

**ELECTRICAL LIST OF ABBREVIATIONS**

<b>A</b> AMPERE	<b>JB</b> JUNCTION BOX	<b>SHLD</b> SHIELDED
<b>AC</b> ALTERNATING CURRENT	<b>J-BOX</b> JUNCTION BOX	<b>SHT</b> SHEET
<b>A/C</b> AIR CONDITIONING		<b>SIG</b> SIGNAL
<b>AF</b> AMPERE FRAME, CKT. BKR. RATING		<b>S1, S2</b> START CONTACTOR COILS
<b>AFF</b> ABOVE FINISHED FLOOR		<b>SP</b> SPARE
<b>AHU</b> AIR HANDLING UNIT		<b>SPDT</b> SINGLE POLE DOUBLE THROW
<b>AL</b> ALUMINIUM		<b>SPECS</b> SPECIFICATIONS
<b>AM</b> AMMETER		<b>SP HTR</b> SPACE HEATER
<b>ANN</b> ANNUNCIATOR		<b>SPST</b> SINGLE POLE SINGLE THROW
<b>AMP</b> AMPERES, AMPERAGE		<b>SS</b> SOLID STATE
<b>APPD</b> APPROVED		<b>ST</b> SHUNT TRIP
<b>AS</b> AMMETER SWITCH		<b>STA</b> STATION
<b>AT</b> AMPERE TRIP		<b>STD</b> STANDARD
<b>ATS</b> AUTOMATIC TRANSFER SWITCH		<b>STL</b> STEEL
<b>AUTO</b> AUTOMATIC		<b>STR</b> STARTER
<b>AUX</b> AUXILIARY		<b>SOV</b> SOLENOID OPERATED VALVE
<b>AWG</b> AMERICAN WIRE GAUGE		<b>SW</b> SWITCH
		<b>SYS</b> SYSTEM
		<b>SYM</b> SYMMETRICAL
<b>BATT</b> BATTERY		<b>TACH</b> TACHOMETER
<b>BKR</b> BREAKER		<b>TB</b> TERMINAL BOX
<b>BLDG</b> BUILDING		<b>TC</b> TIME CLOCK
		<b>TD</b> TIME DELAY
		<b>TD OFF</b> TIME DELAY - OFF
		<b>TD ON</b> TIME DELAY - ON
		<b>TEMP</b> TEMPERATURE
		<b>TERM</b> TERMINAL
		<b>TOC</b> TOP OF CONCRETE
		<b>TR</b> TIMING RELAY
		<b>TS</b> TEMPERATURE SWITCH
		<b>TSTAT</b> THERMOSTAT
		<b>TYP</b> TYPICAL
		<b>UGP</b> UNDERGROUND POWER
		<b>UH</b> UNIT HEATER
		<b>UON</b> UNLESS OTHERWISE NOTED
		<b>US</b> UNIT SUBSTATION
		<b>V</b> VOLTAGE, VOLTS
		<b>VAR</b> VAR METER
		<b>VFD</b> VARIABLE FREQUENCY DRIVE
		<b>VP</b> VAPOR PROOF
		<b>VS</b> VOLTMETER SWITCH, VARIABLE SPEED
		<b>W</b> WATTS, WIRE
		<b>WHD</b> WATTHOUR DEMAND METER
		<b>WHM</b> WATTHOUR METER
		<b>WP</b> WEATHERPROOF
		<b>XD</b> TRANSDUCER
		<b>XFMR</b> TRANSFORMER
		<b>XFER</b> TRANSFER
