

WALL LEGEND
 3-HOUR RATED FIRE WALL

ELECTRICAL SYSTEM AND EQUIPMENT METHOD OF COMPLIANCE

PRESCRIPTIVE PERFORMANCE ENERGY COST BUDGET

PROVIDE A STANDARD RISER DIAGRAM WHICH INDICATES DESIGNATED POINTS FOR CHECK METERING. PROVIDE A STANDARD PANEL SCHEDULE DESCRIPTION WHICH IDENTIFIES DIFFERENT ENDUSE LOADS.

LIGHTING SCHEDULE (SHOPS A-C)
 LAMP TYPE REQUIRED IN FIXTURE: FLUORESCENT
 BALLAST TYPE USED IN FIXTURE: ELECTRONIC
 NUMBER OF LAMPS IN FIXTURE: 4
 NUMBER OF BALLASTS IN FIXTURE: 4
 TOTAL WATTAGE PER FIXTURE: 128
 TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED: 0.88 W/SQ. FT. VS. 1.7 W/SQ. FT.

LIGHTING SCHEDULE (SHOPS E-G)
 LAMP TYPE REQUIRED IN FIXTURE: FLUORESCENT
 BALLAST TYPE USED IN FIXTURE: ELECTRONIC
 NUMBER OF LAMPS IN FIXTURE: 4
 NUMBER OF BALLASTS IN FIXTURE: 4
 TOTAL WATTAGE PER FIXTURE: 128
 TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED: 0.88 W/SQ. FT. VS. 1.7 W/SQ. FT.

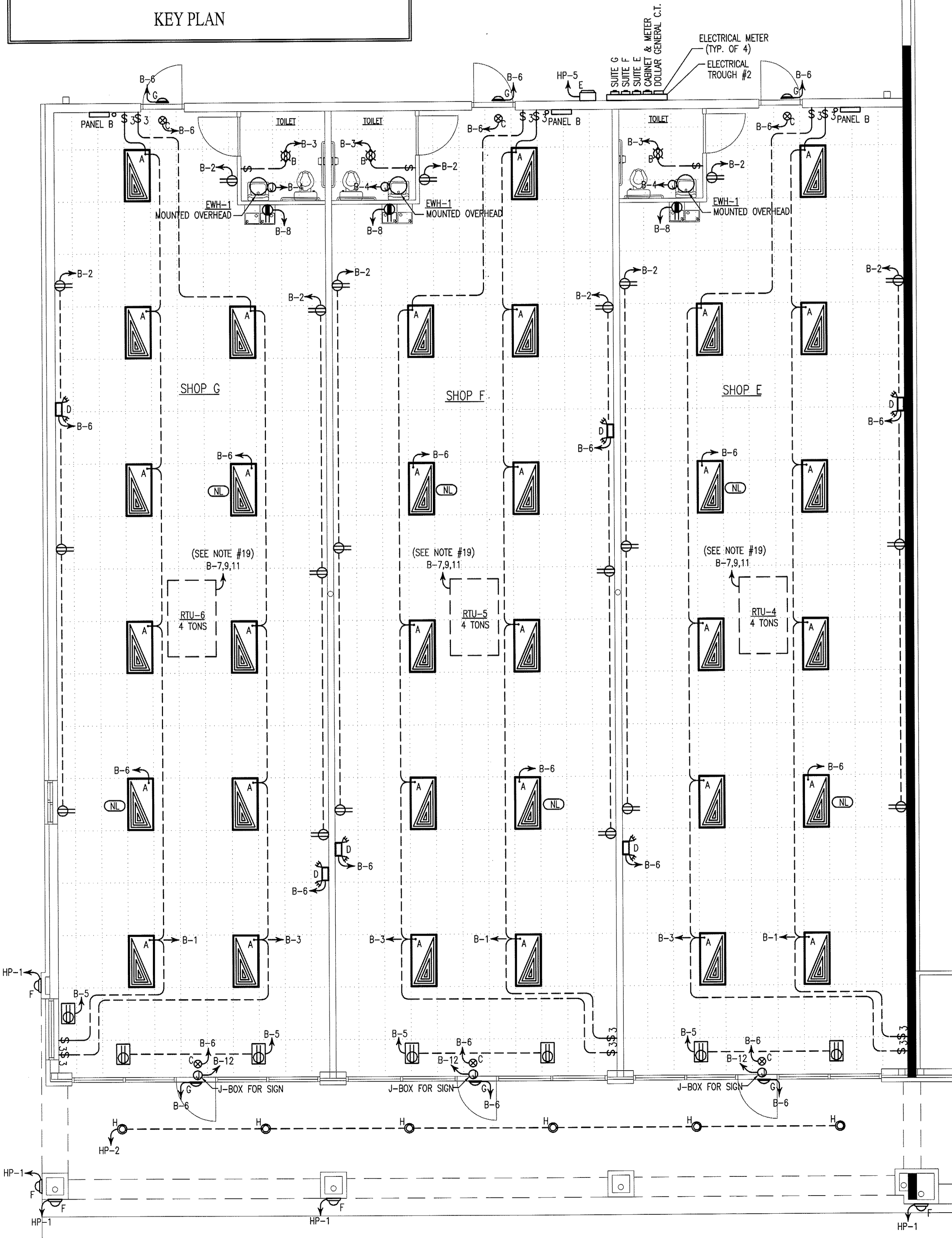
EQUIPMENT SCHEDULES WITH MOTORS (NOT USED FOR MECHANICAL SYSTEMS)
 MOTOR HORSEPOWER: N/A
 NUMBER OF PHASES: 3
 MINIMUM EFFICIENCY: 88%
 MOTOR TYPE: HP
 # OF POLES: 4

