

J:\PROJECTS\2023\20230110\0431_C00W_WD02_BRIDGE REPLACEMENT AT 15TH STREET\1010\BIDDING\MEP\ELECTRICAL\COVER SHEET.DWG
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PROJECT GENERAL NOTES

- ALL WORK SHALL COMPLY WITH CURRENT FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES AS WELL AS THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL REPORT ANY CONFLICTS TO THE ENGINEER AS SOON AS THEY ARE DISCOVERED.
- THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE A.D.A.A.G. (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES).
- THE CONTRACTOR SHALL REVIEW THE DRAWINGS AND SPECIFICATIONS PRIOR TO BIDDING JOB AND DURING CONSTRUCTION. EXCEPT AS OTHERWISE NOTED, THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIALS, AND LABOR FOR A COMPLETE PROJECT AS SHOWN IN THE DRAWINGS AND SPECIFICATIONS. DRAWINGS AND SPECIFICATIONS CARRY EQUAL IMPORTANCE AND ITEMS LISTED IN EITHER SHALL BE FURNISHED AS IF LISTED IN BOTH. ALSO REVIEW DETAILS AND RISER DIAGRAMS FOR ADDITIONAL ITEMS/INSTRUCTIONS WHETHER SPECIFICALLY REFERRED TO ON PLANS OR NOT.
- THE CONTRACTOR MUST VISIT THE SITE TO FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS WHICH WILL BE AFFECTED DURING CONSTRUCTION PRIOR TO SUBMITTING THEIR BID PROPOSAL, INCLUDING THE EXTENT OF DEMOLITION AND CONFLICTS WITH PLANS.
- DRAWINGS ARE DIAGRAMMATIC IN NATURE AND SHOW THE GENERAL INSTALLATION OF EQUIPMENT AND MATERIALS IN RELATIONSHIP TO STRUCTURE AND OTHER TRADES. THEY MAY NOT SHOW EVERY REQUIRED OFFSET, FITTING, ETC. CONTRACTOR SHALL FIELD VERIFY ACTUAL JOB CONDITIONS AND COORDINATE WORK WITH OTHER TRADES PRIOR TO BIDDING JOB AND PRIOR TO ORDERING EQUIPMENT, FABRICATION OF MATERIALS, OR STARTING WORK. CONTRACTOR SHALL NOT SCALE THE DRAWINGS. REFER TO CIVIL PLANS/SPECIFICATIONS FOR A DETAILED DESCRIPTION OF ALL ALTERNATES AND PHASES.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL ITEMS THAT AFFECT OTHER DISCIPLINES WITH THE CORRESPONDING CONTRACTOR AND THE GENERAL CONTRACTOR IF EQUIPMENT, MATERIALS, ETC. OTHER THAN THOSE SCHEDULED AND SPECIFIED (PENDING PRE-APPROVAL) ARE FURNISHED.
- CHANGE ORDERS WILL NOT BE GRANTED DUE TO LACK OF COORDINATION WITH JOB CONDITIONS AND/OR OTHER CONTRACTORS.
- EXISTING EQUIPMENT, DEVICE, AND FIXTURE LOCATIONS ARE SHOWN FOR REFERENCE ONLY. ADJUST EXACT INSTALLATION AND CONNECTION OF NEW ITEMS ACCORDING TO ACTUAL CONDITIONS. EXISTING CONDITIONS SHOWN ON THE DRAWINGS WERE TAKEN FROM ORIGINAL DOCUMENTS AND FIELD OBSERVATIONS. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF EXISTING CONDITIONS. E.C. SHALL VISIT THE JOBSITE PRIOR TO BID AND VERIFY ALL EXISTING CONDITIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR STORAGE OF RELOCATED EQUIPMENT AND MATERIALS DURING CONSTRUCTION. ITEMS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- UPON COMPLETION OF THE PROJECT THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS TO THE OWNER, ARCHITECT, AND ENGINEER SHOWING EQUIPMENT, DEVICES, FIXTURES, CIRCUITS, ETC. THAT DIFFERS FROM CONSTRUCTION DOCUMENTS AS THEY ARE ACTUALLY INSTALLED.
- THE RESPONSIBILITY OF EACH CONTRACTOR IS NOT LIMITED TO THEIR SPECIFIC DISCIPLINE'S DRAWING SHEETS. REFER TO OTHER DISCIPLINES' DRAWING SHEETS AS REQUIRED FOR ADDITIONAL INFORMATION/INSTRUCTIONS.
- FIRE STOP ALL PENETRATIONS THROUGH RATED WALLS. SLEEVE IN ENTIRETY WITH APPROPRIATE SLEEVE MATERIAL.

