

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

**ELECTRICAL GENERAL NOTES**

**A. ADMINISTRATIVE:**  
A.1. THESE GENERAL NOTES APPLY TO ALL WORK IN THIS PROJECT.  
A.2. REFER TO PIPING, CONTROLS AND CIVIL PLANS, SPECIFICATIONS (BOOK RO DRAWING FORMAT), AND ADDENDA FOR UPDATED AND COMPLETE ALTERNATES AND DEMOLITION ON THIS PROJECT.  
A.3. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REVIEW OF ALL DRAWINGS 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.4. DO NOT SCALE DRAWINGS. DRAWINGS ARE DIAGRAMMATIC. ALL DIMENSIONS SHOWN ARE APPROXIMATE. ALL LOCATIONS SHALL BE FIELD VERIFIED.  
A.5. NOTES ON DRAWINGS SHALL APPLY TO ALL SIMILAR CONDITIONS WHETHER THEY ARE REPEATED OR NOT.  
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 ELECTRICAL UTILITY SERVING THIS WORK IS: WESTAR ELECTRIC. THE REPRESENTATIVE IS SHANE PRICE. PHONE: (316)-261-6315.

**B. COORDINATION WITH OTHER TRADES:**  
B.1. 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.

**C. CONDUIT AND WIRE:**  
C.1. MAJOR FEEDERS TO OR FROM THE UTILITY, PANELS, TRANSFORMERS OR LOADS NOT SHOWN ON THE PLANS 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. 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.5. 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.6. THE MINIMUM CONDUIT SIZE IS 1".  
C.7. THIN WALL CONDUIT SHALL NOT BE INSTALLED.  
C.8. ALL EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR, AND SHALL BE RIGID GALVANIZED UNLESS OTHERWISE NOTED.  
C.9. ALL CONDUITS STUBBED TO ANY LOCATION SHALL BE CAPPED AND MARKED.  
C.10. 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, HORIZONTAL OR VERTICAL, UNDERGROUND SHALL BE RIGID STEEL. ALL RISERS EXITING A SLAB OR EARTH SHALL BE RIGID GALVANIZED STEEL. NO EXCEPTION.  
C.11. CONDUIT PASSING THROUGH A SLAB SHALL BE ENTIRELY PERPENDICULAR TO THE SLAB.

**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. ALL INSTALLATION MOUNTING HEIGHTS SHOWN ARE TO THE CENTER OF THE UNIT UNLESS OTHERWISE NOTED.  
D.5. 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 ELEMENTS THAT 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.

**SYMBOL LIST**

SYMBOL	DESCRIPTION	MOUNTING OR AS INDICATED
⊞	SINGLE POLE SWITCH	WALL - 46" AFF
⊞⊞	THREE-WAY SWITCH	WALL - 46" AFF
⊞⊞⊞	FOUR-WAY SWITCH	WALL - 46" AFF
⊞P	SWITCH WITH PILOT LIGHT	WALL - 46" AFF
⊞K	KEY SWITCH	WALL - 46" AFF
⊞T	TIME SWITCH WATT STOPPER #TS-300 SET FOR 30 MIN.	WALL - 46" AFF
⊞M	HORSE POWER RATED TOGGLE SWITCH	-
⊞D	DIMMER SWITCH	WALL - 46" AFF
a.b.c...	SWITCHING SCHEME	-
⊞	SINGLE RECEPTACLE (SAME RATING AS CIRCUIT)	WALL - 18" AFF
⊞g	ISOLATED GROUND DUPLEX RECEPTACLE	WALL - 18" AFF
⊞	DUPLEX RECEPTACLE (15 AMP)	WALL - 18" AFF
⊞	DUPLEX RECEPTACLE (20 AMP)	WALL - 18" AFF
⊞R	TAMPER-RESISTANT DUPLEX RECEPTACLE (15 AMP)	WALL - 18" AFF
⊞	QUAD-PLEX RECEPTACLE	WALL - 18" AFF
⊞	SWITCHED DUPLEX RECEPTACLE	WALL - 18" AFF
⊞	GFI DUPLEX RECEPTACLE (20 AMP)	WALL - 18" AFF
⊞	GFI QUAD RECEPTACLE	WALL - 18" AFF
⊞	SPECIAL OUTLET (SEE SCHEDULE)	WALL, FLOOR
⊞	SPECIAL OUTLET (SEE SCHEDULE)	WALL, FLOOR
⊞	TELEPHONE OUTLET	WALL - 18" AFF
⊞	DATA OUTLET	WALL - 18" AFF
⊞	COMBINATION DATA AND TELEPHONE OUTLET	WALL - 18" AFF
⊞	COMBINATION DATA AND TELEPHONE OUTLET	WALL - 18" AFF
⊞	CONTROLLER	WALL - 46" AFF
⊞	THERMOSTAT	46" AFF (SEE MECH. DWGS)
⊞	JUNCTION BOX	ABOVE CEILING
⊞	JUNCTION BOX	WALL
⊞	PULL BOX	WALL - 46" AFF
⊞	SAFETY SWITCH (NON-FUSED)	6'-0" AFF TO TOP
⊞	SAFETY SWITCH (FUSED)	6'-0" AFF TO TOP
⊞	TOGGLE DISCONNECT SWITCH	WALL
⊞	MAGNETIC STARTER	WALL
⊞	FUSE COVER - BUSSMAN #SSY FUSE @ 125% FLA.	ON EQUIPMENT
⊞	MOTOR	6'-0" AFF TO TOP
⊞	ELECTRICAL PANELBOARD (SURFACE MTD.)	46" AFF TO CENTER UON
⊞	ELECTRICAL PANELBOARD (FLUSH MTD.)	46" AFF TO CENTER UON

