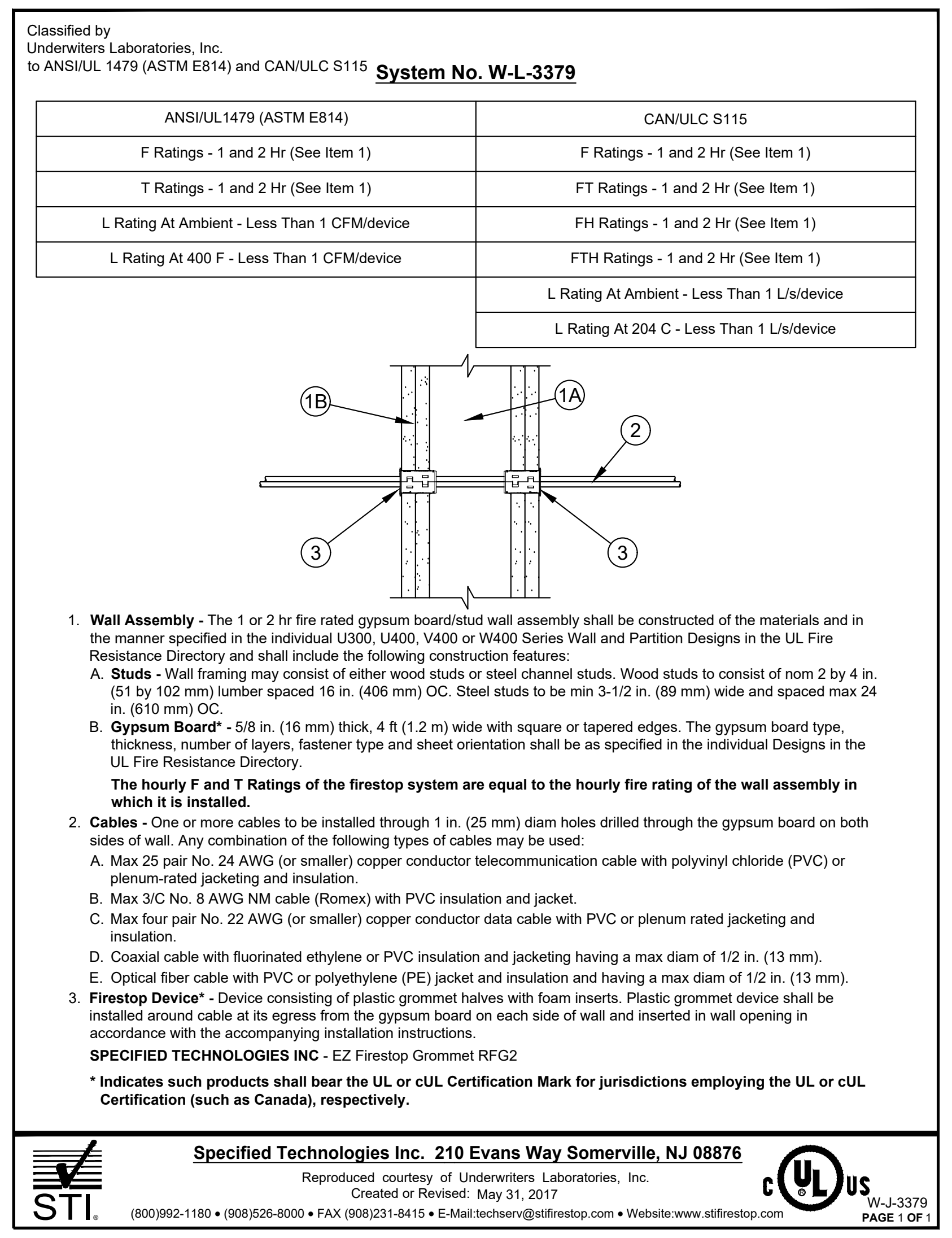
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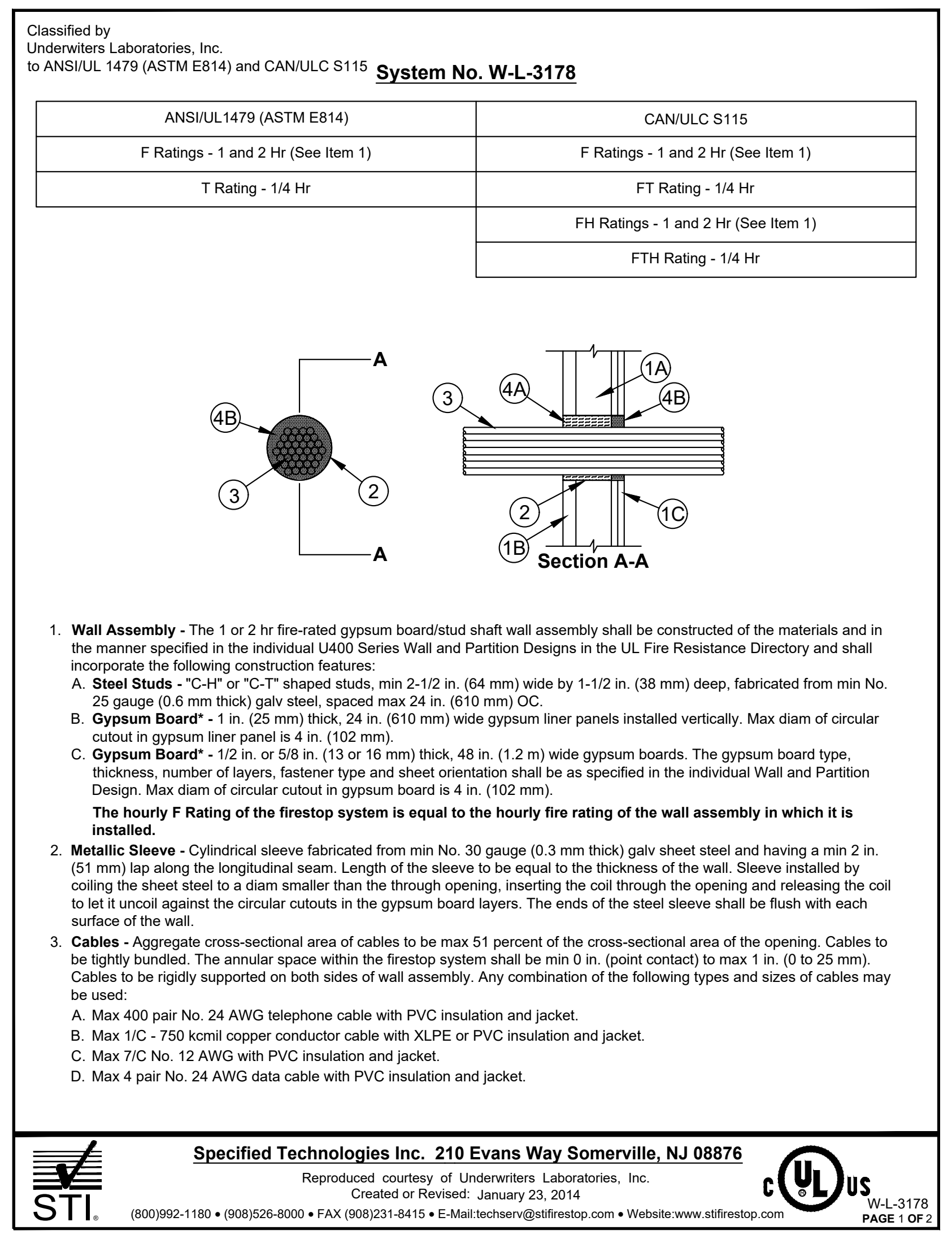
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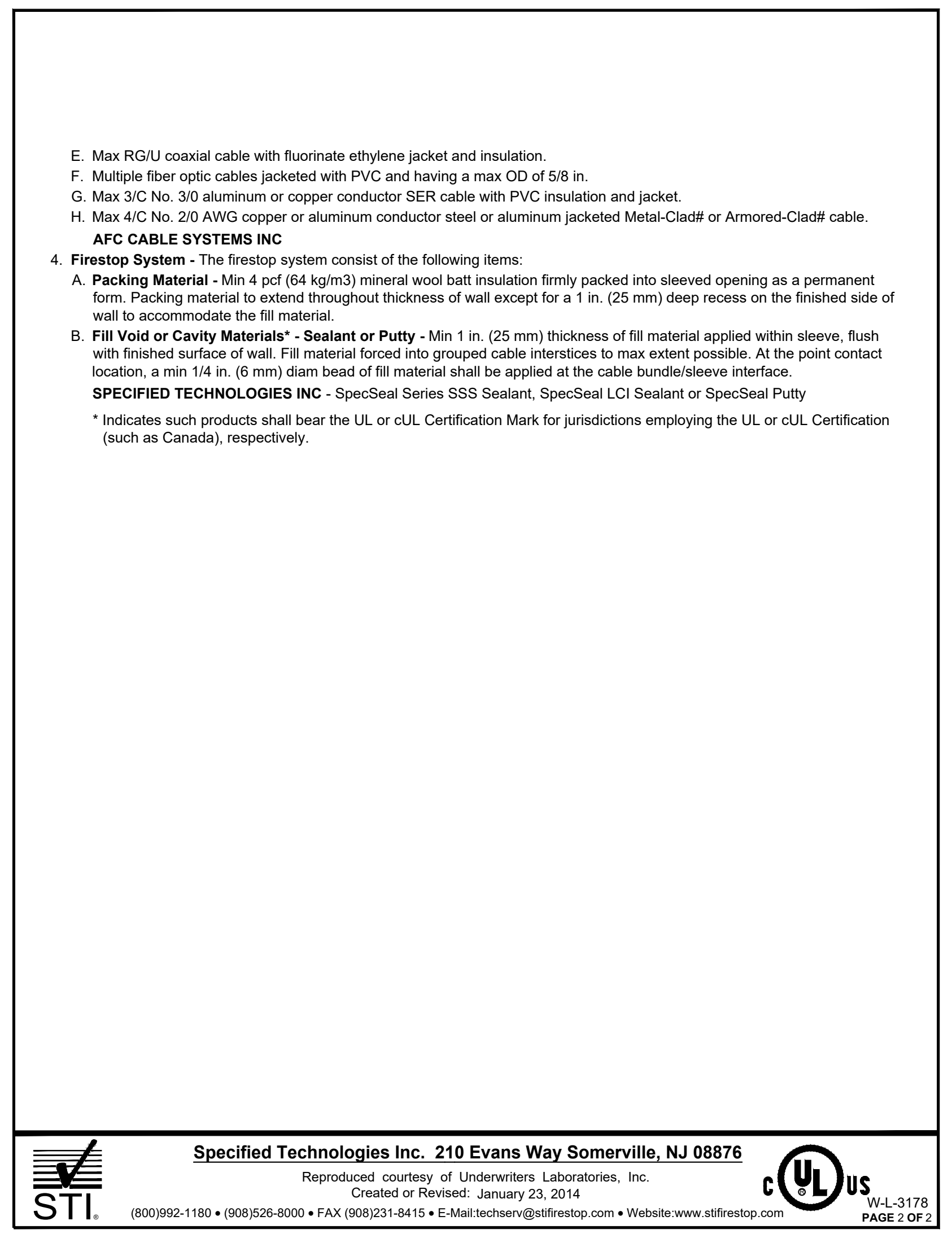

GENERAL NOTES:

1. Refer to section 07 84 00 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.
2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   - Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
3. If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Engineering Judgments shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
4. References:
   - UL Fire Resistance Directory; Current Edition
   - NFPA 101 Life Safety Code
   - All governing local and regional building codes
5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479), ASTM E1966 (UL 1479), ASTM 1966 (UL 2079), ASTM E2307, or ULC-S115 (as required) in tested assemblies that provide a fire rating equal to that of the surrounding construction.

DIVISION 4: Masonry
DIVISION 7: Thermal & Moisture Protection
DIVISION 9: Finishes
DIVISION 22: Plumbing
DIVISION 23: HVAC
DIVISION 26: Electrical
DIVISION 27: Communications

PROJECT NAME:
PROJECT_NAME:

PROJECT LOCATION:
PROJECT_LOCATION:

ARCHITECT/CONSULTANT:
ARCHITECT/CONSULTANT:

TITLE:
STI FIRESTOP SYSTEMS

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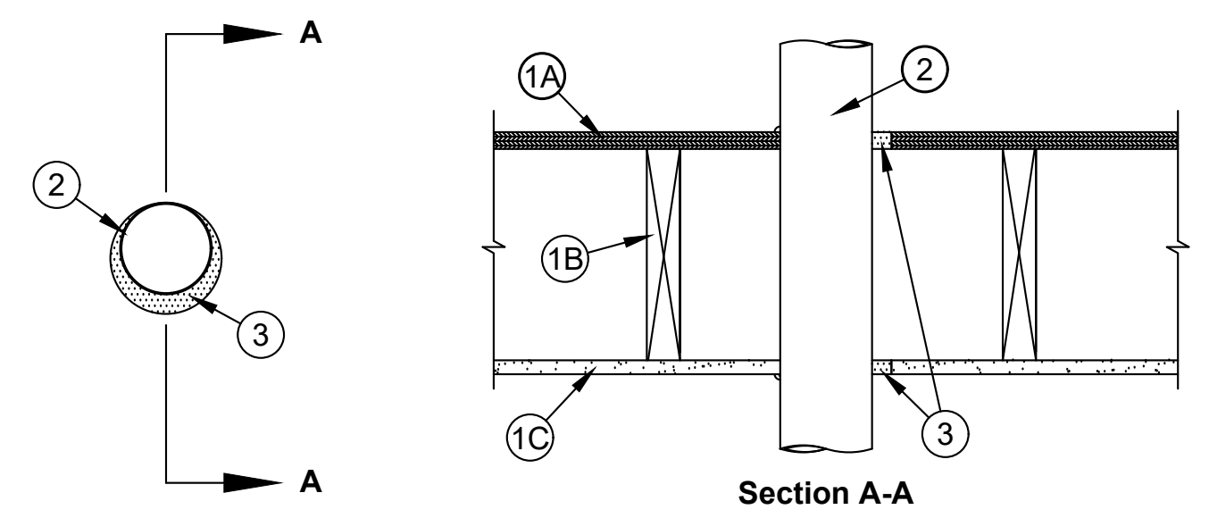
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115

System No. F-C-7014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 1 Hr	F Rating - 1 Hr
T Ratings - 1/4 and 1 Hr (See Item 2)	FT Ratings - 1/4 and 1 Hr (See Item 2)
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 1 Hr
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Ratings - 1/4 and 1 Hr (See Item 2)
	L Rating At Ambient - Less Than 5.1 L/s/m2
	L Rating At 400 F - Less Than 5.1 L/s/m2



Section A-A

1. **Floor - Ceiling Assembly -** The 1 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Designs in the UL Fire Resistance Directory, as summarized below:
   A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Diam of opening is to be max 1 in. (25 mm) larger than diam of steel duct.
   B. **Wood Joists -** Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   C. **Gypsum Board* -** Thickness, type, number of layers and fasteners as required in the individual Floor-Ceiling Design. Diam of opening is to be max 1 in. (25 mm) larger than diam of steel duct.

1A. **Chase Wall -** (Optional, Not Shown) - The through penetrant (Item 2) may be routed through a single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1/2 in. (13 mm) greater than diameter of opening cut in sole and top plates to accommodate the through penetrant (Item 2). The chase wall shall include the following construction features:
   A. **Studs -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
   B. **Sole Plate -** Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm)or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening is to be max 1 in. (25 mm) larger than diam of steel pipe.
   C. **Top Plate -** The single or double top plate shall consist of one or two nom 2 by 4 in (51 by 102 mm) or one or two nom 2 by 6 in. (51 by 152 mm) or one or two sets of parallel nom 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening is to be max 1 in. (25 mm) larger than diam of steel duct.
   D. **Gypsum Board* -** Min 1/2 in. (13 mm) thick rated or nonrated gypsum board.

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2. **Steel Duct -** One nom 4 in. (102 mm) diam (or smaller) No. 30 GA (or heavier) steel duct or one nom 10 in. (254 mm) diam (or smaller) No. 28 GA (or heavier) steel duct to be installed either concentrically or eccentrically within the opening. Annular space to be min 0 in. (point contact) to max 1 in. (25 mm). Steel duct to be rigidly supported on both sides of floor-ceiling assembly.

   T, FT and FTH Ratings are 1 hr for nom 4 in. (102 mm) diam (or smaller) ducts. T, FT and FTH Ratings are 1/4 hr for ducts greater than nom 4 in. (102 mm) diam.

3. **Fill, Void or Cavity Material* - Sealant -** Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with bottom surface of ceiling or top plate. Min 1/4 in. (6 mm) diam bead of fill material applied at point contact location on the top surface of floor or chase wall sole plate and at the penetrant/ceiling or chase wall top plate interface.

   SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant or Type WF300 Firestop Caulk

   *** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

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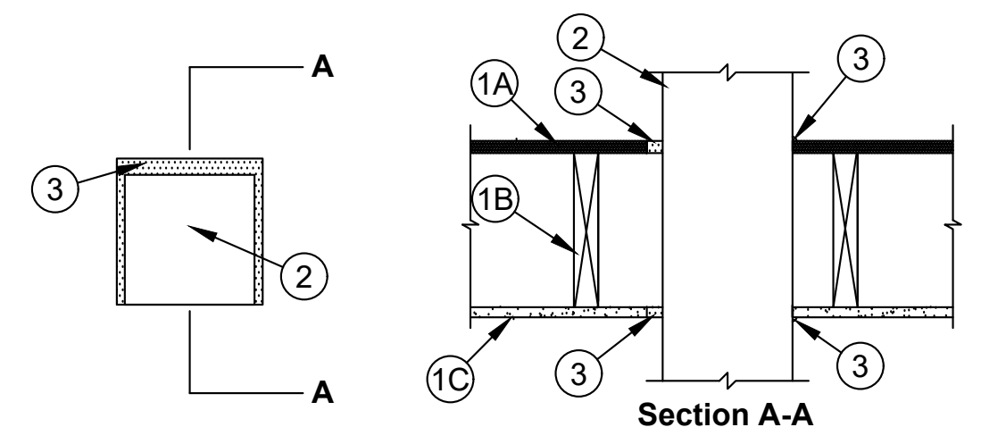
System No. F-C-7023

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 1 Hr	F Rating - 1 Hr
T Rating - 1/4 Hr	FT Rating - 1/4 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 1 Hr
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 1/4 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. **Floor-Ceiling Assembly -** The 1 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Designs in the UL Fire Resistance Directory, as summarized below:
   A. **Flooring System -** Lumber or plywood subfloor with finish floor of lumber, plywood or **Floor Topping Mixture*** as specified in the individual Floor-Ceiling Design. Square or rectangular opening made to accommodate steel duct (Item 2) to be centered between wood joists. Max area of opening is 81 sq in. (0.05 m2). Length and width dimensions of opening to be max 1 in.(25 mm) larger than outside dimensions of steel duct. Long dimension of rectangular opening to be perpendicular to direction of wood joists.
   B. **Wood Joists -** Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or **Structural Wood Members*** with bridging as required and with ends firestopped.
   C. **Gypsum Board* -** Thickness, type, number of layers and fasteners as required in the individual Floor-Ceiling Design. Max area of opening in gypsum board ceiling is 100 sq in. (0.065 m2). Length and width dimensions of opening to be max 1 in. (25 mm) larger than outside dimensions of steel duct.

1A. **Chase Wall -** (Optional, Not Shown) - The steel duct may be routed through a 1 hr fire rated single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1/2 in. (13 mm) greater than width of opening cut in sole and top plates to accommodate the steel duct. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Nom 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
   B. **Sole Plate -** Nom 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max area of opening is 100 sq in. (0.065 m2). Length and width dimensions of opening to be max 1 in. (25 mm) larger than each side of steel duct.
   C. **Top Plate -** The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Length and width dimensions of opening to be max 1 in. (25 mm) larger than each side of steel duct.
   D. **Gypsum Board* -** Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.

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2. **Steel Duct -** Square or rectangular duct formed from No. 28 gauge (or heavier) galvanized steel. Max cross-sectional area of duct to be 64 sq in. (0.04 m2) with a maximum dimension of 12 in. (305 mm). Annular space between the steel duct and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (25 mm). Steel duct to be rigidly supported on both sides of floor-ceiling assembly.
3. **Fill, Void or Cavity Material* - Sealant -** Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with bottom surface of gypsum board ceiling or top plate. Min 1/4 in. (6 mm) diam bead of fill material applied at point contact location on the top surface of floor or chase wall sole plate and at the penetrant/ceiling or penetrant/chase wall top plate interface.

   SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant or Type WF300 Firestop Caulk

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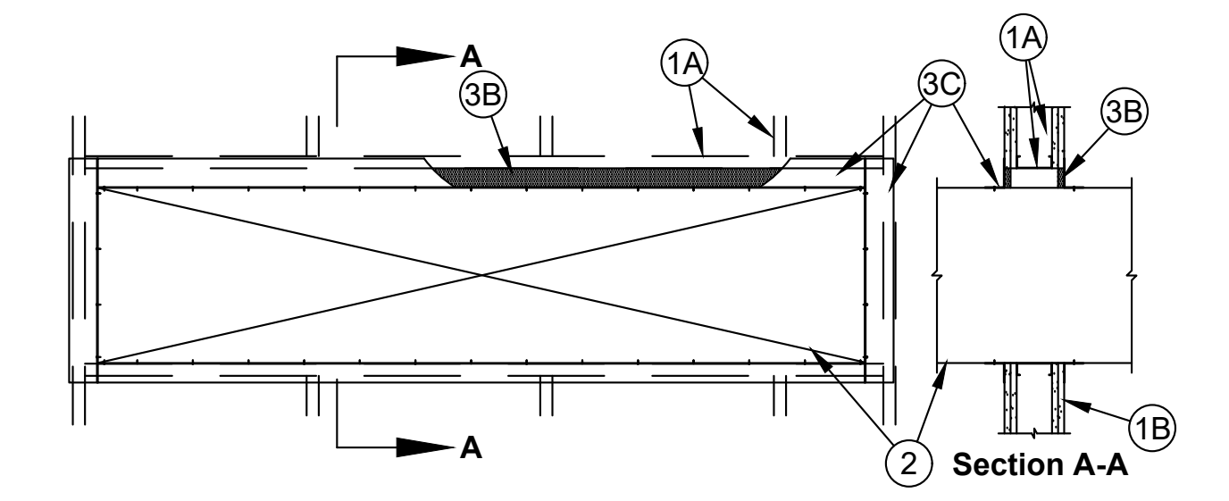
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115

System No. W-L-7025

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 1/2 Hr	FT Rating - 1/2 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 1/2 Hr
	L Rating At Ambient - Less Than 5.1 L/s/m3
	L Rating At 204 C- Less Than 5.1 L/s/m3



Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W 400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel channel studs spaced max 24 in. (610 mm) OC. Additional steel studs shall be used to completely frame the opening.
   B. **Gypsum Board* -** 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Design in the UL Fire Resistance Directory. Max area of opening is 73.7 sq ft (6.85 m2) with a max dimension of 104 in. (2.64 m).