DESIGNER STATEMENT:
 TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE ELECTRICAL SYSTEM AND EQUIPMENT REQUIREMENTS OF NORTH CAROLINA STATE BUILDING CODE.

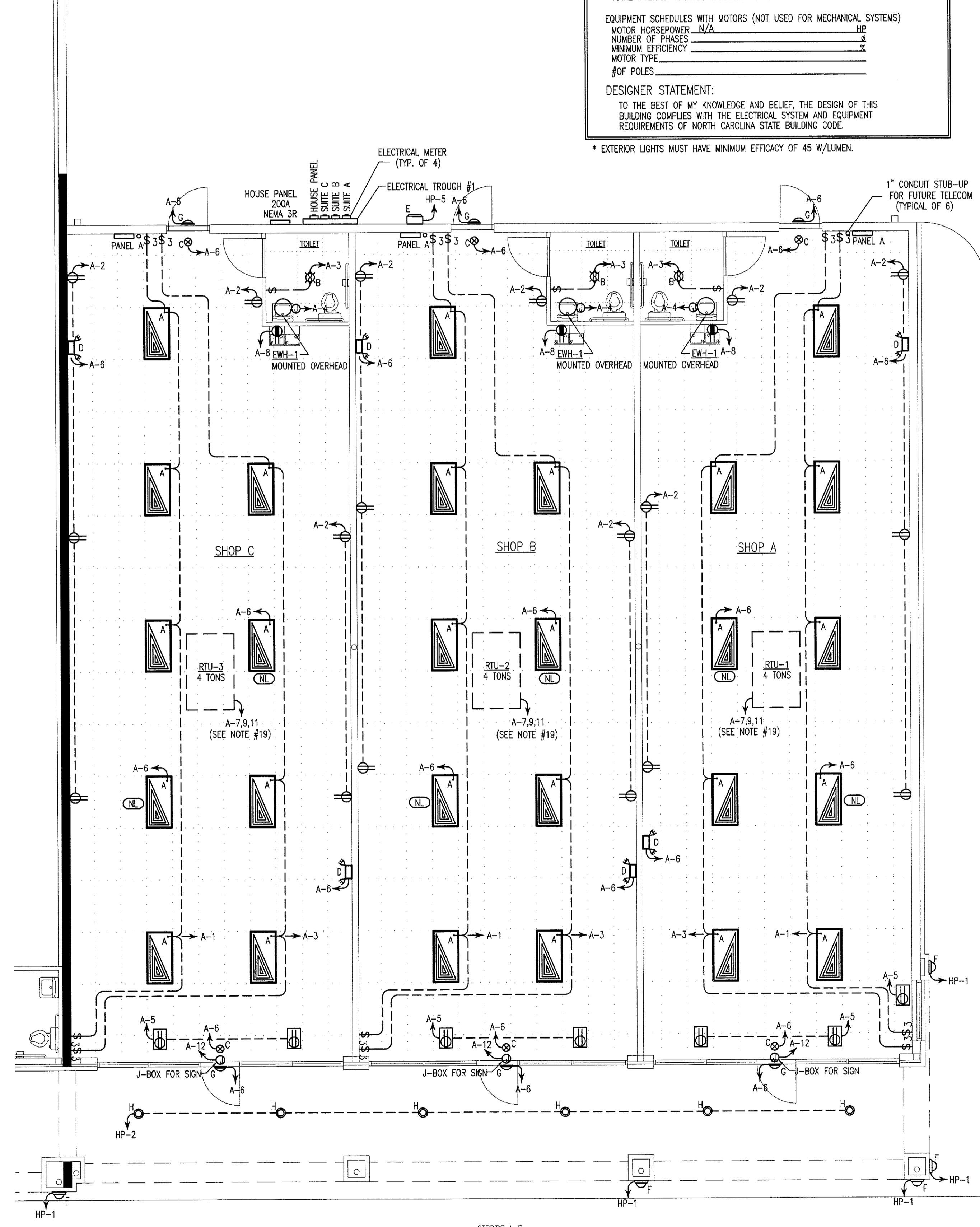
* EXTERIOR LIGHTS MUST HAVE MINIMUM EFFICACY OF 45 W/LUMEN.

