

ELECTRICAL SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	MOUNTING HEIGHT	SYMBOL	DESCRIPTION	MOUNTING HEIGHT	SYMBOL	DESCRIPTION	MOUNTING HEIGHT
GENERAL ELECTRICAL SYMBOLS										
A. DEVICES SHALL BE MOUNTED AT THE HEIGHT INDICATED, UNLESS NOTED OTHERWISE. HEIGHTS ARE MEASURED TO THE CENTER OF THE DEVICE UNLESS OTHERWISE NOTED. DEVICES MOUNTED IN BLACK-BRICK WALLS SHALL CORRESPOND WITH BLOCK/BRICK COURSING. SEE MASONRY BACKBOX MOUNTING HEIGHT DETAIL.			RECESSED FLUORESCENT LIGHT FIXTURE (TYPE DENOTED)							
B. ALL MOUNTING HEIGHTS INDICATED ARE FROM THE FINISH FLOOR TO THE CENTER OF THE BOX.			SURFACE MOUNTED FLUORESCENT LIGHT FIXTURE (TYPE DENOTED)							
C. ON DEMOLITION DRAWINGS, DASHED ELECTRICAL ITEMS DENOTES EXISTING ITEMS TO BE REMOVED; SOLID SCREENED ELECTRICAL ITEMS DENOTES EXISTING ITEMS TO REMAIN, UNLESS NOTED OTHERWISE.			LIGHT FIXTURE ON EMERGENCY CIRCUIT, SWITCHED							
D. ON NEW WORK LIGHTING, POWER AND SYSTEMS DRAWINGS, SCREENED ELECTRICAL ITEMS DENOTES EXISTING ITEMS TO REMAIN; SOLID ELECTRICAL ITEMS DENOTES NEW ITEMS, UNLESS NOTED OTHERWISE.			LIGHT FIXTURE ON EMERGENCY CIRCUIT, UNSWITCHED							
DEVICES TO BE DEMOLISHED:			FLUORESCENT STRIP LIGHTING FIXTURE, FOR SUSPENDED MOUNTING HEIGHTS, SEE DRAWINGS.							
EXISTING DEVICES TO REMAIN:			WALL MOUNTED LIGHTING FIXTURE, SEE REFLECTED CEILING PLAN FOR MOUNTING HEIGHT.							
NEW DEVICES:			LINEAR PENDANT LIGHTING FIXTURE, FOR SUSPENDED MOUNTING HEIGHTS, SEE DRAWINGS.							
KEYED NOTE:			CIRCULAR PENDANT LIGHT FIXTURE, FOR SUSPENDED MOUNTING HEIGHTS, SEE DRAWINGS.							
FEEDER OR EQUIPMENT DRAWING NOTE:			TRACK LIGHTING FIXTURE (WITH HEADS OR PENDANTS), LENGTH AND MOUNTING AS NOTED ON DRAWINGS.							
ELEVATION, SEE DETAIL # ON SHEET EA:			EXIT LIGHT-FACE SHOWN SHADED; PLAN INDICATES CEILING OR WALL MOUNTING AND DIRECTIONAL ARROWS.							
POWER DISTRIBUTION AND EQUIPMENT			EMERGENCY LIGHTING UNIT - TWO HEAD MOUNTING AS INDICATED ON DRAWINGS.							
SWITCHBOARD WITH CONCRETE PAD, FLOOR MOUNTED.			POLE MOUNTED SITE LIGHTING FIXTURE - SINGLE SQUARE HEAD, # OF HEADS AS SHOWN.							
RELAY/CONNECTION CABINET, WALL MOUNTED, WITH TOP 6'-0".			SWITCHING NOTATION: ■ INDICATES THE FOLLOWING:							
PANELBOARD, WALL MOUNTED WITH TOP 6'-0".			3 THREE-WAY							
AUTOMATIC TRANSFER SWITCH, WALL OR FLOOR MOUNTED.			4 FOUR-WAY							
TRANSFORMER, WITH SIZE AS NOTED. SEE RISER DIAGRAM, SCHEDULE OR FLOOR PLANS; VERIFY.			D DIMMER							
