

# ELECTRICAL NOTES:

- ELECTRICAL CONTRACTOR SHALL FURNISH ALL MATERIALS AND EQUIPMENT AND PERFORM ALL WORK AS REQUIRED FOR COMPLETE AND PROPERLY FUNCTIONING ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND AS EVIDENTLY NECESSARY FOR THE SATISFACTORY COMPLETION OF THE PROJECT, WHETHER OR NOT EVERY SUCH ITEM IS SPECIFICALLY SHOWN ON THE DRAWINGS.
- ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AS WELL AS ALL APPLICABLE LOCAL AND STATE CODES AND ORDINANCES. CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS, FEES, INSPECTIONS, ETC.
- ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED, OR AS APPROVED BY THE ENGINEER. ALL MATERIALS SHALL BE NEW AND SHALL BE UL-APPROVED. CONTRACTOR SHALL SUBMIT ALL PROPOSED MATERIALS AND EQUIPMENT FOR APPROVAL PRIOR TO PURCHASE.
- CONTRACTOR SHALL FULLY TEST ALL WIRING FOR CONTINUITY, AND ALL CIRCUITS AND EQUIPMENT FOR PROPER FUNCTION. ALL WORK, MATERIALS, AND EQUIPMENT SHALL BE WARRANTED FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE PROJECT. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL DELIVER TO THE OWNER COMPLETE OPERATION AND MAINTENANCE MANUALS, IN THREE COPIES.
- ALL SYSTEMS, CIRCUITS, AND EQUIPMENT INSTALLED OR CONNECTED ON THE PROJECT SHALL BE PROPERLY GROUNDED IN ACCORDANCE WITH THE NEC. SERVICE GROUNDING ELECTRODE CONDUCTORS SHALL BE CONNECTED TO GROUNDING BUILDING STRUCTURE, MAIN WATER LINE, AND OTHER AVAILABLE ELECTRODES. SUPPLEMENTAL "MADE" ELECTRODES AND OTHER AVAILABLE ELECTRODES. SUPPLEMENTAL "MADE" ELECTRODES SHALL BE PROVIDED AS REQUIRED. ALL FEEDERS AND CIRCUITS SHALL INCLUDE A SEPARATE GROUNDING CONDUCTOR SIZED ACCORDING TO NEC TABLE 250-95.
- ALL WIRING SHALL BE INSTALLED IN CONDUIT, UNLESS SPECIFICALLY SHOWN OR APPROVED OTHERWISE. NON-METALLIC CONDUIT MAY BE USED FOR INSTALLATION UNDERGROUND OR IN FOURED CONCRETE. OTHERWISE, CONDUIT SHALL BE OF METAL. USE HEAVY WALL STEEL CONDUIT OR IMC FOR CONDUITS 2 1/2" IN DIAMETER OR LARGER, AND FOR CONDUITS EXPOSED BELOW 48" A.F.F. OR OTHERWISE SUBJECT TO DAMAGE. USE EMT FOR GENERAL INTERIOR BRANCH CIRCUITING APPLICATIONS. EMT SHALL BE INSTALLED WITH COMPRESSION TYPE FITTINGS OF STEEL. CONNECTORS SHALL HAVE INSULATED THROATS.
- USE FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO MOTORS, TRANSFORMERS, AND OTHER VIBRATING EQUIPMENT, AND FOR FINAL CONNECTION TO LIGHTING FIXTURES IN SUSPENDED CEILINGS. USE LIQUID-TIGHT FLEXIBLE METAL CONDUIT FOR WET OR DAMP LOCATIONS.
- BOXES SHALL BE OF STEEL OR ALUMINUM. ALL BOXES SHALL BE INSTALLED SECURELY AND PERFECTLY LEVEL. BOXES RECESSED IN WALLS OR OTHER SURFACES SHALL BE SET TO BE FLUSH WITH THE FINISHED SURFACES.
- ALL CONDUCTORS SHALL BE OF COPPER, WITH 600V INSULATION TYPE THHN/THWN, EXCEPT WHERE CODES REQUIRE DIFFERENT TYPE. MINIMUM SIZE SHALL BE #12 AWG, EXCEPT FOR CONTROL AND SIGNAL WIRING WHICH MAY USE #16 AWG MINIMUM. CONDUCTORS SHALL BE COLOR-CODED BLACK, RED, BLUE, WHITE, AND GREEN (PHASES A, B, C, NEUTRAL, AND GROUND).
- CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID, WITH INSULATION COLORED IN MANUFACTURE. MAKE CIRCUIT JOINTS WITH TWIST-ON INSULATED CONNECTORS (WIRENUTS). CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED. MAKE JOINTS WITH SPLIT-BOLTS OR OTHER MECHANICAL-PRESSURE TYPE CONNECTORS.
