



Firestopping Submittal Package

metacaulk®

Project: Drywall Contractor Submittal - Sealant & Blazefoam
Architect:
General Contractor:
Installation Contractor:
Distributor (and Contact):

Manufacturer's Representative:

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APPROVALS FOR METACAULK® PRODUCTS

Below is a list of Model Building Codes requiring the use of firestop products in various types of constructions and occupancies. Most local codes are derived from one or more of these model codes. Metacaulk® products and systems meet the through-penetration firestopping requirements of all of these codes.

ICC	International Code Council; International Building Code
ICBO	International Code of Building Officials; Uniform Building Code
SBCCI	Southern Building Code Congress International; Standard Building Code
BOCA	Building Official and Code Administrators International; National Building Code
CABO	Council of American Building Officials (coordinating agency between ICBO, SBCCI and BOCA)
NBCC	National Building Code of Canada
NFPA 101	National Fire Protection Association Life Safety Code
IRC	International Residence Code

Certain cities, counties and states have written their own code requirements which may supersede or supplement model building codes, check with these authorities for approvals.

Metacaulk® Products are UL Classified and conform to the codes and test requirements shown below.

UL 1479	Fire Tests of Through-Penetration Firestops
UL 2079	Tests for Fire Resistance of Building Joint Systems
ASTM E 1966	Standard Test Method for Fire Resistive Joint Systems
ASTM E 814	Methods for Fire Tests of Through-Penetration Fire Stops
NFPA 101	National Fire Protection Association Life Safety Code
ASTM E 84 (UL 723)	Test Method for Surface Burning Characteristics of Building Materials
ASTM E 119 (UL 263)	Method for Fire Tests of Building Construction and Materials
ULC CAN4-S115M	Standard Method of Fire Tests of Firestop Systems
B.S. 476/ pr EN 1366.3	European/ British Standards
AS 1530.4	Part 4: Fire Resistance Tests of Elements of Building Construction
AS 4072.1	Part 1: Service Penetration and Control Joint
ASTM G21	Testing for mold and mildew growth resistance

For Questions or Additional Information call Technical Service 1-800-231-3345 • 1-713-263-8001
Fax 1-800-441-0051 • 1-713-263-7577



A CSW Industrials Company

GENERAL CERTIFICATE OF COMPLIANCE

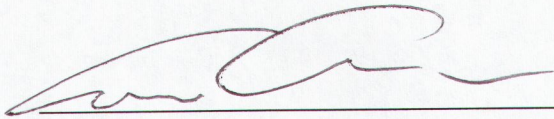
DESCRIPTION: METACAULK® FIRESTOPPING PRODUCTS

METACAULK® MC 150+ FIRESTOP SEALANT
METACAULK® 350i FIRESTOP SEALANT
METACAULK® 835+ SILICONE SEALANT
METACAULK® 950 FIRESTOP SEALANT
METACAULK® 1000 FIRESTOP SEALANT
METACAULK® 1200
METACAULK® BLAZESEAL™
METACAULK® BOX GUARD™
METACAULK® COMPOSITE SHEET
METACAULK® COVER GUARD™
METACAULK® FIRE-RATED MORTAR
METACAULK® FIRESTOP PILLOW
METACAULK® INDUSTRIAL CABLE COATING
METACAULK® INTUMESCENT SLEEVE
METACAULK® JOINT STRIP
METACAULK® PASS-THRU DEVICE
METACAULK® PIPE COLLAR
METACAULK® PUTTY STICK & PUTTY PAD
METACAULK® WRAP STRIP
FLAMESAFE® BAGS
FLAMESAFE® FS 900+ SEALANT
RECTORSEAL® SMOKE AND ACOUSTIC SEALANT
RECTORSEAL® TRACK-SAFE™

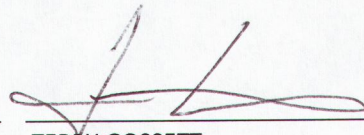
THESE PRODUCTS ARE TESTED ACCORDING TO ONE OR MORE OF THE FOLLOWING STANDARDS:

U.L. 263 - FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS
U.L. 1479 - FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS
U.L. 2079 - TESTS FOR FIRE RESISTANCE OF BUILDING JOINT SYSTEMS
ASTM E-84 (UL 723) - SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS
ASTM E-814 - FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS
ASTM E-2307 - METHOD FOR DETERMINING FIRE RESISTANCE OF PERIMETER FIRE BARRIERS
IEEE 1202 - FLAME-PROPAGATION TESTING OF WIRE & CABLE

ALL PRODUCTS CONTAIN NO ASBESTOS OR PCB'S AND ARE CONSIDERED V.O.C. COMPLIANT.

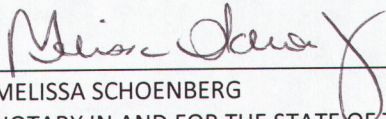


EVA ACKERMAN PH.D
VICE PRESIDENT OF RESEARCH & TECHNOLOGY



TERRY GOSSETT
TECHNICAL SERVICES

SUBSCRIBED AND SWORN TO BEFORE ME THIS 1ST DAY OF OCTOBER 2015.



MELISSA SCHOENBERG
NOTARY IN AND FOR THE STATE OF TEXAS
COUNTY OF HARRIS
MY COMMISSION EXPIRES: OCTOBER 25, 2019





A CSW Industrials Company

December 18, 2017

To whom it may concern:

RectorSeal's Warranty statement for firestop is contingent upon actual storage conditions and proper installation.

If RectorSeal® firestop products are correctly installed in accordance with our stated Manufacturers instructions and according to the UL tested systems, our products comply with UL 1479 "Fire Tests of Through-Penetration Firestops" standard requirements for Environmental Exposure Tests. This test relates to the performance of firestop products as originally installed, and compares to the performance testing after exposure to extreme temperatures and high humidity for an extended period of time.

If properly stored, our products have a minimum shelf life of three years, subject to inspection with the exception of our fire rated mortar and silicone products which have a two year shelf life.

The Rectorseal Corporation, manufacturer of Metacaulk® Fire Stop products, has always been concerned about the long-term performance of our products. We implemented a testing program prior to the UL 1479 requirement for "Fire Tests of Through-Penetration Firestops". We burned materials in our UL sanctioned fire test facility to measure the performance of RectorSeal® products after extended periods of time as in accordance with current standards. Some of the tested materials exceed 15 years in age. Assuming that the substrate area surrounding the actual penetration has not been damaged, we warrant that Metacaulk® products will perform satisfactorily for the sustainable life of the building.

Repectfully,

Terry L. Gossett

Terry L. Gossett
Technical Service



A CSW Industrials Company

March 3, 2016

To Whom It May Concern:

RectorSeal's Warranty Statement for our Smoke and Acoustical sealant is contingent upon actual storage conditions and proper installation.

If properly stored, our RectorSeal® Smoke and Acoustic Sealant has a minimum shelf life of two years, subject to inspection. Assuming that the substrate area surrounding the actual penetration/joint has not been damaged, we warrant that the RectorSeal® Smoke and Acoustic Sealant product, when fully cured will perform satisfactorily for the sustainable life of the building.

If there are any additional questions, do not hesitate to call our office at 800-231-3345.

Respectfully,
RECTORSEAL

Terry Gossett

Terry Gossett
Technical Services



2601 Spenwick Dr
Houston, TX 77055

ph: 713-263-8001
fax: 713-263-7577



USGBC® and related logo is a trademark owned by the U.S. Green Building Council and is used by permission

May 9, 2012

RE: Metacaulk® Firestopping Materials
LEED® Product Information

TO: Whom It May Concern

This letter will detail the contribution of Metacaulk® firestopping materials to the LEED Green Building Rating System in accordance with LEED-NC, CS, CI and School Rating Systems.

MR Credit 2.1: Construction Waste Management, Divert 50% from Disposal

MR Credit 2.2: Construction Waste Management, Divert 75% from Disposal

In areas where facilities exist, the following Metacaulk® materials are recyclable and can contribute to earning Materials and Resources Credit 2.1 or Credit 2.2.

•	Carton	Cardboard	2 lbs / carton
•	10.3 oz caulk tube	HDPE	40 g. / tube
•	20.2 oz foil pack	Mylar	5 g. / pack
•	30 oz caulk tube	HDPE	98 g. / tube
•	quart bottle	HDPE	57 g. / bottle
•	5 gallon pail	HDPE	934 g. / pail
•	Wooden pallet	wood	45 lbs. / pallet

MR Credit 5.1: Regional Materials, 10% Extracted, Processed & Manufactured Regionally

MR Credit 5.2: Regional Materials, 20% Extracted, Processed & Manufactured Regionally

Metacaulk® firestopping materials are manufactured in one location Houston, Texas. If these locations fall within a 500-mile radius of the project site and the location the raw materials used to make the finished product are extracted, recovered or harvested within a 500-mile radius of the project, then these materials or a portion of the materials can contribute to earning Materials and Resources Credit 5.1 and Credit 5.2.

The following are the locations of the Metacaulk® firestopping materials manufacturing plants:

<u>Metacaulk® Product</u>	<u>Location</u>
All Metacaulk® Products	Houston, Texas

Please contact your local Metacaulk® Representative to request a project specific letter pertaining to Credit 5.1 and Credit 5.2. The letter will provide the location where the raw materials are extracted, recovered or harvested in relation to the location of the project.

EQ Credit 4.1: Low Emitting Materials, Adhesives & Sealants

EQ Credit 4.2: Low Emitting Materials, Paints & Coatings

The volatile organic content (VOC) of Metacaulk® firestopping materials is listed below for those products that are lower than the minimum LEED requirements for low-emitting materials. These materials can help contribute to earning Indoor Environmental Quality EQ Credit 4.1 and 4.2.

<u>Metacaulk Product</u>	<u>EQ Credit</u>	<u>VOC Content (g/l)</u>
Metacaulk® 1000	4.1	10
Metacaulk® 950	4.1	10
Metacaulk® 835+	4.1	10
Metacaulk® MC 150+	4.1	10
Metacaulk® 350i	4.1	10
Metacaulk® Putty pads & Sticks	4.1	10
Metacaulk® 1100	4.2	10
Metacaulk® 1200	4.2	10
Metacaulk® Joint Strip	4.1	10
Metacaulk® Wrap Strip	4.1	10
Metacaulk® 1500	4.1	10
Metacaulk® Industrial Cable Coating	4.2	10
Metacaulk® Pipe Collar	4.1	10
Metacaulk® Intumescent Sleeve	4.1	10
Metacaulk® Fire Rated Mortar	4.1	10
Metacaulk® Firestop Pillows	4.1	10
Metacaulk® Cast-In-Place (CID)	4.1	10

Please feel free to contact me with any additional questions or information.

Sincerely,



Terry Gossett
Technical Service

RECTORSEAL

A CSW Industrials Company

PRODUCT DATA SHEET

METACALK® 1200
1200 CAULK GRADE
Spray & Caulk Firestop Sealant**Description**

Both grades of Metacaulk 1200 are a single component, general purpose fire rated sealants for construction joints such as top of the wall, curtain wall perimeter, expansion, control, etc. and for general construction gaps and voids. Metacaulk 1200 is a water based sealant that comes in two different grades. Metacaulk 1200 mastic grade is designed for spray applications and provides a fast, economical means of installation on long joint runs. Metacaulk 1200 caulk grade is a non-sag sealant that is easy to apply from a caulk gun or troweled. It cures to an elastomeric membrane seal that is suitable where dynamic movement is expected. In the event of a fire, Metacaulk 1200 will prevent the spread of flames, smoke, hot gases and water through the joint openings. No dilution or mixing is required for use. Metacaulk 1200 can be caulked from a tube, brushed or troweled from the pail, or applied with a spray pump. Metacaulk 1200 systems are rated for up to 3 hour conditions in accordance with ASTM E1966 (UL 2079) (Tests for Fire Resistance of Building Joint Systems), test standards. Metacaulk 1200 has been cycled 500 times, in accordance with the new ASTM E1399 standard. Also tested in accordance with ASTM E814 (UL 1479) for systems up to 4 hours. Metacaulk 1200 is protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.

**Applications**

Metacaulk 1200 can be used as a general purpose fire rated sealant and smoke seal for construction joints on both vertical and horizontal surfaces. Metacaulk 1200 is also an excellent fire rated acoustical sealant and can be used in areas under constant vibration or movement.

Characteristics | Features

- Sprayable, Brushable, Trowelable, or Caulkable
- Freeze-thaw capable
- Water based
- Flexible - Elastomeric
- Paintable
- VOC compliant
- Excellent smoke seal
- 3 Year shelf life

Packaging

Code	Size	Qty. per Case	Dimensions (in)	Cubic Feet
Red				
66292	20.2 oz. foil pack	12	9x14x17	.51
66015	30 oz cartridge	12	11x9x17	.97
66379	5 Gallon	1	13 dia x14	1.08
66529	5 Gal. spray	1	13 dia x 14	1.08
66387	5 Gallon caulk grade	1	13 diax14	1.08
White				
66525	30 oz. cartridge	12	11x9x17	.97
66527	5 Gal. Spray	1	13 dia x 14	1.08
66526	5 Gal. Spray	1	13 dia x14	1.08
66386	5 Gallon caulk grade	1	13 diax14	1.08
66294	20.2 oz. foil pack	12	9x14x7	.51

Installation Data

Tightly pack with the appropriate backing material as listed in the selected UL Tested System design. There should be no loose insulation, voids or gaps present. Apply the required coating thickness to completely cover backing material.

Consult UL Product iQ for complete instructions and system listings. For Metacaulk 1200 spray application, use recommended spray equipment. Contact Technical Service at 1-800-231-3345 for current recommendations.

When system clean up is needed, follow manufacturer's instructions for specific equipment used.

NOTE: SPRAY EQUIPMENT CAN BE DANGEROUS! USE ONLY BY PROPERLY TRAINED PERSONNEL. FOLLOW ALL SAFETY AND OPERATION INSTRUCTIONS AND PROCEDURES.

Spray application of Metacaulk 1200 Spray requires airless spray equipment meeting the following specifications:

Working Pressure: Min. 2500 PSI (172 Bar)

Delivery: Min. .72 U.S. gpm (2.7 l/min.)

Recommended Spray Tip Orifice: 0.021 to 0.025 in. (0.53 to 0.64 mm)

Recommended Wetted Parts All seals and contact surfaces suitable for contact with latex emulsions.

A minimum 3/8" (9.5 mm) fluid line is required, a 1/2" (13 mm) line is preferred. Consult pump manufacturer for long hose runs or lifts to higher elevations. A reversible spray tip is recommended. A 6" (152 mm) fan pattern is suggested to minimize overspray. The following airless spray equipment has demonstrated suitability for application of this product.

Manufacturer Model Number & Description

Titan Tool Inc. 740ix Electric Airless Sprayer

Graco Inc. Ultra Max II 695 Electric Airless Sprayer

Testing Data

Metacaulk 1200 is classified by Underwriters Laboratories Inc. For specific test criteria, refer to the UL Product iQ or call RectorSeal.

Metacaulk 1200 was tested at positive pressure with a minimum 0.01 inches (2.5 Pa) water and in accordance with UL 2079 test standards.

Sound Transmission Class (STC) 65 - The test was performed in accordance with ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

Tested by a third party independent laboratory to ASTM G21 with Fungal Growth Rating results of zero.



FBC System Compatible indicates that this product has been tested, and is monitored on an ongoing basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® pipe and fittings.

FBC, FlowGuard Gold®, BlazeMaster® and Corzan® are licensed trademarks of The Lubrizol Corporation.

Inspection & Repair

RectorSeal recommends that a firestop system inspection be conducted during installation of the material in accordance with ASTM E2174 and ASTM E2393. In the event post-installation inspection and destructive sampling is necessary, RectorSeal advises repairing the damaged firestop system by replacing any material that was removed or damaged with the same product originally installed, and ensuring the assembly matches the original firestop listing. RectorSeal advises, that due to the chemical nature of firestop products and sealants, material depth should be determined by measuring the points of adhesion at the substrate bond area as sealants may decrease in size during the curing process.

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Spray, Caulking Gun or Towel
Application Temperature between	40°F - 120°F 4°C - 49°C
Color	Red or White
Cure Time	5 to 7 days (1/8" at 77°F/25°C)
Density	~10.5 lbs/gal
Flexible	Yes
Skin Over Time	30-45 min. (at 77°F/25°C)
pH Value	7 to 9

Volume Coverage:

per 20.2 oz	36 cu. in
per 30 oz	54 cu. in
per 5 gallon pail	1155 cu. in.

VOC	Negligible
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ASTM E84, UL 723 Tunnel Test

Flame Spread	0
Smoke Index	0

Storage & Handling

Metacaulk 1200 should be stored in unopened container between 35°(2°C) and 120°F (49°C) to obtain a 3 year shelf life.

NOTE: Do not dilute; no mixing is required. Best if protected from freezing. If freezing occurs, thaw completely before use. Keep products stored under protective cover in original containers.

Limitations

Metacaulk 1200 is not designed to be used in areas under continuous immersion or in areas which would be continuously wet. Metacaulk 1200 should not be used on hot uninsulated surfaces above 200°F (93°C).

Cautions

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRES, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300.

PRECAUTIONS: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation. Wear gloves and safety glasses. Wash after handling. **FIRST AID:** For any overexposure or if skin irritation develops get immediate medical attention. **EYES-**Flush 15 minutes with clean water. **SKIN-**Wash with soap and water. **INGESTION-**Call physician immediately **SPILLS:** Clean up immediately with scrapers and water. **STORAGE AND HANDLING:** Keep container upright and tightly closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

For additional information, refer to Safety Data Sheet.

METACAULK 1200 COVERAGE RATE:

NOTE: Coverage rates as given are mathematical calculations. Allow for application losses, opening size variations and applied thickness variations. (Verify all calculations)

Based on 3" fluted metal deck with 3/4" relief joint.

Opening Width (inches)	*Coverage Rate in Lineal Feet Per Gallon at Application Thickness of 1/8 inch
1/2	102
3/4	88
1 1/2	61
2	51
2 1/2	44
3	38
3 1/2	34
4	30
5	25
6	22

*Calculation includes 1/2" overlap along both edges of opening

Limited Warranty

RectorSeal, LLC makes the Limited Express Warranty that when the instructions for storage and handling of our products are followed we warrant our products to be free from defects. THIS LIMITED EXPRESS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF RectorSeal, LLC. The sole remedy for breach of the Limited Express Warranty shall be the refund of the purchase price. All other liability is negated and disclaimed, and RectorSeal, LLC shall not be liable for incidental or consequential damages.



Manufactured by **RectorSeal LLC • 2601 Spenwick Drive, Houston, TX 77055, USA • 800-231-3345 • Fax 800-441-0051 • RectorSeal.com**

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DELTA®

DECK PLUGS



DELTA Deck Plugs are precision-cut from noncombustible UL® classified high-density mineral fiber DELTA Board using our patented V-grooving technology to facilitate compression into the fluted profile of metal decks encountered at top-of-wall joints. DELTA Deck Plugs are available in three (3) standard sizes to closely match the profiles of the most frequently specified metal decks:

For Top-Of-Wall @ Roof Deck Joints:

Type I Profile: 1.5" thick x 3.5"x4.5" width x 36" long

Type V Profile: 1.5" thick x 4.5"x5.5" width x 36" long

For Top-Of-Wall @ Floor Deck Joints:

Type III Profile: 3.0" thick x 5.0"x7.0"x36" long

Special non-standard sized precision-cut by agreement as to dimensions and quantities are available.

Note: Plug cross-sections are slightly over-sized to facilitate a snug compression fit and to overcome small dimensional variations of deck profiles among various metal deck manufacturers. The above dimensions are nominal and refer to the nominal size of the flute for which they are intended. Achieving the actual percentage of compression required by the listing agency the responsibility of the installing contractor.

DELTA Deck Plugs are manufactured in 36" long strips that are easily and precisely field cut to the length required using a suitable knife, i.e. 6" long belting knife. Most listed top-of-wall joint assembly descriptions specify a percentage of compression for the UL® classified mineral fiber forming material to assure that flutes remain fully packed within the dynamic limits anticipated by the joint's design. A suggested sequence for installation is 1) compress DELTA Board between the top-of-wall and the ribs of the metal deck, then 2) compress DELTA Deck Plugs to fit snugly into every flute above the DELTA Board.

Benefits:

- By cutting each DELTA Deck Plug to the precise length required, a smooth substrate over which firestop caulk or sealant can be most cost effectively applied according to the firestop material manufacturer's instructions.
- inspecting fire marshals and building code officials may be more confident that flutes are completely filled with UL® classified mineral fiber forming material.
- Flute-shaped DELTA Deck Plugs reduce the otherwise tedious time and consuming labor needed to cut, fit, completely fill and properly compress high-density mineral fiber board into the irregularly shaped flute openings and gaps between tops of walls and metal decks. Thus, production time can be reduced and critical construction schedules may be more easily met.

Technical Data:

Density: Nominal 7.0 lbs/ft³ (Nominal 112 Kg/m³)

Corrosion [Steel, Aluminum & Copper] per ASTM C 665
...None

Moisture Sorption [Vapor] per ASTM C 1104..... Less than 1%

Water wicking resistant • Non-hygroscopic • Does Not Promote Growth of Fungi or Bacteria

Per Test Method UL®-723:

Flame Spread Index = 0

Smoke Developed Index = 0

When UL® tested in accordance with ASTM E 136-95, DELTA Boards are designated as "noncombustible".