ELECTRICAL SHEET INDEX

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ELECTRICAL GENERAL NOTES

- A. COORDINATION WITH OTHER TRADES:**
- ELECTRICAL CONTRACTOR SHALL VERIFY TOTAL CONNECT LOAD/HP WITH MECHANICAL AND ALL OTHER CONTRACTORS PRIOR TO WIRING OF ALL EQUIPMENT. MAKE ANY CHANGES TO OVERCURRENT DEVICES OR FEED SIZE PER THE NATIONAL ELECTRICAL CODE, APPLICABLE VERSION.
- B. CONDUIT AND WIRE:**
- ALL POWER WIRING OF ALL SYSTEMS SHALL BE COPPER WITH INSULATED GROUND WIRE IN STEEL CONDUIT AND STEEL BOXES UNLESS SPECIFICALLY NOTED OTHERWISE.
 - 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.
 - 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.
 - THE MINIMUM WIRE SIZE SHALL BE #12 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.
 - THE MINIMUM CONDUIT SIZE IS 0.5".
 - REFER TO THE CIVIL DRAWINGS FOR LOCATIONS OF BRIDGE EXPANSION JOINTS. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH EXPANSION FITTINGS. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC, AND MANUFACTURER'S WRITTEN RECOMMENDATIONS.
 - ALL EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR, AND SHALL BE RIGID GALVANIZED UNLESS OTHERWISE NOTED.
 - EXTERIOR EXPOSED CONDUIT RUNS WILL NOT BE PERMITTED, (EXCEPT FOR NEW SERVICE ENTRANCES FOR POWER OR TELEPHONE, OR NOTED OTHERWISE ON PLAN.)
 - UNDER-SLAB CONDUIT SHALL NOT BE IN THE SLAB, BUT BELOW IT IN THE DENSE GRADE AGGREGATE, AND PARALLEL TO THE SLAB.
 - ALL CONDUIT UNDERGROUND 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, NO EXCEPTION.
 - 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.
 - FEEDER ROUTING INDICATED ON THE DRAWINGS DOES NOT INDICATE NEC CODE REQUIRED PULL BOXES. E.C. SHALL BE RESPONSIBLE FOR LOCATING AND INSTALLING REQUIRED PULL BOXES FOR EACH FEEDER.
 - TERMINATE CONDUCTORS PER EQUIPMENT MANUFACTURER'S RECOMMENDED TORQUE VALUES. IN THE ABSENCE OF MANUFACTURER'S RECOMMENDED TORQUE VALUES, SEE NEC 2023 ARTICLE 110.14 AND "INFORMATIVE ANNEX I TIGHTENING TORQUE TABLES" (TABLE I.1, TABLE I.2, AND TABLE I.3) FOR TIGHTEN SCREW-TYPE CONNECTIONS FOR POWER AND LIGHTING CIRCUITS.
- D. DEVICES AND BOXES:**
- WHERE SEVERAL DEVICES ARE GANGED TOGETHER, THE COVERPLATE SHALL BE OF THE GANGED STYLE FOR THE NUMBER OF DEVICES USED.
 - RECEPTACLES SHALL NOT BE WIRED TO THE LOAD SIDE OF A GFCI RECEPTACLE.
 - WEATHERPROOF WHILE IN USE RECEPTACLE COVERS SHALL BE METAL, AND PAINTABLE UNLESS OTHERWISE NOTED.
- E. ELECTRICAL-OTHER:**
- ALL PANELS SHALL BE PANELBOARD CONSTRUCTION WITH BOLT ON BREAKERS. TANDEM BREAKERS SHALL NOT BE USED.
 - UPON COMPLETION OF PROJECT, E.C. SHALL PROVIDE A FULL TYPED AND UPDATED PANEL DIRECTORY FOR EACH PANELBOARD AFFECTED BY THE SCOPE OF THIS PROJECT.