- CONDUCTOR SIZE SHALL BE AS NOTED ON THE DRAWINGS, OR OF THE APPROPRIATE SIZE TO MATCH CIRCUIT OVERCURRENT PROTECTION. WHERE THE LENGTH OF A 20A BRANCH CIRCUIT (MEASURED TO THE FARTHEST OUTLET) EXCEEDS 75', CONTRACTOR SHALL ADJUST THE CONDUCTOR SIZE TO LIMIT VOLTAGE DROP (e.g. MINIMUM #10 AWG FOR HOME RUN).
- WIRING DEVICES SHALL BE SPECIFICATION GRADE AS MANUFACTURED BY HUBBELL, SLATER, LEVITON, OR APPROVED EQUAL. DEVICES SHALL BE IVORY IN COLOR. TRIM PLATES SHALL BE OF #302 STAINLESS STEEL. ALL DEVICES AND PLATES SHALL MATCH THROUGHOUT THE PROJECT. DUPLEX RECEPTACLES SHALL BE RATED 20A, 125V, 3-WIRE GROUNDING TYPE. LIGHTING SWITCHES SHALL BE RATED 20A, 120-277V, WITH GROUNDING SCREW. SPECIAL-PURPOSE DEVICES SHALL BE FURNISHED AS INDICATED OR REQUIRED TO ACCOMMODATE THE EQUIPMENT SERVED.
- LIGHTING FIXTURES SHALL BE FURNISHED AND INSTALLED AS INDICATED ON THE DRAWINGS. FIXTURES SHALL BE FURNISHED COMPLETE WITH LAMPS, AND ALL HARDWARE AND ACCESSORIES AS REQUIRED TO PROPERLY SUPPORT AND FIT THEM TO THE CONSTRUCTION. FLUORESCENT FIXTURES SHALL BE FURNISHED WITH ENERGY-SAVING LAMPS AND BALLASTS. ALL FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE.
- PANELBOARDS SHALL BE OF COMMERCIAL GRADE AS MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, OR WESTINGHOUSE. PANEL TYPES SPECIFIED ARE THOSE OF SQUARE D AND ARE INTENDED TO ESTABLISH TYPE AND QUALITY REQUIRED. PANELS SHALL BE FURNISHED WITH COPPER BUSES. EACH PANEL SHALL BE EQUIPPED WITH A COPPER EQUIPMENT GROUNDING BAR. PANEL ENCLOSURES SHALL BE BOLT-ON WITH BLANK ENDWALLS. CIRCUIT BREAKERS SHALL BE MULTI-POLE MOULD-CASE TYPE, WITH THERMAL-MAGNETIC TRIPS. MULTI-POLE BREAKERS SHALL HAVE COMMON INTERNAL TRIP. HANDLE TIES ARE NOT PERMITTED. CIRCUIT BREAKERS USED FOR CONTROL OF LIGHTING LOADS OR OTHER FREQUENT SWITCHING DUTY SHALL BE RATED FOR THE APPLICATION.
- ALL CIRCUIT BREAKERS SHALL BE ARRANGED AND NUMBERED AS SHOWN AND ALL CIRCUITS SHALL BE CONNECTED AS ASSIGNED ON THE PLAN DRAWINGS. EACH PANELBOARD SHALL BE FURNISHED WITH A TYPED DIRECTORY CARD IDENTIFYING THE LOAD CONNECTED TO EACH BREAKER.
- DISCONNECT SWITCHES SHALL BE FURNISHED AS SHOWN ON THE DRAWINGS AND AS REQUIRED TO COMPLY WITH CODES. SWITCHES SHALL BE GENERAL DUTY SAFETY SWITCHES, OF AMPERAGE, VOLTAGE, AND CONFIGURATION REQUIRED. FUSIBLE SWITCHES SHALL BE EQUIPPED WITH FUSES - CLASS RK5 TIME-DELAY UNLESS NOTED OTHERWISE. FURNISH WITH 30 ENCLOSURES FOR SWITCHES IN WET LOCATIONS, AND OTHER SPECIAL ENCLOSURES AS APPROPRIATE.
- CONTRACTOR SHALL COORDINATE WITH THE TELEPHONE UTILITY TO ACCOMMODATE TELEPHONE SERVICE TO THE PROJECT. UNLESS NOTED OTHERWISE, PROVIDE 2 1/2" SCHEDULE 40 PVC CONDUIT FROM PROPERTY LINE TO EQUIPMENT LOCATION FOR ENTRANCE OF TELEPHONE UTILITY SERVICE CABLE. AT EACH OUTLET LOCATION, PROVIDE 4" SQUARE OUTLET BOX WITH SINGLE DEVICE RING. PROVIDE 3/4" CONDUIT FROM EACH OUTLET TO THE EQUIPMENT LOCATION. LEAVE ALL CONDUITS WITH PULL WIRES.
- CONTRACTOR SHALL COORDINATE WITH THE POWER UTILITY COMPANY FOR POWER SERVICE TO THE PROJECT. INSTALL METERING EQUIPMENT, ETC. AS REQUIRED. IF PADMOUNT TRANSFORMER IS USED, PROVIDE CONCRETE PAD IN ACCORDANCE WITH UTILITY SPECIFICATIONS.

