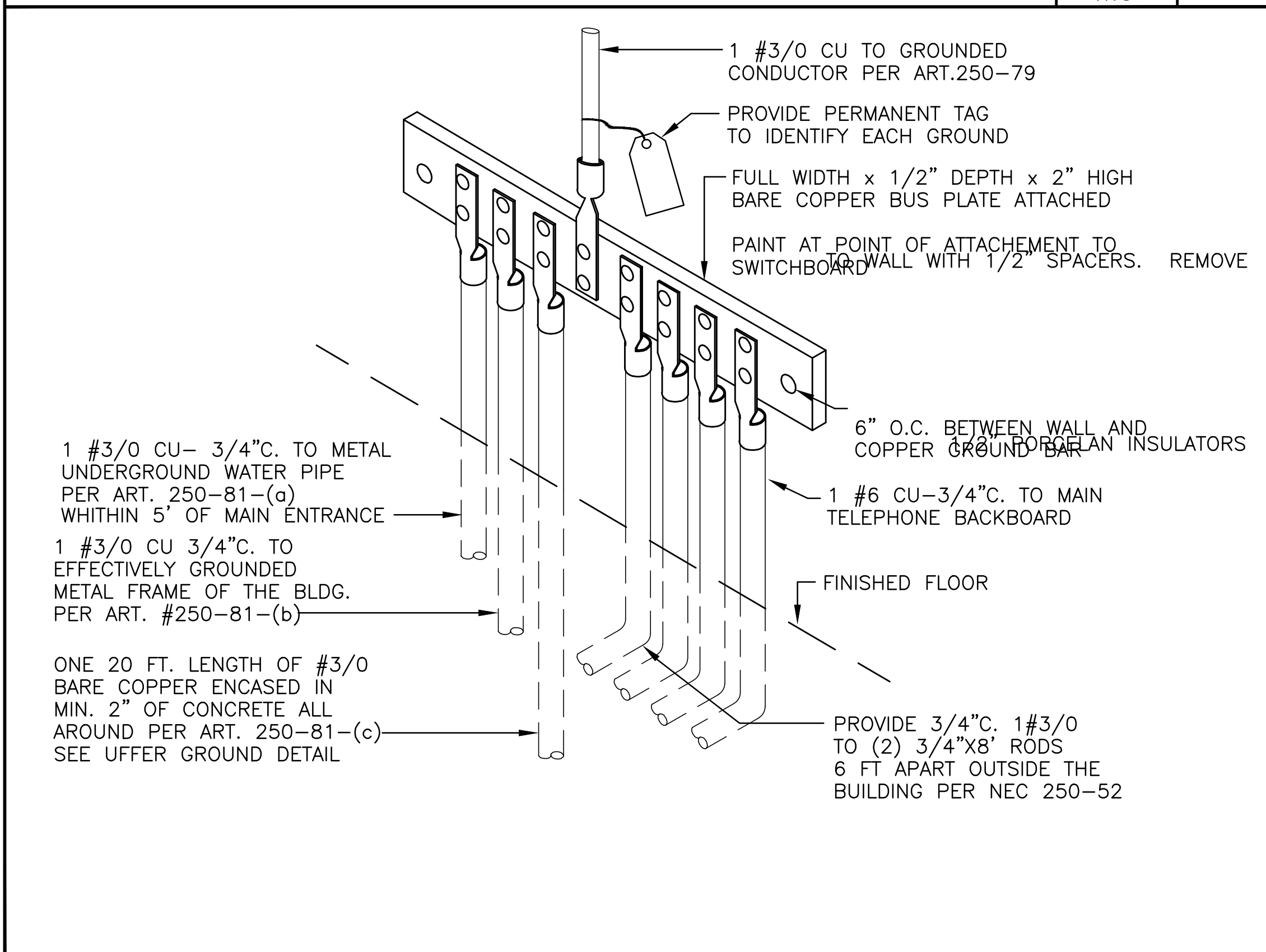


TRANSFORMER GROUNDING DIAGRAM

SCALE
NTS

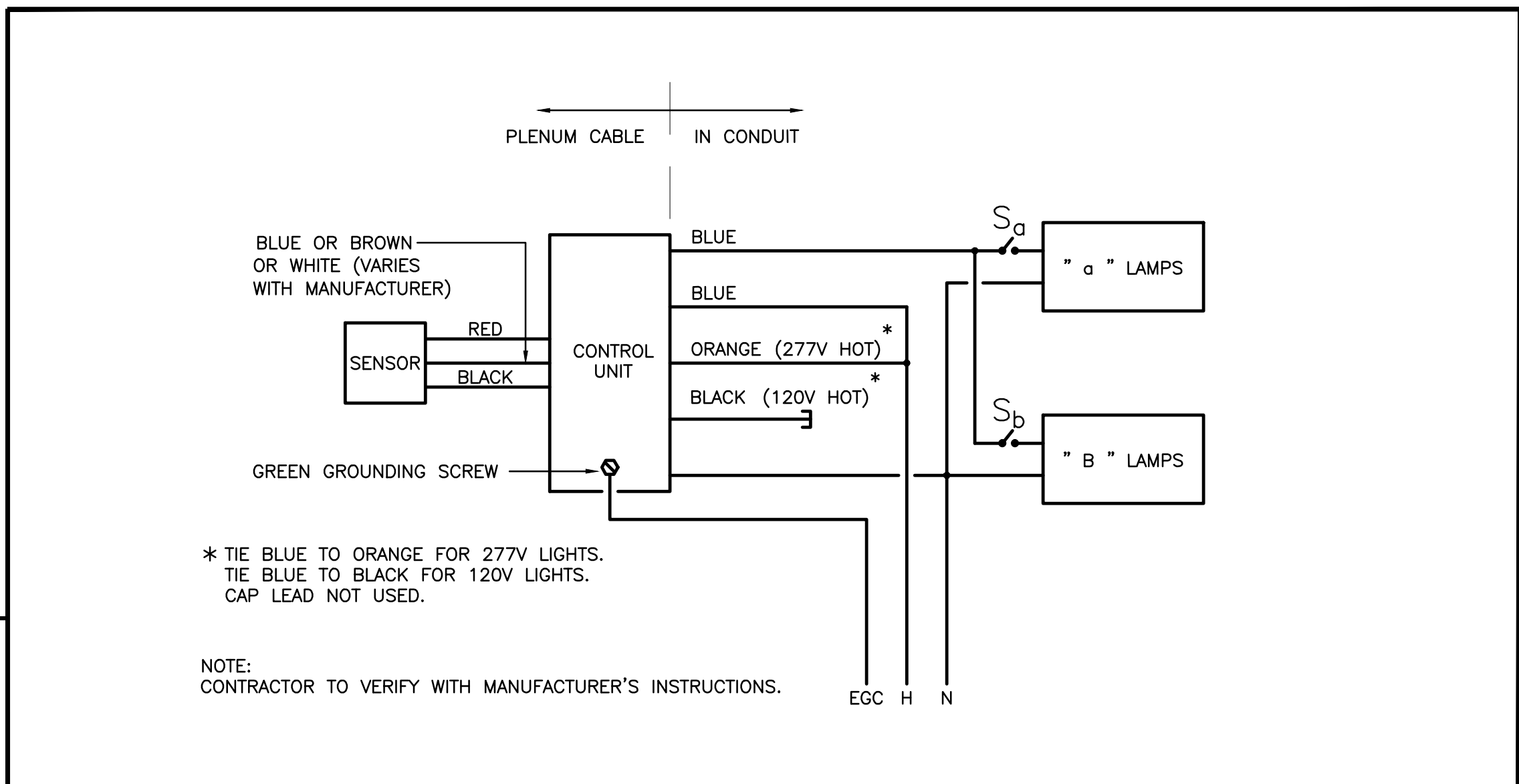
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SERVICE GROUND BUS BAR DIAGRAM

