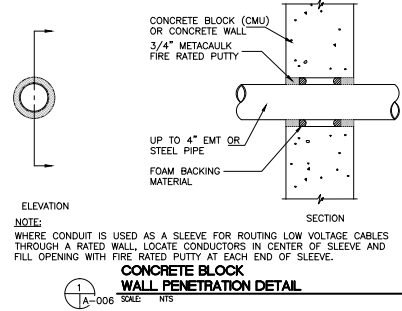
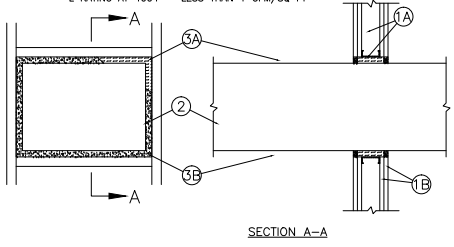
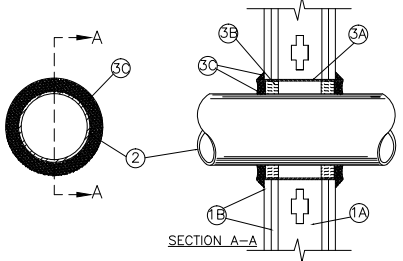
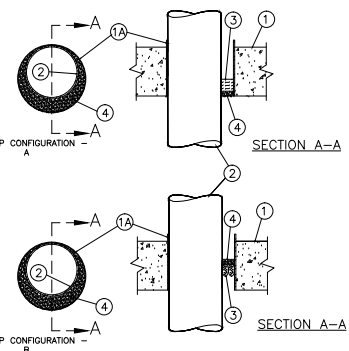


SYSTEM NO. C-AJ-1175  
 F RATING - 2 HR  
 W RATING - CLASS I (SEE ITEM 4)

SYSTEM NO. W-L-1003  
 (FORMERLY SYSTEM NO. 147)  
 F RATINGS - 1 AND 2 HR (SEE ITEM 1)  
 T RATING - 0 HR

SYSTEM NO. W-L-7191  
 F RATING - 1 AND 2 HR (SEE ITEM 1)  
 L RATING AT AMBIENT - LESS THAN 1 CFM/SQ FT  
 L RATING AT 400°F - LESS THAN 1 CFM/SQ FT



1. FLOOR OR WALL ASSEMBLY - MIN 2-1/2 IN. THICK LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WHEN CONFIGURATION A IS USED, ON CONFIGURATION B IS USED IN CONJUNCTION WITH THE STEEL SLEEVE (ITEM 1A), FLOOR MAY 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\*. MAX DIAM OF CIRCULAR THROUGH OPENING IS 10 IN.  
 \*SEE CONCRETE BLOCKS (CAZT) AND PRECAST CONCRETE UNITS (CFV) CATEGORIES IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

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 DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

1. 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 OR V400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:  
 A. STUDS - WALL FRAMING SHALL CONSIST OF STEEL CHANNEL STUDS. STEEL STUDS TO BE MIN 6 IN. (152 MM) WIDE AND SPACED MAX 24 IN. (60 MM) OC. ADDITIONAL FRAMING MEMBERS SHALL BE USED TO COMPLETELY FRAME AROUND OPENING.  
 B. GYPSUM BOARD\* - MIN 5/8 IN. (16 MM) THICK, 4 FT (121 CM) WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS AND PARTITION DESIGN, MAX AREA OF OPENING IS 676 SQ IN. (4362 SQ CM) WITH A MAX DIMENSION OF 26 IN.  
 THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.

1A. STEEL SLEEVE (OPTIONAL) - NO. 10 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE SLEEVE CAST INTO CONCRETE FLOOR OR WALL. SLEEVE TO BE FLUSH WITH OR PROJECT MAX 2 IN. FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL.  
 2. THROUGH PENETRANTS - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. MAX ANNUAL SPACE BETWEEN PIPE, CONDUIT OR TUBING AND EDGE OF THROUGH OPENING NOT TO EXCEED 1-3/8 IN. AN ANNUAL SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF THROUGH OPENING IS ZERO IN. (POINT CONTACT). PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:  
 A. STEEL PIPE - NOM 8 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.  
 B. CONDUIT - NOM 6 IN. DIAM (OR SMALLER) RIGID STEEL CONDUIT.  
 C. CONDUIT - NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.  
 D. IRON PIPE - NOM 4 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.  
 E. COPPER TUBING - NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.  
 F. COPPER PIPE - NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

A. STUDS - WALL FRAMING MAY CONSIST OF EITHER METAL STUDS OR STEEL CHANNEL STUDS. METAL STUDS AND STEEL STUDS TO BE MIN 3-1/2 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX 24 IN. OC.  
 B. GYPSUM BOARD\* - NOM 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 15 IN. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.

