

1. Floor or Wall Assembly — Lightweight or normal weight (100-150 pcf) concrete. Except as footnoted for floor assembly in table under Item 3, min

Through-Penetration Firestop Systems (XHEZ)—Continued

thickness of solid concrete floor or wall assembly is 4-1/2 in. Floor assembly may also be constructed of any min 6 in. thick UL Classified hollow core Precast Concrete Units*. Wall may also be constructed of any UL Classified Concrete Blocks*. Diam of opening through floor or wall to be 0 to 1/4 in. larger than the outside diam of nom 2 in. diam and smaller pipes or conduits. Diam of opening to be 0 to 1/2 in. larger than the outside diam of nom 2-1/2 in. diam and larger pipes or conduits. Max diam of opening is 7 in. See Concrete Blocks (CAZT) and Precast Concrete Units (CFTV) categories in Fire Resistance Directory for names of manufacturers.

2. Through Penetrants — One nonmetallic pipe or conduit to be centered in the through opening. Pipe or conduit to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes or conduits may be used:

A. Polyvinyl Chloride (PVC) Pipe — Nom 6 in. diam (or smaller) Schedule 40 solid-core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.

B. Cellular — Core Polyvinyl Chloride (ccPVC) Pipe — Nom 4 in. diam (or smaller) Schedule 40 cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.

C. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 6 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

D. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 4 in. diam (or smaller) Schedule 40 solid-core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

E. Cellular Core Acrylonitrile Butadiene Styrene (ccABS) Pipe — Nom 4 in. diam (or smaller) Schedule 40 cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

F. Polybutylene (PB) Pipe — Nom 3 in. diam (or smaller) SDR11 (or heavier) PB pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

G. Rigid Nonmetallic Conduit — Nom 4 in. diam (or smaller) (Schedule 40 or 80) PVC conduit installed in accordance with Article 347 of the National Electric Code (NECA No. 70).

H. Flame Retardant Polypropylene (FRPP) Pipe — Nom 4 in. diam (or smaller) Schedule 40 (or heavier) FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

See Rigid Nonmetallic Conduit (DZKT) category in UL Electrical Construction Materials Directory for names of manufacturers.

3. Firestop System — The details of the firestop system shall be as follows:

A. Fill, Void or Cavity Materials* — Wrap Strip — Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in 1 and 2 in. wide strips. Strips tightly wrapped around nonmetallic pipe (foil side exposed) with the edges butted against the underside of the concrete floor or both sides of wall surface. Sufficient layers of wrap strip shall be installed to lap a min of 3/16 in. on the concrete around the entire perimeter of the through opening. The min wrap strip width and the min number of layers of wrap required is dependent upon the pipe type, the nom pipe diam, the wall of floor thickness and the hourly T Rating required, as shown in the following table.

Pipe Type	Nom Pipe Diam In.	Min Wall or Floor Thkns In.	Wrap Strip Width In.	Min Wrap Strip Layers	T Rating Hr
PVC, ccPVC or CPVC	1/2 to 1-1/2	2-1/2	1	1	0
ABS, ccABS or FRPP(a)	1/2 to 1-1/2	2-1/2	1	1	1
PVC, ccPVC or CPVC	1/2 to 2	2-1/2	2	1	0
PVC, ccPVC or CPVC	2	2-1/2	1	2	0
ABS, ccABS or FRPP(a)	2	2-1/2	1	2	1
PVC, ccPVC or CPVC	2-1/2 to 3	2-1/2	2	2	0
PVC, ccPVC or CPVC	3-1/2 to 4	2-1/2	2	3	0
PVC, ccPVC or CPVC	1/2 to 1-1/2	4-1/2	1	1	2
ABS, ccPVC or FRPP(a)	2	4-1/2	1	2	2
PVC, ccPVC, CPVC, ABS, ccABS or FRPP(a)	2-1/2 to 3	4-1/2	1	3	2
PVC, ccPVC, CPVC, ABS, ccABS, PB or FRPP(a)	2-1/2 to 3	4-1/2	2	2	2
PVC, ccPVC or CPVC	3-1/2 to 4	4-1/2	2	2	1-1/2
PVC, ccPVC, CPVC	3-1/2 to 4	4-1/2	2	3	2
ABS, ccABS or FRPP(b)	6(c)	4-1/2	3	3	0