   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Steel Duct -** Max 100 in. by 100 in. (2.54 by 2.54 m) No. 26 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. The space between the steel duct and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Steel duct to be rigidly supported on both sides of the wall assembly.

2A. **Coated Ducts* -** As an alternate to Item 2, max 60 by 60 in. (1524 by 1524 mm) steel duct coated with BW11 coating material. Duct sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. Annular space between duct and periphery of opening shall be shall be min 0in. (point contact) to max 2 in. (51 mm). Duct to be rigidly supported on both sides wall assembly.

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3. **Firestop System -** The firestop system shall consist of the following:
   A. **Packing Material -** (Optional, Not Shown) - Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction fitted into annular space. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
   B. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of fill material shall be applied at the point contact location between the steel duct and the gypsum board. For 2 hr Rated walls when LC150 or LE600 Sealant is used, fill material thickness installed to full depth of gypsum board layers on each side of wall assembly.

      SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, SpecSeal LCI Sealant, SpecSeal LC150 Sealant or SpecSeal LE 600 Sealant.

   C. **Steel Retaining Angles -** Min No. 16 gauge (0.059 in. or 15 mm) galv steel angles sized to lap steel duct a min of 2 in. (51 mm) and to lap wall surfaces a min of 1 in. (25 mm). Angles attached to steel duct on both sides of wall with min No. 10 by 1/2 in. (13 mm) long steel sheet metal screws located a max of 1 in. (25 mm) from each end of steel duct and spaced a max of 6 in. (152 mm) OC.

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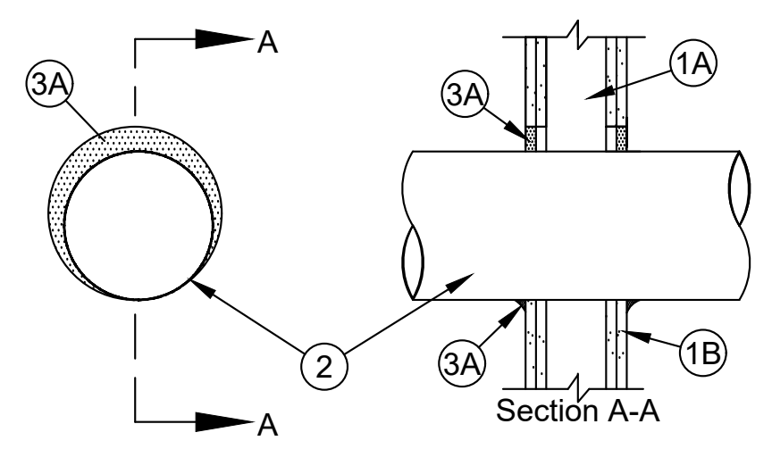
System No. W-L-7026

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 5.1 L/s/m2
	L Rating At 204 C- Less Than 5.1 L/s/m2



Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel channel studs spaced max 24 in. (610 mm) OC. When diam of opening exceeds width of stud cavity, additional lengths of steel stud installed to frame out opening around steel duct (Item 2).
   B. **Gypsum Board* -** 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Design in the UL Fire Resistance Directory. Max diam of opening is 25-1/2 in. (648 mm).

   The hourly F and FH Rating of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Steel Duct -** Max 24 in. (610 mm) diam No. 28 gauge (or heavier) galv steel vent duct or No. 26 gauge (or heavier) spiral wound galv steel duct. One steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (point contact) to max 1-1/2 in. (38 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of the wall assembly.

2A. **Coated Ducts* -** As an alternate to Item 2, max 24 in. (610 mm) diam (or smaller) steel duct coated with BW11 coating material. Duct sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. One duct to be installed either concentrically or eccentrically within the firestop system. The annular space between the duct and the periphery of the opening shall be min 0 in. (point contact) to a max of 1-1/2 in. (38 mm). Duct to be rigidly supported on both sides o wall assembly.

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3. **Firestop System -** The firestop system shall consist of the following:
   A. **Packing Material -** (Optional, Not Shown) - Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).
   B. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of fill material shall be applied at the point contact location between the steel duct and the gypsum board. For 2 hr Rated walls when LC150 or LE600 Sealant is used, fill material thickness installed to full depth of gypsum board layers on each side of wall assembly.

      SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, SpecSeal LC150 Sealant, or SpecSeal LE600 Sealant

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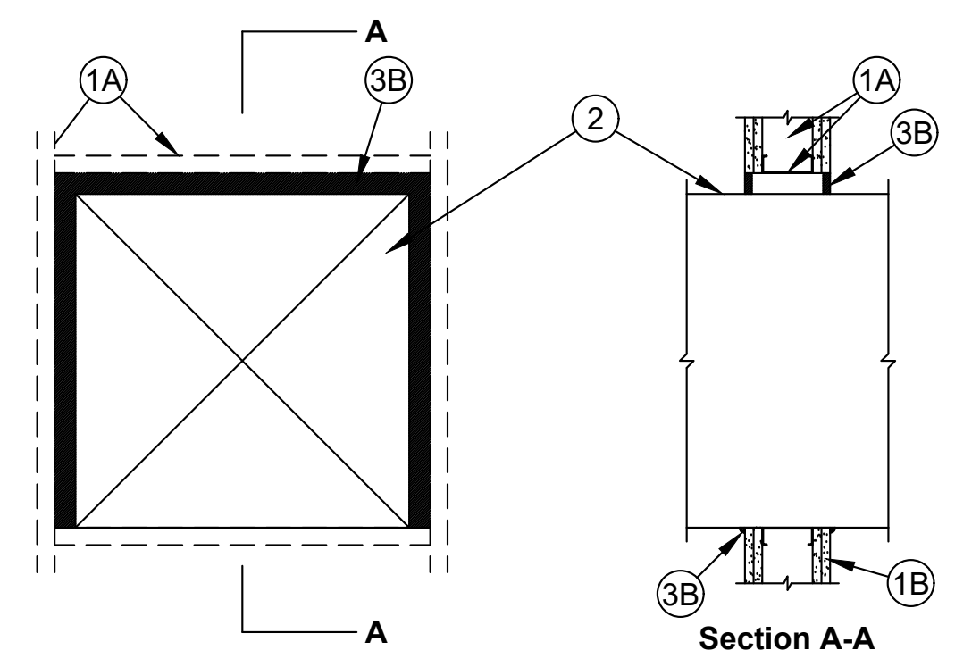
System No. W-L-7029

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 1/4 Hr	FT Rating - 1/4 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Rating - 1/4 Hr



Section A-A

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400, or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel channel studs spaced max 24 in. (610 mm) OC. Additional steel studs shall be used to completely frame opening.
   B. **Gypsum Board* -** 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Designs in the UL Fire Resistance Directory. Max area of opening is 690 sq in. (0.45 m2) with max dimension of 27 in. (686 mm).

   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall in which it is installed.

2. **Steel Duct -** Max 24 by 24 in. (610 by 610 mm) No. 26 gauge (or heavier) steel duct to be installed within the opening. The annular space within the firestop system shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Steel duct to be rigidly supported on both sides of the wall assembly.

2A. **Coated Ducts* -** As an alternate to Item 2, max 24 by 24 in. (610 by 610 mm) steel duct coated with BW11 coating material. Duct sections shall be assembled using bolted flanges or SMACNA approved Transverse Joint Reinforcements. Annular space between duct and periphery of opening shall be shall be min 0 in. (point contact) to max 2 in. (51 mm). Duct to be rigidly supported on both sides of wall assembly.

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3. **Firestop System -** The firestop system shall consist of the following:
   A. **Packing Material -** (Optional, Not Shown) - Mineral wool batt insulation, foam backer rod or glass fiber insulation installed as a permanent form to facilitate installation of fill material (Item 3B).
   B. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Min 1/4 in. (6 mm) diam bead of fill material to be applied at point contact location between the steel duct and the gypsum board.

      SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

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GENERAL NOTES:

1. Refer to section 07 84 00 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.
2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   - Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
3. If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Engineering Judgments shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
4. References:
   - UL Fire Resistance Directory; Current Edition
   - NFPA 101 Life Safety Code
   - All governing local and regional building codes
5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479), ASTM E1966 (UL 1479), ASTM 1966 (UL 2079), ASTM E2307, or ULC-S115 (as required) in tested assemblies that provide a fire rating equal to that of the surrounding construction.

DIVISION 4: Masonry
DIVISION 7: Thermal & Moisture Protection
DIVISION 9: Finishes
DIVISION 22: Plumbing
DIVISION 23: HVAC
DIVISION 26: Electrical
DIVISION 27: Communications

PROJECT NAME:

PROJECT_NAME:

PROJECT LOCATION:

PROJECT_LOCATION:

ARCHITECT/CONSULTANT:

ARCHITECT/CONSULTANT:

TITLE:

STI FIRESTOP SYSTEMS

Specified Technologies Inc.
210 Evans Way Somerville, NJ 08876
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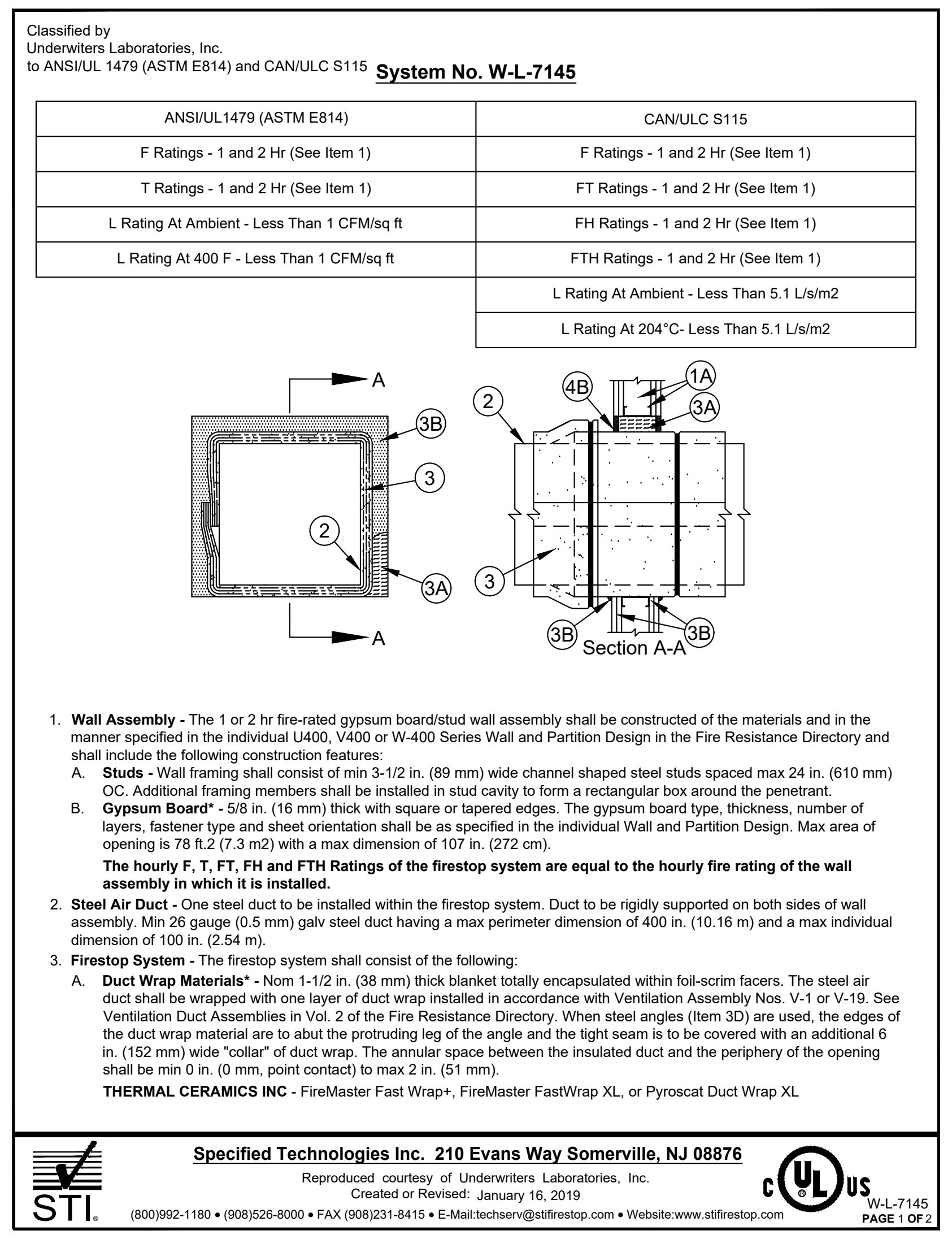
Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-7145**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Item 1)	FT Ratings - 1 and 2 Hr (See Item 1)
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Ratings - 1 and 2 Hr (See Item 1)
	L Rating At Ambient - Less Than 5.1 L/s/m2
	L Rating At 204°C- Less Than 5.1 L/s/m2

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400, V400 or W-400 Series Wall and Partition Design in the Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing shall consist of min 3-1/2 in. (89 mm) wide channel shaped steel studs spaced max 24 in. (610 mm) OC. Additional framing members shall be installed in stud cavity to form a rectangular box around the penetrant.
   B. **Gypsum Board* -** 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max area of opening is 78 ft.2 (7.3 m2) with a max dimension of 107 in. (272 cm).

   The hourly F, T, FT, FH and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Steel Air Duct -** One steel duct to be installed within the firestop system. Duct to be rigidly supported on both sides of wall assembly. Min 26 gauge (0.5 mm) galv steel duct having a max perimeter dimension of 400 in. (10.16 m) and a max individual dimension of 100 in. (2.54 m).
3. **Firestop System -** The firestop system shall consist of the following:
   A. **Duct Wrap Materials* -** Nom 1-1/2 in. (38 mm) thick blanket totally encapsulated within foil-scrim facers. The steel air duct shall be wrapped with one layer of duct wrap installed in accordance with Ventilation Assembly Nos. V-1 or V-19. See Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory. When steel angles (Item 3D) are used, the edges of the duct wrap material are to abut the protruding leg of the angle and the tight seam is to be covered with an additional 6 in. (152 mm) wide "collar" of duct wrap. The annular space between the insulated duct and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm).

   THERMAL CERAMICS INC - FireMaster Fast Wrap+, FireMaster FastWrap XL, or Pyroscat Duct Wrap XL

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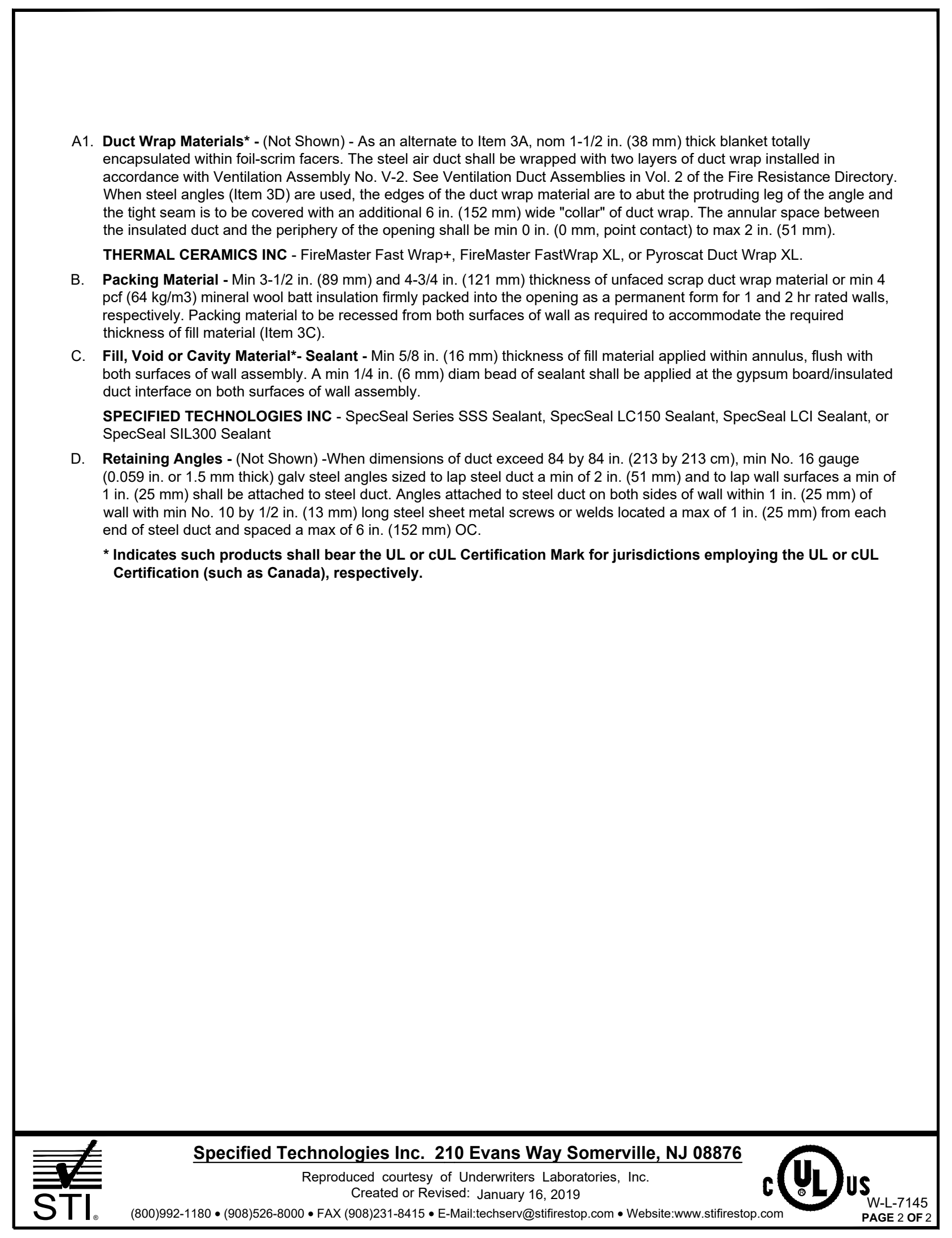
A1. **Duct Wrap Materials* -** (Not Shown) - As an alternate to Item 3A, nom 1-1/2 in. (38 mm) thick blanket totally encapsulated within foil-scrim facers. The steel air duct shall be wrapped with two layers of duct wrap installed in accordance with Ventilation Assembly No. V-2. See Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory. When steel angles (Item 3D) are used, the edges of the duct wrap material are to abut the protruding leg of the angle and the tight seam is to be covered with an additional 6 in. (152 mm) wide "collar" of duct wrap. The annular space between the insulated duct and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm).

THERMAL CERAMICS INC - FireMaster Fast Wrap+, FireMaster FastWrap XL, or Pyroscat Duct Wrap XL.

B. **Packing Material -** Min 3-1/2 in. (89 mm) and 4-3/4 in. (121 mm) thickness of unfaced scrap duct wrap material or min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into the opening as a permanent form for 1 and 2 hr rated walls, respectively. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material (Item 3C).

C. **Fill, Void or Cavity Material*- Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. A min 1/4 in. (6 mm) diam bead of sealant shall be applied at the gypsum board/insulated duct interface on both surfaces of wall assembly.

SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LC150 Sealant, SpecSeal LCI Sealant, or SpecSeal SIL300 Sealant

D. **Retaining Angles -** (Not Shown) -When dimensions of duct exceed 84 by 84 in. (213 by 213 cm), min No. 16 gauge (0.059 in. or 1.5 mm thick) galv steel angles sized to lap steel duct a min of 2 in. (51 mm) and to lap wall surfaces a min of 1 in. (25 mm) shall be attached to steel duct. Angles attached to steel duct on both sides of wall within 1 in. (25 mm) of wall with min No. 10 by 1/2 in. (13 mm) long steel sheet metal screws or welds located a max of 1 in. (25 mm) from each end of steel duct and spaced a max of 6 in. (152 mm) OC.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

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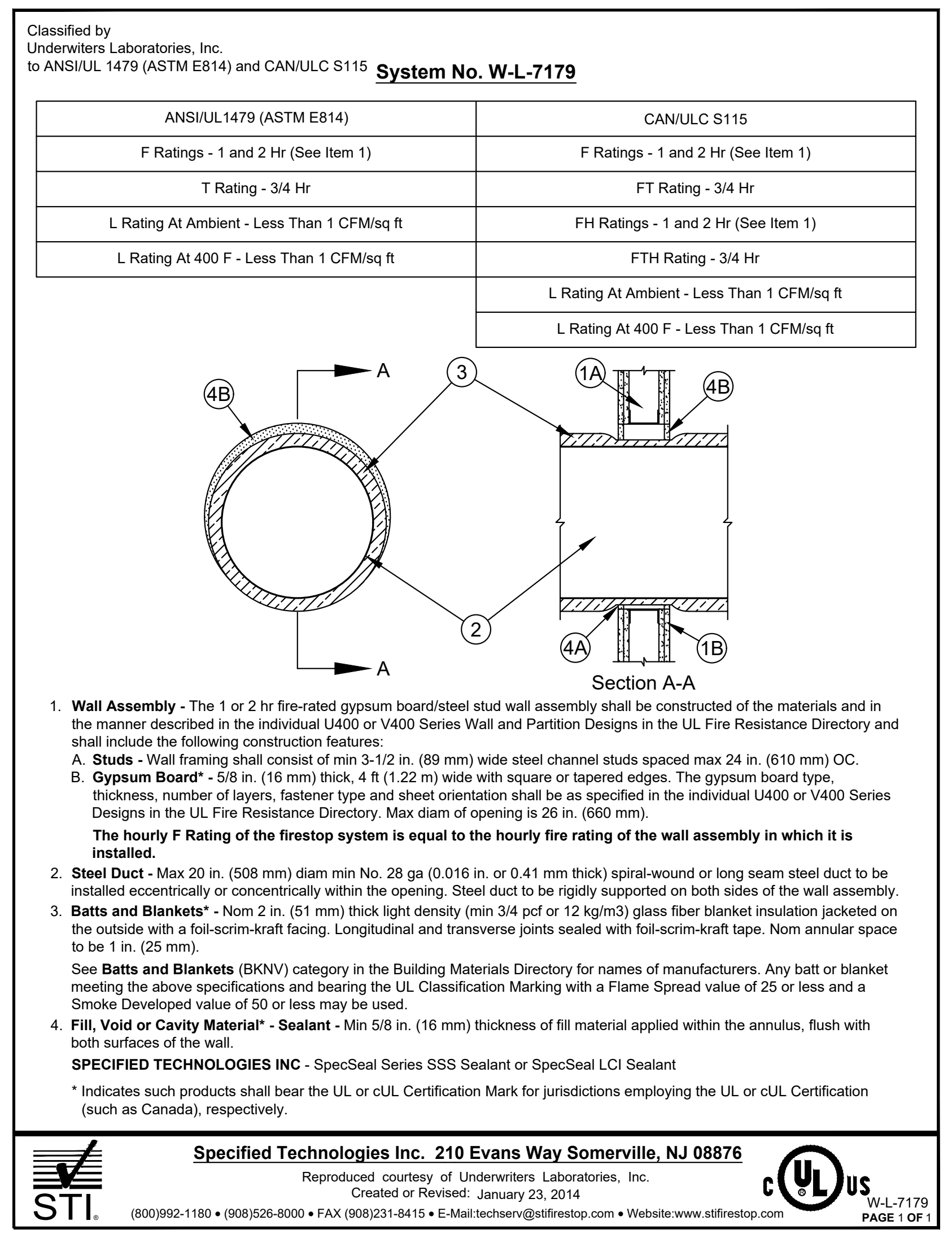
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Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-7179**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 3/4 Hr	FT Rating - 3/4 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 3/4 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel channel studs spaced max 24 in. (610 mm) OC.
   B. **Gypsum Board* -** 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U400 or V400 Series Designs in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Steel Duct -** Max 20 in. (508 mm) diam min No. 28 ga (0.016 in. or 0.41 mm thick) spiral-wound or long seam steel duct to be installed eccentrically or concentrically within the opening. Steel duct to be rigidly supported on both sides of the wall assembly.
3. **Batts and Blankets* -** Nom 2 in. (51 mm) thick light density (min 3/4 pcf or 12 kg/m3) glass fiber blanket insulation jacketed on the outside with a foil-scrim-kraft facing. Longitudinal and transverse joints sealed with foil-scrim-kraft tape. Nom annular space to be 1 in. (25 mm).

   See **Batts and Blankets** (BKNV) category in the Building Materials Directory for names of manufacturers. Any batt or blanket meeting the above specifications and bearing the UL Classification Marking with a Flame Spread value of 25 or less and a Smoke Developed value of 50 or less may be used.
4. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of the wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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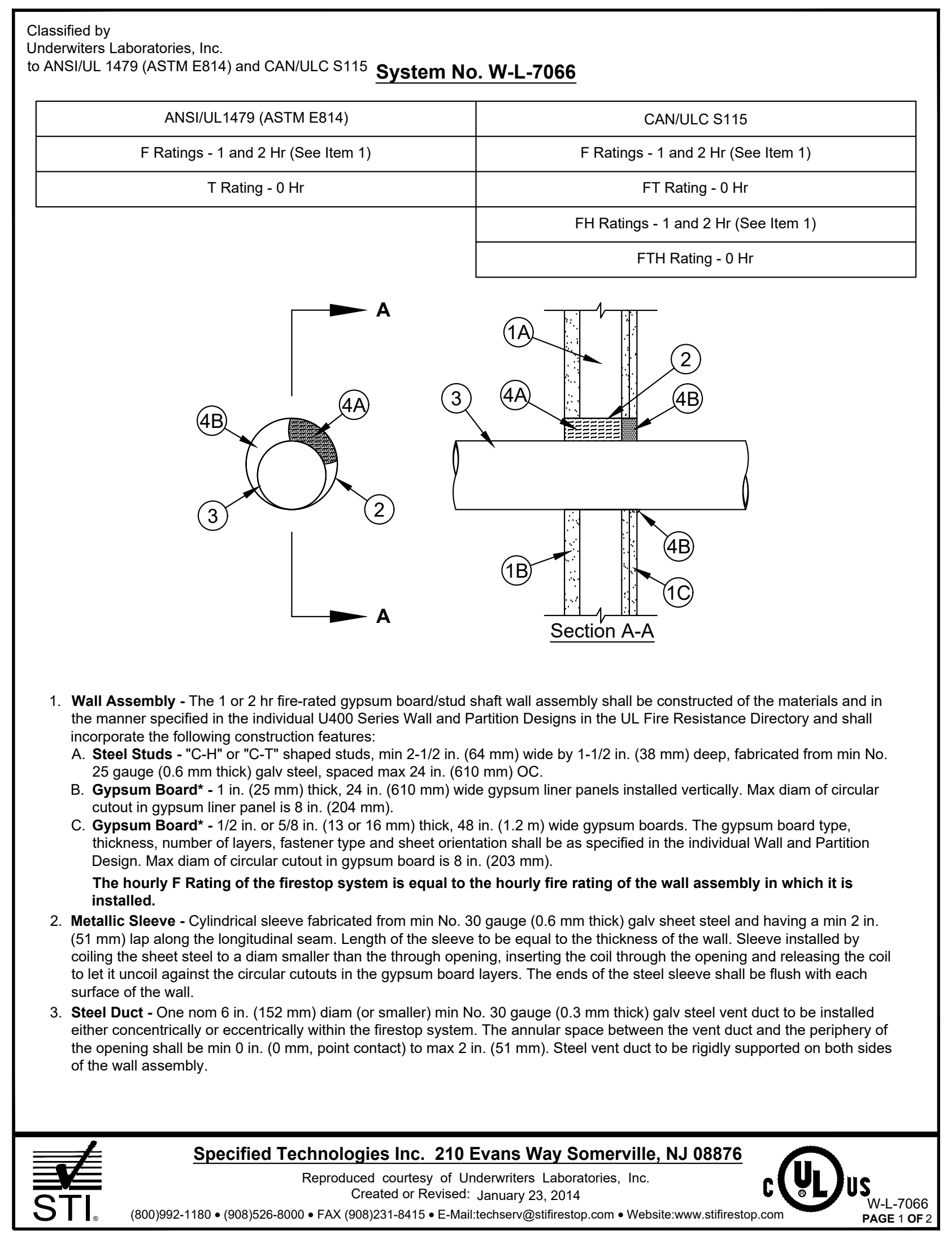
Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-7066**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Rating - 0 Hr

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud shaft wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. **Steel Studs -** "C-H" or "C-T" shaped studs, min 2-1/2 in. (64 mm) wide by 1-1/2 in. (38 mm) deep, fabricated from min No. 25 gauge (0.6 mm thick) galv steel, spaced max 24 in. (610 mm) OC.
   B. **Gypsum Board* -** 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner panels installed vertically. Max diam of circular cutout in gypsum liner panel is 8 in. (204 mm).
   C. **Gypsum Board* -** 1/2 in. or 5/8 in. (13 or 16 mm) thick, 48 in. (1.2 m) wide gypsum boards. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of circular cutout in gypsum board is 8 in. (203 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Metallic Sleeve -** Cylindrical sleeve fabricated from min No. 30 gauge (0.6 mm thick) galv sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Length of the sleeve to be equal to the thickness of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers. The ends of the steel sleeve shall be flush with each surface of the wall.
3. **Steel Duct -** One nom 6 in. (152 mm) diam (or smaller) min No. 30 gauge (0.3 mm thick) galv steel vent duct to be installed either concentrically or eccentrically within the firestop system. The annular space between the vent duct and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Steel vent duct to be rigidly supported on both sides of the wall assembly.

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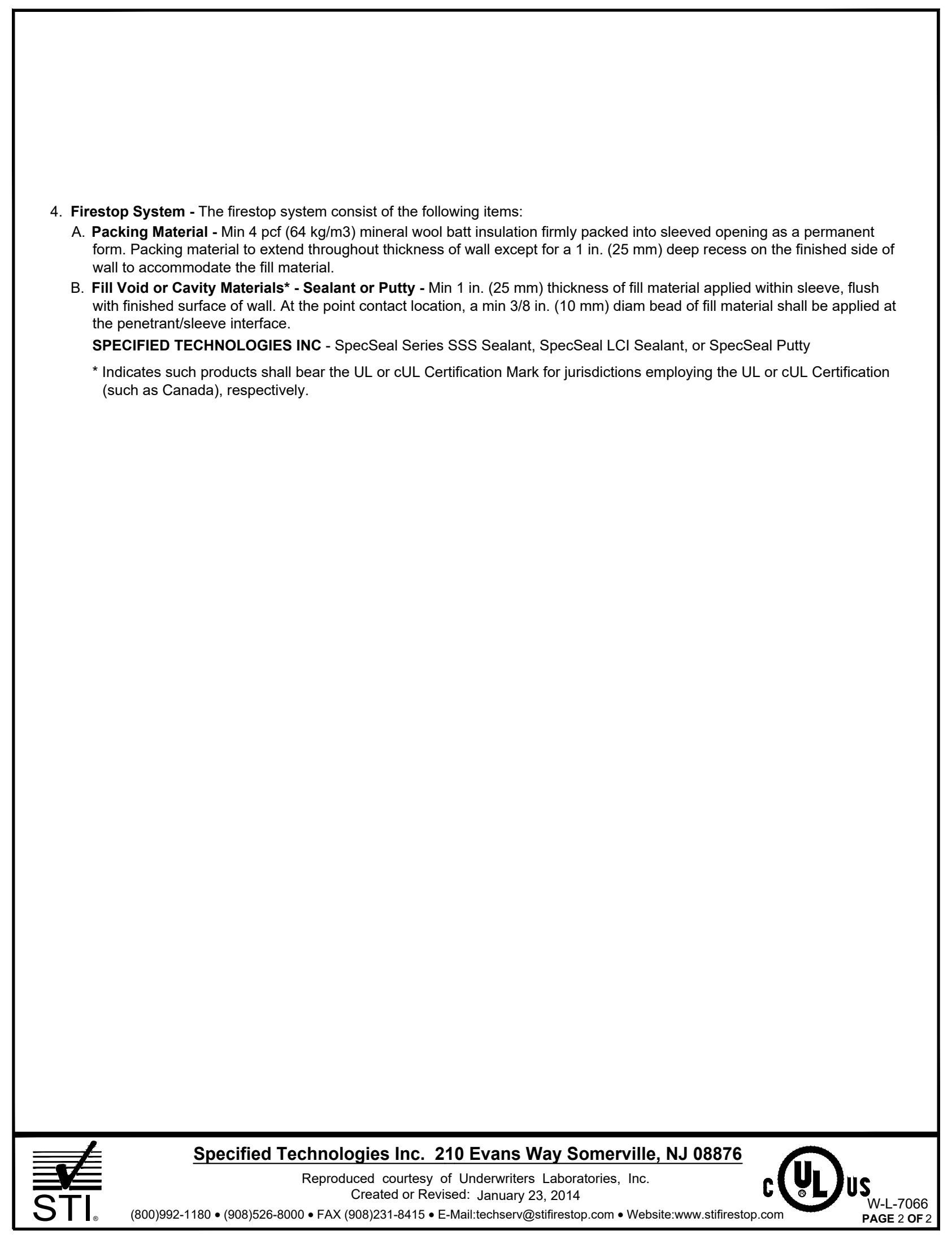
4. **Firestop System -** The firestop system consist of the following items:
   A. **Packing Material -** Min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into sleeved opening as a permanent form. Packing material to extend throughout thickness of wall except for a 1 in. (25 mm) deep recess on the finished side of wall to accommodate the fill material.
   B. **Fill Void or Cavity Materials* - Sealant or Putty -** Min 1 in. (25 mm) thickness of fill material applied within sleeve, flush with finished surface of wall. At the point contact location, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the penetrant/sleeve interface.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, or SpecSeal Putty

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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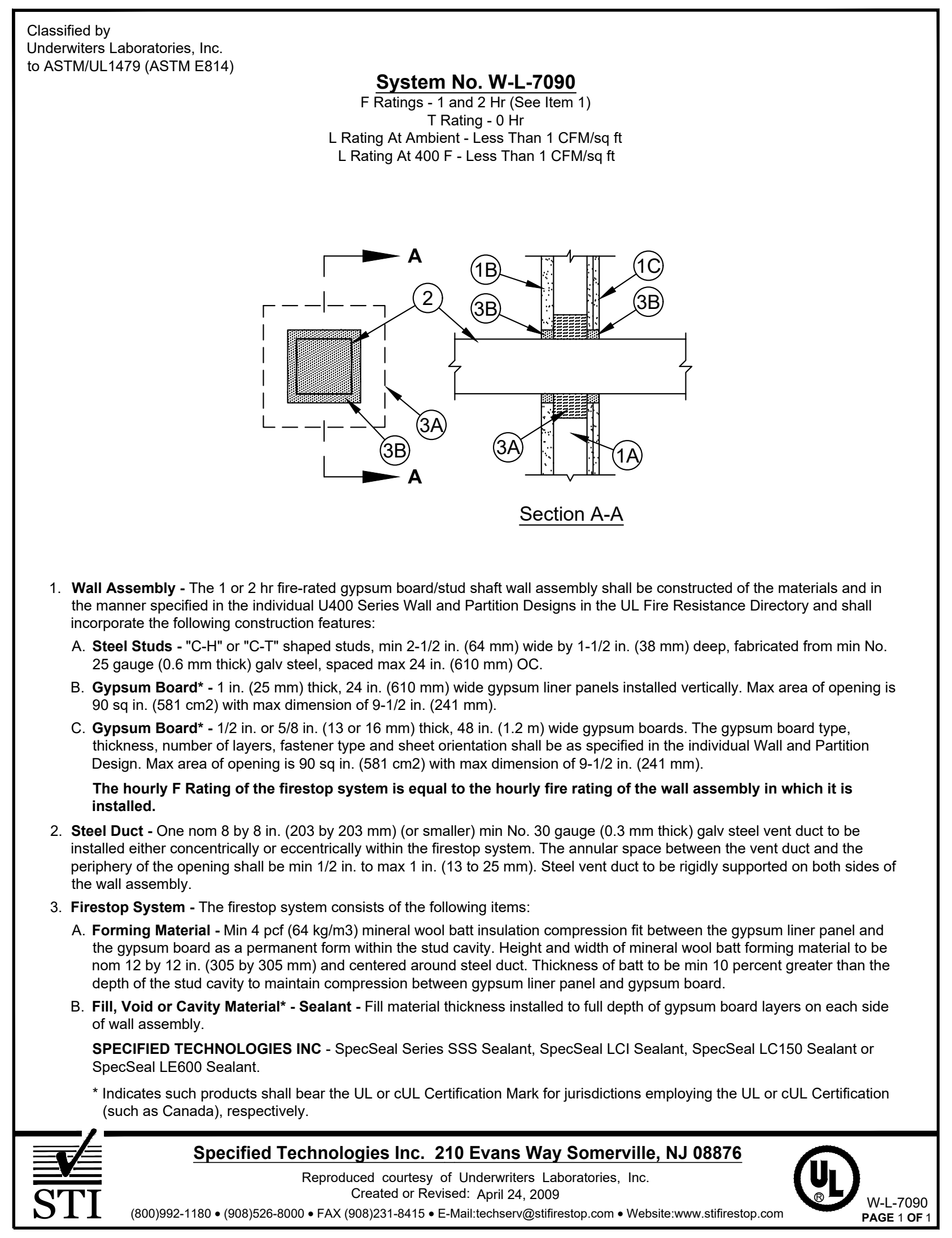
Classified by
Underwiters Laboratories, Inc.
to ASTM/UL1479 (ASTM E814)

System No. W-L-7090
F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud shaft wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. **Steel Studs -** "C-H" or "C-T" shaped studs, min 2-1/2 in. (64 mm) wide by 1-1/2 in. (38 mm) deep, fabricated from min No. 25 gauge (0.6 mm thick) galv steel, spaced max 24 in. (610 mm) OC.
   B. **Gypsum Board* -** 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner panels installed vertically. Max area of opening is 90 sq in. (581 cm2) with max dimension of 9-1/2 in. (241 mm).
   C. **Gypsum Board* -** 1/2 in. or 5/8 in. (13 or 16 mm) thick, 48 in. (1.2 m) wide gypsum boards. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max area of opening is 90 sq in. (581 cm2) with max dimension of 9-1/2 in. (241 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Steel Duct -** One nom 8 by 8 in. (203 by 203 mm) (or smaller) min No. 30 gauge (0.3 mm thick) galv steel vent duct to be installed either concentrically or eccentrically within the firestop system. The annular space between the vent duct and the periphery of the opening shall be min 1/2 in. to max 1 in. (13 to 25 mm). Steel vent duct to be rigidly supported on both sides of the wall assembly.
3. **Firestop System -** The firestop system consists of the following items:
   A. **Forming Material -** Min 4 pcf (64 kg/m3) mineral wool batt insulation compression fit between the gypsum liner panel and the gypsum board as a permanent form within the stud cavity. Height and width of mineral wool batt forming material to be nom 12 by 12 in. (305 by 305 mm) and centered around steel duct. Thickness of batt to be min 10 percent greater than the depth of the stud cavity to maintain compression between gypsum liner panel and gypsum board.
   B. **Fill, Void or Cavity Material* - Sealant -** Fill material thickness installed to full depth of gypsum board layers on each side of wall assembly.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, SpecSeal LC150 Sealant or SpecSeal LE600 Sealant.

   * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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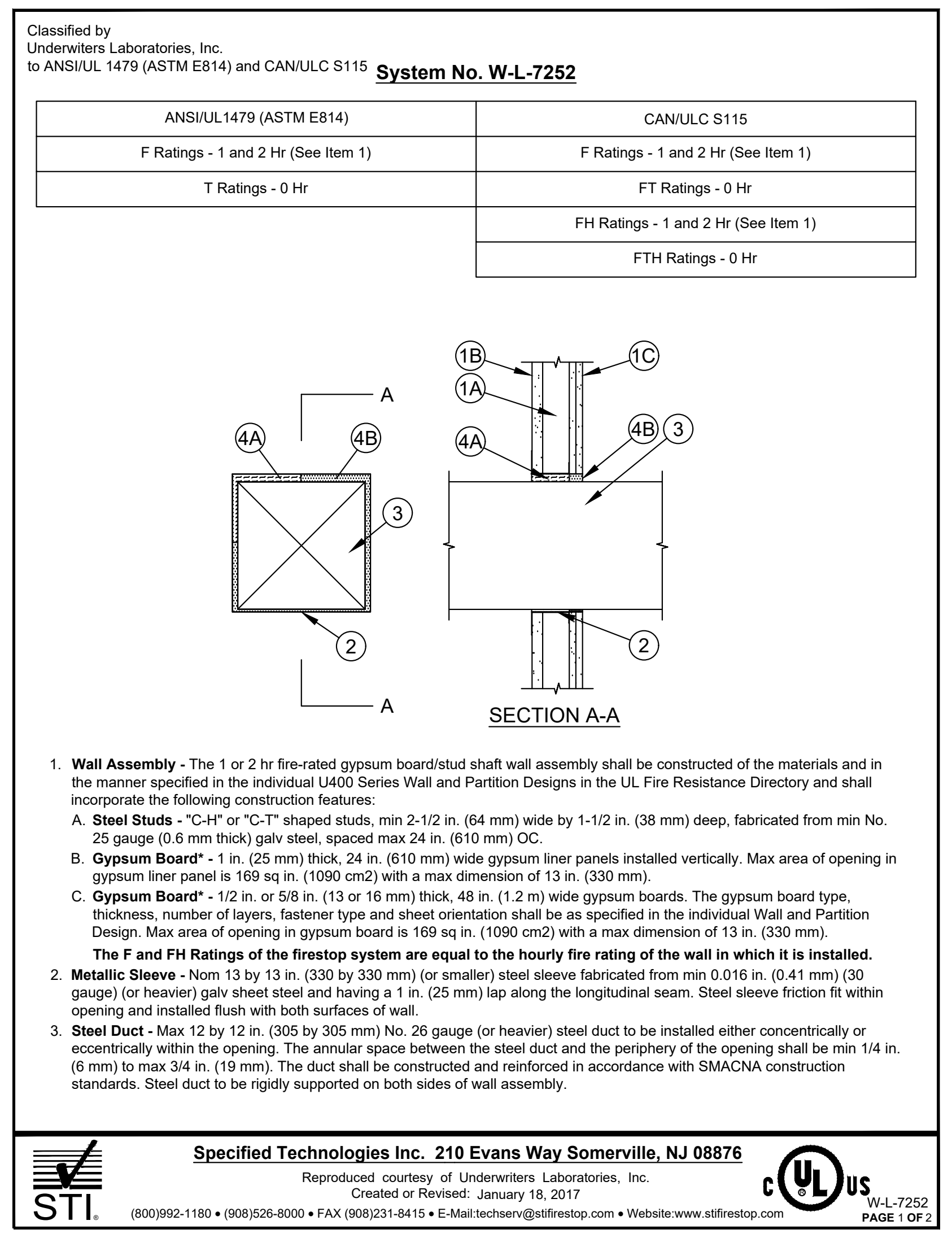
Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-7252**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 0 Hr	FT Ratings - 0 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Ratings - 0 Hr

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud shaft wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. **Steel Studs -** "C-H" or "C-T" shaped studs, min 2-1/2 in. (64 mm) wide by 1-1/2 in. (38 mm) deep, fabricated from min No. 25 gauge (0.6 mm thick) galv steel, spaced max 24 in. (610 mm) OC.
   B. **Gypsum Board* -** 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner panels installed vertically. Max area of opening in gypsum liner panel is 169 sq in. (1090 cm2) with a max dimension of 13 in. (330 mm).
   C. **Gypsum Board* -** 1/2 in. or 5/8 in. (13 or 16 mm) thick, 48 in. (1.2 m) wide gypsum boards. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max area of opening in gypsum board is 169 sq in. (1090 cm2) with a max dimension of 13 in. (330 mm).