PULLBOX			K KEYED							
HANDHOLE			LV LOW VOLTAGE, MOMENTARY CONTACT							
MOTOR CONTROL CENTER (IN CONCRETE PAD), FLOOR MOUNTED.			MG MOMENTARY CONTACT							
PLUG-IN BUS DUCT SWITCH, SIZE AS INDICATED AND SPECIFIED. VERIFY MOUNTING HEIGHT.			OS INTEGRAL OCCUPANCY SENSOR							
METER/SOCKET ASSEMBLY, MOUNT TOP AT 6'-0".			PL LIGHTED PILOT LIGHT							
BRANCH CIRCUIT, FEEDER, RACEWAY			TD TIME DELAY							
INDICATES CONDUIT ROUTED BELOW OR IN FLOOR STRUCTURE OR BELOW GRADE OR AS NOTED.			EACH SYMBOL DENOTES A SINGLE POLE LIGHT SWITCH WHEN MULTIPLE SWITCHES ARE SHOWN, LOCATE ALL UNDER SINGLE MULTI-SWITCH COVERPLATE.							
INDICATES CONDUIT IS SURFACE MOUNTED.			PHOTOCELL - WALL, CEILING, OR ROOF MOUNTED; SEE DRAWINGS.							
INDICATES CONDUIT ROUTED CONCEALED ABOVE FLOOR OR GRADE (IN CEILING OR WALL).			OCCUPANCY SENSOR - WALL OR CEILING MOUNT							
INDICATES CONDUIT UP.			OS4 INDICATES TYPE PER OCCUPANCY SENSOR SCHEDULE.							
INDICATES CONDUIT DOWN.			EMERGENCY LIGHTING RELAY (UL 924) - SEE WIRING SCHEMATIC ON DETAIL SHEETS.							
CONDUIT STUB - TERMINATION INDICATED BY NOTE.			SECURITY DEVICES							
CONDUIT CONTINUATION.			SECURITY DEVICE: ■ INDICATES THE FOLLOWING:							
CONDUIT SLEEVE WITH BUSHINGS ON BOTH ENDS. SEE SCHEDULE FOR QUANTITIES AND SIZES OF SLEEVES.			CM CONTROL MODULE							
CABLE TRAY (WIDTH X DEPTH)			DC DOOR CONTACTS (MONITORING)							
INDICATES 1" CONDUIT, (3) NO. 4 AWG CONDUCTORS AND (1) NO. 3 GROUND WIRE.			EL ELECTRIC LOCK							
SURFACE RACEWAY ASSEMBLY, PROVIDE AS SPECIFIED, UNLESS NOTED OTHERWISE.			ES ELECTRIC STRIKE							
			GB GLASS BREAK DETECTOR							
			IR INFRARED DETECTOR							
			ML MAGNETIC LOCK							
			PT ELECTRIC POWER TRANSFER							
			XP EXIT PUSHBUTTON, MOUNT AT ADA HT							
			XS EXIT SENSOR							
			CARD READER ROUGH-IN AT ADA HEIGHT							
			DOOR RELEASE, MOUNT PER DN65.							
			ELECTRIC EYE, MOUNT PER DN65.							
			KEYPAD, VERIFY MOUNTING HEIGHT WITH DN65.							
			LOCAL ALARM							
			MASTER CONTROL STATION							
			MOTION DETECTOR; ARROW INDICATES DIRECTION (WALL OR CEILING MOUNTED).							
			PHOTO-ELECTRIC RECEIVER; MOUNT PER DN65.							
			PHOTO-ELECTRIC TRANSMITTER; MOUNT PER DN65.							
			SECURITY CAMERA CLOSED CIRCUIT (WALL OR CEILING MOUNTED, 3/4" BUSHED EMT TO ACCESSIBLE CEILING).							
LIGHTING CONTROL										
COMMUNICATION DEVICES										
POWER AND MOTOR DEVICES										