- (a) — Requires use of aluminum tape detailed in Item 3E.
- (b) — Requires use of pipe covering detailed in Item 3D.
- (c) — For nom 6 in. diam pipe, 1 in. and 2 in., wide wrap strips are "Stacked" to attain nom 3 in. wrap strip width.
- Each layer of wrap strip to be installed with butted seam with butted seams in successive layers staggered. Wrap strip layers temporarily held in position using

NOTE:

THESE DETAILS TO BE USED AT ALL FLOOR TO FLOOR PENETRATIONS AS WELL AS PENETRATIONS IN RATED WALLS WHERE THEY OCCUR

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aluminum foil tape, steel wire tie, or equivalent. In wall assemblies, the wrap strip is to be installed in the same manner used for floor assemblies, but it shall be installed symmetrically on both sides of the wall assembly.

MINNESOTA MINING & MFG CO —FS-195+

B. Fill, Void or Cavity Materials* — Caulk or Putty — (Not Shown) — Generous bead of caulk or putty to be applied to outer perimeter of wrap strip at its interface with floor or wall surface(s).

MINNESOTA MINING & MFG CO —CP 25WB+ Caulk; Type MPS-2+ Putty. (Note: L Ratings apply only when Type CP 25WB+ caulk is used.)

C. Steel Collar — Nom 1, 2 or 3 in. deep collar, dependent upon wrap strip width, with 1-1/4 in. wide by 2 in. long anchor tabs and min 1/2 in. long tabs to retain wrap strip layers. Coils of precut 0.016 in. thick (28 gauge) galv sheet steel available from wrap strip manufacturer. As an alternate, collar may be field-fabricated from min 0.016 in. thick (28 gauge) galv sheet steel in accordance with instruction sheet supplied by wrap strip manufacturer. Steel collar, with anchor tabs bent outward 90 deg, wrapped tightly around wrap strip layers with min 1 in. overlap at seam. Anchor tabs to be pressed tightly against floor or wall surface(s), and collar to be compressed around wrap strip layers using a min 1/2 in. wide by 0.028 in. thick stainless steel band clamp at the collar midheight. Two band clamps are required for 3 in. high collar on nom 6 in. diam pipe. As an alternate to the band clamps, 1 in. and 2 in. deep collars may be secured by a means No. 10 by 1/2 in. long sheet metal screws installed in the vertical axis at the center of the 1 in. overlap along the perimeter joint of the collar. A min of two and three screws are required for 1 and 2 in. diam pipes, respectively. Collar to be secured to floor or wall surface(s) with 1/4 in. diam by min 1-1/2 in. long steel expansion bolts, or equivalent, in conjunction with steel nuts and min 1-1/4 in. diam steel fender washers. Anchor bolts to be used with every other anchor tab or as described in the following which ever is greater. Two anchor bolts, symmetrically located, required for nom 1/2 in. to nom 2 in. diam pipes. Three anchor bolts, symmetrically located, required for nom 2-1/2 to 3 in. diam pipes. Four anchor bolts, symmetrically located, required for nom 3-1/2 and 4 in. diam pipes. For 6 in. diam pipes, anchor bolts to be used with each anchor tab. Retainer tabs to be bent 90 deg toward pipe to lock wrap strip layers in position.

D. Pipe Covering* — (Not Shown) — Nom 1 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. When required (see table), min 6 in. length of pipe covering installed around pipe at its egress from the steel collar (Item C) on the underside of floor or on both sides of wall. Pipe covering secured to pipe with steel wire ties spaced max 4 in. OC. Edge of pipe covering abutting steel collar to be sealed with a min 1/4 in. diam bead of caulk or putty (Item B).

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

E. Firestop Device* — (Not Shown) — As an alternate to Items A and C when nom 1-1/2, 2, 3, 4 or 6 in. diam nonmetallic pipes are used, a firestop device consisting of a sheet-steel split collar lined with intumescent material and provided with steel clips for attachment may be used. Firestop device to be installed on underside of floor or on both sides of wall in accordance with the accompanying installation instructions. The firestop device type to be used is dependent upon the wall of floor thickness, the pipe type and nom pipe diam, as tabulated below:

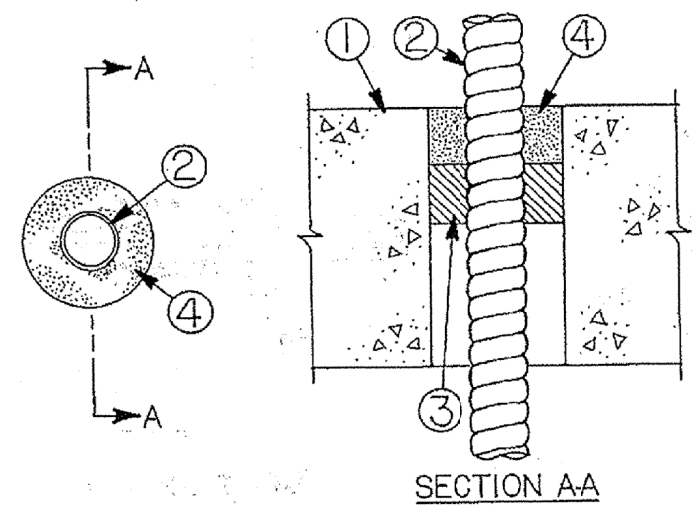
Pipe Type	Nom Pipe Diam In.	Min Wall or Floor Thkns In.	Firestop Device
PVC, ccPVC or CPVC, ABS, ccABS or FRPP(a)	1-1/2	2-1/2	PPD 15 or PPD 150
PVC, ccPVC or CPVC, ABS, ccABS or FRPP(a)	2	2-1/2	PPD 2 or PPD 200
PVC, ccPVC or CPVC, ABS, ccABS or FRPP(a)	3	2-1/2	PPD 300
PVC, ccPVC or CPVC	4	2-1/2	PPD 400
PB	1-1/2	4-1/2	PPD 150
PB	2	4-1/2	PPD 200
PVC, ccPVC or CPVC, ABS, ccABS or FRPP(a)	3	4-1/2	PPD 3 or PPD 300
PB	3	4-1/2	PPD 300
PVC, ccPVC or CPVC, ABS, ccABS or FRPP(a)	3	4-1/2	PPD 300
PVC, ccPVC or CPVC, ABS, ccABS or FRPP(a)	4	4-1/2	PPD 4 or PPD 400
PVC, ccPVC or CPVC, ABS, ccABS or FRPP(a)	4	4-1/2	PPD 400
PVC	6	4-1/2	PPD 6

- (a) — Requires use of aluminum tape detailed in Item 3E.
- (b) — Requires use of pipe covering detailed in Item 3D.
- MINNESOTA MINING & MFG CO
++Bearing the UL Listing Mark

1 FIRESTOP DETAIL

Scale: N.T.S.

System No. C-AJ-3031
(Formerly System No. 337)
F Rating — 2 Hr
T Ratings — 0, 3/4 and 2 Hr (See Item 2)