ROCK WOOL MANUFACTURING COMPANY

Leeds, Alabama 35094-0506 U.S.A. Phone 205.699.6121

RECTORSEAL

A CSW Industrials Company

PRODUCT DATA SHEET

RECTORSEAL® BLAZE FOAM™ Compressible Intumescent Firestop Foam

Description

RectorSeal® Blaze Foam™ is intumescent compressible foam used to firestop head of wall, wall to wall and bottom of wall joint applications both dynamic and static.

Applications

RectorSeal Blaze Foam is installed on dynamic and static joints for head of wall, wall to wall, and bottom of wall. Designed for installation within resistive joints with up to 2 hours F rating, Rectorseal Blaze Foam provides dynamic movement with up to 50% compression (see UL systems) and 100% extension capabilities for max joint width 1/4 to 1 inch.

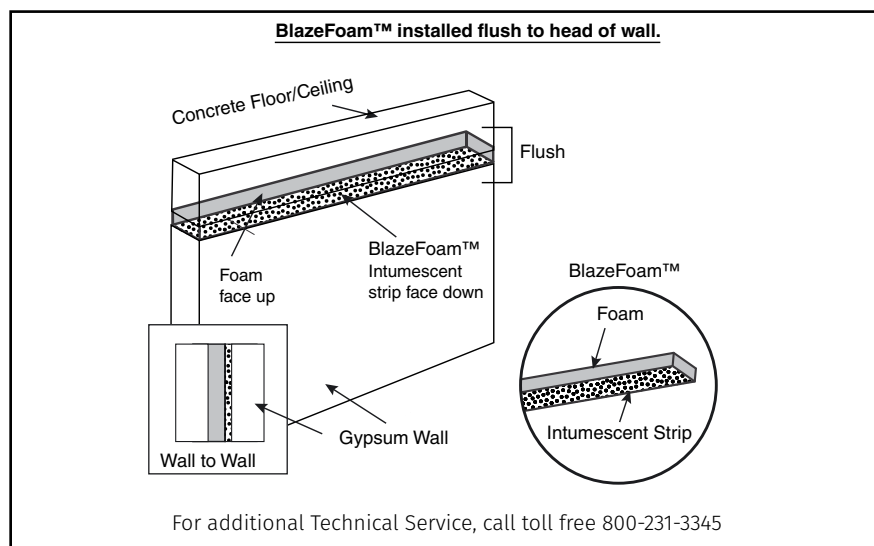
Packaging

Code	Size	Qty. per Case
66024	48"x5/8"x1 1/2"	80

Characteristics | Features

- Up to 50% compression
- 100% extension capabilities
- Up to 2 hours F rating
- Dynamic movement

Installation Data



RectorSeal Blaze Foam is simple to install for head of wall applications. Compress the Blaze Foam into the joint between the top of the wall and bottom of the deck so that the intumescent strip is facing the wall surface. RectorSeal Blaze Foam can be recessed into the joint or installed flush with the outside surface of the wall. Joints are butted together. No mechanical fastening of Blaze Foam is required.

Testing Data

RectorSeal Blaze Foam is classified by Underwriters Laboratories as a Fill, Void or Cavity Material. For specific test criteria, see UL Online Certifications Directory or call RectorSeal. RectorSeal Blaze Foam is tested in accordance with UL 2079. F rating up to 2 hours.

STC Rating 64

The test was performed in accordance with ASTM E-90-09, Standard Test Method for Laboratory Measurements of Airborne Sound Transmission Loss of Building Partitions and Elements.



L Rating < 1 CFM/LF

Inspection & Repair

RectorSeal recommends that a firestop system inspection be conducted during installation of the material in accordance with ASTM E2174 and ASTM E2393. In the event post-installation inspection and destructive sampling is necessary, RectorSeal advises repairing the damaged firestop system by replacing any material that was removed or damaged with the same product originally installed, and ensuring the assembly matches the original firestop listing. RectorSeal advises, that due to the chemical nature of firestop products and sealants, material depth should be determined by measuring the points of adhesion at the substrate bond area as sealants may decrease in size during the curing process.

Storage & Handling

RectorSeal Blaze Foam should be stored in a cool, dry place between 0°F (-18°C) to 120°F (49°C) to obtain a minimum 10 year shelf life. Keep products stored under protective cover, in their original containers. A stock rotation program is recommended.

Limitations

To be used only in the tested configurations or as recommended by RectorSeal. Blaze Foam is not used in joints that require movement greater than 1".

Cautions

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC-DAY OR NIGHT 1-800-424-9300.

PRECAUTIONS: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation if prolonged or repeated contact occurs. Wash after handling. **FIRST AID:** For any overexposure, get immediate medical attention after first aid is given. **Eyes-** Flush 15 minutes with clean water. **Skin-** Wash with soap and water. **Inhalation-** Remove to fresh air. **Ingestion-** Only if conscious, give large amounts of water and INDUCE VOMITING. **FIRE AND SPILLS:** Use water fog, CO₂, foam, or dry chemicals. Wipe up spills to prevent footing hazard. Clean up with scrapers and water. **STORAGE AND HANDLING:** Store away from heat sources. Keep container closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

Limited Warranty

RectorSeal, LLC makes the Limited Express Warranty that when the instructions for storage and handling of our products are followed we warrant our products to be free from defects. THIS LIMITED EXPRESS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF RectorSeal, LLC. The sole remedy for breach of the Limited Express Warranty shall be the refund of the purchase price. All other liability is negated and disclaimed, and RectorSeal, LLC shall not be liable for incidental or consequential damages.

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None

Activation of Intumescence:

Expansion Begins	375°F (190°C)
Expansion Greatest	575°F - 1100°F 302°C - 593°C

Color	Charcoal
Storage	0°F -120°F -18°C -49°C

US Patent No. 6,207,085

US Patent No. 9,683,364 licensed from CEMCO Inc.

Manufactured by **RectorSeal LLC • 2601 Spenwick Drive, Houston, TX 77055, USA • 800-231-3345 • Fax 800-441-0051 • RectorSeal.com**

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RECTORSEAL

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PRODUCT DATA SHEET

METACAULK® 150+
General Purpose Firestop Sealant**Description**

Metacaulk 150+ is a one component, general purpose fire rated sealant, acoustic sealant and smoke seal for construction joints and through-penetrations. Metacaulk 150+ is a water based, non-sag caulking grade sealant that is easy to apply as well as retrofit. It cures to an elastomeric seal that is suitable where dynamic movement is expected. In the event of a fire, Metacaulk 150+ will prevent the spread of flames, smoke, hot gases and water through joint openings and through-penetrations. No dilution or mixing is required for use. No special skills are necessary for installation. Metacaulk 150+ is applied with a conventional caulking gun, bulk loading gun or can be troweled from the pail. For large applications, it can be pumped directly from the pail. Metacaulk 150+ systems are rated for up to 4 hours in accordance with ASTM E814 (UL 1479) and ASTM E1966 (UL 2079) test standards. Metacaulk 150+ is protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.

**Applications**

Metacaulk 150+ can be used in interior applications as a general purpose fire rated sealant, acoustic sealant and smoke seal for construction joints on both vertical and horizontal surfaces. Metacaulk 150+ is also an excellent fire rated acoustical sealant and can be used in areas under constant vibration or movement. Metacaulk 150+ can also be used on various penetrations such as EMT, telephone & power cables in concrete floors and walls, gypsum walls as well as wood floors. Use Metacaulk 150+ to prevent the spread of fire and smoke through joints in fire rated gypsum wallboard partitions, concrete block or concrete walls and/or concrete or corrugated steel deck floor/ceiling assemblies.

Characteristics | Features

- Water based
- Excellent freeze-thaw
- Flexible set
- Paintable
- VOC compliant
- Safe and easy to use
- 3 Year shelf life
- STC rating 65

Packaging

Code	Size	Qty. per Case	Dimensions (in)	Cubic Feet
66648	10.3 oz cartridge	12	8x6x12	.34
66385	20.2 oz foil pack	12	9x14x7	.51
66383	30 oz. cartridge	12	11x9x17	.97
66389	5 Gallon	1	13 dia x14	1.08

Installation Data

Install Metacaulk 150+ using standard caulking techniques or trowel from pails. Metacaulk MC 150+ may also be pumped from the pails. When damming materials are needed, use only materials approved for the specific application.

TYPICAL GYPSUM WALLBOARD INSTALLATION

- Step 1 Cut opening in wall.
 - Step 2 Clean penetration opening and surfaces from loose debris, dirt, oil and wax.
 - Step 3 If required, install sleeve or wire mesh and backing material.
 - Step 4 Gun the sealant as required to the specified depth. Trowel surface flush with wall.
- Consult UL Product iQ for complete instructions and system listings.

Testing Data

For specific test criteria, refer to UL's Fire Resistance Directory or call RectorSeal.

Metacaulk 150+ was tested at positive pressure with a minimum 0.01 inches of water (2.5 Pa) and in accordance with ASTM E814 (UL 1479), ASTM E1966 (UL 2079).

Sound Transmission Class (STC) 65 - The test was performed in accordance with ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

Tested by a third party independent laboratory to the ASTM G21 standard with Fungal Growth Rating results of zero.



FBC™ System Compatible indicates that this product has been tested, and is monitored on an on-going basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® pipe and fittings.

FBC, FlowGuard Gold®, BlazeMaster® and Corzan® are licensed trademarks of The Lubrizol Corporation.

Inspection & Repair

RectorSeal recommends that a firestop system inspection be conducted during installation of the material in accordance with ASTM E2174 and ASTM E2393. In the event post-installation inspection and destructive sampling is necessary, RectorSeal advises repairing the damaged firestop system by replacing any material that was removed or damaged with the same product originally installed, and ensuring the assembly matches the original firestop listing. RectorSeal advises, that due to the chemical nature of firestop products and sealants, material depth should be determined by measuring the points of adhesion at the substrate bond area as sealants may decrease in size during the curing process.

Storage & Handling

Metacaulk 150+ should be stored between 35°F (2°C) and 120°F (49° C) to obtain a 3 year shelf life.

NOTE: Do not dilute, no mixing is required. Best if protected from freezing. If freezing occurs, thaw completely before using. Keep products stored under protective cover in original containers.

Limitations

Metacaulk 150+ is not designed to be used in areas under continuous immersion or in areas which would be continuously wet. Metacaulk 150+ should not be used against hot uninsulated surfaces above 300°F (149°C).

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Caulking Gun or Trowel
Application Temperature between	40°F - 120°F 4°C - 49°C
Color	Red
Cure Time	3 to 4 weeks (at 77°F/25°C)
Density	12.5 lbs/gal
Elastomeric	Yes
Freeze/Thaw	Excellent
Skin Over Time	30 min. (at 77°F/25°C)
pH Value	7 to 8

Volume Coverage:	
for 10.3 oz. tube	(304 ml) 18 cu. in.
for 20.2 oz. foil packs	(597 ml) 36 cu. in (
for 30 oz. tube	(887 ml) 54 cu. in.
for 5 gallon	(18.9 liter) 1155 cu. in..

VOC	Negligible
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ASTM E84, UL 723 Tunnel Test	
Flame Spread	10
Smoke Index	0

Cautions

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC-DAY OR NIGHT 1-800-424-9300.

PRECAUTIONS: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation if prolonged or repeated contact occurs. Wash after handling. **FIRST AID:** For any overexposure, get immediate medical attention after first aid is given. **EYES**-Flush 15 minutes with clean water. **SKIN**-Wash with soap and water. **INHALATION**-Remove to fresh air. **INGESTION**-Only if conscious, give large amounts of water and INDUCE VOMITING. **FIRE AND SPILLS:** Use water fog, CO₂, foam, or dry chemicals. Wipe up spills to prevent footing hazard. Clean up with scrapers and water. **STORAGE AND HANDLING:** Store away from heat sources. Keep container closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

For additional information, refer to Safety Data Sheet.

Limited Warranty

RectorSeal, LLC makes the Limited Express Warranty that when the instructions for storage and handling of our products are followed we warrant our products to be free from defects. THIS LIMITED EXPRESS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF RectorSeal, LLC. The sole remedy for breach of the Limited Express Warranty shall be the refund of the purchase price. All other liability is negated and disclaimed, and RectorSeal, LLC shall not be liable for incidental or consequential damages.



Manufactured by **RectorSeal, LLC • 2601 Spenwick Drive, Houston, TX 77055, USA • 800-231-3345 • Fax 800-441-0051 • RectorSeal.com**

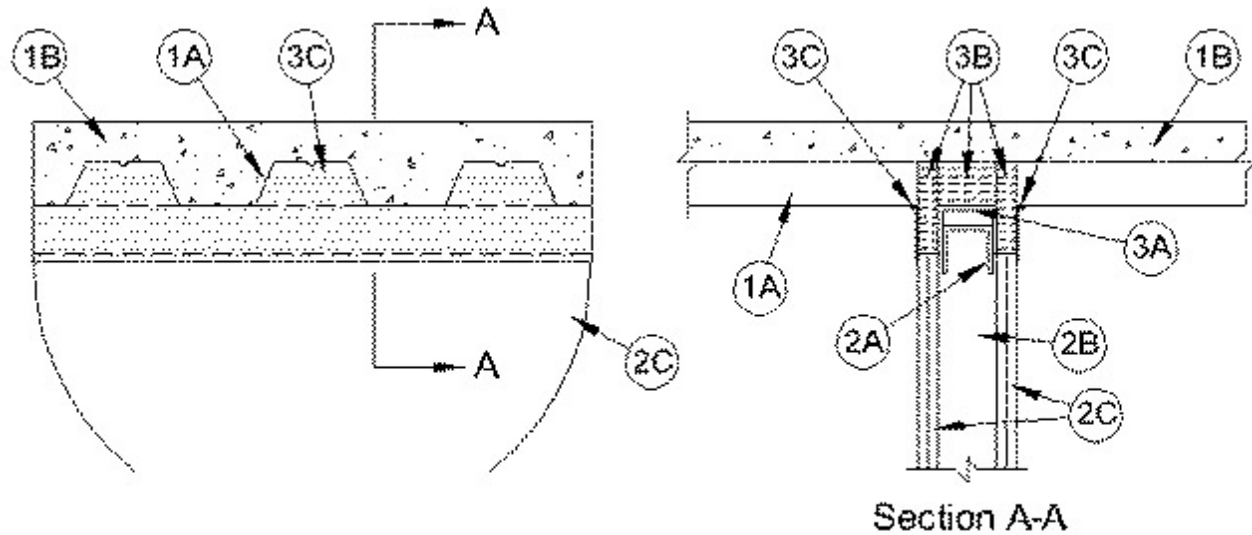
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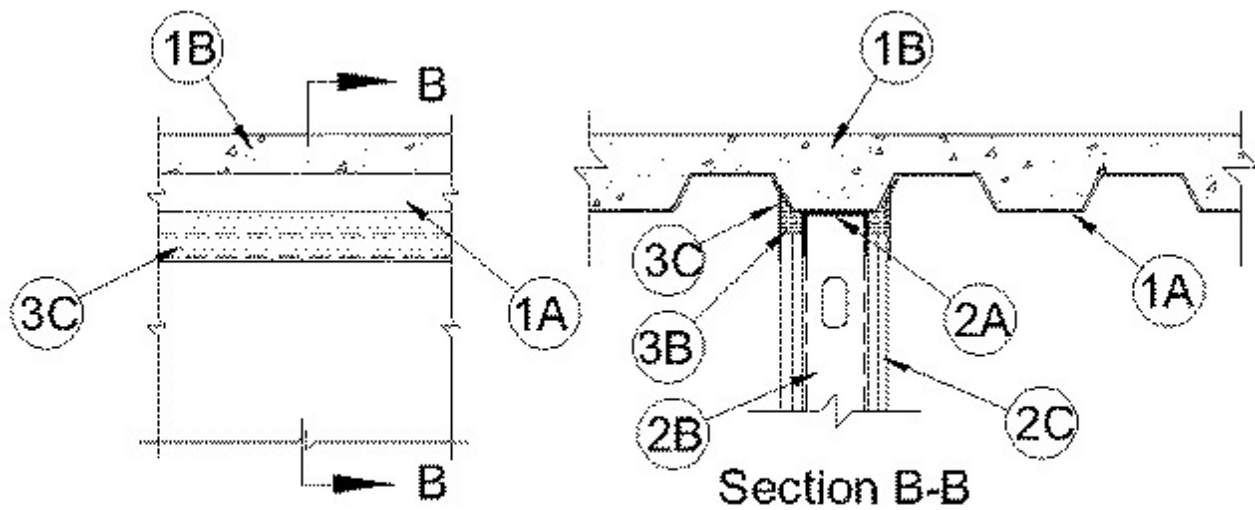
System No. HW-D-0107

September 08, 2015

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 4)	F Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 4)
Nominal Joint Width - 1-1/2 or 2 In. (See Item 3)	FT Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 4)
Class II Movement Capabilities — 25% Compression or Extension	FH Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 4)
L Rating At Ambient — Less Than 1 CFM/sq ft	FTH Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 4)
L Rating At 400 F — Less Than 1 CFM/sq ft	Nominal Joint Width - 1-1/2 or 2 In. (See Item 3)
	Class II Movement Capabilities — 25% Compression or Extension
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft



Configuration A



Configuration B

1. Floor Assembly — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor And Floor Units* — Max 3 in. (76 mm) deep galv steel fluted floor units.

B. Concrete — Min 2-1/2 in. (64 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) reinforced concrete, as measured from the top plane of the floor units.

C. Spray-Applied Fire Resistive Material* — (Optional, Not Shown) - Prior to the installation of the joint system (Item 3) all surfaces of the steel floor units to be sprayed with the thickness of material specified in the individual D700 Series Design.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, RG and MK-6S

1A. Roof Assembly — (Not Shown) — As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 or P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The roof assembly shall include the following construction features:

A. Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. Roof Insulation — For P900 Series Designs, min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the roof deck. For P700 Series Designs, roof insulation shall be as specified in the individual design.

C. Spray-Applied Fire Resistive Material* — (Optional, Not Shown) - Prior to the installation of the joint system (Item 3) all surfaces of the roof deck to be sprayed with the thickness of material specified in the individual P700 Series Design.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, RG and MK-6S

The hourly fire rating of the floor or roof assembly shall be equal to or greater than the hourly fire rating of the wall assembly.

2. Wall Assembly — The max separation between bottom of steel floor units, roof deck or spray-applied fire resistive material (if used) and top of wall (at time of installation of joint system) is dependent upon the type of floor or roof assembly, hourly rating of the wall and configuration of the joint system, as shown in table under Item 3. Wall may be perpendicular to direction of the fluted steel floor units or roof deck (Configuration A) or parallel to and centered under the valleys of the steel floor units or roof deck (Configuration B). The 1, 2, 3 or 4 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with min 1-1/4 in. (32 mm) flanges. Studs and gypsum board must have a min 1/4 in. (6 mm) engagement onto the flanges of the ceiling runner at the furthest point of extension of the joint. When U shaped deflection channel is used, ceiling runner is installed within the U-shaped deflection channel (Item 3B) with 1 in. (25 mm) gap maintained between the top of ceiling runner and top of deflection channel. When deflection channel is not used, ceiling runner installed perpendicular to or parallel with direction of the fluted steel deck prior to the application of the spray-applied fire resistive material (if used). Ceiling runner secured to steel deck valleys with steel masonry anchors or welds spaced max 24 in. (610 mm) OC.

A1. Light Gauge Framing* — Slotted Ceiling Runner — When the nom joint width is less than or equal to 1-3/4 in. (44 mm) or when the thickness of the spray-applied fire resistive material is less than 1 in. (25 mm), slotted ceiling runner may be used as an alternate to the ceiling runner in Item 2A. Slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner installed perpendicular to or parallel with direction of fluted steel deck prior to the application of the spray-applied fire resistive material (if used). Slotted ceiling runner secured to steel deck valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. When slotted ceiling runner is used, deflection channel (Item 3a) shall not be used.

BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK

CLARKDIETRICH BUILDING SYSTEMS — Type SLT, SLT-H

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — SDT250, SDT300

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Type SLT

OLMAR SUPPLY INC — STT250, STT300

R & P SUPPLY — SCT250, SCT300

SCAFCO STEEL STUD MANUFACTURING CO

TELLING INDUSTRIES L L C — True-Action Deflection Track

A2. Light Gauge Framing* — Vertical Deflection Clip — (Optional) Steel clips can be used in conjunction with steel studs (Item 2B), ceiling runner (Item 2A) or deflection channel (Item 3A). Clips installed over the top of studs and inserted within the ceiling runner or deflection channel. Clip shall be secured to the ceiling runner or deflection channel with No. 8 self drilling, self tapping steel fasteners through holes provided within the clip. Clip may be secured to the stud with No. 6 pan head steel screw through holes provided within the clip. As an alternate, the legs of the clip may be installed over the top of the stud without attachment in accordance with manufacturer's installation instructions.

FLEX-ABILITY CONCEPTS L L C — Three Legged Dog Deflection Clip

A3. Light Gauge Framing*- Notched Ceiling Runner — As an alternate to the ceiling runners in Items 2A through 2A3, notched ceiling runners to consist of C-shaped galv steel channel with notched return flanges sized to accommodate steel studs (Item 2B). Notched ceiling runner installed perpendicular to or parallel with direction of fluted steel deck and secured to steel deck valleys with steel masonry anchors spaced max 24 in. (610 mm) OC. When notched ceiling runner is used, deflection channel (Item 3A) shall not be used.

OLMAR SUPPLY INC — Type SCR

B. Studs — Steel studs to be min 3-5/8 in. (92 mm) wide. Studs cut 3/4 in. (19 mm) less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. Studs and gypsum board must have a min 1/4 in. (6 mm) engagement onto the flanges of the ceiling runner at the furthest point of extension of the joint. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. (13 mm) long wafer head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in. (610 mm) OC.

