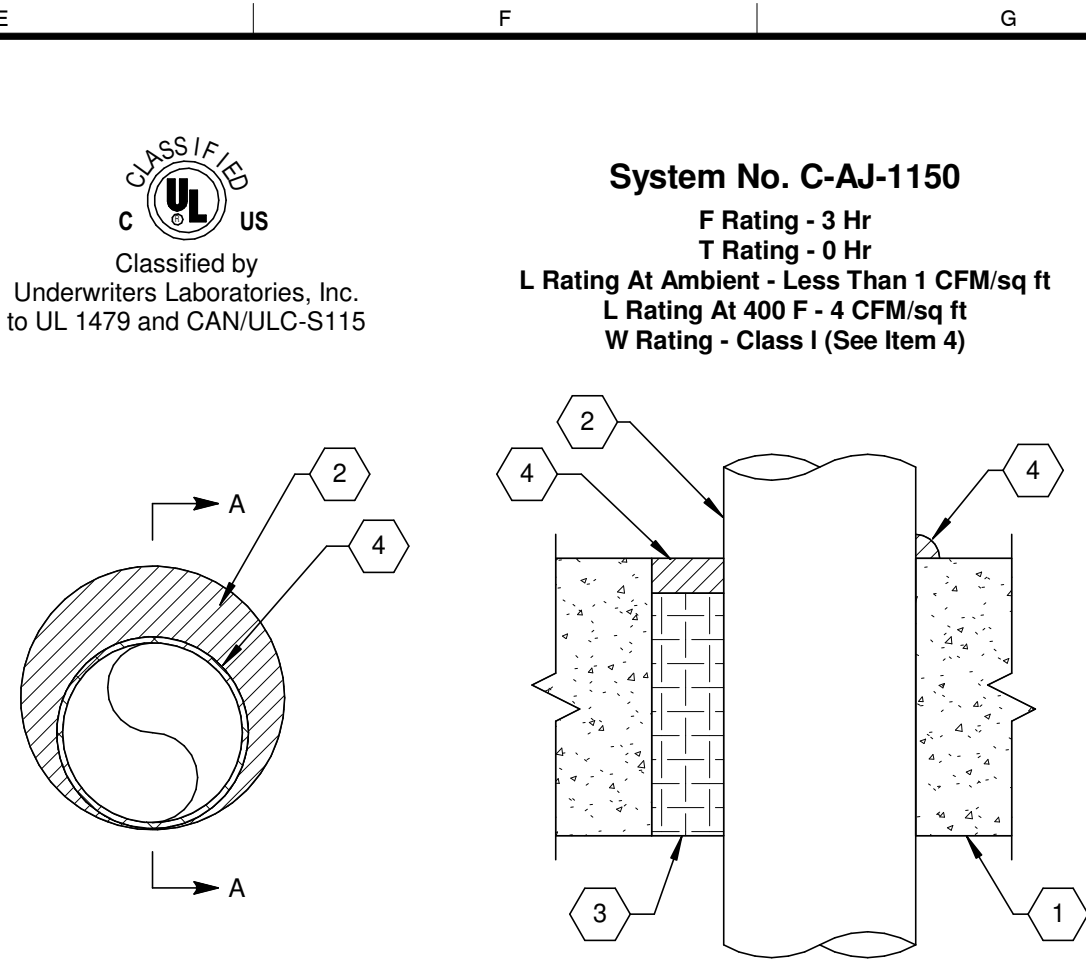


1. RATED GYPSUM WALL BOARD ASSEMBLY
2. NOMINAL 4"x4" FLUSH DEVICE U.L. LISTED METALLIC BOX
3. CONDUIT LEADING TO ELECTRICAL BOX.
4. "SPECSEAL" PUTTY PAD. COMPLETELY COVER EXTERIOR SURFACES OF THE BOX WITH IN THE STUD CAVITY WITH ADDITIONAL 1/4" OF PUTTY FORMED AROUND THE END OF EACH ELECTRICAL METALLIC TUBE OR CONDUIT OF ITS CONNECTION TO THE BOX. WHEN MOLDABLE PUTTY PAD OUTLET BOX PROTECTIVE MATERIAL USED AS DIRECTED. THE HORIZONTAL SEPARATION BETWEEN OUTLET BOXES ON OPPOSITE SIDES OF THE WALL MAY BE LESS THAN 24" PROVIDED THAT THE BOXES ARE NOT INSTALLED BACK-TO-BACK.

NOTE:
THE PRODUCTS USED IN THIS DESIGN HAVE BEEN TESTED AS FOLLOWS:
- ASTM E814 (UL1479). REFER TO U.L. CATEGORY CILV (PAGE 1516, VOLUME ONE 1995)
- ASTM E119 (TIME/TEMPERATURE EXPOSE) (COTTON WASTE IGNITION)
- ANNULAR SPACE REQUIREMENTS.

