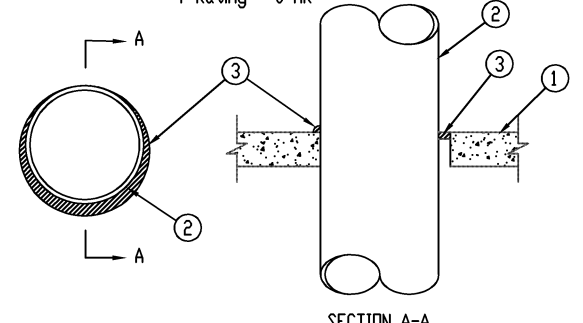


1 GROUNDING DETAIL
SCALE: NTS (IF APPLICABLE)

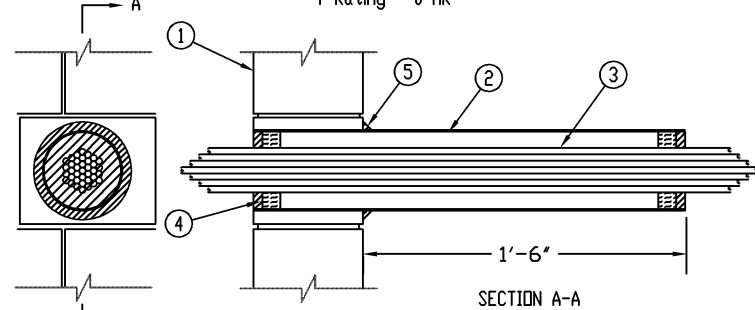
METAL PIPE THROUGH CONCRETE FLOOR/WALL OR BLOCKWALL
UL/cUL System No. C-AJ-1291
F Rating - 2-Hr
T Rating - 0-Hr



1. **Fire or Wall Assembly** - Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Masonry. Max diam of opening is 30-7/8 in. See concrete Block (CMU) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetration** - One metallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe or conduit and periphery of opening shall be min 0 in. to max 7/8 in. Pipe or conduit to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or conduits may be used:
 - A. Steel Pipe - Min 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
 - B. Cast Iron Pipe - Min 6 in. diam (or smaller) cast or ductile iron pipe.
 - C. Copper Pipe - Min 6 in. diam (or smaller) regular (or heavier) copper pipe.
 - D. Conduit - Min 6 in. diam (or smaller) regular (or heavier) copper tubing.
 - E. Conduit - Min 6 in. diam (or smaller) steel conduit.
 - F. Conduit - Min 4 in. diam (or smaller) steel electrical metallic tubing (EMT).
3. **Fire Seal or Gasket Material** - Min 1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor or both surfaces of wall. At the joint contact location between pipe and concrete, a min 1/4 in. diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall.

UL/cUL System No. C-AJ-1291
F Rating - 2-Hr
T Rating - 0-Hr

CABLE BUNDLE THROUGH 2-HR. CONCRETE WALL OR BLOCK WALL ASSEMBLY
UL/cUL System No. W-L-3060
F Rating - 2-Hr
T Rating - 0-Hr

