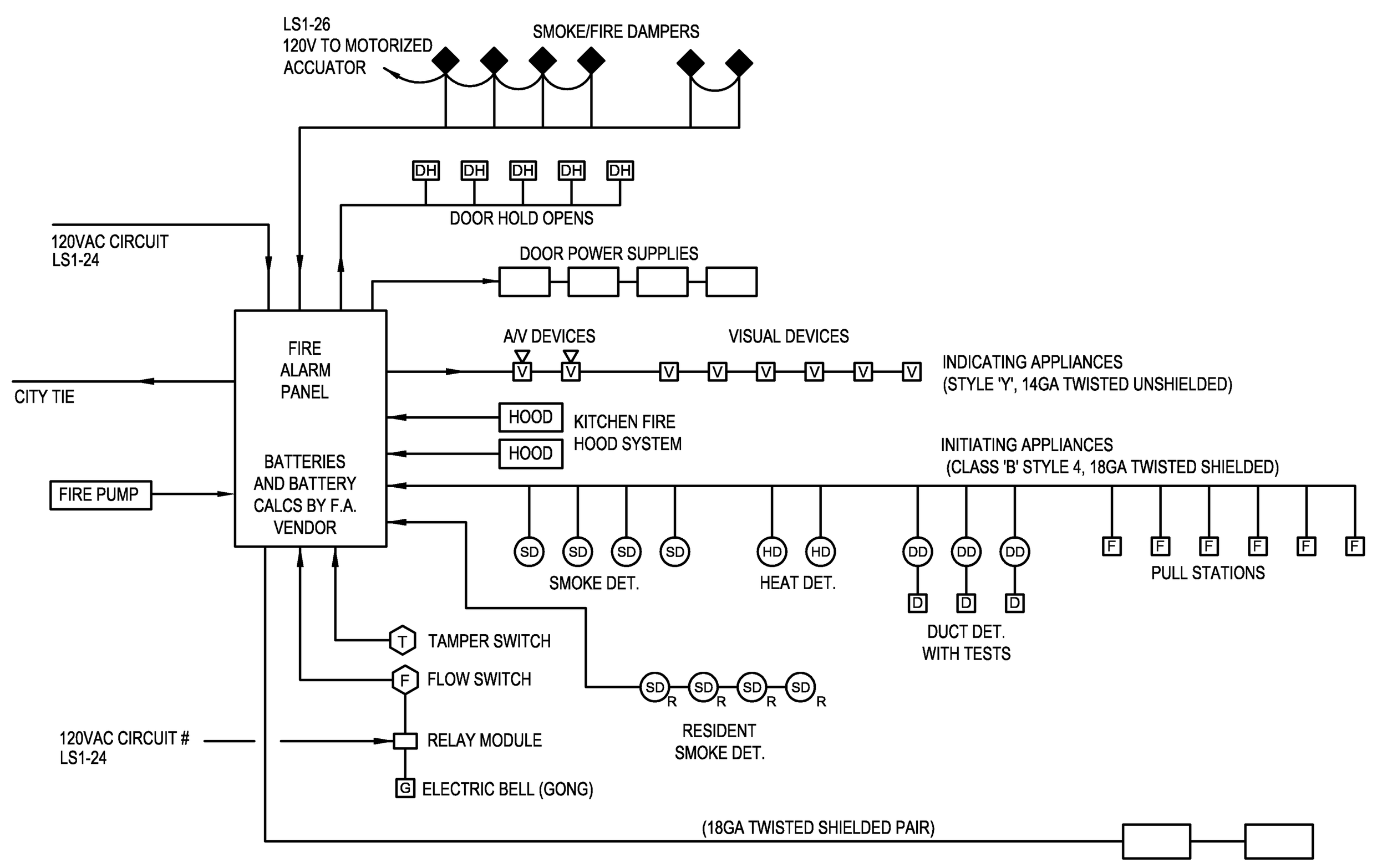
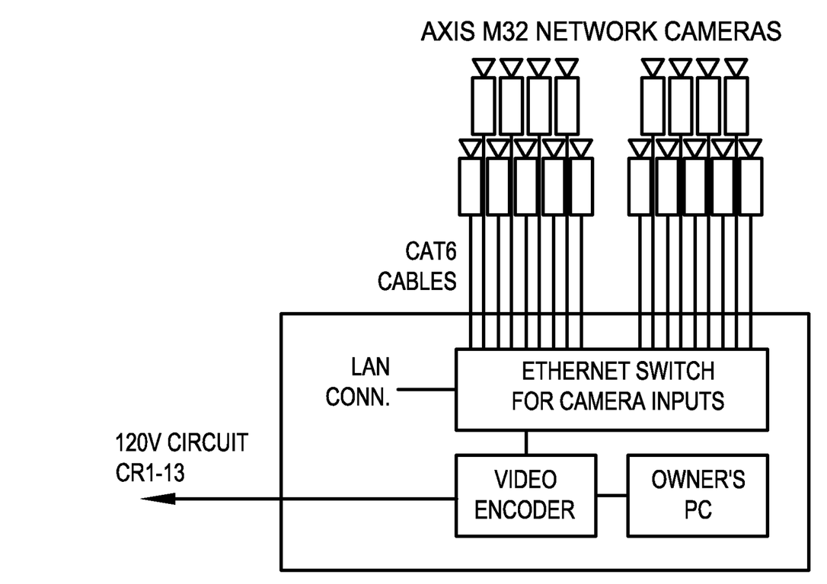


THIS CABLING AND DEVICE PLAN IS A "GENERIC" REPRESENTATION OF THE ACTUAL CABLING AND DEVICES REQUIRED. PLEASE COORDINATE ACTUAL CABLING REQUIREMENTS, EQUIPMENT TYPES AND QUANTITIES WITH FIRE ALARM VENDOR PRIOR TO ROUGH-IN. PROVIDE POWER SUPPLIES AND NAC EXTENDERS AS REQUIRED.

FIRE ALARM RISER DIAGRAM

SCALE: N.T.S.



1. E.C. TO PROVIDE ALL EQUIPMENT FOR A COMPLETE AND OPERATIONAL SYSTEM.
2. PROVIDE SURGE PROTECTION ON ALL DVRS, HEAD END EQUIPMENT AND CABLES.
3. PROVIDE VIEWING SOFTWARE FOR OWNER'S PC.
4. CONNECT TO OWNER'S LAN NETWORK.
5. SYSTEM AS MANUFACTURED BY AXIS COMMUNICATIONS. CAMERAS TO BE AXIS M32 NETWORK CAMERA SERIES.