   The F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall in which it is installed.
2. **Metallic Sleeve -** Nom 13 by 13 in. (330 by 330 mm) (or smaller) steel sleeve fabricated from min 0.016 in. (0.41 mm) (30 gauge) (or heavier) galv sheet steel and having a 1 in. (25 mm) lap along the longitudinal seam. Steel sleeve friction fit within opening and installed flush with both surfaces of wall.
3. **Steel Duct -** Max 12 by 12 in. (305 by 305 mm) No. 26 gauge (or heavier) steel duct to be installed either concentrically or eccentrically within the opening. The annular space between the steel duct and the periphery of the opening shall be min 1/4 in. (6 mm) to max 3/4 in. (19 mm). The duct shall be constructed and reinforced in accordance with SMACNA construction standards. Steel duct to be rigidly supported on both sides of wall assembly.

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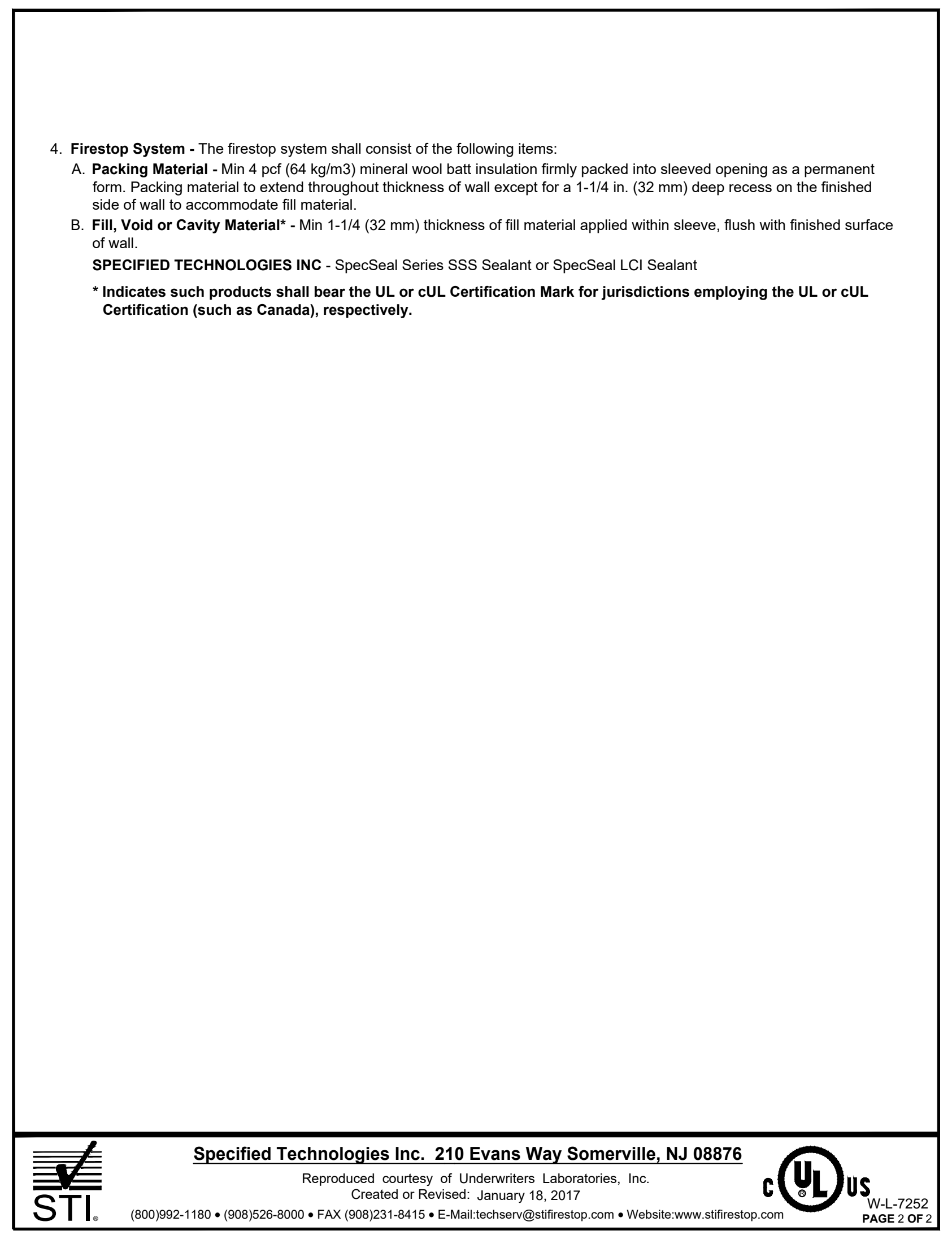
4. **Firestop System -** The firestop system shall consist of the following items:
   A. **Packing Material -** Min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into sleeved opening as a permanent form. Packing material to extend throughout thickness of wall except for a 1-1/4 in. (32 mm) deep recess on the finished side of wall to accommodate fill material.
   B. **Fill, Void or Cavity Material* -** Min 1-1/4 (32 mm) thickness of fill material applied within sleeve, flush with finished surface of wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

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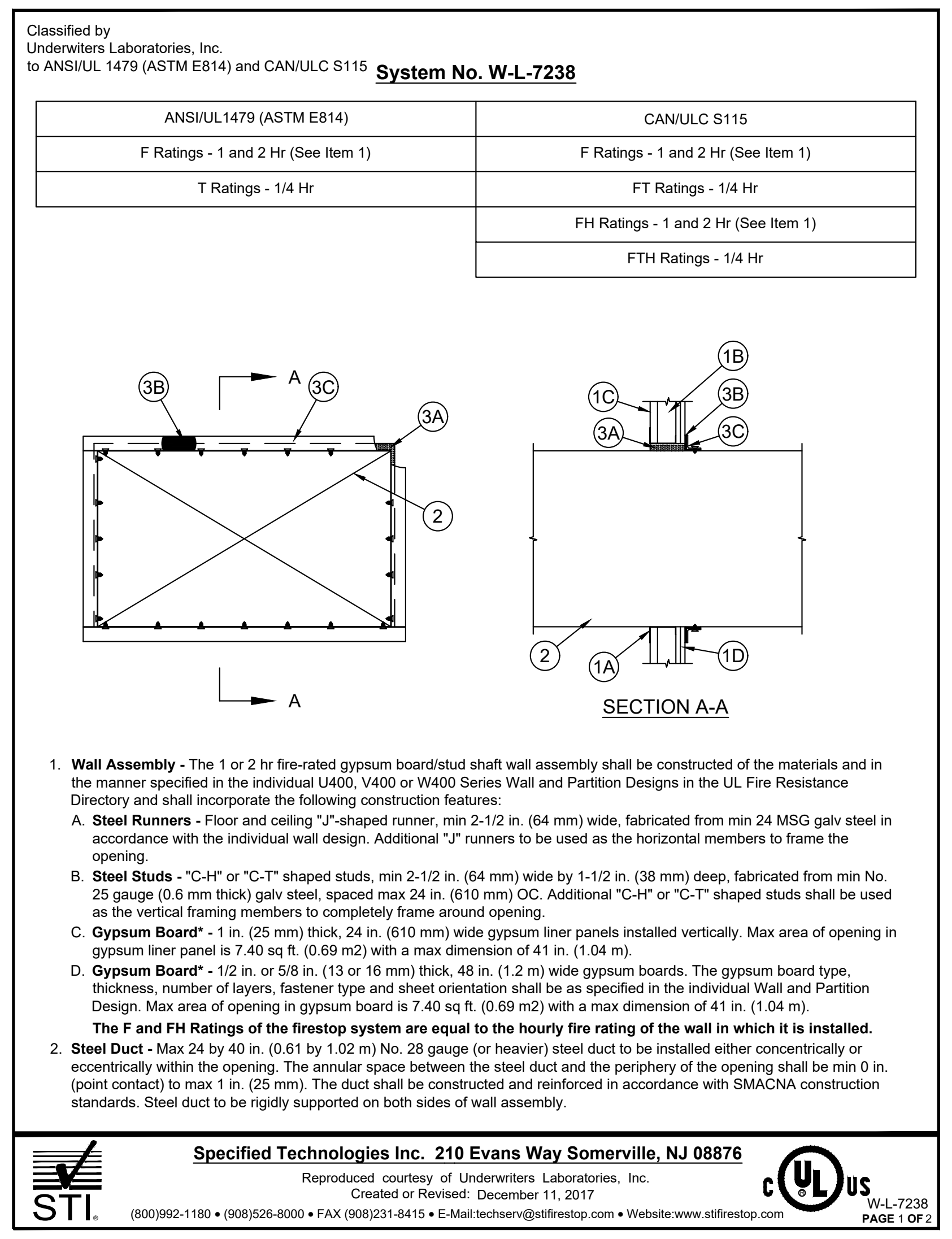
Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-7238**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1/4 Hr	FT Ratings - 1/4 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Ratings - 1/4 Hr

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud shaft wall assembly shall be constructed of the materials and in the manner specified in the individual U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. **Steel Runners -** Floor and ceiling "J"-shaped runner, min 2-1/2 in. (64 mm) wide, fabricated from min 24 MSG galv steel in accordance with the individual wall design. Additional "J" runners to be used as the horizontal members to frame the opening.
   B. **Steel Studs** - "C-H" or "C-T" shaped studs, min 2-1/2 in. (64 mm) wide by 1-1/2 in. (38 mm) deep, fabricated from min No. 25 gauge (0.6 mm thick) galv steel, spaced max 24 in. (610 mm) OC. Additional "C-H" or "C-T" shaped studs shall be used as the vertical framing members to completely frame around opening.
   C. **Gypsum Board* -** 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner panels installed vertically. Max area of opening in gypsum liner panel is 7.40 sq ft. (0.69 m2) with a max dimension of 41 in. (1.04 m).
   D. **Gypsum Board* -** 1/2 in. or 5/8 in. (13 or 16 mm) thick, 48 in. (1.2 m) wide gypsum boards. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max area of opening in gypsum board is 7.40 sq ft. (0.69 m2) with a max dimension of 41 in. (1.04 m).

   The F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall in which it is installed.
2. **Steel Duct -** Max 24 by 40 in. (0.61 by 1.02 m) No. 28 gauge (or heavier) steel duct to be installed either concentrically or eccentrically within the opening. The annular space between the steel duct and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (25 mm). The duct shall be constructed and reinforced in accordance with SMACNA construction standards. Steel duct to be rigidly supported on both sides of wall assembly.

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W-L-7238
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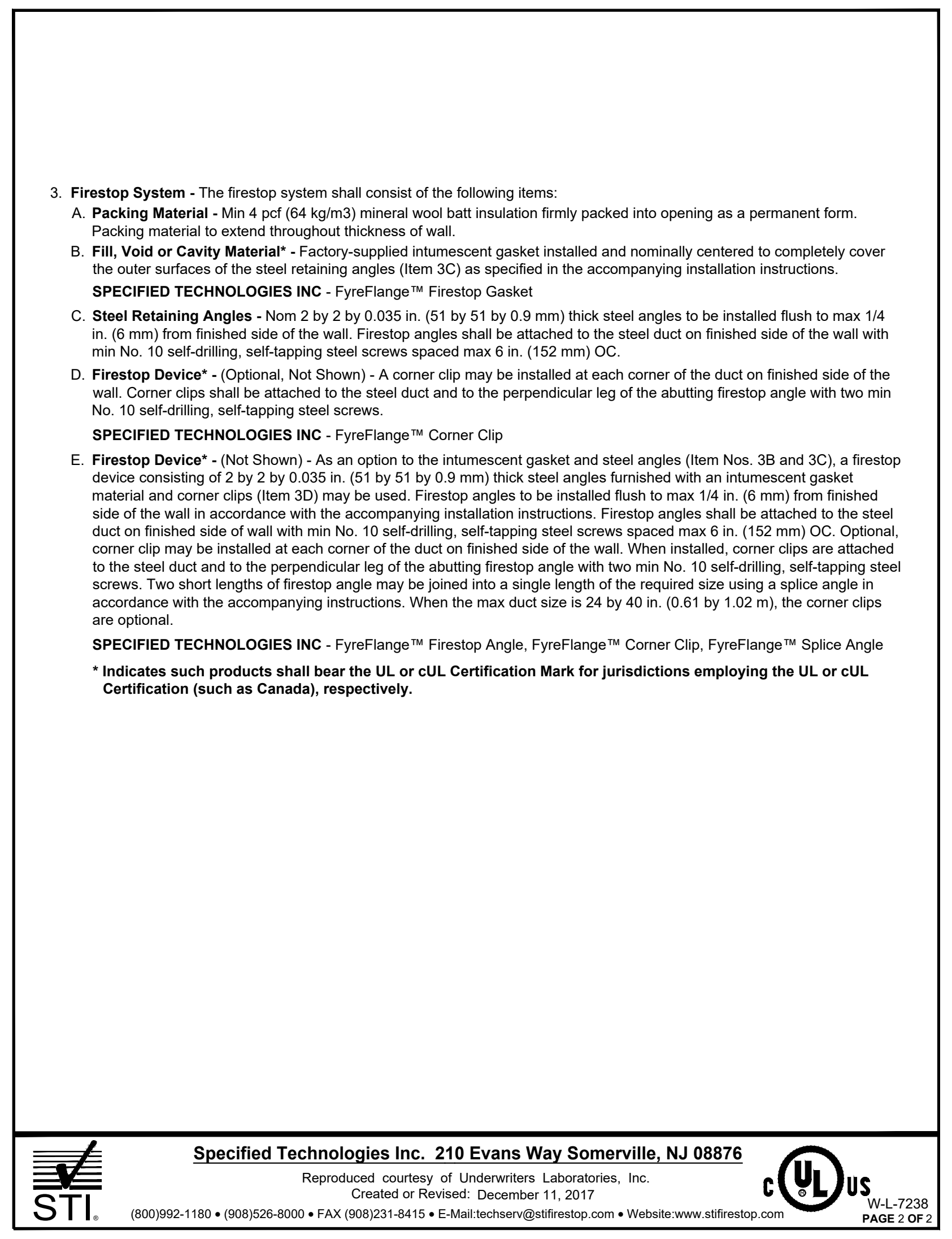
3. **Firestop System -** The firestop system shall consist of the following items:
   A. **Packing Material -** Min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to extend throughout thickness of wall.
   B. **Fill, Void or Cavity Material* -** Factory-supplied intumescent gasket installed and nominally centered to completely cover the outer surfaces of the steel retaining angles (Item 3C) as specified in the accompanying installation instructions.

   SPECIFIED TECHNOLOGIES INC - FyreFlange™ Firestop Gasket
   C. **Steel Retaining Angles -** Nom 2 by 2 by 0.035 in. (51 by 51 by 0.9 mm) thick steel angles to be installed flush to max 1/4 in. (6 mm) from finished side of the wall. Firestop angles shall be attached to the steel duct on finished side of the wall with min No. 10 self-drilling, self-tapping steel screws spaced max 6 in. (152 mm) OC.
   D. **Firestop Device* -** (Optional, Not Shown) - A corner clip may be installed at each corner of the duct on finished side of the wall. Corner clips shall be attached to the steel duct and to the perpendicular leg of the abutting firestop angle with two min No. 10 self-drilling, self-tapping steel screws.

   SPECIFIED TECHNOLOGIES INC - FyreFlange™ Corner Clip
   E. **Firestop Device* -** (Not Shown) - As an option to the intumescent gasket and steel angles (Item Nos. 3B and 3C), a firestop device consisting of 2 by 2 by 0.035 in. (51 by 51 by 0.9 mm) thick steel angles furnished with an intumescent gasket material and corner clips (Item 3D) may be used. Firestop angles to be installed flush to max 1/4 in. (6 mm) from finished side of the wall in accordance with the accompanying installation instructions. Firestop angles shall be attached to the steel duct on finished side of wall with min No. 10 self-drilling, self-tapping steel screws spaced max 6 in. (152 mm) OC. Optional, corner clip may be installed at each corner of the duct on finished side of the wall. When installed, corner clips are attached to the steel duct and to the perpendicular leg of the abutting firestop angle with two min No. 10 self-drilling, self-tapping steel screws. Two short lengths of firestop angle may be joined into a single length of the required size using a splice angle in accordance with the accompanying instructions. When the max duct size is 24 by 40 in. (0.61 by 1.02 m), the corner clips are optional.

   SPECIFIED TECHNOLOGIES INC - FyreFlange™ Firestop Angle, FyreFlange™ Corner Clip, FyreFlange™ Splice Angle

   *** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

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W-L-7238
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GENERAL NOTES:

1. Refer to section 07 84 00 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.
2. Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following:
   - Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.
3. If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Engineering Judgments shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.
4. References:
   - UL Fire Resistance Directory; Current Edition
   - NFPA 101 Life Safety Code
   - All governing local and regional building codes
5. Firestop System installation must meet requirements of ASTM E-814 (UL 1479), ASTM E1966 (UL 1479), ASTM 1966 (UL 2079), ASTM E2307, or ULC-S115 (as required) in tested assemblies that provide a fire rating equal to that of the surrounding construction.

DIVISION 4: Masonry
DIVISION 7: Thermal & Moisture Protection
DIVISION 9: Finishes
DIVISION 22: Plumbing
DIVISION 23: HVAC
DIVISION 26: Electrical
DIVISION 27: Communications

PROJECT NAME:
PROJECT_NAME:

PROJECT LOCATION:
PROJECT_LOCATION:

ARCHITECT/CONSULTANT:
ARCHITECT/CONSULTANT:

TITLE:
STI FIRESTOP SYSTEMS

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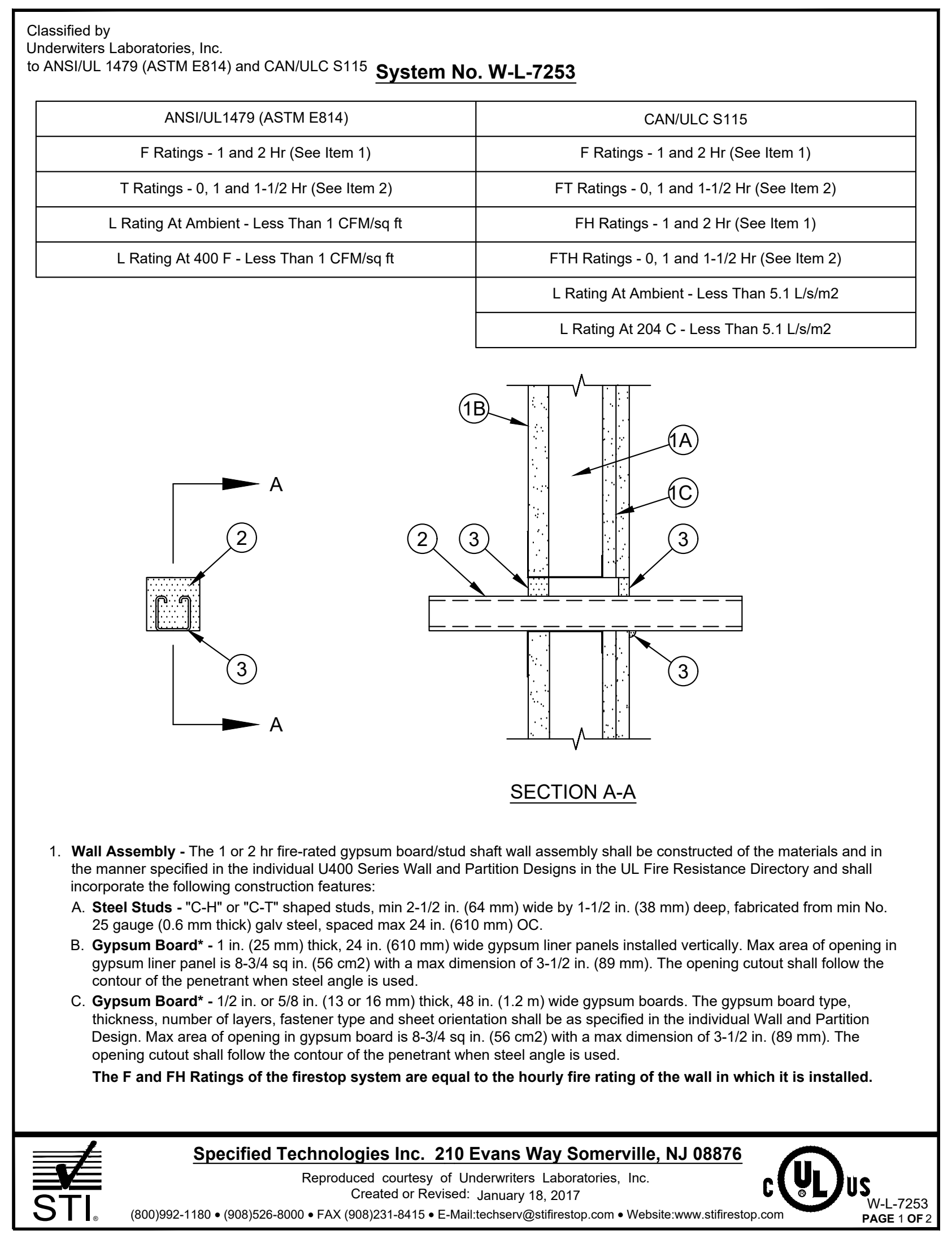
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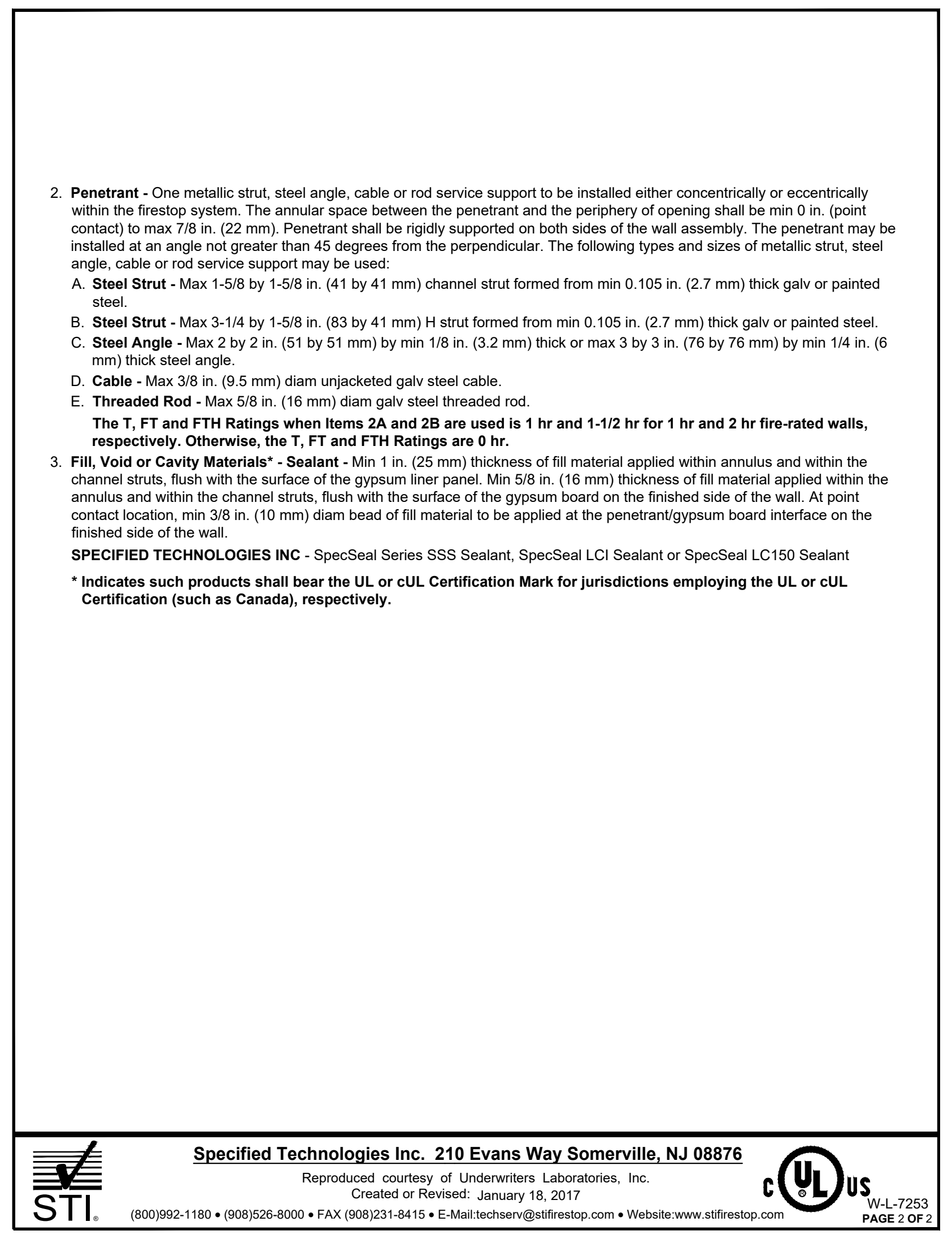