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in., 1-1/4 in., 1-1/2 in. or 2 in. (16, 32, 38 or 51 mm) on each side of wall for 1, 2, 3 and 4 hr fire rated wall assemblies, respectively. Wall to be constructed as specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory, except that a max 1-1/2 or 2 in. (38 or 51 mm) gap shall be maintained between the top of the gypsum board and the bottom surface of the steel floor units or roof deck as specified in Item 3 below. The top row of screws shall be installed into the studs 4-3/4 in. (121 mm) below the valleys of the steel floor units, roof deck or spray-applied fire resistive material (if used).

The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.

3. Joint System — Max separation between bottom of floor and top of wall (at time of installation of joint system) is dependent upon the hourly rating of the wall, type of assembly, and configuration of joint system. The joint system is designed to accommodate a max 25 percent compression or extension from it's installed width. The hourly rating of the joint system is dependent upon the joint configuration, type of floor or roof assembly, max hourly rating of the wall assembly and max width of the joint as shown in the table below:

Type of Assembly	Rating of Wall Assembly, Hr	Joint Configuration	Max Joint Width, In (mm)	Hourly Rating, Hr
D900 or P900	1, 2, 3 & 4	A	1-1/2 or 2 (38 or 51)	1, 2, 3 & 4
D900 or P900	1 & 2	B	1-1/2 or 2 (38 or 51)	1 & 2
D700 or P700	1, 2 & 3	A	1 (25)	1, 2 & 3
D700 or P700	1 & 2	B	1 (25)	1 & 2

The joint system consists of a deflection channel, forming material and fill material, as follows:

Joint Configuration A

For unprotected steel floors units or roof decks (D900 or P900 Series Designs), max separation between bottom of floor or roof and top of wall (at time of installation of joint system) is 1-1/2 in. (38 mm) for 1 hr fire rated assemblies and 2 in. (51 mm) for 2, 3 and 4 hr fire rated assemblies. For protected steel floors units or roof decks (D700 or P700 Series Designs), max separation between bottom of spray-applied fire resistive material and top of wall (at time of installation of joint system) is 1 in. (25 mm).

A. Deflection Channel — (Optional) - Nom 3-3/4 in. (95 mm) wide by 3 in. (76 mm) deep U-shaped channel formed from min 25 gauge galv steel. Deflection channel installed perpendicular to direction of the fluted steel deck and secured to the steel deck valleys with steel masonry anchors or by welds spaced max 12 in. (305 mm) OC. The ceiling runner (Item 2A) is installed within the deflection channel to maintain a 1 in. (25 mm) gap between the top of the ceiling runner and the top of the deflection channel. The ceiling runner is not fastened to the deflection channel.

B. Forming Material* — Min 4-7/8 in., 6 in., 6-5/8 in. or 7-5/8 in. (124, 152, 168 or 194 mm) depth of 4 pcf (64 kg/m³) mineral wool batt insulation for 1, 2, 3 and 4 hr fire rated assemblies, respectively, cut to the shape of the fluted deck, approx 25 percent larger than the area of the flutes and compressed into the fluted area of the steel floor or roof deck above the ceiling channel. Additional strips of min 4 pcf (64 kg/m³) density- mineral wool batt insulation cut to a thickness equal to the overall thickness of the gypsum board, are compressed 50 percent in thickness and installed cut edge first to fill the gap between the top of the gypsum board and

bottom of the steel floor units or roof deck. The forming material shall be installed flush with both surfaces of the wall.

The type and manufacturer of forming material used within the joint system is dependent upon the hourly rating of the wall assembly as shown in the table below:

Rating of Wall, hr	Manufacturer of Mineral Wool	Type of Mineral Wool
1, 2, 3 & 4	Roxul Inc	SAFE Mineral Wool
1 & 2	Rock Wool Manufacturing	Delta Safing Insulation
1, 2 & 3	Thermafiber Inc, IIG Minwool	SAF, MinWool - 1200 Safing

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE Mineral Wool Batts

ROXUL INC — SAFE Mineral Wool Batts

THERMAFIBER INC — SAF

B1. Spray-Applied Fire Resistive Material* - (Not Shown) — As an alternate to the forming material (Item 3A) within the flutes, min 4-7/8 in., 6 in., 6-5/8 in., or 7-5/8 in. (124, 152, 168 or 194 mm) depth of spray-applied fire resistive material, for 1, 2, 3, and 4 hr fire rated assemblies, respectively, installed into the flutes of the steel floor or roof deck between the top of the wall and the bottom of the steel floor units or roof deck. Material shall be excluded from the joint immediately above the top of the gypsum board assemblies. The spray-applied fire resistive material is mixed with water in accordance with the mixing instructions on the bag and is sprayed and/or troweled to fill the flute above the wall. The min average density of the spray applied fire resistive material shall be 15 pcf (240 kg/m³) with a min individual density of 14 pcf. (224 kg/m³). See Design Information in Volume 1 of the Fire Resistance Directory for method of density determination.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Types MK-6/HY, MH-6/HY ES, RG, MK-6s, Z-106/G, Z-106, Z-106/HY and Z-146.

B2. Forming Material* - Plugs — (Not Shown) — As an alternate to the forming material and spray-applied fire resistive material (Items 3B and 3B1), mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes. Plugs shall be friction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner, flush with wall surfaces. Additional forming material, described in Item 3B, to be used in conjunction with the plugs to fill the gap between the top of gypsum board and bottom of steel floor units or roof deck. **Plugs to be used in max 2 hr fire rated wall assemblies.**

ROCK WOOL MANUFACTURING CO — Delta Deck Plugs

C. Fill, Void or Cavity Material* — Sealant — For assemblies incorporating mineral wool insulation within the flutes, min 1/8 in. (3 mm) wet thickness of fill material spray or brush applied on each side of the wall in the fluted area of the steel floor units or roof decks and between the top of the wall and the bottom of the steel floor units roof deck. Sealant shall overlap a min 1/2 in. (13 mm) onto wall and steel floor units or roof deck on both sides of wall or spray-applied fire resistive material, if used. For assemblies incorporating spray-applied fire resistive materials within the flutes, min 1/8 in. (3 mm) wet thickness of fill material spray or brush to cover the mineral wool insulation within the joint between the top of the wall and the bottom of the steel floor units roof decks. Sealant shall overlap a min 1/2 in. (13 mm) onto wall and a min 1/2 in. (13 mm) above the joint onto the spray-applied fire resistive material within the flutes on both sides of wall. When optional through penetrant (Item 4) is used, fill material to overlap a min of 1/2 in. (13 mm) onto conduit or EMT on both sides of wall.

RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

Joint Configuration B

For unprotected steel floor units or roof decks (D900 or P900 Series Designs), max separation between bottom of floor or roof and top of wall (at time of installation of joint system) is 1-1/2 and 2 in. (38 and 51 mm) for 1 and 2 hr fire rated assemblies, respectively. For protected steel floor units or roof decks (D700 or P700 Series Designs), max separation between bottom of spray-applied fire resistive material and top of wall (at time of installation of joint system) is 1 in. (25 mm).

A. Deflection Channel — Nom 3-3/4 in. (95 mm) wide by 3 in. (76 mm) deep U-shaped channel formed from min No. 22 ga galv steel. Deflection channel centered on valley of steel floor or roof deck and secured with steel fasteners or by welds spaced max 12 in. (305 mm) OC (prior to application of spray-applied fire resistive material, if used). The ceiling runner (Item 2A) is installed within the deflection channel to maintain a 1 in. (25 mm) gap between the top of the ceiling runner and the top of the deflection channel. The ceiling runner is not fastened to the deflection channel.

B. Forming Material* — Strips of min 4 pcf (64 kg/m³) mineral wool batt insulation, cut to a thickness equal to the overall thickness of the gypsum board and compressed 50 percent in width. Mineral wool strips inserted into the gap between the top of the gypsum board and bottom of the steel floor units, roof deck or spray-applied fire resistive material, (if used), flush with both surfaces of the wall.

The type and manufacturer of forming material used within the joint system is dependent upon the hourly rating of the wall assembly as shown in the table below:

Rating of Wall, hr	Manufacturer of Mineral Wool	Type of Mineral Wool
1, 2 & 3	Roxul Inc.	SAFE Mineral Wool
1 & 2	Rock Wool Manufacturing	Delta Safing Insulation
1, 2 & 3	Thermafiber Inc, IIG MinWool	SAF, MinWool - 1200 Safing

B1. Forming Material* - Plugs — (Not Shown) — As an alternate to the forming material (Item 3B), mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes. Plugs shall be friction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner, flush with wall surfaces. Additional forming material, described in Item 3B, to be used in conjunction with the plugs to fill the gap between the top of gypsum board and bottom of steel floor units or roof deck. **Plugs to be used in max 2 hr fire rated wall assemblies.**

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROXUL INC — SAFE

THERMAFIBER INC — SAF

C. Fill, Void or Cavity Material* — Min 1/8 in. (3 mm) wet thickness of fill material spray or brush applied on each side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. (13 mm) onto gypsum board and steel floor units, roof deck or spray-applied fire resistive material, if used on both sides of wall.

RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

4. Through Penetrant — (Optional, Not Shown) - Max 1-1/2 in. (38 mm) diam steel conduit or steel electrical metallic tubing (EMT) may be installed parallel with and within the flutes of the steel floor or roof deck when Joint Configuration A is used. The conduit or EMT shall be located near the mid-depth of the steel deck with a clearance of 1/2 to 1-1/2 in. (13 to 38 mm) between the conduit or EMT and the steel deck. Conduit or EMT to be rigidly supported on both sides of the wall assembly. A max of one conduit or EMT is permitted in an individual flute. When a conduit or EMT is installed in the flute of the steel deck, the max assembly rating of the joint system is 2 hr.

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



System No. HW-D-0267

September 04, 2015

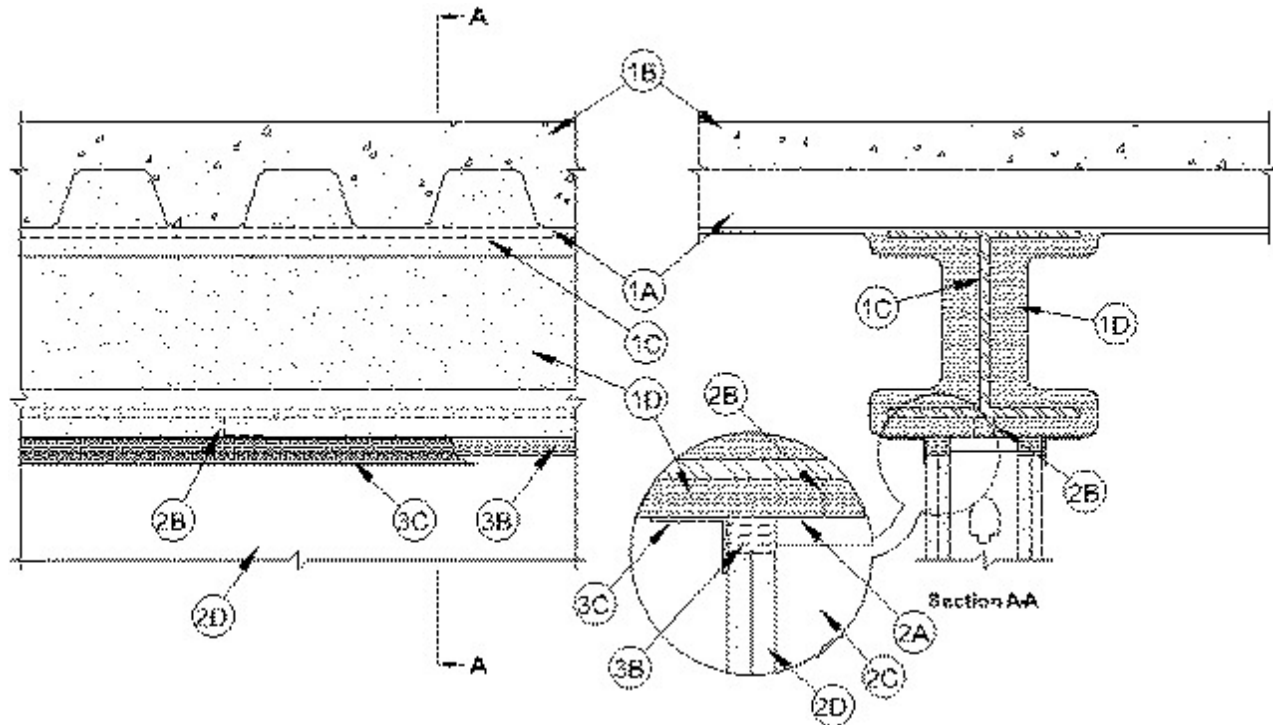
Assembly Ratings — 1, 2 and 3 Hr (See Items 1, 1A and 2)

Nominal Joint Width — 1 in.

Class II Movement Capabilities — 19% Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. Floor Assembly — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor And Floor Units* — Max 3 in. (76 mm) deep galv steel fluted floor units.

B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

C. Structural Steel Support — Steel beam, as specified in the individual D700 or D900 Series Floor-Ceiling Design, used to support steel floor units. Steel beam centered over and parallel with wall assembly.

D. Spray-Applied Fire Resistive Material* — After installation of the steel attachment clips (Item 2B), steel floor units and structural steel support to be sprayed with the min thickness of material specified in the individual D700 or D900 Series Design. The flutes of the steel floor units are to be filled with material across the entire top flange of the steel beam. **Additional material shall be applied to the web of the steel beam on each side of the wall. The min total thickness of material applied to each side of the steel beam web shall be 13/16 in. (21 mm) for 1 hr fire rated assemblies, 1-3/8 in. (35 mm) for 2 hr fire rated assemblies and 1-9/16 in. (40 mm) for 3 hr fire rated assemblies.** For D700 Series Designs, all surfaces of the steel floor units to be sprayed with the thickness of material specified in the individual D700 Series Design. For D900 Series Designs structural steel supports only to be sprayed in accordance with the specifications in the individual D900 Series Design.

D1. Spray-Applied Fire Resistive Material* — After installation of the steel attachment clips (Item 2B), steel floor units and structural steel support to be sprayed with the min thickness of material specified in the individual D700 or D900 Series Design. The flutes of the steel floor units are to be filled with material across the entire top flange of the steel beam. **Additional material shall be applied to the web of the steel beam on each side of the wall. The min total thickness of material applied to each side of the steel beam web shall be 11/16 in. (18 mm) for 1 hr fire rated assemblies, 1-1/2 in. (38 mm) for 2 hr fire rated assemblies and 3 in. (76 mm) for 3 hr fire rated assemblies.** For D700 Series Designs, all surfaces of the steel floor units to be sprayed with the thickness of material specified in the individual D700 Series Design. For D900 Series Designs structural steel supports only to be sprayed in accordance with the specifications in the individual D900 Series Design.

ISOLATEK INTERNATIONAL — Type 300

The hourly fire rating of the floor assembly shall be equal to or greater than the hourly fire rating of the wall assembly.

1A. Roof Assembly — (Not Shown) — As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 or P700 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The roof assembly shall include the following construction features:

A. Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. Roof Insulation — For P900 Series Designs, min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the roof deck. For P700 Series Designs, roof insulation shall be as specified in the individual design.

C. Structural Steel Support — Steel beam, as specified in the individual P700 or P900 Series Floor-Ceiling Design, used to support steel floor units. Steel beam centered over and parallel with wall assembly.

D. Spray-Applied Fire Resistive Material* — (Not Shown) Prior to the installation of the joint system (Item 3) all surfaces of the roof deck to be sprayed with the thickness of material specified in the individual P700 Series Design. For D900 Series Designs structural steel supports only to be sprayed in accordance with the specifications in the individual P900 Series Design. The flutes of the steel roof deck are to be filled with material across the entire top flange of the steel beam. **Additional material shall be applied to the web of the steel beam on each side of the wall. The min total thickness of material applied to each side of the steel beam web shall be 13/16 in. (21 mm) for 1 hr fire rated assemblies, 1-3/8 in. (35 mm) for 2 hr fire rated assemblies and 1-9/16 in. (40 mm) for 3 hr fire rated assemblies.**

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, RG and MK-6S

D1. Spray-Applied Fire Resistive Material* — (Not Shown) Prior to the installation of the joint system (Item 3) all surfaces of the roof deck to be sprayed with the thickness of material specified in the individual P700 Series Design. For D900 Series Designs structural steel supports only to be sprayed in accordance with the specifications in the individual P900 Series Design. The flutes of the steel roof deck are to be filled with material across the entire top flange of the steel beam. **Additional material shall be applied to the web of the steel beam on each side of the wall. The min total thickness of material applied to each side of the steel beam web shall be 11/16 in. (18 mm) for 1 hr fire rated assemblies, 1-1/2 in. (38 mm) for 2 hr fire rated assemblies and 3 in. (76 mm) for 3 hr fire rated assemblies.**

ISOLATEK INTERNATIONAL — Type 300

The hourly fire rating of the roof assembly shall be equal or greater than the hourly fire rating of the wall assembly.

2. Wall Assembly — The 1, 2 or 3 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2C). Ceiling runner to be provided with min 2 in. (51 mm) flanges. When deflection channel (Item 3A) is used, flange height of ceiling runner is to be equal to or greater than flange height of deflection channel and the ceiling runner is to nest within the deflection channel with a 1/2 in. to 3/4 in. (13 to 19 mm) gap maintained between the top of the ceiling runner and the top of the deflection channel. When deflection channel is not used, ceiling runner is secured to steel beam (Item 1A) with steel attachment clips (Item 2B) spaced max 24 in. (610 mm) OC. Ceiling runner or deflection channel to be centered beneath and parallel with bottom flange of steel beam. A clearance equal to the required thickness of spray-applied fireproofing material (Item 1D) shall be maintained between the top of the ceiling runner or deflection channel and the bottom flange of the steel beam.

A1. Light Gauge Framing* - Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 2A, slotted ceiling runner consisting of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2C) may be used. Slotted ceiling runner secured to steel beam (Item 1A) with steel attachment clips (Item 2B) spaced max 16 in. (406 mm) OC. Ceiling runner or deflection channel to be centered beneath and parallel with bottom flange of steel beam. A clearance equal to the required thickness of spray-applied fireproofing material (Item 1D) shall be maintained between the top of the slotted ceiling runner and the bottom flange of the steel beam.

B. Steel Attachment Clips — Z-shaped clips formed from 1 in. (25 mm) wide strips of min 20 ga galv steel. Clips to be sized to extend through the thickness of the spray-applied fire-resistant material on the bottom flange of the steel beam with 2 in. (51 mm) long upper and lower legs. Legs of clips fastened to bottom of beam (prior to application of spray-applied fire-resistant materials) and top of ceiling runner (or deflection channel) with steel fasteners or welds. Clips spaced max 16 in. (406 mm) OC.

C. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 in. to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and secured to floor runner. When deflection channel (Item 3A) is used, steel studs attached to ceiling runner (Item 2A) with sheet metal screws located 1/2 in. (13 mm) below the bottom of the deflection channel. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. (13 mm) long wafer head steel screws at midheight of slot on each side of wall. When deflection channel or slotted ceiling runner is not used, studs to nest in ceiling runner without attachment.

D. Gypsum Board* — Gypsum board sheets installed to a min total 5/8 in., 1-1/4 in. and 1-1/2 in. (16, 32 and 38 mm) thickness on each side of wall for 1, 2 and 3 hr fire rated assemblies, respectively. Wall to be constructed in accordance with the individual U400 or V400 Series Design in the UL Fire Resistance Directory, except that a max 1 in. (25 mm) high gap shall be maintained between the top of the gypsum board and the bottom plane of the spray applied fire resistive material on the structural steel support member. The screws attaching the gypsum board to the studs along the top of the wall shall be located 1 in. (25 mm) below the bottom of the ceiling runner. No gypsum board attachment screws shall be driven into the ceiling runner or into the optional deflection channel.

The hourly fire rating of the joint system is equal to the hourly rating of the wall.

3. Joint System — Max separation between spray applied fire resistive material on bottom of structural support member and top of gypsum board (at time of installation of joint system) is 1 in. (25 mm). The joint system is designed to accommodate a max 19 percent compression or extension from it's installed width as measured between bottom plane of the protective material on the steel beam and the top of the gypsum board. The joint system shall consist of forming and fill materials, with or without a deflection channel (Item 3A), as follows:

A. Deflection Channel — (Optional, Not Shown) - Max 2 in. (51 mm) deep min 24 gauge galv steel channel sized to accommodate ceiling runner (Item 2A). Deflection channel installed parallel with and centered beneath bottom flange of steel beam (Item 1C) and secured to steel beam with steel clips (Item 2B) spaced max 16 in. (406 mm) OC. The ceiling runner (Item 2A) is installed within the deflection channel to maintain a 1/2 in. to 3/4 in. (13 to 19 mm) gap between the top of the ceiling runner and the top of the deflection channel. A clearance equal to the required thickness of spray-applied fireproofing material (Item 1D) shall be maintained between the top of the ceiling runner or deflection channel and the bottom flange of the steel beam. The ceiling runner nests inside the deflection channel without attachment.

B. Forming Material* — Sections of nom 4 pcf (64 kg/m³) mineral wool batt insulation to be compressed 50 percent in thickness and installed cut edge first to completely fill the gap above the top of the gypsum board. The forming material shall be installed flush with both surfaces of wall.