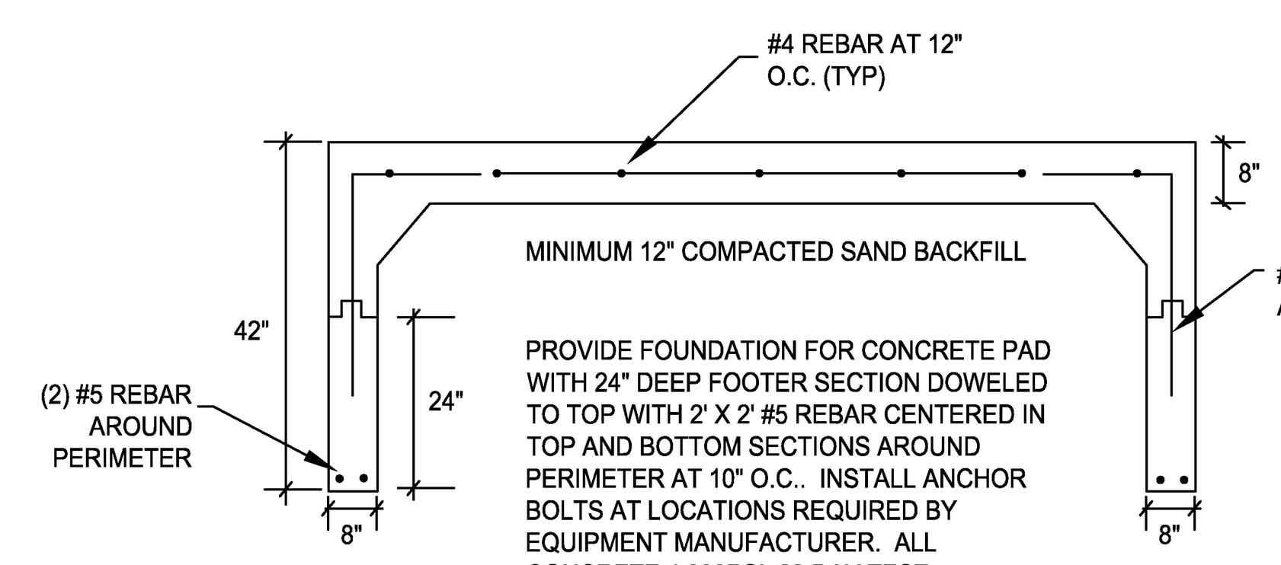
VIDEO SURVEILLANCE (CCTV) SYSTEM

Scale: None

MOUNTING HEIGHTS

SWITCHES	48"
RECEPTACLES - STANDARD	18"
RECEPTACLES - ABOVE COUNTERS	43"
RECEPTACLES - MECHANICAL ROOMS	48"
RECEPTACLES - PLANT AREAS & GARAGE	48"
RECEPTACLES - EXTERIOR	24" (ABOVE FINISH GRADE)
TELEVISION RECEPTACLE	90"
LOW VOLTAGE OUTLETS	SAME AS RECEPTACLES
DISCONNECT SWITCHES	60" (TO CENTER OF HANDLE)
MOTOR STARTERS	60" (TO CENTER OF HANDLE)
PANELS	72" TO 78" (TO TOP OF PANEL AS LONG AS BOTTOM IS AT LEAST 12" AFF)
FIRE ALARM PULL STATIONS	48" (TO TOP OF PULL HANDLE)
FIRE ALARM INDICATING DEVICES	6' 8" (TO BOTTOM OF DEVICE OR 6" FROM CEILING TO CENTER)
CONTROL BUTTONS - FINISHED AREAS	48"
CONTROL BUTTONS - UNFINISHED AREAS	60"
CARD READERS, ETC.	48"
WALL MOUNTED CLOCKS, SPEAKERS, EXIT SIGNS, EMERGENCY LIGHTING	90"
EXTERIOR BUILDING MOUNTED LIGHT FIXTURES	(SEE ARCHITECTURAL ELEVATIONS OR COORDINATE WITH ARCHITECTURAL FEATURES)

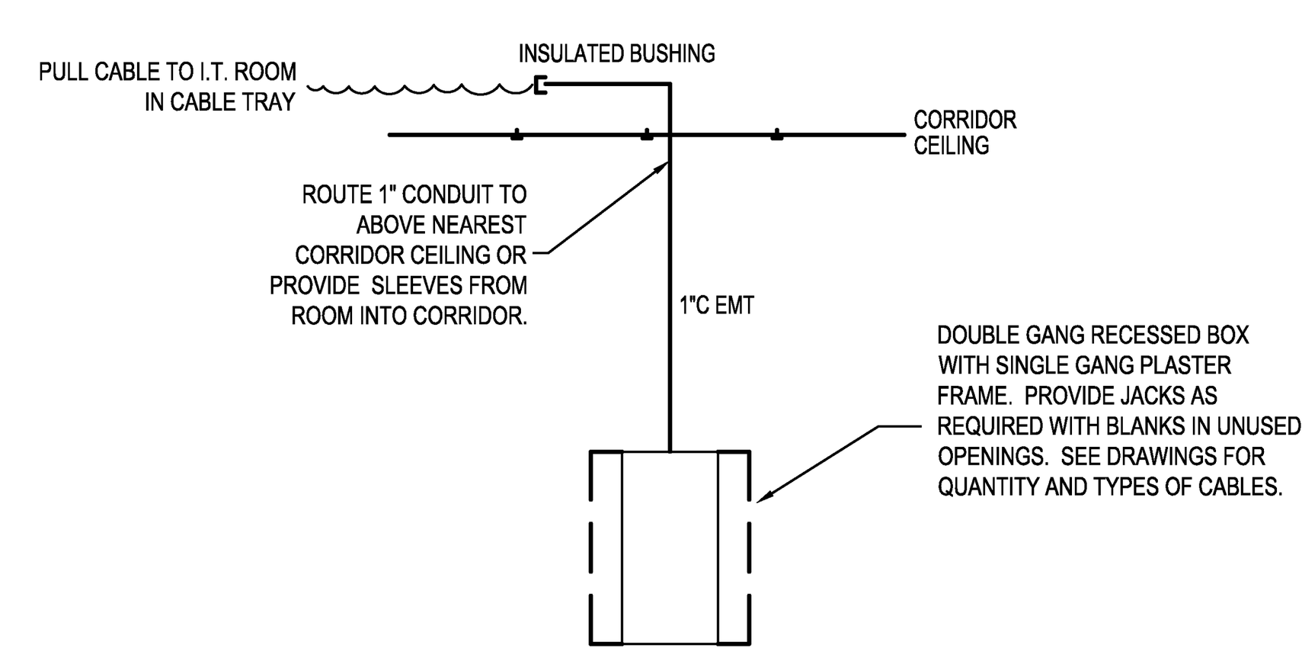
UNLESS NOTED OTHERWISE, MEASUREMENTS INDICATE TO CENTER OF BOX. IF DEVICE IS MARKED ON DRAWINGS DIFFERENTLY THAN THIS SCHEDULE, USE DRAWINGS AS A GUIDE. CERTAIN PROJECT CONDITIONS MAY WARRANT VARYING THE HEIGHTS. ELECTRICAL CONTRACTOR'S FIELD FOREMAN IS TO STUDY FINAL DOCUMENTS WITH SUBMITTALS FROM ALL TRADES BEFORE ROUGHING IN (IF POSSIBLE). REFER TO INTERIOR ELEVATIONS FOR HEIGHTS AND LOCATIONS OF EQUIPMENT AND FURNITURE.



PROVIDE FOUNDATION FOR CONCRETE PAD WITH 24" DEEP FOOTER SECTION DOWELED TO TOP WITH 2' X 2' #5 REBAR CENTERED IN TOP AND BOTTOM SECTIONS AROUND PERIMETER AT 10" O.C.. INSTALL ANCHOR BOLTS AT LOCATIONS REQUIRED BY EQUIPMENT MANUFACTURER. ALL CONCRETE 4,000PSI, 28 DAY TEST.