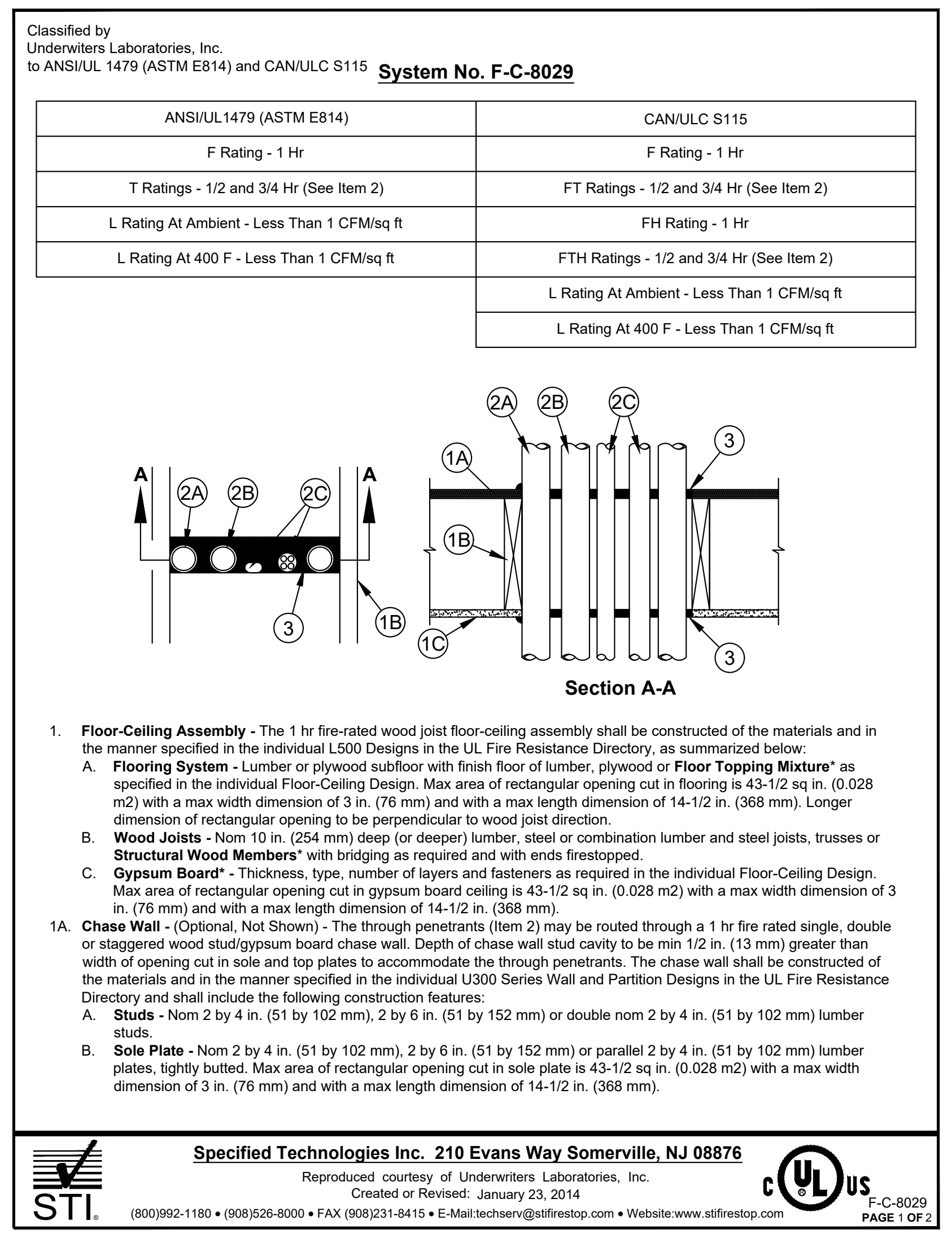
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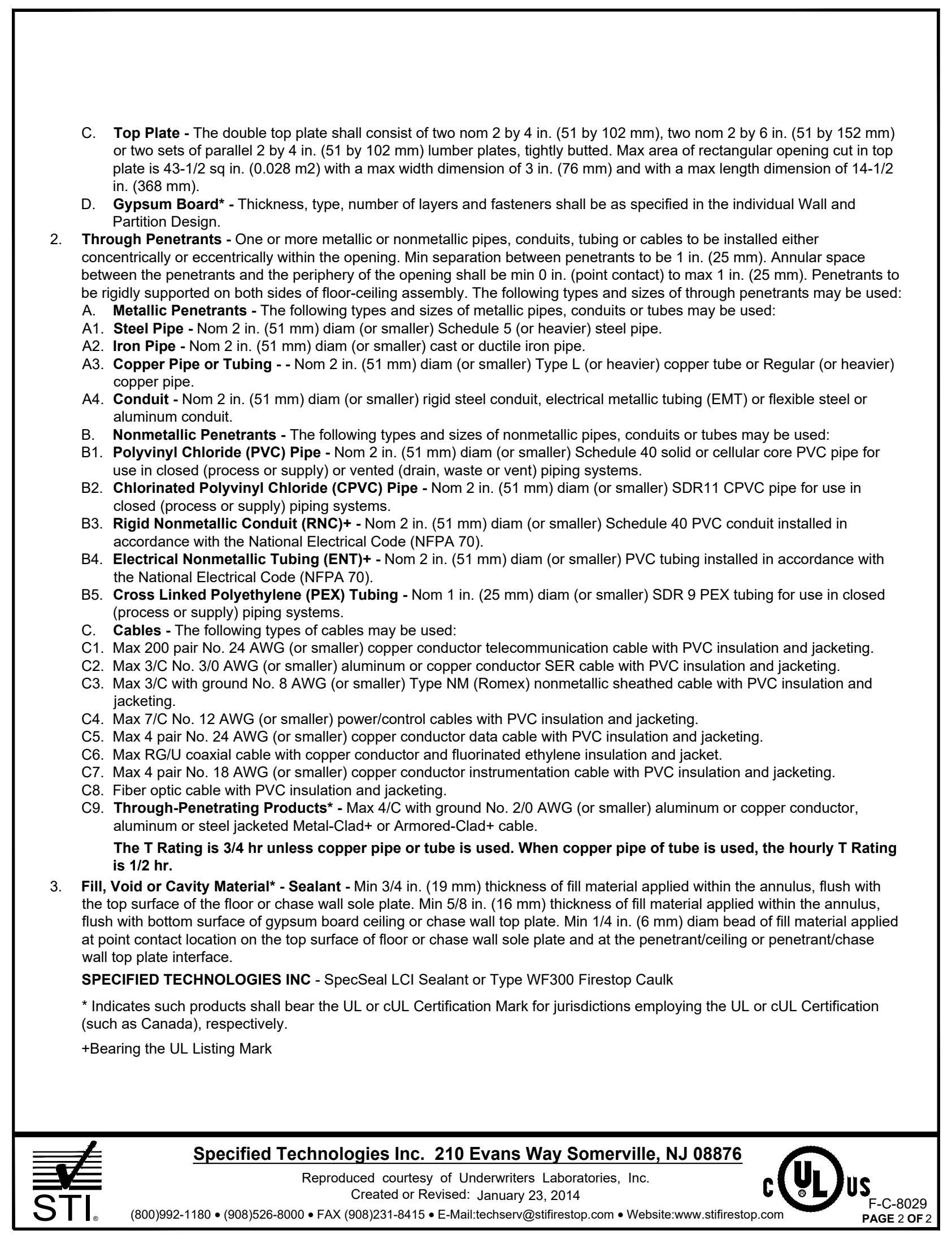

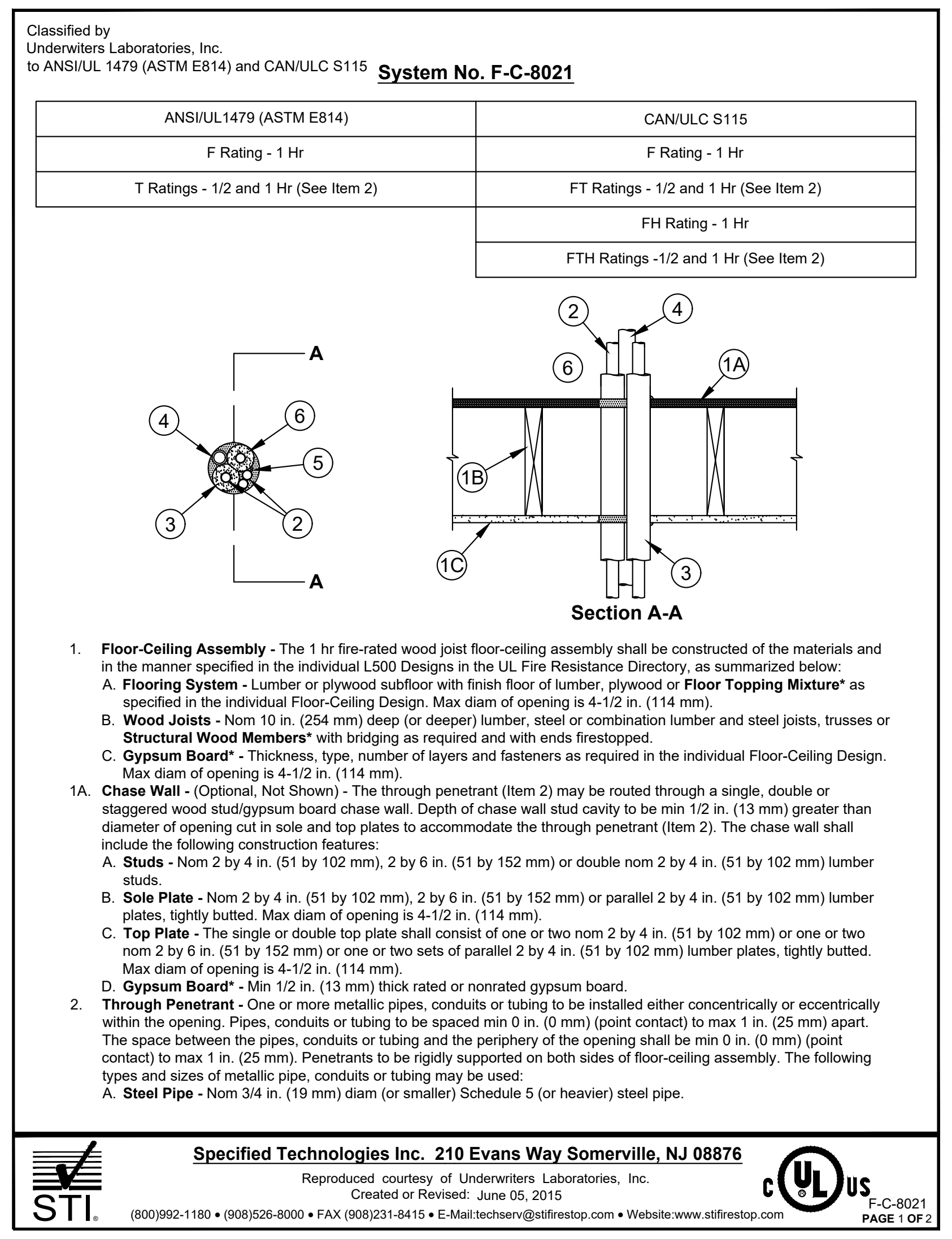
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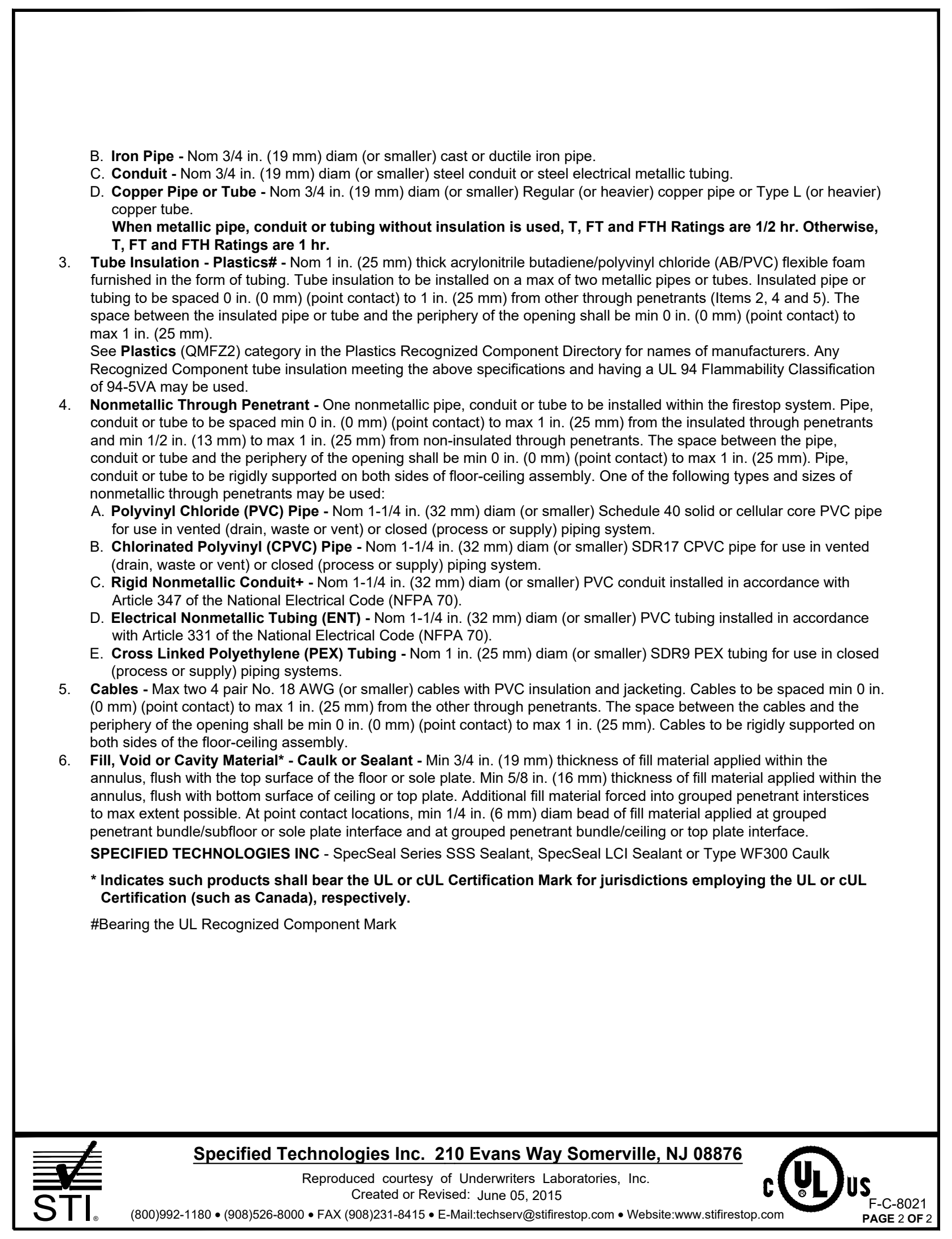

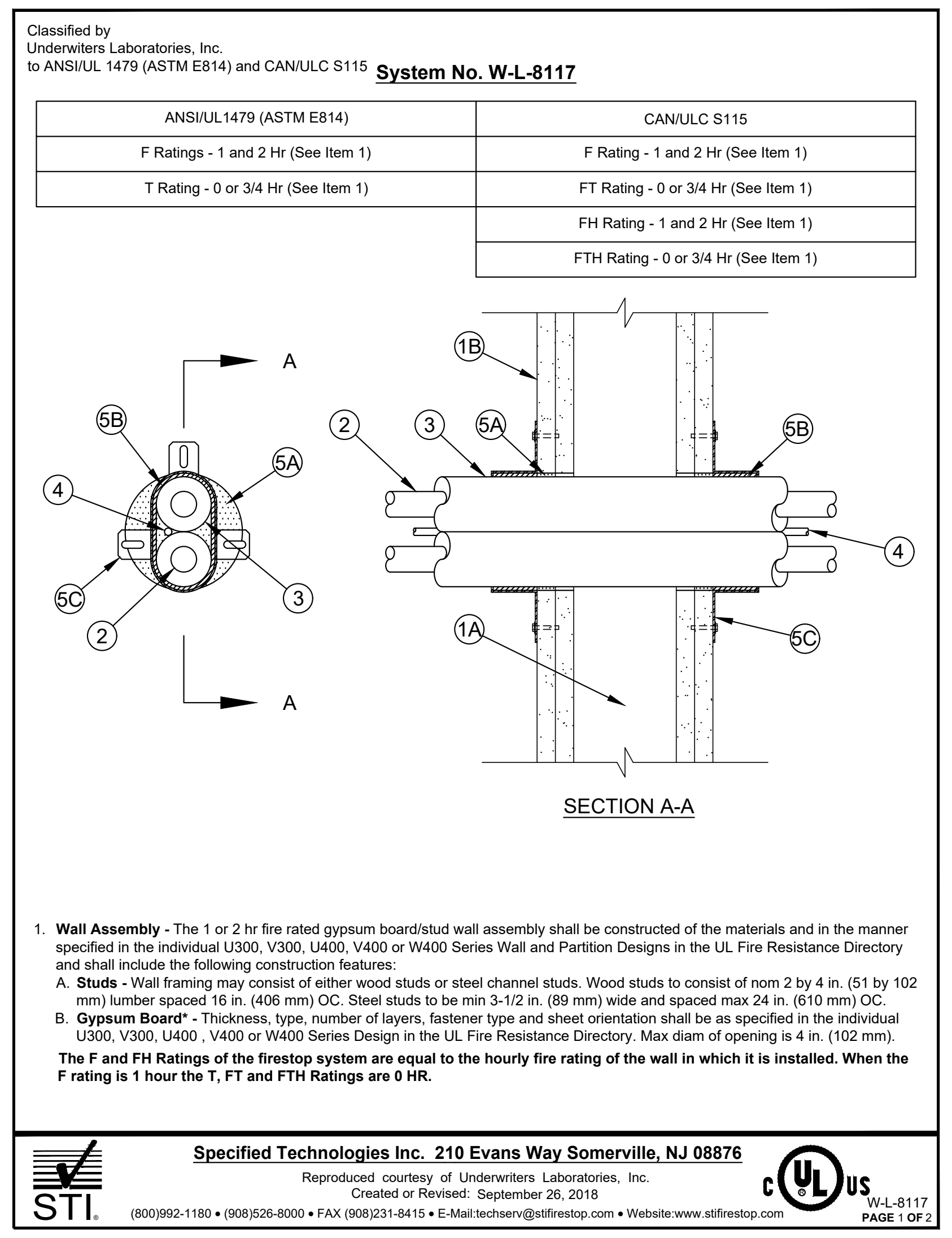
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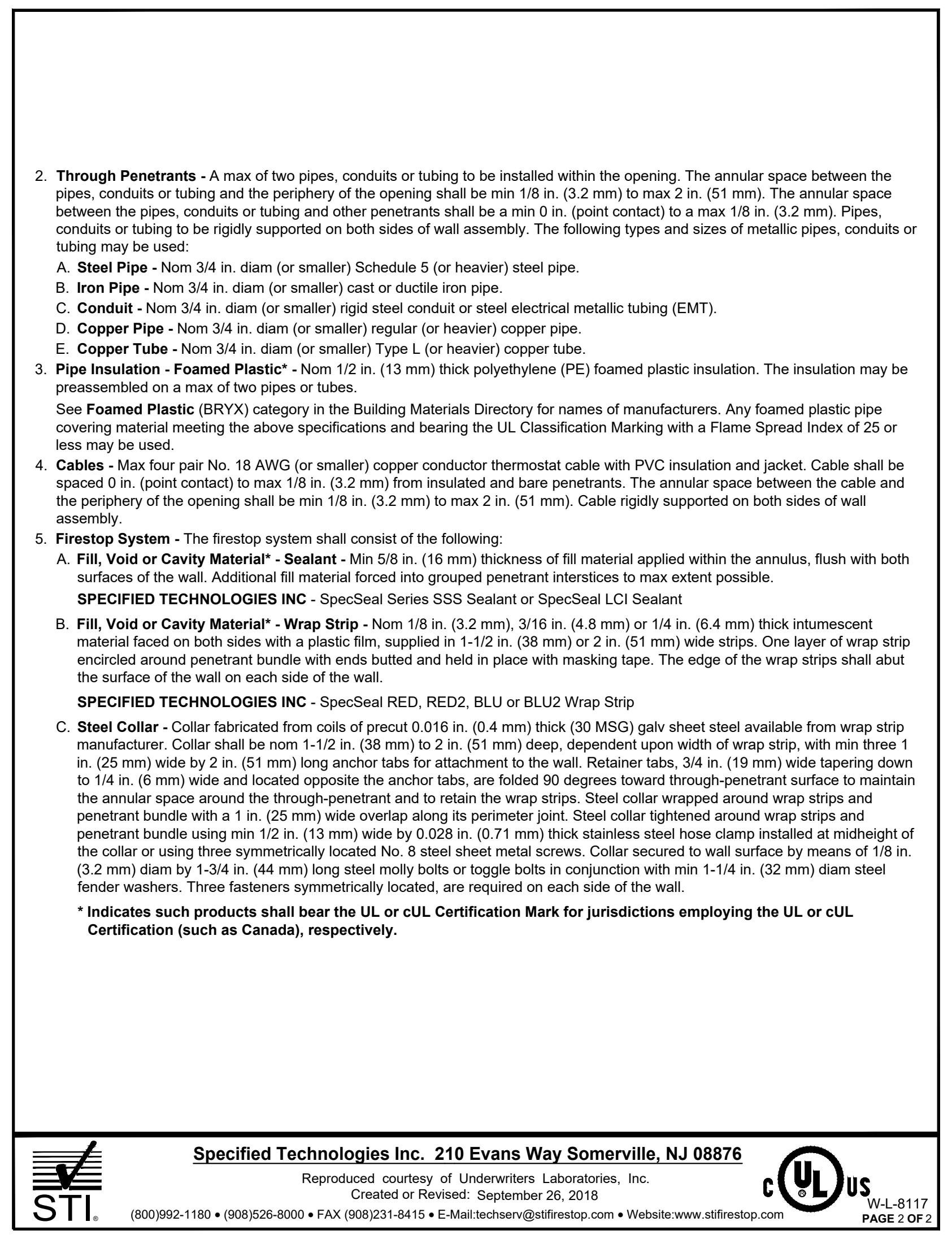