CT	LOAD	WIRE	BRK	CKT	WIRE	BRK	CKT	LOAD	WIRE	BRK	CKT
1	6500	PUMP #1	12	20	1	12	20	6500	PUMP #3	12	20
2	6500	PUMP #2	12	20	2	12	20	6500	PUMP #4	12	20
3	2100	TIEB CLEANER	12	20	3	12	20	6500	PUMP #5	12	20
4	2100	FRE-SOAK	12	20	4	12	20	5800	AM COMPRESSOR	12	20
5	1500	VACUUM	12	20	5	12	20	500	GAS WATER HTR	12	20
6	1500	VACUUM	12	20	6	12	20	500	VACUUM	12	20
7	1500	VACUUM	12	20	7	12	20	500	VACUUM	12	20
8	1500	VACUUM	12	20	8	12	20	500	VACUUM	12	20
9	1500	VACUUM	12	20	9	12	20	500	VACUUM	12	20
10	1500	VACUUM	12	20	10	12	20	500	VACUUM	12	20
11	1500	VACUUM	12	20	11	12	20	500	VACUUM	12	20
12	1500	VACUUM	12	20	12	12	20	500	VACUUM	12	20
13	1500	VACUUM	12	20	13	12	20	500	VACUUM	12	20
14	1500	VACUUM	12	20	14	12	20	500	VACUUM	12	20
15	1500	VACUUM	12	20	15	12	20	500	VACUUM	12	20
16	1500	VACUUM	12	20	16	12	20	500	VACUUM	12	20
17	1500	VACUUM	12	20	17	12	20	500	VACUUM	12	20
18	1500	VACUUM	12	20	18	12	20	500	VACUUM	12	20
19	1500	VACUUM	12	20	19	12	20	500	VACUUM	12	20
20	1500	VACUUM	12	20	20	12	20	500	VACUUM	12	20
21	1500	VACUUM	12	20	21	12	20	500	VACUUM	12	20
22	1500	VACUUM	12	20	22	12	20	500	VACUUM	12	20
23	1500	VACUUM	12	20	23	12	20	500	VACUUM	12	20
24	1500	VACUUM	12	20	24	12	20	500	VACUUM	12	20
25	1500	VACUUM	12	20	25	12	20	500	VACUUM	12	20
26	1500	VACUUM	12	20	26	12	20	500	VACUUM	12	20
27	1500	VACUUM	12	20	27	12	20	500	VACUUM	12	20
28	1500	VACUUM	12	20	28	12	20	500	VACUUM	12	20
29	1500	VACUUM	12	20	29	12	20	500	VACUUM	12	20
30	1500	VACUUM	12	20	30	12	20	500	VACUUM	12	20
31	1500	VACUUM	12	20	31	12	20	500	VACUUM	12	20
32	1500	VACUUM	12	20	32	12	20	500	VACUUM	12	20
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40	1500	VACUUM	12	20	40	12	20	500	VACUUM	12	20
41	1500	VACUUM	12	20	41	12	20	500	VACUUM	12	20
42	1500	VACUUM	12	20	42	12	20	500	VACUUM	12	20

PANEL - 'M'

91.5 KVA ~ 254A

SQUARE D TYPE NQOD. SURFACE MOUNTED.  
120/208V 3-P-4W. 400A BUSSES & SN.  
400A MAIN BREAKER @ BOTTOM.  
22,000 AIC  
UL LABEL FOR SERVICE ENTRANCE USE.