GENERAL ELECTRICAL NOTES

- INSTALL CONCEALED CONDUIT WITH FLUSH J.B.'S IN WALLS AND CEILINGS UNLESS NOTED OTHERWISE. IN FINISHED AREAS WITH INACCESSIBLE WALLS OR CEILINGS, PROVIDE SURFACE (WIREMOLD) RACEWAY; PAINT TO MATCH COLOR OF ADJACENT WALL OR CEILING.
- RACEWAYS SHALL CONTAIN A GROUNDING CONDUCTOR.
- CIRCUITS SUPPLYING LINE TO NEUTRAL LOADS SHALL HAVE DEDICATED NEUTRALS, I.E. ONE NEUTRAL PER PHASE. NEUTRAL CONDUCTORS SHALL HAVE TRACER STRIPE ALONG ENTIRE LENGTH INDICATING ASSOCIATED PHASE.
- BUILDING CONDUCTORS SHALL BE THINW/THIN. CONDUCTORS IN UNDERGROUND CONDUIT OUTSIDE OF BUILDINGS SHALL BE XHHW.
- NUMBERS AT RECEPTACLES AND LUMINAIRES CORRESPOND DIRECTLY WITH PANELBOARD CIRCUIT NUMBERS AS SCHEDULED. BRANCH CIRCUIT WIRING AND HOMERUNS ARE NOT SHOWN FOR CLARITY. ACCURATE RECORD DRAWING INFORMATION IS TO BE PROVIDED AT THE PROJECT COMPLETION. TYPICAL THROUGHOUT. REFER TO SPECIFICATIONS FOR MATERIALS AND INSTALLATION REQUIREMENTS.
- SWITCHES SHALL BE MOUNTED PER ADA REQUIREMENTS, 48" AFF. UNLESS OTHERWISE NOTED. RECEPTACLES AND TELECOMMUNICATION OUTLETS IN FINISHED AREAS SHALL BE MOUNTED 18" AFF. RECEPTACLES IN UN-FINISHED SPACES SHALL BE MOUNTED AT 48" OR 4" ABOVE WORK SURFACE. COORDINATE RECEPTACLE MOUNTING HEIGHTS WITH MILLWORK LOCATIONS, ARCHITECTURAL ELEVATIONS, AND MASONRY COURSING.
- CRITICAL DEVICES / EQUIPMENT, INCLUDING TELEPHONE, COMPUTER, SECURITY, AND FIRE ALARM, AFFECT ASSOCIATED SYSTEMS BUILDING-WIDE. THESE SYSTEMS MUST REMAIN OPERATIONAL DURING THE CONSTRUCTION. INDIVIDUAL DEVICES MAY BE DISCONNECTED AND/OR RECONNECTED DURING CONSTRUCTION. COORDINATE POWER OUTAGES WITH OWNER. PROVIDE TEMPORARY PANEL(S) AND/OR CIRCUIT(S) AS/IF NECESSARY TO MAINTAIN CONTINUITY. PROTECT FROM PHYSICAL AND DUST DAMAGE.
- THE BUILDING SHALL MAINTAIN POWER THROUGHOUT THE CONSTRUCTION PROCESS. COORDINATE ENERGIZATION OF NEW EQUIPMENT AND THE CORRESPONDING RECONNECTION OF EXISTING AFFECTED ELECTRICAL DISTRIBUTION EQUIPMENT.
- SEE RELATED PLUMBING AND HVAC DRAWINGS FOR LOCATION OF EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS. COORDINATE INTERCONNECTION REQUIREMENTS WITH EQUIPMENT SHOP DRAWINGS.
- WIRING FOR MISCELLANEOUS HVAC DEVICES AND CONTROLLERS SUCH AS DAMPER MOTORS, THERMOSTATS, DUCT SMOKE DETECTORS, FREEZESTATS, DIFFERENTIAL PRESSURE SWITCHES, OCCUPIED AND UNOCCUPIED SELECTOR SWITCHES, ALARM LIGHTS, ETC., NOT SHOWN ON ELECTRICAL DRAWINGS IS DIVISION 23 WORK.
- FIELD VERIFY EXISTING CONDITIONS. DISCREPANCIES BETWEEN THE DRAWING AND ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BIDS.
- MAINTAIN EXISTING CIRCUIT CONTINUITY ON ALL SYSTEMS ON THE SITE THAT ARE EXISTING TO REMAIN.
- PROVIDE ALL CONDUIT HOMERUNS AS 3/4" MIN.
- COORDINATE ALL WORK WITH OTHER CONTRACTORS AND OWNER.
- ALL CUTTING AND PATCHING FOR DIV. 26 WORK SHALL BE UNDER SUPERVISION AND APPROVAL OF ARCHITECT.
- REMOVE AND/OR REINSTALL ELECTRICAL DEVICES IN ALL AREAS OF WORK AS REQUIRED AND REPLACE ANY ELECTRICAL DEVICES DAMAGED BY WORK. NOT ALL DEVICES MAY BE SHOWN ON DRAWINGS.
- PROVIDE ALL BOXES, FITTINGS, CONDUIT, WIRING, TERMINATIONS, EQUIPMENT, ETC. FOR A COMPLETE INSTALLATION.
- BRANCH 20A CIRCUIT CONDUCTORS SHOULD BE SIZED AS FOLLOWS:

120V CGT LENGTH	217V CGT LENGTH	AWG
< 75'	< 75'	12
75' - 120'	75' - 280'	10
120' - 200'	280' - 450'	8
> 200'	> 450'	6

ELECTRICAL DRAWINGS

E0.000	ELECTRICAL SYMBOLS AND ABBREVIATIONS
E0.001	ELECTRICAL OVERALL PLANS
E1.000	COURTHOUSE CLERK DEMOLITION PLAN
E2.000	COURTHOUSE CLERK LIGHTING PLAN
E3.000	COURTHOUSE CLERK POWER PLAN
E4.000	COURTHOUSE CLERK SYSTEMS PLAN
E5.000	ELECTRICAL SCHEDULES AND DETAILS

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Electrical drawings prepared by Wold & Ruck Pate, Inc. under the supervision of Bradley R. Johannsen, P.E. License No. 43936, State of Minnesota.

ELECTRICAL ABBREVIATIONS LIST

ANGLE	C	CONDUIT	J-B	JUNCTION BOX	NG	NORMALLY CLOSED	RZPT	RECEPTACLE	UE	UNDERGROUND ELECTRICAL
AT	CATV	CABLE TELEVISION			NEB	NATIONAL ELECTRICAL CODE	REQD	REQUIRED	UG	UNDERGROUND
FEET	CB	CIRCUIT BREAKER	KV	KILO-VOLT	NEA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION	RG	RIGID GALVANIZED RIGID STEEL CONDUIT	UH	UNIT HEATER
INCHES	CGTV	CLOSED CIRCUIT TELEVISION	KVA	KILO-VOLT-AMPERE	NPS	NON-FUSED SAFETY DISCONNECT SWITCH	RS	ROOF TOP UNIT	UV	UNIT VENTILATOR OR ULTRAVIOLET
NUMBER	CKT	CIRCUIT	KVAR	KILO-VOLT-AMPERE REACTIVE	NF	NOT IN CONTRACT	SC	SURFACE CONDUIT	V	VOLT
1 POLE (2P, 3P, 4P, ETC.)	CLS	CELLING	KWH	KILO-WATT HOUR	NO	NORMALLY OPEN	SEC	SECONDARY	VA	VOLT-AMPERES
	CMR	COMPRESSOR			NL	NEW LOCATION	SH	SHEET	VERT	VERTICAL
AMPERE	CON	CONNECTION	LOC	LOCATE OR LOCATION	N/O	NORMALLY OPEN	SM	SMILAR	VFD	VARIABLE FREQUENCY DRIVE
AIR CONDITIONER	CONT	CONTINUATION OR CONTINUOUS	LT	LIGHT	N/S	NOT TO SCALE	SIBF	SOLID BRISTLE	VOL	VOLUME
ABOVE CEILING	CONTR	CONTRACTOR	LTG	LIGHTING	OH	OVERHEAD	SPKR	SPEAKER	W	WATT
AUTOMATIC DOOR OPENER	CONV	CONVERTOR	LTN	LIGHTING	OL	OVERLOADS	SP	SPARE	W/	WITH
ABOVE FINISHED FLOOR	CP	CIRCULATING PUMP	LV	LOW VOLTAGE	PA	PUBLIC ADDRESS	SS	STAINLESS STEEL	WG	WIRE GUARD
