

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	87 N-0361-01	2010	165	169

MKEC
ENGINEERING
CONSULTANTS, INC.
411 N. WEBB ROAD
WICHITA, KS. 67206
316-684-9600

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ELECTRICAL GENERAL NOTES

A. ADMINISTRATIVE:
A.1. THESE GENERAL NOTES APPLY TO ALL WORK IN THIS PROJECT. REFER TO ALL PLANS, SPECIFICATIONS, AND ADDENDA FOR UPDATED AND COMPLETE ALTERNATES AND DEMOLITION ON THIS PROJECT.
A.2. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REVIEW OF ALL DISCIPLINES PLANS, SPECIFICATIONS, AND ADDENDA FOR COORDINATION, INFORMATION, AND FOR ADDITIONAL ELECTRICAL REQUIREMENTS. ADDITIONAL REQUIREMENTS MAY BE INCLUDED IN THESE DOCUMENTS THAT THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND/OR INSTALLING.
A.3. DO NOT SCALE DRAWINGS, DRAWINGS ARE DIAGRAMMATIC. ALL DIMENSIONS SHOWN ARE APPROXIMATE. ALL LOCATIONS SHALL BE FIELD VERIFIED.
A.4. NOTES ON DRAWINGS SHALL APPLY TO ALL SIMILAR CONDITIONS WHETHER THEY ARE REPEATED OR NOT.
A.5. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE A.D.A.A.G. (AMERICANS WITH DIS-ABILITIES ACT ACCESSIBILITY GUIDELINES).
A.6. THE CONTRACTOR MUST VISIT THE SITE TO FAMILIARIZE HIMSELF WITH THE EXISTING SITE CONDITIONS WHICH WILL BE AFFECTED DURING CONSTRUCTION PRIOR TO SUBMITTING HIS BID PROPOSAL, INCLUDING THE EXTENT OF DEMOLITION, AND CONFLICTS WITH PLANS.
A.7. ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE-2008 EDITION OR THE ADDITION REQUIRED BY THE AUTHORITY HAVING JURISDICTION, LOCAL/MUNICIPAL CODES, AND THE AUTHORITY HAVING JURISDICTION.
A.8. THE BUILDING SECURITY SYSTEM IS NOT PART OF THE WORK. BUILDING SECURITY SYSTEM BY OTHERS.
A.9. TELEPHONE AND DATA SYSTEM AND WIRING IS NOT PART OF THE WORK, NOTED RACEWAYS ARE PART OF THE WORK.
A.10. THE ELECTRICAL UTILITY SERVING THIS WORK IS: WESTAR ENERGY. THE REPRESENTATIVE IS SHANE PRICE. PHONE: (316)-261-6315.
A.11. REFER TO CIVIL, STRUCTURAL, AND CONTROLS PLANS, SPECIFICATIONS, AND ADDENDA FOR A DETAILED DESCRIPTION OF THE ENTIRE PROJECT AND ALL ALTERNATES. ELECTRICAL WORK MAY BE INVOLVED THAT DOES NOT SHOW ON THE ELECTRICAL PLANS.