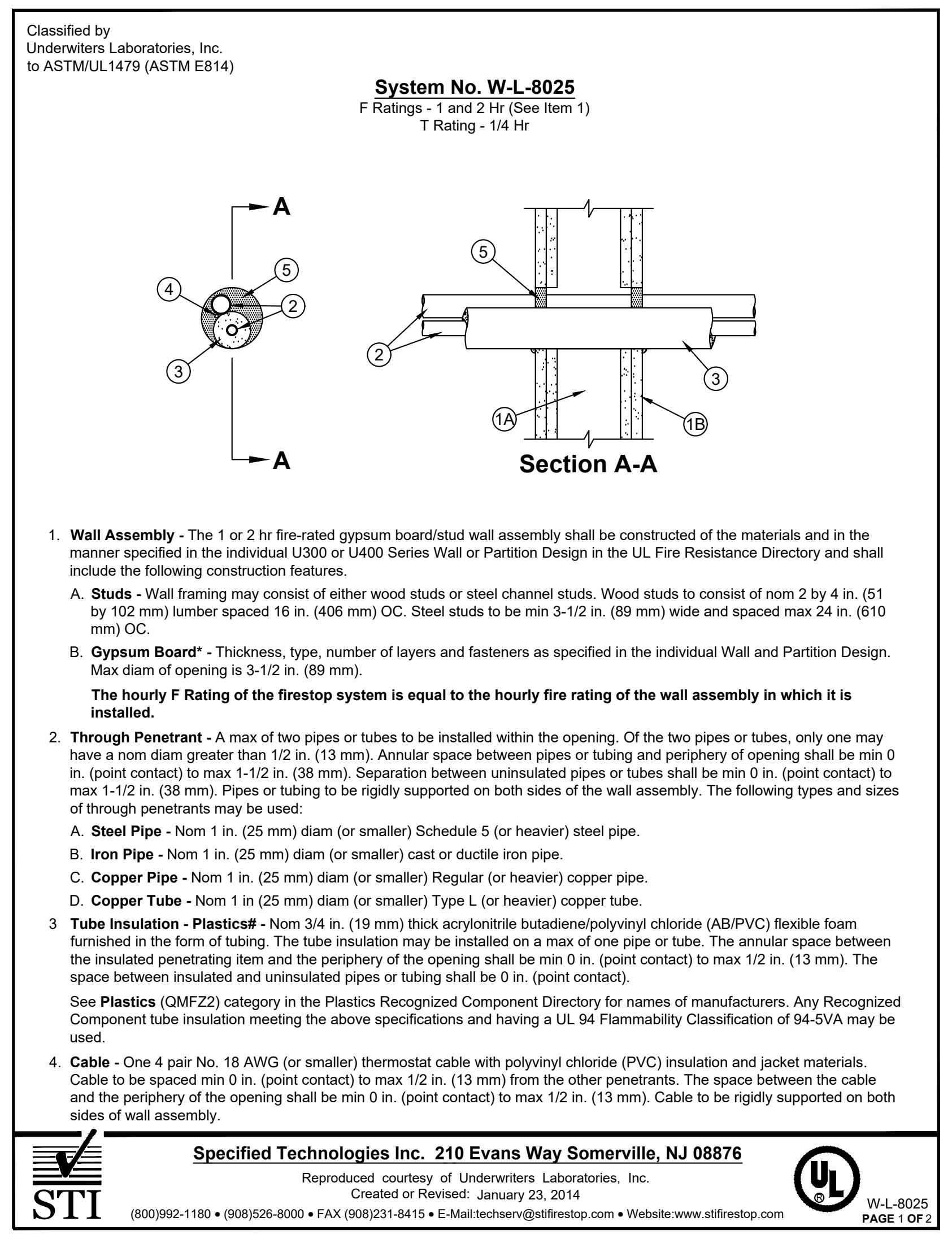
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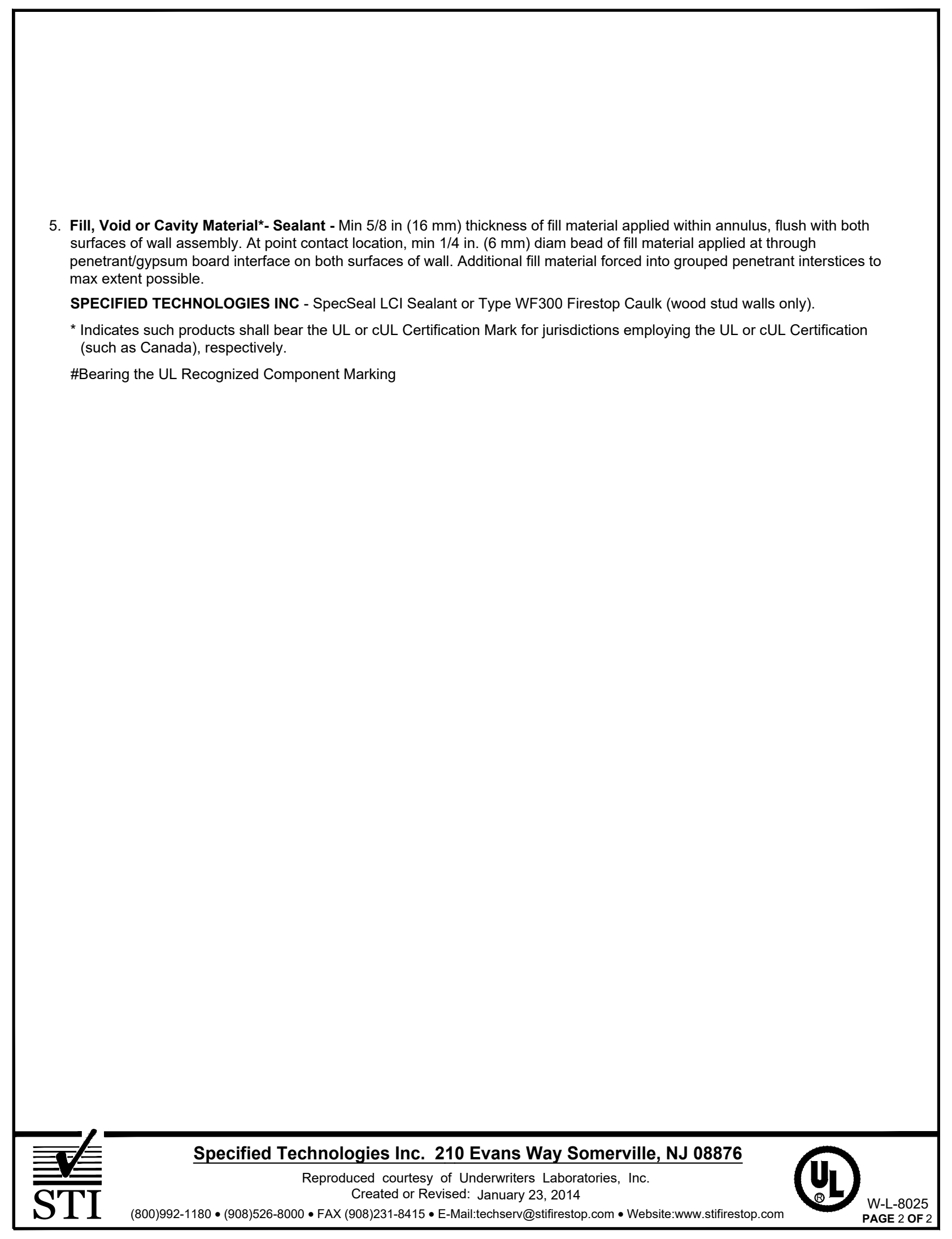

GENERAL NOTES:

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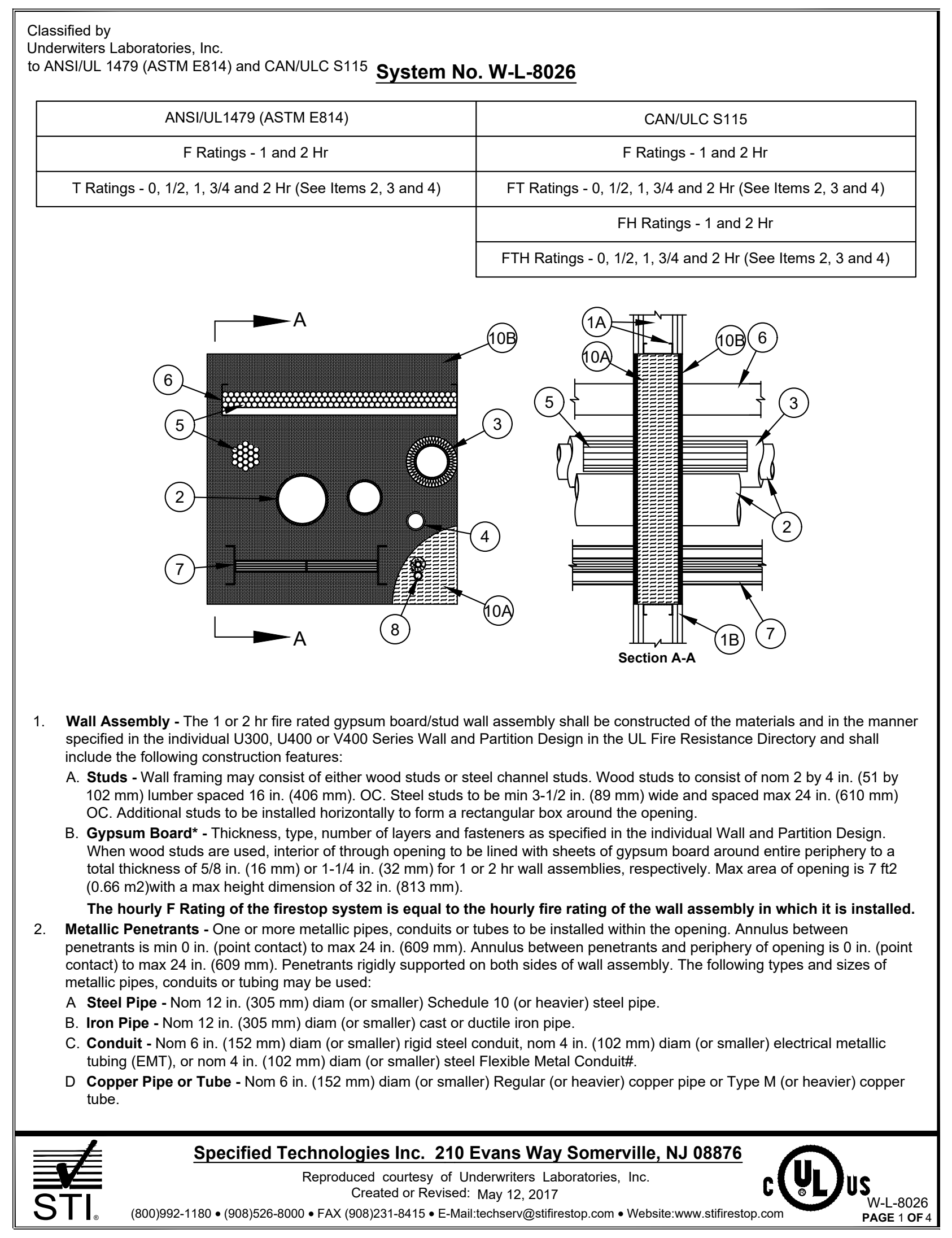