		<b>XMR</b> TRANSDUCER
		<b>XPDR</b> TRANSPONDER
<b>DC</b> DIRECT CURRENT		
<b>DH</b> DATA HIGHWAY		
<b>DISC</b> DISCONNECT		
<b>DISINF</b> DISINFECTION		
<b>DISTR</b> DISTRIBUTION		
<b>DN</b> DOWN		
<b>DPDT</b> DOUBLE POLE DOUBLE THROW		
<b>DWG</b> DRAWING		
<b>E</b> EMPTY		
<b>EC</b> ELECTRICAL CHILLER		
<b>EFC</b> EXHAUST FAN		
<b>ELEC</b> ELECTRICAL		
<b>ELEV</b> ELEVATION		
<b>EMERG</b> EMERGENCY		
<b>EMT</b> ELECTRICAL METALLIC TUBING		
<b>ENCL</b> ENCLOSURE		
<b>EP</b> EXPLOSION PROOF		
<b>EQPT</b> EQUIPMENT		
<b>ER</b> CONDUCTANCE RELAY		
<b>ETM</b> ELAPSED TIME METER		
<b>EHU</b> ELECTRIC HEATING UNIT		
<b>EXH</b> EXHAUST		
<b>EXIST</b> EXISTING		
<b>FC</b> FAN COIL		
<b>FDR</b> FEEDER		
<b>FLEX</b> FLEXIBLE		
<b>FLUOR</b> FLUORESCENT		
<b>FUT</b> FUTURE		
<b>FVR</b> FULL VOLTAGE REVERSING		
<b>FVNR</b> FULL VOLTAGE NON-REVERSING		
<b>FWD</b> FORWARD		
<b>GALV</b> GALVANIZED		
<b>GEN</b> GENERATOR		
<b>GND</b> GROUND		
<b>HH</b> HAND HOLE		
<b>HID</b> HIGH INTENSITY DISCHARGE		
<b>HG</b> MERCURY		
<b>HOA</b> HAND-OFF-AUTOMATIC		
<b>HP</b> HORSEPOWER		
<b>HPS</b> HIGH PRESSURE SODIUM		
<b>HTR</b> HEATER		
<b>HT TR</b> HEAT TRACED		
<b>HVAC</b> HEATING, VENTILATING, A/C		
<b>HZ</b> HERTZ - CYCLES PER SECOND		
<b>IMC</b> INTERMEDIATE METAL CONDUIT		
<b>INCAND</b> INCANDESCENT		
<b>IND</b> INDICATION, INDICATING		
<b>I/O</b> INPUT/OUTPUT		
<b>INST</b> INSTANTANEOUS		
<b>INSTR</b> INSTRUMENT		
<b>ISC</b> SHORT CIRCUIT CURRENT		
<b>INVT</b> INVERT		
<b>KVA</b> KILO VOLT AMPERES		
<b>KW</b> KILOWATTS		
<b>KWH</b> KILOWATT HOUR		
<b>KCMIL</b> 1,000 CIRCULAR MILS		
<b>LC</b> LIGHTING CONTACTOR		
<b>LCB</b> LOCAL CONTROL BOARD		
<b>LCP</b> LOCAL CONTROL PANEL		
<b>LOC</b> LOCAL		
<b>LO</b> LOCKOUT		
<b>LOS</b> LOCKOUT STOP		
<b>LS</b> LEVEL SWITCH		
<b>LT</b> LIGHT		
<b>LTG</b> LIGHTING		
<b>LTS</b> LIGHTS		
<b>M</b> MOTOR CONTACTOR COIL		
