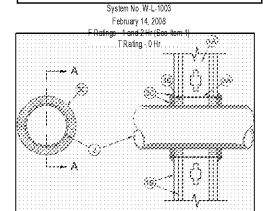
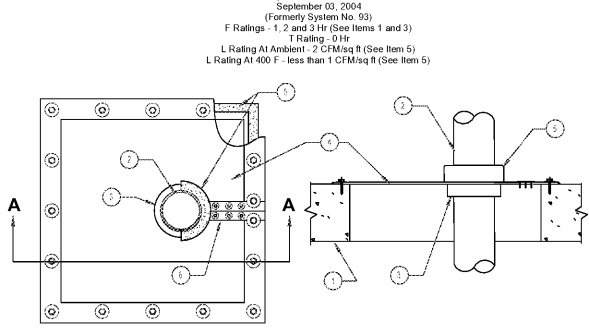


DETAILS ARE FOR REFERENCE ONLY. PENETRATIONS ARE TO BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.



- 1. Wall Assembly** - The 1 or 2 hr fire rated gypsum board wall assembly shall be constructed of the materials and in the manner described in the referenced UL 263, 260 or 900 Series Wall and Ceiling Fire Test Report or in the Fire Resistance Directory and shall include the following construction features:
 - A. Make-up** - All framing and other wood work shall be treated with wood preservative. Wood shall be treated with 2 1/2 lb. (113 ml) of 10% borate solution per cubic foot (28.3 L) of wood. All wood shall be protected with a minimum of 1/4" (6.35 mm) of 10% borate solution per cubic foot (28.3 L) of wood. All wood shall be protected with a minimum of 1/4" (6.35 mm) of 10% borate solution per cubic foot (28.3 L) of wood.
 - B. Gypsum Board** - 5/8" (15.9 mm) thick Type X gypsum board with a minimum of 1/4" (6.35 mm) of 10% borate solution per cubic foot (28.3 L) of wood. The gypsum board shall be installed in accordance with the manufacturer's instructions.
 - C. Fire Stop** - The fire stop shall be installed in accordance with the manufacturer's instructions.
- 2. Through Penetration** - The penetration shall be installed in accordance with the manufacturer's instructions.
- 3. Fire Stop** - The fire stop shall be installed in accordance with the manufacturer's instructions.
- 4. Fire Stop** - The fire stop shall be installed in accordance with the manufacturer's instructions.
- 5. Fire Stop** - The fire stop shall be installed in accordance with the manufacturer's instructions.

DETAILS ARE FOR REFERENCE ONLY. PENETRATIONS ARE TO BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.