FIRE STOP WALL BOX DETAIL

SCALE: 12" = 1'-0"



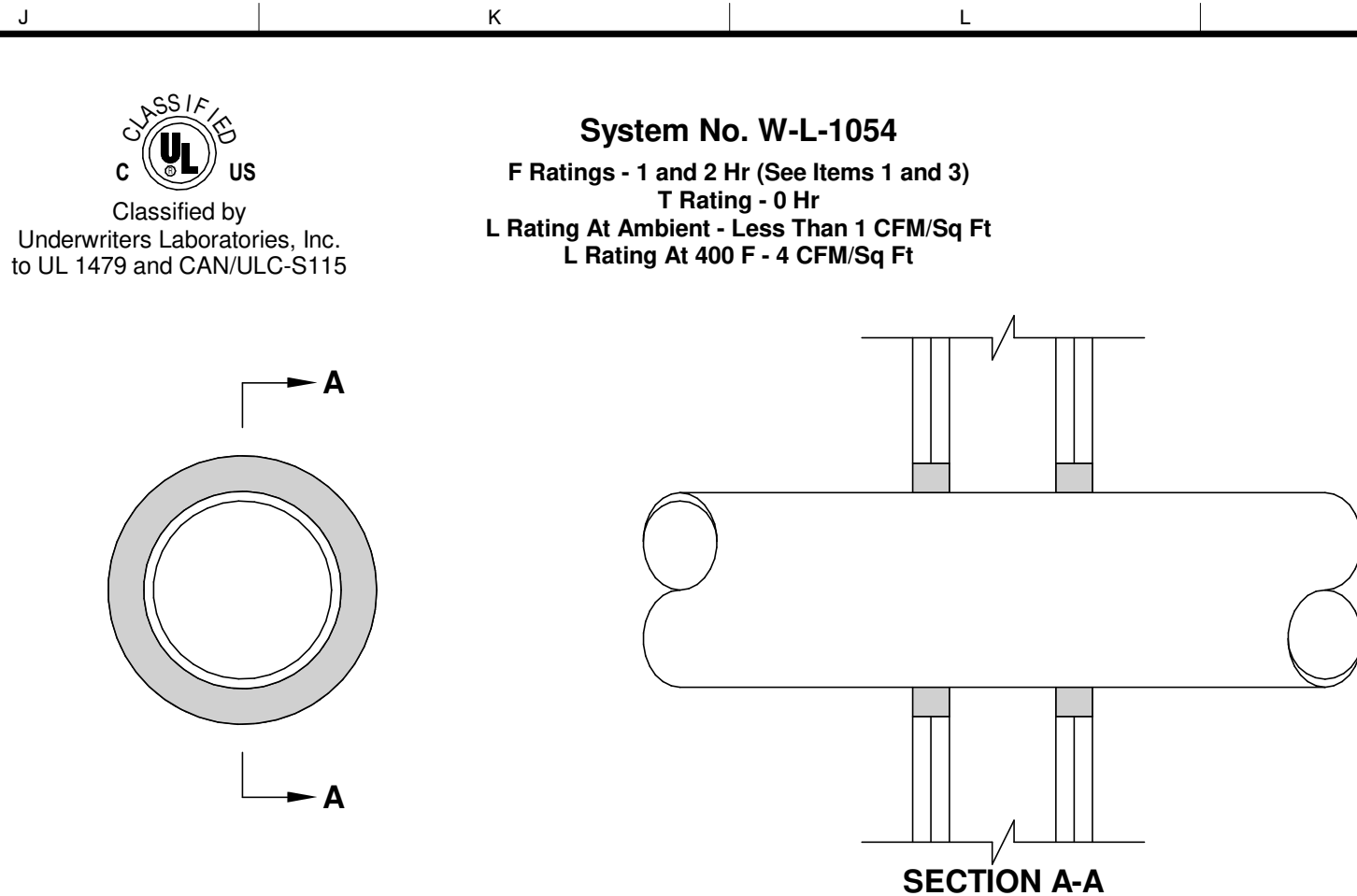
1. Floor or Wall Assembly - Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 8 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants - One metallic pipe or conduit to be installed within the firestop system. Pipe or conduit to be rigidly supported on both sides of floor or wall assembly. The annular space shall be min 0 in. (point contact) to max 1-3/8 in. The following types and sizes of metallic pipes or conduits may be used:
A. Steel Pipe - Nom 6 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.
B. Iron Pipe - Nom 6 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit - Nom 4 in. diam (or smaller) steel electrical metallic tubing or nom 6 in. diam (or smaller) steel conduit.
3. Packing Material - Min 4 in. thickness of min. 4.0 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
4. Fill, Void or Cavity Material* - Sealant - Min 1/4 in. thickness of fill material applied within the annulus, flush with tip surface of floor and with both surfaces of wall. At the pint contact location between pipe and concrete, a min 1/2 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. W Rating applies only when CP601S or CP604 sealant is used.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - CP601S, CP604, CP606 or FS-ONE Sealant