SCALE
NTS

6



OCCUPANCY SENSOR CONNECTION DIAGRAM

SCALE
NOT TO SCALE

5

System No. W-L-5029
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/2, 3/4, 1, 1-1/2 and 1-3/4 Hr (See Item 3)
L Rating At Ambient — 4 CFMSq Ft
L Rating At 400 F — Less Than 1 CFMSq Ft

SECTION A-A

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 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. O.C. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. O.C.
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 WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IS 18-5/8 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. THROUGH PENETRANTS — ONE METALLIC PIPE OR TUBING TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. PIPE OR TUBING TO BE RIDGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES 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) CAST OR DUCTILE IRON PIPE.
C. COPPER TUBING — NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
D. COPPER PIPE — NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. PIPE COVERING* — NOM 1, 1-1/2 OR 2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT.
SEE PIPE AND EQUIPMENT COVERING — MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIAL DIRECTORY FOR THE NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.
THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT ON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, THE SIZE AND TYPE OF THROUGH PENETRANT AND THE PIPE COVERING THICKNESS, AS SHOWN IN THE TABLE BELOW:

Wall Assembly Rating Hr	Through Penetrant		Pipe Covering Thkns In.	Annular Space		T Rating Hr
	Type +	Max Diam In.		Min In.	Max In.	
1	A	4	1	0	1-1/2	1/2
1	B or C	2	1 or 1-1/2	0	1-1/2	1/2
1	A	4	1-1/2	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	B or C	6	2	0	1-7/8	1
2	A	4	1	0	1-1/2	1
2	B or C	4	1 or 1-1/2	0	1-1/2	1
2	B or C	6	2	0	1-7/8	1
2	A	4	1-1/2	0	1-1/2	1-3/4
2	A	12	2	0	1-7/8	1-1/2
2	B or C	6	2	0	1-7/8	1