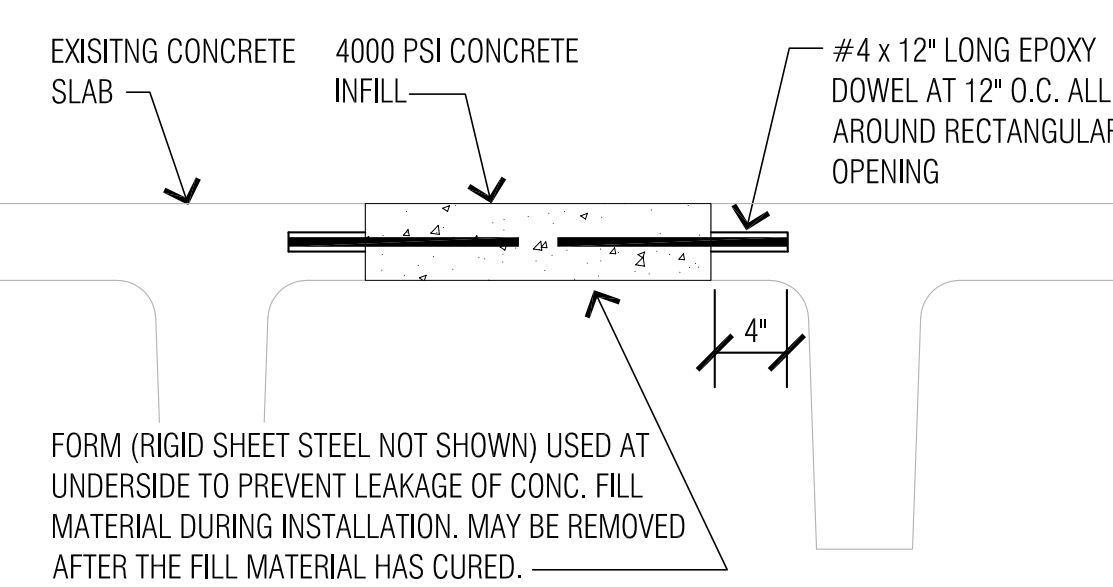


1. Floor or Wall Assembly — Min 4-1/2 in. thick lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Diam of circular through opening in floor or wall assembly to be 3/4 in. to 1-1/2 in. larger than diam of through penetrating product (Item 2) installed in through opening. Max diam of opening is 3 in. See Concrete Block (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrating Product* — Max four copper conductor No. 2 AWG (or smaller) aluminum or steel Armored Cable* or Metal — Clad Cable*. Max one armored cable or metal clad cable installed near center of circular through opening in floor or wall assembly. Through penetrating product to be rigidly supported on both sides of floor or wall assembly. When max No. 2 AWG armored cable or metal clad cable is used in floor assembly, T Rating is 0 hr. When max No. 2 AWG armored cable or metal clad cable is used in wall assembly less than 6 in. thick, T Rating is 0 hr. When max No. 2 AWG armored cable or metal clad cable is used in min 6 in. thick wall assembly, T Rating is 3/4 hr. When max No. 12 AWG armored cable or metal clad cable is used in min 6 in. thick wall assembly, T Rating is 2 hr.
- AFC CABLE SYSTEMS INC
3. Packing Material — Nom 1 in. thickness of ceramic (alumina silica) fiber blanket or mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed min 1 in. from top surface of floor or from both surfaces of wall.
4. Fill, Void or Cavity Material* — Caulk — Applied to fill the annular space around the through penetrating product. In floors, a min 1 in. depth of fill material to be installed flush with top surface of floor. In walls, a min 1 in. depth of fill material to be installed flush with wall surface on both sides of wall assembly.
- MINNESOTA MINING & MFG CO —CP 25WB+

- *Bearing the UL Classification Marking
+Bearing the UL Listing Mark

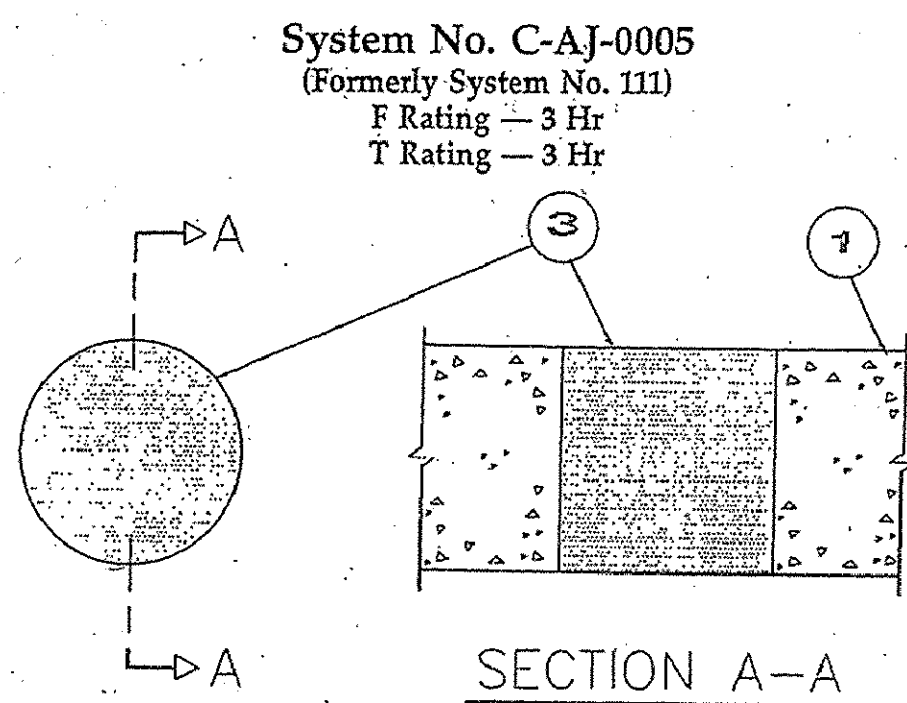
4 CONDUIT FIRESTOP DETAIL THRU FLOOR

Scale: N.T.S.