<b>MA</b> MILLIAMPS		
<b>MAN</b> MANUAL		
<b>MAG</b> MAGNETIC		
<b>MAX</b> MAXIMUM		
<b>MCC</b> MOTOR CONTROL CENTER		
<b>MCB</b> MAIN CONTROL BOARD		
<b>MCP</b> MOTOR CIRCUIT PROTECTOR		
<b>MD</b> MOTORIZED DAMPER		
<b>MH</b> MANHOLE		
<b>MH</b> MOUNTING HEIGHT		
<b>MIN</b> MINIMUM MINUTES		
<b>MLO</b> MAIN LUGS ONLY		
<b>MVO</b> MOTOR OPERATED VALVE		
<b>MS</b> MOTOR STARTER		
<b>MMS</b> MANUAL MOTOR STARTER		
<b>MTD</b> MOUNTED		
<b>MTR</b> MOTOR		
<b>MUX</b> MULTIPLEXING PANEL		
<b>N</b> NEUTRAL		
<b>NA</b> NON-AUTOMATIC		
<b>NC</b> NORMALLY CLOSED		
<b>NEC</b> NATIONAL ELECTRIC CODE		
<b>NO</b> NORMALLY OPEN		
<b>NO</b> NUMBER		
<b>NOS</b> NUMBERS		
<b>NP</b> NAMEPLATE		
<b>N.P.C.</b> NEVADA POWER COMPANY		
<b>NIC</b> NOT IN CONTRACT		
<b>NTS</b> NOT TO SCALE		
<b>O</b> OPEN		
<b>OC</b> ON CENTER		
<b>OHP</b> OVERHEAD POWER		
<b>OHT</b> OVERHEAD TELEPHONE		
<b>OL</b> OVERLOAD RELAY		
<b>OSC</b> OSCILLATION		
<b>P</b> POLE		
<b>PB</b> PUSH BUTTON		
<b>PCM</b> PROCESS CONTROL MODULE		
<b>PCP</b> PROCESS CONTROL PANEL		
<b>PF</b> POWER FACTOR		
<b>PH</b> PHASE		
<b>PNL</b> PANEL		
<b>PNLBD</b> PANELBOARD		
<b>POS</b> POSITION		
<b>POT</b> POTENTIOMETER		
<b>PP</b> POWER POLE		
<b>PQM</b> POWER QUALITY MONITOR		
<b>PR1</b> PRIMARY		
<b>PS</b> PRESSURE SWITCH		
<b>PT</b> POTENTIAL TRANSFORMER		
<b>PVC</b> POLYVINYL CHLORIDE		
<b>PW</b> PART WINDING		
<b>PWR</b> POWER FACTOR		
<b>REC</b> RECEPTACLE		
<b>RECP</b> RECEPTACLES		
<b>REQ'D</b> REQUIRED		
<b>REV</b> REVERSE		
<b>RGS</b> RIGID GALVANIZED STEEL		
<b>RM</b> ROOM		
<b>RTU</b> REMOTE TERMINAL UNIT		
<b>RVAT</b> REDUCED VOLTAGE AUTOTRANSFORMER		
<b>RVNR</b> REDUCED VOLTAGE NON-REVERSING		
<b>RVSS</b> REDUCED VOLTAGE SOLID STATE		
<b>SCH</b> SCHEDULE		
<b>SEC</b> SECONDARY, SECONDS		
<b>SECT</b> SECTION		
<b>SEL SW</b> SELECTOR SWITCH		
<b>SEQ</b> SEQUENCE		
<b>SH</b> SHIELD		

