

SECTION 16010 - ELECTRICAL

GENERAL

SCOPE: PROVIDE AND INSTALL A COMPLETE WORKING INSTALLATION OF THE SYSTEMS AS SHOWN ON THE PLANS AND AS SPECIFIED HEREIN.

CODES: EQUIPMENT AND INSTALLATION SHALL MEET THE FOLLOWING CODES AND REGULATIONS FOR THE CITY OF ROCKWELL, TEXAS:

- NATIONAL FIRE CODES
- NATIONAL ELECTRIC CODE, 1990 EDITION
- CITY OF ROCKWELL ELECTRICAL CODE AMENDMENTS
- TEXAS UTILITIES ELECTRIC CO. REQUIREMENTS
- SOUTHWESTERN BELL TELEPHONE COMPANY REQUIREMENTS

MATERIAL AND EQUIPMENT: SHALL BE U.L. APPROVED.

DRAWINGS: ARE DIAGNOSTIC AND ARE NOT INTENDED TO SHOW COMPLETE REQUIREMENTS.

COORDINATION: COORDINATE WITH THE GENERAL CONTRACTOR AND OTHER TRADES ALL SPACE REQUIREMENTS FOR EQUIPMENT. VERIFY DOOR SWINGS BEFORE LOCATING SWITCHES, VERIFY LOCATIONS AND HEIGHTS OF CABINETS BEFORE LOCATING OUTLET BOXES, PROVIDE SIZES OF CHASES AND OPENINGS TO GENERAL CONTRACTOR.

INSTRUCTIONS: PROVIDE ANY OPERATING AND MAINTENANCE INSTRUCTIONS REQUIRED TO OWNER AT COMPLETION OF PROJECT.

SHOP DRAWINGS AND SUBMITTALS

EQUIPMENT SUBMITTALS: SUBMIT THREE COPIES MINIMUM OF THE FOLLOWING TO THE ARCHITECT FOR APPROVAL:

- PANELS AND DISTRIBUTION EQUIPMENT LIGHTING FIXTURES

SERVICE ENTRANCE

TYPE: OVERHEAD SERVICE FROM UTILITY POLE. VERIFY WITH TU ELECTRIC. SEE RISER DIAGRAM.

COORDINATE: INSTALLATION WITH TU ELECTRIC CO.

COSTS: PAY ALL COSTS ASSOCIATED WITH SERVICE ENTRANCE AND DO ALL WORK NECESSARY SO THAT NO SERVICE COSTS WILL BE REQUIRED OF OWNER, INCLUDING OWNER'S METER.

METERING: MAKE NECESSARY PROVISIONS FOR METERING.

DISTRIBUTION SYSTEM

SYSTEM: 20/208, THREE PHASE, 4 WIRE

APPROVED MANUFACTURERS OF PANELS AND DISCONNECT SWITCHES: SQUARE D, CUTLER HAMMER, GENERAL ELECTRIC, OR WESTINGHOUSE

DISTRIBUTION PANELS, CIRCUIT BREAKERS:

- SQUARE D TYPE 100 (100 AMP MAX. BREAKER)
- SQUARE D 1 LINE LARGER THAN 100 AMP BREAKERS
- MULTIPLE POLE BREAKERS, COMMON TRIP TYPE
- SURFACE TYPE WITH DOOR FOR EQUIPMENT ROOMS
- TYRED CIRCUIT INDEX WITH CLEAR PLASTIC COVER ON PANEL DOOR

CONDUIT:

ALL WIRING TO BE RUN IN CONDUIT. ELECTRICAL METALLIC TUBING FOR ALL DRY WETTER RISERS, UNLESS OTHERWISE NOTED ON DRAWINGS OR SPECIFIED HEREIN. TYPE AC CABLE (B) IS PROHIBITED. ALL CONDUIT CONCEALED EXCEPT IN EQUIPMENT ROOMS. FITTINGS: THREADLESS, WATER-TIGHT, COMPRESSION TYPE. SUPPORT RISERS: WIRE SUSPENSION NOT PERMITTED. CONNECT MOTORS OR TRANSFORMERS WITH SECTION OF FLEXIBLE CONDUIT. NO CONDUIT LESS THAN 1/2" PERMITTED. ALL CONDUIT IN EARTH SHALL BE U.L. LISTED PFG 504, 40 OR PRIOR APPROVAL OTHERWISE.

