

D

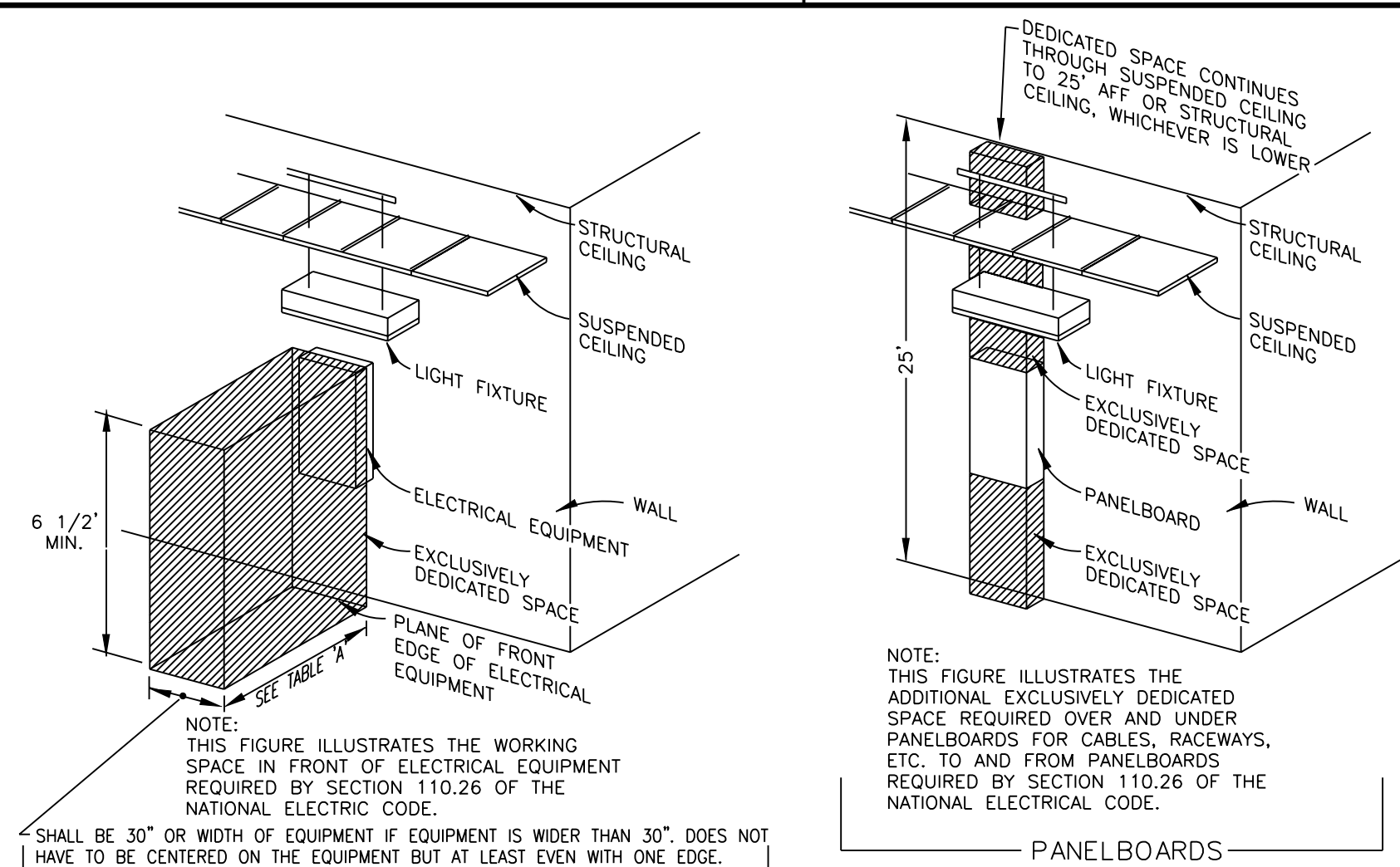


TABLE 'A' - WORKING CLEARANCES

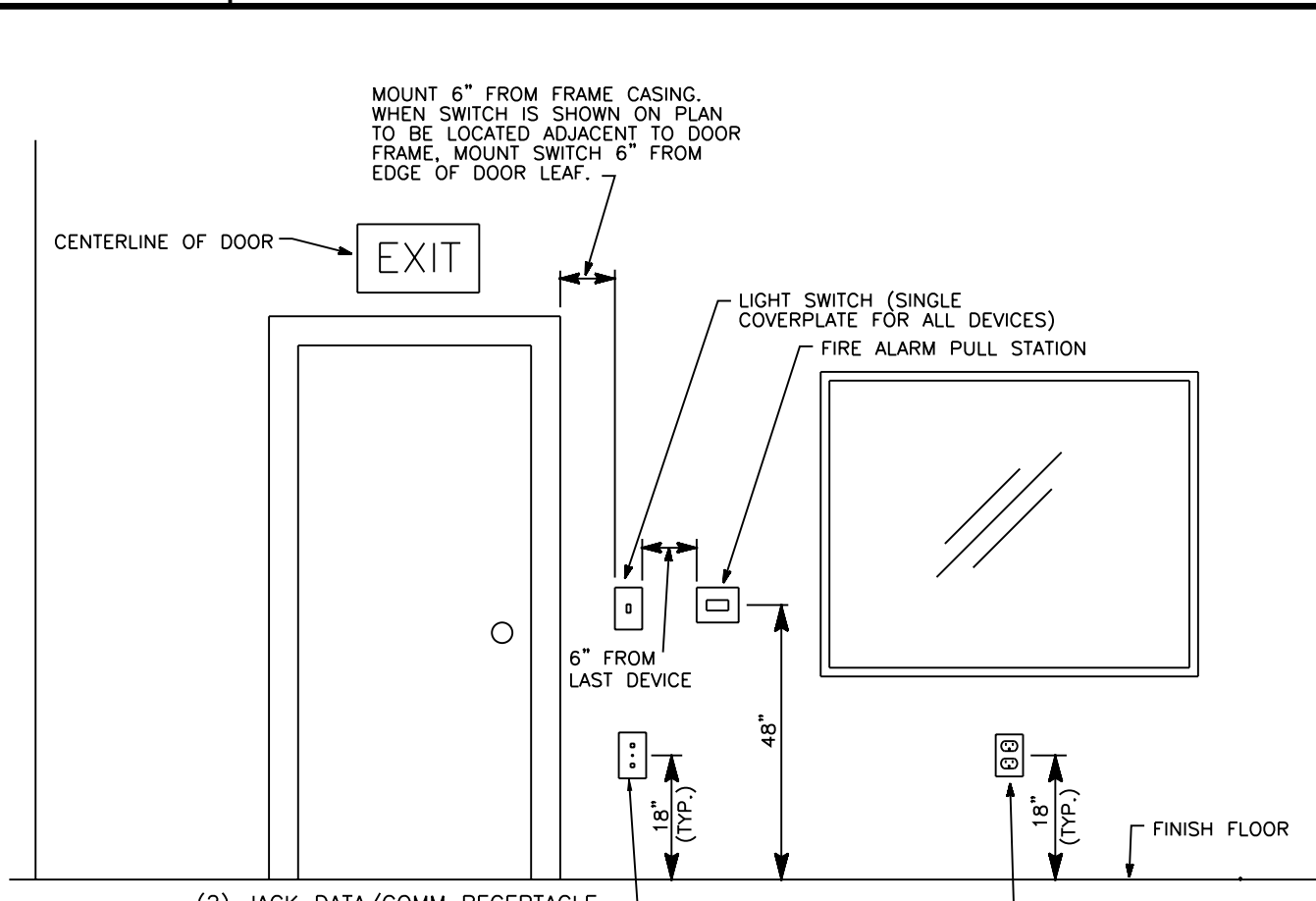