PAD SECTION A-A AND B-B

NO SCALE



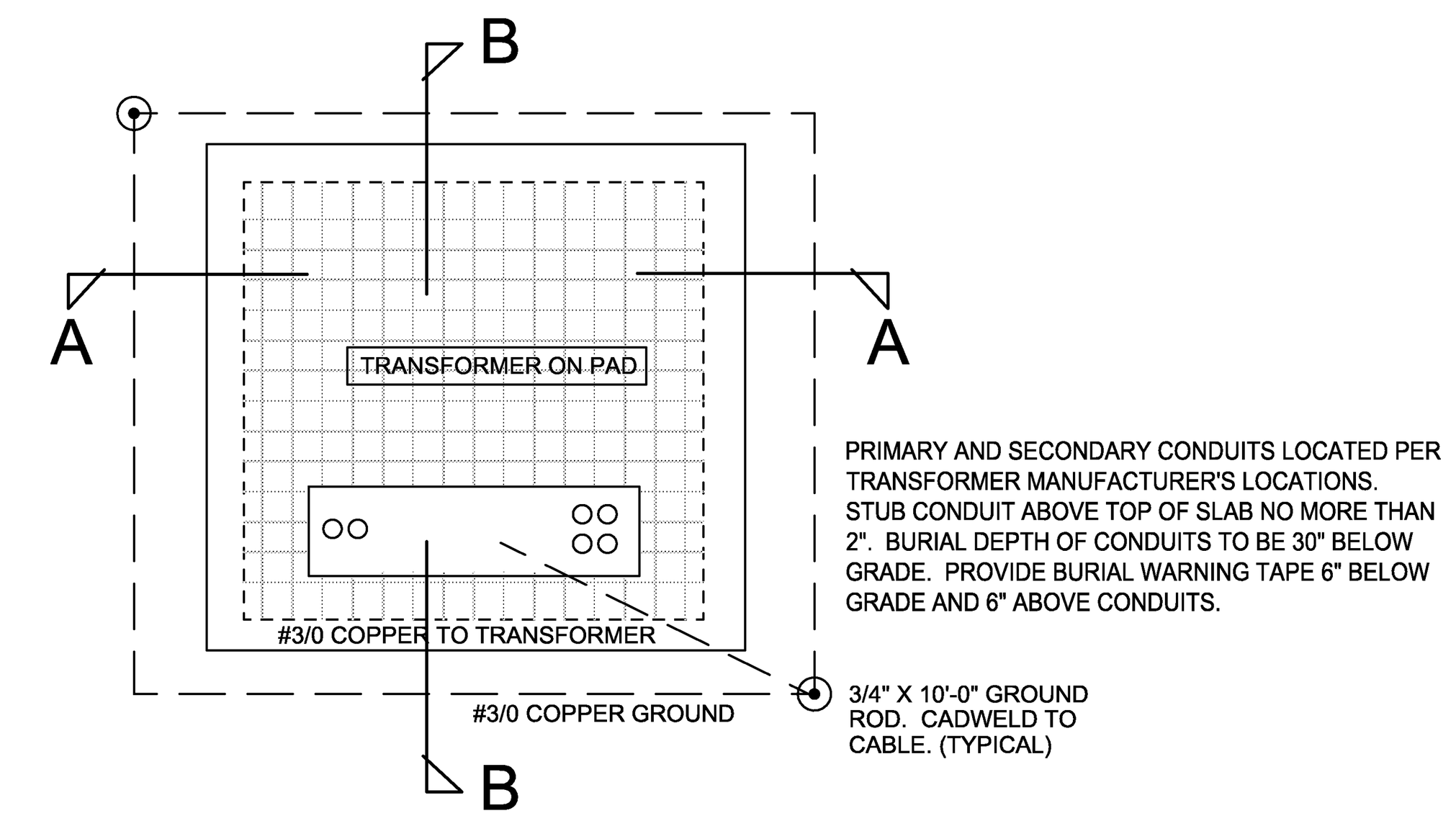
TYPICAL TEL/DATA/ CABLE TV OUTLET

Scale: None

PHONE/DATA/CABLE TV LEGEND

▲XY
TYPE OF CABLES
NUMBER OF EACH TYPE OF CABLES:

D = DATA (ETHERNET)
V = VOICE (TELEPHONE)
C = CABLE TV (COAX)

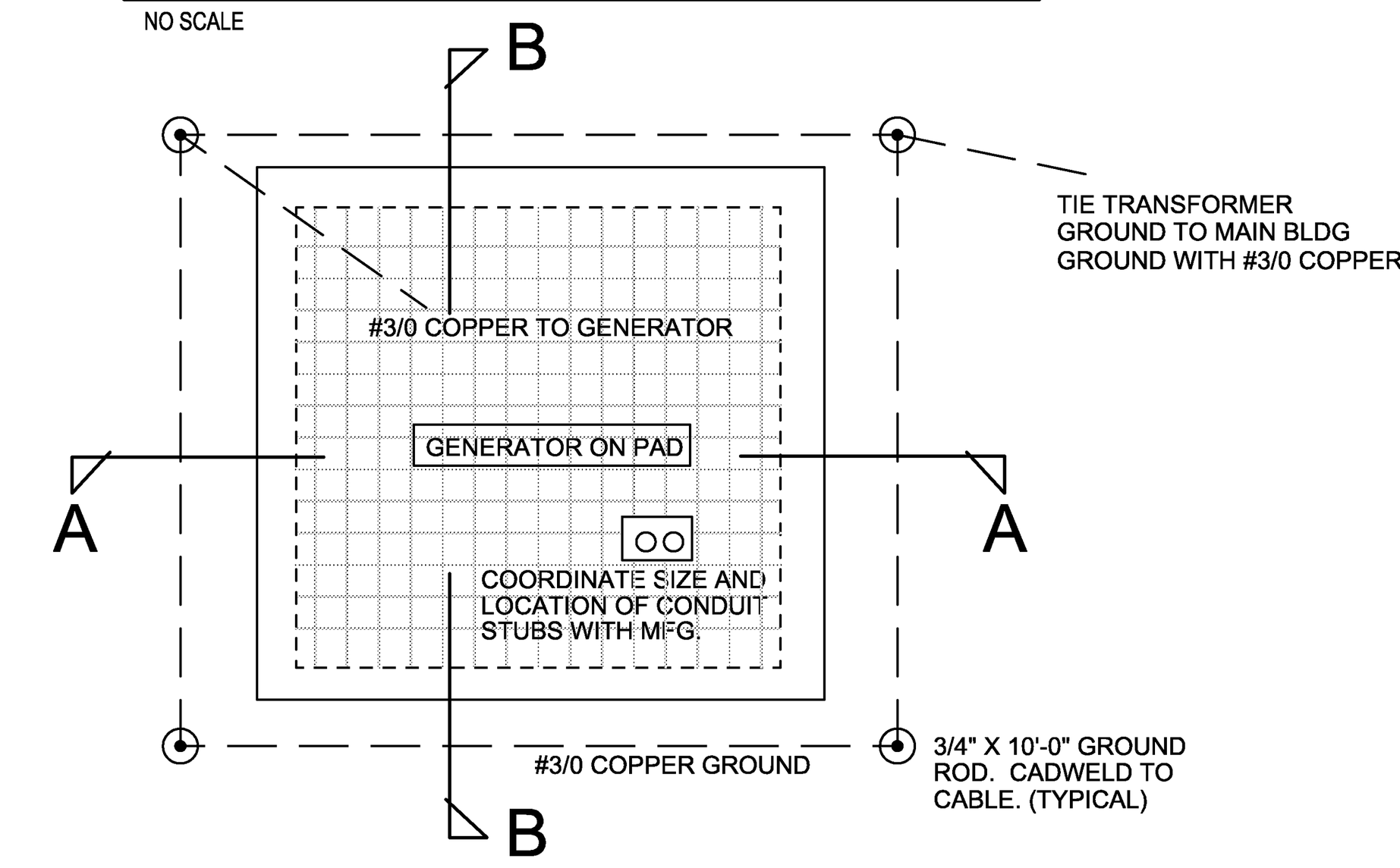


PRIMARY AND SECONDARY CONDUITS LOCATED PER TRANSFORMER MANUFACTURER'S LOCATIONS. STUB CONDUIT ABOVE TOP OF SLAB NO MORE THAN 2". BURIAL DEPTH OF CONDUITS TO BE 30" BELOW GRADE. PROVIDE BURIAL WARNING TAPE 6" BELOW GRADE AND 6" ABOVE CONDUITS.