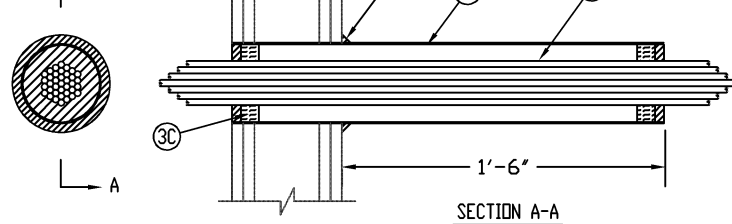


1. **Concrete Wall Assembly** - (2-Hr. Fire-Rating):
 - A. Any lightweight or normal weight concrete wall (Min. 5" thick).
 - B. Any UL/ULC classified concrete block wall.
2. **Cables** - Aggregate cross-sectional area of cables in steel sleeve to be 30 percent of the aggregate cross-sectional area of the sleeve. Cables to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes of copper conductor cable may be used:
 - A. Max 300 kcmil single conductor type RHH, RHHB, THHN or RHH power cables; cross-linked polyethylene (XLPE) insulation.
 - B. Max 4-pair No. 14 AWG twisted-pair cable intended for plenum applications.
 - C. Max 1/2 in. No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.
3. **Firestop System** - The firestop system shall consist of the following:
 - A. **Steel Sleeve** - Min 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or Schedule 5 steel pipe cast into wall assembly with a fire compound. Sleeve may extend up to 18 in. beyond wall surface.
 - B. **Steel Sleeve** - Min 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or Schedule 5 steel pipe cast into wall assembly with a fire compound. Sleeve may extend up to 18 in. beyond wall surface.
 - C. **Firestop Material** - Min 1 in. thickness of min 4.0 pcf mineral wool batt insulation firmly packed into each end of sleeve on a permanent form. Packing material to be recessed from each end of sleeve as required to accommodate the required thickness of fill material.
 - D. **Firestop Material** - Min 1 in. thickness of fill material applied within the sleeve, flush with both ends.

UL/cUL System No. W-L-3060
F Rating - 2-Hr
T Rating - 0-Hr

2 FIRE STOP DETAIL
SCALE: NTS (IF APPLICABLE)

CABLE BUNDLE THROUGH A SLEEVE IN 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY
UL/cUL System No. W-L-3112
F Rating - 1 & 2 Hr (See Item D)
T Rating - 0 Hr

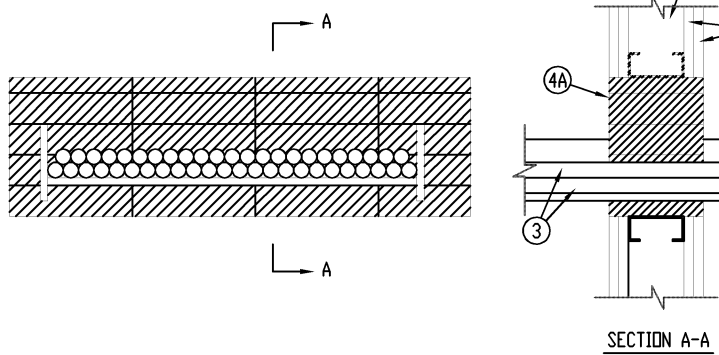


1. **Wall Assembly** - The 1 or 2 hr fire-rated gypsum wallboard/steel wall assembly shall be constructed of the materials and in the manner specified in the individual UL500 or UL600 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 - A. **Steel** - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of min 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
 - B. **Wallboard** - Min 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 UL500 or UL600 Series Design in the UL Fire Resistance Directory. Max diam of opening is 4-1/2 in.
 - C. **Fire Rating** - The hourly fire rating of the wall assembly is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Cables** - Aggregate cross-sectional area of cables in steel sleeve to be 30 percent of the aggregate cross-sectional area of the sleeve. Cables to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes of copper conductor cable may be used:
 - A. Max 300 kcmil single conductor type RHH, RHHB, THHN or RHH power cables; cross-linked polyethylene (XLPE) insulation.
 - B. Max 4-pair No. 14 AWG twisted-pair cable intended for plenum applications.
 - C. Max 1/2 in. No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.
3. **Firestop System** - The firestop system shall consist of the following:
 - A. **Steel Sleeve** - Min 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or Schedule 5 steel pipe cast into wall assembly with a fire compound. Sleeve may extend up to 18 in. beyond wall surface.
 - B. **Steel Sleeve** - Min 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or Schedule 5 steel pipe cast into wall assembly with a fire compound. Sleeve may extend up to 18 in. beyond wall surface.
 - C. **Firestop Material** - Min 1 in. thickness of min 4.0 pcf mineral wool batt insulation firmly packed into each end of sleeve on a permanent form. Packing material to be recessed from each end of sleeve as required to accommodate the required thickness of fill material.
 - D. **Firestop Material** - Min 1 in. thickness of fill material applied within the sleeve, flush with both ends.