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SHOPS E-G
ELECTRICAL PLAN
 2
 E-1 SCALE: 3/16"=1'-0"



SHOPS A-C
ELECTRICAL PLAN
 1
 E-1 SCALE: 3/16"=1'-0"

SOUTHRIDGE MARKET
 5416 ROCK QUARRY ROAD
 RALEIGH, NORTH CAROLINA
 ASHLAND CONSTRUCTION COMPANY

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ACE Job # 9078
 project 1082100
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content
 RETAIL SHOPS
 ELECTRICAL
 PLAN

FOR CONSTRUCTION
 sheet

E-1
 1 of 3

AIC = 10,000 VA. (SEE NOTE #1) 208/120V, 3 ϕ , 4W										PANEL A (TYPICAL FOR SUITES A-C)			200A M.L.O. 200A BUS			
POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND	SERVES	LOAD VA			POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND	SERVES
							A#	B#	C#							
1	1	20	1	12	1/2"	LIGHTING	512	384	2,000	2	2	20	1	12	1/2"	RECEPTACLES
3	3	20	1	12	1/2"	LIGHTING	512	384	2,000	4	4	30	1	10	1/2"	WATER HEATER
5	5	20	1	12	1/2"	STORE FRONT RECEPTACLES	360	316		6	6	20	1	12	1/2"	EMERGENCY/NIGHT LIGHTS
7	7	60	3	4	-1/4"	HVAC	7,061	540		8	8	20	1	12	1/2"	EWG
9	9	-	-	-	-	-	7,061	540		10	10	-	-	-	-	-
11	11	-	-	-	-	-	7,061	540		12	12	20	1	12	1/2"	SIGN
13	13	-	-	-	-	-	7,061	540		14	14	-	-	-	-	-
15	15	-	-	-	-	-	7,061	540		16	16	-	-	-	-	-
17	17	-	-	-	-	-	7,061	540		18	18	-	-	-	-	-
19	19	-	-	-	-	-	7,061	540		20	20	-	-	-	-	-
21	21	-	-	-	-	-	7,061	540		22	22	-	-	-	-	-
23	23	-	-	-	-	-	7,061	540		24	24	-	-	-	-	-
25	25	-	-	-	-	-	7,061	540		26	26	-	-	-	-	-
27	27	-	-	-	-	-	7,061	540		28	28	-	-	-	-	-
29	29	-	-	-	-	-	7,061	540		30	30	-	-	-	-	-
31	31	-	-	-	-	-	7,061	540		32	32	-	-	-	-	-
33	33	-	-	-	-	-	7,061	540		34	34	-	-	-	-	-
35	35	-	-	-	-	-	7,061	540		36	36	-	-	-	-	-
37	37	-	-	-	-	-	7,061	540		38	38	-	-	-	-	-
39	39	-	-	-	-	-	7,061	540		40	40	-	-	-	-	-
41	41	-	-	-	-	-	7,061	540		42	42	-	-	-	-	-
CONNECTED V.A. PER PHASE							9,193	9,445	8,937							
TOTAL AMPERES PER PHASE							77	79	74							

☒ - DENOTES BREAKER LOCK-OUT

AIC = 10,000 VA. (SEE NOTE #1) 208/120V, 3 ϕ , 4W										PANEL B (TYPICAL FOR SUITES E-G)			200A M.L.O. 200A BUS			
POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND	SERVES	LOAD VA			POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND	SERVES
							A#	B#	C#							
1	1	20	1	12	1/2"	LIGHTING	640	1,260		2	2	20	1	12	1/2"	RECEPTACLES
3	3	20	1	12	1/2"	LIGHTING	640	1,260		4	4	30	1	10	1/2"	WATER HEATER
5	5	20	1	12	1/2"	STORE FRONT RECEPTACLES	512	2,000		6	6	20	1	12	1/2"	EMERGENCY/NIGHT LIGHTS
7	7	60	3	4	-1/4"	HVAC	360	316		8	8	20	1	12	1/2"	EWG
9	9	-	-	-	-	-	7,061	540		10	10	-	-	-	-	-
11	11	-	-	-	-	-	7,061	540		12	12	20	1	12	1/2"	SIGN
13	13	-	-	-	-	-	7,061	540		14	14	-	-	-	-	-
15	15	-	-	-	-	-	7,061	540		16	16	-	-	-	-	-
17	17	-	-	-	-	-	7,061	540		18	18	-	-	-	-	-
19	19	-	-	-	-	-	7,061	540		20	20	-	-	-	-	-
21	21	-	-	-	-	-	7,061	540		22	22	-	-	-	-	-
23	23	-	-	-	-	-	7,061	540		24	24	-	-	-	-	-
25	25	-	-	-	-	-	7,061	540		26	26	-	-	-	-	-
27	27	-	-	-	-	-	7,061	540		28	28	-	-	-	-	-
29	29	-	-	-	-	-	7,061	540		30	30	-	-	-	-	-
31	31	-	-	-	-	-	7,061	540		32	32	-	-	-	-	-
33	33	-	-	-	-	-	7,061	540		34	34	-	-	-	-	-
35	35	-	-	-	-	-	7,061	540		36	36	-	-	-	-	-
37	37	-	-	-	-	-	7,061	540		38	38	-	-	-	-	-
39	39	-	-	-	-	-	7,061	540		40	40	-	-	-	-	-
41	41	-	-	-	-	-	7,061	540		42	42	-	-	-	-	-
CONNECTED V.A. PER PHASE							9,501	9,573	8,937							
TOTAL AMPERES PER PHASE							79	80	74							