CONDUCTORS:

SHALL BE COPPER, GENERALLY RATED 600 VOLT INSULATION MIN. SIZE #12 THIN BRANCH CIRCUIT. CONDUCTORS MAY BE TYPE THHN OR THWN. ALL CONDUCTORS SHALL BE COLOR CODED. CONNECTIONS TO SERVICE EQUIPMENT, FEEDER PANELS TO BE SOLDERLESS LUGS. ALL SPACES TO SERVICE EQUIPMENT SHALL BE COMPRESSION TYPE CONNECTORS REINFORCED BY CODE. ISOLATE JOINTS WITH SCOTCH #33 PLASTIC TAPE OR PLASTIC MOLDED JACKETS.

DEVICES

JUNCTION BOXES:

STEEL, ONE PIECE ACCESSIBLE, DESIGNED FOR INSTALLATION CONDUIT. EXPOSED BOXES NOT PERMITTED, EXCEPT IN EQUIPMENT ROOMS. ALL DEVICES TO BE LOCATED IN JUNCTION BOX. SUPPORT LIGHTING FIXTURES INDEPENDENT OF CEILING MATERIAL. WHERE PULL BOXES ARE REQUIRED, LOCATE AS DIRECTED BY ARCHITECT. NO BACK-TO-BACK BOXES ALLOWED; OFFSET AS REQUIRED.

COLOR OF DEVICES AND COVER PLATES: NONE UNLESS OTHERWISE NOTED ON PLANS.

COVER PLATES: PROVIDE FOR ALL DEVICES AND BOXES.

CONVENIENCE OUTLETS: LOCATE CENTER 18" ABOVE FLOOR OR AS CALLED FOR ON THE DRAWINGS. PROVIDE WEATHERPROOF COVER FOR EXTERIOR OUTLETS.

SWITCHES: ADJACENT SWITCHES TO BE LOCATED UNDER SAME COVER PLATE.

TELEPHONE OUTLETS: SINGLE GANG BOX WITH COVER PLATE.

MECHANICAL SYSTEM

CONNECT: ALL ITEMS OF MECHANICAL EQUIPMENT SPECIFIED.

PROVIDE ALL NECESSARY WIRING, CONDUIT, BOXES, ETC. FOR EQUIPMENT AND CONDUIT SYSTEMS ONLY FOR A/C TEMPERATURE CONTROL SYSTEM. PROVIDE DISCONNECT SWITCHES WHERE NOT PROVIDED WITH EQUIPMENT, REQUIRED BY CODE OR AS NOTED ON THE DRAWINGS. COORDINATE ROUTING OF TEMPERATURE CONTROL CONDUIT WITH MECHANICAL CONTRACTOR.

TELEPHONE SYSTEM

COORDINATE: INSTALLATION WITH SOUTHWESTERN BELL TELEPHONE COMPANY.

SERVICE: OVERHEAD FROM ELECTRICAL RISER POLE. VERIFY.

CONDUIT: PROVIDE A 3/4" CONDUIT FOR EACH OUTLET TO DESIGNATED CAVITY SPACE ABOVE CEILING OR TO TELEPHONE PANEL.

CONDUCTORS: PROVIDE 6 CONDUCTOR #24 TELEPHONE WIRE TO EACH OUTLET SHOWN ON DRAWINGS FROM TELEPHONE PANEL. AT EACH OUTLET SHALL BE A MODULAR JACK EQUAL TO LEVITON #40299-1 AND FOR EACH WALL OUTLET A JACK EQUAL TO LEVITON #40223-5.