3 FIRESTOP DETAIL @ (E) SLAB INFILL

Scale: N.T.S.



1. Floor or Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 8 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Forms — (Not Shown, Optional) — Used as a form to prevent leakage of fill material during installation. Forms to be a rigid sheet material, fastened to underside of floor or both sides of wall. Forms may be removed after the fill material has cured.
3. Fill, Void or Cavity Material* — Sealant — Min 4-1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall.

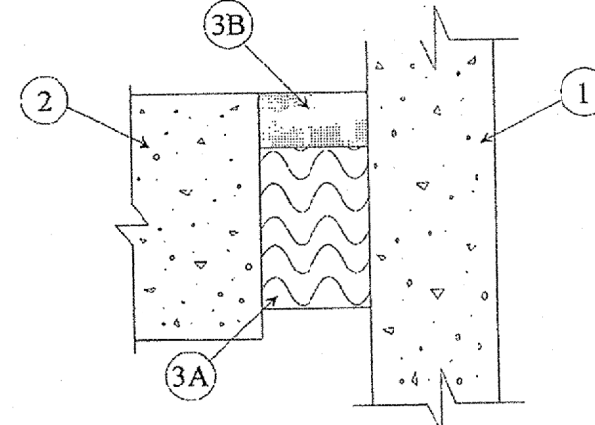
INTERNATIONAL PROTECTIVE COATINGS CORP —Types
FS500, FSS01, FS503, FS505, FS529, FST601, FST603, FST605,
RFS500, RFS501, RFS505, RFS601 and RFS605

*Bearing the UL Classification Marking

2 FIRESTOP DETAIL - (E) CORE DRILL

Scale: N.T.S.