**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.  
4. TTB SHALL BE MINIMUM VOID FREE, A/C 3/4" PLYWOOD WITH A FACE SHOWING, KILN DRIED WITH MAXIMUM 15% MOISTURE CONTENT, SECURELY ATTACHED TO WALL FRAMING MEMBERS, WITH FIRE RETARDANT COATING, OR INTUMESCENT WHITE PAINT. COVER WALL WITH TTB PLUG FROM FLOOR TO 8' AFF.

**ABBREVIATIONS**

ABBR.	DESCRIPTION
a.b.c...	SWITCHING SCHEME
A	AMPERES
ABBR.	ABBREVIATIONS
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
BFC	BELOW FINISHED CEILING
BFG	BELOW FINISHED GRADE
BIGSI	BUILDING INDUSTRY CONSULTING SERVICE INTERNATIONAL
C	CONDUIT
CB	CIRCUIT BREAKER
CLG	CEILING
CT	MOUNTED 6" ABOVE COUNTER TOP
DF	DRINKING FOUNTAIN
EC	ELECTRICAL CONTRACTOR
EM	INDICATES DEVICE ON EMERGENCY CIRCUIT OR WITH AN EMERGENCY BATTERY
EOL	END-OF-LINE DIODE
EX	EXISTING
FLA	FULL LOAD AMPS
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
FWD	FORWARD
GC	GENERAL CONTRACTOR
GF/GFCI	GROUND FAULT INTERRUPTER
GND	GROUND
HLOA	HIGH LOW OFF AUTOMATIC
HOA	HAND-OFF-AUTO SELECTOR SWITCH
HOAFS	HAND-OFF-AUTO-FAST-SLOW SELECTOR SWITCH
HP	HORSE POWER
IG	ISOLATED GROUND
J-BOX	JUNCTION BOX
KALC	AMPERES INTERRUPTING CAPACITY IN THOUSANDS
LTC	LIGHTING
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCP	MOTOR CIRCUIT PROTECTOR (MAGNETIC TRIP)
MFS	MAXIMUM FUSE SIZE
MIN	MINIMUM
NC	NORMALLY CLOSED
NL	NIGHT LIGHT
NO	NORMALLY OPEN
(N)	NEW
OCP	OVERCURRENT PROTECTION
P	POLE
SPD	SURGE PROTECTIVE DEVICE
SR	SAFETY RECEPTACLE
T-STAT	THERMOSTAT
THU	THROUGH WALL UNIT
TM	THERMAL MAGNETIC
TP	TAMPER PROOF OUTLET COVERS
TVSS	TRANSIENT VOLTAGE SURGE PROTECTION
TYP	TYPICAL
UCT	MOUNTED UNDER COUNTER TOP
UN/UNO	UNLESS OTHERWISE NOTED
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WP	WEATHER PROOF
WPI	WP IN SERVICE (WITH PLUG INSERTED)

**ABBREVIATION SCHEDULE NOTES:**  
1. SOME MAY NOT BE USED IN THIS SET OF PLANS.  
2. ABBREVIATIONS MAY BE WITH OR WITHOUT PERIODS

**SHEET LIST TABLE**

NO.	DESCRIPTION
E0.1	ELECTRICAL GENERAL NOTES AND LEGENDS
E1.0	ELECTRICAL POWER PLAN
E2.0	ELECTRICAL DETAILS
E3.0	ELECTRICAL SPECIFICATIONS

**ELECTRICAL CONTACTS**

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P: 316.684.9600 x1201  
E: BBRAUDAWAY@MKEC.COM