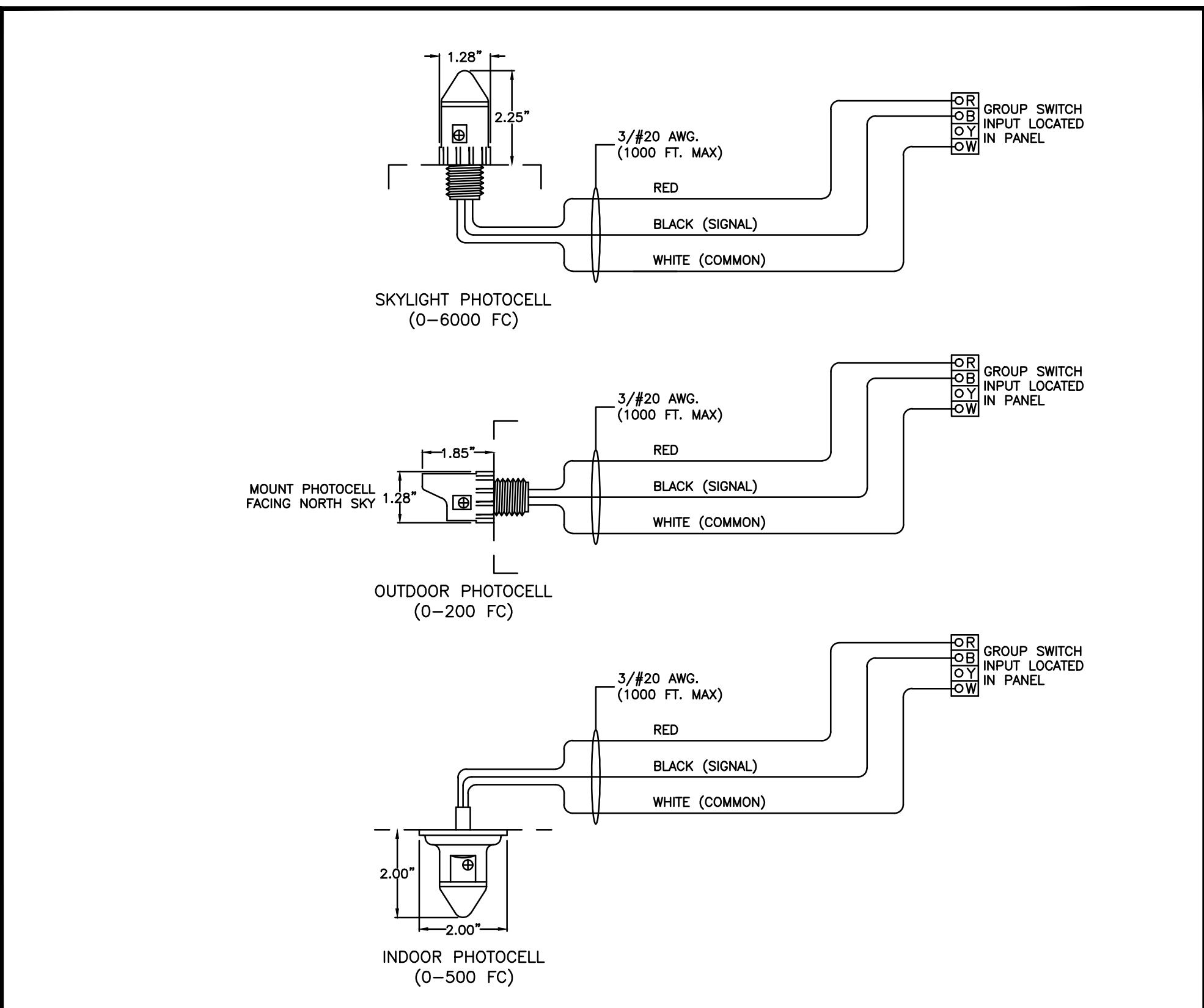
*INDICATES PENETRANT TYPE AS ITEMIZED IN ITEM 2.
3A. PIPE COVERING* — (NOT SHOWN) — AS AN ALTERNATE TO ITEM 3, MAX 2 IN. THICK CYLINDRICAL CALCIUM SILICATE (MIN 14 PCF) UNITS SIZED TO THE OUTSIDE DIAM OF THE PIPE OR TUBE MAY BE USED. PIPE INSULATION SECURED WITH STAINLESS STEEL BANDS OR MIN 8 AWG STAINLESS STEEL WIRE SPACED MAX 12 IN. O.C. WHEN THE ALTERNATE PIPE COVERING IS USED, THE T RATING SHALL BE DETERMINED FROM THE TABLE ABOVE.
SEE PIPE AND EQUIPMENT COVERING — MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.
4. 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 CONTACT LOCATION BETWEEN PIPE COVERING AND GYPSUM BOARD, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE COVERING/GYPSUM BOARD INTERFACE ON BOTH SURFACES OF WALL.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARK

Wall Assembly Rating Hr	Through Penetrant Type +	Through Penetrant Max Diam In.	Pipe Covering Thkns In.	Annular Space Min In.	Annular Space Max In.	T Rating Hr
1	A	4	1	0	1-1/2	1/2
1	B or C	2	1 or 1-1/2	0	1-1/2	1/2
1	A	4	1-1/2	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	B or C	6	2	0	1-7/8	1
2	A	4	1	0	1-1/2	1
2	B or C	4	1 or 1-1/2	0	1-1/2	1
2	B or C	6	2	0	1-7/8	1
2	A	4	1-1/2	0	1-1/2	1-3/4
2	A	12	2	0	1-7/8	1-1/2
2	B or C	6	2	0	1-7/8	1

THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

SCALE
NTS

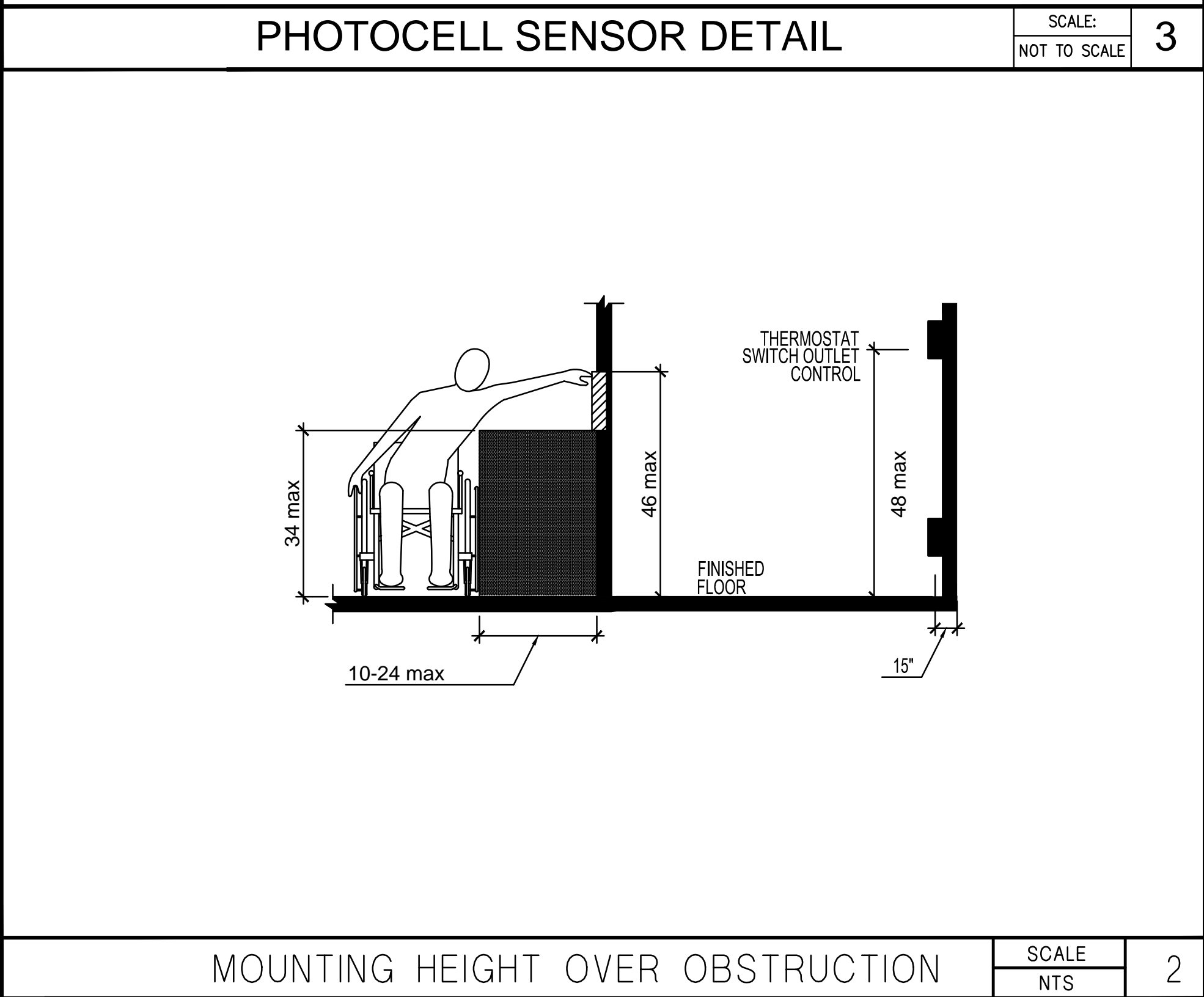
4



PHOTOCELL SENSOR DETAIL

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NOT