☒ - DENOTES BREAKER LOCK-OUT

AIC = 10,000 VA. (SEE NOTE #1) 208/120V, 3 ϕ , 4W										HOUSE PANEL NEMA 3R			200A M.L.O. 200A BUS			
POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND	SERVES	LOAD VA			POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND	SERVES
							A#	B#	C#							
1	1	20	1	12	1/2"	EXTERIOR LIGHTING	520	714		2	2	-	-	-	-	-
3	3	20	1	12	1/2"	EXTERIOR LIGHTING	520	714		4	4	-	-	-	-	-
5	5	20	1	12	1/2"	EXTERIOR LIGHTING	520	714		6	6	-	-	-	-	-
7	7	-	-	-	-	-	520	714		8	8	-	-	-	-	-
9	9	-	-	-	-	-	520	714		10	10	-	-	-	-	-
11	11	-	-	-	-	-	520	714		12	12	-	-	-	-	-
13	13	-	-	-	-	-	520	714		14	14	-	-	-	-	-
15	15	-	-	-	-	-	520	714		16	16	-	-	-	-	-
17	17	-	-	-	-	-	520	714		18	18	-	-	-	-	-
19	19	-	-	-	-	-	520	714		20	20	-	-	-	-	-
CONNECTED V.A. PER PHASE							520	714	1,200							
TOTAL AMPERES PER PHASE							4	6	10							

LOAD CALCULATION SUMMARY (PANEL HP)

ITEM	TOTAL VA	(X) D.F.	VA
LIGHTS	2,434	125 (%)	3,043
TOTAL	2,434	-	3,043
TOTAL AMPS = $VA / (208 \times \sqrt{3}) = 8$			

ELECTRICAL NOTES:

- THE AIC RATINGS ARE BASED ON PRELIMINARY UTILITY INFORMATION AND CERTAIN ASSUMPTIONS. IF THE TRANSFORMERS ARE LOCATED CLOSER THAN 50' TO THE METER THROUGH, THE FAULT CURRENT AT THE TRANSFORMER IS GREATER THAN 41,000A, AND/OR THE TRANSFORMER IS LARGER THAN 250 KVA, THE ELECTRICAL CONTRACTOR IS TO CONTACT THE ENGINEER TO RECALCULATE THE AIC RATINGS PRIOR TO ORDERING ELECTRICAL PANELS.
- FUSES IN SERVICE DISCONNECTS SHALL BE CURRENT LIMITING TYPE.
- COORDINATE ALL HVAC WIRING WITH MECHANICAL CONTRACTOR.
- EMERGENCY LIGHTING AND EXIT SIGNS TO BE CONNECTED AHEAD OF ANY SWITCHING.
- WIRE TO BE TYPE THWN (EXTERIOR) AND TYPE THHN (INTERIOR) OR APPROVED EQUAL.
- COORDINATE LOCATION OF ALL DEVICES AND MOUNTING HEIGHTS OF RECEPTACLES WITH OWNER.
- ALL ELECTRICAL COMPONENTS ARE TO BE UL LISTED.
- ANY FIRE RATED ASSEMBLY PENETRATIONS ARE TO BE PER CODE. CONTRACTOR SHOULD REVIEW ALL FIRE RATING PENETRATIONS.
- OUTLET BOXES ON OPPOSITE SIDES OF A FIRE RATED WALL SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24". WHERE THIS PROVISION CANNOT BE MET, THE OUTLET BOX SHOULD BE ENCASED WITH FIRE-RATED GYPSUM BOARD OR EQUIPPED WITH APPROVED INTUMESCENT PUDDY PADS.
- LOW VOLTAGE CABLE, SUCH AS COMMUNICATION AND SIGNAL WIRE, SHALL BE PLENUM RATED AND SHALL BE LISTED AND LABELED AS SUCH.
- EQUIPMENT GROUND CONDUCTOR TO BE PROVIDED IN ACCORDANCE WITH NEC SECTION 250.
- ALL INTERIOR WIRING TO BE RUN IN EMT UNLESS OTHERWISE APPROVED BY ENGINEER. MC CABLE MAY BE USED FOR LIGHTING FIXTURE WHIPS AND WHERE CONCEALED AND APPROVED BY OWNER.
- BATHROOM EXHAUST FANS ARE TO BE FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR. FANS TO BE WIRED BY ELECTRICAL CONTRACTOR.
- ALL EXTERIOR LIGHTING TO BE WIRED THROUGH A LIGHTING CONTACTOR AND CONTROLLED BY A PHOTOCCELL AND TIMELOCK.
- THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CONDUIT AND EQUIPMENT WITH ALL OTHER TRADES PRIOR TO BEGINNING INSTALLATION TO AVOID CONFLICTS AND INTERFERENCE WITH OTHER TRADES.
- FINAL UTILITY CONNECTIONS (GAS, ELECTRIC, WATER, ETC.) TO EQUIPMENT SHALL BE MADE BY THE CONTRACTOR INSTALLING THE EQUIPMENT REQUIRING THE UTILITIES.
- ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. THERE IS NO INTENT TO INDICATE ALL FITTINGS REQUIRED. GENERALLY, CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO AND PLUMB WITH WALL CONSTRUCTION.
- REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONED LOCATIONS OF WALL AND PARTITIONS AND FOR PARTITION THICKNESS AND CONSTRUCTION MATERIALS.
- ROOF TOP UNITS ARE TO BE EQUIPPED WITH ON-BOARD BREAKER AND CONVENIENCE RECEPTACLES. COORDINATE WIRING REQUIREMENTS WITH MECHANICAL CONTRACTOR.
- ELECTRICAL POWER REQUIREMENTS FOR HVAC EQUIPMENT ARE BASED ON MANUFACTURER'S PUBLISHED DATA. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR AND/OR MECHANICAL CONTRACTOR TO CONFIRM ELECTRICAL REQUIREMENTS HAVE NOT CHANGED DUE TO EQUIPMENT SUBSTITUTIONS OR OTHER CHANGES PRIOR TO PROVIDING FINAL BID AND PRIOR TO PURCHASING PANELS.
- RECESSED ELECTRICAL BOXES INSTALLED IN FIRE RATED WALLS MUST HAVE FIRE RATING EQUAL TO THE WALL.
- EXTERIOR EMERGENCY LIGHTS WILL PROVIDE A MINIMUM OF 1 FC AT 10' FROM EXIT.

LOAD CALCULATION SUMMARY (PANEL A)

ITEM	TOTAL VA	(X) D.F.	VA
LIGHTS ***	4,155	125 (%)	5,194
RECEPTACLES	1,260	100 (%)	1,620
HVAC *	21,183	100 (%)	21,183
SHOW WINDOWS **	3,900	125 (%)	4,875
SIGN	1,200	125 (%)	1,500
WATER HEATER	2,000	125 (%)	2,500
TOTAL	33,697	-	33,872
TOTAL AMPS = $VA / (208 \times \sqrt{3}) = 102$			

- * NOTE: NAME PLATE RATING INCLUDES 125% DIVERSITY FACTOR.
- ** NOTE: SHOW WINDOWS ARE CALCULATED AT 200 WATTS PER LINEAR FOOT
- *** NOTE: LIGHTS ARE CALCULATED AT 3 WATTS PER SQ. FT. PER NEC TABLE 220.12

LOAD CALCULATION SUMMARY (PANEL B)

ITEM	TOTAL VA	(X) D.F.	VA
LIGHTS ***	4,806	125 (%)	6,008
RECEPTACLES	1,260	100 (%)	1,260
HVAC *	21,183	100 (%)	21,183
SHOW WINDOWS **	3,900	125 (%)	4,875
SIGN	1,200	125 (%)	1,500
WATER HEATER	2,000	125 (%)	2,500
TOTAL	34,349	-	37,326
TOTAL AMPS = $VA / (208 \times \sqrt{3}) = 104$			

- * NOTE: NAME PLATE RATING INCLUDES 125% DIVERSITY FACTOR.
- ** NOTE: SHOW WINDOWS ARE CALCULATED AT 200 WATTS PER LINEAR FOOT
- *** NOTE: LIGHTS ARE CALCULATED AT 3 WATTS PER SQ. FT. PER NEC TABLE 220.12