**GENERAL NOTES**

- PRIOR TO BEGINNING EXCAVATION, VERIFY LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES, PIPING, ETC. PROVIDE EXCAVATION, BACKFILL, SUPPORT, SAWCUTTING, PATCHING, PAVING, ETC. AS REQUIRED. BACKFILL EXCAVATIONS TO 90 PERCENT COMPACTION AND PATCH TO MATCH EXISTING CONDITIONS.
- ALL DIRT AND DEBRIS SHALL BE REMOVED FROM ALL MANHOLES AND PULLBOXES. DISPOSE OF AS DIRECTED BY THE LAS VEGAS VALLEY WATER DISTRICT.
- DO NOT SCALE DRAWINGS. VERIFY DIMENSIONS IN FIELD PRIOR TO BEGINNING WORK.
- FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
- CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BID AND VERIFY THAT CONDITIONS ARE AS INDICATED. CONTRACTOR SHALL INCLUDE IN HIS BID COSTS, THE REQUIREMENTS TO MAKE HIS WORK MEET THE EXISTING CONDITIONS.
- THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT ON THE PLANS.

**ELECTRICAL LEGEND**

SYMBOL	DESCRIPTIONS
	A = REFERENCE TO LIGHTING FIXTURE SCHEDULE
	3 = LIGHTING PANEL CIRCUIT NUMBER
	e = SWITCH ASSOCIATED WITH FIXTURE CONTROL
	1' x 4' FLUORESCENT FIXTURE, SURFACE MOUNTED
	FLUOR. FIXTURE, NIGHT LIGHT
	FLUOR. FIXTURE, EMERGENCY LIGHT
	LUMINAIRE, CEILING MOUNTED (SURFACE)
	LUMINAIRE, EXTERIOR WALL MOUNTED (SURFACE)
	LUMINAIRE, CEILING MOUNTED, (RECESSED)
	FLOODLIGHT, MOUNTING AND WATTAGE AS SPECIFIED
	LUMINAIRE, PENDANT MOUNTED, LAMP AS SPECIFIED
	EMERGENCY LIGHTING
	POWERED EMERGENCY EXIT SIGN
	SMOKE DETECTOR
	TEL. RECEPTACLE, 3/4" HOME RUN U.O.N.
	SPECIAL SINGLE GANG DEVICE BOX
	DUPLEX RECEPTACLE, MT. HEIGHT SHOWN
	GFCI DUPLEX RECEPTACLE, MT. HEIGHT SHOWN
	DUPLEX RECEPTACLE, WEATHERPROOF, GROUND FAULT TYPE
	SPECIAL RECEPTACLE AS NOTED
	SINGLE POLE SWITCH
	THREE-WAY SWITCH
	FOUR-WAY SWITCH
	LIGHTED SWITCH
	DIMMER SWITCH
	MANUAL MOTOR STARTER
	CONDUIT SEAL
	CONDUIT UNION
	TRANSFORMER
	PHOTOCCELL

SYMBOL	DESCRIPTIONS
	DISTRIBUTION PANEL
	LIGHTING AND BRANCH CIRCUIT PANEL
	TERMINAL CABINET, TYPE AS SPECIFIED
	MOTOR, NUMBER INDICATES HORSEPOWER
	MOTOR, FRACTIONAL HORSEPOWER
	FIRE/SECURITY ALARM CONTROL PANEL
	THERMOSTAT
	JUNCTION BOX
	INTRUSION DETECTOR, INSTRUMENT, DEVICE AS NOTED
	SHUNT TRIP
	HEAT DETECTOR
	FIRE ALARM PULL STATION
	LIGHTING CONTACTOR
	MOTION SWITCH, ADJUSTABLE "ON" TIMER
	CONDUIT RUN INTERRUPTED
	CONDUIT, TURNED UP, TOWARD VIEWER
	CONDUIT, TURNED DOWN, AWAY FROM VIEWER
	CROSSHATCHING INDICATES COUNTS OF No. 12 CONDUCTORS IF MORE THAN 3. NO CROSSHATCHING INDICATES 2 No. 12 AND 1 No. 12 GROUND. LONG HATCH IS A NEUTRAL AND 1/2 IS GROUND CONDUCTOR
	FUTURE BRANCH CIRCUIT FEEDER OR DUCT EXPOSED
	FUTURE BRANCH CIRCUIT, FEEDER OR DUCT CONCEALED OR BELOW GRADE
	EXISTING BRANCH CIRCUIT FEEDER OR DUCT EXPOSED
	EXISTING BRANCH CIRCUIT, FEEDER OR DUCT CONCEALED OR BELOW GRADE
	NEW BRANCH CIRCUIT FEEDER OR DUCT EXPOSED
	NEW BRANCH CIRCUIT, FEEDER OR DUCT CONCEALED OR BELOW GRADE
	EXISTING EQUIPMENT, CONDUIT AND WIRING TO BE REMOVED