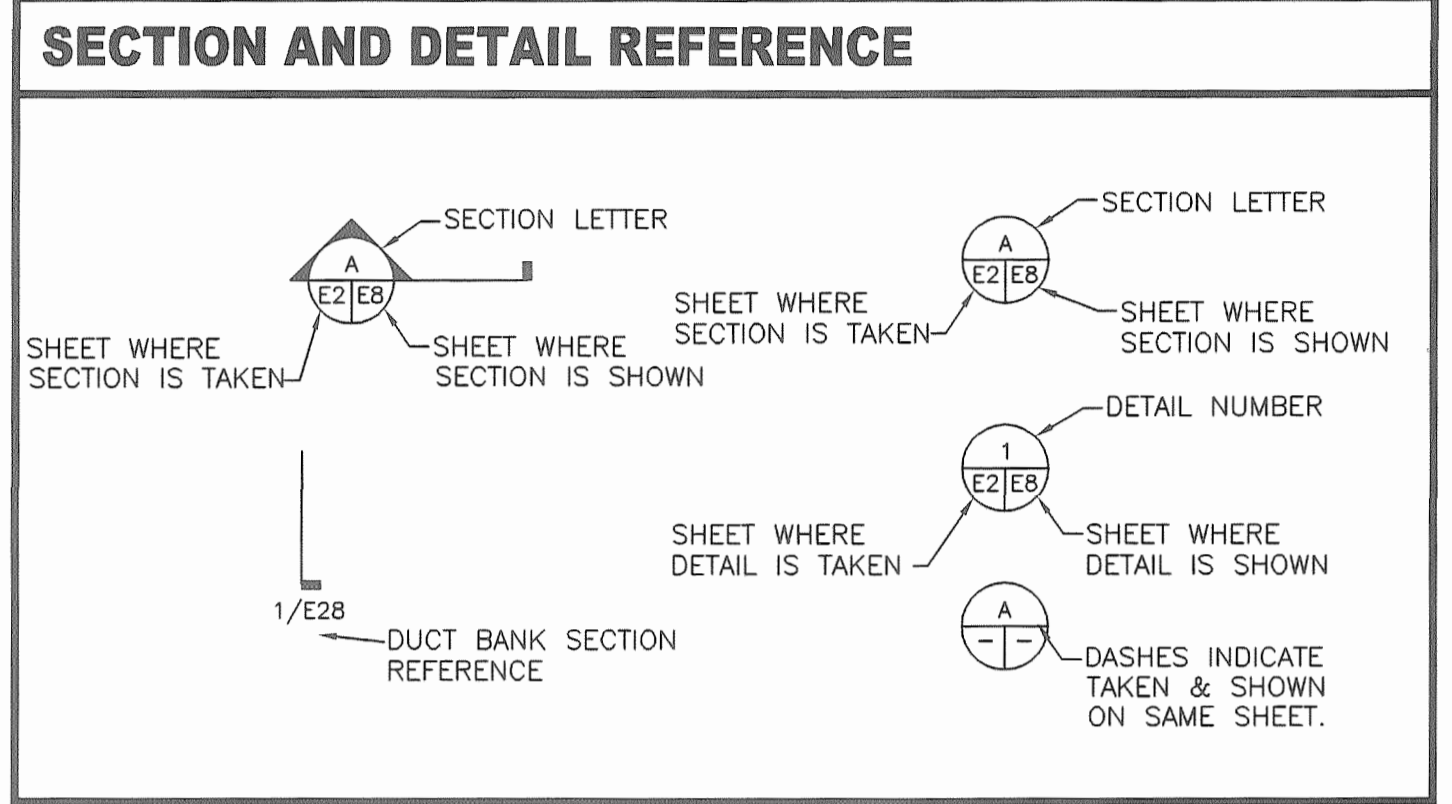
B. COORDINATION WITH OTHER TRADES:
B.1. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES. CONDUIT FOR CONTROLS SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. VERIFY ALL CONNECTIONS AND EQUIPMENT LOCATIONS WITH ALL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION. THIS CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS OR CONNECTION LOCATIONS TO ACCOMMODATE EQUIPMENT.
B.2. ELECTRICAL CONTRACTOR SHALL VERIFY TOTAL CONNECTED LOAD/HP WITH MECHANICAL AND ALL OTHER CONTRACTORS PRIOR TO WIRING OF ALL EQUIPMENT. MAKE ANY CHANGES TO OVERCURRENT DEVICES OR FEEDER SIZE PER THE NATIONAL ELECTRICAL CODE, APPLICABLE VERSION. THERE WILL BE NO COST TO THE OWNER UNLESS THE PROVIDED EQUIPMENT IS AN APPROVED CHANGE RATHER THAN A BID.
B.3. ALL CONTROL WIRING SHALL BE FURNISHED AND INSTALLED BY CONTROLS CONTRACTOR AS INDICATED IN THE CONTROLS SPECIFICATIONS. INSTALL CONDUIT FOR CABLE IN EXPOSED AREAS. REFER TO THE CONTROLS CONTRACTOR AND ALL PLANS AND SPECIFICATIONS FOR EXACT LOCATION OF EQUIPMENT LOCATIONS.
B.4. THE HYDRAULIC SYSTEM IS A PERFORMANCE SPECIFICATION. SIZING SHOWN FOR THE ELECTRICAL SYSTEM AND THE GENERATOR ON THESE PLANS SHALL BE MODIFIED PER EQUIPMENT SUPPLIER. GENERATOR FINAL SIZING SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER AND SUBMITTED WITH THE GENERATOR SUBMITTAL. SIZE OF THE SERVICE AND TRANSFER SWITCHES SHALL MATCH MAXIMUM CAPACITY OF THE GENERATOR.