ELECTRIC POWER: PROVIDE DUPLEX OUTLET (ON SEPARATE CIRCUIT) AT LOCATION DESIGNATED FOR TELEPHONE TERMINAL BOARD.

LIGHTING FIXTURES

APPROVAL: FIXTURE AND MANUFACTURER ARE LISTED ON DRAWINGS. LIGHTING FIXTURE SCHEDULED. THE ARCHITECT MAY APPROVE OTHER MANUFACTURERS' FIXTURES OF EQUAL QUALITY AND VERY SIMILAR DESIGN APPEARANCE, BUT RESERVES THE RIGHT TO REJECT ANY FIXTURE NOT SCHEDULED ON DRAWINGS.

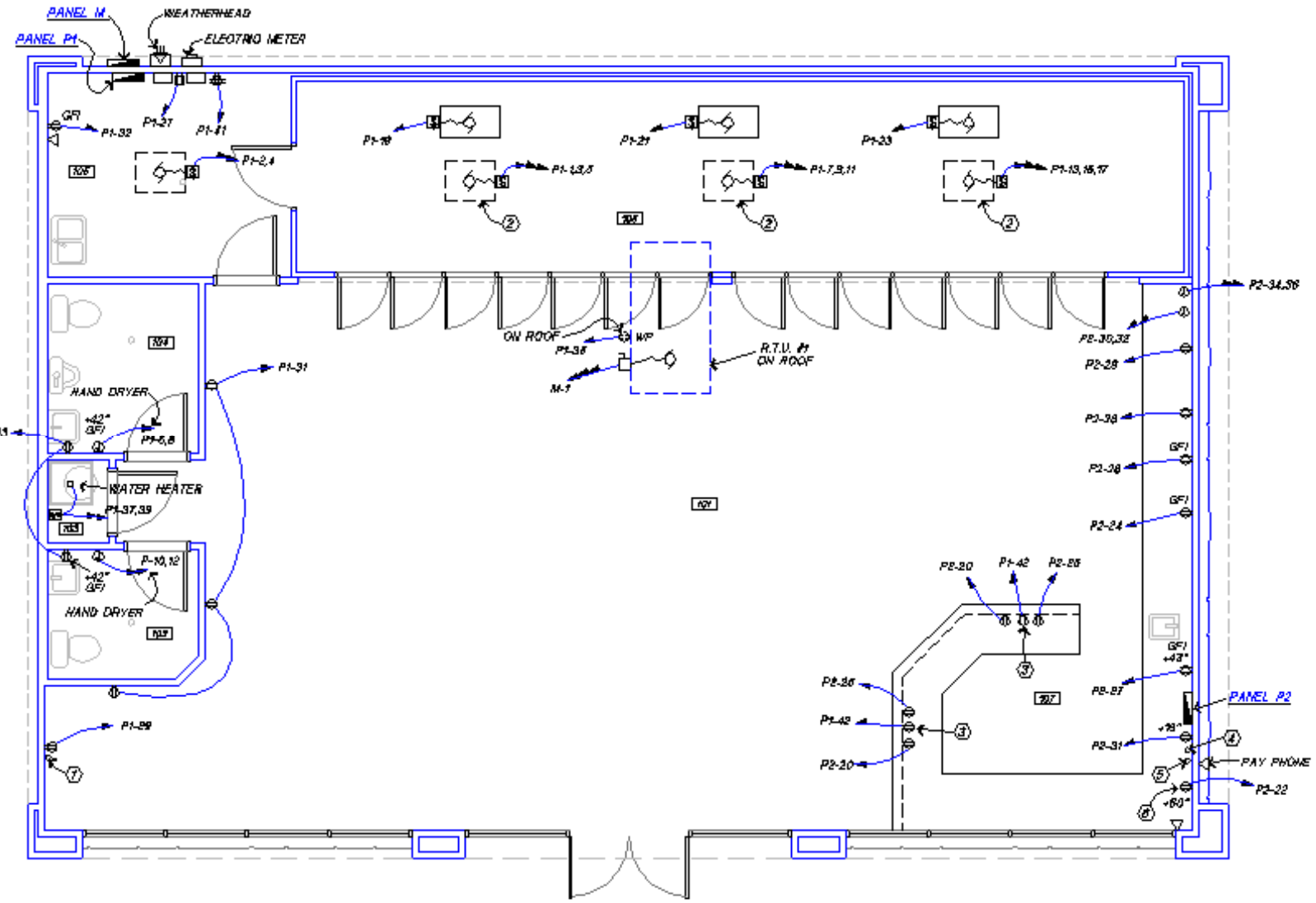
FURNISH ALL MISCELLANEOUS ITEMS FOR COMPLETE INSTALLATION. VERIFY CEILING FINISH PRIOR TO ORDERING FIXTURES. FIXTURE NUMBERS INDICATED ARE FOR THE PURPOSE OF INDICATING TYPE, APPEARANCE AND QUALITY. CONTRACTOR SHALL BE RESPONSIBLE FOR ORDERING TO MEET THE PARTICULAR INSTALLATION REQUIREMENTS AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCY.