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

C. Fill, Void or Cavity Material* - Sealant — Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material spray applied over the forming material on each side of the wall. Fill material to overlap min 1/2 in. (13 mm) onto gypsum board and min 2 in. (51 mm) onto the spray applied material (Item 1D) on the steel beam on both sides of wall.

RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

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



System No. HW-D-0299

September 04, 2015

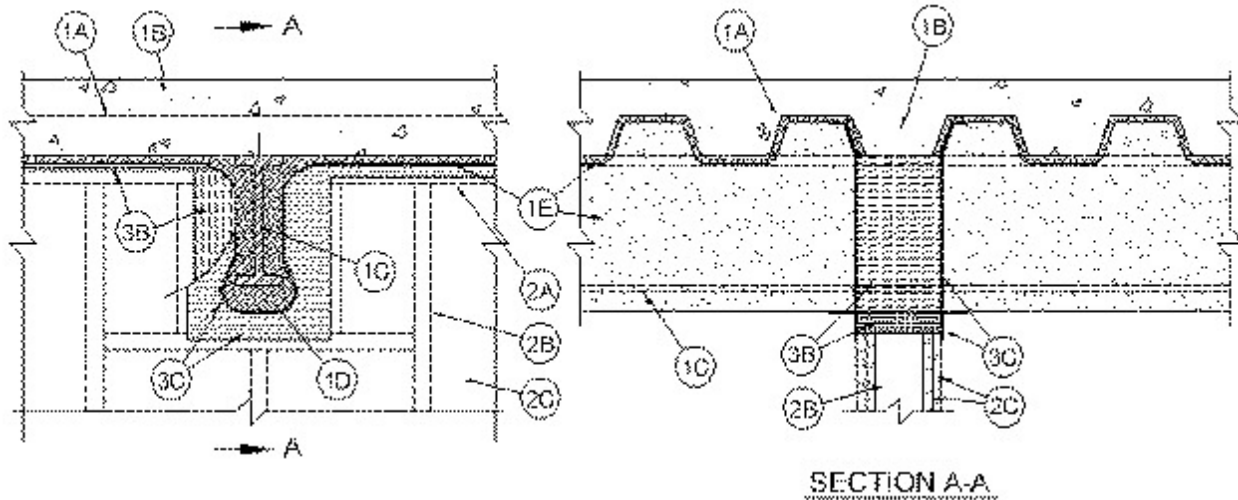
Assembly Ratings — 1 and 2 Hr (See Item 2)

Nominal Joint Width — 1 and 2 In. (See Item 3)

Class II Movement Capabilities — 25% Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. Floor Assembly — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D900 or D700 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Floor Units* — Max 3 in. (76 mm) deep galv steel fluted floor units.

B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

C. Structural Steel Support — (Optional) - Steel beam or open-web steel joist, as specified in the individual D700 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support oriented perpendicular to wall assembly. Where open-web steel joists pass through the fire rated wall, 3/8 in. (10 mm) diamond mesh expanded steel lath having a nom weight of 1.7 to 3.4 lb per sq yd (0.92-1.84 kg/m²) shall be secured to one side of each joist with steel tie wire and the lath shall be fully covered with spray-applied fire resistive material with no min thickness requirement.

D. Spray-Applied Fire Resistive Material* — After installation of the ceiling runner (Item 2A) or deflection channel (Item 3A, if used), steel floor units and structural steel supports to be sprayed in accordance with the specifications in the individual D700 Series Design. For D900 Series Designs structural steel supports only to be sprayed in accordance with the specifications in the individual D900 Series Design.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, MK-6S and RG

1A. Roof Assembly (Not Shown) — As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 or P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction details:

A. Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. Roof Insulation — For P900 Series Designs, min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the roof deck. For P700 Series Designs, as specified in the individual P700 Series Design.

C. Spray - Applied Fire Resistive Materials* — Prior to the installation of the Forming Material and Fill, Void or Cavity Material (Items 3B and 3C, respectively), the steel roof deck shall be sprayed with the thickness of material specified in the individual P700 Series Design. For P900 Series Designs structural steel supports only to be sprayed in accordance with the specifications in the individual P900 Series Design.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, MK-6S and RG

2. 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 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with min 2 in. (51 mm) to max 3 in. (76 mm) flanges. When deflection channel (Item 3A) is used, the ceiling runner is to nest within the deflection channel with a 1/2 in. (13 mm) to 1 in. (25 mm) gap maintained between the top of the ceiling runner and the top of the deflection channel. When deflection channel is not used, ceiling runner to be provided with min 2 in. (51 mm) flanges and secured to steel floor units (Item 1A) with steel fasteners or welds spaced max 24 in. (610 mm) OC. Ceiling runner to be centered beneath and parallel with valley of steel floor unit or roof deck. A clearance of 1 in. (25 mm) shall be maintained between the end of the ceiling runner or deflection channel and the spray applied fire resistive material on the structural steel support members.

A1. Light Gauge Framing* - Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner installed parallel to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24 in. (610 mm) OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.

BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Type SLT

A2. Light Gauge Framing* - Clipped Ceiling Runner — As an alternate to the ceiling runner in Items 2A and 2A1, clipped runner to consist of galv steel channel with clips preformed in track flanges which positively engage the inside flange of the steel studs (Item 2B). Track sized to accommodate steel studs (Item 2B). Track flanges to be min 2-1/2 in. (64 mm). Clipped ceiling runner installed parallel to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24 in. (610 mm) OC. When clipped ceiling runner is used, deflection channel (Item 3A) shall not be used.

TOTAL STEEL SOLUTIONS L L C — Snap Trak

A3. Light Gauge Framing* - Vertical Deflection Ceiling Runner — As an alternate to the ceiling runner in Items 2A, 2A1 or 2A2, vertical deflection ceiling runner to consist of galv steel channel with slotted vertical deflection clips mechanically fastened within runner. Slotted clips, provided with step bushings, for permanent fastening of steel studs. Vertical deflection ceiling

runner installed parallel to direction of fluted steel floor or roof deck and secured to valleys with steel fasteners spaced max 24 in. (610 mm) OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.

THE STEEL NETWORK INC — VertiTrack VTD250, VTD362, VTD400, VTD600 and VTD800

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 in. (13 mm) to 3/4 in. (19 mm) less in length than assembly height with bottom nesting in and secured to floor runner. When deflection channel (Item 3A) is used, steel studs attached to ceiling runner (Item 2A) with sheet metal screws located 1/2 in. (13 mm) below the bottom of the deflection channel. When deflection channel is not used, studs to nest in ceiling runner without attachment. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 in. (13 mm) long wafer head steel screws at midheight of slot on each side of wall. When vertical deflection ceiling runner (Item 2A3) is used, steel studs secured to slotted vertical deflection clips, through bushings, with steel screws at midheight of each slot. A framed opening shall be constructed around each structural steel support member. A min clearance of 1 in. (25 mm) to a max clearance of 3 in. (76 mm) shall be maintained between the framing and the spray applied fire resistive material on the two sides of the structural support member. The clearance between the framing and the spray applied fire resistive material on the bottom of the structural steel support member shall be max 1 in. (25 mm).

C. Gypsum Board* — Gypsum board sheets installed to a min total 5/8 in. (16 mm) or 1-1/4 in. (32 mm) thickness on each side of wall for 1 and 2 hr fire rated assemblies, respectively. Wall to be constructed as specified in the individual U400 Series Design in the UL Fire Resistance Directory, except that a max 1 in. (25 mm) gap shall be maintained between the top of the gypsum board and the spray applied fire resistive material on the steel floor units and between the top edge of the gypsum board and the spray applied fire resistive material on the structural steel support member. For D900 and P900 Series Designs, max separation between bottom of the steel floor units or roof deck and top of gypsum board (at time of installation of joint system) is 2 in. (51 mm). For D700 and P700 Series Designs, max separation between bottom of the spray applied fire resistive material on the steel floor units or roof deck and top of gypsum board (at time of installation of joint system) is 1 in. (25 mm). The screws attaching the gypsum board to studs at the top of the wall shall be located 1 in. (25 mm) below the bottom of the deflection channel, when deflection channel is used. When deflection channel is not used, the screws attaching the gypsum board to studs at the top of the wall shall be located 1 in. (25 mm) below the bottom of the ceiling runner.

The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.

3. Joint System — Max separation between spray applied fire resistive material on bottom of structural support member and framed opening in top of wall is 1 in. (25 mm). For D700 and P700 series Designs, max separation between bottom of the spray applied fire resistive material on the steel floor units or roof deck and top of gypsum board (at time of installation of joint system) is 1 in. (25 mm). For D900 and P900 Series Designs, max separation between bottom of steel floor units or roof deck and top of gypsum board (at time of installation of joint system) is 2 in. (51 mm). The joint system is designed to accommodate a max 25 percent compression or extension from it's installed width as measured between the spray applied fire resistive material on the steel floor units or roof deck and the top of the gypsum board. The joint system shall consist of forming and fill materials, with or without a deflection channel (Item 3A), as follows:

A. Deflection Channel — (Optional, Not Shown) - Min 24 gauge galv steel channel, 3 in. (76 mm) deep, sized to accommodate ceiling runner (Item 2A). Deflection channel to be centered beneath and parallel with valley of steel floor unit and secured to steel floor unit or roof deck with steel fasteners or welds spaced max 24 in. (610 mm) OC. The ceiling runner (Item 2A) is installed within the deflection channel to maintain a 1/2 in. (13 mm) to 1 in. (25 mm) gap between the top of the ceiling runner and the top of the deflection channel. A clearance of 1 in. (25 mm) shall be maintained between the end of the deflection channel and the spray applied fire resistive material on the structural steel support members. The ceiling runner nests inside the deflection channel without attachment.

B. Forming Material* — Nom 4 pcf (64 kg/m³) mineral wool batt insulation cut to a length approx the same as the overall thickness of wall and inserted cut edge first into the spaces between the spray-applied fire resistive material on the structural steel member and the framed notch at the top of the wall, flush with the gypsum board surface on both sides of the wall. The thickness of forming material shall be sufficient to attain a min compression of 33 percent between the sides of the framed notch and the protected structural steel member and a min compression of 50 percent between the bottom of the framed notch and the bottom of the protected structural steel member. Additional sections of mineral wool batt insulation are compressed 50 percent in thickness and are installed cut edge first to completely fill the gap above the top of the gypsum board, flush with both surfaces of wall.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

C. Fill, Void or Cavity Material* - Sealant — Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry wet thickness of fill material sprayed or brushed over the forming material on each side of the wall. Fill material to overlap a min of 1 in. (25 mm) onto the gypsum board and a min 2 in. (51 mm) onto the spray applied material (Item 1D) on the steel floor unit or roof deck and on the structural steel support member on both sides of wall.

RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

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



System No. HW-D-0327

September 04, 2015

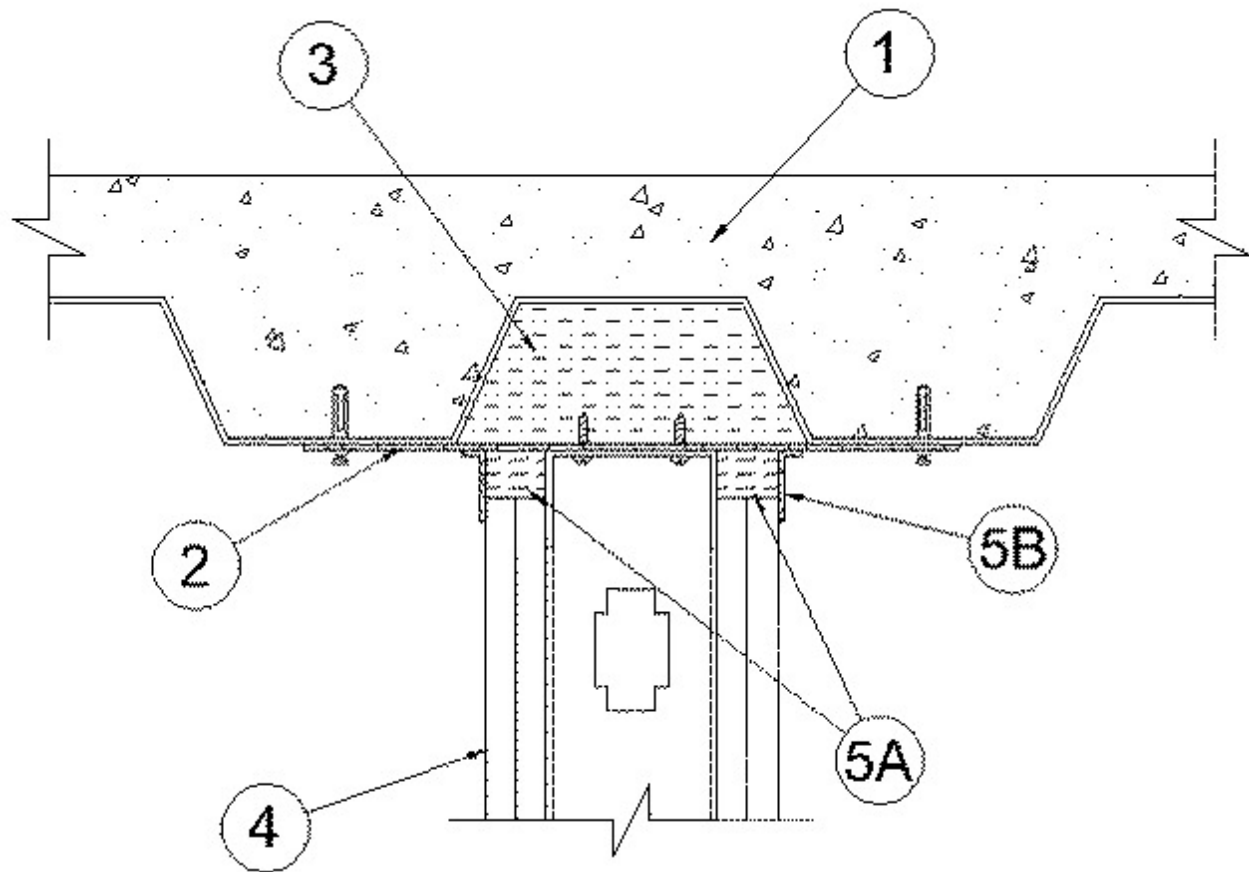
Assembly Rating — 1 and 2 Hr (See Item 1)

Nominal Joint Width — 1 In.

Class II Movement Capabilities — 25% Compression and Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. Floor Assembly — The fire-rated fluted steel floor unit/concrete floor assembly shall be constructed of the materials and in the manner described in the individual Floor-Ceiling Design in the Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Form Units* — Max 3 in. (76 mm) deep galv steel fluted floor units.

B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete, as measure from the top plane of the floor units.

2. Steel Straps — Min 2 in. (51 mm) wide 16 MSG galv steel straps cut to a length to span the flute and overlap the adjacent valleys of fluted floor units by 1-1/2 in. (38 mm). Straps spaced max 24 in. (610 mm) OC and fastened to floor assembly with 1/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel concrete anchors.

3. Forming Material* - Plugs — Preformed mineral wool plugs, formed to the shape of the fluted floor units, friction fit to completely fill the flutes above the steel straps. Adjacent lengths of plugs to be tightly butted with butted seams spaced min 24 in. (610 mm) apart along the length of the plugs.

4. Wall Assembly — The 1 or 2 h fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with 2 in. (51 mm) flanges. Ceiling runner installed parallel to direction of fluted steel floor units, directly beneath steel straps and secured to straps with two No. 8 self-drilling, self-tapping steel screws per strap.

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 in. (13 mm) to 3/4 in. (19 mm) less in length than assembly height with bottom nesting in and resting on the floor runner and with top nesting in ceiling runner without attachment. Stud spacing not to exceed 24 in. (610 mm) OC.

C. Gypsum Board* — For 1 hr assembly, one layer of 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. For 2 hr assembly, two layers of 5/8 in. (16 mm) thick gypsum board are specified in the individual Wall and Partition Design. For both hourly ratings, a nom 1 in. (25 mm) gap shall be maintained between the top of the gypsum board and the bottom surface of the steel floor units and the top row of screws shall be installed into the studs 3 in. (76 mm) below the valleys of the steel floor units.

5. Joint System — **Max separation between bottom of floor and top of wall is 1 in. (25 mm) The joint system is designed to accommodate a max 25 percent compression or extension from its installed width.** The joint system consists of a forming material and a fill material between the top of the gypsum board and the bottom of the floor, as follows:

A. Forming Material* — Min 4 pcf (64 kg/m³) density mineral wool batt insulation cut shall be cut into strips to fill the gap between the top of gypsum board and bottom of the floor units. The width of the strips shall be equal to the total thickness of the gypsum board. The strips of mineral wool are compressed 50 percent in thickness and firmly packed into the gap between the top of the gypsum board and bottom of the mineral wool plug or steel floor units.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

B. Fill, Void or Cavity Material* - Sealant — Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material sprayed or troweled on each side of the wall to completely cover the mineral wool forming material and to overlap a min of 1/2 in. (13 mm) onto gypsum board, steel floor units and steel straps on both sides of the wall.

RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

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



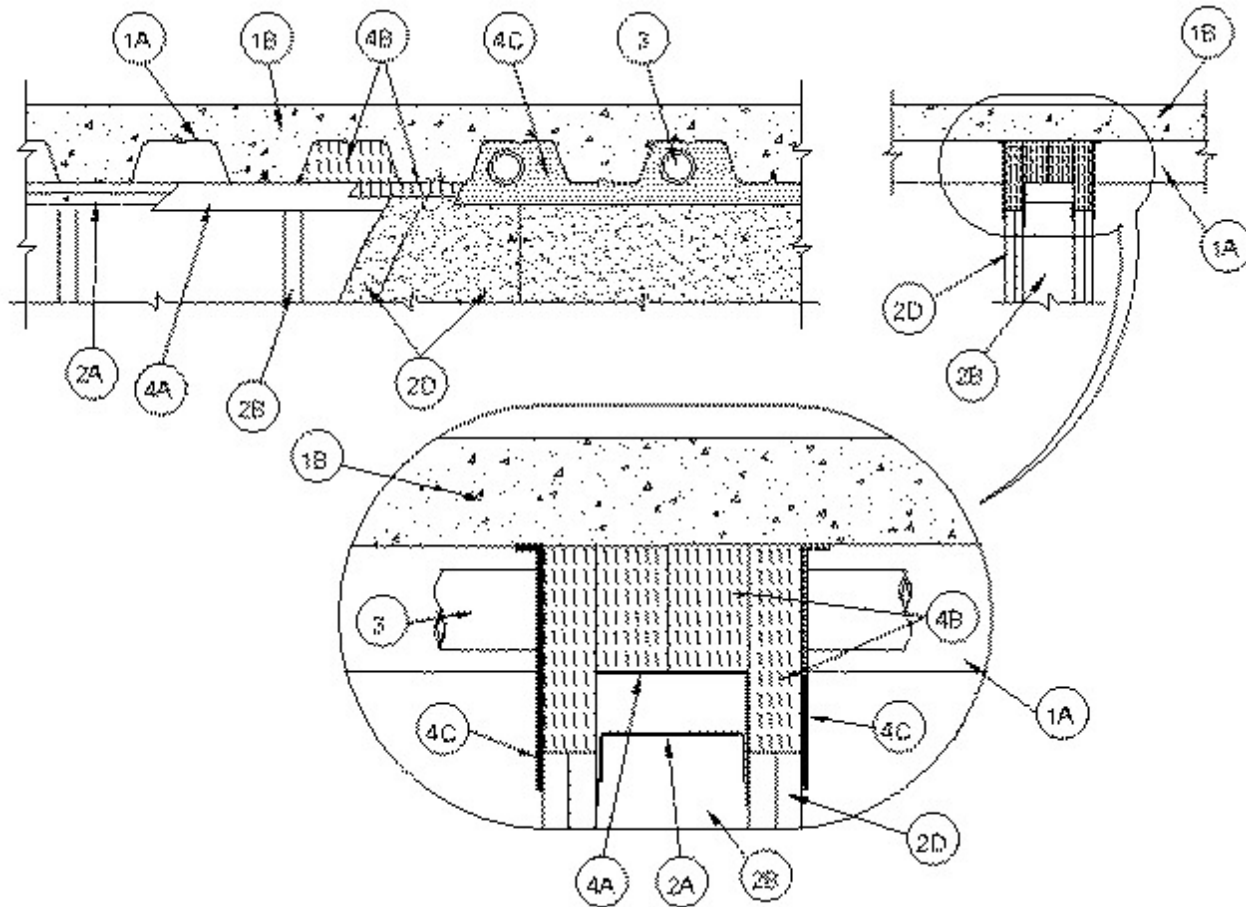
System No. HW-D-0380

April 23, 2007

Assembly Rating — 1 and 2 Hr (See Item 2)

Nominal Joint Width — 1-1/2 In.

Class II and III Movement Capabilities — 20% Compression or Extension



1. Floor Assembly — The fire rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor And Form Units* — Max 3 in. deep galv steel fluted floor units.

B. Concrete — Min 2-1/2 in. thick reinforced concrete, as measured from the top plane of the floor units.

2. 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 or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor And Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with min 1 in. flanges. When U-shaped deflection channel (Item 3A) is used, ceiling runner installed within the U-shaped deflection channel (Item 3A) with a 1-1/2 in. gap maintained between the top of ceiling runner and top of deflection plate. When deflection channel is not used, the ceiling runner shall have min 2-3/4 in. flanges. Ceiling runner installed perpendicular to direction of fluted steel floor units and secured to valleys with steel fasteners

spaced a max 12 in. OC.