C. CONDUIT AND WIRE:
C.1. MAJOR FEEDERS FROM THE SWITCHBOARD TO 480V PANELBOARDS, FEEDERS FROM 480V PANELS TO TRANSFORMERS, AND FEEDS TO 208V PANELS ARE NOT SHOWN ON THE PLANS. THESE FEEDERS ARE PART OF THE WORK, AND SHALL BE INSTALLED AS INDICATED ON THE ONE-LINE DIAGRAM.
C.2. ALL POWER WIRING OF ALL SYSTEMS SHALL BE COPPER WITH INSULATED GROUND WIRE IN STEEL CONDUIT & STEEL BOXES, UNLESS SPECIFICALLY NOTED OTHERWISE.
C.3. ALL CONNECTIONS TO EQUIPMENT SUBJECT TO MOVEMENT OR VIBRATIONS SHALL BE LIQUID TIGHT FLEXIBLE METAL CONDUIT, NOT LESS THAN 12" IN LENGTH, NOR GREATER THAN 36" IN LENGTH.
C.4. ALL CABLES INSTALLED IN AIR HANDLING PLENUMS SHALL BE PLENUM RATED CABLE.
C.5. MULTIPLE CIRCUITS ON THE SAME PHASE SHALL NOT BE COMBINED IN A SINGLE RACEWAY UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. SINGLE PHASE BRANCH CIRCUIT HOME RUNS MAY BE COMBINED AT THE CONTRACTOR'S DISCRETION NOT GREATER THAN THREE CIRCUITS CONSISTING OF (3) PHASE CONDUCTORS, (3) NEUTRAL CONDUCTORS, AND GROUNDING CONDUCTOR.
C.6. THE MINIMUM WIRE SIZE SHALL BE #10 FOR ALL POWER CIRCUITS. EACH CIRCUIT SHALL HAVE A SEPARATE AND DEDICATED NEUTRAL FROM THE PANEL. SEE BRANCH CIRCUIT VOLTAGE DROP TABLE FOR SIZING OF CONDUCTORS.
C.7. THE MINIMUM CONDUIT SIZE IS 1".
C.8. THE CONTRACTORS SHALL MAKE AN ALLOWANCE FOR THE INSTALLATION OF TEN (10) DEDICATED RECEPTACLES WITH BRANCH CIRCUIT WIRING AND CONDUIT IN ADDITION TO THOSE SHOWN ON THE CONTRACT DRAWINGS. THESE RECEPTACLES SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER.
C.9. REFER TO THE ALL DRAWINGS FOR LOCATIONS OF EXPANSION JOINTS. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH EXPANSION FITTINGS, UNLESS THE CONDUIT IS BELOW SLAB IN THE DENSE GRADE AGGREGATE. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC, AND MANUFACTURER'S WRITTEN RECOMMENDATIONS.
C.10. THIN WALL CONDUIT SHALL NOT BE INSTALLED FOR EXTERIOR USE.
C.11. ALL EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR, AND SHALL BE RIGID GALVANIZED UNLESS OTHERWISE NOTED.
C.12. ALL CONDUIT PENETRATIONS OF FIRE RATED WALLS SHALL BE SEALED WITH APPROPRIATELY RATED FIRE STOP MATERIAL ON BOTH SIDES OF THE WALL.
C.13. ALL CONDUITS STUBBED OUT OF BUILDING OR TO ANY LOCATION, SHALL BE CAPPED AND MARKED.