CONCRETE PAD TO BE 4,000PSI CONCRETE 8" THICK. SIZE TO BE 6" LARGER THAN TRANSFORMER IN ALL DIMENSIONS. PROVIDE #3 REBAR ON 12" CENTERS IN BOTH DIRECTIONS. PAD TO BE 2" ABOVE GRADE WITH 1" X 1" X 45 DEGREE CHAMFER ON TOP EDGE ALL THE WAY AROUND. SET ON A MINIMUM OF 12" DEPTH OF CLEAN COMPACTED SAND.

TRANSFORMER PAD DETAIL

NO SCALE



CONCRETE PAD TO BE 4,000PSI CONCRETE 8" THICK. SIZE TO BE 12" LARGER THAN GENERATOR IN ALL DIMENSIONS. PROVIDE #4 REBAR ON 12" CENTERS IN BOTH DIRECTIONS. PAD TO BE 2" ABOVE GRADE WITH 1" X 1" X 45 DEGREE CHAMFER ON TOP EDGE ALL THE WAY AROUND. SET ON A MINIMUM OF 12" DEPTH OF CLEAN COMPACTED SAND.

GENERATOR PAD DETAIL

NO SCALE

GENERAL ELECTRICAL NOTES

1. PROVIDE COMPLETE AND ADEQUATE TEMPORARY POWER AND LIGHTS DURING CONSTRUCTION USING APPROVED LAMPHOLDERS AND GFCI CIRCUITING. MAINTAIN ALL LAMPS AS REQUIRED. REMOVE TEMPORARY INCLUDING TEMPORARY TO CONSTRUCTION MANAGER'S OFFICE TRAILERS AT PROJECT COMPLETION.
2. ELECTRICAL SERVICE COORDINATION WITH THE LOCAL UTILITY COMPANY IS TO BE BY THE ELECTRICAL CONTRACTOR. THIS INCLUDES, PERMITS, LOAD CALCULATION INFORMATION, RACEWAY, TRANSFORMER AND METER LOCATIONS AND REQUIREMENTS.
3. CUTTING AND PATCHING FOR ELECTRICAL ITEMS BY ELECTRICAL CONTRACTOR.
4. TRENCHING UNDER PAVED AREAS TO BE BACKFILLED WITH SAND AND COMPACTED.
5. AS-BUILT DRAWINGS WILL BE REQUIRED TO BE UPDATED ON A WEEKLY BASIS, AND WILL BE CHECKED BY THE PROJECT MANAGER AND ENGINEER. THESE AS-BUILTS WILL BE EXPECTED TO BE IN A LEGIBLE AND NEAT FORM.
6. ALL WIRING TO BE COPPER. ALL WIRING ABOVE 50 VOLTS TO BE IN CONDUIT UNLESS NOTED OTHERWISE. PROPER WIRE TYPE AND SIZE AND CONDUIT SIZE IS REQUIRED FOR BRANCH CIRCUITS. AC/MC CABLE IS ACCEPTABLE IN WALLS FOR BRANCH CIRCUITS. BRANCH CIRCUITS ABOVE CEILINGS, ALL FEEDERS, HOME RUNS AND EXPOSED CONDUIT TO BE IN HARD PIPE.
7. MAKE SURE THAT EXPOSED CABLE IS RATED FOR THE ENVIRONMENT THAT IT IS IN.
8. PROVIDE TYPEWRITTEN DIRECTORIES ON ALL PANELS. LABEL ALL DISCONNECTS AND PANELS.
9. PROVIDE THREE (4) EMPTY 1" CONDUITS FROM EACH NEW FLUSH PANEL TO CEILING SPACE.
10. EXPOSED CABLE AND CONDUIT TO RUN PARALLEL WITH STRUCTURE AND SECURELY ATTACHED TO BUILDING STEEL.
11. FURNISH 10% SPARE FUSES OF EACH SIZE AND TYPE USED. MINIMUM OF THREE (3).
12. STUB ALL LOW VOLTAGE CONDUIT TO ACCESSIBLE CEILING LOCATION. IF REQUIRED, PROVIDE STUBS THROUGH WALLS TO GET WIRING INTO CORRIDORS AND INTO I.T. ROOMS.
13. ELECTRICAL CONTRACTOR TO PROVIDE SUBMITTALS PRIOR TO ORDERING EQUIPMENT FOR LIGHTING, SWITCHGEAR, SPECIAL EQUIPMENT, ETC.
14. UNLESS NOTED OTHERWISE, ALL DEVICE ELEVATIONS REFER TO CENTER OF OUTLET BOX. ELECTRICAL CONTRACTOR SHALL VERIFY ALL OUTLET LOCATIONS WITH OTHER TRADES. MINIMUM OF 18" ABOVE FINISHED FLOOR TO MEET BARRIER FREE REQUIREMENTS.
15. SHARING NEUTRALS BETWEEN CIRCUITS IS NOT PERMITTED.
16. LOW VOLTAGE TEMPERATURE CONTROL BY OTHERS.
17. REFER TO MECHANICAL DRAWINGS FOR ELECTRICAL DATA PERTAINING TO ALL MECHANICAL EQUIPMENT. VERIFY ACTUAL REQUIREMENTS WITH EQUIPMENT ORDERED AND MAKE ADJUSTMENTS ACCORDINGLY. LOCATIONS SHOWN ARE APPROXIMATE. FIELD VERIFY.
18. ELECTRICAL CONTRACTOR SHALL REFER TO ALL MECHANICAL DIVISION SPECIFICATIONS, HVAC PLANS AND PLUMBING PLANS FOR ADDITIONAL ELECTRICAL WORK AND REQUIREMENTS.
19. PROVIDE A DUCT DETECTOR FOR THE RETURN AND SUPPLY OF AIR HANDLING UNITS. CONNECT TO SHUT DOWN THE UNIT UPON ALARM. INSTALLATION MUST COMPLY WITH N.F.P.A. -90A.
20. FIRE ALARM SYSTEM TO BE INSTALLED BY QUALIFIED INSTALLER. ALL NECESSARY CERTIFICATIONS TO BE TAKEN CARE OF BY ELECTRICAL CONTRACTOR. MATCH EXISTING.
21. PROVIDE A CONNECTION FOR ALL GARBAGE DISPOSALS. DISHWASHERS AND SIMILAR EQUIPMENT IN KITCHEN.
22. ALL EMERGENCY SYSTEM WIRING SHALL BE IN A SEPARATE RACEWAY IN ACCORDANCE WITH ARTICLE 700 OF N.E.C.
23. WIRING IN AREA SEPARATION WALLS TO COMPLY WITH ARTICLE 300-22 OF THE N.E.C.