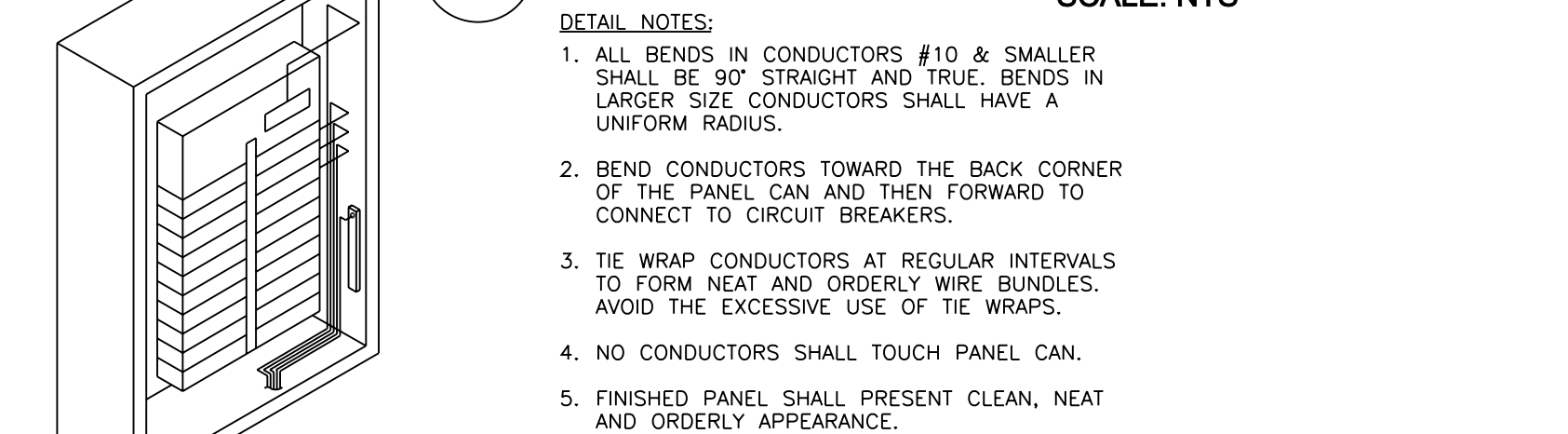
VOLTAGE TO GROUND, NOMINAL	CONDITION:		
	1	2	3
0-150	3	3	3
151-600	3	3 1/2	4