**SINGLE LINE LEGEND**

	COMBINATION MOTOR STARTER, FULL VOLTAGE, NON-REVERSING, WITH THERMAL MAGNETIC CIRCUIT BREAKER, MAGNETIC CIRCUIT PROTECTOR SHOWN WITH RATING AND TRIP ( ) SETTINGS.
	FULL VOLTAGE, NON-REVERSING MOTOR STARTER, SIZE 2 SHOWN, WITH RATINGS AND SIZE AS SPECIFIED OR REQUIRED BY THE APPLICATION.
	FULL VOLTAGE, REVERSING MOTOR STARTER, SIZES AND RATINGS AS SPECIFIED ON THE DIAGRAM OR BY MOTOR RATINGS.
	FULL VOLTAGE, 2 - SPEED MOTOR STARTER, SIZE AND RATINGS AS SPECIFIED ON THE DIAGRAM OR BY MOTOR RATINGS.
	REDUCED VOLTAGE MOTOR STARTER, NON-REVERSING, TYPE AS SPECIFIED, RATINGS IN ACCORDANCE WITH APPLICATION.
	REDUCED VOLTAGE MOTOR STARTER, NON-REVERSING, SOLID STATE WITH STARTING CHARACTERISTICS AND RATINGS AS SPECIFIED.
	THERMAL MAGNETIC CIRCUIT BREAKER, TRIP RATINGS AS INDICATED ON THE DIAGRAM, CHARACTERISTICS AS SPECIFIED.
	MAGNETIC CIRCUIT PROTECTOR, MAXIMUM CONTINUOUS RATING AND TRIP SETTINGS AS INDICATED ON THE DIAGRAM.
	FULL VOLTAGE CONTACTOR, RATINGS AND SIZE AS INDICATED ON THE DIAGRAM.
	DISCONNECT SWITCH, NUMBER OF POLES AND RATINGS AS SPECIFIED OR REQUIRED BY THE APPLICATION. "F" DENOTES FUSED.
	TRANSFORMER, NUMBER OF PHASES, CONFIGURATION, RATINGS, AND IMPEDANCE AS INDICATED OR SPECIFIED.
	MOTOR, TYPE AS REQUIRED BY THE APPLICATION, HORSEPOWER AND FULL LOAD AMPERES ( ) AS SHOWN ON THE DIAGRAM.
	CONTROL DEVICE, LOCATION AS INDICATED ON THE DIAGRAM, STOP-START.
	CONTROL DEVICE, LOCATION AND FUNCTION AS INDICATED ON THE DIAGRAM.
	CONTROL DEVICE, LOCATION AS INDICATED ON THE DIAGRAM, HAND-OFF-AUTO.
	CONTROL DEVICE, LOCATION AND TYPE AS INDICATED ON THE PLANS OR DIAGRAM.
	LOCAL INDICATING PILOT LIGHT, COLOR AND TYPE AS SPECIFIED OR INDICATED ON THE DIAGRAM.
	INDICATING PILOT LIGHT, COLOR AND TYPE AS SPECIFIED ON THE DIAGRAM.
	OUTLINE OF FUTURE ELECTRICAL AND MECHANICAL EQUIPMENT
	SPACE HEATER, VOLTAGE AND RATING AS INDICATED ON THE DIAGRAM.
	WINDING TEMPERATURE SENSOR, TYPE AS SUPPLIED BY MOTOR MANUFACTURER.
	FIELD INSTRUMENT, PRESSURE, TEMPERATURE, FLOW, LEVEL SWITCH OR TRANSMITTER AS INDICATED ON THE DIAGRAM OR PLANS.
	DENOTES BREAKER SHALL BE SOLID STATE TRIP
	DENOTES BREAKER SHALL BE EQUIPPED WITH GROUND FAULT MONITORING AND TRIP
	DENOTES BREAKER SHALL BE EQUIPPED WITH SHUNT TRIP - INCLUDING CONTROL POWER TRANSFORMER AND FIELD WIRING TERMINALS FOR REMOTE PUSHBUTTON.
	EQUIPMENT OUTLINE
	VENDOR PACKAGED EQUIPMENT
	VACUUM CONTACTOR, 5kV, 3-POLE, RATINGS AND OPERATING MECHANISM AS DESCRIBED IN SPECIFICATIONS
	VACUUM CONTACTOR, MECHANICAL LATCH, 5kV, 3-POLE, RATINGS AND OPERATING MECHANISM AS DESCRIBED IN SPECIFICATIONS
	ISOLATION SWITCH, LOAD BREAK RATED, GANG OPERATED, 3-POLE, WITH REPLACEABLE ARC SUPPRESSION, INTERLOCK WITH VACUUM CONTACTOR TO INHIBIT OPENING UNDER NORMAL OPERATING CONDITIONS
	INSTRUMENT CLASS CURRENT TRANSFORMER, RATINGS AND BURDEN TO MATCH SYSTEM AND MONITORING DEVICES ONE PER PHASE PROVIDE WITH GROUND SHORTING TERMINAL STRIP
	GROUND SENSING CURRENT TRANSFORMER, INSTRUMENT CLASS, RATINGS TO MATCH INSTRUMENT BURDEN
	BUSHING CURRENT TRANSFORMER (BCT), WETERING CLASS, RATINGS AS INDICATED, FOR DIFFERENTIAL SERVICE ACROSS DELTA-WYE TRANSFORMER, PROVIDE MIRRORRED WYE-DELTA CONNECTIONS, ALL CT'S TO BE TERMINATED ON GROUND SHORTING TERMINAL STRIPS
	VOLTAGE TRANSFORMER, INSTRUMENT CLASS, FUSED PRIMARY AND SECONDARY, OPEN DELTA CONFIGURATION
	REDUCED VOLTAGE, NON-REVERSING AUTOTRANSFORMER TYPE STARTER WITH VACUUM CONTACTOR, OPEN-TRANSITION CONFIGURATION, AND FACTORY PREWIRED TAP SELECTION AT 65% FURNISH HEAVY DUTY STARTER WITH HIGH WINDING TEMPERATURE THERMISTOR AND ALARM RELAY

