DIVISION 16 – ELECTRICAL

A. General Instructions:

1. Codes, Permits and Inspections:
   a. Wiring shall be in accordance with latest edition National Electrical Code (NEC), NFPA, and/or applicable local, state, and Utility Company rules, laws, codes, and ordinances.
   b. Secure all permits and inspections required for the installation of the electrical work.
   c. All work shall comply with the latest edition of the Americans With Disabilities Act (ADA).
   d. Pay all fees associated with new utility services.

2. Verifications:
   a. Verify mounting heights and locations of electrical equipment before installation or rough-in.
   b. Verify exact location of electrical service entrance including point of service and system characteristics.
3. Wiring Methods:
   a. The Electrical Contractor shall cooperate with other Contractors and install equipment in proper sequence so as not to interfere with the progress of other Contractors.
   b. All materials shall be new and carry the Underwriter's Label or be "listed" by that group, and be fully equal to makes specified.
   c. Use only insulated copper conductors in conduit. Use flexible conduit for connections to motors and similar equipment.
   d. All wiring shall be concealed and all outlets shall be flush mounted in finished spaces except as noted otherwise.
   e. All systems wiring in return air plenums shall be in conduit or be plenum rated.

4. Tests:
   a. This Contractor shall be responsible for performing all tests necessary to prevent concealment of defective or improper work.
   b. Upon completion of work, test the installation thoroughly and render it free from shorts, grounds or improper connections.

5. Guarantee – This Contractor shall guarantee that all defective items of workmanship, material, labor or mechanical operation developing within one (1) year from the date of final acceptance of completed installation shall be replaced to the complete satisfaction of the Owner.

6. Workmanship – Electrical equipment shall be installed in a neat and workmanlike manner. Unsightly installations shall be removed or reworked at no additional expense to the Owner.

7. Identification of disconnecting means – Provide a permanent nameplate for each disconnect switch indicating its purpose. The marking shall be of sufficient durability to withstand the environment it is installed in as required by N.E.C. Section 110-22 and 230-72(a).

B. Electrical Equipment:

1. Conduits:
   a. All conduit installed in earth, concrete, below concrete on earth,or exposed to weather shall be rigid steel or intermediate metal conduit. Electrical non-metallic tubing for all dry interior runs. Fittings shall be fully approved in accordance with N.E.C.
   b. Flexible or P.V.C. conduit may be used where not exposed to damage and approved by N.E.C. and local codes.
   c. Provide a ground wire sized per N.E.C. Art. 250-95 in all conduits, both metallic and nonmetallic.
   d. Conduit shall be installed and sized according to code requirements and protected from damage during construction.
   e. Conduit may be re-routed where such action does not adversely affect the intended design or circuiting.
2. Conductors:
   a. Conductors shall be copper, generally with 600 volt rated insulation. Branch circuit wiring min. size #12 Type "THW" or "THWN/THHN" as required. Service entrance, feeder conductors Type "THWN/THHN" or "XHHW". Low voltage wire shall be Type "IF" or "IFF" minimum #18 gauge unless noted otherwise. All other types shall be as required by N.E.C.
   b. All conductors shall be color coded with type and size marking. Connections to service equipment, feeder panels shall be made with solderless lugs. All splices, taps, connections to service entrance conductors shall be made by bronze solderless lugs. All other splices, connections shall be pressure type connectors.
   c. Insulate joints, splices with Scotch #33 plastic tape or plastic moulded jackets.