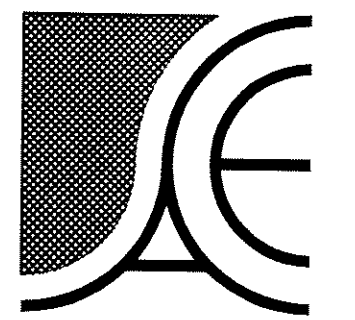
ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	120V DUPLEX RECEPTACLE
	JUNCTION BOX
	120V DUPLEX RECEPTACLE CEILING MOUNTED
	PANEL

LIGHTING LEGEND

MARK	SYMBOL	DESCRIPTION
A		2'x4' LAY-IN FLUORESCENT, 4-TUBE, WITH ACRYLIC LENS, T-8 LAMPS, ELECTRONIC BALLASTS, 128W
B		BATHROOM EXHAUST FAN/LIGHT COMBO SEE EXHAUST FAN SCHEDULE FOR SPECIFICATIONS
C		EXIT SIGN WITH BATTERY BACK-UP
D		EMERGENCY LIGHT WITH BATTERY BACK-UP
E		WALL PAK, METAL HALIDE, 1-LAMP, 400W WITH FULL CUT OFF VISOR
F		DECORATIVE EXTERIOR EMERGENCY LIGHT, TWO 6W XENON LAMPS, W/HIGH-TEMPERATURE NICKEL-CADMIUM BATTERY, LITHONIA #AFN-W-EXT
G		EXTERIOR NAUTICA TYPE LIGHT, WALL MOUNTED 2-LAMP, 52W, FLOURSCENT, TERON FRONTIER UL LISTED, WET LOCATION
H		RECESSED CAN LIGHT, COMPACT FLUORESCENT, RATED FOR DAMP LOCATIONS, 1-LAMP, 42W
---		DENOTES UNSWITCHED NIGHT LIGHT
---		SINGLE POLE WALL SWITCH
---		THREE WAY WALL SWITCH

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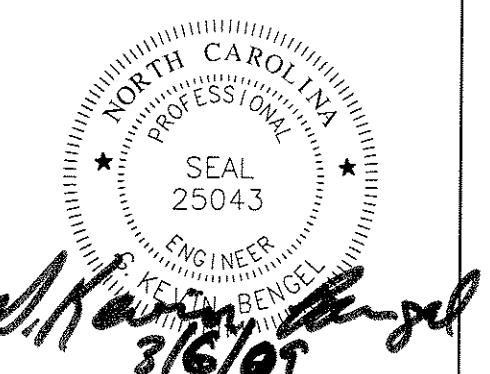


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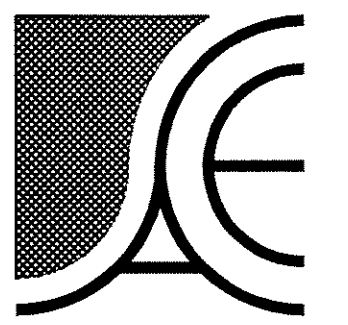
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SOUTHRIDGE MARKET
5416 ROCK QUARRY ROAD
RALEIGH, NORTH CAROLINA
ASHLAND CONSTRUCTION COMPANY

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ACE Job # 9018
project 1022100
dwg. by EDM
ckd. by



Alamance Consulting Engineers

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System No. C-AJ-1044
(Formerly System No. 319)
F Ratings-2, 3, and 4 Hr (See Items 2A and 4)
T Rating-0 Hr
L Rating At Ambient- 2 CFM/sq ft
L Rating at 400 F-Less Than 1 CFM/sq ft