ABOVE FINISHED GRADE	CT	CURRENT TRANSFORMER	MAGS	MAGNETIC STARTER	PB	PULL BOX	SSH	SELECTOR SWITCH	PH	WATER HEATER
ARG FAIL CIRCUIT	CTR	CENTER	MGB	MAN CIRCUIT BREAKER	PE	PNEUMATIC ELECTRIC	S/S	STOP/START PUSHBUTTONS	N/O	WITHOUT
INTERRUPTER	CU	COPPER	MCC	MOTOR CONTROL CENTER	PED	PEDESTAL	STA	STATION	WP	WEATHERPROOF
AIR HANDLING UNIT	DGP	DOMESTIC WATER CIRCULATING PUMP	MDC	MAN DISTRIBUTION CENTER	PF	POWER FACTOR	STD	STANDARD	XFR	TRANSFORMER
ALUMINUM	EX	EXISTING TO REMAIN	MTG	MAN DISTRIBUTION PANEL	PH	PHASE	SURF	SURFACE MOUNTED	XFR	TRANSFER
ALTERNATE	HTR	HEATER	MFR	MANUFACTURER	PIL	PANEL	SH	SHUT		
AMP	HV	HIGH VOLTAGE	MFS	MAIN FIRED DISCONNECT SWITCH	PP	POWER POLE	SHBD	SHUTBOARD		
AQUASTAT	HWP	HYDRONIC WATER PUMP	MNS	MANUAL MOTOR STARTER	PR	PAIR	SYM	SYMMETRICAL		
AUTOMATIC TRANSFER SWITCH	IC	INTERTRIPPING CAPACITY	MLO	MULTI-OUTLET ASSEMBLY	PRE	PRELARY	TERM	TERMINAL		
AUDIO VISUAL	IS	ISOLATED GROUND	MSP	MOTOR STARTER PANELBOARD	PRV	POWER ROOF VENTILATOR	TR	TAMPER RESISTANT		
AMERICAN WIRE GAUGE	ISB	INTERMEDIATE METAL CONDUIT	MST	MANUAL STARTER	PT	POTENTIAL TRANSFORMER	TRST	THERMOSTAT		
BATT	ISD	ISOLATED GROUND	MTC	MANUAL TRANSFER SWITCH	PVC	POLY(VINYL CHLORIDE) (CONDUIT)	TTC	TELEPHONE TERMINAL CABINET		
BOARD	ISN	ISOLATED NEUTRAL	MTS	MANUAL TRANSFER SWITCH	PWR	POWER	TVT	TELEVISION TERMINAL CABINET		
BUILDING	ISV	INTERLOCK WITH	MTR	MOTOR, MOTORIZED	QTY	QUANTITY	TYP	TYPICAL		
BUILDING AUTOMATION SYSTEM										

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed PROFESSIONAL ENGINEER under the laws of the State of MINNESOTA.

Bradley R. Johannsen
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 License Number: 43936 Date: 10/06/2017

Description	Revisions	
	Date	Num

Comm: 173040
 Date: 10/06/2017
 Drawn: A. NILSSON
 Check: B. JOHANNSEN

ELECTRICAL SYMBOLS AND ABBREVIATIONS

Scale: As Indicated

E0.000