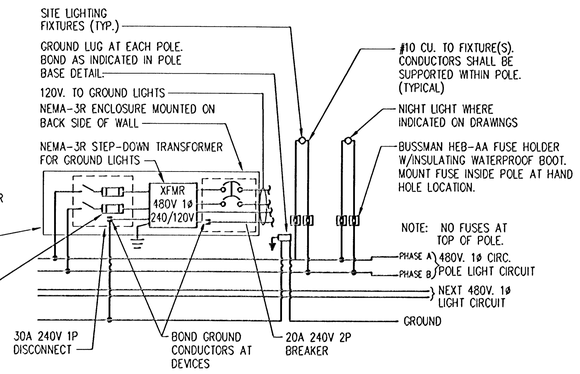
3. Lighting Fixtures and Lamps:
   a. Install lighting fixtures. Provide lamps as indicated on the drawings.
   b. No substitutions on lighting fixtures except as approved by Engineer prior to bidding.
   c. Verify exact locations of fixture outlets so as to cause no interference with piping, equipment and architectural treatment.
   d. Ballasts – by "Advance" or equal, internally or externally fused, high power factor, MLH, fully compatible with lamps and shall carry UL label, ETL and CBM certifications of compliance, even though indicated fixture number may indicate otherwise.
   e. Furnish all fixtures with lamps as scheduled and/or required by final fixture selection. Lamps equal to G.E.

4. Grounding:
   a. Provide system ground as required by N.E.C. and utility company if not already existing.
   b. Bond mechanical equipment frames.
   c. Bond all service entrance equipment and conduit system.
   d. An equipment grounding conductor sized per N.E.C. Art. 250-94 shall be provided in all conduits. The ground wire is required for both metallic and nonmetallic conduit installations.

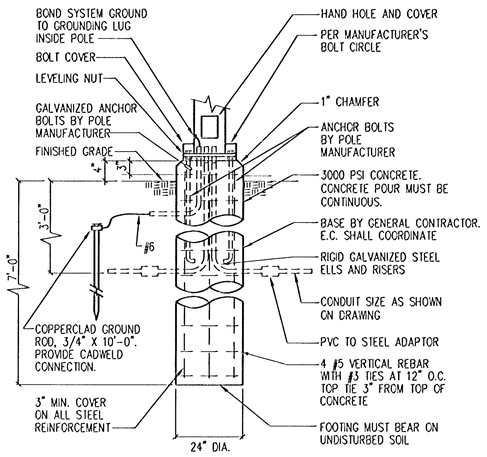
5. Branch Circuit Panels
   a. Branch circuit lighting panels equal to Square D, G.E., ITE, or Cutler Hammer, with thermal magnetic breakers and ground buses. Load center construction is not permitted. Electrical Contractor shall obtain available short circuit current from local Utility co. Panelboards shall be U.L. listed for available fault current. Breakers and panels shall be fully rated or U.L. series rated with specified fuses (22,000 AIC minimum).
   b. Breakers shall have individual plastic cases sized as scheduled. Two pole breakers shall be common trip (single pole units with tie bars are not acceptable).
   c. Panel shall be mounted as noted on the drawings. Provide with a hinged door and a neatly typed circuit directory card.
   d. Re-assign circuits to properly balance the loads on the phases if final connections and tests show it to be advisable.

6. Contactors And Relays
   a. Shall be as manufactured by Cutler-Hammer, Allen Bradley, G.E. or Square D. They shall be as sized on the drawings
   b. All contactors and relays shall be Tungsten rated.

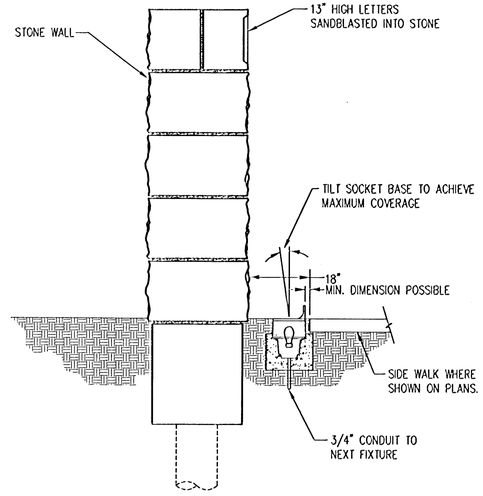
7. Photo Electric Controls:
   a. Photo Electric Controls by Tork, Intermatic and Paragon equal to those indicated below and approved by the Engineer will be acceptable.
   b. Photo Electric Controls (Photo Switches; Photo Cells) shall be rated at 1800W, 120 volts, weatherproof. Mount on roof and orient photo electric controls to the north.
   c. Photo-electric controls supplied as a part of a fixture assembly shall be as provided by Fixture Manufacturer.