CT	LOAD	WIRE	BRK	CKT	WIRE	BRK	CKT	LOAD	WIRE	BRK	CKT
1	1200	LIGHTING	12	20	1	12	20	800	GRAND RECEPT	12	20
2	1400	LIGHTING	12	20	2	12	20	1000	VEHICLE	12	20
3	200	LIGHTING	12	20	3	12	20	1000	VEHICLE	12	20
4	1600	VACUUM LTR	12	20	4	12	20	1000	VEHICLE	12	20
5	1600	VACUUM LTR	12	20	5	12	20	1000	VEHICLE	12	20
6	1600	RECEPTABLE #	12	20	6	12	20	1000	VEHICLE	12	20
7	1600	RECEPTABLE #	12	20	7	12	20	1000	VEHICLE	12	20
8	1600	RECEPTABLE #	12	20	8	12	20	1000	VEHICLE	12	20
9	1600	RECEPTABLE #	12	20	9	12	20	1000	VEHICLE	12	20
10	1600	RECEPTABLE #	12	20	10	12	20	1000	VEHICLE	12	20
11	1600	RECEPTABLE #	12	20	11	12	20	1000	VEHICLE	12	20
12	1600	RECEPTABLE #	12	20	12	12	20	1000	VEHICLE	12	20
13	1600	RECEPTABLE #	12	20	13	12	20	1000	VEHICLE	12	20
14	1600	RECEPTABLE #	12	20	14	12	20	1000	VEHICLE	12	20
15	1600	RECEPTABLE #	12	20	15	12	20	1000	VEHICLE	12	20
16	1600	RECEPTABLE #	12	20	16	12	20	1000	VEHICLE	12	20
17	1600	RECEPTABLE #	12	20	17	12	20	1000	VEHICLE	12	20
18	1600	RECEPTABLE #	12	20	18	12	20	1000	VEHICLE	12	20
19	1600	RECEPTABLE #	12	20	19	12	20	1000	VEHICLE	12	20
20	1600	RECEPTABLE #	12	20	20	12	20	1000	VEHICLE	12	20
21	1600	RECEPTABLE #	12	20	21	12	20	1000	VEHICLE	12	20
22	1600	RECEPTABLE #	12	20	22	12	20	1000	VEHICLE	12	20
23	1600	RECEPTABLE #	12	20	23	12	20	1000	VEHICLE	12	20
24	1600	RECEPTABLE #	12	20	24	12	20	1000	VEHICLE	12	20
25	1600	RECEPTABLE #	12	20	25	12	20	1000	VEHICLE	12	20
26	1600	RECEPTABLE #	12	20	26	12	20	1000	VEHICLE	12	20
27	1600	RECEPTABLE #	12	20	27	12	20	1000	VEHICLE	12	20
28	1600	RECEPTABLE #	12	20	28	12	20	1000	VEHICLE	12	20
29	1600	RECEPTABLE #	12	20	29	12	20	1000	VEHICLE	12	20
30	1600	RECEPTABLE #	12	20	30	12	20	1000	VEHICLE	12	20
31	1600	RECEPTABLE #	12	20	31	12	20	1000	VEHICLE	12	20
32	1600	RECEPTABLE #	12	20	32	12	20	1000	VEHICLE	12	20
33	1600	RECEPTABLE #	12	20	33	12	20	1000	VEHICLE	12	20
34	1600	RECEPTABLE #	12	20	34	12	20	1000	VEHICLE	12	20
35	1600	RECEPTABLE #	12	20	35	12	20	1000	VEHICLE	12	20
36	1600	RECEPTABLE #	12	20	36	12	20	1000	VEHICLE	12	20
37	1600	RECEPTABLE #	12	20	37	12	20	1000	VEHICLE	12	20
38	1600	RECEPTABLE #	12	20	38	12	20	1000	VEHICLE	12	20
39	1600	RECEPTABLE #	12	20	39	12	20	1000	VEHICLE	12	20
40	1600	RECEPTABLE #	12	20	40	12	20	1000	VEHICLE	12	20
41	1600	RECEPTABLE #	12	20	41	12	20	1000	VEHICLE	12	20
42	1600	RECEPTABLE #	12	20	42	12	20	1000	VEHICLE	12	20