System No. FW-S-1003
Assembly Rating — 2 Hr
Joint Width — 4 In. Max

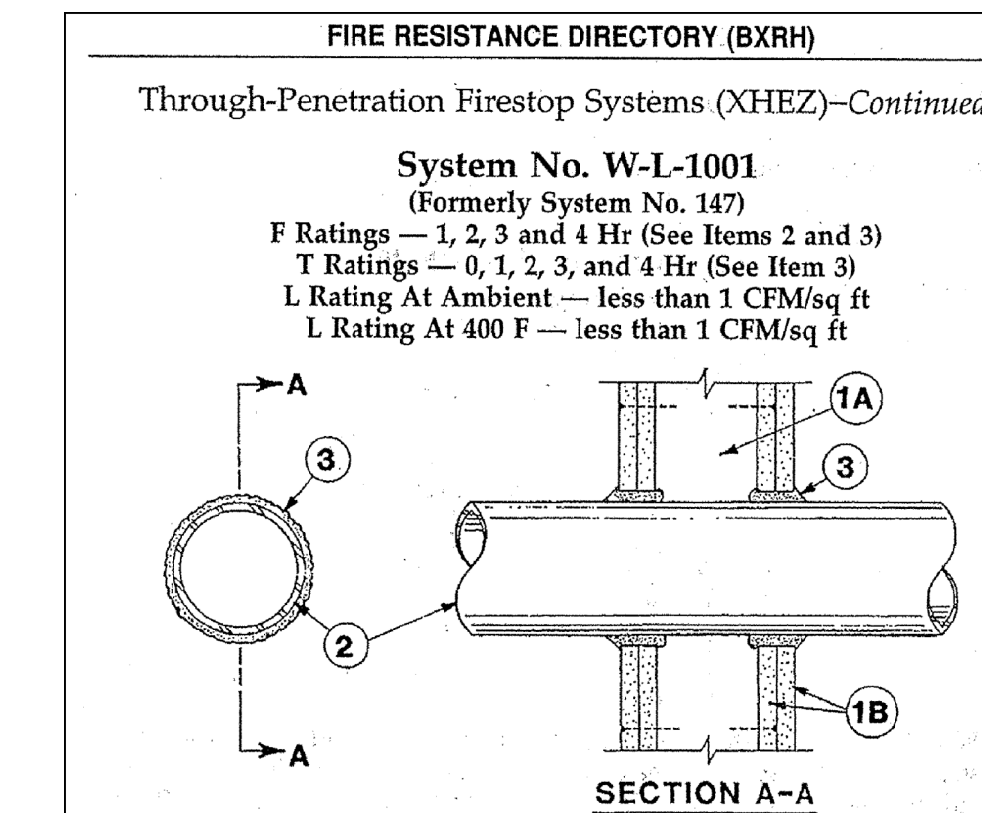


1. Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) structural concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Floor Assembly — Min 4-1/2 in. thick steel-reinforced lightweight or normal weight (100-150 pcf) structural concrete.
3. Joint System — Max separation between edge of floor and face of wall is 4 in. The joint system shall consist of the following:
- A. Packing Material — Min 4 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor to accommodate the required thickness of fill material.
- B. Fill, Void or Cavity Material* — Min 1/2 in. thickness of fill material applied within the joint, flush with top surface of floor.
- NELSON FIRESTOP PRODUCTS —CLK S/L (Self Leveling) or CLK N/S (Non-Sag) Caulk

*Bearing the UL Classification Marking

6 FIRESTOP DETAIL @ WALL/FLOOR JOINT

Scale: N.T.S.



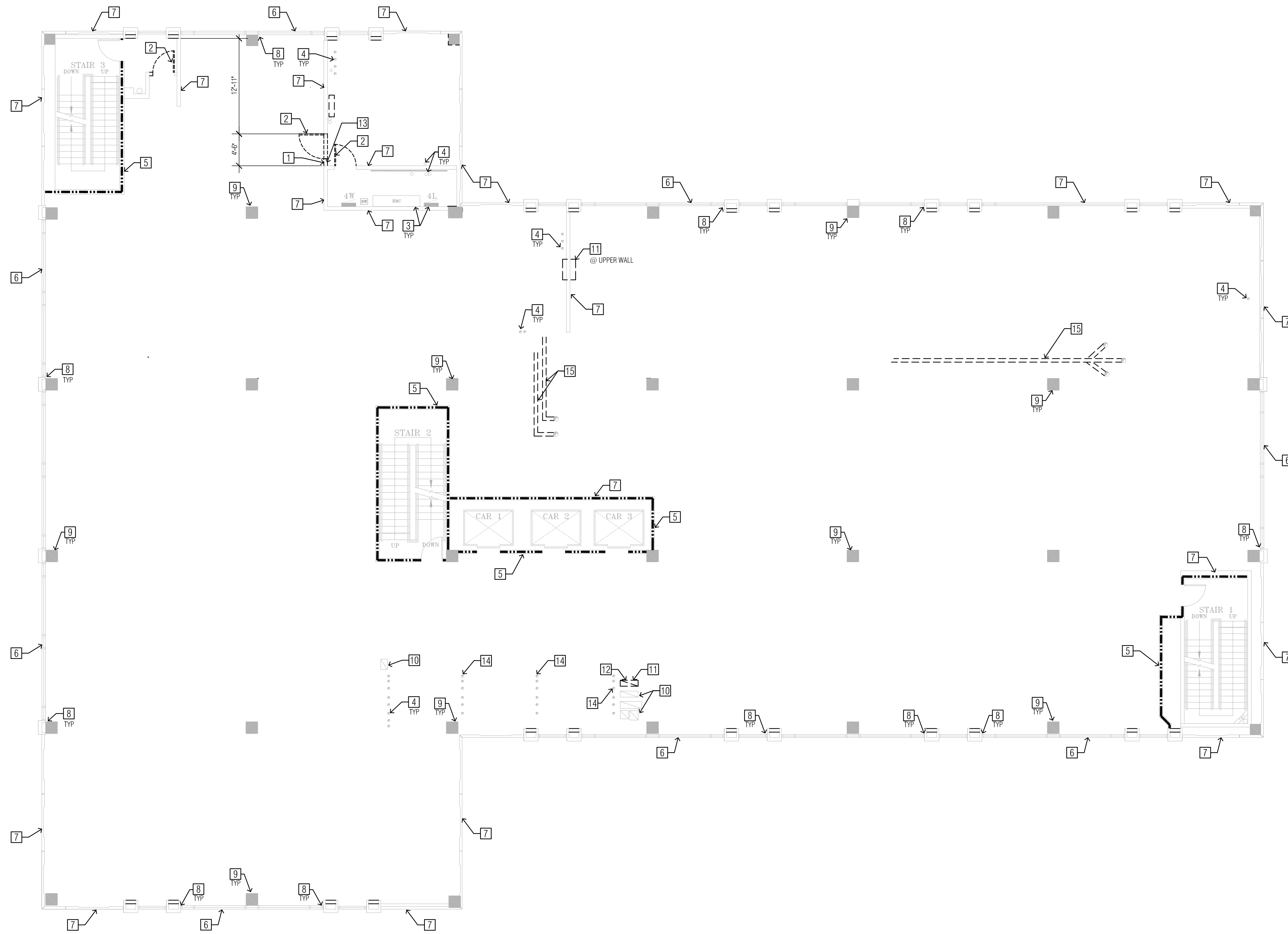
1. Wall Assembly — The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
- A. Studs — Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.
- B. Wallboard, Gypsum* — Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 13-1/2 in.
2. Pipe or Conduit — Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. diam (or smaller) steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) Type L (or heavier) copper tubing or nom 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of firestop system (Item 3) is 2 h. Steel pipes or conduits larger than nom 4 in. diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the firestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.
3. Fill, Void or Cavity Material* — Caulk — Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In.	Annular Space In.	F Rating Hr	T Rating Hr
1	0 to 3/16	1 or 2	0, 1 or 2
4	1/4 to 1/2	3 or 4	3 or 4
6	0 to 1-1/2	1 or 2	0
12	1/4 to 1/2	3 or 4	0
12	3/16 to 3/8	1 or 2	0