**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.

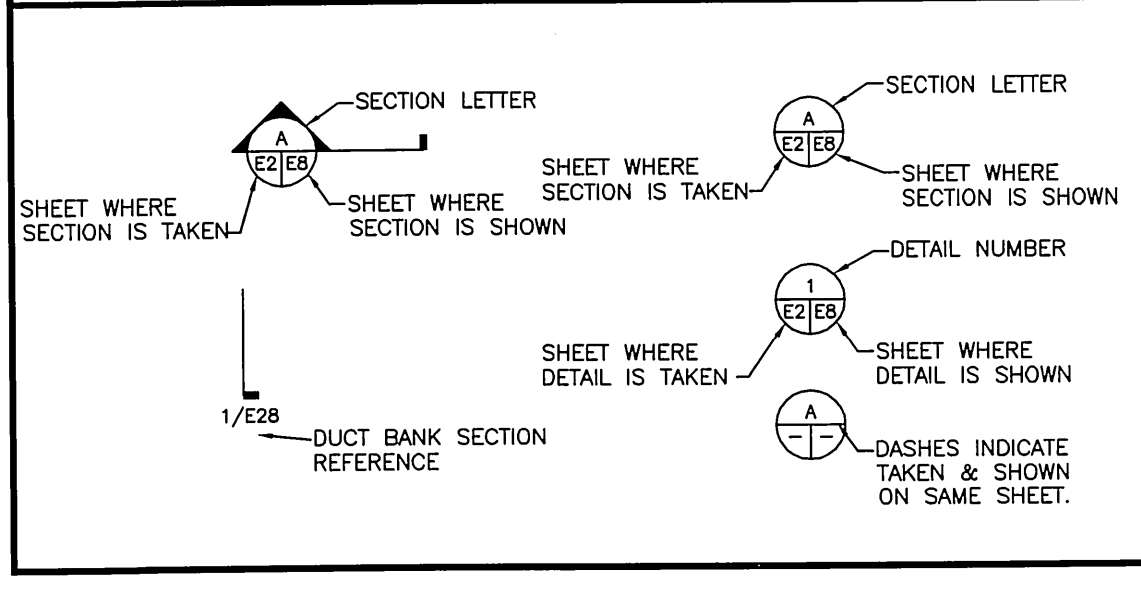
**BRANCH VOLT DROP TABLE**

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

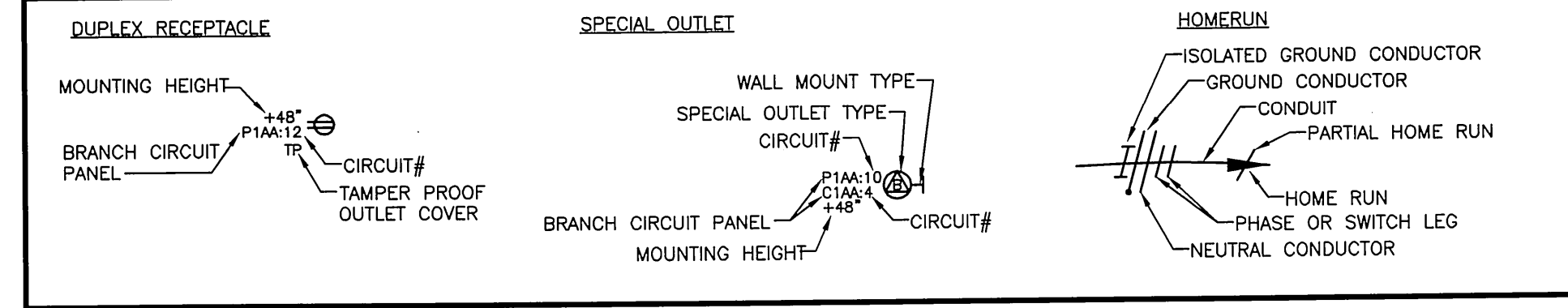
MAX DISTANCE	120V	277V	PHASE & NEUTRAL SIZE	EQUIPMENT GROUND SIZE
100'	250'		#12	#12
175'	400'		#10	#10
275'	600'		#8	#8
475'	1000'		#6	#6

**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.

**SECTION AND DETAIL REFERENCE**



**CIRCUITING LEGEND**



SANITARY SEWER LIFT STATION AND FORCE MAIN  
**BOTANICA - THE WICHITA GARDENS**  
STREETS AND UTILITIES

**ELECTRICAL GENERAL NOTES**

SHEET TITLE  
PROJECT NUMBER  
468-84683  
PROJECT NUMBER

BWB | JUB | BWB  
DESIGNED DRAWN CHECKED

ISSUED  
July 2010

REVISED