A1. Light Gauge Framing* — Slotted Ceiling Runner - As an alternative to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner installed perpendicular to direction of fluted steel floor units and secured to valleys with steel fasteners spaces max 24 in. OC. When slotted ceiling runner is used, deflection channel (Item 3A) shall not be used.

CALIFORNIA EXPANDED METAL PRODUCTS

COMPANY — CST

BRADY CONSTRUCTION INNOVATIONS INC,

DBA SLIPTRACK SYSTEMS — SLP-TRK

A2. Light Gauge Framing* — Clipped Ceiling Runner — As an alternate to the ceiling runner in Items 2A and 2A1, clipped runner to consist of galv steel channel with clips preformed in track flanges which positively engage the inside flange of the steel studs (Item 2B). Track sized to accommodate steel studs (Item 2B). Track flanges to be min 3-1/4 in. Clipped ceiling runner installed perpendicular to direction of fluted steel floor units and secured to valleys with steel fasteners spaced max 24 in. OC. When clipped ceiling runner is used, deflection channel (Item 3A) shall not be used.

TOTAL STEEL SOLUTIONS L L C — Snap Trak

B. Studs — Steel studs to be min 3-1/2 in. wide. Studs cut 1-1/2 in. less in length than assembly height. When deflection channel is used, studs shall be installed with bottom nesting in and resting on floor runner and with top nesting in ceiling runner. Studs secured to floor and ceiling runner with sheet metal screw. When deflection channel is not used, studs shall not be secured to ceiling runner. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 x 1/2 in. long water head steel screws at midheight of slot on each side of wall. Stud spacing not to exceed 24 in. OC.

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 1/2 in. and 3/4 in. on each side of wall for 1 and 2 hr rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a nom 1-1/2 in. gap shall be maintained between the top of the gypsum board and the bottom of the steel floor units and the top row of screws shall be installed into the studs 4 to 4-1/2 in. below the lower surface of the floor.

The hourly assembly rating of the joint system is equal to the hourly fire rating of the wall.

3. Through Penetrants — (Optional) — Multiple pipes or conduits to be installed parallel with and within the flutes of the steel floor or roof deck. The penetrants shall be located near the middepth of the steel deck with a clearance of 1/2 to 1-1/2 in. between the penetrants and the steel deck. A max of one pipe or conduit is permitted in an individual flute. Penetrants to be rigidly supported on both sides of wall assembly. The following types and sizes of pipes or conduits may be used:

A. Polyvinyl Chloride (PVC) Pipe — Nom 1-1/4 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 system.

B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 1-1/4 in. diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

C. Conduit — Nom 1-1/4 in. (or smaller) steel conduit or nom 1-1/4 in. diam (or smaller) steel electrical metallic conduit.

4 Joint System — Max separation between bottom of floor and top of wall at time of installation of joint system is 1-1/2 in. The joint system is designed to accommodate a max 20 percent compression or extension from its installed width. The joint system consists of an optional deflection channel, a forming material and a fill material, as follows:

A. Deflection Channel — (Optional) A nom 3-11/16 in. wide by 3 in. deep min No. 22 gauge steel U-shaped channel. Deflection channel installed perpendicular to direction of fluted steel

floor units and secured to valleys with steel fasteners or by welds spaced max 12 in. OC. The ceiling runner (Item 2A) is installed within the deflection channel to maintain a 1-1/2 in. gap between the top of the ceiling runner and the top of the deflection channel. The ceiling runner is not fastened to the deflection channel.

B. Forming Material* — Min 3-1/2 in. thickness of min 4 pcf density mineral wool batt insulation cut to the shape of the fluted steel floor units, approx 33 percent larger than the area of the flutes. Pieces compressed and inserted vertically into the flutes above the top of the deflection channel or ceiling runner. The mineral wool is to be flush with each side of the deflection channel or ceiling runner. Additional min 3/8 in. and 1-1/4 in. thickness of min 4 pcf mineral wool insulation for 1 and 2 hr rated assemblies respectively, cut larger than the contour of the flutes and the max 1-1/2 in. gap above the top of the gypsum board, compressed 33 percent, and firmly packed into the flutes and the gap between the top of the gypsum board and the bottom of the steel floor units, flush with both surfaces of the wall.

ROCK WOOL MANUFACTURING CO — Delta Board

C. Fill, Void or Cavity Material* — Min 1/8 in. wet thickness of fill material sprayed or troweled on each side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. onto gypsum board and steel deck on both sides of wall.

RECTORSEAL — Metacaulk 1200 Spray, Metacaulk 1200 Caulk Grade

*Bearing the UL Classification Mark



System No. HW-D-0390

September 08, 2015

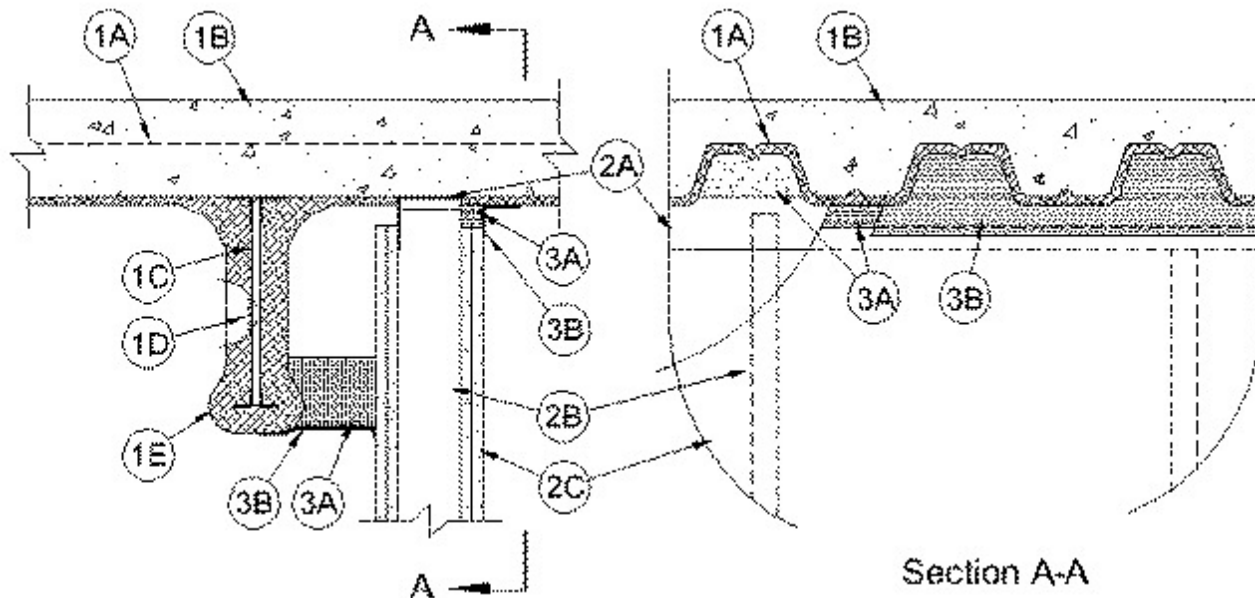
Assembly Ratings — 1 and 2 Hr (See Item 2)

Nominal Joint Width - 1 In.

Class II Movement Capabilities - 12.5% Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. Floor Assembly — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory. The hourly fire rating of the floor assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The floor assembly shall include the following construction features:

A. Steel Floor and Floor Units* — Max 3 in. (76 mm) deep galv steel fluted floor units.

B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

C. Structural Steel Support — Steel beam or open-web steel joist, as specified in the individual D700 or D900 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to and 1 to 6 in. (25 to 152 mm) from wall assembly.

D. Steel Lath — When structural steel support (Item 1C) consists of open-web steel joists, 3/8 in. (10 mm) diamond mesh expanded steel lath having a nom weight of 1.7 to 3.4 lb per sq yd (0.9 to 1.8 kg/m²) shall be installed to completely cover one side of each joist which is located within 6 in. (152 mm) of wall assembly. The lath shall be secured with steel tie wire and shall be fully covered with spray applied fire resistive material.

E. Spray-Applied Fire Resistive Material* — After installation of the ceiling runner (Item 2A), steel floor units and structural steel supports to be sprayed with the thickness of material specified in the individual D700 or D900 Series Design. The flutes of the steel floor units above the structural steel supports and above the ceiling runner (Item 2A) shall be filled with spray-applied fire resistive material. As an alternate, the spray-applied fire resistive material in the flutes above the ceiling runner may be applied to follow the contour of the steel floor units. Excess material shall be removed from the flanges of the ceiling runner beyond the required

thickness of spray-applied fire resistive material on the steel floor units.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, MK-6s, RG

1A. Roof Assembly — (Not Shown) — As an alternate to the floor assembly (Item 1), a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 or P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly fire rating of the roof assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The roof assembly shall include the following construction features:

A. Steel Roof Deck — Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. Roof Insulation — For P700 Series Designs, min 3/4 in. (19 mm) thick **Mineral and Fiber Board*** insulation applied in one or more layers directly over steel roof deck or over gypsum board sheathing laid atop steel roof deck as specified in the individual design. For P900 Series Designs, min 2-1/4 in. thick poured insulating concrete, as measured from the top plane of the roof deck as specified in the individual design.

C. Roof Covering* — Hot-mopped or cold-application materials compatible with mineral and fiber board insulation.

D. Structural Steel Support — Steel beam or open-web steel joist, as specified in the individual P700 or P900 Series Roof-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to and min 2 in. (51 mm) to max 6 in. (152 mm) from wall assembly.

E. Steel Lath — When structural steel support (Item 1D) consists of open-web steel joists, 3/8 in. (10 mm) diamond mesh expanded steel lath having a nom weight of 1.7 to 3.4 lb per sq yd (0.9 to 1.8 kg/m²) shall be installed to completely cover one side of each joist which is located within 6 in. (152 mm) of wall assembly. The lath shall be secured with steel tie wire and shall be fully covered with spray applied fire resistive material.

F. Spray-Applied Fire Resistive Material* — After installation of the ceiling runner (Item 2A), steel roof deck and structural steel supports to be sprayed with a thickness of spray applied fire resistive material as specified in the individual P700 or P900 Series Roof-Ceiling design. The flutes of the steel deck above the structural steel supports and above the ceiling runner (Item 2A) shall be filled with spray-applied fire resistive material. As an alternate, the spray-applied fire resistive material in the flutes above the ceiling runner may be applied to follow the contour of the steel roof deck. Excess material shall be removed from the flanges of the ceiling runner beyond the required thickness of spray-applied fire resistive material on the steel roof deck.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, MK-6s, RG

2. 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 or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with min 1-1/4 in. (32 mm) to max 3 in. (76 mm) flanges. Ceiling runner is secured to steel floor units (Item 1A) with steel fasteners or welds spaced max 24 in. (610 mm) OC. Ceiling runner to be installed parallel with structural steel support and located such that a max clearance of 4 in. (102 mm) is present between the finished wall and the spray-applied fire resistive material at the lowest elevation of the structural steel support.

A1. Light Gauge Framing* — Slotted Ceiling Runner — As an alternate to the ceiling runner in Item 2A, ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Ceiling runner secured to valleys with steel fasteners spaced max 24 in. (610 mm) OC.

A2. Light Gauge Framing* — Clipped Ceiling Runner — As an alternate to the ceiling runner in Items 2A and 2A1, clipped runner to consist of galv steel channel with clips preformed in track flanges which positively engage the inside flange of the steel studs (Item 2B). Track sized to accommodate steel studs (Item 2B). Track flanges to be min 2-1/2 in. (64 mm). Clipped ceiling runner secured with steel fasteners spaced max 24 in. (610 mm) OC.

TOTAL STEEL SOLUTIONS L L C — Snap Trak

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 in. to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and secured to floor runner. When slotted ceiling runner (Item 2A1) is used, steel studs secured to slotted ceiling runner with No. 8 by 1/2 (13 mm) long wafer head steel screws at midheight of slot on each side of wall. Studs to nest in ceiling runner without attachment.

C. Gypsum Board* — Gypsum board sheets installed to a min total 5/8 in. (16 mm) or 1-1/4 in. (32 mm) thickness on each side of wall for 1 and 2 hr fire rated assemblies, respectively. Wall to be constructed as specified in the individual U400 or V400 Series Design in the UL Fire Resistance Directory except that a max 1 in. (25 mm) gap shall be maintained between the top of the gypsum board and the bottom plane of the spray applied fire resistive material on the steel deck on both sides of the wall assembly. When no spray-applied fire resistive material is used on the steel deck, a max 1 in. (25 mm) gap shall be maintained between the top of the gypsum board and the bottom plane of the steel deck. The screws attaching the gypsum board to the studs along the top of the wall shall be located 1 in. (25 mm) below the bottom of the ceiling runner. No gypsum board attachment screws shall be driven into the ceiling runner. Where the top of the wall assembly is inaccessible above the lowest elevation of the structural steel support, the gypsum board attachment screws may be omitted.

The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.

3. Joint System — Max separation between bottom plane of steel deck or spray-applied fire resistive material and top of gypsum board (at time of installation of joint system) is 1 in. (25 mm). Separation distance between spray applied fire resistive material on structural support member and surface of wall is min 1 in. (25 mm) to max 4 in. (102 mm). The joint system is designed to accommodate a max 12.5 percent compression or extension from its installed width as measured between the bottom plane of the steel deck or the spray-applied fire resistive material on the steel deck and the top of the gypsum board. The joint system shall consist of forming and fill materials, as follows:

A. Forming Material* — Nom 4 pcf (64 kg/m³) density mineral wool batt insulation. Sections of mineral wool batt cut to a width of 4 in. (102 mm) and stacked to attain a thickness which is 50 percent greater than the width of the linear gap between the spray applied fire resistive material on the structural steel member and the surface of the wall assembly. Stacked sections of mineral wool compressed 33 percent in thickness and installed cut edge first into linear gap until the bottom edge is flush with the bottom surface of the spray applied fire resistive material on the structural steel member. When no spray-applied fire resistive material is used on the steel deck or when the spray-applied fire resistive material in the flutes above the wall follows the contour of the steel deck, sections of mineral wool batt cut to the shape of the fluted deck and stacked to a min 6 in. (152 mm) thickness shall be installed in the flutes of the steel floor or roof deck between the top of the ceiling runner and the steel deck or spray-applied fire resistive material. The mineral wool batt insulation is to be installed flush with the gypsum board surface on the side of the wall opposite the structural steel support. Additional sections of mineral wool batt insulation are compressed 50 percent in thickness and are installed cut edge first to completely fill the gap above the top of the gypsum board.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

A1. Forming Material* - Plugs — (Not Shown) As an alternate to the forming material (Item 3A), mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes. Plugs shall be friction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner, flush with wall surfaces. Additional forming material, described in Item 3A, to be used in conjunction with the plugs to fill the gap between the top of gypsum board and bottom of steel floor units or roof deck.

ROCK WOOL MANUFACTURING CO — Delta Deck Plugs

B. Fill, Void or Cavity Material* — Sealant — Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material spray or brush applied over the forming material on each side of the wall. Fill material to overlap a min of 1/2 in. (13 mm) onto the gypsum board and a min of 2 in. (51 mm) onto the steel deck or the spray-applied fire resistive material on the steel deck and on the spray-applied fire resistive material on the structural steel support member on each side of the wall.

RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

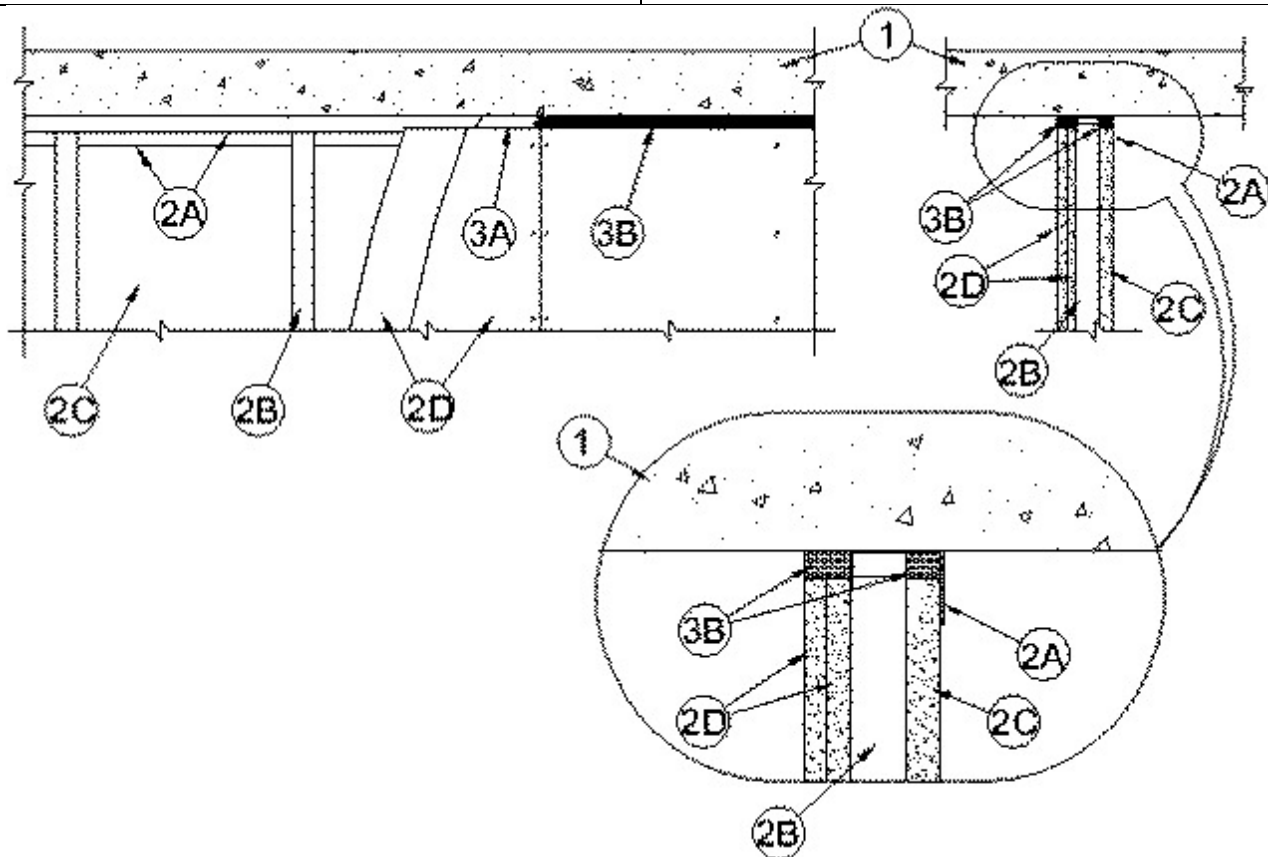
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



System No. HW-D-0401

July 10, 2014

ANSI/UL2079	CAN/ULC S115
Assembly Rating — 1 and 2 Hr (See Item 2)	F Rating — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 1 In.	FT Rating — 1 and 2 Hr (See Item 2)
Class II or III Movement Capabilities — 25% Compression or Extension	FH Rating — 1 and 2 Hr (See Item 2)
	FTH Rating — 1 and 2 Hr (See Item 2)
	Nominal Joint Width - 25 mm
	Class II or III Movement Capabilities — 25 % Compression or Extension



1. Floor Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete.

2. Shaft Wall Assembly — The 1 or 2 hr fire rated shaft wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory. The wall shall include the following construction features:

A. Floor and Ceiling Runners — "J"-shaped runner, min 2-1/2 in. (64 mm) wide with unequal legs of min 1 in. (25 mm) and min 2 in. (51 mm), fabricated from min 24 MSG galv steel. The length of the shorter leg of the "J"-shaped runner used for the ceiling runner shall be min 1/4 in. (6 mm) greater than the joint width. Runners positioned with shorter leg toward finished side of wall. Runners attached to floor and ceiling with steel fasteners spaced max 24 in. (610 mm) OC. As an alternate to the "J"-shaped runner, a min 2-1/2 in. (64 mm) wide by 1 or 1-1/4 in. (25 or 32 mm) deep channel formed from min 24 MSG galv steel may be used for the floor runner.

A1. Light Gauge Framing* — Slotted Ceiling Track — (Not Shown) - As an alternate to the "J"-shaped runner in Item 2A, a ceiling track consisting of galv steel channel with slotted flanges may be used. Slotted ceiling track sized to accommodate steel "C-T", "I" or "C-H" studs (Item 2C). Attached to concrete at ceiling with steel fasteners spaced max 24 in. (610 mm) OC.

BRADY CONSTRUCTION INNOVATIONS INC, DBA SLIPTRACK SYSTEMS — SLP-TRK

A2. Light Gauge Framing Members* — (Not Shown) - As an option, the steel studs (Item 3B) may incorporate vertical deflection clips for attachment to the ceiling runner (Item 3A) in accordance with the manufacturer's instructions.

THE STEEL NETWORK INC — VertiClip SLD 250, VertiClip SLD 400

B. Steel Studs — "C-T", "I" or "C-H"-shaped steel studs to be min 2-1/2 in. (64 mm) wide and formed of min 24 MSG galv steel. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in "J"-shaped runner or slotted ceiling track. Studs spaced max 24 in. (610 mm) OC. After installation of gypsum board liner panels (Item 2D), studs secured to flange of floor runner on finished side of wall only with No. 6 by 1/2 in. (13 mm) long self-drilling, self-tapping steel screws. If slotted ceiling track (Item 2A1) is used, studs secured to flange of slotted ceiling track on finished side of wall only with No. 8 by 1/2 in. (13 mm) long self-drilling, self-tapping wafer head steel screws at slot midheight.