- +When copper pipe is used, T Rating is 0 h.
- MINNESOTA MINING & MFG CO —CP 25WB+.
- *Bearing the UL Classification Marking

5 CONDUIT FIRESTOP DETAIL THRU FLOOR

Scale: N.T.S.



1 DEMOLITION FLOOR PLAN

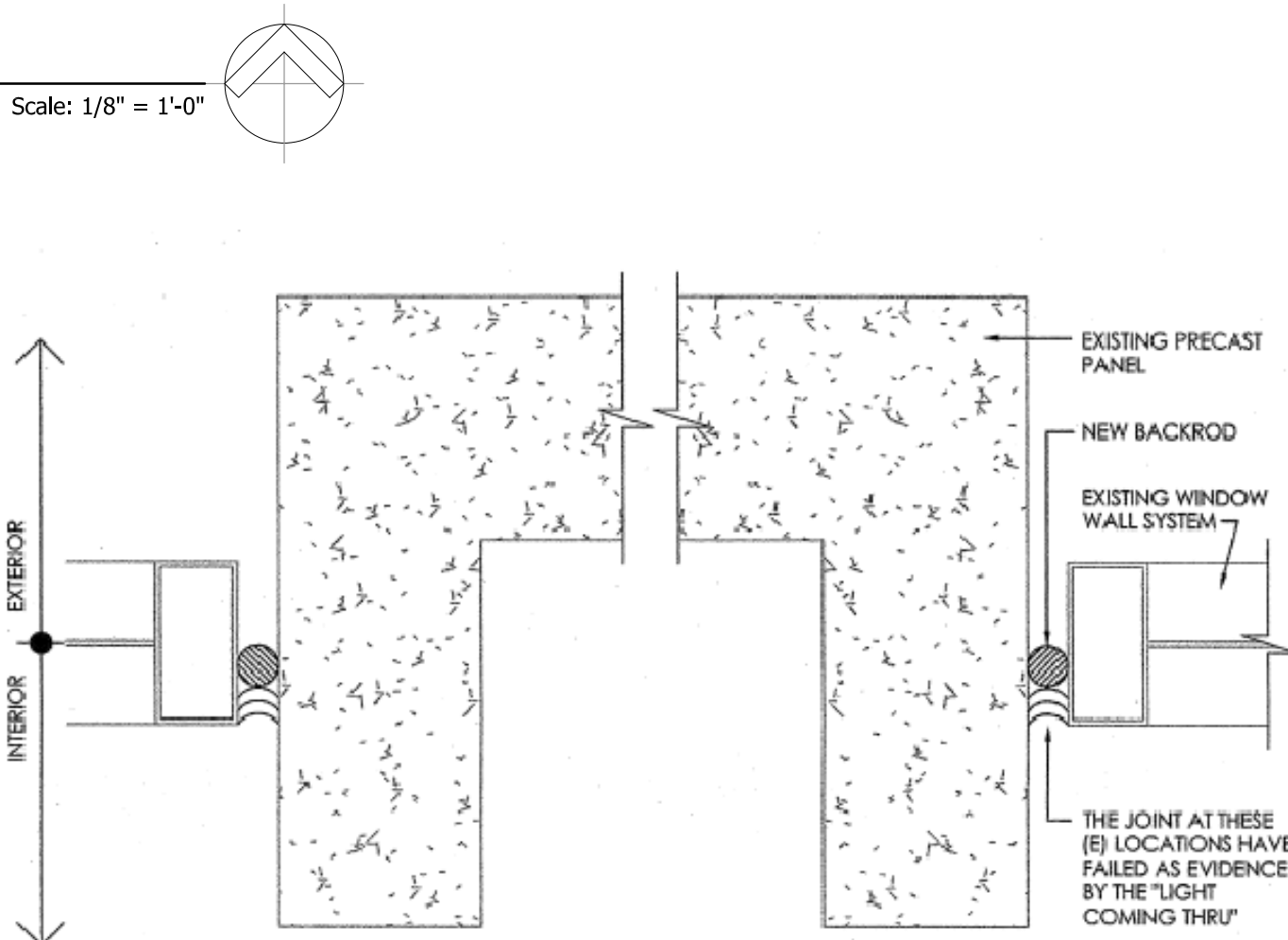
Scale: 1/8" = 1'-0"