24. PROVIDE FIRESTOPPING AT ALL REQUIRED PENETRATIONS.
25. BACK-TO-BACK OUTLETS CANNOT BE IN THE SAME STUD CAVITY IN RATED WALLS. 8" MINIMUM SPACING REQUIRED.
26. SLEEVE ELECTRICAL PENETRATIONS FROM FERROUS SLEEVES AND ALL AREA SEPARATION WALLS.
27. AN ELECTRICAL PERMIT SHALL BE ACQUIRED BY A STATE LICENSED ELECTRICAL CONTRACTOR.
28. PROVIDE GROUNDING AS PER N.E.C. SECTION 250.
29. ALL ELECTRICAL WORK IS SUBJECT TO FIELD REVIEW BY THE ELECTRICAL INSPECTOR AND THE PROJECT ENGINEER.
30. PROVIDE PROPER WORKING CLEARANCES AT ALL ELECTRICAL EQUIPMENT.
31. MAXIMUM OF SIX (6) DUPLEX OUTLETS PER 20 AMP CIRCUIT UNLESS NOTED OTHERWISE.
32. ALL WORK TO COMPLY WITH STATE AND LOCAL CODES.
33. DO NOT LAY WIRES, FLEX, ETC. ON CEILING TILE.
34. WHERE A FLOOR COVERING OR FINAL FLOOR FINISH IS OTHER THAN CARPET OR VINYL TILE, CONDUIT SHALL NOT BE RUN WITHIN CONCRETE SLABS. 1" OF CONCRETE OVER THE TOP OF CONDUITS AND SLABS MUST BE MAINTAINED. 1-1/2" OVER IS PREFERRED.
35. PROVIDE SEAL-OFFS WHEN PIPING PASSES THROUGH AREAS OF DIFFERENT AMBIENT TEMPERATURES AND/OR HAZARDOUS AREAS.
36. PROPER PROTECTION AGAINST CORROSION REQUIRED FOR ALL ELECTRICAL EQUIPMENT. IT SHALL BE SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE TO BE INSTALLED.
37. BRANCH CIRCUIT CONDUCTORS SUPPLYING A SINGLE MOTOR SHALL HAVE AN AMPACITY NOT LESS THAN 125% OF THE MOTOR FULL LOAD CURRENT RATING.
38. PROPER THERMAL OVERLOAD PROTECTION SHALL BE REQUIRED FOR ALL MOTORS.
39. DO NOT ROUGH IN ANY CIRCUITS UNTIL ALL MECHANICAL & OTHER EQUIPMENT SUBMITTALS ARE THOROUGHLY REVIEWED FOR CHANGES IN CIRCUIT SIZES. NOTIFY ENGINEER IF ANY DISCREPANCIES. E.C. WILL BE COMPENSATED ACCORDINGLY.
40. PROVIDE OPERATION AND MAINTENANCE MANUALS AT PROJECT COMPLETION.
41. PROVIDE NECESSARY TRAINING ON ELECTRICAL SYSTEMS TO OWNER.
42. PROPER TIME IS TO BE GIVEN TO PRE-CONSTRUCTION COORDINATION OF ALL OTHER SYSTEMS. ELECTRICAL CONTRACTOR TO VERIFY MOUNTING HEIGHTS OF DEVICES WITH FINAL FURNITURE AND CABINET PLANS. FLOOR OUTLETS TO BE FIELD VERIFIED FOR EXACT PLACEMENT.
43. FEEDERS ARE TO BE KEPT AWAY FROM RESIDENT ROOMS.
44. PROVIDE PROPER SEPARATION BETWEEN LOW VOLTAGE CONDUCTORS AND HIGHER VOLTAGE CONDUCTORS.
45. UNLESS NOTED OTHERWISE, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR CONCRETE PADS AND HOUSEKEEPING PADS. PROVIDE PROPER SLOPE FOR DRAINAGE. ALL OUTDOOR CONCRETE BASES AND PADS TO BE 4,000 PSI CONCRETE. ALL INDOOR HOUSEKEEPING PADS TO BE 3,000 PSI CONCRETE.
46. MAKE SURE THERE ARE RECEPTACLES WITHIN 25 FEET OF HVAC EQUIPMENT FOR SERVICEABILITY.
47. ALL TELE/DATA BACK BOARDS AND COMMUNICATION CLOSETS TO HAVE #6 GROUND WIRE TO SERVICE GROUND.
48. PROVIDE BLANK COVERPLATES FOR ALL UNUSED JUNCTION-BOXES AND BACK-BOXES AT JOB COMPLETION.
49. COORDINATE DOOR HARDWARE ROUGH-IN REQUIREMENTS WITH DOOR, HARDWARE AND SECURITY SUPPLIERS. PROVIDE BACKBOXES, CONDUIT, WIRING, ETC. FOR A COMPLETE SYSTEM.
50. E.C IS TO REVIEW ALL OTHER TRADES CONSTRUCTION DRAWINGS AND SHOP DRAWINGS FOR ANY ELECTRICAL ROUGH-IN REQUIREMENTS NOT SHOWN IN ELECTRICAL CONSTRUCTION DOCUMENTS. THIS INCLUDES, BUT IS NOT LIMITED TO, ARCHITECTURAL, INTERIOR DESIGN, MECHANICAL, PLUMBING, FOOD SERVICE, AUDIO/VISUAL, SECURITY, ACCESS CONTROL, INFORMATION TECHNOLOGY, FIRE ALARM, LANDSCAPING AND ANY OTHER SPECIALTY SYSTEM DOCUMENTS.
51. OWNER AND/OR OWNER'S REPRESENTATIVE IS RESPONSIBLE FOR CONTACTING AND COORDINATING SERVICES AND EQUIPMENT CONTRACTS FOR PHONE, INTERNET, CABLE TV, SECURITY, ACCESS CONTROL, PAGING, SOUND, ETC., ALONG WITH SERVICE ENTRANCE RACEWAY SIZES AND LOCATIONS. INTERIOR RACEWAYS AND BACK-BOXES FOR SUCH SYSTEMS WILL BE INSTALLED PER PART OF THE BASE CONTRACT DOCUMENTS BY THE ELECTRICAL CONTRACTOR. REFER TO TELE/DATA NOTES FOR CABLING, JACK AND CABLE TERMINATION REQUIREMENTS, IF ANY, AS PART OF THIS PROJECT'S CONTRACT.