UL/cUL System No. W-L-3112
F Rating - 1 & 2 Hr (See Item D)
T Rating - 0 Hr

CABLE TRAY THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY



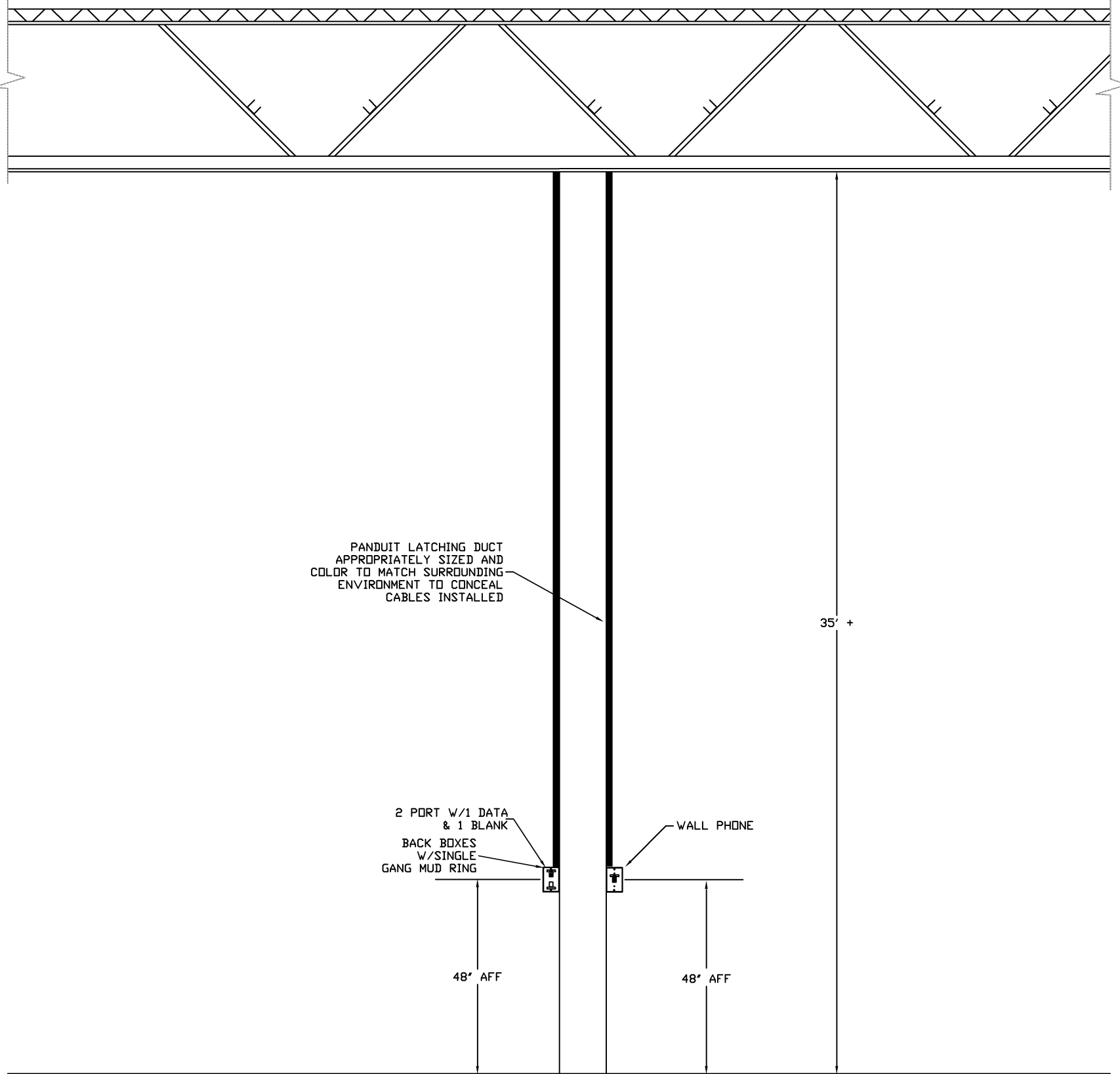
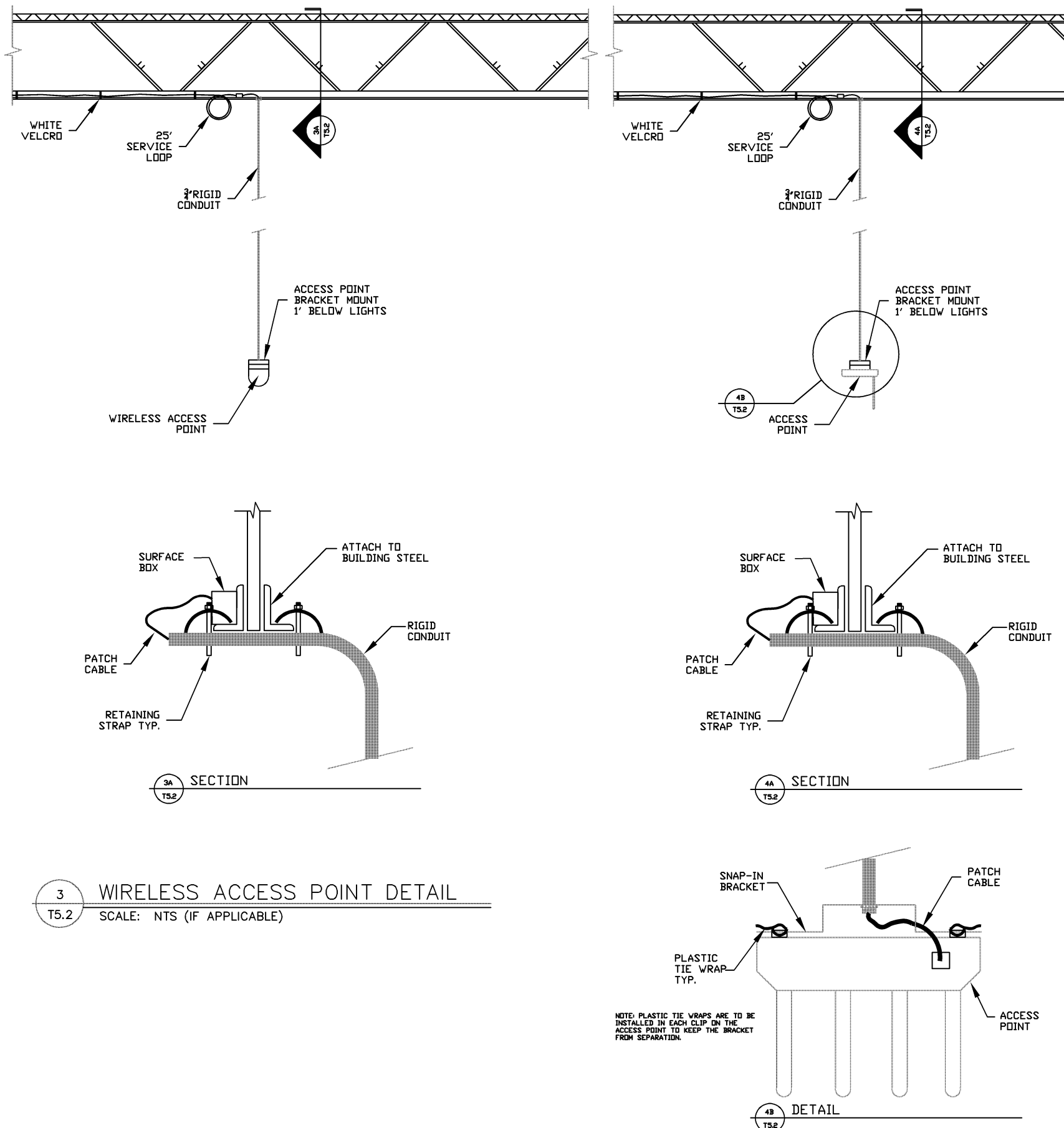
1. **Wall Assembly** - The 1 or 2 hr fire-rated gypsum wallboard/steel wall assembly shall be constructed of the materials and in the manner specified in the individual UL500 or UL600 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 - A. **Steel** - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of min 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. Additional framing member shall be installed in stud cavity containing through-penetrating item to form a rectangular box around penetration.
 - B. **Wallboard** - Min 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 UL500 or UL600 Series Design in the UL Fire Resistance Directory. Max size of opening is 4-1/2 in.
 - C. **Fire Rating** - The hourly fire rating of the wall assembly is equal to the hourly fire rating of the wall assembly in which it is installed.