ELECTRICAL CONTACTS

ELECTRICAL: STEVEN WIEBE, P.E. PHONE: 316.684.9600 X1155 EMAIL: SWIEBE@MKEC.COM	ELECTRICAL UTILITY: EVERGY LADONNA VANDERFORD PHONE: 316.261.6290 EMAIL: LADONNA.VANDERFORD@EVERGY.COM
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ELECTRICAL SYMBOL LIST

ABBR.	DESCRIPTION	MOUNTING OR AS INDICATED
 A	LIGHT FIXTURE W/ TYPE DESIGNATION (HATCH INDICATES EMERGENCY POWER)	AS NOTED OR SCHEDULED
 OA	LIGHT FIXTURE W/ TYPE DESIGNATION (HATCH INDICATES EMERGENCY POWER)	AS NOTED OR SCHEDULED
 HOA	LIGHT FIXTURE W/ TYPE DESIGNATION (HATCH INDICATES EMERGENCY POWER)	WALL
 HA	WALL MOUNTED AREA LIGHT W/ TYPE DESIGNATION	WALL
 POA	POLE MOUNTED AREA LIGHT W/ TYPE DESIGNATION	POLE
 Q	MISCELLANEOUS LIGHT FIXTURE W/ TYPE DESIGNATION	AS NOTED OR SCHEDULED
 XA	EXIT LIGHT W/ TYPE DESIG. (SHADE INDICATES FACE DIRECTION)	CEILING
 HOXA	EXIT LIGHT W/ TYPE DESIG. (SHADE INDICATES FACE DIRECTION)	WALL - 6" ABOVE DOOR
 EA	EMERGENCY LIGHT FIXTURE W/ TYPE DESIGNATION	WALL - 12" BFC
 S	SINGLE POLE SWITCH	WALL - 44" AFF
 S3	THREE-WAY SWITCH	WALL - 44" AFF
 S4	FOUR-WAY SWITCH	WALL - 44" AFF
 SH	HORSE POWER RATED TOGGLE SWITCH	WALL - 44" AFF
 SD	DIMMER SWITCH	WALL - 44" AFF
a,b,c,...	SWITCHING SCHEME	--
 M#	MOTION DETECTOR SWITCH (TYPE #)	WALL - 44" AFF
 MS#	MOTION SENSOR W/POWER PACK (TYPE #)	CEILING
 S	SIMPLEX RECEPTACLE (SAME RATING AS CIRCUIT)	WALL - 18" AFF
 D	DUPLEX RECEPTACLE (20 AMP)	WALL - 18" AFF
 C	CEILING MOUNTED RECEPTACLE	CEILING
 Q	QUAD-PLEX RECEPTACLE	WALL - 18" AFF
 SD	SWITCHED DUPLEX RECEPTACLE	WALL - 18" AFF
 GFCI	GFCI DUPLEX RECEPTACLE (20 AMP)	WALL - 18" AFF
 GFCI	GFCI QUAD RECEPTACLE	WALL - 18" AFF
 SO	SPECIAL OUTLET (SEE SCHEDULE)	WALL, FLOOR
 T	TELEPHONE OUTLET	WALL - 44" AFF
 D	DATA OUTLET	WALL - 18" AFF
 TV	T.V. OUTLET	AS NOTED
 JB	JUNCTION BOX	AS NOTED
 PB	PULL BOX	FLUSH (GRADE OR FLOOR)
 SS	SAFETY SWITCH (NON-FUSED)	6'-0" AFF TO TOP
 SS	SAFETY SWITCH (FUSED)	6'-0" AFF TO TOP
 TDS	TOGGLE DISCONNECT SWITCH	WALL
 CS	COMBINATION STARTER	WALL
 ES	EMERGENCY STOP-MUSHROOM HEAD, MAINTAINED PUSH BUTTON	44" AFF OR AFG
 M	MOTOR	AS NOTED
 EP	ELECTRICAL PANELBOARD (SURFACE MTD.)	48" AFF TO CENTER
 EP	ELECTRICAL PANELBOARD (FLUSH MTD.)	48" AFF TO CENTER
 TTB	TELEPHONE TERMINAL BOARD (SURFACE MTD.)	NOTE 4
 M	UTILITY METER	AS NOTED

- SYMBOLS LIST NOTES:**
- SOME MAY NOT BE USED IN THIS SET OF PLANS.
 - ABBREVIATIONS MAY BE WITH OR WITHOUT PERIODS.
 - ALL MOUNTINGS APPLY UNLESS OTHERWISE NOTED.
 - 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 PLYWOOD FROM FLOOR TO 8" AFF.
 - LIGHT FIXTURE CAPITAL LETTER DESIGNATIONS KEY TO MATCHING ENTRIES IN THE LIGHTING FIXTURE SCHEDULE.
 - LIGHT FIXTURE SMALL CASE LETTER DESIGNATIONS (IF SHOWN) REPRESENT SWITCHING REQUIREMENTS.
 - ALL MOUNTING HEIGHTS SHALL BE TO CENTERLINE OF DEVICE U.O.N.