WHERE THE "CONDITIONS" ARE AS FOLLOWS:
 1. EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR OTHER INSULATING MATERIALS. INSULATED WIRE OR INSULATED BUSBARS OPERATING AT NOT OVER 300V SHALL NOT BE CONSIDERED LIVE PARTS.
 2. EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.
 3. EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

C

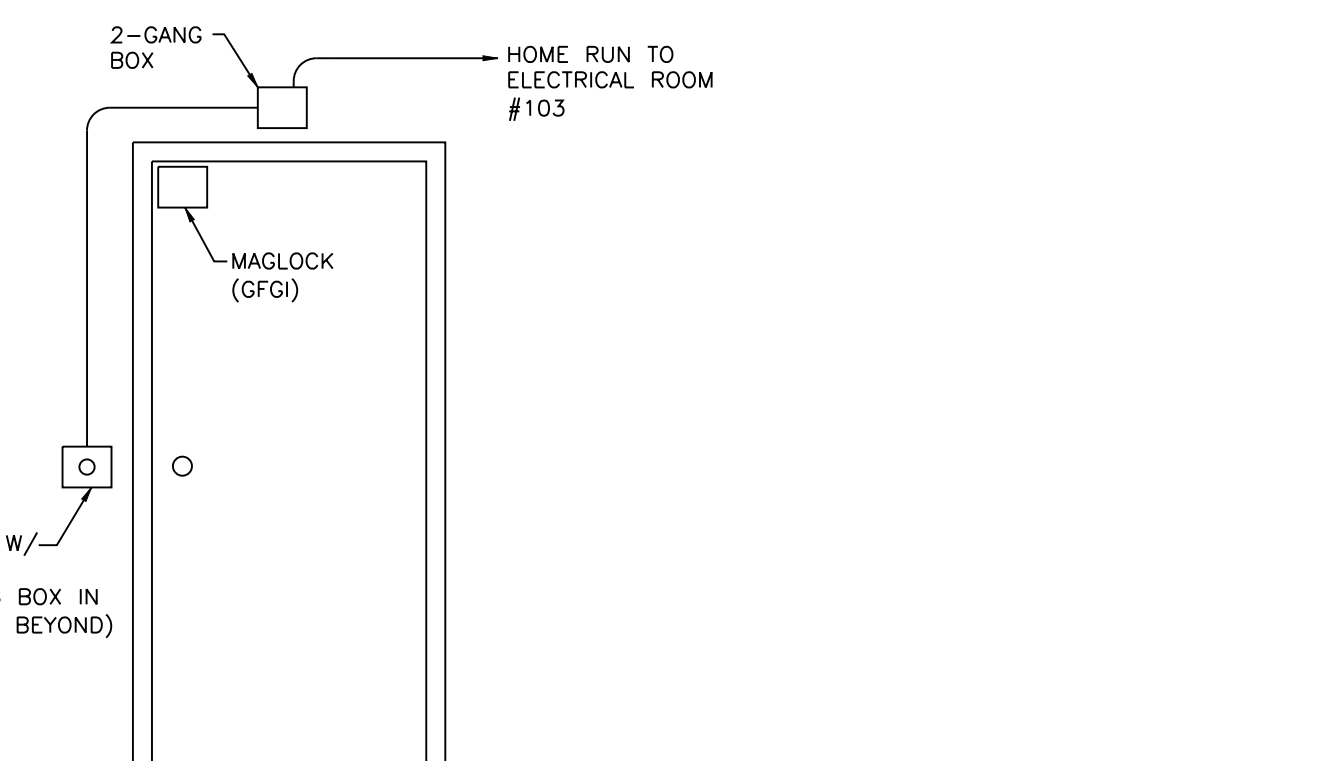
1 WORKING SPACE REQUIREMENTS
 SCALE: NTS

2 TYPICAL PANEL WIRING
 SCALE: NTS



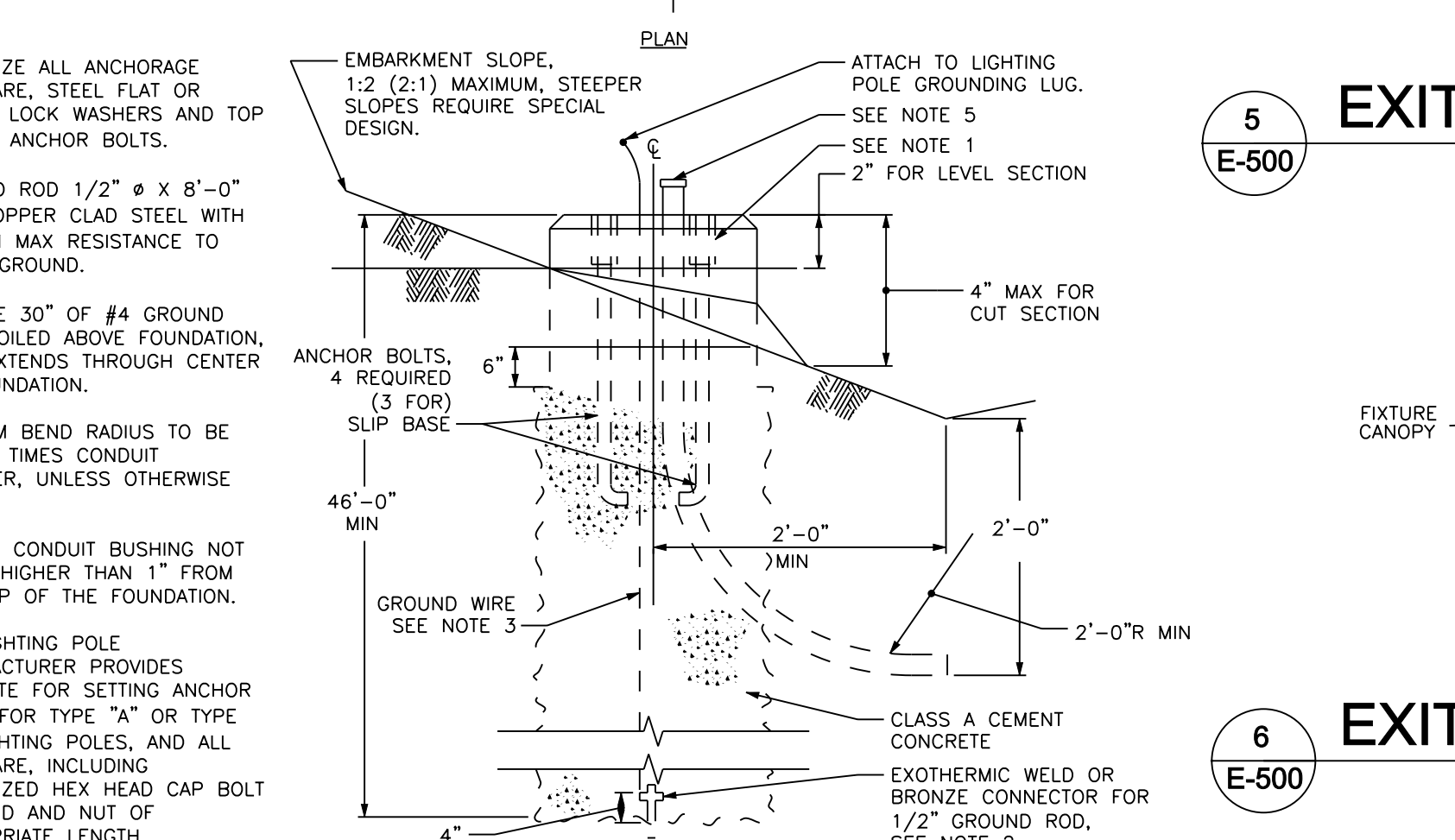
3 TYPICAL MOUNTING HEIGHTS AND ARCHITECTURAL CRITERIA
 SCALE: NTS

DETAIL NOTE: ANY SPECIFIC DIMENSIONING OR INSTRUCTIONS GIVEN ELSEWHERE ON THE DRAWING SHALL SUPERSEDE THESE INSTRUCTIONS