C.14. EXTERIOR EXPOSED CONDUIT RUNS WILL NOT BE PERMITTED. (EXCEPT UNDER BRIDGE, AND WHERE NO OTHER OPTION EXISTS ON THE DAM.)
C.15. UNDER-SLAB CONDUIT SHALL NOT BE IN THE SLAB, BUT BELOW IT IN THE DENSE GRADE AGGREGATE, AND PARALLEL TO THE SLAB. ALL CONDUIT UNDER GROUND SHALL BE A MINIMUM OF 1" THIS APPLIES FOR BOTH LINE VOLTAGE AND DATA/COMMUNICATIONS. ALL BENDS UNDERGROUND, HORIZONTAL OR VERTICAL, SHALL BE RIGID GALVANIZED STEEL PVC COATED. ALL RISERS EXITING A SLAB OR EARTH SHALL BE RIGID GALVANIZED STEEL PVC COATED. NO EXCEPTION.
C.16. CONDUIT PASSING THROUGH A SLAB SHALL BE ENTIRELY PERPENDICULAR TO THE SLAB.
C.17. MAINTAIN MAXIMUM SPACE BETWEEN LOW VOLTAGE CABLES WITH METAL CONDUCTORS AND SOURCES OF INTERFERENCE INCLUDING: POWER WIRING, ALL LIGHT FIXTURES, AND ESPECIALLY MOTORS AND TRANSFORMERS. ELECTRICAL INTERFERENCE IS REDUCED BY DISTANCE FROM SOURCES. BICSI IS THE STANDARD FOR CLEARANCE BETWEEN ELECTRO-MAGNETIC SPACING. AND INCLUDES FOUR FEET SPACING FROM TRANSFORMERS.

D. DEVICES AND BOXES:
D.1. VERIFY ALL OUTLET LOCATIONS ON JOB, PRIOR TO ROUGH-IN.
D.2. WHERE SEVERAL DEVICES ARE GANGED TOGETHER, THE COVERPLATE SHALL BE OF THE GANGED STYLE FOR THE NUMBER OF DEVICES USED.
D.3. RECEPTACLES SHALL NOT BE WIRED TO THE LOAD SIDE OF A GFCI RECEPTACLE. INSTALL GFCI RECEPTACLE WHERE SHOWN ON DRAWINGS.
D.4. COLOR OF DEVICE PLATES AND COVERS: STEEL. TYPE OF PLATES SHALL BE STEEL. ALL INSTALLATION MOUNTING HEIGHTS SHOWN ARE TO THE CENTER OF THE UNIT UNLESS OTHERWISE NOTED.
D.5. ELECTRICAL CONTRACTOR SHALL COORDINATE THE MOUNTING OF FLUSH MOUNTED DEVICES IN MASONRY BLOCK WALLS WITH THE MASONRY CONTRACTOR. MOUNTING HEIGHTS WILL BE DETERMINED BY ACTUAL BLOCK CONFIGURATION. MOUNT DEVICES SUCH THAT THE EDGE OF THE COVER PLATE IS EVEN WITH THE TOP OR BOTTOM OF THE BLOCK. DO NOT OVERLAP JOINT. MOUNT DEVICES IN A SINGLE BLOCK.
D.6. WEATHERPROOF WHILE IN USE RECEPTACLE COVERS SHALL BE METAL, AND PAINTABLE UNLESS OTHERWISE NOTED.

