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 ROUTED: Tuesday, September 03, 2019 @ 04:15PM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	87 N-0662-01	2019	131	194



### ELECTRICAL GENERAL NOTES

- A. 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".
  - ALL EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR, AND SHALL BE RIGID GALVANIZED UNLESS OTHERWISE NOTED.
  - 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. 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.
- B. 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.
- C. 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.

### 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 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.
- 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 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. 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. G.C. SHALL CUT AND PATCH FLOOR, WALLS, AND ROOF AS REQUIRED FOR INSTALLATION/DEMOLITION OF ELECTRICAL SYSTEMS.
- 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.
- 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.

### CODE INFORMATION

2017 NATIONAL ELECTRICAL CODE  
2012 INTERNATIONAL BUILDING CODE

### ELECTRICAL CONTACTS

**ELECTRICAL:**

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### LINETYPES LEGEND

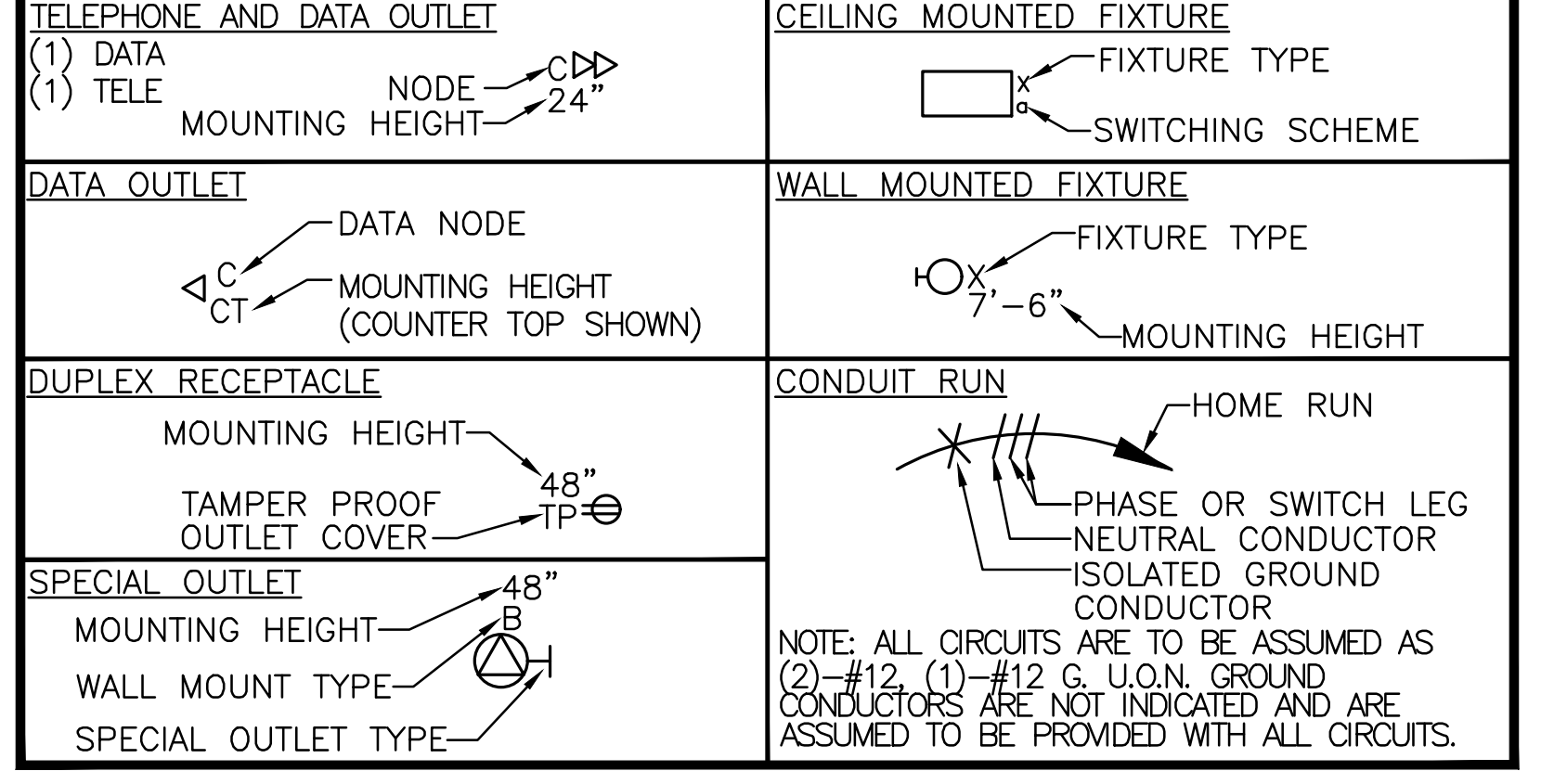
- EXISTING/REFERENCE
- - - - - EXISTING TO BE DEMOLISHED
- WORK TO BE DONE

### ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION	MOUNTING OR AS INDICATED
	FIXTURE W/LETTER DESIGNATION	SURFACE OR RECESSED
	FIXTURE W/EM POWER W/LETTER DESIGN.	SURFACE OR RECESSED
	FIXTURE W/LETTER DESIGNATION	WALL,SURFACE,SUSPENDED
	FIXTURE W/EMERGENCY POWER W/LETTER DESIGN.	WALL,SURFACE,SUSPENDED
	FIXTURE W/LETTER DESIGNATION	RECESSED OR SURFACE
	FIXTURE W/EM POWER W/LETTER DESIGNATION	RECESSED OR SURFACE
	FIXTURE W/LETTER DESIGNATION	WALL
	FIXTURE W/EM POWER W/LETTER DESIGNATION	WALL
	EXIT SIGN W/LTR. DESIGN. (SHADE INDICATES FACE DIRECTION)	CEILING
	EXIT SIGN W/LTR. DESIGN. (SHADE INDICATES FACE DIRECTION)	WALL-6" ABOVE DOOR
	EMERGENCY LIGHT FIXTURE W/LTR. DESIGN.	WALL-12" BELOW CLG
	SINGLE POLE SWITCH	WALL-48" AFF TO TOP
	THREE-WAY SWITCH	WALL-48" AFF TO TOP
	DIMMER SWITCH	WALL-48" AFF TO TOP
	SWITCHING SCHEME	-
	MOTION DETECTOR (TYPE #)	WALL-48" AFF TO TOP
	ULTRA SONIC SENSOR (TYPE #)	CEILING
	DUPLEX RECEPTACLE (20A)	WALL-18" AFF
	QUAD-PLEX RECEPTACLE	WALL-18" AFF
	GFCI DUPLEX RECEPTACLE (20 AMP)	WALL-18" AFF