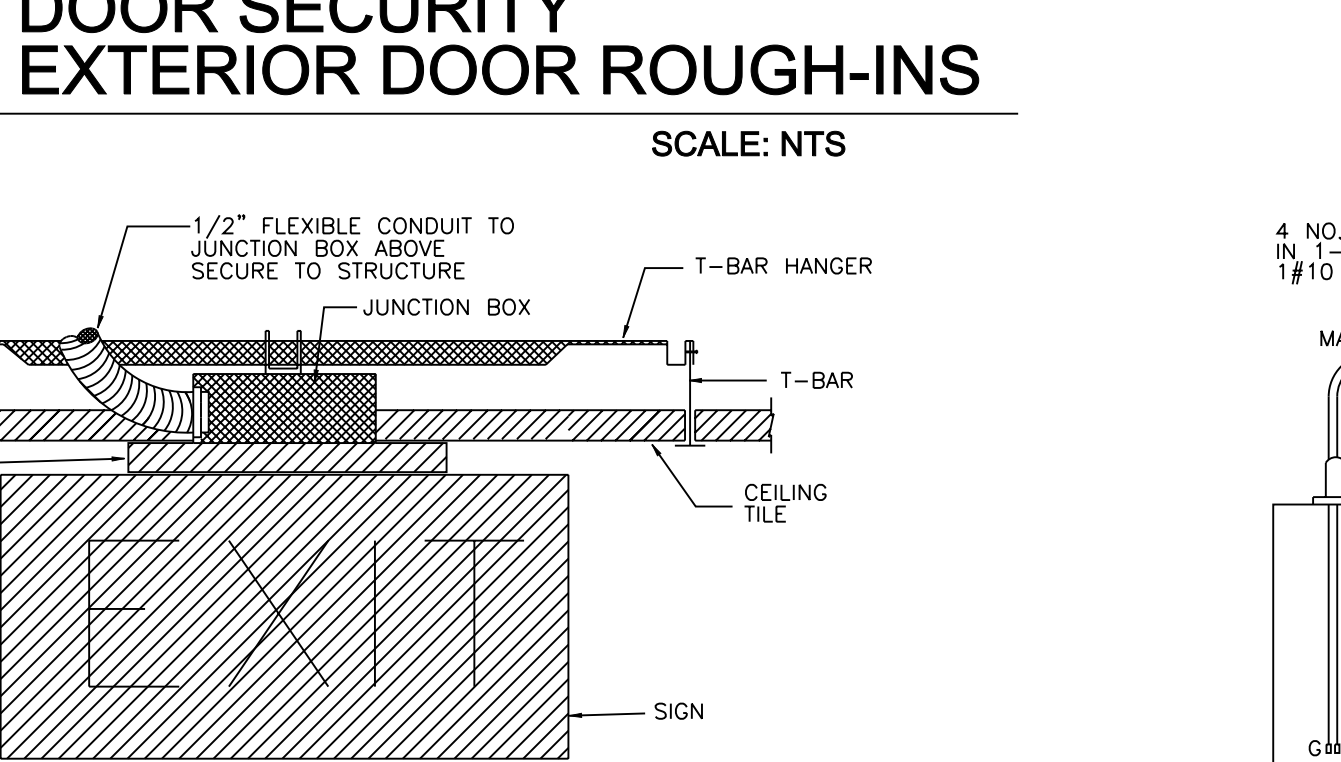


4 DOOR SECURITY EXTERIOR DOOR ROUGH-INS
 SCALE: NTS

B



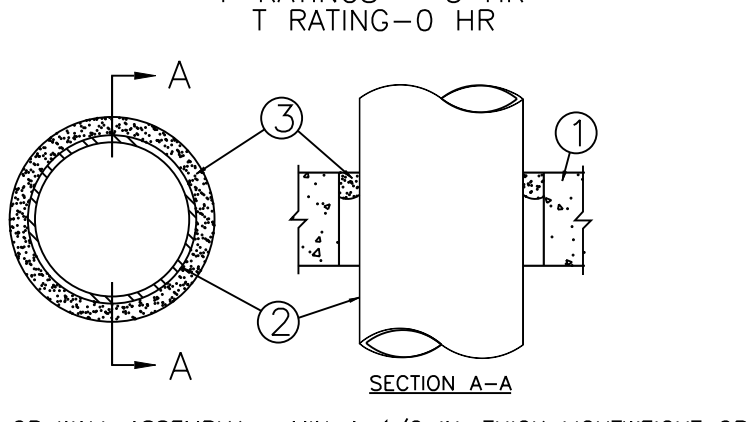
5 EXIT SIGN MOUNTING DETAIL (LAY-IN)
 SCALE: NTS



6 EXIT SIGN MOUNTING DETAIL (HARD CEILING)
 SCALE: NTS

SYSTEM NO. C-AJ-1027

(FORMERLY SYSTEM NO. 202)
 F RATINGS - 3 HR
 T RATING - 0 HR



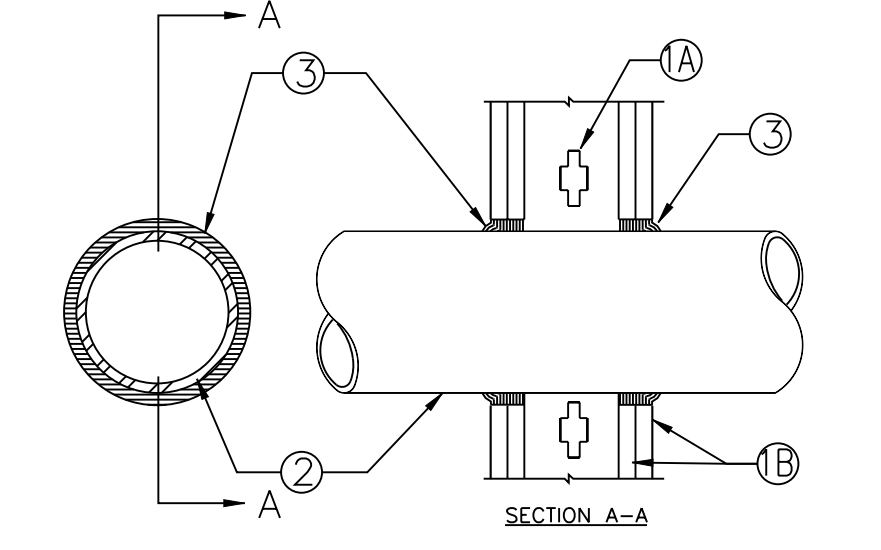
7 SURGE SUPPRESSOR DETAIL
 SCALE: NTS

- 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*. MAX DIAM OF THROUGH OPENING IS 1 1/4 IN. SEE CONCRETE BLOCKS (CAZI) CATEGORY IN FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- THROUGH-PENETRANTS - ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. MIN ANNUAL SPACE BETWEEN PIPE, CONDUIT OR TUBING AND EDGE OF OPENING IS 0 IN. (POINT CONTACT). MAX ANNUAL SPACE IS DEPENDANT ON PIPE, CONDUIT OR TUBING TYPE AND SIZE AS WELL AS THE F RATING OF THE SYSTEM, AS SHOWN IN THE TABLE BELOW. 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:

PIPE OR CONDUIT OR TUBING TYPE	MAX NOM PIPE CONDUIT OR TUBING DIAM IN	F RATING HR	MAX ANNUAL SPACE IN
A. STEEL PIPE - NOM 10 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.	10	3	3/4
B. CONDUIT - NOM 6 IN. DIAM (OR SMALLER) RIGID STEEL CONDUIT.	6	3	3/4
C. CONDUIT - NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT.	4	3	1-1/2
D. COPPER TUBING - NOM 3 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.	3	3	3/4
E. COPPER PIPE - NOM 3 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.	3	2	7/8
F. IRON PIPE - NOM 10 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.			
- FILL, VOID OR CAVITY MATERIAL* - PUTTY - MOLDABLE PUTTY MATERIAL KNEADED BY HAND AND APPLIED TO FILL ANNUAL SPACE TO A MIN DEPTH OF 1 IN. FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED PUTTY THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL. MINNESOTA MINING & MFG CO - MPS-2+.