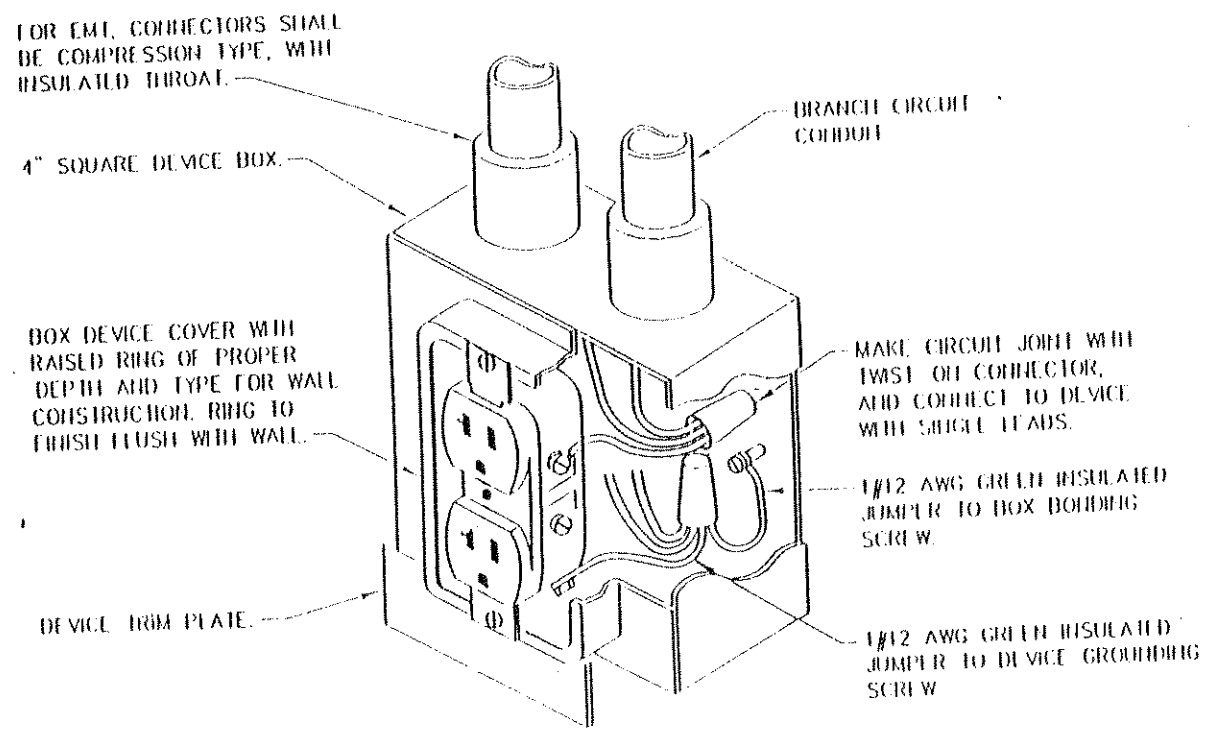
PANEL - 'P'