	GFCI QUAD RECEPTACLE	WALL-18" AFF
	SPECIAL OUTLET (SEE SCHEDULE)	WALL, FLOOR
	TELEPHONE OUTLET	WALL-18" AFF
	DATA OUTLET	WALL-18" AFF
	COMBINATION DATA AND TELEPHONE OUTLET	WALL-18" AFF
	CONNECT TO EXISTING	AS NOTED
	JUNCTION BOX	AS NOTED
	PULL BOX	AS NOTED
	SAFETY SWITCH (NON-FUSED)	4'-0" AFF
	SAFETY SWITCH (FUSED)	4'-0" AFF
	TOGGLE DISCONNECT SWITCH	WALL
	MOTOR	AS NOTED
	ELECTRICAL PANELBOARD (SURFACE MTD)	48" AFF TO CENTER UON
	ELECTRICAL PANELBOARD (FLUSH MTD)	48" AFF TO CENTER UON
	TELEPHONE TERMINAL BOARD (SURFACE MTD)	NOTE 4
	ELECTRICAL UTILITY METER	AS NOTED

- SYMBOLS LIST NOTES:**
- 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.

### CIRCUITING LEGEND



### 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	OC	OVERCURRENT PROTECTION
CB	CIRCUIT BREAKER	P	POLE
CT	6" ABOVE COUNTERTOP	PH	PHASE
DN	DOWN	RLA	RUNNING LOAD AMPS
(E)	EXISTING	(R)	RELOCATED
EC	ELECTRICAL CONTRACTOR	SPD	SURGE PROTECTIVE DEVICE
EM	INDICATES DEVICE ON EMERGENCY CIRCUIT OR W/ AN EMERGENCY BATTERY	SR	SAFETY RECEPTACLE
FLA	FULL LOAD AMPS	T-STAT	THERMOSTAT
GC	GENERAL CONTRACTOR	TCC	TEMPERATURE CONTROLS CONTRACTOR
GFI/GFCI	GROUND FAULT INTERRUPTER	TP	TAMPER PROOF/SAFETY OUTLET OR COVERS
GND	GROUND	TYP	TYPICAL
HOA	HAND-OFF-AUTO SELECTOR SWITCH	UCT	MOUNTED UNDER COUNTER WITHIN 12" OF TOP.
HP	HORSE POWER	UON	UNLESS OTHERWISE NOTED
IG	ISOLATED GROUND	V	VOLTS
J-BOX	JUNCTION BOX	VFD	VARIABLE FREQUENCY DRIVE
KW	KILOWATT	W	WIRE
LTG	LIGHTING	WP	WEATHER PROOF
MC	MECHANICAL CONTRACTOR	WPI	WP IN SERVICE (WITH PLUG INSERTED)
MCA	MINIMUM CIRCUIT AMPACITY	WR	WEATHER RESISTANT TYPE DEVICE
MCOP	MAXIMUM OVERCURRENT PROTECTION		

**ABBREVIATION SCHEDULE NOTES:**

- SOME MAY NOT BE USED IN THIS SET OF PLANS.
- ABBREVIATIONS MAY BE WITH OR WITHOUT PERIODS.

### BRANCH VOLT DROP TABLE

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

MAXIMUM DISTANCE	PHASE AND NEUTRAL SIZE	EQUIPMENT GROUND SIZE
120V		
100'	#12	#12
175'	#10	#10
275'	#8	#8
475'	#6	#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.

### ELECTRICAL SHEET LIST

- 119 - ELECTRICAL COVERSHEET
- 120 - ELECTRICAL SITE PLAN
- 121 - ELECTRICAL DETAILS & SPECIFICATIONS
- 122 - ELECTRICAL SPECIFICATIONS

STREET IMPROVEMENTS FOR  
**17TH ST - BROADWAY TO I-135**  
 FROM BROADWAY TO I-135

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### ELECTRICAL COVERSHEET

PROJECT NO.	87 N-0662-01	
DATE	8/30/2019	
SCALE	#"-#"	
DESIGNED	DRAWN	CHECKED
XXX	XXX	XXX
NO.	REVISION	DATE
SHEET NO.	131 OF 194	