CODE INFORMATION

2023	NATIONAL ELECTRICAL CODE (NEC)
2024	KANSAS BUILDING CODE
2018	KANSAS ENERGY CODE

LINETYPES LEGEND

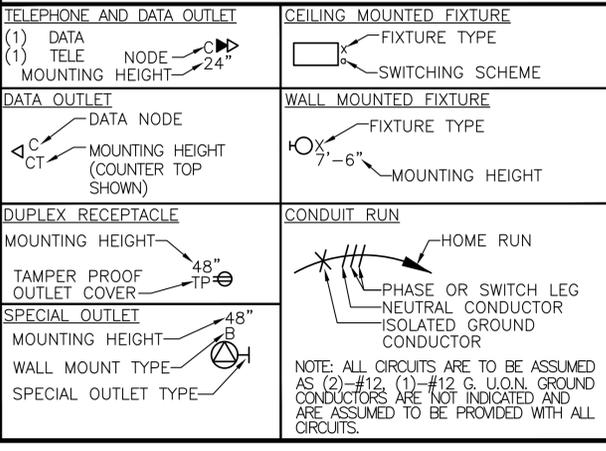
---	EXISTING/REFERENCE	---	WORK TO BE DONE
---	EXISTING TO BE DEMOLISHED		

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERES	MCP	MOTOR CIRCUIT PROTECTOR (MAGNETIC TRIP)
AFF	ABOVE FINISHED FLOOR	MFS	MAXIMUM FUSE SIZE
AFG	ABOVE FINISHED GRADE	(N)	NEW
AIC	AMPERES INTERRUPTING CAPACITY (K IS *1000)	NC	NORMALLY CLOSED
ATS	AUTOMATIC TRANSFER SWITCH	NL	NIGHT LIGHT
BFC	BELOW FINISHED CEILING	NO	NORMALLY OPEN
BFG	BELOW FINISHED GRADE	NTS	NOT TO SCALE
C	CONDUIT	OCP	OVERCURRENT PROTECTION
CB	CIRCUIT BREAKER	P	POLE
CT	6" ABOVE COUNTERTOP	PH	PHASE
DN	DOWN	(R)	RELOCATE/RELOCATED
(E)	EXISTING TO REMAIN	RLA	RUNNING LOAD AMPS
EC	ELECTRICAL CONTRACTOR	SPD	SURGE PROTECTIVE DEVICE
EM	INDICATES DEVICE ON EMERGENCY CIRCUIT OR W/ AN EMERGENCY BATTERY	SR	SAFETY RECEPTACLE
		T-STAT	THERMOSTAT
FLA	FULL LOAD AMPS	TCC	TEMPERATURE CONTROLS CONTRACTOR
GC	GENERAL CONTRACTOR	TP	TAMPER PROOF/SAFETY OUTLET OR COVERS
GFI/GFCI	GROUND FAULT INTERRUPTER	TYP	TYPICAL
GND	GROUND	UCT	MOUNTED UNDER COUNTER WITHIN 12" OF TOP.
HOA	HAND-OFF-AUTO SELECTOR SWITCH	UON	UNLESS OTHERWISE NOTED
HP	HORSE POWER	V	VOLTS
IG	ISOLATED GROUND	VFD	VARIABLE FREQUENCY DRIVE
J-BOX	JUNCTION BOX	W	WIRE
KW	KILOWATT	WP	WEATHER PROOF
LTG	LIGHTING	WPI	WP IN SERVICE (WITH PLUG INSERTED)
MC	MECHANICAL CONTRACTOR	WR	WEATHER RESISTANT TYPE DEVICE
MCA	MINIMUM CIRCUIT AMPACITY		
MCOP	MAXIMUM OVERCURRENT PROTECTION		

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

CIRCUITING LEGEND



BRANCH VOLT DROP TABLE

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

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

- VOLTAGE DROP TABLE NOTES:**
- DISTANCE GIVEN IS THE MAXIMUM FOR THE LONGEST RUN FOR ANY BRANCH, PANEL TO LOAD.
 - THE DISTANCES ARE FOR THE ENTIRE RUN IN THE GIVEN WIRE SIZE.
 - 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.
 - OTHER NEC DERATING FACTORS ARE NOT INCLUDED IN THE WIRE SIZES IN THIS TABLE.



IMPROVEMENT PLANS FOR 15TH STREET BRIDGE OVER THE WICHITA DRAINAGE CANAL WICHITA, KS

ELECTRICAL COVERSHEET

PROJECT NO.	472-2023-085864	
SCALE	AS NOTED	
DRAWN	DESIGNED	CHECKED
NAS	SW	SW
NO.	REVISION	DATE
SHEET NO. 84 OF 114		