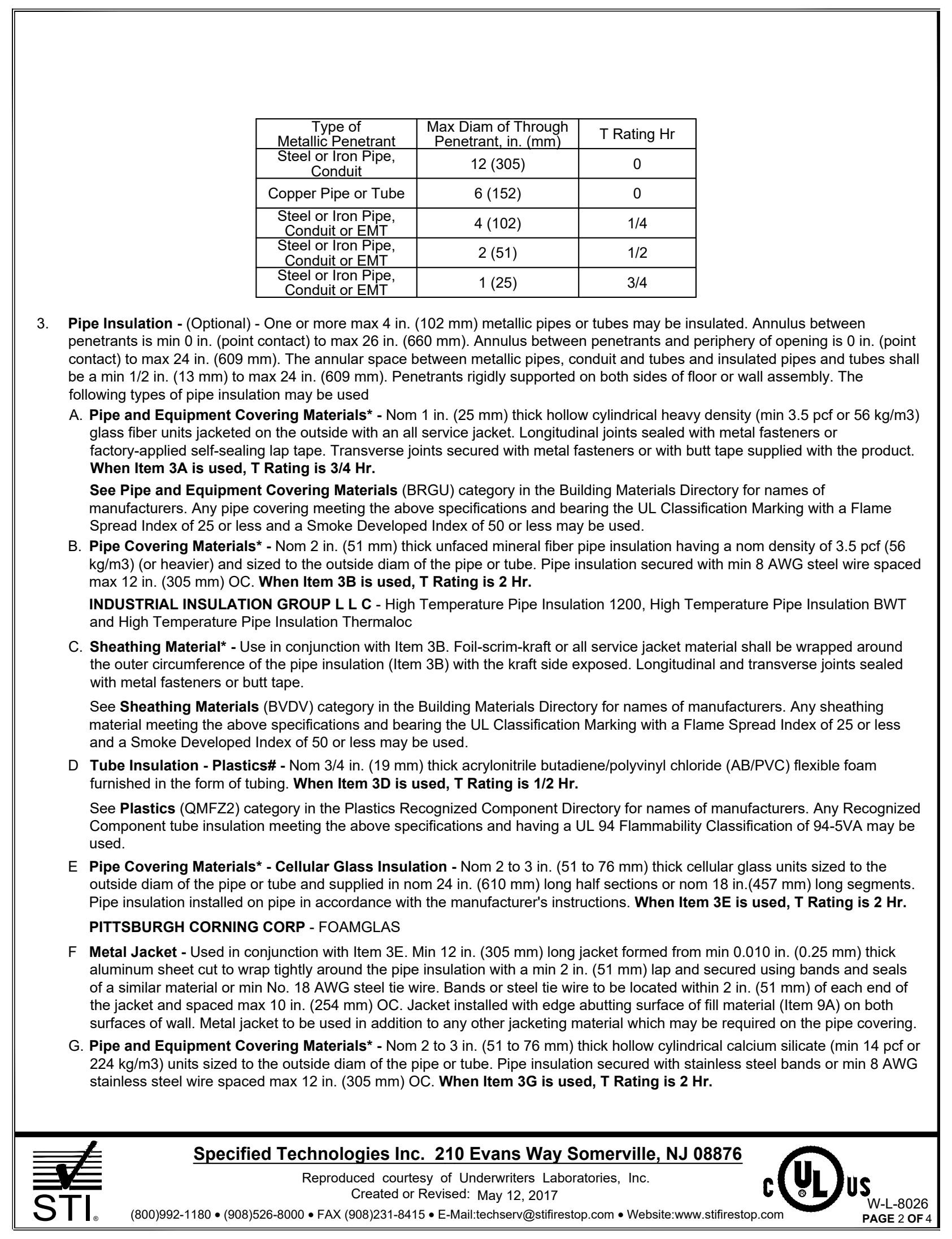

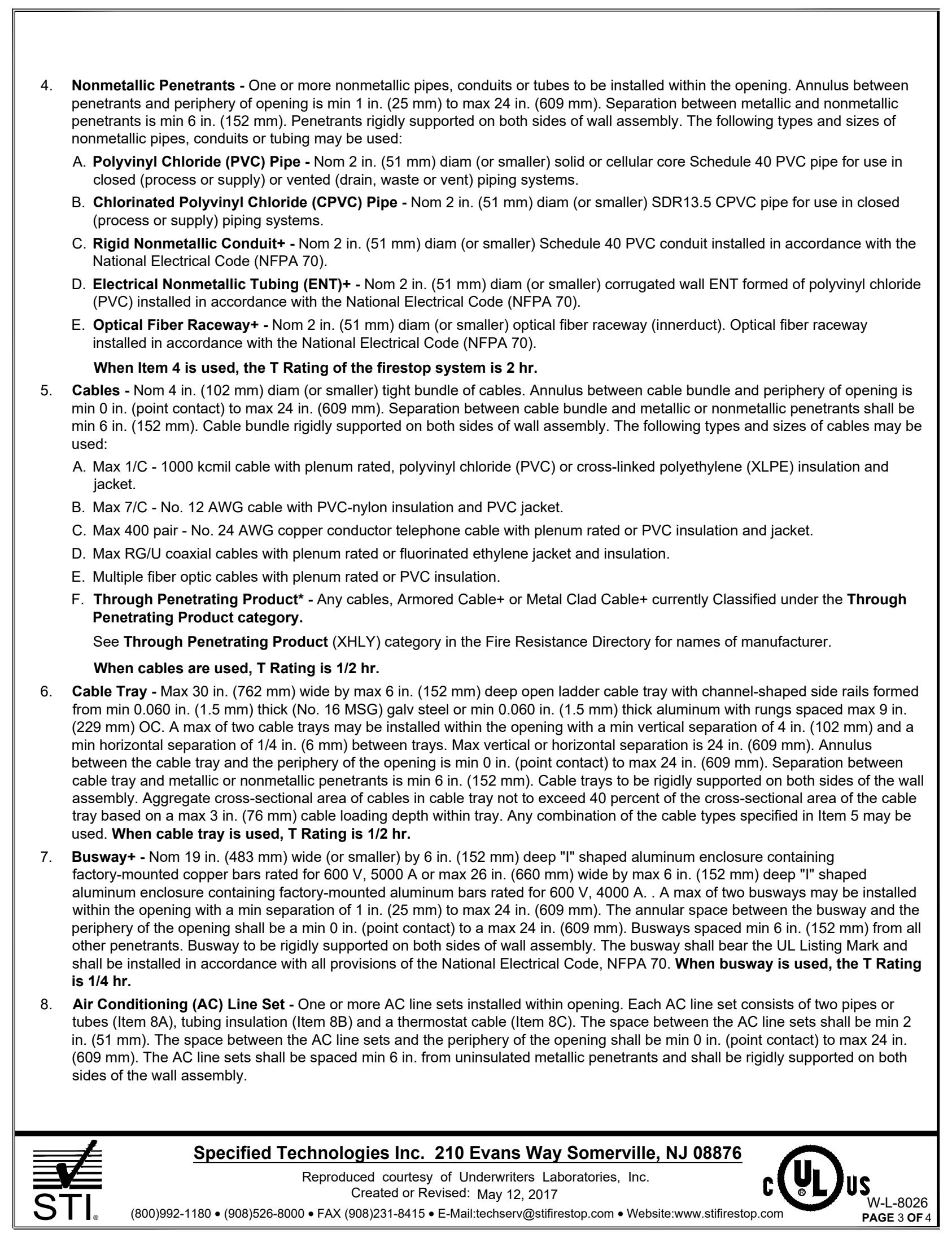

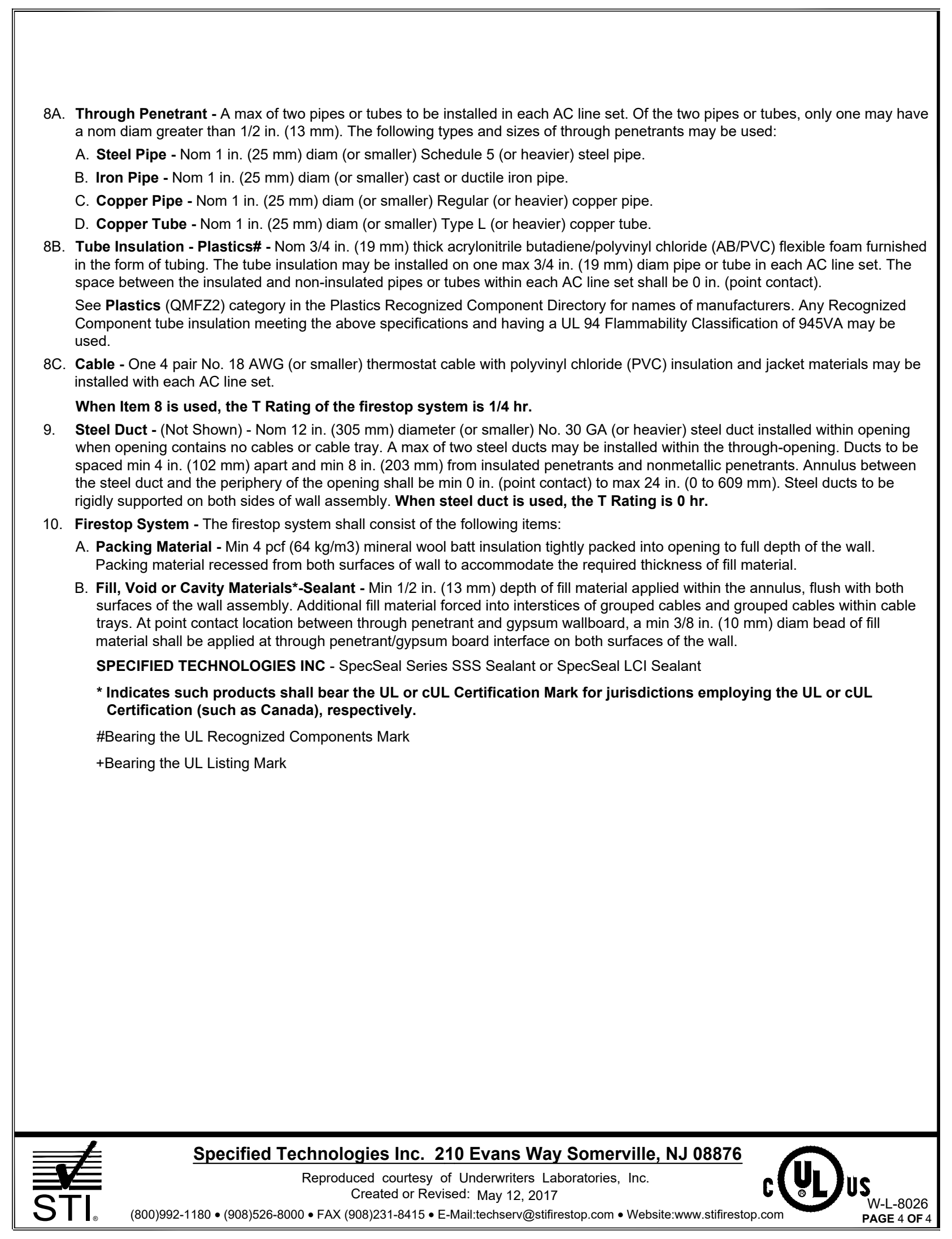

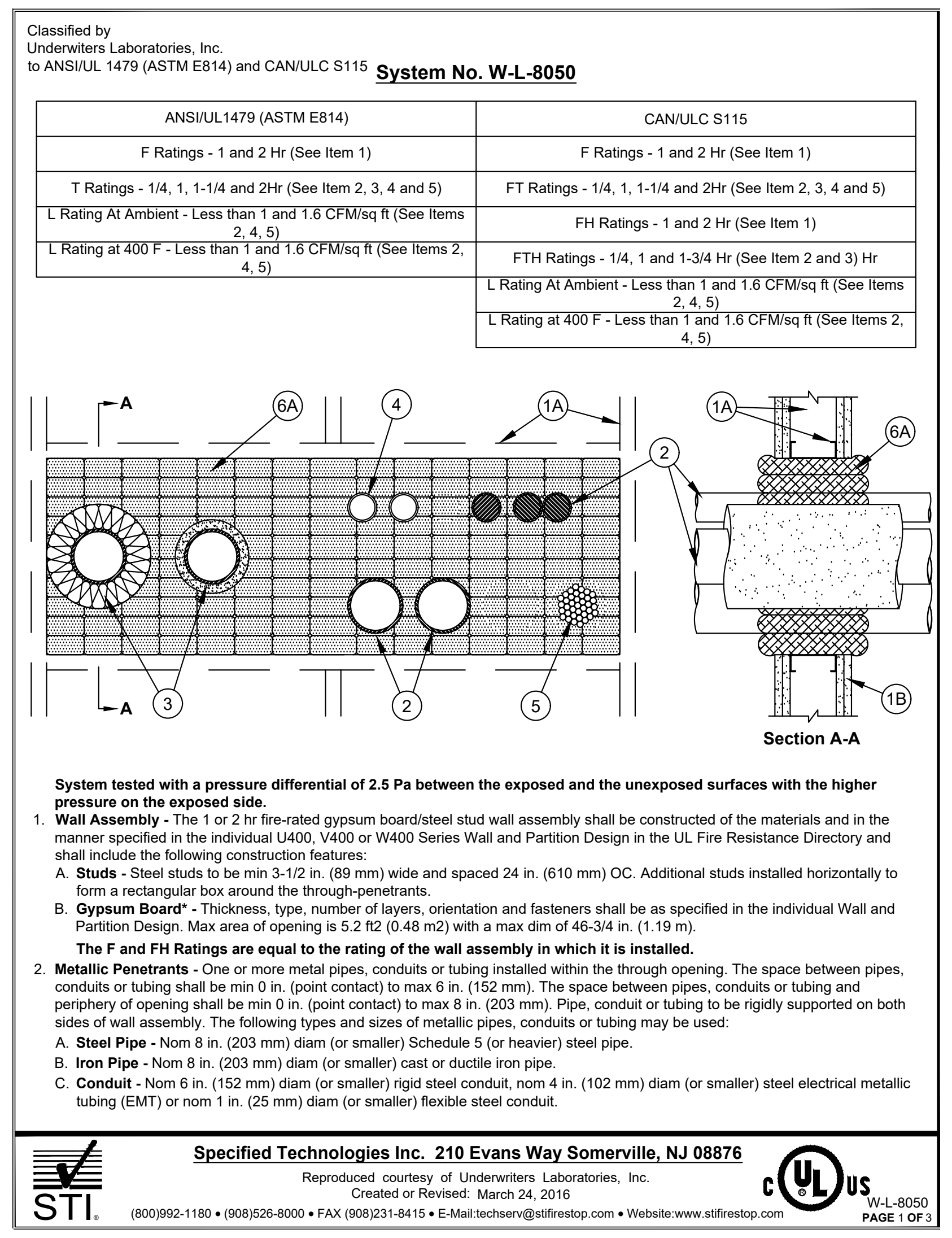

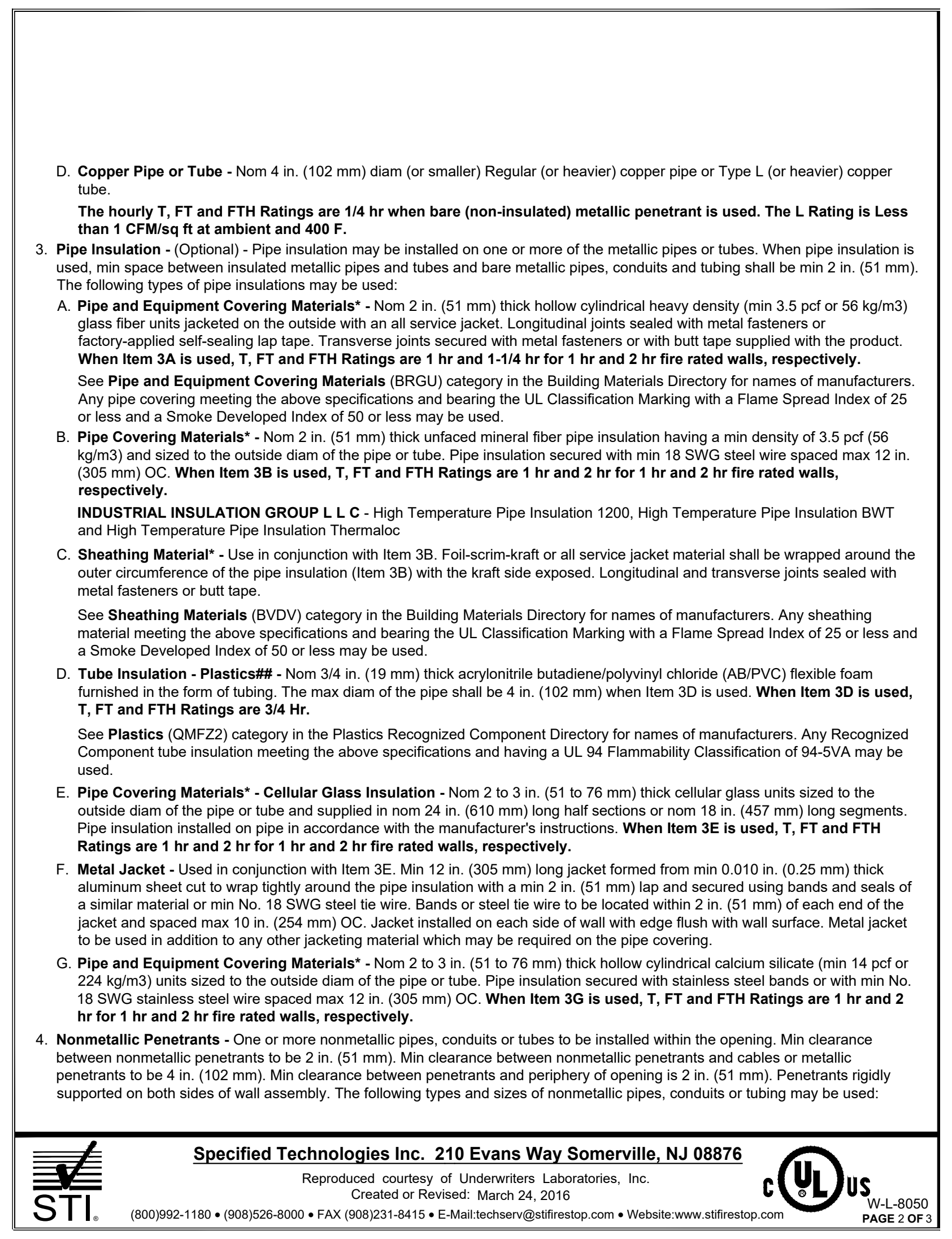

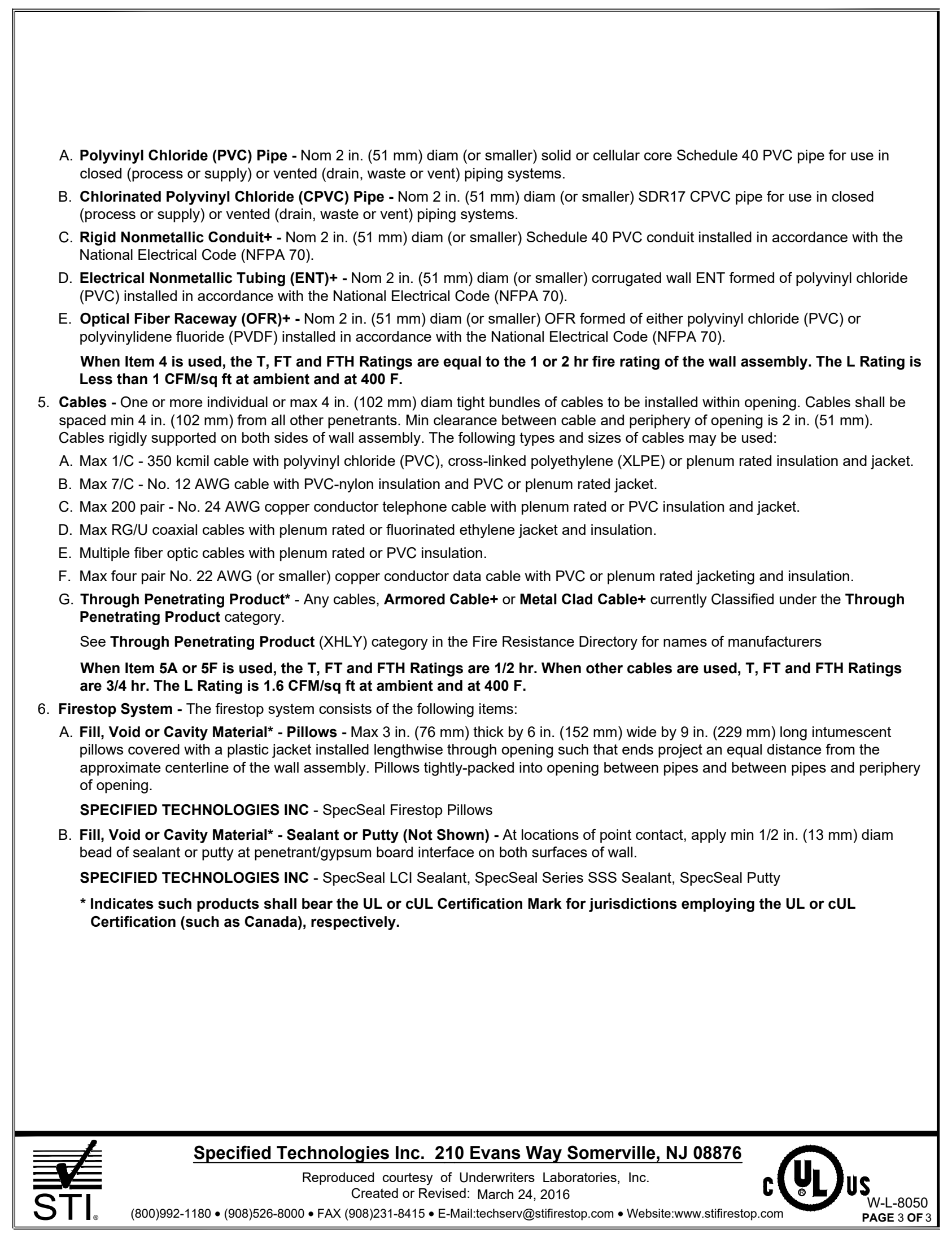

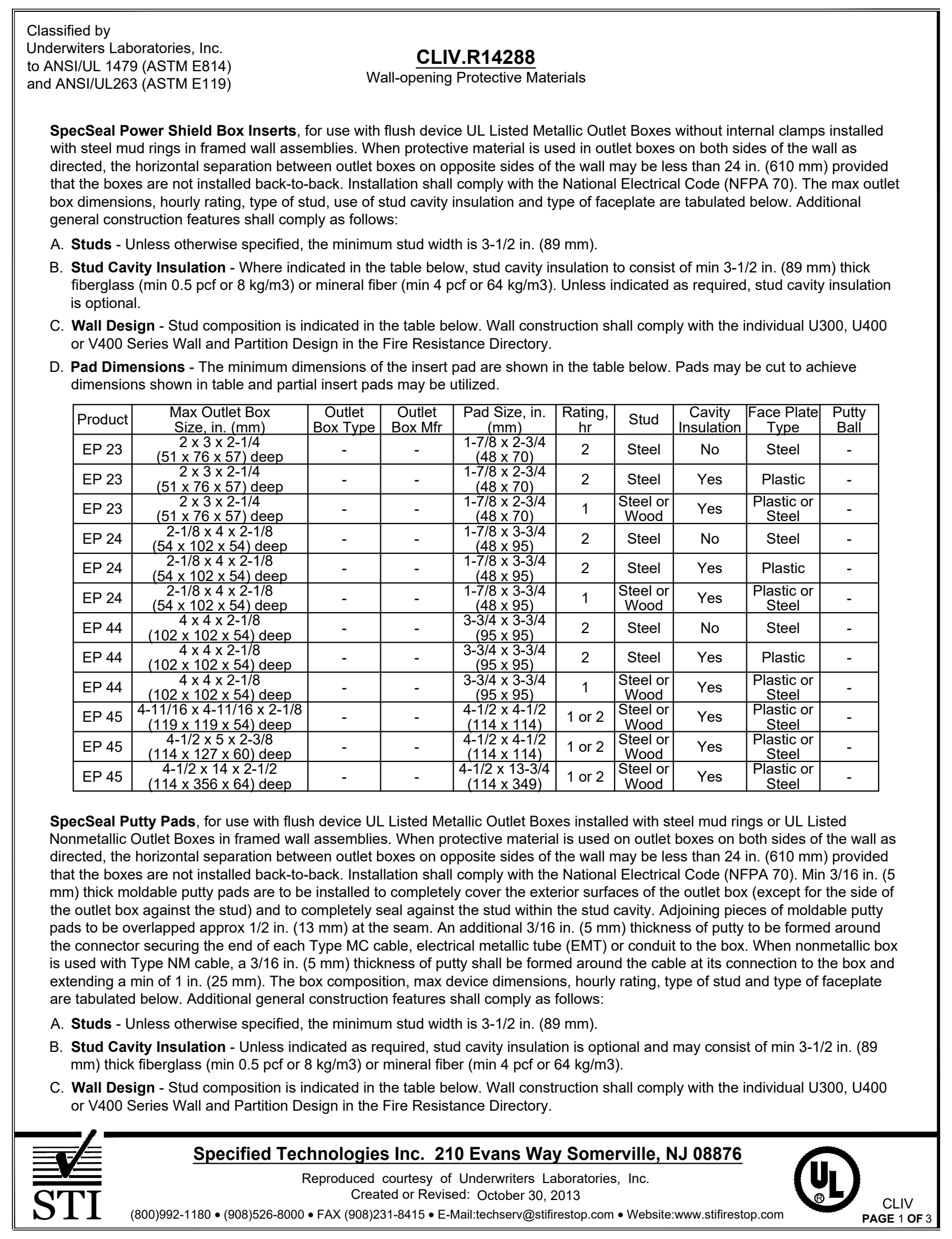

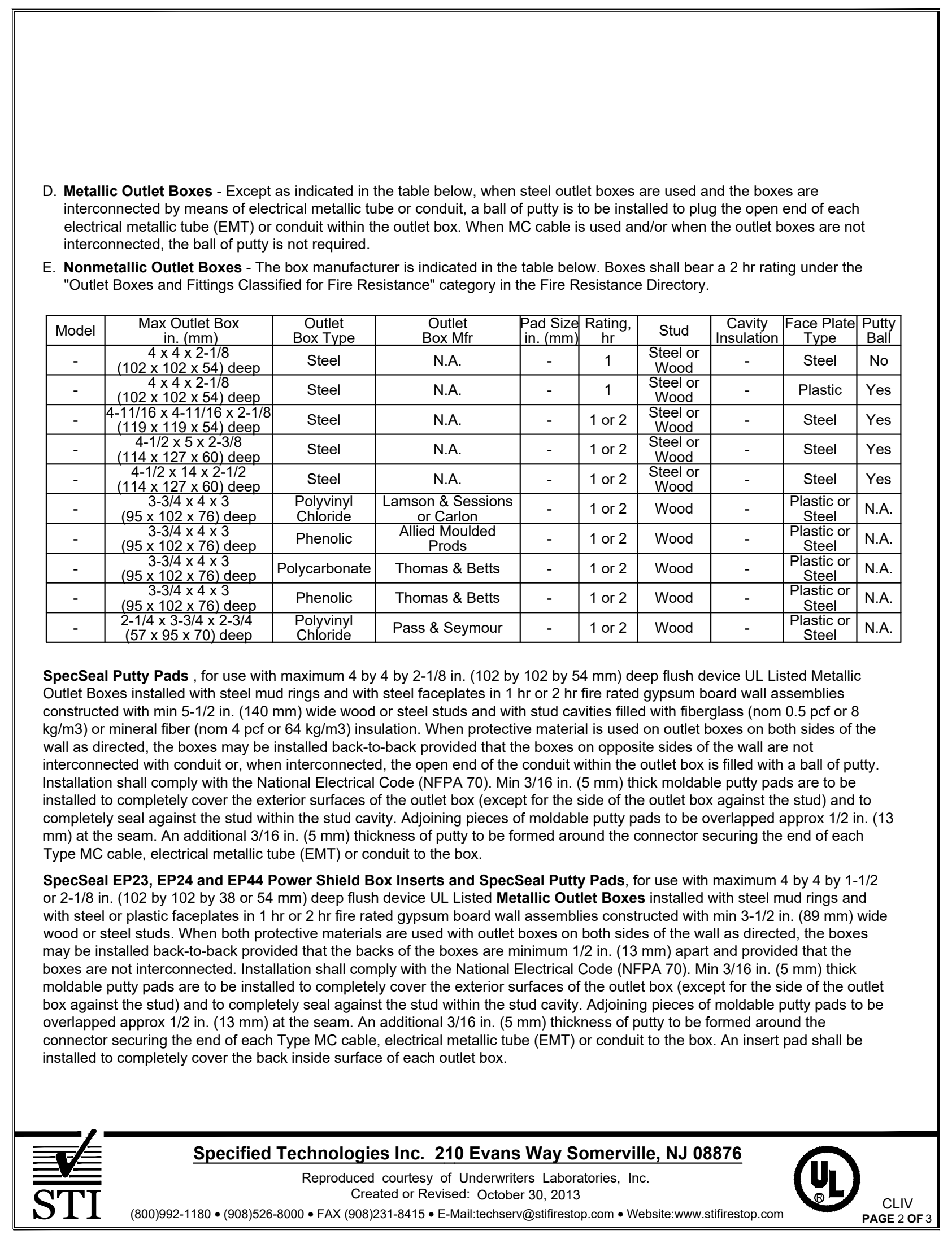

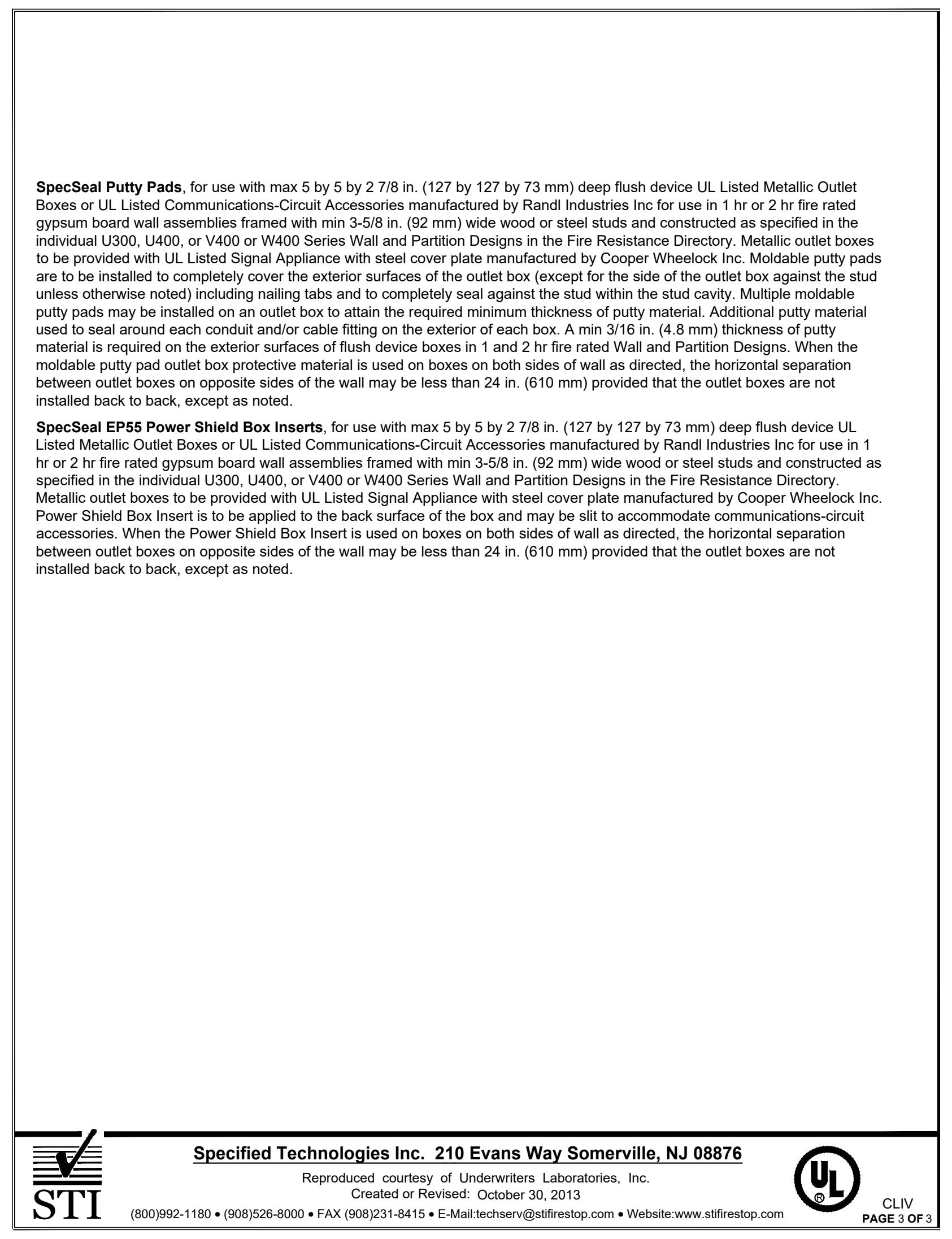

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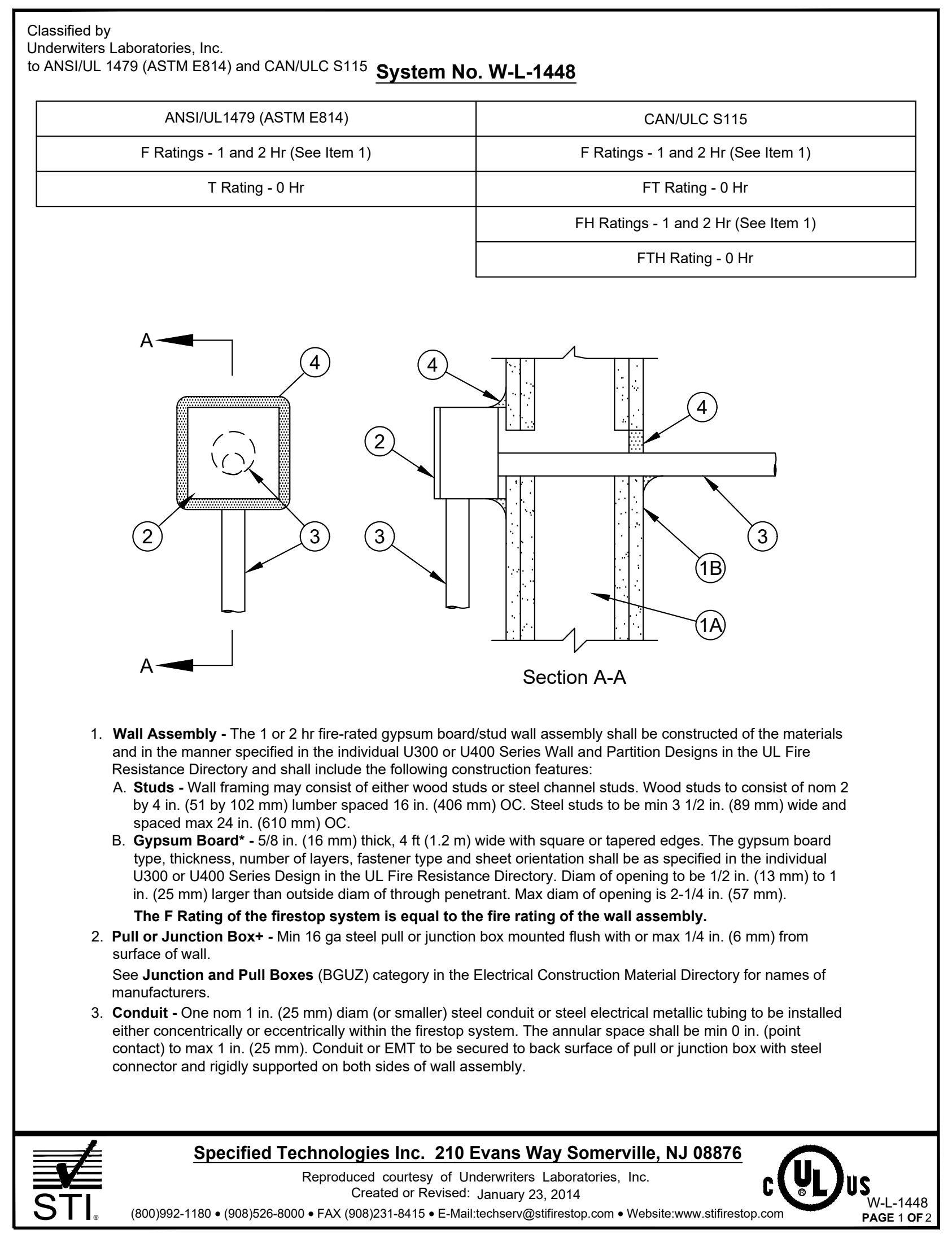

Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-1448**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Rating - 0 Hr

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   - A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3 1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   - B. **Gypsum Board* -** 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Diam of opening to be 1/2 in. (13 mm) to 1 in. (25 mm) larger than outside diam of through penetrant. Max diam of opening is 2-1/4 in. (57 mm).

   The F Rating of the firestop system is equal to the fire rating of the wall assembly.
2. **Pull or Junction Box+ -** Min 16 ga steel pull or junction box mounted flush with or max 1/4 in. (6 mm) from surface of wall.

   See **Junction and Pull Boxes** (BGUZ) category in the Electrical Construction Material Directory for names of manufacturers.
3. **Conduit -** One nom 1 in. (25 mm) diam (or smaller) steel conduit or steel electrical metallic tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. (point contact) to max 1 in. (25 mm). Conduit or EMT to be secured to back surface of pull or junction box with steel connector and rigidly supported on both sides of wall assembly.

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W-L-1448
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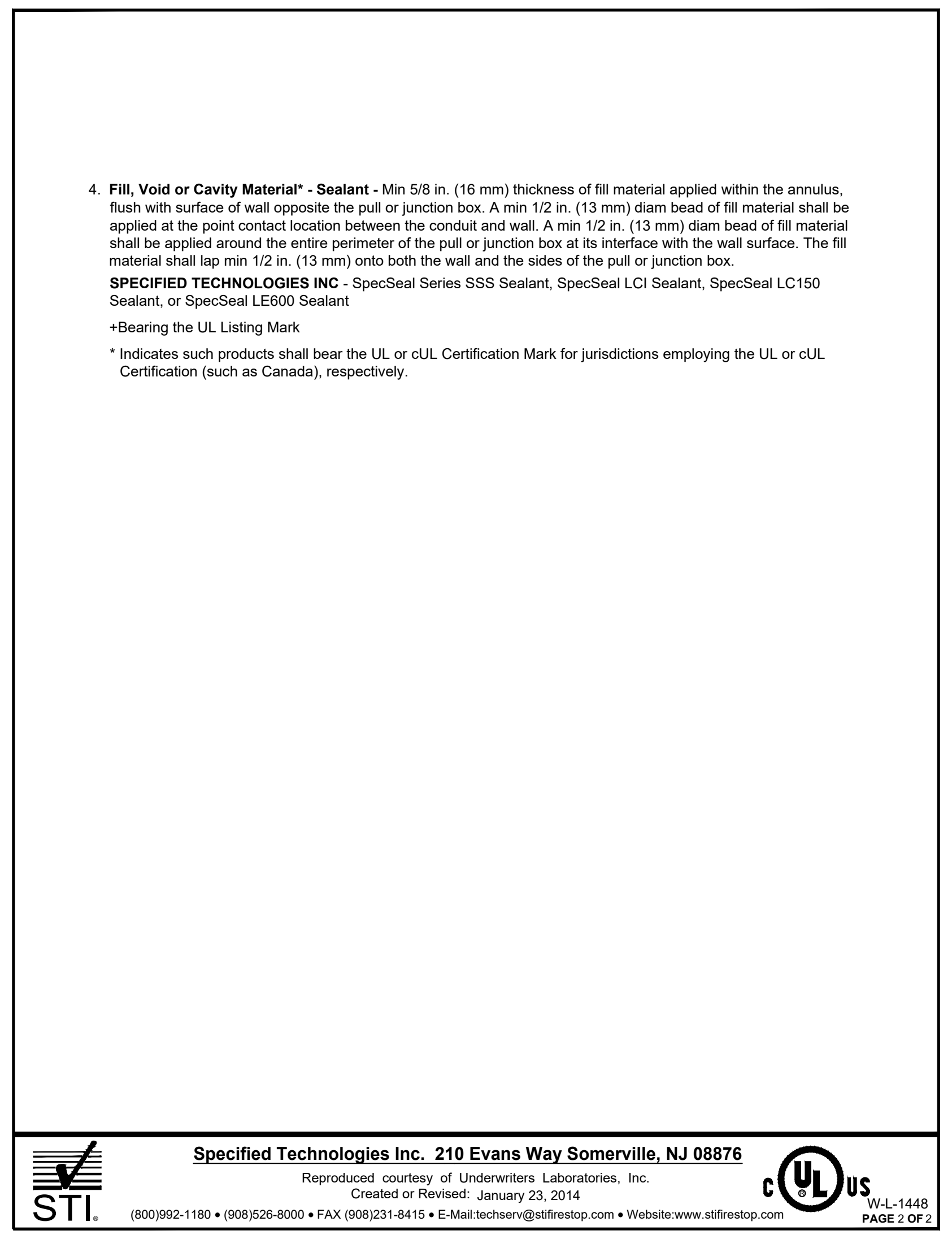

4. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with surface of wall opposite the pull or junction box. A min 1/2 in. (13 mm) diam bead of fill material shall be applied at the point contact location between the conduit and wall. A min 1/2 in. (13 mm) diam bead of fill material shall be applied around the entire perimeter of the pull or junction box at its interface with the wall surface. The fill material shall lap min 1/2 in. (13 mm) onto both the wall and the sides of the pull or junction box.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant, SpecSeal LC150 Sealant, or SpecSeal LE600 Sealant

+Bearing the UL Listing Mark

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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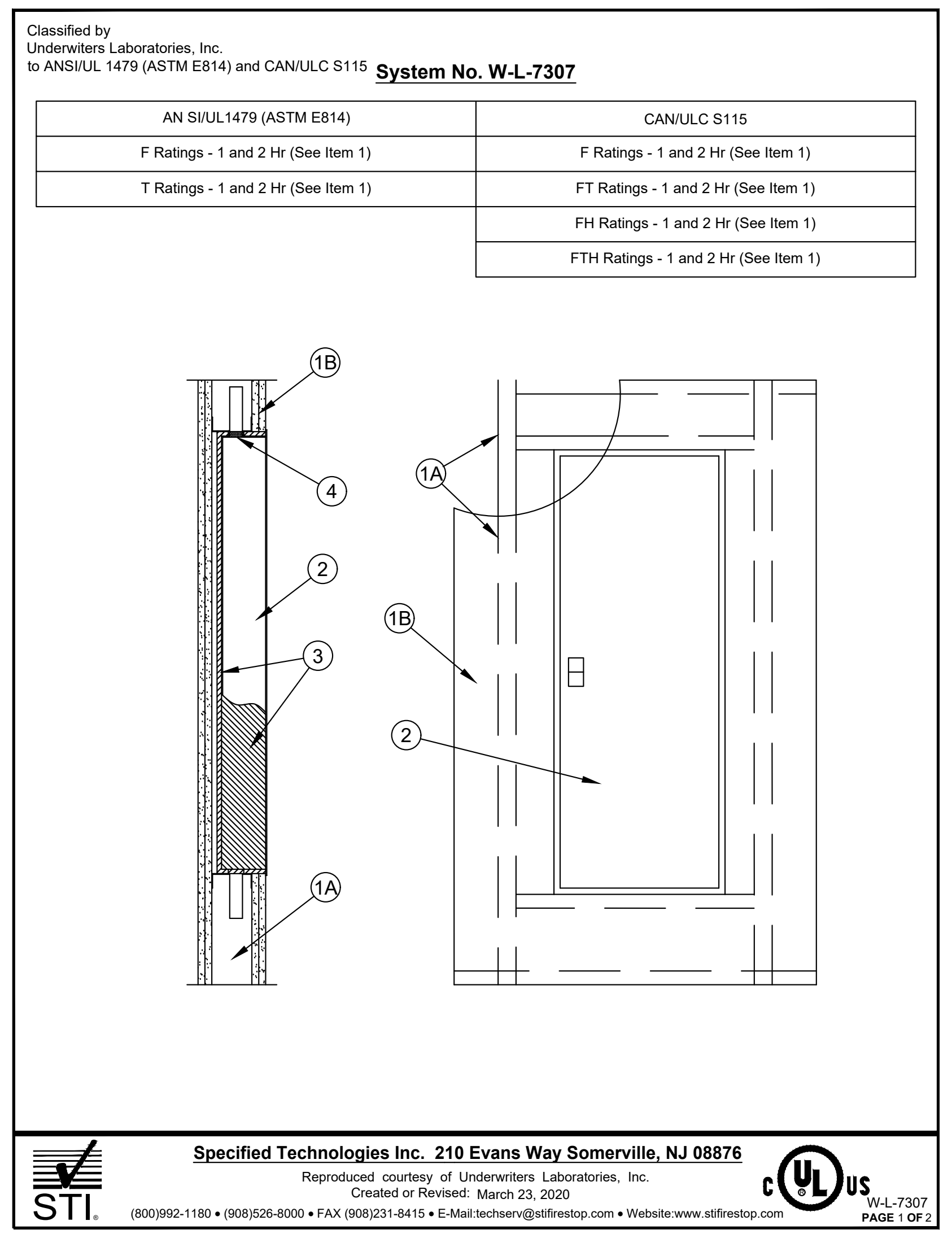

Classified by
Underwiters Laboratories, Inc.
to ANSI/UL 1479 (ASTM E814) and CAN/ULC S115 **System No. W-L-7307**

AN SI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Item 1)	FT Ratings - 1 and 2 Hr (See Item 1)
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Ratings - 1 and 2 Hr (See Item 1)