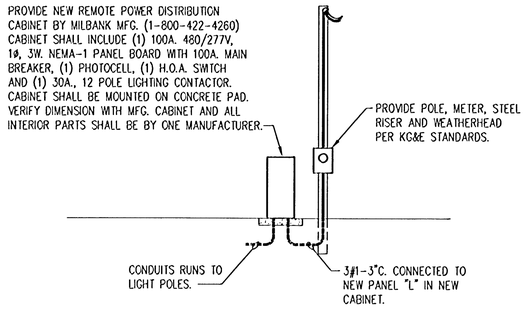
1 SITE LIGHTING WIRING DETAIL
NO SCALE



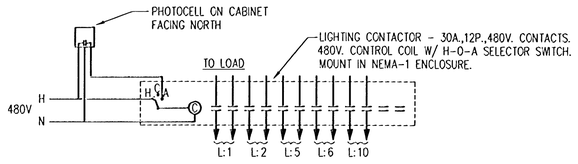
2 POLE BASE DETAIL
N.T.S. (30' MAX. POLE)
(TYP. FOR FIXTURE "SD" &"SF")



3 IN-GROUND FIXTURE DETAIL
N.T.S. (TYP. FOR FIXTURE"SC")



4 ELECTRICAL RISER DIAGRAM
N.T.S. 480V.,1ø OVERHEAD SERVICE



5 LIGHTING CONTROL WIRING DIAGRAM
NO SCALE

LIGHTING FIXTURE SCHEDULE

(P.E.C.)

FIXT. LTR.	MANUFACTURER CATALOG NUMBER	MANUFACTURER CATALOG NUMBER	MANUFACTURER CATALOG NUMBER	MANUFACTURER CATALOG NUMBER	DESCRIPTION SEE NOTES	LAMP TYPE NO.	LAMP TYPE VOLTS	LENS\LOUVER\FINISH REMARKS	W	L	D
SC	KIM LTV250/NF/50MH120/M550/M00				IN-GROUND	50W MH ED-17		BRONZE			
						1	120	FIXTURE LENS SHALL BE SANDBLASTED			
SD	KIM 1A/AR2/400HPS480/DB-P				SITE LIGHT ②	400W HPS 1	480	BRONZE TYPE B/DRKBRZ	1.0	1.43	.5
	30' ROUUND TAPER POLE W/HAND HOLE & BOLT COVERS. VERIFY POLE TO MEET TOTAL FIXTURE EPA REQ'MTS AT 110MPH W/1.3 GUST FACTOR.										
SF	KIM 2B/AR2/400HPS480/DB-P				SITE LIGHT ③	400W HPS 1	480	BRONZE TYPE B/DRKBRZ	1.0	1.43	.5
	30' ROUUND TAPER POLE W/HAND HOLE & BOLT COVERS. VERIFY POLE TO MEET TOTAL FIXTURE EPA REQ'MTS AT 110MPH W/1.3 GUST FACTOR.										

① MANUFACTURERS LISTED IN THIS SCHEDULE OR APPROVED BY WRITTEN ADDENDUM WILL BE THE ONLY APPROVED MANUFACTURERS TO BID THE LIGHTING FIXTURES FOR THIS PROJECT. CONTRACTORS AND SUPPLIERS USING PRICING FROM MANUFACTURERS NOT LISTED ON SCHEDULE OR BY ADDENDUM DO SO AT THEIR OWN RISK.