C. Gypsum Board* — 1 in. (25 mm) thick by max 24 in. (610 mm) wide gypsum board liner panels. Panels cut max 1 in. (25 mm) less in length than floor to ceiling height. Vertical edges inserted into "T"-shaped section of "C-T" studs, into holding tabs of "I" studs or into "H"-shaped section of "C-H" studs.

D. Gypsum Board* — Gypsum board sheets, 1/2 or 5/8 in. (13 or 16 mm) thick, applied on finished side of wall as specified in the individual Wall and Partition Design. A max 1 in. (25 mm) gap shall be maintained between the top of the gypsum board and the bottom surface of the concrete floor. The screws attaching the gypsum board layer(s) to the "C-T", "I" or "C-H" studs shall be located 1 in. (25 mm) below the bottom of the "J"-shaped runner (Item 2A) or slotted ceiling track (Item 2A1). No gypsum board attachment screws are to penetrate the ceiling runner.

3. Joint System — Max separation between bottom of floor and top of liner panel (Item 2C) and between bottom of floor and top of gypsum board (Item 2D) at time of installation of joint system is 1 in. (25 mm). The joint system is designed to accommodate a maximum 25 percent compression from its installed width. The joint system consists of bond breaker tape and sealant, as follows:

A. Bond Breaker Tape — Polyethylene tape supplied in rolls. Tape applied to flanges of "J"-shaped runner (Item 2A) or slotted ceiling track (Item 2A1) to prevent bonding of the sealant at points other than the top and bottom of the linear gap. When FS 900+ is used, bond breaker tape is not required.

B. Fill, Void or Cavity Material* — Sealant — Min 1 in. (25 mm) depth of sealant to be installed to fill linear gap between top of gypsum board liner panel (Item 2C) and top inside surface of "J"-shaped ceiling runner or slotted ceiling track prior to installation of gypsum board sheets on finished side of wall. The depth of sealant to be installed to fill the linear gap between the top of the gypsum board sheets (Item 2D) and the bottom of the concrete floor shall be equal to the overall thickness of the gypsum board sheets and shall be flush with the finished side of the wall.

RECTORSEAL — FlameSafe FS900+, FS1900, Metacaulk 1000, Metacaulk 350i, Metacaulk 1200, Biostop 350i, Biostop 500+ or Biostop 750

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

Design Number TRC/BP 120-03
PERIMETER FIRE BARRIERS

Rectorseal Corporation

Biostop 750, Biostop 800, FlameSafe FS 3000, FlameSafe FS 4000, Metacaulk 1200 Spray, and
Metacaulk 1500 Spray

ASTM E 2307

T-Rating 0 hr

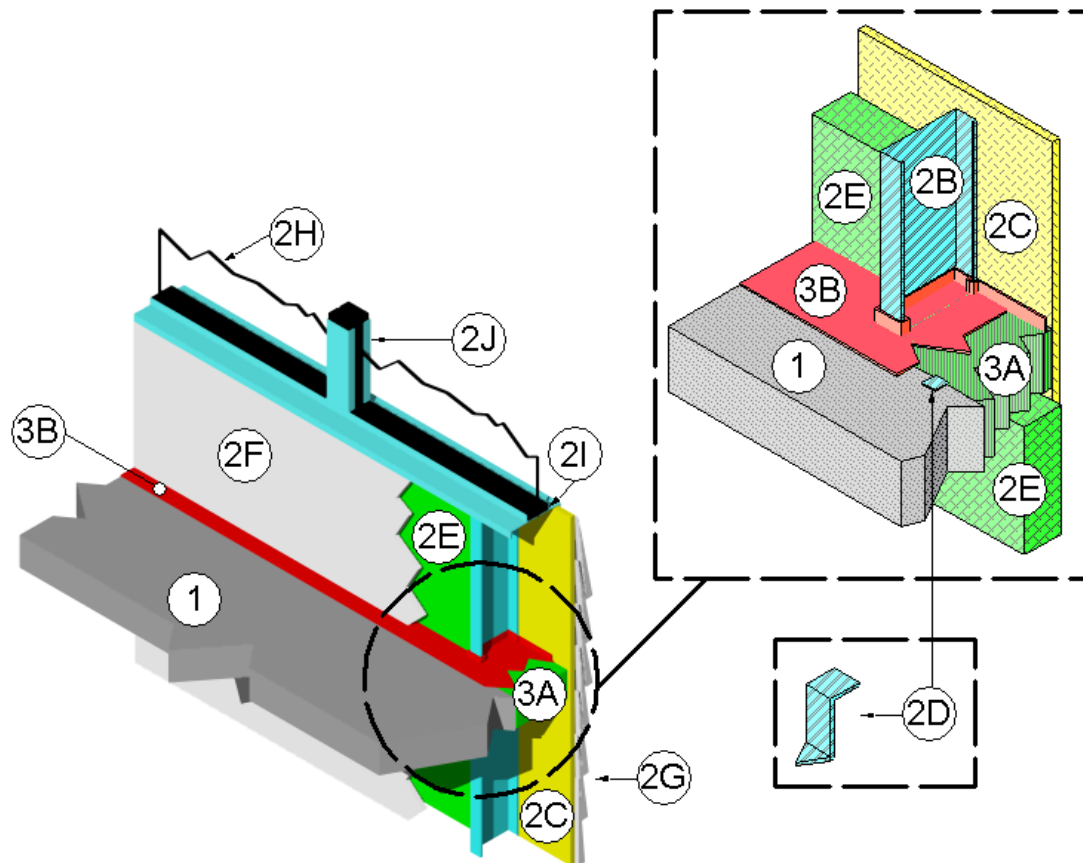
F-Rating 2 hr

ASTM E 2307/ASTM E 1399 Cycling

Class IV: 500 cycles @ 30 cpm

± 12.5% horizontal movement

± 6.25% vertical shear movement



1. CONCRETE FLOOR ASSEMBLY: Two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100 to 150 pcf, having a min. thickness of 4-1/2 in. at the joint face. When a longitudinal recess (blockout) is required to contain an architectural joint system, increase

concrete floor assembly thickness to maintain a min. thickness of 4-1/2 in. and accommodate depth of blockout formed in the concrete: blockout width unrestricted.

2. CURTAIN WALL ASSEMBLY: The curtain wall assembly shall incorporate the following construction features:

Division 07 Thermal Protection

07 84 00 Firestopping

07 84 53 Building Perimeter Firestopping

- A. Mounting Attachment: (Not shown)
Attach the steel stud framing (Item 2B) to structural steel framing according to the curtain wall manufacturer's instructions. When required, connect mounting attachments to the joint face of the concrete floor assembly (Item 1) in accordance with the curtain wall manufacturer's instructions. Secure mounting attachments to steel "C" studs of steel stud framing (Item 2B) in the perimeter joint protection (Item 3) region at a max. spacing of 120 in..
- B. Steel Stud Framing: Use min. 6 in. by 1-5/8 in., 16 GA, C-shaped steel studs as interior vertical framing. Secure steel studs in 16 GA appropriate sized steel tracks, located top and bottom, using #6 x 1-1/4 in. long bugle head SD PT screws. Limit distance between steel stud framing to max. 24 in.. Secure steel-stud framing to the concrete floor assembly (Item 1) with curtain wall clips (Item 2D). Where required, install horizontal framing members according to the curtain wall system manufacturer's guidelines.
- C. Sandwiched Wall Surface: Use a min. 5/8 in. thick, 48 in. wide by 96 in. long, exterior grade fiberglass sheathed gypsum board placed over and secured to framing with min. 1-1/4 in. long Type S drywall screws spaced 8 inches on center (oc).
- D. Curtain Wall Clips: Use min. 18 GA, "stair-like", steel clips measuring min. 1 in. wide affixed to each steel stud framing (Item 2B) using 5/8 in. long sheet metal screws and to the surface of the concrete floor assembly (Item 1) using min. 1/4 in. diameter, 1-inch long concrete screws. When the following optional method does not interfere with the installation of the perimeter joint protection (Item 3), weld curtain wall clips to steel stud framing (Item 2B) and to the optional structural pour stop at the edge of the concrete floor assembly (Item 1).
- E. Curtain Wall Insulation: (Optional)
When used, install either mineral wool or fiberglass batt curtain wall insulation after the perimeter joint protection (Item 3). Attach curtain wall insulation to steel stud framing (Item 2B) by friction fit or mechanical fasteners.
- F. Interior Curtain Wall Surface: (Optional) When used, install after the perimeter joint protection (Item 3). Install above or below perimeter joint protection (Item 3) or in both locations. When used, secure the interior curtain wall surface to steel stud framing (Item 2B) in accordance with the product's installation instructions.
- G. Exterior Curtain Wall Finish: Do not create voids or openings in the sandwiched wall surface (Item 2C) when attaching the exterior curtain wall finish. Extend exterior curtain wall finish at least 8 in. above and at least 24 in. below the surface of the concrete floor assembly (Item 1). Acceptable exterior curtain wall finish options applied over sandwiched wall surface (Item 2C):
 - (1) Glass Panels: Size and install glass panels to steel stud framing (Item 2B) according to the curtain wall system manufacturer's guidelines. Use a min. 1/4 in. thick clear, heat-strengthened (HS) glass or tempered glass with max. width and height less than the steel stud framing (Item 2B) on center spacing, allowing glass panels to be secured between the notched shoulder of the steel stud framing (Item 2B) and pressure bar. Secure glass panels using a thermal break (rubber extrusion), pressure bar (extrusion), min. 1/4-20 x 5/8 in. long screws, and a snap face (extrusion) or other equivalent manner as detailed by the manufacturer. Create monolithic glass panel assembly without expansion or control joints.
 - (2) Aluminum Panels: Secure min. 1/8 in. thick aluminum panels to the steel stud framing (Item 2B) in accordance with the manufacturer's installation instructions. When additional framing for the aluminum panels is required, install in accord with the

Division 07 Thermal Protection

07 84 00 Firestopping

07 84 53 Building Perimeter Firestopping

manufacturer's installation instructions. Create a monolithic assembly without expansion or control joints.

(3) Brick: Use any conventional brick and mortar type to create any brick pattern. Do not to exceed 7/8 in. wide mortar joints. Secure bricks to curtain wall assembly (Item 2) without creating through openings in sandwiched wall surface (Item 2C) using conventional acceptable masonry construction techniques. Create a monolithic assembly without expansion or control joints.

(4) Stone: Use any conventional stone panel and mortar type measuring at least 1 in. thick to create any stone pattern. Do not to exceed 7/8 in. wide mortar joints. Secure stone to curtain wall assembly (Item 2) without creating through openings in sandwiched wall surface (Item 2C) using conventional acceptable masonry construction techniques. Create a monolithic assembly without expansion or control joints.

(5) Siding: Apply any Listed and Labeled non-combustible siding without creating through openings in sandwiched wall surface (Item 2C). The siding shall be classified as non-combustible. Create a monolithic assembly without expansion or control joints.

(6) GFRP Panels: Use glass fiber reinforced concrete (GFRP) panels at least 1 in. thick and attach in accord with the manufacturer's installation instructions without creating through openings in sandwiched wall surface (Item 2C). Create a monolithic assembly without expansion or control joints.

- H. Glass Vision Panels: (Optional) When used, locate glass vision panels above spandrel area and a min. 8 in. above the top surface of the concrete floor assembly (Item 1). Install glass vision panels into window framing (Item 2I) according to manufacturer's guidelines. Use a min. 1/4 in. thick,

clear tempered glass with a max. 56-1/2 in. width and max. 69 in. height.

- I. Window Gaskets: When glass vision panels (Item 2H) used, use a thermal break (thermal-set rubber extrusion) to secure glass vision panels (Item 2H).
- J. Window Framing: When glass vision panels used, use steel framing members a min. 3-5/8 in. by 1-5/8 in., 18 GA steel, U-shaped channel or similar construction compatible with steel stud framing (Item 2B). Locate window framing at least 8 in. above the top surface of the concrete floor assembly (Item 1).
3. PERIMETER JOINT PROTECTION: Do not exceed an 8 in. nominal joint width (joint width at installation). Incorporate the following construction features for the perimeter joint protection (also known as perimeter fire barrier system):
- A. Packing Material: Use only mineral wool bearing an Intertek certified product label and meeting the following min. requirements. Use a min. 4 in. thick, 4-pcf density, mineral wool batt insulation installed with the fibers running parallel to the edge of concrete floor assembly (Item 1) and curtain wall assembly (Item 2). Cut packing material width to achieve 50% compression when installed in the nominal joint width. Compress the packing material into the perimeter joint. Tightly compress together splices (butt joints) in the lengths of packing material by using min. 1/4 in. compression per piece of packing material. Use only Intertek certified products meeting the above min. requirements. When a spray coating is used, locate the top surface of the packing material flush with the top surface of the concrete floor assembly (Item 1). When the non-sag or self leveling silicone sealant is used, recess the top surface of the packing material 1/4 in. from the top surface of the concrete floor assembly (Item 1).
- B. CERTIFIED MANUFACTURER: Rectorseal Corporation
- CERTIFIED PRODUCT: Biostop, FlameSafe, Metacaulk

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07 84 00 Firestopping
07 84 53 Building Perimeter Firestopping

MODEL: Biostop 750, Biostop 800, FlameSafe FS 3000, FlameSafe FS 4000, Metacaulk 1200 Spray, or Metacaulk 1500 Spray

on each side with three No. 10 steel self-tapping sheet metal screws placed in a triangular fashion with a max. spacing of 2 in. oc.

Fill, Void or Cavity Material: Apply either spray coating or sealant over the packing material (Item 3A) as follows:

Spray Coating – Spray apply the liquid to cover the exposed top surface of the packing material (Item 3A) compressed and installed in the perimeter joint. Apply a min. wet film thickness of 1/8 in. and overlap the spray coating a min. 1/2 in. onto the adjacent curtain wall assembly (Item 2) and concrete floor assembly (Item 1). When the spraying process is stopped and the applied spray coating cures to an elastomeric film before installation process is restarted, then overlap the edge of the cured spray coating at least 1/8 in. with the liquid spray coating.

Sealant – Apply non-sag or self leveling sealant to cover the exposed surface of the packing material (Item 3A) compressed and installed in the perimeter joint. Apply min. 1/4 in. thickness non-sag or self leveling sealant over the packing material (Item 3A) and finish flush with the top surface of the concrete floor assembly (Item 1).

- C. Optional Reinforcing Angle: Not shown or required. Mount a min. 1-1/2 in. x 1-1/2 in. x 20GA galvanized steel angle to the vertical steel stud framing (Item 2B) so that the vertical leg serves as a backer to the exterior face of the curtain wall insulation (Item 2E) and the horizontal leg extends away from the curtain wall insulation (Item 2E) and the elevation is located at the centerline of the perimeter joint protection (Item 3). Size the angle 12 in. longer than the span between the interior edges of the vertical steel stud framing (Item 2B) and form the angle so that it has a 6 in. vertical leg on each end. Secure the 6 in. leg to the vertical steel stud framing (Item 2B)



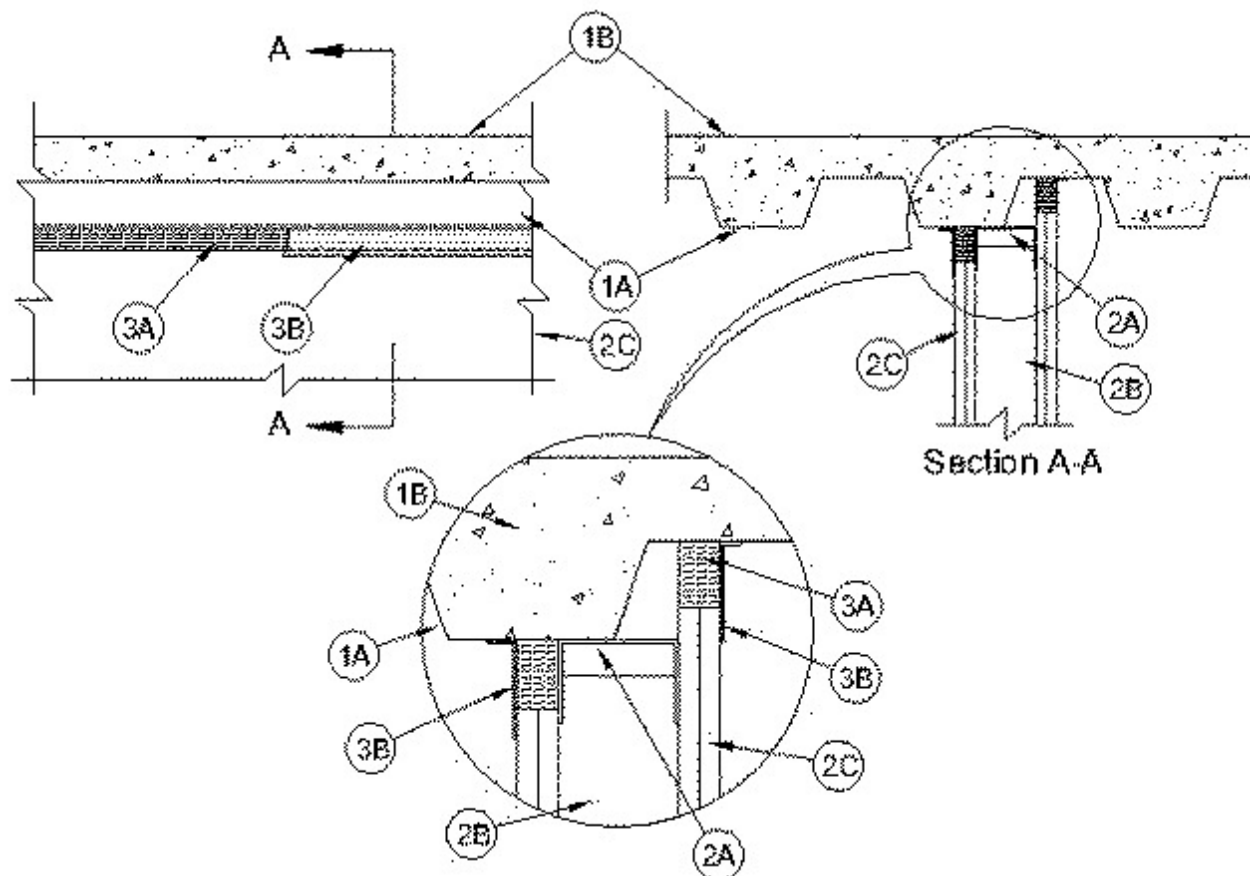
System No. HW-D-0444

March 29, 2006

Assembly Ratings — 1 and 2 Hr (See Item 2)

Nominal Joint Width — 2 in.

Class II Movement Capabilities — 33% Compression Only



1. Floor Assembly — The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory. The hourly fire rating of the floor assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The floor assembly shall include the following construction features:

A. Steel Floor And Form Units* — Max 3 in. (76 mm) deep galv steel fluted floor units.

B. Concrete — Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

2. 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 Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor And Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with min 2-1/2 in. (64 mm) flanges. Ceiling runner installed parallel to direction of fluted steel deck and secured to valley of steel deck with welds or steel masonry anchors spaced a max 12 in. (305 mm) OC.

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1 to 1-1/2 in. (25 to 38 mm) less in length than assembly height. Studs shall be installed with bottom nesting in and resting

on floor runner and with top nesting in ceiling runner. Studs secured to floor runner with sheet metal screws. Stud spacing not to exceed 24 in. (610 mm) OC.

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. (16 mm) or 1-1/4 in. (32 mm) on each side of wall for 1 or 2 hr fire rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a nom 2 in. (51 mm) gap shall be maintained between the top of the gypsum board and the bottom of the steel deck and the top row of screws shall be installed into the studs 1 to 1-1/2 in. (25 to 38 mm) below the bottom edge of the ceiling runner flange.

The hourly assembly rating of the joint system is equal to the hourly fire rating of the wall.

3. Joint System — Max separation between bottom of steel deck and top of wall at time of installation of joint system is 2 in. (51 mm). The joint system is designed to accommodate a max of 33 percent compression from its installed width. The joint system consists of forming material and a fill material, as follows:

A. Forming Material* — Min 8 pcf (128 kg/m³) mineral wool batt insulation shall be cut into strips to fill the gap between the top of the gypsum board and bottom of the steel floor units. The width of the strips shall be equal to the total thickness of the gypsum board. The strips of mineral wool are tightly friction-fitted into the gap between the top of the gypsum board and bottom of the steel deck flush with wall surfaces.

ROCK WOOL MANUFACTURING CO — Delta-8A

B. Fill, Void or Cavity Material* — Min 1/8 in. (3.2 mm) wet thickness (min 1/16 in. or 1.6 mm dry thickness) of fill material sprayed or troweled on each side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. (13 mm) onto gypsum board and steel deck on both sides of wall.