KITCHEN EQUIPMENT SCHEDULE

ITEM TAG	ELECT. TAG	EQUIPMENT DESCRIPTION	VOLTAGE	AMPS	KW	H.W./ PLUG-IN	WIRE	BRKR	CKT	COMMENTS
	E1	CONVENIENCE OUTLET	120V, 1PH	20.0A	1.8KW	HARD WIRE	#12	20A, 1P	SEE PLANS	ROUGH-IN AT 50" AFF
	E2	CONVENIENCE OUTLET	120V, 1PH	20.0A	1.8KW	HARD WIRE	#12	20A, 1P	SEE PLANS	ROUGH-IN AT 14" AFF
1	E3	ICE AND WATER DISPENSER	120V, 1PH	14.0A	1.6KW	PLUG-IN	#12	20A, 1P	EM2-1	NEMA 5-20R AT 50" AFF
2	E4	JUICE DISPENSER	120V, 1PH	9.5A	1.1KW	PLUG-IN	#12	20A, 1P	EM2-2	NEMA 5-20R AT 50" AFF
5	E5	COFFEE BREWER	120V, 1PH	20.0A	1.8KW	PLUG-IN	#12	20A, 1P	EM2-3	NEMA 5-20R AT 50" AFF
7	E6	HOT WELLS	120V, 1PH	9.2A	1.1KW	HARD WIRE	#12	20A, 1P	EM2-4	STUB UP FROM BELOW INSIDE ISLAND
13	E7	UNDERCOUNTER WAREWASHER	208V, 3PH	29.5A	10.6KW	HARD WIRE	#8	40A, 3P	EM2-5,7,9	ELECTRICAL CONDUIT CONNECTION AT 14" AFF
14	E10	MIXER	120V, 1PH	2.9A	0.4KW	PLUG-IN	#12	20A, 1P	EM2-6	NEMA 5-20R AT 50" AFF
16	E11	FOOD PROCESSOR	120V, 1PH	7.0A	0.8KW	PLUG-IN	#12	20A, 1P	EM2-8	NEMA 5-20R AT 50" AFF
17	E16	EXHAUST HOOD	120V, 1PH	4.2A	0.5KW	HARD WIRE	#12	20A, 1P	EM2-10	DOWN FROM ABOVE TO HOOD LIGHTS SWITCH
21	E8/E9	FIRE SUPPRESSION SYSTEM	120V, 1PH	15A	1.8KW	HARD WIRE	#12	20A, 1P	EM2-11	DOWN FROM ABOVE TO J. BOX AND REMOTE PULL STATION
23	E12	MICROWAVE	120V, 1PH	16A	1.9KW	PLUG-IN	#12	20A, 1P	EM2-12	NEMA 5-20R AT 50" AFF
24	E13	TOASTER	120V, 1PH	15A	1.8KW	PLUG-IN	#12	20A, 1P	EM2-13	NEMA 5-20R AT 50" AFF
25	E14	REACH-IN REFRIGERATOR	120V, 1PH	7.3A	0.9KW	PLUG-IN	#12	20A, 1P	EM2-14	NEMA 5-20R AT 14" AFF
26	E15	REACH-IN FREEZER	120V, 1PH	7.2A	0.9KW	PLUG-IN	#12	20A, 1P	EM2-15	NEMA 5-20R AT 14" AFF
30	E20	ICE AND WATER DISPENSER	120V, 1PH	14.0A	1.6KW	PLUG-IN	#12	20A, 1P	EM3-1	NEMA 5-20R AT 50" AFF
31	E21	JUICE DISPENSER	120V, 1PH	9.5A	1.1KW	PLUG-IN	#12	20A, 1P	EM3-2	NEMA 5-20R AT 50" AFF
34	E22	COFFEE BREWER	120V, 1PH	20.0A	1.8KW	PLUG-IN	#12	20A, 1P	EM3-3	NEMA 5-20R AT 50" AFF
36	E23	HOT WELLS	120V, 1PH	9.2A	1.1KW	HARD WIRE	#12	20A, 1P	EM3-4	STUB UP FROM BELOW INSIDE ISLAND
43	E24	UNDERCOUNTER WAREWASHER	208V, 3PH	29.5A	10.6KW	HARD WIRE	#8	40A, 3P	EM3-5,7,9	ELECTRICAL CONDUIT CONNECTION AT 14" AFF
44	E27	MIXER	120V, 1PH	2.9A	0.4KW	PLUG-IN	#12	20A, 1P	EM3-6	NEMA 5-20R AT 50" AFF
46	E28	FOOD PROCESSOR	120V, 1PH	7.0A	0.8KW	PLUG-IN	#12	20A, 1P	EM3-8	NEMA 5-20R AT 50" AFF
47	E33	EXHAUST HOOD	120V, 1PH	4.2A	0.5KW	HARD WIRE	#12	20A, 1P	EM3-10	DOWN FROM ABOVE TO HOOD LIGHTS SWITCH
50	E18/E19	FIRE SUPPRESSION SYSTEM	120V, 1PH	15A	1.8KW	HARD WIRE	#12	20A, 1P	EM3-11	DOWN FROM ABOVE TO J. BOX AND REMOTE PULL STATION
53	E29	MICROWAVE	120V, 1PH	16A	1.9KW	PLUG-IN	#12	20A, 1P	EM3-12	NEMA 5-20R AT 50" AFF
54	E30	TOASTER	120V, 1PH	15A	1.8KW	PLUG-IN	#12	20A, 1P	EM3-13	NEMA 5-20R AT 50" AFF
55	E31	REACH-IN REFRIGERATOR	120V, 1PH	7.3A	0.9KW	PLUG-IN	#12	20A, 1P	EM3-14	NEMA 5-20R AT 14" AFF
56	E32	REACH-IN FREEZER	120V, 1PH	7.2A	0.9KW	PLUG-IN	#12	20A, 1P	EM3-15	NEMA 5-20R AT 14" AFF
59	E35	REACH-IN REFRIGERATOR	120V, 1PH	7.3A	0.9KW	PLUG-IN	#12	20A, 1P	EM1-1	NEMA 5-20R AT 14" AFF
60	E36	REACH-IN FREEZER	120V, 1PH	7.2A	0.9KW	PLUG-IN	#12	20A, 1P	EM1-2	NEMA 5-20R AT 14" AFF

REFERENCE KITCHEN CONSULTANT'S DRAWINGS FSE-3 AND PRODUCT CUT-SHEETS OF ABOVE EQUIPMENT FOR ALL INSTALLATION REQUIREMENTS. ROUGH-IN HEIGHTS AND ANCILLARY WIRING REQUIREMENTS.

E.C. TO INSTALL AND PROVIDE WIRING OF CONTROL PANELS, HOODS, FIRE SUPRESSION, CONTROL VALVES, ETC. AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. COORDINATE WITH FSES DRAWINGS.