② REFER TO POLE BASE DETAIL THIS SHEET. POLE SHALL BE KIM #PTRS30-75120/A/DB-P.

③ REFER TO POLE BASE DETAIL THIS SHEET. POLE SHALL BE KIM #PTRS30-75120/B/DB-P.

PANEL 'L'

277/480 VOLTS, 1 PHASE, 3 WIRE
SURFACE MOUNTED, W/GROUND BUS
100 AMP MAIN BKR
50,000 AIC LABELLED

CRC NO	LOAD V. A.	LOAD TYPE	LOAD DESCRIPTION	P	AMP SIZE	BKR TYPE	AMP SIZE	P	LOAD DESCRIPTION	LOAD TYPE	LOAD V. A.	CRC NO
1	5300	LGH	LTS/SIGN S SIDE	2	30	A	30	2	LTS/SIGN N SIDE	LGH	6375	2
3	------	-	----------		----	B	----		----------	-	------	4
5	5025	LGH	LTS/SIGN S SIDE	2	30	A	30	2	LTS/SIGN N SIDE	LGH	4525	6
7	------	-	----------		----	B	----		----------	-	------	8
9			SPARE	2	30	A	30	2	LTS/SIGN WEST S	LGH	4225	10
11		-	----------		----	B	----		----------	-	------	12
13			SPACE			A			SPACE			14
15			SPACE			B			SPACE			16
17			SPACE			A			SPACE			18
19			SPACE			B			SPACE			20
21			SPACE			A			SPACE			22
23			SPACE			B			SPACE			24

GENERAL NOTES

1. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) & THE AMERICANS WITH DISABILITIES ACT (ADA).
2. REFER TO RELATED ARCHITECTURAL AND CIVIL DRAWINGS FOR RELATED INFORMATION.
3. REFER TO THE SPECIFICATIONS FOR DATA NOT ON THE DRAWINGS.
4. CONDUIT RUN W/CONDUCTORS AS INDICATED & GROUND WIRE SIZED PER N.E.C. 250-122 (1999). CONDUIT SIZE AS REQUIRED.
5. WHEN INCREASED CONDUCTOR SIZES ARE SHOWN ON THE PLANS, THE LARGER CONDUCTOR SIZE SHALL BE USED THROUGHOUT THE LENGTH OF THE CIRCUIT, INCLUDING NEUTRAL AND GROUND.
6. E.C. SHALL FIELD VERIFY ALL CONDITIONS PRIOR TO CONSTRUCTION. DURING CONSTRUCTION USE EXTREME CAUTION WHEN TRENCHING AND BORING HOLES FOR POLE BASES, THERE ARE NUMEROUS EXISTING BURIED PIPES AND UTILITY LINES ON THIS PROJECT.
7. E.C. SHALL COORDINATE WITH KG&E NEW POLE LOCATION, METERING LOCATION AND REQUIREMENTS.

SYMBOL LIST

SYMBOL	DESCRIPTION	MOUNTING
A	EXTERIOR POLE MTD. SINGLE HEAD	POLE
A	EXTERIOR POLE MTD. DOUBLE HEAD	POLE
A	IN GROUND LIGHT FIXTURE	GROUND
'A'	BRANCH CIRCUIT PANEL & PANEL DESIG.	CABINET
	CONDUIT RUN 2#12 & 1#12 GRD.-3/4"C.	EARTH/FLOOR
#10	SEE GENERAL NOTE 7	

REV.	DATE	DESCRIPTION

HELLMUTH, OBATA & KASSEBAUM, INC.
DALLAS, TEXAS

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
WICHITA, KANSAS

BRAD J. GOLDBERG
DALLAS, TEXAS

MUSEUM DISTRICT ROADWAY AND PEDESTRIAN IMPROVEMENTS
WICHITA, KANSAS

LIGHTING PLAN

PROJECT NO. 99773-000 | SCALE: 1"=20' | SHEET E-7