(FORMERLY SYSTEM NO. 147)

F RATINGS-1, 2, 3 AND 4 HR (SEE ITEMS 2 AND 3)
 T RATINGS-0, 1, 2, 3, AND 4 HR (SEE ITEM 3)
 L RATING AT AMBIENT-LESS THAN 1 CFM/SQ FT
 L RATING AT 400 F-LESS THAN 1 CFM/SQ FT



8 WALL PENETRATION FIRESTOP DETAILS
 SCALE: NTS

- 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:
 - 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.
 - GYPSUM BOARD* - 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 28 IN.
 - THROUGH-PENETRANT - ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNUAL SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN. (POINT CONTACT) TO MAX 2 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:

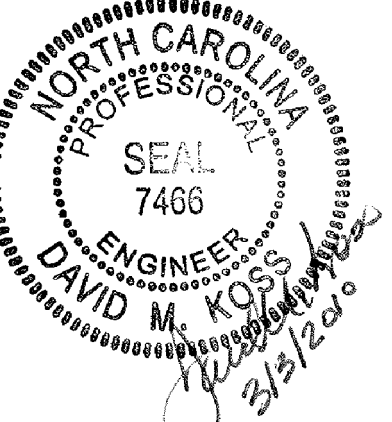
PIPE OR CONDUIT OR TUBING TYPE	MAX NOM PIPE CONDUIT OR TUBING DIAM IN	F RATING HR	MAX ANNUAL SPACE IN
A. STEEL PIPE - NOM 24 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.	24	3	3/4
B. IRON PIPE - NOM 24 IN. DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN. DIAM (OR SMALLER) OR CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE.	12	3	3/4
C. CONDUIT - NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT OR NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING	6	3	3/4
D. COPPER TUBING - NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING	6	2	7/8
E. COPPER PIPE - NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.	6	2	7/8
F. THROUGH PENETRATING PRODUCT* - FLEXIBLE METAL PIPING THE FOLLOWING TYPES OF STEEL FLEXIBLE METAL GAS PIPING MAY BE USED: <ol style="list-style-type: none"> NOM 2 IN. DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. NOM 1 IN. DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. WARD MFG INC NOM 1 IN. DIAM (OR SMALLER) STEEL FLEXIBLE METAL GAS PIPING. PLASTIC COVERING ON PIPING MAY OR MAY NOT BE REMOVED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. TITIFLEX CORP A BUNDY CO 			
- FILL, VOID OR CAVITY MATERIAL* - CALK - MIN 5/8, 1-1/4, 1-7/8 AND 2-1/2 IN. THICKNESS OF CALK FOR 1, 2, 3 AND 4 HR RATED ASSEMBLIES, RESPECTIVELY, APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MIN 1/4 IN. DIAM BEAD OF CALK APPLIED TO GYPSUM BOARD/PENETRANT INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDANT UPON THE HOURLY F 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 DEPENDANT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY F RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

Max Pipe or Conduit Diam In	F Rating Hr	T Rating Hr
1	1 or 2	0+, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

*BEARING THE UL CLASSIFICATION MARK

+WHEN COPPER PIPE IS USED, T RATING IS 0 H.
 3M COMPANY - CP 25WB+
 *BEARING THE UL CLASSIFICATION MARK

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3 MARCH 2010 BUILDING DESIGN FINAL DESIGN FOR CONSTRUCTION



DATE	DESCRIPTION	APPR.	MARK
11/06/09	100% PRE-FINAL DESIGN		
03/03/10	FINAL DESIGN FOR CONSTRUCTION		

DESIGNED BY:	CHK BY:	DATE:
SMH	SMH	28-JUL-2009
SMH	SMH	03-MAR-2010

U.S. ARMY CORPS OF ENGINEERS
 HUNTSVILLE CENTER

CONTRACT NO.: W912DY-09-C-003
 FILE NUMBER: XX-XXXXXX
 FILE NAME: FS_E-500.dgn

15TH STREET FIRE STATION
 FORT STEWART, GEORGIA

ELECTRICAL DETAILS

SHEET IDENTIFICATION
E-500
 SHEET 112 OF 117