TO SCALE

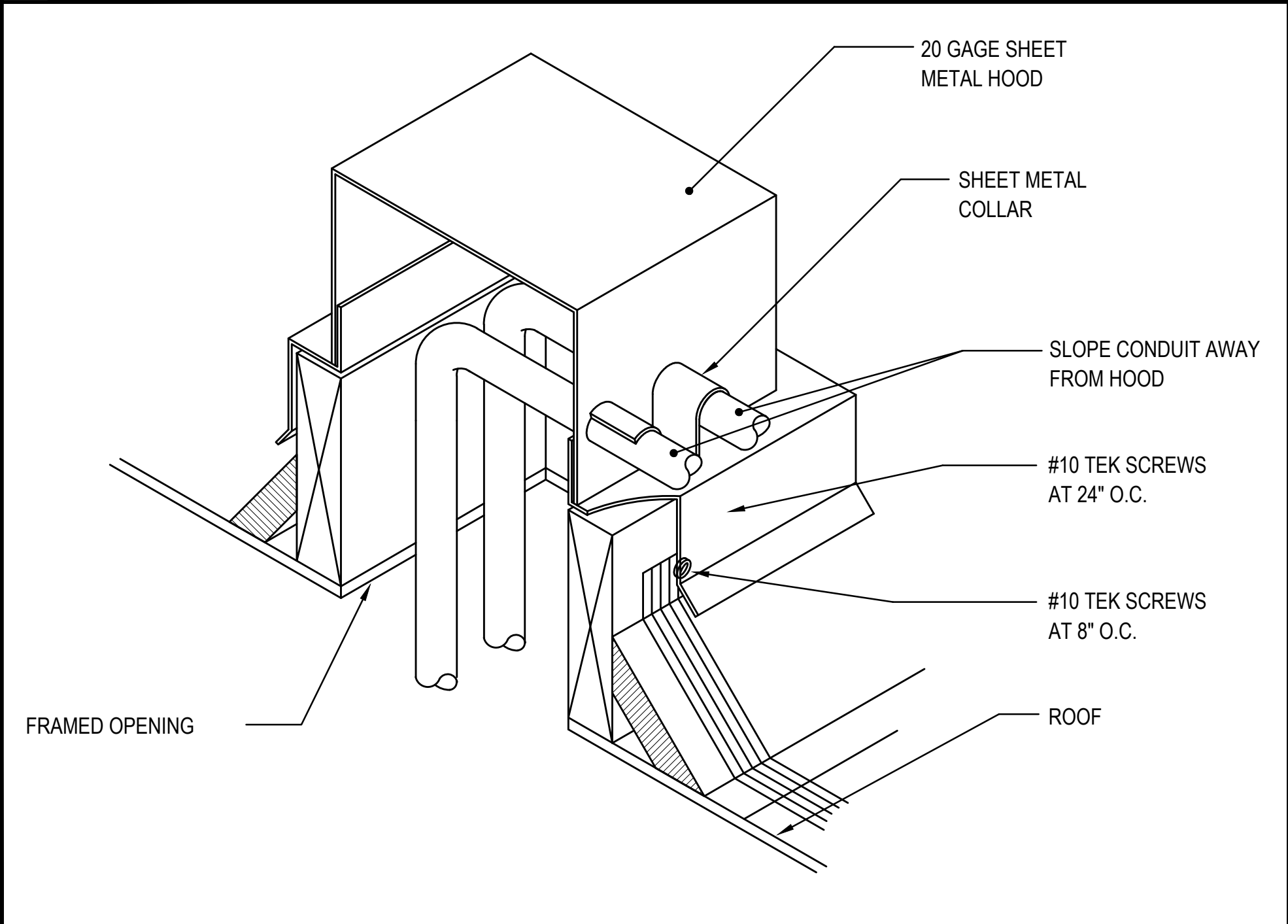
3



MOUNTING HEIGHT OVER OBSTRUCTION

SCALE
NTS

2



TYPICAL CONDUIT THROUGH ROOF DIAGRAM

SCALE
NTS

1