12.3 KVA ~ 35A

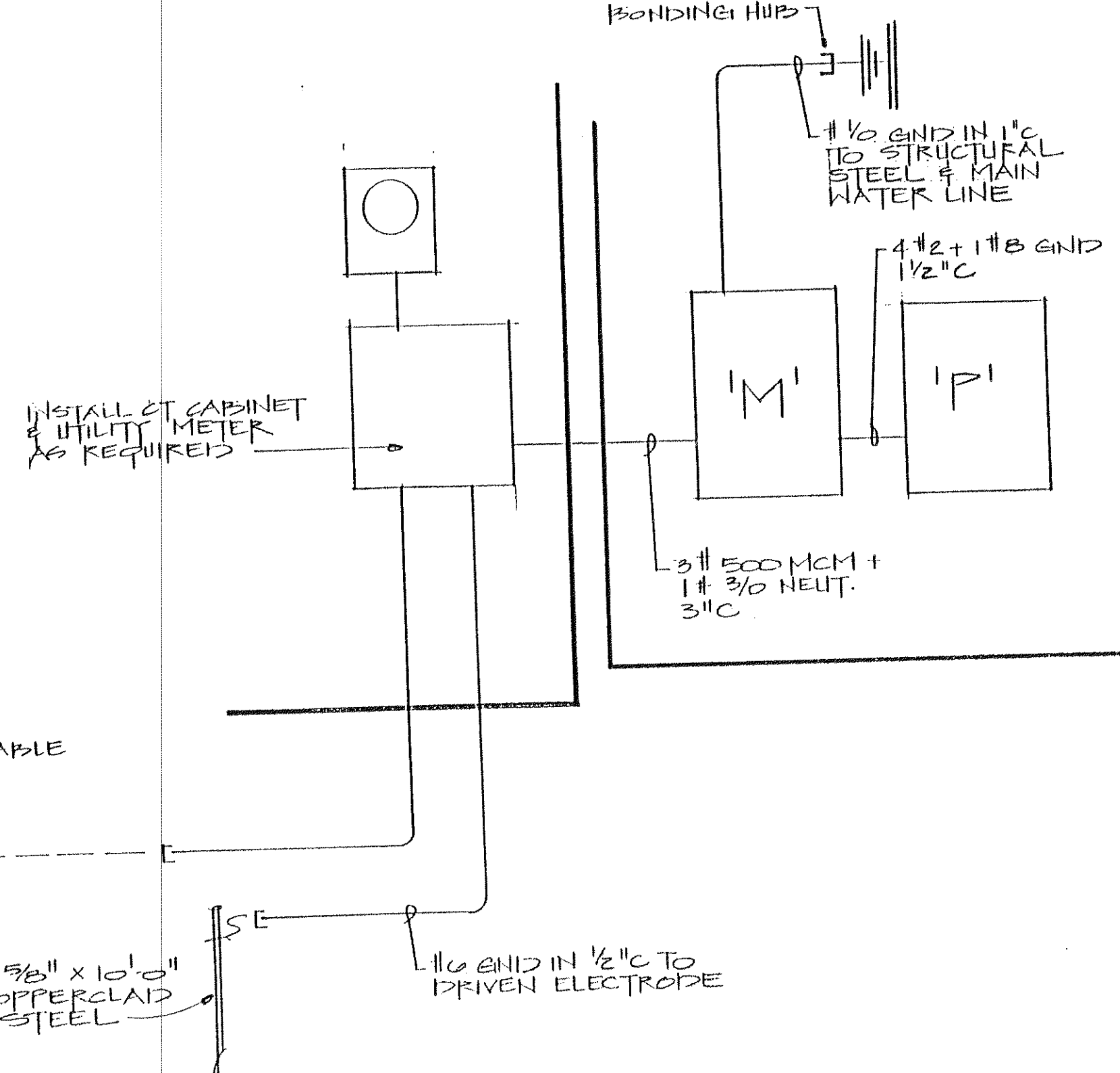
SQUARE D TYPE NQOD. SURFACE MOUNTED.  
120/208V 3-P-4W. 100A BUSSES & SN.  
MAIN LUGS ONLY @ BOTTOM.  
22,000 AIC  
\* GFI CIRCUIT BREAKER.

## SYMBOL SCHEDULE

- WET PROOF, WET LOCATION, ENCLOSED LIGHTING FIXTURE - LITHONIA BMW 27V
- WALL MOUNTED WALL PACK METAL HALIDE - 250W - LITHONIA THP WALL PACK
- SWITCH, 20A, SF 120-277V
- DUPLEX RECEPTACLE - 20A, 125V 3 WIRE GROUNDING TYPE
- DUPLEX RECEPTACLE - 20A, 125V 3 WIRE GND TYPE W/ BUILT IN GROUND FAULT PROTECTION
- DUPLEX RECEPTACLE 20A, 125V, 3-WIRE GROUNDING TYPE, WEATHERPROOF COVER
- DISCONNECT SWITCH, FUSED
- VACUUM ISLAND LIGHT POLE & LIGHTS
- EXHAUST FAN & LIGHT COMBINATION 120V

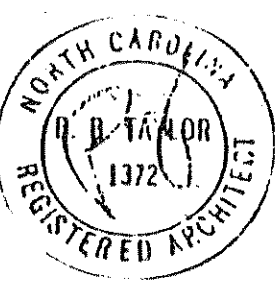


DETAIL - TYPICAL DUPLEX RECEPTACLE INSTALLATION  
Not To Scale



## ELECTRICAL RISER DIAGRAM

NTS



Quality by Design  
Computer-Aided Architectural  
and Commercial Drafting

CWC CAR WASH PROJECT FOR  
STEVE EVERHART  
WINSTON SALEM, N C

PROPERTY OF  
**CAR WASH CONCEPTS**

50 East Main Street  
Thomasville, NC 27360

(336) 475-0522

DATE 2/3/88  
DRAWN BY: DAF  
SCALE: AS NOTED  
REVISED:  
APPROVED:

Sheet No.

CWC 7