SUSPENDED CEILING: SUPPORT FIXTURES INDEPENDENT OF GRID SYSTEM. PROVIDE WIRE SUPPORT HANGER AT EACH CORNER OF LAY-IN FIXTURES.

LAY-IN FIXTURES: CONNECT WITH 5' FLEXIBLE CONDUIT TO JUNCTION BOX TO ALLOW FOR RELOCATION TO ANY ADJACENT CEILING GRID WITHOUT REWORKING. ROWS OF FIXTURES SHALL BE INDIVIDUALLY WARED TO A JUNCTION BOX.

BALLAST FOR FLUORESCENT FIXTURES: HIGH POWER FACTOR, BUILT-IN THERMAL PROTECTION (AS LISTED CLASS #1) SCORING RATING RATED FOR VOLTAGE OF CIRCUIT PROVIDED; EQUAL TO GENERAL ELECTRIC "MAXI-MISER V" UNLESS OTHERWISE NOTED ON DRAWINGS.

END OF SECTION



GENERAL NOTES

DRAWINGS ARE DIAGNOSTIC AND ARE NOT INTENDED TO SHOW EACH AND EVERY ITEM.

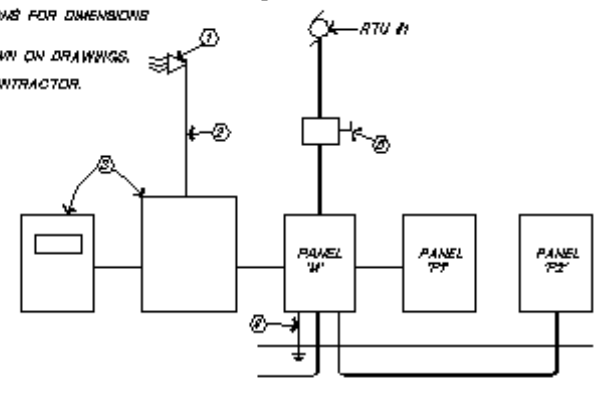
COORDINATE WITH OTHER TRADES.

REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR DIMENSIONS AND ADDITIONAL INFORMATION.

REFER TO SPECIFICATIONS FOR DATA NOT SHOWN ON DRAWINGS.

REPORT CONFLICTS TO ARCHITECT/GENERAL CONTRACTOR.