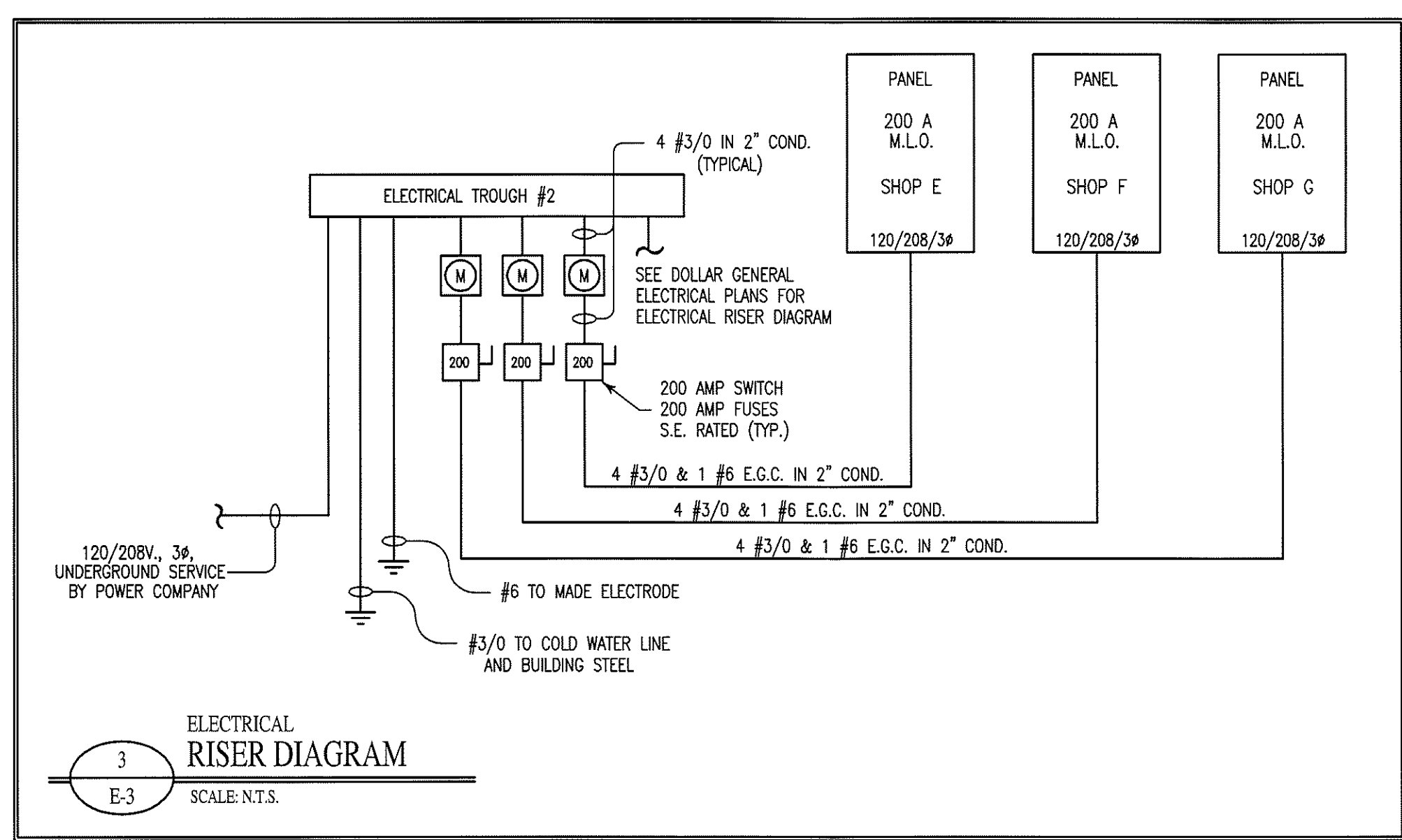
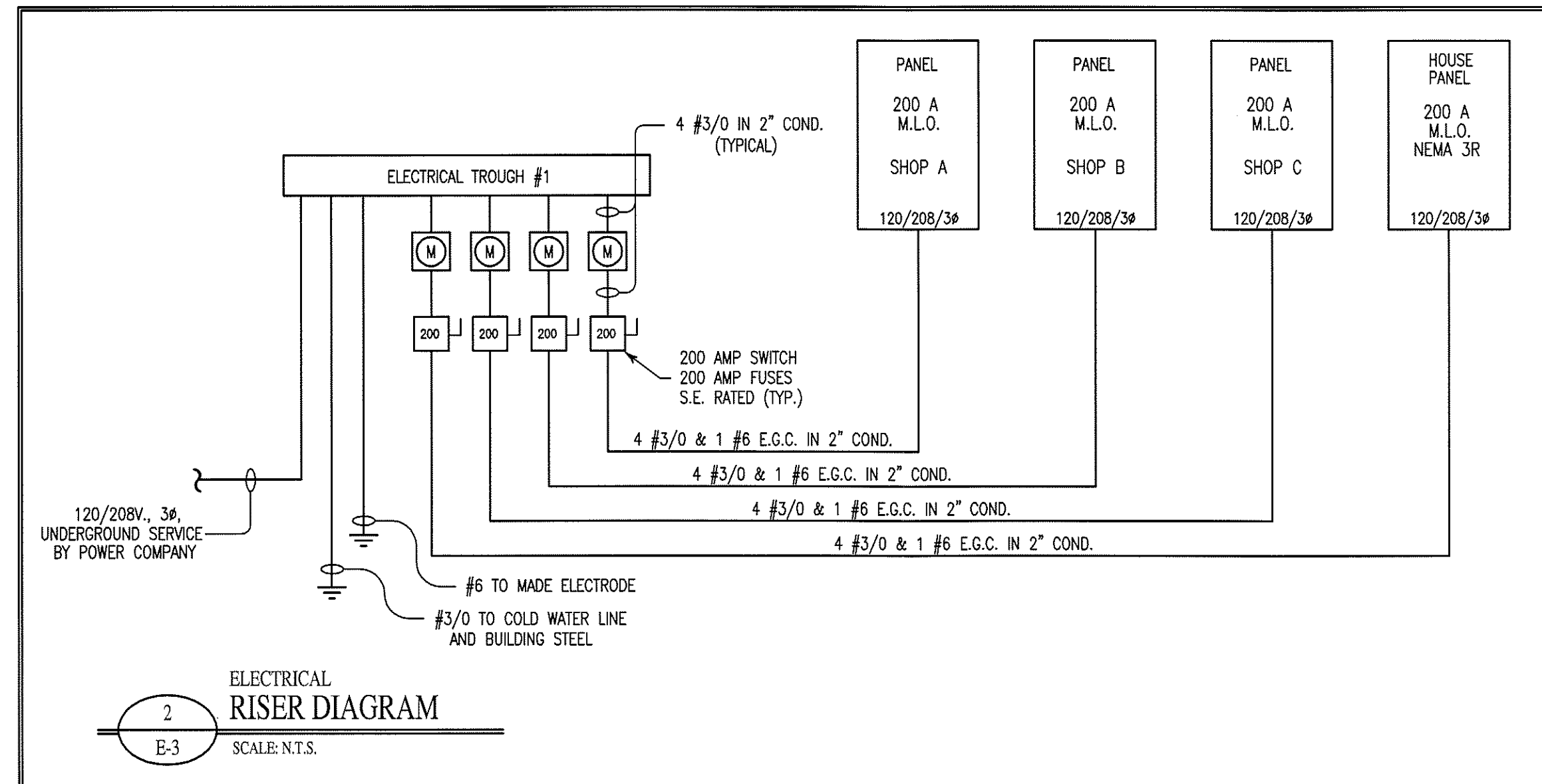
Section A-A