SECTION A-A

- 1. Floor or Wall Assembly** - Lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Min thickness of concrete floor or wall is 4 1/2 in. (114 mm) for 1 hr Rating and 4 1/2 in. (114 mm) for 2 or 3 hr Rating. Wall may also be Concrete Blocks constructed of any UL Classified. Min area of opening 30 in. (762 mm) with one dimension of opening being 18 in. (457 mm) min. Concrete Blocks See (CAJ) category in the Fire Resistance Directory for names of manufacturers.
- 2. Pipe or Conduit** - Non 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe, non 6 in. (152 mm) diam (or smaller) steel conduit, non 4 in. (102 mm) diam (or smaller) EMT or non 6 in. (152 mm) diam (or smaller) Type I (or heavier) copper tubing. Min clearance between pipes 1 in. (25 mm) Min clearance between pipe and wall of through opening 1/4 in. (6 mm). When using non 6 in. (152 mm) diam (or smaller) pipe, conduit or EMT is installed in non 7 in. (178 mm) diam (or smaller) circular through opening, min clearance between pipe, conduit or EMT and wall of through opening is 0 in. (0 mm) (point contact). Pipes and conduits rigidly supported on both sides of floor or wall assembly.
- 3. Fill Void or Cavity Materials - Wrap Strip** - Non 1/4 in. (6 mm) thick incompressible elastomeric material bonded on one side with aluminum foil, applied in strips. Min 2 in. (51 mm) wide strip wrapped around pipe/conduit (but side exposed) and secured to place with steel wire or stainless foil lace. Wrap strip to extend approx. 75 in. (192 mm) beyond each face of the incompressible sheet (item 4). When non 6 in. (152 mm) diam (or smaller) pipe, conduit or EMT is installed in through opening, no wrap strip is required on pipe, conduit or EMT for 2 hr Rating. **3M COMPANY** - FS-195.
- 4. Fill Void or Cavity Materials - Incompressible Sheet** - Rigid aluminum foil-faced sheet with gals steel sheet backer. Sheet cut to tightly follow the contours of the pipe wrap strip (or individual pipe) and with a min gap of 1/8 in. (3 mm) on all sides of the through opening. Sheet to be installed with the gals steel sheet backer exposed aluminum foil facing against floor or wall surface. Sheet secured to top surface of floor and both sides of solid concrete or concrete block wall using min 3/16 in. (5 mm) diam (or 1/16 in. (1.6 mm) long steel masonry fasteners with min 1/4 in. (6 mm) diam steel washers. Max spacing of fasteners not to exceed 6 in. (152 mm) OC. As an alternate when (1) the max pipe or conduit size is non 4 in. (102 mm) diam, (2) each pipe or conduit is provided with a layer of wrap strip and (3) no bundled cables or installed pipes are installed in a through opening, the incompressible sheet may be installed on bottom surface of floor or on only one side of solid concrete wall. **3M COMPANY** - CS-194.
- 5. Fill Void or Cavity Materials - Gypsum Seal, Sealant or Putty** - Gypsum application of caulk or putty to be applied around the base of the wrap strip (or individual pipe) at its ingress from the incompressible sheet(s) in addition to completely covering the wrap strip up to the interfaces with the pipe, pipe insulation and/or cable braid. One layer of 1/2 in. (13 mm) (1/2 in. (13 mm) minimum) thick gypsum sealant positioned under incompressible sheet around the perimeter of through opening or min 1/4 in. (6 mm) diam continuous bead of caulk or putty applied to edge of incompressible sheet at its interface with surface of floor or wall around entire perimeter of through opening. Prior to installation of the steel strip, apply incompressible sheet covered with non 1/4 in. (6 mm) diam bead of caulk (item 5). Seal cover strip secured to gals steel backer of incompressible sheet with steel metal screws or steel nails spaced max 2 in. (51 mm) OC on each side of all. **3M COMPANY** - E-FS or Ultra GS seal, CP 250W caulk, FS-300W sealant, W-36 putty. **UL** - Rating apply only when CP 250W caulk or FS-300W W sealant used.
- 6. Steel Cover Strip** - Min 2 in. (51 mm) wide strip of min 0.015 in. (0.38 mm) thick (30 gauge) gals steel covered over entire length of all trade in incompressible sheet (item 4) to permit installation about the pipe/conduit bundle. Prior to installation of the steel strip, all incompressible sheet covered with non 1/4 in. (6 mm) diam bead of caulk (item 5). Steel cover strip secured to gals steel backer of incompressible sheet with steel metal screws or steel nails spaced max 2 in. (51 mm) OC on each side of all.
- 7. Support Channel** (Not Shown) - When area of through opening exceeds 144 sq in. (9290 cm²), an intermediate support channel shall be installed flush with top surface of floor or both surface of wall. Support channels to be min 1 1/2 in. (38 mm) (41 mm by 41 mm) and formed of min 0.030 in. (0.36 mm) thick (No. 10 gauge) painted or gals steel. Ends of steel channel bolted or welded to steel angles anchored to inside walls of through opening. When steel support channels are connected to each other, the ends of incompressible sheet, to steel cover strip (item 6), is required over bottom beam. Incompressible sheet secured to steel support channels with steel metal screws in conjunction with min 1/4 in. (6 mm) (32 mm) diam steel brace washers. When support channels are used between walls of incompressible sheets, fasteners spaced max 2 in. (51 mm) OC on each side of both beam. When support channel is located away from incompressible sheet beam, fasteners spaced max 6 in. (152 mm) OC. Prior to installation of the incompressible sheet(s), a non 1/4 in. (6 mm) diam continuous bead of caulk or sealant (item 5) shall be applied as gasket over the steel support channel.

FIRE PENETRATION DETAIL

NOTE: THIS MATERIAL WAS EXTRACTED BY 3M FIRE DETECTION PRODUCTS FROM THE 2004 EDITION OF THE UL FIRE RESISTANCE DIRECTORY.

FIRE PENETRATION DETAIL

FILE NAME = XHEZ-W-L-1003
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FIRE ALARM NOTES:

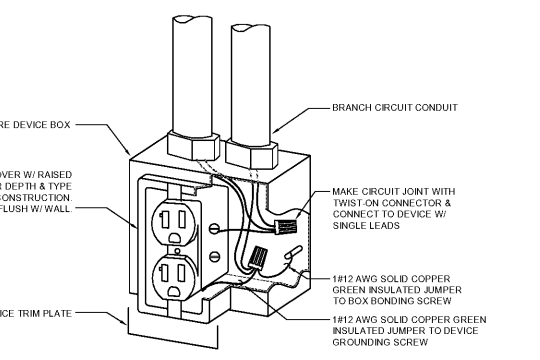
- FURNISH AND INSTALL WIRING AND CONDUIT SIZED PER FIRE ALARM SYSTEM MANUFACTURER'S RECOMMENDATIONS, PRODUCT SPECIFICATIONS, & NATIONAL ELECTRIC CODE, 3/4" CONDUIT MINIMUM.
- REFER TO SPECIFICATIONS FOR TRANSMISSION REQUIREMENTS OF DIGITAL COMMUNICATOR.
- PROVIDE EXTRA (2) TYPICAL VISUAL ALARMS, (2) TYPICAL HEAT DETECTORS & (2) TYPICAL SMOKE DETECTORS TO BE INSTALLED AT FIRE INSPECTOR'S DISCRETION.
- ALL SMOKE AND HEAT DETECTORS TO BE LOCATED MIN. 3' FROM AIR VENTS.
- PROPER INSTALLATION AND PHYSICAL LOCATION OF EACH DETECTOR AND ACCESS DOORS SHALL BE COORDINATED BETWEEN THE ELECTRICAL, THE MECHANICAL, AND THE FIRE ALARM SUBCONTRACTORS, AND APPROVED BY THE ELECTRICAL ENGINEER PRIOR TO EQUIPMENT INSTALLATION.
- THE EXISTING FIRE ALARM IS A HONEYWELL FIRELITE FIRE ALARM SYSTEM. THE NEW DEVICES SHOWN SHALL MATCH THE EXISTING DEVICES. THE SCOPE OF WORK SHOULD INCLUDE ANY NECESSARY CABLES, POWER SUPPLIES, OR CONTROLLER UPGRADES FOR A FULLY FUNCTIONAL AND INTEGRATED FIRE ALARM SYSTEM. ALL NEW INITIATING DEVICES SHOULD PROVIDE POINT ANNUNCIATION TO THE HONEYWELL FIRELITE ADDRESSABLE FIRE ALARM PANEL. VERIFY EXISTING SMOKE DETECTOR COVERAGE & REQUIREMENTS AND ALLOW FOR REQUIRED COVERAGE IN AREA OF NEW CONSTRUCTION.