POWER PLAN
SCALE: 1/4" = 1'-0"



ELECTRICAL RISER DIAGRAM

NOT TO SCALE

KEY NOTES

- WEATHERHEAD FOR 20/208 VOLT, 3 PHASE, 4 WIRE SERVICE. COORDINATE INSTALLATION WITH TEXAS UTILITIES' REP.
- 4 #500 MCM THWN CU #1 3" C.
- INSTALL C.T. CABINET AND C.T. METER PER TU ELECTRIC REQUIREMENTS.
- PROVIDE GROUNDING PER NEC BUT AT LEAST TIE ONE #4 CU BRAD TO BUILDING SLAB STEEL AND ONE #6 TO DRIVEN GROUND ROD.
- 100A/3P/100 AMP FUSION FUSED DISCONNECT SWITCH

POWER PLAN LEGEND

- DUPLEX RECEPTACLE 20 A 120 VAC, 18" A.F.F. (NO)
- QUADPLEX RECEPTACLE 2-20 A, 120 VAC UNDER ONE COVER, 18" A.F.F.
- SWITCHED DUPLEX RECEPTACLE, 20 A, 120 VAC
- DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT PROTECTION, 20 A, 120 VAC
- DUPLEX RECEPTACLE IN CAST METAL OUTLET BOX WITH WEATHERPROOF COVER, 18" A.F.F.
- TELEPHONE OUTLET
- DATA OUTLET
- DISCONNECT SWITCH
- FEEDER CIRCUITS, COMBINATION POWER BRANCH CIRCUITS AND LIGHTING BRANCH CIRCUITS
- NEUTRAL AND HOT CONDUCTORS WITHOUT SWITCH LEG
- BRANCH CIRCUIT HOME RUN
- JUNCTION BOX
- TIME CLOCK
- MANUAL MOTOR STARTER
- PANELBOARD
- EXHAUST FAN
- MOTOR

ABBREVIATIONS

- A ABOVE FINISH FLOOR
- AFF ABOVE FINISH GRADE
- AIC AMPERES INTERRUPTING CAPACITY
- BRK BRANCH BREAKER
- CU COPPER
- EDF EMPTY CONDUIT
- EDF ELECTRIC DRINKING FOUNTAIN
- EWB ELECTRIC WATER HEATER
- EF EXHAUST FAN
- F&C FAN AND COOL UNIT
- GFI GROUND FAULT INTERRUPTER
- GRND GROUND
- MCB MAIN CIRCUIT BREAKER
- MLO MAIN LUG ONLY
- MH METAL HOUSE
- V VOLT
- OWW UNLESS OTHERWISE NOTED

LOAD ANALYSIS		120/208 VOLTS 4 WIRE 3 PHASE					
ITEM	CONNECTED LOAD WATT			DEMAND FACTOR	DEMAND LOAD WATT		
	AØ	BØ	CØ		AØ	BØ	CØ
PANEL P1 RECEPTACLES	580	580	580	1.0	580	580	580
MISCELLANEOUS	13420	13420	13186	1.0	13420	13500	13166
PANEL P1 SUBTOTAL (VA)					13780	13860	13360
PANEL P2 LIGHTING RECEPTACLES	9122	10101	8844	1.25	11403	12626	11058
KITCHEN EQMP	1820	600	400	1.0	1820	600	400
PANEL P2 SUBTOTAL (VA)					10066	13826	14858
RTU #1 COMPRESSOR	7440	7440	7440	1.0	7440	7440	7440
RTU #1 HEATER	5000	5000	5000	1.0	5000	5000	5000
LARGEST MOTOR	7440	7440	7440	0.25	1860	1860	1860
SUBTOTAL					8610	8510	8510
DEMAND LOAD:							
PHASE A - 320 AMPS					PHASE B - 327 AMPS		PHASE C - 332 AMPS
FEEDER AMPACITY CAPACITY WITH 4 #500 MCM THWN CU IS 406 AMPS/PHASE.							

MISC. ELECT. DEVICES

- DUPLEX RECEPTACLE (NEMA 5-20R) ARROW HAAT 5382-Z
- SWITCH ARROW HAAT 1891-Z
- 3-WAY SWITCH ARROW HAAT 1893-Z
- TIME CLOCK 3 PST, 60 AMPS PER POLE, 120 VOLT TORK 1300L W/RESERVE POWER
- PHOTOCELL SPST 2000 WATTS, 250 VOLT TORK 2101

A New Building
EXXON
Georgetown, Texas

DATE
4-08-96
JOB NO 153

REVISIONS

SHEET
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