2. STEEL DUCT - MAX 24 BY 24 IN. (610 BY 610 MM) NO. 22 GAUGE (OR HEAVIER) STEEL DUCT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE OPENING. THE ANNUAL SPACE SHALL BE MIN 3/4 IN. (19 MM) TO MAX 1-1/2 IN. (38 MM). DUCT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.  
 3. FIRESTOP SYSTEM - THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:

3. PACKING MATERIAL - MIN 1 IN. THICKNESS OF TIGHTLY-PACKED MINERAL WOOL BATT MATERIAL. USED AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP OR BOTTOM SURFACE OF FLOOR OR FROM EITHER SURFACE OF SOLID CONCRETE WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL (ITEM 4). WHEN WALL IS CONSTRUCTED OF CONCRETE BLOCK, PACKING MATERIAL IS TO BE INSTALLED ON BOTH SIDES OF WALL ASSEMBLY. WHEN PRECAST HOLLOW CORE FLOOR IS USED, PACKING MATERIAL MUST BE INSTALLED ON BOTTOM SURFACE OF FLOOR.

2. THROUGH PENETRANT - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE SPACE BETWEEN PIPES, CONDUITS OR TUBING AND THE STEEL SLEEVE (ITEM 3A) SHALL BE MIN OF 0 IN. (POINT CONTACT) TO MAX 2-3/8 IN. 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 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.  
 B. IRON PIPE - NOM 12 IN. DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN. DIAM (OR SMALLER) OR CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE.  
 C. CONDUIT - NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT OR NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.  
 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.

A. PACKING MATERIAL - MIN 6 IN. (152 MM) OR 7-1/4 IN. (184 MM) THICKNESS OF MIN 4 PCF (64 KG/M) MINERAL WOOL BATT INSULATION FOR 1 OR 2 HR RATED WALLS, RESPECTIVELY. MINERAL WOOL TO BE FIRMLY PACKED INTO OPENING AS A PERMANENT FORM AND RECESSED FROM BOTH SURFACES OF WALL TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.  
 A1. FORMING MATERIAL\* - AS AN ALTERNATE TO THE PACKING MATERIAL IN ITEM 3A, NOM 4 IN. (102 MM) WIDE STRIPS OF MIN 1/2 IN. (13 MM) THICK COMPRESSIBLE MAT TO BE STAPLED TO A THICKNESS GREATER THAN THE WIDTH OF THE ANNUAL SPACE AND COMPRESSION-FITTED, EDGE-FIRST, TO FILL THE ANNUAL SPACE TO A MIN 6 IN. (152 MM) DEPTH FOR 1 HR RATED WALLS AND MIN 7-1/4 IN. DEPTH FOR 2 HR RATED WALLS. FORMING MATERIAL TO BE RECESSED FROM BOTH SURFACES OF WALL AS NECESSARY TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.  
 3M COMPANY  
 3M FIRE PROTECTION PRODUCTS - FIRE BARRIER PACKING MATERIAL

4. FILL VOID OR CAVITY MATERIALS\* - CAULK OR SEALANT - APPLIED TO FILL THE ANNUAL SPACE TO A MIN DEPTH OF 1/2 IN. FLUSH WITH THE TOP OR BOTTOM SURFACE OF THE FLOOR OR EITHER SURFACE OF THE SOLID CONCRETE WALL. A MIN 1/4 IN. DIAM BEAD OF CAULK SHALL BE APPLIED TO THE FLOOR OR WALL SURFACE WHERE THE PIPE, CONDUIT OR EMT IS INSTALLED IN POINT CONTACT WITH THE EDGE OF THE THROUGH OPENING. WHEN WALL IS CONSTRUCTED OF CONCRETE BLOCK, CAULK TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. WHEN PRECAST HOLLOW CORE FLOOR IS USED, CAULK FILL MATERIAL MUST BE INSTALLED ON BOTTOM SURFACE OF FLOOR.