E. ELECTRICAL-OTHER:
E.1. PLASTIC ANCHORS SHALL NOT BE USED.
E.2. OUTLET BOXES SHALL BE ATTACHED TO BUILDING ELEMENTS SO THAT IT WILL SUPPORT 50 POUNDS MINIMUM LOAD.
E.3. ALL PANELS SHALL BE PANELBOARD CONSTRUCTION WITH BOLT ON BREAKERS. TANDEM BREAKERS SHALL NOT BE USED. NOTIFY THE ENGINEER IF ADDITIONAL POLE SPACE IS NEEDED PRIOR TO INSTALLATION.



ELECTRICAL CONTACTS

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SHADING LEGEND

LIGHT COLORED LINES INDICATE ITEMS THAT ARE EXISTING OR SHOWN FOR REFERENCE, NO WORK TO BE DONE.

DARK COLORED LINES INDICATE NEW ITEMS OR EXISTING ITEMS WHERE WORK IS TO BE DONE.

OTHER SYMBOL LIST

	SYMBOL	DESCRIPTION	MOUNTING OR AS INDICATED
LIGHTING		FLUORESCENT LIGHT FIXT. W/LETTER DESIG.	SURFACE OR RECESSED
		LIGHT FIXT. W/LETTER DESIG.	WALL
		LIGHT FIXT. W/LETTER DESIG.	WALL
POWER		SINGLE POLE SWITCH	WALL - 46" AFF
		THREE-WAY SWITCH	WALL - 46" AFF
		GFI DUPLEX RECEPTACLE (20 AMP)	WALL - 18" AFF
		ELECTRICAL PANELBOARD (SURFACE MTD.)	46" AFF TO CENTER UON
		SAFETY SWITCH (FUSED)	6"-0" AFF TO TOP
SITE		PULL BOX	GRADE
		UNDERGROUND ELECTRICAL	BELOW GRADE
		UTILITY TRANSFORMER	GRADE
		SITE LIGHT POLE AND FIXTURE HEAD	POLE
		CONDUIT MARKER	GRADE

SYMBOLS LIST NOTES:
1. SOME MAY NOT BE USED IN THIS SET OF PLANS.
2. ABBREVIATIONS MAY BE WITH OR WITHOUT PERIODS.
3. ALL MOUNTINGS APPLY UNLESS OTHERWISE NOTED.