- Floor or Wall Assembly—Lightweight or normal weight (100–150pcf) concrete. Except as noted in table under item 4, min thickness of solid concrete floor or wall assembly is 4–1/2 in. Floor may also be constructed of any min 6 in. thick UL Classified hollow core Precast Concrete Units*. When floor is constructed of hollow core precast concrete units, packing material (item 3) and caulk fill material (item 4) to be installed symmetrically on both sides of floor, flush with floor surface. Wall assembly may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 32 in.
See Concrete Blocks (CAZT) and Precast Concrete Units (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
- Through Penetrants—One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in item 4. Min annular 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:
 - Steel Pipe—Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
 - Iron Pipe—Nom 30 in. diam (or smaller) cast or ductile iron pipe.
 - Conduit—Nom 6 in. diam (or smaller) rigid steel conduit.
 - Conduit—Nom 4 in. diam (or smaller) steel electrical metallic tubing.
 - Copper Tubing—Nom 6 in. diam (or smaller) Type L (or heavier) copper tube.
 - Copper Pipe—Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
- Packing Material—Polyethylene backer rod or nom 1 in. thickness of tightly-packed mineral wool batt or glass fiber 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 caulk fill material (item 4).
- Fill, Void or Cavity Material—Caulk—Applied to fill the annular space flush with top surface of floor. In wall assemblies, required caulk thickness to be installed symmetrically on both sides of wall, flush with wall surface. The hourly F Ratings and the min required caulk thicknesses are dependent upon a number of parameters, as shown in the following table:

Min Floor Or Wall Thkns, in	Nom Pipe Tube or Conduit Diam, in	Max Annular Space, in	Min Caulk Thkns, in	F Rating, Hr
2-1/2	1/2-12	1-3/8	1/2	2
2-1/2	1/2-12	3-1/4	1	2
4-1/2	1/2-6	1-3/8	1/4(a)	3
4-1/2	1/2-12	1-1/4	1/2	3
4-1/2	1/2-20	2	1	3
4-1/2	1/2-20	2	1	3
4-1/2	1/2-12	3-1/4	1	3
4-1/2	22-30	2	2	3
5-1/2	1/2-6	1-3/8	1(b)	4

 (a) Min 2 in. thickness of mineral wool batt insulation required in annular space.
 (b) Min 1 in. thickness of mineral wool batt insulation required in annular space on both sides of floor or wall assembly. Min 1 in. thickness of caulk to be installed flush with each surface of floor or wall assembly.
 Minnesota Mining & Manufacturing Co.—CP 25WB*
 *Bearing the UL Classification Marking

1 FIRE PENETRATION DETAIL
SCALE: N.T.S.



SOUTHRIDGE MARKET
5416 ROCK QUARRY ROAD
RALEIGH, NORTH CAROLINA
ASHLAND CONSTRUCTION COMPANY

issue date:
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ACE Job # 9018
project 1021.00
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RETAIL SHOPS
ELECTRICAL
DETAILS