**ELECTRICAL SCHEMATIC LEGEND**

	LEVEL SWITCH, LSH, LSH, LSL N.O. OR N.C. AS INDICATED
	FLOW SWITCH, N.C. OR N.O. AS INDICATED
	PRESSURE SWITCH, PSL, PSH, N.O. OR N.C. AS INDICATED
	TEMPERATURE SWITCH, TSH, TSL, N.O. OR N.C. AS INDICATED
	LIMIT SWITCH, N.C. OR N.O. AS INDICATED
	RELAY/CONTROL CONTACT, N.C. OR N.O. AS INDICATED
	TIME DELAY CONTACT, TIME DELAY ON/OFF, N.C./N.O. AS INDICATED
	RELAY COIL, FUNCTION, NUMBER AND CONTACTS ( ) AS SHOWN
	INDICATING LIGHT, LENS COLORS (R) RED, (G) GREEN, (W) WHITE
	PUSHBUTTON, MOMENTARY, N.O. OR N.C., L.O. = LOCKOUT
	PUSHBUTTON, MAINTAINED UNIVERSAL CONTACT
	ON-OFF SELECTOR SWITCH, MAINTAINED, FUNCTION AS SHOWN
	SELECTOR SWITCH, MAINTAINED L-O-R = LOCAL-OFF-REMOTE, OR OTHER FUNCTION AS DESIGNATED
	FUSE, SIZE AS NOTED
	CONTROL POWER TRANSFORMER RATINGS AS INDICATED
	TERMINAL IN RELAY PANEL
	TERMINAL IN RTU
	TERMINAL IN PLC
	TERMINAL IN MOTOR STARTER
	TERMINAL AT FIELD DEVICE
	TERMINAL - EQUIPMENT OR DEVICE
	GROUND CONNECTION
	CIRCUIT BREAKER
	OVERLOAD ELEMENT