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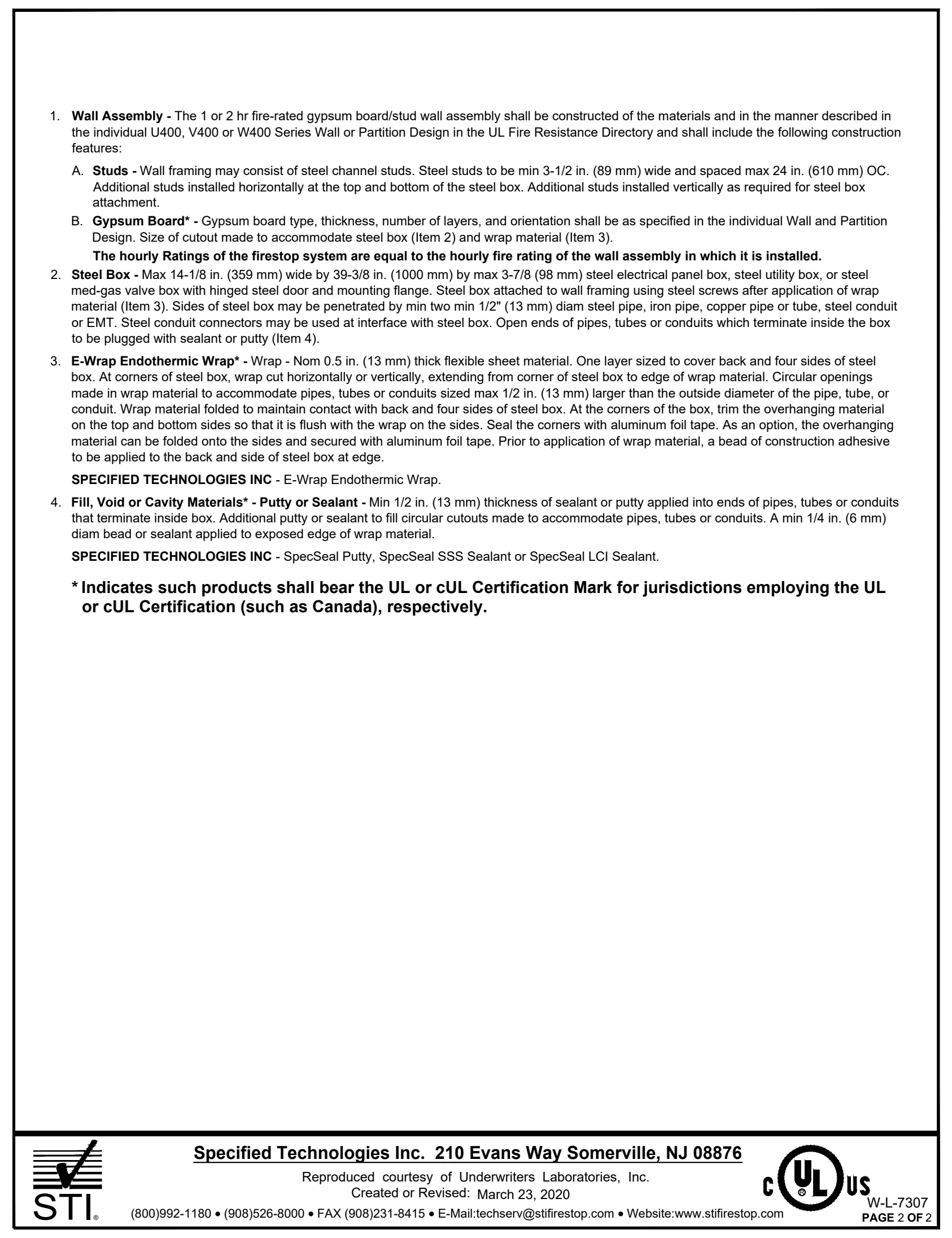

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   - A. **Studs -** Wall framing may consist of steel channel studs. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional studs installed horizontally at the top and bottom of the steel box. Additional studs installed vertically as required for steel box attachment.
   - B. **Gypsum Board* -** Gypsum board type, thickness, number of layers, and orientation shall be as specified in the individual Wall and Partition Design. Size of cutout made to accommodate steel box (Item 2) and wrap material (Item 3).

   The hourly Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Steel Box -** Max 14-1/8 in. (359 mm) wide by 39-3/8 in. (1000 mm) by max 3-7/8 (98 mm) steel electrical panel box, steel utility box, or steel med-gas valve box with hinged steel door and mounting flange. Steel box attached to wall framing using steel screws after application of wrap material (Item 3). Sides of steel box may be penetrated by min two min 1/2" (13 mm) diam steel pipe, iron pipe, copper pipe or tube, steel conduit or EMT. Steel conduit connectors may be used at interface with steel box. Open ends of pipes, tubes or conduits which terminate inside the box to be plugged with sealant or putty (Item 4).
3. **E-Wrap Endothermic Wrap* -** Wrap - Nom 0.5 in. (13 mm) thick flexible sheet material. One layer sized to cover back and four sides of steel box. At corners of steel box, wrap cut horizontally or vertically, extending from corner of steel box to edge of wrap material. Circular openings made in wrap material to accommodate pipes, tubes or conduits sized max 1/2 in. (13 mm) larger than the outside diameter of the pipe, tube, or conduit. Wrap material folded to maintain contact with back and four sides of steel box. At the corners of the box, trim the overhanging material on the top and bottom sides so that it is flush with the wrap on the sides. Seal the corners with aluminum foil tape. As an option, the overhanging material can be folded onto the sides and secured with aluminum foil tape. Prior to application of wrap material, a bead of construction adhesive to be applied to the back and side of steel box at edge.

   SPECIFIED TECHNOLOGIES INC - E-Wrap Endothermic Wrap.
4. **Fill, Void or Cavity Materials* - Putty or Sealant -** Min 1/2 in. (13 mm) thickness of sealant or putty applied into ends of pipes, tubes or conduits that terminate inside box. Additional putty or sealant to fill circular cutouts made to accommodate pipes, tubes or conduits. A min 1/4 in. (6 mm) diam bead or sealant applied to exposed edge of wrap material.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Putty, SpecSeal SSS Sealant or SpecSeal LCI Sealant.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

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