RECTORSEAL — Metacaulk 1200 Spray, Metacaulk 1200 Caulk Grade

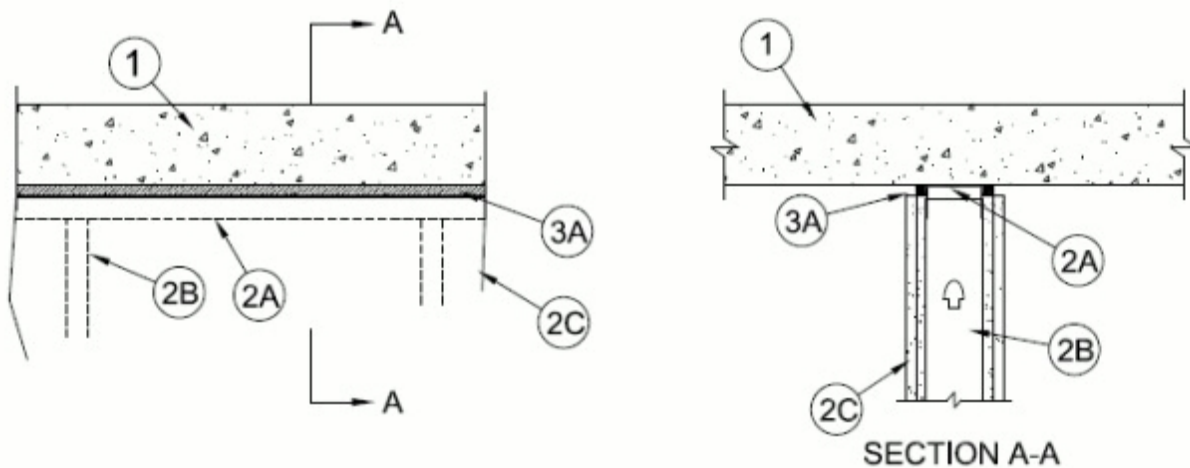
*Bearing the UL Classification Mark



System No. HW-D-0789

April 20, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 1/2 In.	FT Ratings — 1 and 2 Hr (See Item 2)
Class II and III Movement Capabilities — 50% Compression and 100% Extension	FH Ratings — 1 and 2 Hr (See Item 2)
L Rating at Ambient — Less than 1 CFM/Lin Ft	FTH Ratings — 1 and 2 Hr (See Item 2)
L Rating at 400° F — Less than 1 CFM/Lin Ft	Nominal Joint Width - 1/2 In. (13 mm)
	Class II and III Movement Capabilities — 50% Compression and 100% Extension
	L Rating at Ambient — Less than 1.5 L/s/Lin M
	L Rating at 400° F — Less than 1.5 L/s/Lin M



1. Floor Assembly — Min 4-1/2 in. (114 mm) thick steel-reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete.

2. 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 Series or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B) with min 2 in. (51 mm) flanges. Ceiling runner is secured to concrete floor with steel fasteners spaced max 24 in. (610 mm) OC.

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 in. to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and secured to floor runner and with top nesting in ceiling runner without attachment. Stud spacing not to exceed 24 in. (610 mm) OC.

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. and 1-1/4 in. (16 and 32 mm) on each side of wall for 1 and 2 hr fire rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a max 1/2 in. (13 mm) gap shall be maintained between the top of the gypsum board and the bottom surface of the floor. The screws attaching the gypsum board to the studs along the top of the wall shall be located 1 to 1-1/2 in. (25 to 38 mm) below

the bottom of the ceiling runner. No gypsum board attachment screws shall be driven into the ceiling runner.

The hourly fire rating of the joint system is dependent on the hourly fire rating of the wall assembly in which it is installed.

3. Joint System — Max separation between bottom of floor and top of wall is 1/2 in. (13 mm). The joint system is designed to accommodate a max 50 percent compression and max 100 percent extension from its installed width. The joint system consists of the following:

A. Fill, Void or Cavity Material* — Nom 1-1/2 in. (38 mm) high by 5/8 in. (16 mm) thick foam with integral 1.5 mm by 5/8 in. (16 mm) wide intumescent strip adhered to bottom surface. BlazeFoam to be compressed and inserted into joint between concrete floor and gypsum board, against ceiling runner, with the intumescent strip positioned at bottom and resting on the cut edge of the gypsum board. BlazeFoam is supplied in varying lengths and shall be cut to length and friction fit within the joint with ends tightly butted. Butt joints in the BlazeFoam shall be spaced min 40 in. (102 mm) apart. Blaze Foam applied within joint opening on both sides of wall.

RECTORSEAL — Blaze Foam

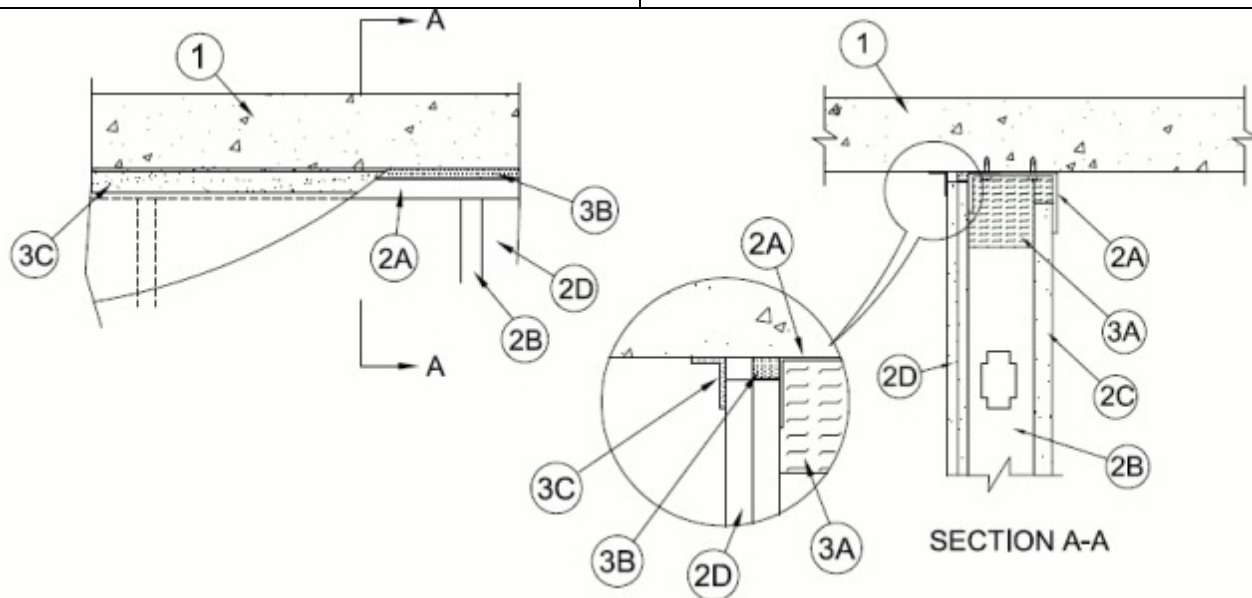
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



System No. HW-D-0797

September 22, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 3/4 In.	FT Ratings — 1 and 2 Hr (See Item 2)
Class II and III Movement Capabilities — 33% Compression and Extension	FH Ratings — 1 and 2 Hr (See Item 2)
	FTH Ratings — 1 and 2 Hr (See Item 2)
	Nominal Joint Width - 19 mm
	Class II and III Movement Capabilities — 33% Compression and Extension



1. Floor Assembly — Min 4-1/2 in. (114 mm) thick steel-reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete.

2. Shaft 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 and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Floor and Ceiling Runners — "J"-shaped runner, min 2-1/2 in. (64 mm) wide with unequal legs of min 2 in. (51 mm) and min 3 in. (76 mm), fabricated from min 20 MSG galv steel. Ceiling runner to be attached to floor with two steel concrete anchors spaced a max 24 in. (610 mm) OC. As an alternate to the "J"-shaped runner, a min 2-1/2 in. (64 mm) wide by 1 or 1-1/4 in. (25 or 32 mm) deep channel formed from min 25 MSG galv steel may be used for the floor runner.

A1. Light Gauge Framing* — Slotted Ceiling Track — (Not Shown) - As an alternate to the Item 2A, a ceiling track consisting of galv steel channel with slotted flanges may be used. Slotted ceiling track sized to accommodate steel studs (Item 2B). Legs are to be min 3 in. (76 mm) long. Attached to floor as specified in item 2A.

See **Light Gauge Framing** (XHLL) Category for names of Classified Companies.

B. Studs — "C-T", "I", or "C-H" shaped steel studs to be min 2-1/2 in. (64 mm) wide and formed of min 25 ga galv steel. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in floor runner. Studs spaced max 24 in. (610 mm) OC.

C. Gypsum Board* — 1 in. (25 mm) thick by max 24 in. (610 mm) wide gypsum board liner panels. Panels cut max 3/8 in. (9.5 mm) less in length than floor to ceiling height. Vertical edges inserted into "T" shaped section of "C-T" studs, into holding tabs of "I" studs or into "H"-shaped section of "C-H" studs.

D. Gypsum Board* — Gypsum board 5/8 in. (16 mm) thick, applied on finished side of wall as specified in the individual Wall and Partition Design. The boards are cut max 3/4 in. (19 mm) less in length than the floor to ceiling height. The screws attaching the gypsum board layer(s) to the "C-T", "I", or "C-H" studs shall be located max 3 in. (76 mm) below the steel deck. No gypsum board attachment screws shall be driven into the ceiling runner.

The hourly fire rating and the F, FT, FH and FTH ratings of the joint system are equal to the hourly fire rating of the wall.

3. Joint System — Max separation between bottom of floor and top of wall is 3/4 in. (19 mm). The joint system is designed to accommodate a max 33 percent compression and extension from its installed width. The joint system consists of the following:

A. Forming Material* — Min 4 pcf (64 kg/m³) mineral wool insulation. Min 1 in. (25 mm) wide pieces of forming material to be cut to a thickness 50% greater than the gap above the shaft liner board, compressed and installed within the ceiling runner above the shaft liner board. In addition, min 3 in. thickness of forming material cut to a width 20% larger than the width of the ceiling runner, compressed in width and installed into the top of ceiling runner between leg of track and gypsum liner board. Butt joints in the forming material shall be spaced minimum 40 in. (102 mm) apart along the length of the joint.

B. Fill, Void or Cavity Material* — Nom 1-1/2 in. (38 mm) high by 5/8 in. (16 mm) thick foam with integral 1.5 mm by 5/8 in. (16 mm) wide intumescent strip adhered to bottom surface. Blaze Foam to be compressed and inserted into joint between concrete floor and gypsum board, against ceiling runner, with the intumescent strip positioned at bottom and resting on the cut edge of the gypsum board. Blaze Foam is supplied in varying lengths and shall be cut to length and friction fit within the joint with ends tightly butted. Butt joints in the BlazeFoam shall be spaced min 40 in. (102 mm) apart. Blaze Foam applied within joint opening on finished side of wall.

RECTORSEAL — Blaze Foam

C. Tape and Joint Compound — A layer of tape and joint compound shall be applied over the joint at the finished side of wall. The tape shall lap onto the gypsum wall and concrete floor, along the length of the joint.

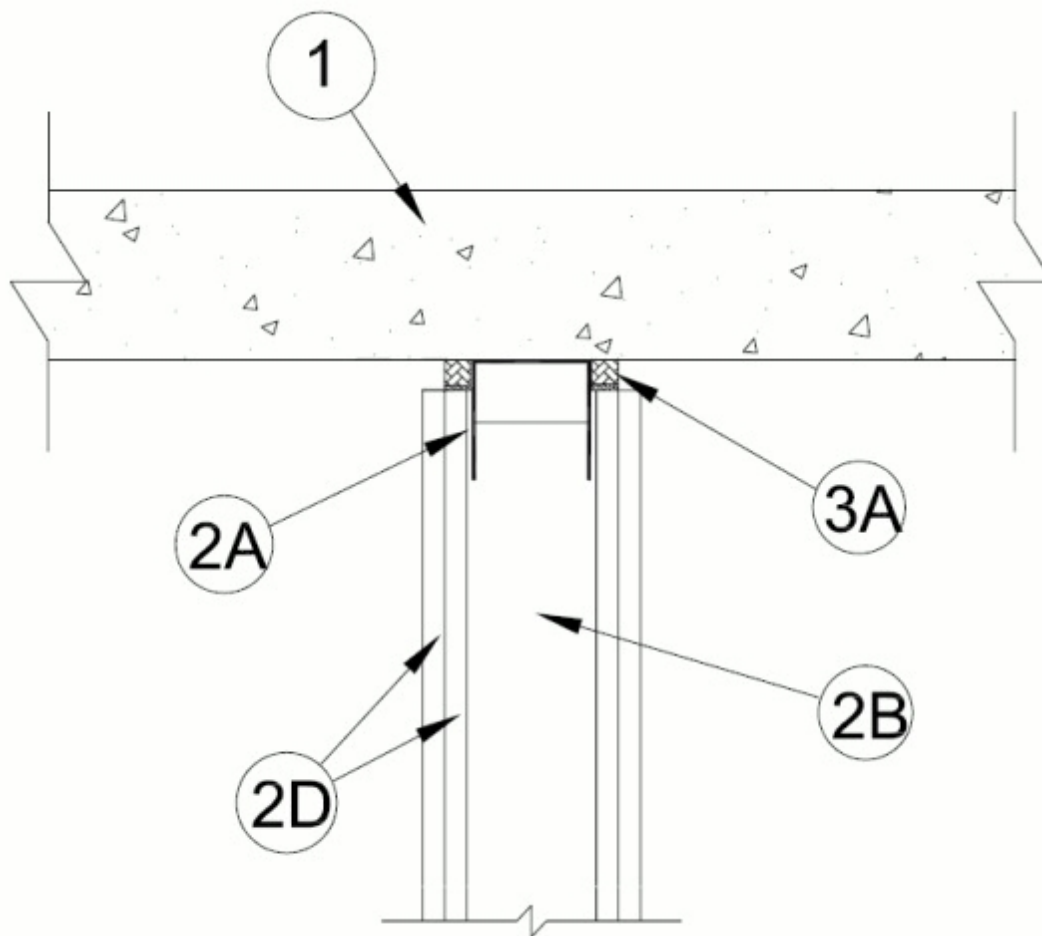
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



System No. HW-D-0798

September 18, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 1/2 In.	FT Ratings — 1 and 2 Hr (See Item 2)
Class II or III Movement Capabilities — 50% Compression or 25% Extension	FH Ratings — 1 and 2 Hr (See Item 2)
L Rating At Ambient — Less Than 1 CFM/Lin ft	FTH Ratings — 1 and 2 Hr (See Item 2)
L Rating At 400 F — Less Than 1 CFM/Lin ft	Nominal Joint Width - 13 mm
	Class II or III Movement Capabilities — 50% Compression or 25% Extension
	L Rating At Ambient — Less Than 1.55 L/s/m
	L Rating At 204 C — Less Than 1.55 L/s/m



1. **Floor Assembly** — Min 4-1/2 in. (114 mm) thick steel reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete.

The hourly fire rating of the floor assembly shall be equal or greater than the hourly fire rating of the wall assembly.

2. **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 and Partition Design in the UL Fire Resistance

Directory and shall include the following construction features:

A. Steel Floor And Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of min 20 ga galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with 2-1/2 in. (64 mm) flanges. Ceiling runner secured to floor with steel concrete anchors spaced max 24 in. (610 mm) OC. As an alternate, the floor runner may be formed from min 25 MSG galv steel and have min 1 or 1-1/4 in. (25 or 32 mm) flanges.

A1. Light Gauge Framing* — Slotted Ceiling Runner - As an alternative to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner to be provided with minimum 2-1/2 in. (64 mm) flanges. Slotted ceiling runner secured to floor with steel concrete anchors spaced max 12 in. (305 mm) OC.

See **Light Gauge Framing** (XHLL) Category for names of Classified Companies.

B. Batts and Blankets* (Not Shown) — Faced or unfaced glass fiber insulation or mineral wool insulation completely filling stud cavity. Insulation shall meet the specifications described in the individual Wall and Partition Design.

See **Batts and Blankets** (BZJZ) Category for names of Classified Companies.

C. Studs — Steel studs to be min 3-5/8 in. (92 mm) wide. Studs cut 1/2 to 3/4 in. less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner without attachment. Stud spacing not to exceed 24 in. (610 mm) OC.

D. Gypsum Board* — Gypsum board sheets installed to a min total 5/8 in. (16 mm) or 1 1/4 in. (32 mm) thickness on each side of wall for 1 and 2 hr fire rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory except that a max 1/2 in. (13 mm) gap shall be maintained between the top of the gypsum board and the bottom of the floor assembly. The screws attaching the gypsum board to the studs along the top of the wall shall be located max 3-1/2 in. (89 mm) below the bottom of the floor. No gypsum board attachment screws shall be driven into the ceiling runner.

The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.

3. Joint System — Max separation between bottom of floor and top of gypsum board (at time of installation) is 1/2 in. (13 mm). The joint system is designed to accommodate a max 50 percent compression or max 25 percent extension from its installed width. The joint system shall consist of the following:

A. Fill, Void or Cavity Material* — Blaze Foam consists of nom 1-1/2 in. (38 mm) high by 5/8 in. (16 mm) thick foam with integral 1.5 mm by 5/8 in. (16 mm) wide intumescent strip adhered to bottom surface. One strip of Blaze Foam to be compressed and inserted into joint against the ceiling runner, between bottom of floor and top edge of gypsum board, with the intumescent strip positioned at bottom and resting on the cut edge of the gypsum board. Blaze Foam is supplied in varying lengths and shall be cut to length and friction fit within the joint with ends tightly butted. Butt joints in the Blaze Foam shall be spaced min 40 in. (102 mm) apart. Blaze Foam applied within joint opening on both sides of wall.

RECTORSEAL — Blaze Foam

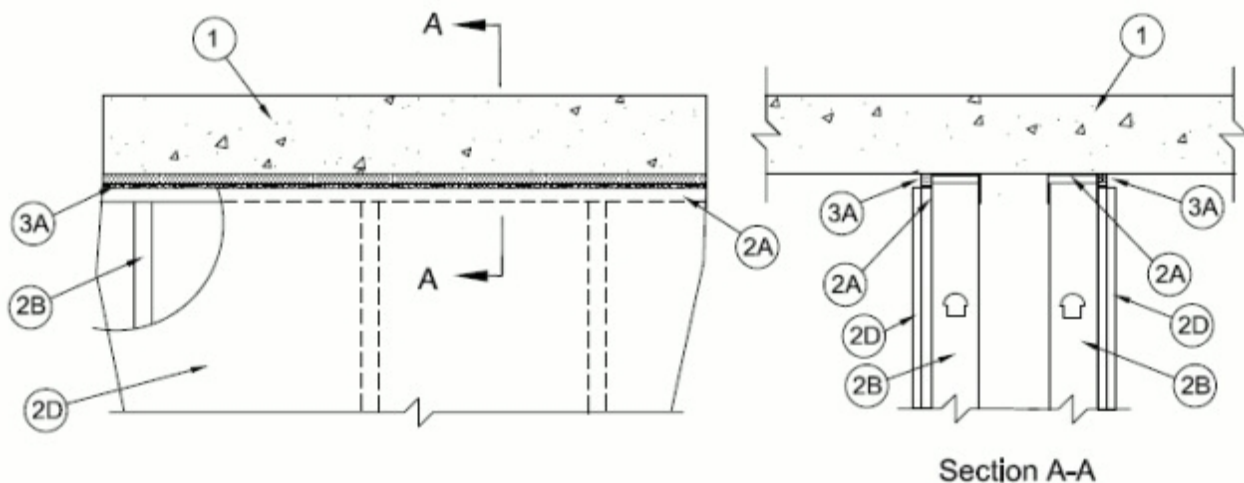
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



System No. HW-D-0806

September 22, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 1/2 in.	FT Ratings — 1 and 2 Hr (See Item 2)
Class II or III Movement Capabilities — 50% Compression or 25% Extension	FH Ratings — 1 and 2 Hr (See Item 2)
L Rating at Ambient — Less than 1 CFM/Lin Ft	FTH Ratings — 1 and 2 Hr (See Item 2)
L Rating at 400°F — Less than 1 CFM/Lin Ft	Nominal Joint Width - 13 mm in.
	Class II or III Movement Capabilities — 50% Compression or 25% Extension
	L Rating at Ambient — Less than 1.55 L/s/m
	L Rating at 204 C— Less than 1.55 L/s/m



1. Floor or Roof Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete.

2. Chase Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud chase (double 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 Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor and Ceiling Runners — Channel shaped ceiling runner with width to accommodate studs, legs of min 2-1/2 in. (64 mm), and fabricated from min 20 MSG galv steel. Floor runners of wall assembly shall consist of min No. 25 ga galv steel channels sized to accommodate the steel studs. Floor runner to be provided with min 1-1/4 in. (32mm) flanges. Ceiling runner to be attached to concrete floor with steel masonry fasteners spaced a max of 24 in. (610 mm) O.C.

A1. Light Gauge Framing* — Slotted Ceiling Runner - As an alternative to the ceiling runner in Item 2A, slotted ceiling runner to consist of galv steel channel with slotted flanges sized to accommodate steel studs (Item 2B). Slotted ceiling runner to be provided with minimum 2-1/2 in. (64 mm) flanges. Slotted ceiling runner secured to floor with steel concrete anchors spaced max 12 in. (305 mm) OC.

See **Light Gauge Framing** (XHLI) Category for names of Classified Companies.

B. Studs — Steel studs to be min 2-1/2 in. (64 mm) wide and formed of min 25 ga galv steel. Studs cut 3/4 to 1 in. (19 to 25 mm) less in length than assembly height with bottom nesting in

and secured to floor runner. Steel studs nested in ceiling runner without attachment. Studs spaced max 24 in. (610 mm) OC.

C. Batts and Blankets* (Not Shown) — Faced or unfaced glass fiber insulation or mineral wool insulation completely filling stud cavity. Insulation shall meet the specifications described in the individual Wall and Partition Design.

See **Batts and Blankets** (BZJZ) Category for names of Classified Companies.

D. Gypsum Board* — Gypsum board 5/8 in. (16 mm) thick, applied on both sides of wall as specified in the individual Wall and Partition Design except that a max 1/2 in. (13 mm) gap shall be maintained between the top of the gypsum board and the bottom of the floor assembly. The screws attaching the gypsum board to the studs along the top of the wall shall be located 3 to 3-1/2 in. (76 to 89 mm) down from floor at time of installation. No gypsum board attachment screws shall be driven into the ceiling runner.