UL/cUL System No. W-L-4011
F Rating - 1 and 2 Hr (See Item D)
T Rating - 0 Hr
L Rating At Ambient - 5 CFM/Sq Ft
L Rating At 400 F - 2 CFM/Sq Ft

2. **Cable Tray** - Max 24 in. wide by max 4 in. deep open-ladder cable tray with channel-shaped side rails formed of 0.10 in. thick aluminum or 0.080 in. thick steel and with 1-1/2 in. wide by 1 in. channel shape range spaced 9 in. OC. The annular space between the cable tray and the periphery of the opening shall be min 1 in. to max 4 in. Cable tray to be rigidly supported on both sides of floor or wall assembly.
3. **Through Penetration** - Aggregate cross-sectional area of cables in cable tray to be max 40 percent of the cross-sectional area of the cable tray. Any combination of the following types and sizes of copper conductor cables may be used:
 - A. 1/2 in. No. 12 AWG with thermoplastic insulation and PVC jacket.
 - B. 300 pcf - Min. 24 AWG cable with PVC insulation and jacket.
 - C. Twenty-four thermoplastic cable with PVC conduit and jacket.
 - D. Max three 1/2 in. No. 12 AWG wire, insulated with polyvinyl chloride, in a min 3/4 in. diameter metal conduit.
4. **Firestop System** - The firestop system shall consist of the following:
 - A. **Steel Sleeve** - Min 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or Schedule 5 steel pipe cast into wall assembly with a fire compound. Sleeve may extend up to 18 in. beyond wall surface.
 - B. **Steel Sleeve** - Min 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or Schedule 5 steel pipe cast into wall assembly with a fire compound. Sleeve may extend up to 18 in. beyond wall surface.
 - C. **Firestop Material** - Min 1 in. thickness of min 4.0 pcf mineral wool batt insulation firmly packed into each end of sleeve on a permanent form. Packing material to be recessed from each end of sleeve as required to accommodate the required thickness of fill material.
 - D. **Firestop Material** - Min 1 in. thickness of fill material applied within the sleeve, flush with both ends.

UL/cUL System No. W-L-4011
F Rating - 1 and 2 Hr (See Item D)
T Rating - 0 Hr
L Rating At Ambient - 5 CFM/Sq Ft
L Rating At 400 F - 2 CFM/Sq Ft

4 PRICE SCANNER MOUNT DETAIL
SCALE: NTS (IF APPLICABLE)



MICHIGAN
RE-FRESH FARE



GENERAL OFFICE
FACILITY ENGINEERING
3000 E. GRAND AVENUE
ANN ARBOR, MI 48106

NOTE: DRAWING IS INTENDED ONLY TO SHOW THE REQUIREMENTS OF THE DESIGN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION, INSTALLATION, AND MAINTENANCE OF THE MATERIALS AND METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF THE APPROPRIATE MATERIALS AND METHODS OF CONSTRUCTION.

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TAKEOVER IFB
D-361
425 NORTH CENTER
NORTHVILLE, MI

CURRENT PLAN DATE		7/12/15
ORIGINAL PLAN DATE		5/22/2015
DRAWN	BY	J EDWARDS
CHECKED	BY	D. BUSMAN
REVISIONS		
STANDARD PLOTTED SCALE:		
NONE		
BUILDING STATS		
TOTAL SHELVING	1037 LF	
SALES AREA	23,190 SF	
GROSS BUILDING	44.5	
WALL STORIES	33,048 SF	
MEZZANINE	892 SF	
DOCK / UTILITY	2,388 SF	
GROSS BUILDING		
36,397 SF		
TELECOM		
DETAILS 2		
SHEET PACKAGES		
Not Applicable		
D-361		
T5.2		
CAD FILE		