*Bearing the UL Classification Mark
HILTI
Hilti Firestop Systems

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December 4, 2002

PENETRATION DETAIL - CONCRETE FLOOR/WALL

SCALE: 12" = 1'-0"



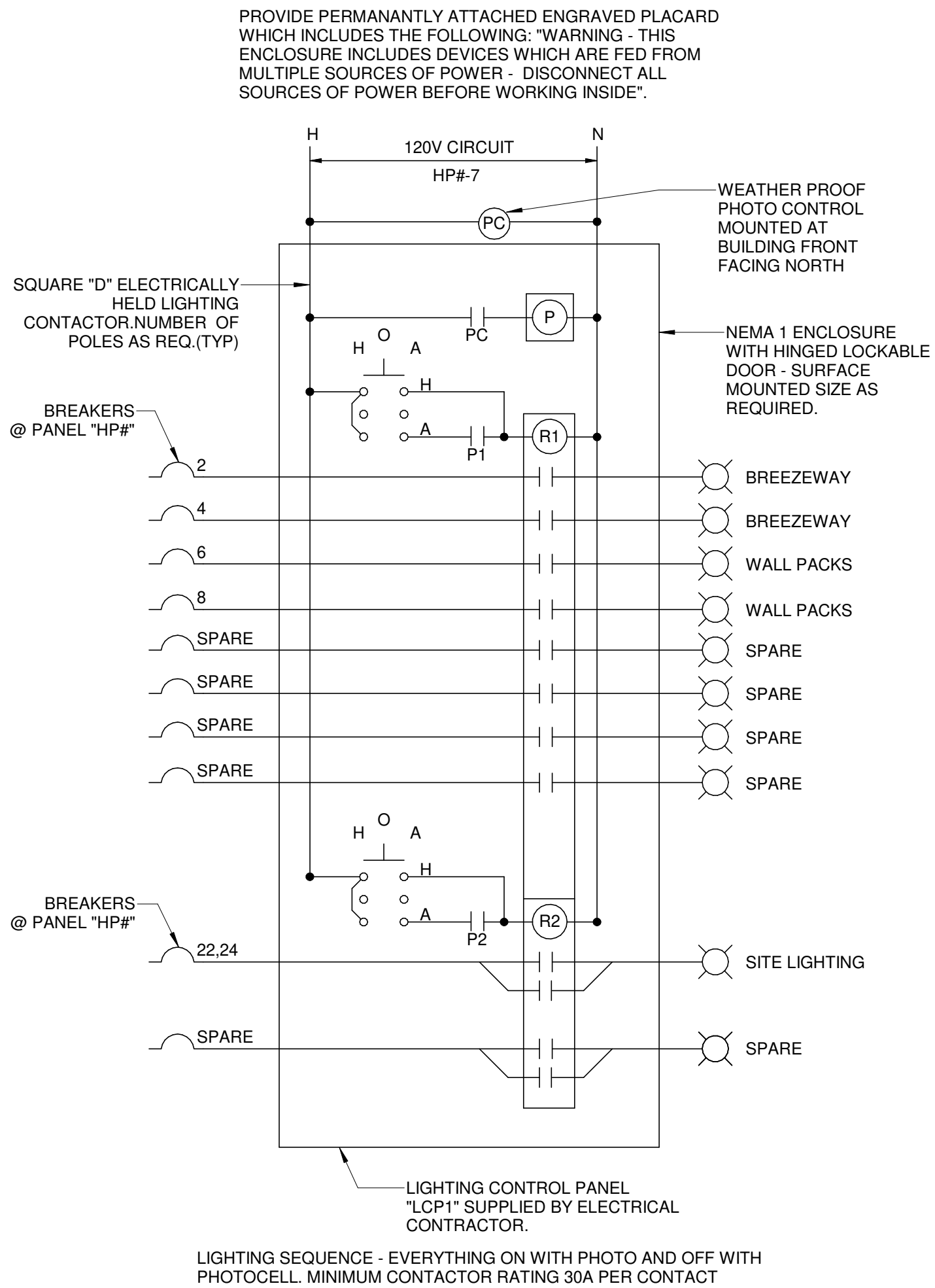
1. Wall Assembly -- The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400-Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs -- Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.
B. Gypsum Board -- 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls. The F Rating of the firestop system is equal to the fire rating of the wall assembly.
2. Through-Penetrants -- One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe -- Nom 30 in diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe -- Nom 30 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit -- Nom 4 in diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.
D. Copper Tubing -- Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
E. Copper Pipe -- Nom 6 in. diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* -- Sealant -- Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE Sealant

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PENETRATION DETAIL - STUD WALL

SCALE: 12" = 1'-0"



LIGHTING CONTROL PANEL "LCP1, 2, 3, & 4"

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