MECHANICAL CONNECTION SCHEDULE

TAG	DESCRIPTION	VOLTAGE	PHASE	FLC AMPS	KW	HP	FUSE SIZE	SAFETY SWITCH	WIRE SIZE	CIRCUIT
CLR-1	CHILLER #1	208V	3PH	340.7 A	119.6 KW	N/A	N/A	600A, WP, NF	#250 kCMIL PARALLELED	500A, 3P, CB ESDP
AHU-1	AIR HANDLING UNIT #1	208V	3PH	48.0 A 11.0 A	16.6 KW 3.8 KW	15HP 3HP	90A 25A	VFD BY MFG VFD BY MFG	#1 AWG #8 AWG	100A, 3P, CB ESDP 30A, 3P, CB ESDP
AHU-2	AIR HANDLING UNIT #2	208V	3PH	48.0 A 11.0 A	16.6 KW 3.8 KW	15HP 3HP	90A 25A	VFD BY MFG VFD BY MFG	#1 AWG #8 AWG	100A, 3P, CB ESDP 30A, 3P, CB ESDP
B-1	BOILER #1	120V	1PH	20 A	1.2 KW	N/A	N/A	20A, 1P	#12 AWG	EM4-4 20A, 1P, CB
B-2	BOILER #2	120V	1PH	20 A	1.2 KW	N/A	N/A	20A, 1P	#12 AWG	EM4-5 20A, 1P, CB
WH-1	WATER HEATER #1	120V	1PH	15 A	1.0 KW	N/A	N/A	20A, 1P	#12 AWG	EM4-6 20A, 1P, CB
WH-2	WATER HEATER #2	120V	1PH	15 A	1.0 KW	N/A	N/A	20A, 1P	#12 AWG	EM4-7 20A, 1P, CB
CH-1	CABINET HEATER #1	120V	1PH	3.1 A	0.4 KW	1/5HP	N/A	ON UNIT	#12 AWG	EM1-12 20A, 1P, CB
CH-2	CABINET HEATER #2	120V	1PH	3.1 A	0.4 KW	1/5HP	N/A	ON UNIT	#12 AWG	EM2-16 20A, 1P, CB
CH-3	CABINET HEATER #3	120V	1PH	3.1 A	0.4 KW	1/5HP	N/A	ON UNIT	#12 AWG	EM2-16 20A, 1P, CB
EF-1	EXHAUST FAN #1	120V	1PH	3.1 A	0.4 KW	1/6 HP	N/A	SNAP SWITCH	#12 AWG	EM1-14 20A, 1P, CB
EF-2	EXHAUST FAN #2	120V	1PH	3.1 A	0.4 KW	1/6 HP	N/A	SNAP SWITCH	#12 AWG	EM1-14 20A, 1P, CB
EF-3	EXHAUST FAN #3	120V	1PH	3.1 A	0.4 KW	1/6 HP	N/A	SNAP SWITCH	#12 AWG	EM1-15 20A, 1P, CB
EF-4	EXHAUST FAN #4	120V	1PH	3.1 A	0.4 KW	1/6 HP	N/A	SNAP SWITCH	#12 AWG	EM1-15 20A, 1P, CB
EF-5	EXHAUST FAN #5	120V	1PH	3.1 A	0.4 KW	1/6 HP	N/A	SNAP SWITCH	#12 AWG	EM1-16 20A, 1P, CB
EF-6	EXHAUST FAN #6	120V	1PH	3.1 A	0.4 KW	1/6 HP	N/A	SNAP SWITCH	#12 AWG	EM1-16 20A, 1P, CB
EF-7	EXHAUST FAN #7	120V	1PH	9.8 A	1.2 KW	1/2 HP	N/A	FACTORY SWITCH	#12 AWG	EM1-17 20A, 1P, CB
EF-8	EXHAUST FAN #8	120V	1PH	9.8 A	1.2 KW	1/2 HP	N/A	FACTORY SWITCH	#12 AWG	EM1-18 20A, 1P, CB
EF-9	EXHAUST FAN #9	120V	1PH	3.1 A	0.4 KW	1/6 HP	N/A	SNAP SWITCH	#12 AWG	EM1-16 20A, 1P, CB
UH-1	UNIT HEATER #1	120V	1PH	1.0 A	0.1 KW	1/25 HP	N/A	SNAP SWITCH	#12 AWG	EM4-8 20A, 1P, CB
UH-2	UNIT HEATER #2	120V	1PH	1.0 A	0.1 KW	1/25 HP	N/A	SNAP SWITCH	#12 AWG	EM1-19 20A, 1P, CB
UH-3	UNIT HEATER #3	120V	1PH	1.0 A	0.1 KW	1/25 HP	N/A	SNAP SWITCH	#12 AWG	EM1-19 20A, 1P, CB
P-1	PUMP #1	208V	3PH	17.5 A	6.3 KW	5 HP	25 A	VFD BY E.C.	#10 AWG	EM4-9,11,13 30A, 3P, CB
P-2	PUMP #2	208V	3PH	17.5 A	6.3 KW	5 HP	25A	VFD BY E.C.	#10 AWG	EM4-10,12,14 30A, 3P, CB
P-3	PUMP #3	120V	1PH	7.2 A	0.9 KW	1/3 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-15 20A, 1P, CB
P-4	PUMP #4	208V	3PH	6.0 A	2.2 KW	1-1/2 HP	7-1/2 A	VFD BY E.C.	#12 AWG	EM4-16,18,20 20A, 3P, CB
P-5	PUMP #5	208V	3PH	6.0 A	2.2 KW	1-1/2 HP	7-1/2 A	VFD BY E.C.	#12 AWG	EM4-17,19,21 20A, 3P, CB
P-6	PUMP #6	120V	1PH	5.8 A	0.7 KW	1/4 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-22 20A, 1P, CB
P-7	PUMP #7	120V	1PH	5.8 A	0.7 KW	1/4 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-23 20A, 1P, CB
P-8	PUMP #8	208V	3PH	32 A	11.5 KW	10 HP	45 A	VFD BY E.C.	#6 AWG	EM4-24,26,28 50A, 3P, CB
P-9	PUMP #9	208V	3PH	32 A	11.5 KW	10 HP	45 A	VFD BY E.C.	#6 AWG	EM4-25,27,29 50A, 3P, CB
P-10	PUMP #10	120V	1PH	7.2 A	0.9 KW	1/3 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-30 20A, 1P, CB
P-11	PUMP #11	120V	1PH	5.8 A	0.7 KW	1/4 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-31 20A, 1P, CB
P-12	PUMP #12	120V	1PH	5.8 A	0.7 KW	1/4 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-32 20A, 1P, CB
P-13	PUMP #13	120V	1PH	2.1 A	0.3 KW	1/25 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-33 20A, 1P, CB
VAV-101 TO 105	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM2-17 20A, 1P, CB
VAV-106 TO 110	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM2-18 20A, 1P, CB
VAV-111 TO 115	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM2-19 20A, 1P, CB
VAV-116 TO 122	VARIABLE AIR VOLUME BOX	120V	1PH	7.0 A	0.8 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM2-20 20A, 1P, CB
VAV-201 TO 205	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM3-17 20A, 1P, CB
VAV-206 TO 210	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM3-18 20A, 1P, CB
VAV-211 TO 215	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM3-19 20A, 1P, CB
VAV-216 TO 221	VARIABLE AIR VOLUME BOX	120V	1PH	6.0 A	0.7 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM3-20 20A, 1P, CB
H-1	HUMIDIFIER #1	208V	3PH	83.3 A	30.0 KW	N/A	110A	200A, 3P	#1/0 AWG	MDP 125A, 3P, CB
H-2	HUMIDIFIER #2	208V	3PH	55.5 A	20.0 KW	N/A	70A	100A, 3P	#1 AWG	MDP 100A, 3P, CB
AC-1	SPLIT SYSTEM INDOOR UNIT	208V	1PH	1.0 A	0.2 KW	N/A	N/A	N/A	#10 AWG	EM1-20,22 30A, 2P, CB
ACCU-1	OUTDOOR SPLIT SYSTEM CONDENSOR	208V	1PH	14.4 A	3.0 KW	N/A	30A	30A, 3P	#10 AWG	EM1-20,22 30A, 2P, CB

VFD AND MANUAL MOTOR STARTERS TO BE CONTROLLED BY BUILDING MANAGEMENT SYSTEM. COORDINATE WITH M.C. TO VERIFY IF ANY CONTROL RELAYS, 4-20mASIGNALS OR DEVICES ARE REQUIRED TO OPERATE VFDS, PUMPS, VAV BOXES OR FANS.

PROVIDE 100VA, 120V TO 24V CONTROL TRANSFORMER ON EACH VAV BOX.