BRANCH VOLT DROP TABLE

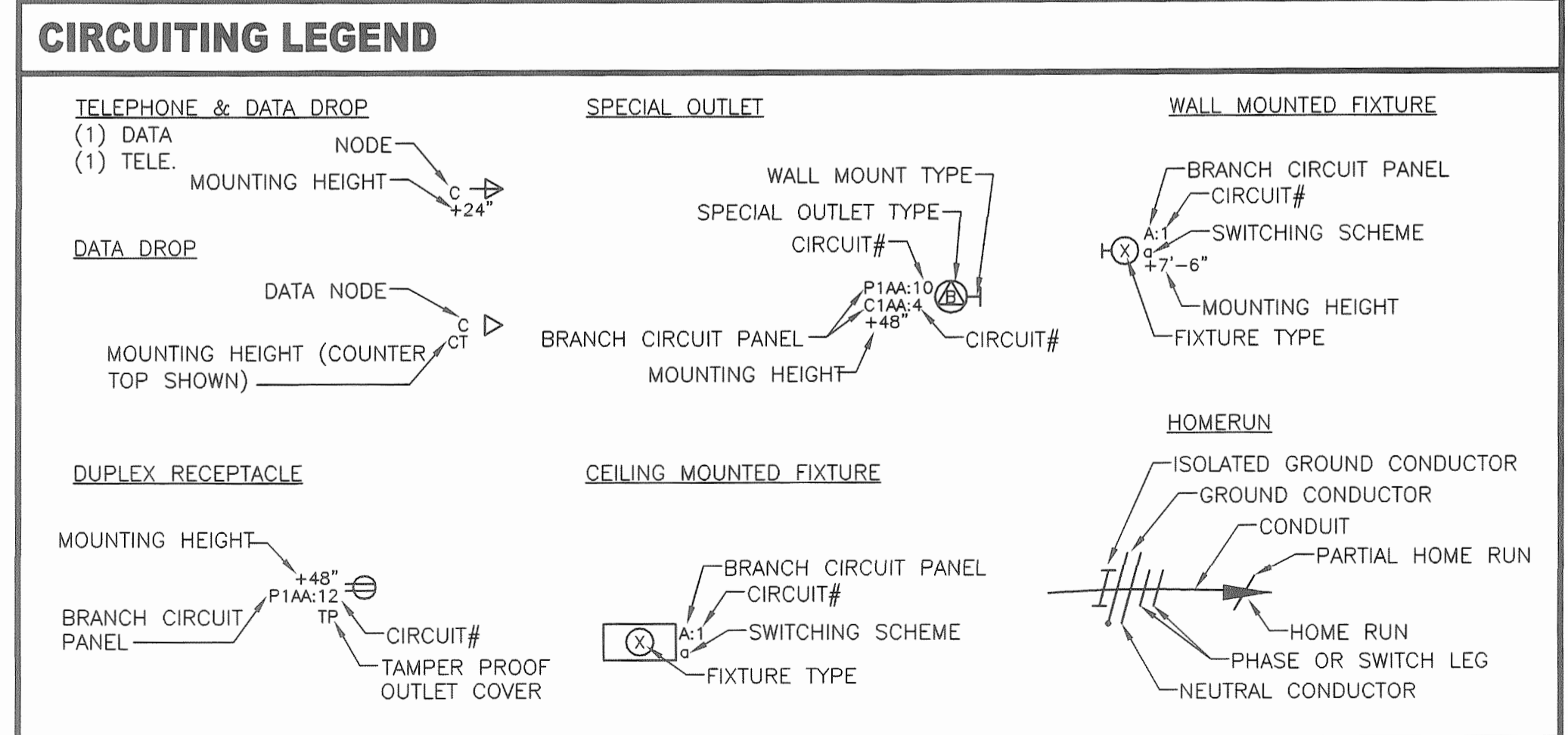
FOR COPPER SINGLE PHASE 3% VOLTAGE DROP, 20 AMP CIRCUIT BREAKER

MAX DISTANCE	120V	277V	PHASE & NEUTRAL SIZE	EQUIPMENT GROUND SIZE
175'	400'		#10	#10
275'	600'		#8	#8
475'	1000'		#6	#6

VOLTAGE DROP TABLE NOTES:
1. DISTANCE GIVEN IS THE MAXIMUM FOR THE LONGEST RUN FOR ANY BRANCH, PANEL TO LOAD.
2. THE DISTANCES ARE FOR THE ENTIRE RUN IN THE GIVEN WIRE SIZE.
3. WIRE REDUCTIONS (WHERE REQUIRED BY DEVICE CONSTRUCTION) SHALL BE MADE WITHIN 3 FEET OF THE SOURCE OR LOAD, AND SHALL BE ONLY DOWN TO THE LARGEST WIRE SIZE THE DEVICE ALLOWS.

SHEET LIST TABLE

165	ELECTRICAL GENERAL NOTES AND SYMBOLS
166	ELECTRICAL ONE LINE AND SCHEDULES
167	ELECTRICAL SITE PLAN
168	ELECTRICAL DETAILS
169	ELECTRICAL DETAILS 2



LINCOLN STREET BRIDGE AND DAM IMPROVEMENTS OVER ARKANSAS RIVER

ELECTRICAL GENERAL NOTES AND SYMBOLS

SHEET TITLE
472-84883
PROJECT NUMBER

DESIGN BY: JAG
DRAWN BY: DPG
CHECKED BY:

ISSUED: 9/27/2010
REVISED:

SHEET NO.
165 of 169



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PLOTED: Thursday, November 18, 2010 9:09:51 AM

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