The hourly assembly rating and F, FT, FH and FTH ratings of the joint system is equal to the hourly fire rating of the wall.

3. Joint System — Max separation between bottom of floor and top of gypsum board (at time of installation) is 1/2 in. (13 mm). The joint system is designed to accommodate a max 50 percent compression or 25% extension from its installed width. The joint system shall consist of the following:

A. Fill, Void or Cavity Material* — Blaze Foam consists of nom 1-1/2 in. (38 mm) high by 5/8 in. (16 mm) thick foam with integral 1.5 mm by 5/8 in. (16 mm) wide intumescent strip adhered to bottom surface. One strip of Blaze Foam to be compressed and inserted into joint against the ceiling runner, between bottom of floor and top edge of gypsum board, with the intumescent strip positioned at bottom and resting on the cut edge of the gypsum board. Blaze Foam is supplied in varying lengths and shall be cut to length and friction fit within the joint with ends tightly butted. Butt joints in the Blaze Foam shall be spaced min 40 in. (102 mm) apart. Blaze Foam applied within joint opening on both finished sides of wall.

RECTORSEAL — Blaze Foam

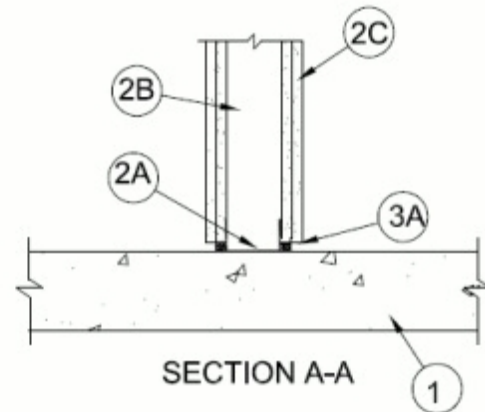
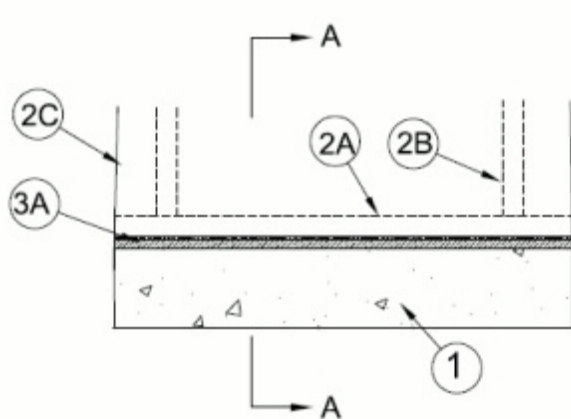
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



System No. BW-S-0044

June 13, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 1/2 In.	FT Ratings — 1 and 2 Hr (See Item 2)
L Rating at Ambient — Less than 1 CFM/Lin Ft	FH Ratings — 1 and 2 Hr (See Item 2)
L Rating at 400° F — Less than 1 CFM/Lin Ft	FTH Ratings — 1 and 2 Hr (See Item 2)
	Nominal Joint Width - 1/2 In. (13 mm)
	L Rating at Ambient — Less than 1.5 L/s/Lin M
	L Rating at 400° F — Less than 1.5 L/s/Lin M



1. Floor Assembly — Min 4-1/2 in. (114 mm) thick steel-reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete.

2. 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 Series or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor Runners — Floor runners of wall assembly shall consist of min No. 25 ga galv steel channels sized to accommodate steel studs (Item 2B) with min 1-1/4 in. (32 mm) flanges. Ceiling runner is secured to concrete floor with steel fasteners spaced max 12 in. (305 mm) OC.

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 in. to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and secured to floor runner with sheet metal screws. Stud spacing not to exceed 24 in. (610 mm) OC.

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. and 1-1/4 in. (16 and 32 mm) on each side of wall for 1 and 2 hr fire rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a max 1/2 in. (13 mm) gap shall be maintained between the bottom of the gypsum board and the top surface of the concrete floor.

The hourly fire rating of the joint system is dependent on the hourly fire rating of the wall assembly in which it is installed.

3. Joint System — The joint system consists of the following:

A. Fill, Void or Cavity Material* — Nom 1-1/2 in. (38 mm) high by 5/8 in. (16 mm) thick foam with integral 1.5 mm by 5/8 in. (16 mm) wide intumescent strip adhered to top surface. BlazeFoam to be compressed and inserted into joint between gypsum board and concrete floor,

against the floor runner, with the intumescent strip positioned at top of joint against the cut edge of the gypsum board. BlazeFoam is supplied in varying lengths and shall be cut to length and friction fit within the joint with ends tightly butted. Butt joints in the BlazeFoam shall be spaced minimum 40 in. (102 mm) apart. Blaze Foam applied within joint opening on both sides of wall.

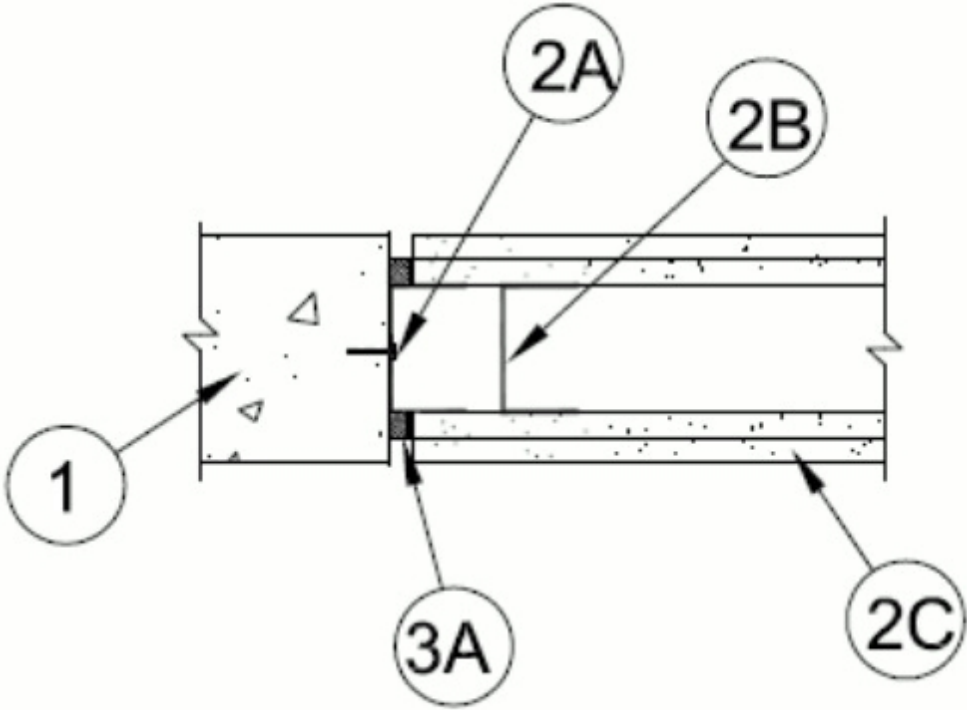
RECTORSEAL — Blaze Foam

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

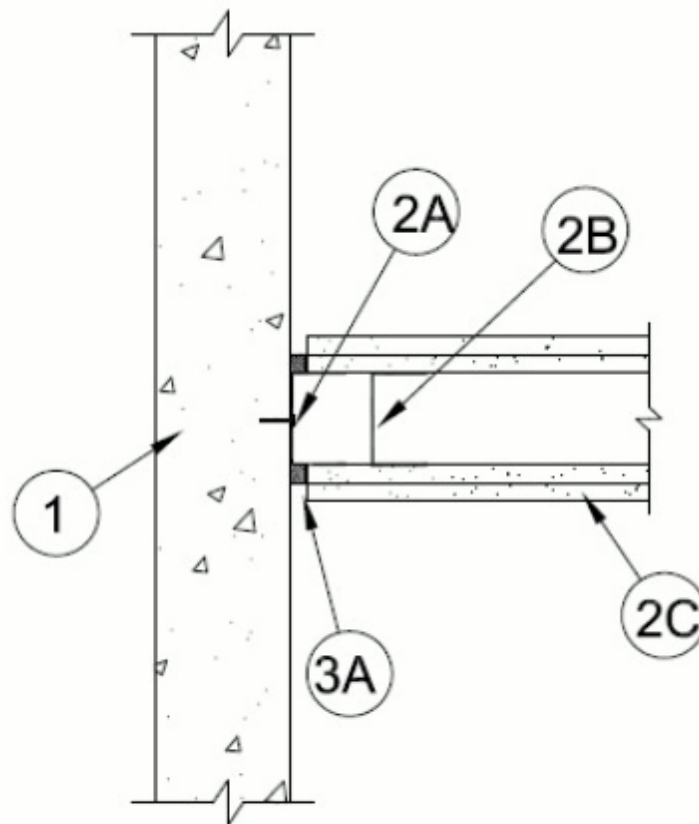
System No. WW-D-0213

April 20, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 1/2 In.	FT Ratings — 1 and 2 Hr (See Item 2)
Class II and III Movement Capabilities — 50% Compression and 100% Extension	FH Ratings — 1 and 2 Hr (See Item 2)
L Rating at Ambient — Less than 1 CFM/Lin Ft	FTH Ratings — 1 and 2 Hr (See Item 2)
L Rating at 400° F — Less than 1 CFM/Lin Ft	Nominal Joint Width - 1/2 In. (13 mm)
	Class II and III Movement Capabilities — 50% Compression and 100% Extension
	L Rating at Ambient — Less than 1.5 L/s/Lin M
	L Rating at 400° F — Less than 1.5 L/s/Lin M



Configuration A



Configuration B

1. Wall Assembly — Min 6 in. (152 mm) thick steel-reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete. Wall may also be constructed of any min 6 in. (152 mm) thick UL Classified **Concrete Blocks***. Concrete wall may be oriented parallel to (Configuration A) or perpendicular to (Configuration B) the gypsum wall (Item 2). For Configuration A, thickness of concrete wall shall be same as or greater than the thickness of the gypsum wall.

See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. 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 Series or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Runner — Runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B) with min 1-1/4 in. (32 mm) flanges. Runner is secured to concrete wall with steel fasteners spaced max 12 in. (305 mm) OC.

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 in. to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and secured to floor runner and with top nesting in ceiling runner without attachment. Stud spacing not to exceed 24 in. (610 mm) OC. First stud adjacent to concrete wall assembly shall be located maximum 4 in. (102 mm) from wall end (Configuration A) or wall face (Configuration B).

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. and 1-1/4 in. (16 and 32 mm) on each side of wall for 1 and 2 hr fire rated assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory, except that a max 1/2 in. (13 mm) gap shall be maintained between the side of the gypsum board and the adjacent surface of the concrete wall. The screws attaching the gypsum board to the first stud shall be located 4 in. (102 mm) from face of concrete wall. No gypsum board attachment screws shall be driven into the side runner.

The hourly fire rating of the joint system is dependent on the hourly fire rating of the wall assembly in which it is installed.

3. Joint System — Max separation between side of gypsum board and face (or end) of concrete wall is 1/2 in. (13 mm). The joint system is designed to accommodate a max 50 percent compression and max 100 percent extension from its installed width. The joint system consists of the following:

A. Fill, Void or Cavity Material* — Nom 1-1/2 in. (38 mm) high by 5/8 in. (16 mm) thick foam with integral 1.5 mm by 5/8 in. (16 mm) wide intumescent strip adhered to bottom surface. BlazeFoam to be compressed and inserted into joint between concrete wall and gypsum board, against side runner, with the intumescent strip positioned to rest on the cut edge of the gypsum board. BlazeFoam is supplied in varying lengths and shall be cut to length and friction fit within the joint with ends tightly butted. Butt joints in the BlazeFoam shall be spaced min 40 in. (102 mm) apart. BlazeFoam applied within joint opening on both sides of wall.

RECTORSEAL — Blaze Foam

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

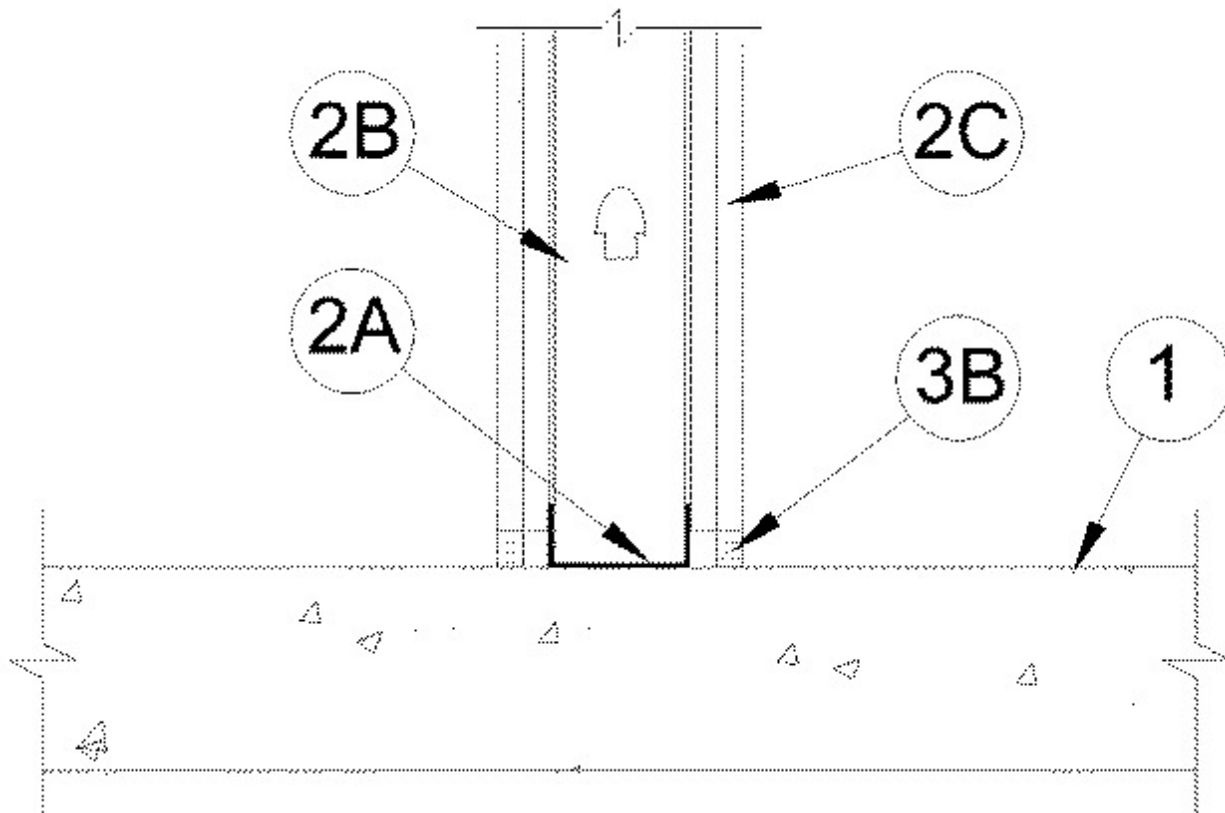


System No. BW-S-0014

December 05, 2005

Assembly Ratings — 1 and 2 Hr (See Item 2)

Joint Width — 3/4 In. Max



1. Floor Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete. Floor may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units***.

See **Precast Concrete Units** (CFTV) category in the Fire Resistance Directory for names of manufactures.

2. Wall Assembly — The 1 or 2 h fire rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory. In addition, the wall may incorporate a head-of-wall joint system constructed as specified in the HW Series Joint Systems in the UL Fire Resistance Directory. The wall shall include the following construction features:

A. Steel Floor Runner — Floor runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B). Floor runners to be provided with min 1-1/4 in. (32 mm) flanges. Runners secured with steel fasteners spaced max 24 in. (610 mm) OC.

B. Studs — Min size as specified in the individual design. Studs cut 3/8 to 5/8 in. (10 to 16 mm) less in length than assembly height with bottom nesting in, resting on and fastened to floor runner with sheet metal screws. Stud spacing not to exceed 24 in. (610 mm) OC.

C. Gypsum Board* — Gypsum board installed to a min total thickness of 5/8 or 1-1/4 in. (16 or 32 mm) on each side of wall for a 1 or 2 hr rated wall, respectively. Wall to be constructed as specified in the individual U400 or V400 Series Design in the UL Fire Resistance Directory, except that a max 3/4 in. (19 mm) gap shall be maintained between the bottom of gypsum

board and top of concrete floor.

The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.

3 Fill, Void or Cavity Material* - Caulk — Max separation between top of floor and bottom of gypsum board is 3/4 in. (19 mm). Min 5/8 in. (16 mm) thickness of fill material installed on each side of the wall between the bottom of the gypsum board and the top of the concrete floor, flush with each surface of the wall.

RECTORSEAL — Metacaulk 150+, 1000, 1100, 350i, 835+ or 1200

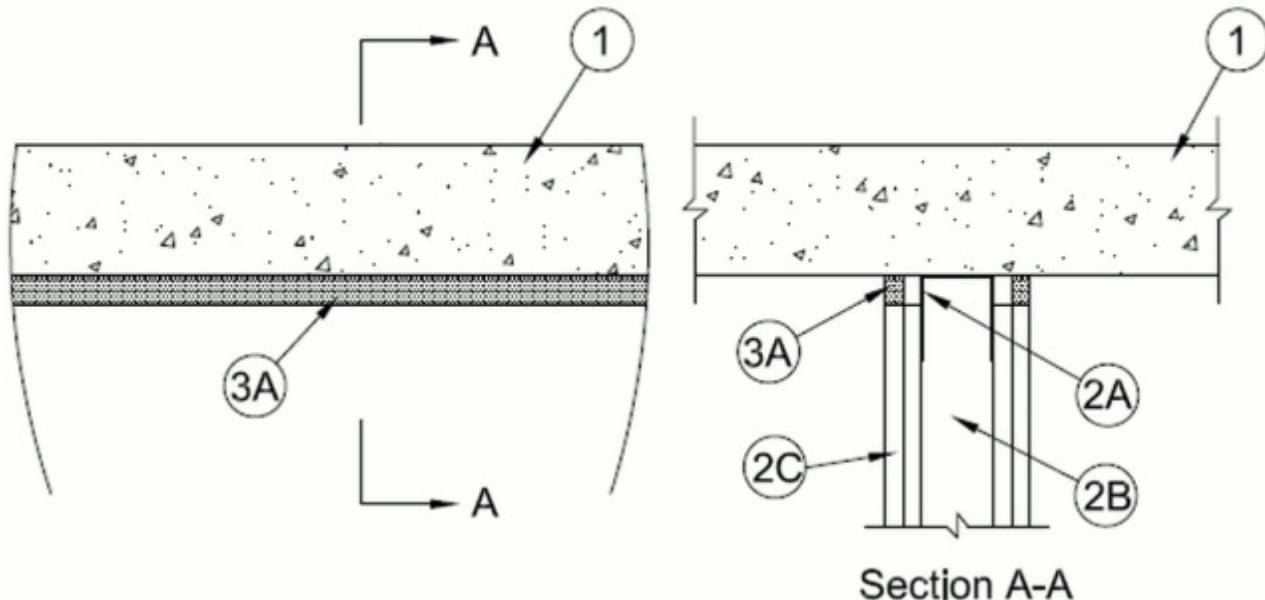
*Bearing the UL Classification Mark



System No. HW-D-0215

May 14, 2014

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 3/4 In.	FT Ratings — 1 and 2 Hr (See Item 2)
Class II and III Movement Capabilities — 20% Compression or Extension or 33% Compression Only (See Item 3)	FH Ratings — 1 and 2 Hr (See Item 2)
	FTH Ratings — 1 and 2 Hr (See Item 2)
	Nominal Joint Width - 3/4 In.
	Class II and III Movement Capabilities — 20% Compression or Extension or 33% Compression Only (See Item 3)



1. Floor Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete or any UL Classified **Concrete Blocks***.

See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. 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 W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Steel Floor And Ceiling Runners — Floor and ceiling runners of wall assembly shall consist of galv steel channels sized to accommodate steel studs (Item 2B). Ceiling runner to be provided with min 1-1/4 in. (32 mm) flanges. Ceiling runner shall be secured to floor with steel fasteners spaced max 24 in. (610 mm) OC.

B. Studs — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in and resting on floor runner and with top nesting in ceiling runner. Studs secured only to floor runner with sheet metal screw. Stud spacing not to exceed 24 in. (610 mm) OC.

C. Gypsum Board* — Gypsum board sheets installed to a min total thickness of 5/8 in. (16 mm) or 1-1/4 in. (32 mm) on each side of wall, for 1 and 2 hr rated wall assemblies, respectively. Wall to be constructed as specified in the individual Wall and Partition Design in

the UL Fire Resistance Directory, except that a nom 3/4 in. (19 mm) gap shall be maintained between the top of the gypsum board and the bottom of the floor and the top row of screws shall be installed into the studs 2 in. (51 mm) below the lower surface the floor.

The hourly assembly ratings of the joint system are equal to the fire rating of the wall.

3. Joint System — Max separation between bottom of floor and top of wall at time of installation of joint system is 3/4 in. (19 mm). The joint system is designed to accommodate a max 20 percent compression or extension from its installed width or max 33 percent compression only from its installed width. The joint system consists of a fill material, as follows:

A. Fill, Void or Cavity Material* - Caulk — Min 5/8 in. (16 mm) thickness of fill material applied within the joint, flush with both surfaces of wall.

RECTORSEAL — MC 150+, Metacaulk 1200 Caulk

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