SYMBOL	DESCRIPTION	MOUNTING
SD	SMOKE DETECTOR, IONIZATION TYPE, MATCH EXISTING	CEILING SURFACE
SD	DUCT SMOKE DETECTOR OR REMOTE INDICATOR, INTELLIGENT MULTITENSOR DETECTOR COMPLETE WITH SIGAS DETECTOR HOUSING, SAMPLING TUBES, & REMOTE INDICATOR/TEST SWITCH, MATCH EXISTING	SUPPLY or RETURN AIR DUCT PLENUM AS NOTED, REMOTE IND. WALL MOUNT, FIRE ALRM
F	MANUAL PULL STATION, MATCH EXISTING	CEILING SURFACE
HS	AUDIO/HEAVY VISUAL ALARM, FIELD CONFIGURABLE 16, 30, 75, 110 CANDELLA SELECTABLE HIGH/LOW DE OUTPUT, MATCH EXISTING	CEILING SURFACE
V	VISUAL ALARM, FIELD CONFIGURABLE 16, 30, 75, 110 CANDELLA, W/FLY MOUNT BACK BOX, MATCH EXISTING	CEILING SURFACE
HD	HEAT DETECTOR, RATE OF CHANGE, TEMPERATURE TO TRIGGER, MATCH EXISTING	CEILING SURFACE

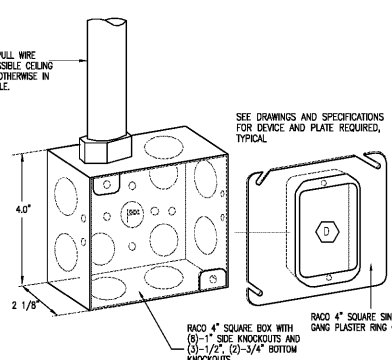
ALL SYMBOLS MAY NOT BE USED

PARTIAL ELECTRICAL RISER DIAGRAM

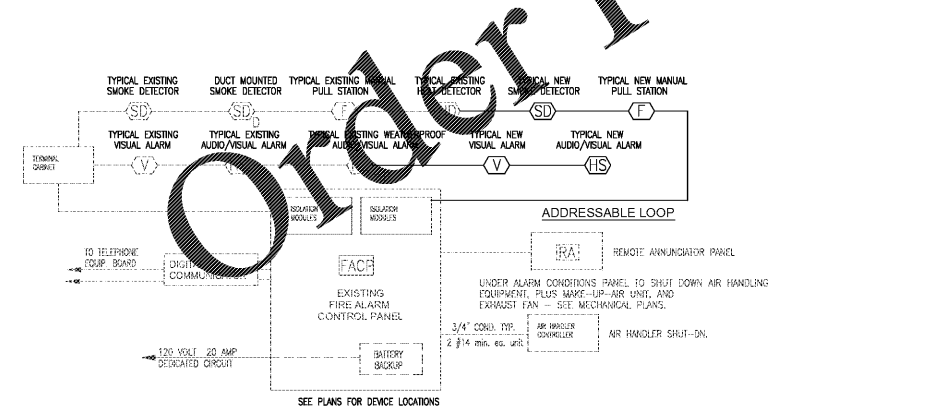
E401 SCALE: NOT TO SCALE



2 TYPICAL RECEPTACLE GROUNDING DETAIL
E401 SCALE: NOT TO SCALE



1 TYPICAL DATA BOX DETAIL
E401 SCALE: NOT TO SCALE



3 TYPICAL DATA BOX DETAIL
E401 SCALE: NOT TO SCALE

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Renovation of
920 Corporate Drive
Orange County Schools
920 Corporate Drive
Hillsborough, North Carolina

no. revisions

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ELECTRICAL
DETAILS

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project no. 2019016.00

date 7.22.19