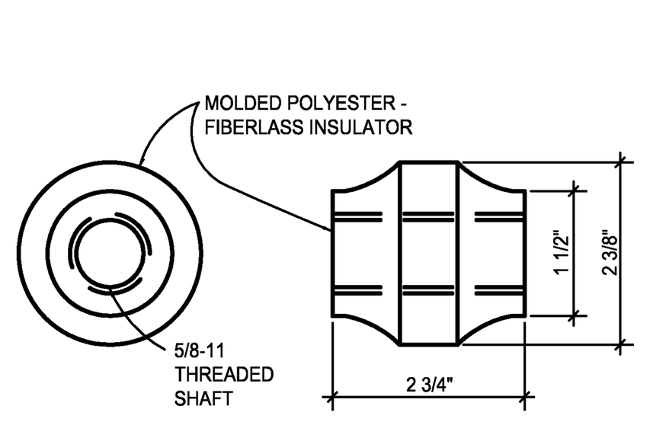
GENERAL GROUNDING BAR DETAIL NOTES

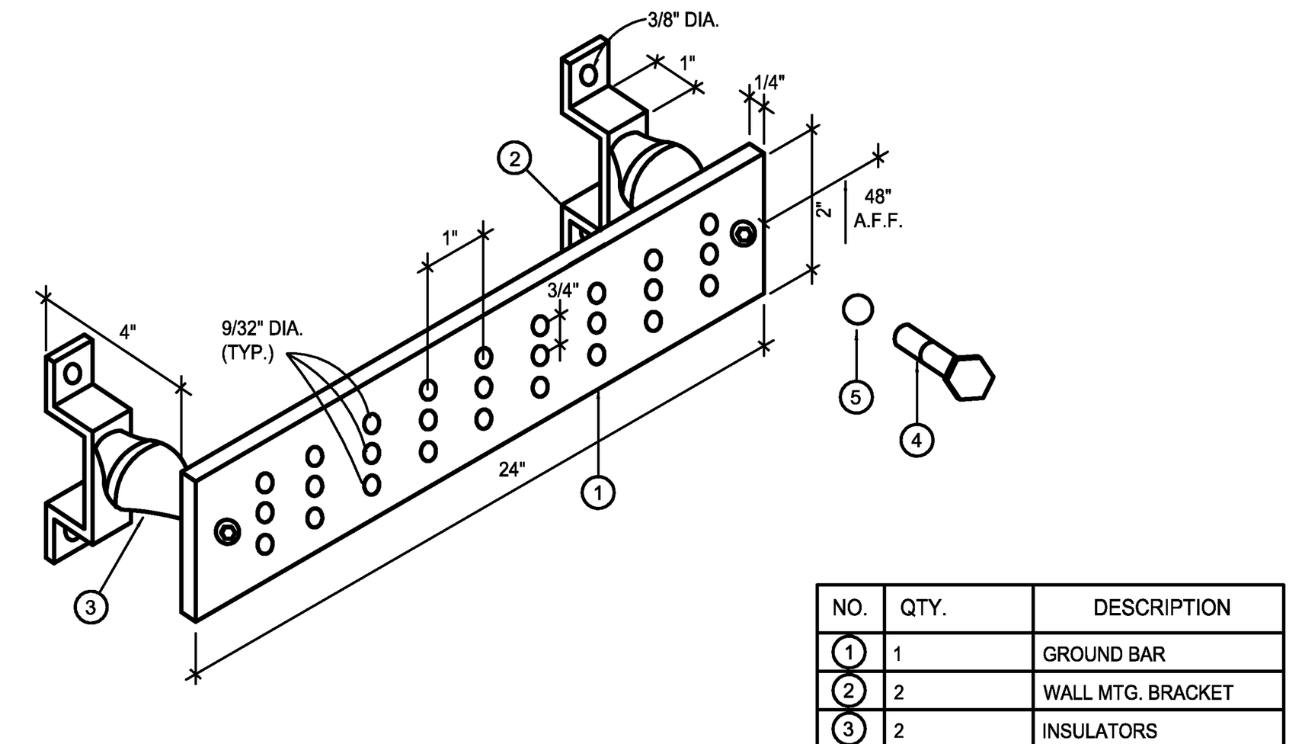
A. MOUNT BAR AT +48" ABOVIE FINISHED FLOOR.

B. MOUNT TO WALL WITH (4) 5/16 X 4" LONG BOLTS & MASONRY INSERTS OR LAG SCREWS INTO BLOCKING BEHIND WALL.

C. THE MASTER GROUND BAR IS TO BE ISLOATED FROM BUILDING WALLS, STRUCTURAL MEMBERS, ETC. BY USE OF INSULATING STANDOFF ISOLATORS. THERE IS TO BE NO ELECTRICAL/CONDUCTING CONTACT OF THE MASTER GROUND BAR TO ANY PORTION OF THE BUILDING STRUCTURE, INCLUDING CONCRETE OR CONCRETE BLOCK WALLS.

D. PROVIDE #4 GROUND TO BUILDING GROUND SYSTEM. BOLT #4 GROUND TO GROUND BAR WITH T&B LUG AND 1/4" DIAMETER X 1" LONG ZINC PLATED GOLD CHROMATE BOLTS, LOCK WASHERS AND NUT.





NO.	QTY.	DESCRIPTION
1	1	GROUND BAR
2	2	WALL MTG. BRACKET
3	2	INSULATORS
4	4	5/8-11 x 1" H.H.C.S.
5	4	5/8" LOCKWASHER

PART NO. FOR ENTIRE ASSEMBLY IS #4090710010 FROM NEWTON INSTRUMENT CO. (BUTNER N.C.)

GROUND BAR DETAIL

SCALE: NOT TO SCALE

POWER/COMMUNICATION LEGEND

SYM	DESCRIPTION	HGT
	CIRCUIT BREAKER	
	COMBINATION STARTER	
C	CONTACTOR	
	DATA/TELEPHONE OUTLET	18"
	DISCONNECT, NON-FUSED. WP = WEATHERPROOF	
	DISCONNECT, FUSED. WP = WEATHERPROOF	
	DUPLEX RECECTACLE	18"
43"/GFI	SINK HEIGHT DUPLEX RECEPTACLE, GROUND FAULT INTERUPTER	43"
GFI	DUPLEX RECEPTACLE, GROUND FAULT INTERUPTER	18"
WP/GFI	DUPLEX RECEPTACLE, WATER PROOF, GROUND FAULT INTERUPTER	18"
	DOUBLE DUPLEX RECECTACLE	18"
	EQUIPMENT CONNECTION POINT	
	GROUND	
J	JUNCTION BOX	
	MOTOR, ELECTRIC	
	PANEL, BRANCH	
	PANEL, DISTRIBUTION	
	PANEL, MAIN DISTRIBUTION	
	RECEPTACLE, SPECIAL	18"
TV	CABLE TELEVISION JACK	18"
VFD	VARIABLE FREQUENCY DRIVE	
	CCTV CAMERA	

MOUNTING HEIGHTS ARE AS GIVEN UNLESS NOTED OTHERWISE ON THE PLANS

FIRE ALARM LEGEND

SYM	DESCRIPTION	HTG
DH	DOOR HOLDER, MAGNETIC	
DD	DUCT TYPE SMOKE DETECTOR	
V	FIRE ALARM AUDIO/VISUAL	84"
F	FIRE ALARM PULL STATION	48"
V	FIRE ALARM VISUAL DEVICE	48"
FS	FLOW SWITCH	
HD	HEAT DETECTOR	
D	DUCT DETECTOR TEST STATION	48"
SD	SMOKE DETECTOR	
SD	SMOKE DAMPER	
TS	TAMPER SWITCH	
G	GONG	

MOUNTING HEIGHTS ARE AS GIVEN UNLESS NOTED OTHERWISE ON THE PLANS.

TELE/DATA NOTES:

1. PROVIDE CABLES AND JACKS AS OUTLINED IN SPECIFICATIONS
2. PROVIDE QUAD RECEPTACLE AT 48" AFF AND #6 GROUND ON I.T. BACKBOARD. SEE DETAIL FOR NEWTON GROUNDING BAR.
3. PLYWOOD BACKBOARDS TO BE 3/4" THICK PLYWOOD 48" BY 96" MOUNTED HORIZONTALLY WITH BOTTOM EDGE 36" AFF. PAINT WITH TWO COATS FIRE RESISTANT PAINT EVEN IF USING FIRE RATED WOOD.

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THE COTTAGE at THORNAPPLE

Hastings, MI

PROJ. NO.: 2011-11-021

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POWER SCHEDULES AND DETAILS

E400