3. FIRESTOP SYSTEM - INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:  
 A. STEEL SLEEVE - CYLINDRICAL SLEEVE FABRICATED FROM MIN 0.019 IN. THICK (NO. 28 GAUGE) GALV SHEET STEEL AND HAVING A MIN 2 IN. LAP ALONG THE LONGITUDINAL SEAM. LENGTH OF STEEL SLEEVE TO BE EQUAL TO THICKNESS OF WALL PLUS 1 TO 4 IN. SUCH THAT, WHEN INSTALLED, THE ENDS OF THE SLEEVE WILL PROJECT APPROXIMATELY 1/2 TO 2 IN. BEYOND THE SURFACE OF THE WALL ON BOTH SIDES OF THE WALL ASSEMBLY. SLEEVE INSTALLED BY COILING THE SHEET STEEL TO A DIAM SMALLER THAN THE THROUGH OPENING, INSERTING THE COIL THROUGH THE OPENINGS AND RELEASING THE COIL TO LET IT UNCOIL AGAINST THE CIRCULAR CUTOUTS IN THE GYPSUM WALLBOARD LAYERS.  
 B. PACKING MATERIAL - MIN 1 IN. THICKNESS OF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO STEEL SLEEVE ON BOTH SIDES OF THE WALL ASSEMBLY AS PERMANENT FORMS. PACKING MATERIAL TO BE RECESSED MIN 1/2 IN. FROM END OF STEEL SLEEVE (FLUSH WITH OR RECESSED INTO GYPSUM WALLBOARD SURFACE) ON BOTH SIDES OF WALL ASSEMBLY.  
 B1. PACKING MATERIAL - (NOT SHOWN) - AS AN ALTERNATE TO ITEM B, NOM 1 IN. THICK POLYETHYLENE BACKER ROD MAY BE USED. THE BACKER ROD IS TO BE RECESSED WITHIN THE STEEL SLEEVE A MIN OF 1 IN. FROM EACH SURFACE OF WALL.  
 C. FILL VOID OR CAVITY MATERIALS\* - CAULK OR SEALANT - WHEN MINERAL WOOL BATT INSULATION IS USED, APPLIED TO FILL THE STEEL SLEEVE TO A MIN DEPTH OF 1/2 IN. ON BOTH SIDES OF WALL ASSEMBLY. WHEN BACKER ROD IS USED, A MIN THICKNESS OF 1 IN. OF CP-25WB+ CAULK IS REQUIRED FLUSH WITH SURFACE OF WALL. A NOM 1/4 IN. DIAM CONTINUOUS BEAD OF CAULK OR SEALANT SHALL BE APPLIED AROUND THE CIRCUMFERENCE OF THE STEEL SLEEVE AT ITS GRESS FROM THE GYPSUM WALLBOARD LAYERS ON BOTH SIDES OF THE WALL ASSEMBLY.

B. FILL VOID OR CAVITY MATERIAL\* - CAULK - MIN 5/8 IN. (16 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNUAL SPACE, FLUSH WITH BOTH SIDES OF WALL.  
 3M COMPANY  
 3M FIRE PROTECTION PRODUCTS - FB-3000 WT, IC 15WB+ OR CP 25WB+  
 \*BEARING THE UL CLASSIFICATION MARK

3M COMPANY - CP 25WB+ CAULK OR FB-3000 WT SEALANT. (THE W RATING APPLIES ONLY WHEN FB-3000 WT IS USED FLUSH WITH THE TOP SURFACE OF FLOOR.)  
 FIRESTOP CONFIGURATION B

3M COMPANY - CP 25WB+ CAULK OR FB-3000 WT SEALANT.  
 \*BEARING THE UL CLASSIFICATION MARK

B. FILL VOID OR CAVITY MATERIALS\* - SEALANT MIN 1/2" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNUAL SPACE, FLUSH WITH TOP SURFACE OF FLOOR.  
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - CP 618 FIRESTOP PUTTY STICK  
 \*BEARING THE UL CLASSIFICATION MARK

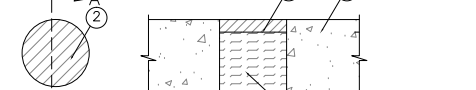
3. PACKING MATERIAL - POLYETHYLENE BACKER ROD OR NOM 1 IN. THICKNESS OF TIGHTLY-PACKED MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED MIN 1/2 IN. FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL (ITEM 4).