NOTES:

1. REMOVE EXISTING CAULKING AND BACKROD.
2. CLEAN AND PREP FOR NEW BACKROD AND CAULKING
3. INSTALL BACKROD CONTINUOUS, THROUGHLY CAULK
4. CAULK COLOR TO MATCH FRAME, SEE SPECS ADDITIONAL INFORMATION.

2 EXISTING COND. @ WINDOW/PRECAST

Scale: 1-1/2" = 1'-0"



DEMOLITION FLOOR PLAN KEYNOTES

1. REMOVE WALL WITH PLASTER OR GWB FINISH. BOTTOM OF FINISHED HEADER TO BE 8'-10". PROVIDE BRACING IF REQUIRED.
2. REMOVE DOOR FRAMES AND DOORS.
3. EXISTING ELECTRICAL PANELS AND GEAR TO REMAIN. SEE ELECTRICAL SHEETS
4. VERTICAL FLOOR TO FLOOR PIPING TO REMAIN. CONTROL / SHUT-OFF VALVES TO REMAIN SEE PLUMBING SHEETS FOR ADDITIONAL DEMOLITION.
5. DASHED LINE DENOTES EXISTING 2 HOUR RATED WALL TO BE REMAIN
6. EXISTING EXTERIOR WINDOWS TO REMAIN
7. EXISTING WALL TO REMAIN
8. SAFING CONDITION AND REPLACE TO MATCH EXISTING. PROVIDE NEW BACKER-ROD AND CAULK ALL VERTICAL WINDOW JOINTS AND FULL HEIGHT PRE-CAST PANELS TO MAKE WATER TIGHT AND AIRTIGHT - WORK TO BE COMPLETED FROM INTERIOR. SEE DETAIL 2/D1. TYPICAL ALL WINDOW FRAME / PRE-CAST LOCATIONS..
9. EXISTING COLUMN TO REMAIN.
10. VERTICAL FLOOR TO FLOOR DUCTWORK TO REMAIN. SEE MECHANICAL SHEETS FOR ADDITIONAL INFORMATION.
11. MECHANICAL DUCTWORK TO BE REMOVED. SEE MECHANICAL SHEETS FOR ADDITIONAL DEMOLITION.
12. SEE DETAIL 3/G1.2 FOR CONCRETE INFILL.
13. REMOVE ANY ELECTRICAL IN AREA OF DEMOLITION. SEE ELECTRICAL PLANS FOR ADDITIONAL DEMO INFORMATION.
14. REMOVE UNUSED PLUMBING WATER, WASTE AND VENT PIPING IN THIS AREA. SEE PLUMBING PLANS FOR ADDITIONAL DEMO INFORMATION.
15. REMOVE UNUSED 4" PLUMBING WASTE PIPING OVERHEAD BACK TO VERTICAL. CAP. SEE PLUMBING PLANS FOR ADDITIONAL DEMO INFORMATION.



REVISED: DATE:
DRWN BY: SS
CKD BY: EAV
DATE: 07/22/19
SCALE: 1/8"=1'-0"
SHEET NO:

D1.0
4 OF 48
W.O. NUMBER
19*10427