3M COMPANY - CP 25WB+ CAULK OR FB-3000 WT SEALANT. (THE W RATING APPLIES ONLY WHEN FB-3000 WT IS USED.)  
 \*BEARING THE UL CLASSIFICATION MARK

1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2" 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 7". SEE CONCRETE BLOCK (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.  
 2. FIRESTOP SYSTEM - THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:  
 A. PACKING MATERIAL - MIN. 4" THICKNESS OF 4 PCF MINERAL WOOL BATT INSULATION TIGHTLY PACKED INTO THE OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE FOR FLOOR AND BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.  
 B. FILL VOID OR CAVITY MATERIALS\* - SEALANT MIN 1/2" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNUAL SPACE, FLUSH WITH TOP SURFACE OF FLOOR.

4. FILL VOID OR CAVITY MATERIALS\* - CAULK OR SEALANT - APPLIED TO FILL THE ANNUAL SPACE TO A MIN DEPTH OF 1/2 IN. FLUSH WITH THE TOP SURFACE OF THE FLOOR OR BOTH SURFACES OF THE WALL. A MIN 1/4 IN. DIAM BEAD OF CAULK SHALL BE APPLIED TO THE FLOOR OR WALL SURFACE WHERE THE PIPE, CONDUIT OR EMT IS INSTALLED IN POINT CONTACT WITH THE EDGE OF THE THROUGH OPENING.  
 3M COMPANY - CP 25WB+ CAULK OR FB-3000 WT SEALANT. (THE W RATING APPLIES ONLY WHEN FB-3000 WT IS USED.)  
 \*BEARING THE UL CLASSIFICATION MARK

3M COMPANY - CP 25WB+ CAULK OR FB-3000 WT SEALANT.  
 \*BEARING THE UL CLASSIFICATION MARK



100% SUBMITTAL  
 BID SET -  
 CONSTRUCTION  
 DOCUMENTS  
 DATE: DECEMBER, 21 2012

GENERAL NOTE:  
 FOR DEMOLITION AND NEW WORK AT EXISTING MECHANICAL CHASE, STAIR ENCLOSURE, FLOOR SLAB, ROOF, EXISTING WALLS, ETC. PROVIDE PROPER ASSEMBLY AS REQUIRED TO SEAL PENETRATION OR OPENING TO MAINTAIN EXISTING RATING OR ASSEMBLY.  
 BID SET - 100% CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

**LINDBERGH & ASSOCIATES, LLC**  
 2170 Ashley Phosphate Road, Suite 304  
 Charleston, South Carolina, 29406  
 Phone: (843) 553-6670 Fax: (843) 553-0755

BY: \_\_\_\_\_ REVISIONS: \_\_\_\_\_ DATE: \_\_\_\_\_

CONFIDENTIAL - THESE DRAWINGS MUST BE RETURNED TO FACILITIES MANAGEMENT SERVICE, PROJECT SECTION, UPON COMPLETION, OR FURNISHED TO THE CONTRACTOR FOR BIDDING PURPOSES.  
 ASBESTOS WARNING: ASBESTOS CONTAINING BUILDING MATERIALS (ACBM) ARE PRESENT THROUGHOUT THE FACILITY. IF CONTRACTORS FIND ACBM, OR SUSPECT FINDING ACBM, THEY SHALL IMMEDIATELY STOP WORK AND CONTACT THE PROJECT COTR.  
 SCALING NOTES: FULL SIZE VLT "A" SHEETS (SCALE AS INDICATED) AND HALF SIZE VLT "D" SHEETS (B SCALE INDICATED LETTER SIZE DRAWINGS ARE NOT TO SCALE)  
 GENERAL NOTE: CONTRACTORS AND ARCHITECT/ENGINEERING FIRMS ARE RESPONSIBLE FOR THE FIELD VERIFICATION OF ALL EXISTING CONDITIONS.

Project Title  
**RENOVATE  
 WARD 5 EAST**

Drawing Title  
**FIFTH FLOOR - WARD EAST  
 PENETRATION DETAILS**

Building Number: 47  
 Location: ASHEVILLE, NC

Date: 12/21/12  
 Project No.: 637-11-119  
 Drawing No.: A-006  
 Dwg: 7 of 78

Office of Facilities  
 University of North Carolina