ELECTRICAL SYMBOLS

NOTE: NOT ALL SYMBOLS ARE USED ON THIS PROJECT

- A / a — FLUORESCENT FIXTURE, WITH FIXTURE DESIGNATED BY LETTER. SMALL LETTER INDICATES SWITCH LEG
- NL — NIGHT LIGHT– NOT SWITCHED OR EMERGENCY
- FLUORESCENT STRIP FIXTURE.
- CEILING OR WALLMOUNTED FIXTURE.
- PC — PORCELAIN PULL CHAIN FIXTURE
- J — JUNCTION BOX
- J — JUNCTION BOX WITH FLEX CONNECTION.
- SINGLE FACE EXIT SIGN– NOT SWITCHED
- DOUBLE FACED EXIT SIGN– NOT SWITCHED.
- TWO HEAD EMERGENCY LIGHT WITH BATTERY.
- S — SINGLE POLE SWITCH, + 48" A.F.F. (20A–120/277V)
- S_3 — THREE WAY SWITCH, + 48" A.F.F. (20A–120/277V)
- S_4 — 4–WAY SWITCH +48" AFF (20A–120/277V)
- S_P — SWITCH AND PILOT LIGHT (20A–120–/277V)
- S_K — SINGLE POLE SWITCH, KEY OPERATED (20A)
- WALL OR CEILING MOUNTED MOTION SENSOR MANUFACTURE BY LAVITON
- DIMMER CONTROL, + 48" A.F.F. TYPE, RATING AS NOTED
- DUPLEX RECEPTACLE, + 18" A.F.F. (20A)
- DUPLEX RECEPTACLE ABOVE COUNTER, VERIFY HEIGHT. (20A)
- FOURPLEX RECEPTACLE, + 18" A.F.F. (20A)
- HALF SWITCHED DUPLEX RECEPTACLE (20A)
- SPECIAL RECEPTACLE – SIZE & TYPE AS NOTED
- POWER / PHONE / DATA FLUSH FLOOR OUTLET
- TELEPHONE OUTLET PLASTER RING AT + 18" A.F.F. HUBBELL #P12 COVERPLATE. 3/4"C TO CEILING SPACE UNLESS SHOWN WITH HOMERUNS.
- DATA SYSTEM OUTLET, 4" SQUARE BOX AND COVERPLATE, 3/4" C. TO CEILING SPACE UNLESS SHOWN WITH HOMERUN, + 18" A.F.F.
- TELE/DATA COMBO OUTLET, 4" SQUARE BOX AND COVERPLATE, 3/4" C. TO CEILING SPACE UNLESS SHOWN WITH HOMERUN, + 18" A.F.F.
- CABLE TELEVISION (CATV) OUTLET PLASTER RING AT + 18" A.F.F. U.N.O. HUBBELL COVERPLATE. 3/4"C TO CEILING SPACE UNLESS SHOWN WITH HOMERUNS.
- TELPHONE SYSTEM CONDUIT HOMERUN WITH NYLON PULLWIRE (1"C MIN UNO)
- TV — CLOSED CIRCUIT TV (CCTV) OUTLET SAME AS CATV OUTLET
- REMOTE CONTROL STATION @ +48" AFF
- DISCONNECT SWITCH, FUSE PER EQUIPMENT MANUFACTURERS RECOMMENDATION. OUTSIDE NEMA 3R – N.F. = NON–FUSED.
- COMBINATION STARTER AND FUSIBLE DISCONNECT SWITCH SIZE AS NOTED
- E — EQUIPMENT TERMINATION CONNECTION POINT VERIFY EXACT LOCATION LOAD AND VOLTAGE AS NOTED
- MOTOR
- SM — THERMAL PROTECTED SWITCH
- MOTOR STARTER – SHADING INDICATES F.B.O.
- DISTRIBUTION PANELBOARD.
- BRANCH CIRCUIT PANELBOARD.
- CONDUIT BELOW FLOOR OR UNDERGROUND
- CONDUIT IN WALL OR ABOVE CEILING
- HOMERUN TO PANEL
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- CONDUIT STUB–OUT, MARK AND CAP AS DIRECTED
- GROUND WIRE (SIZE AS NOTED) EXTENDED AND CONNECTED TO APP'D GROUND

ALL WIRING #6 AWG AND LARGER SHALL BE XHHW COPPER. #8 AWG AND SMALLER SHALL BE THHN/THWN COPPER

GENERAL ELECTRIC SPECIFICATIONS

1. PRIOR TO SUBMITTING BID, SUBCONTRACTORS SHALL EXAMINE ALL GENERAL CONSTRUCTION DRAWINGS AND VISIT THE CONSTRUCTION SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH IN ANY WAY AFFECTS THE WORK UNDER HIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.
2. THE SUBCONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR THE PROPER RESTORATION OF ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING, PAINTING AND /OR OTHER REPAIR DUE TO THE INSTALLATION OF ELECTRICAL WORK UNDER THE TERMS OF THE CONTRACT. CLOSE ALL OPENINGS, REPAIR ALL SURFACES, ETC., AS REQUIRED.
3. SEE ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS, ELEVATIONS AND BUILDING DETAILS. VERIFY LOCATION OF ALL OUTLETS, SWITCHES, AND WALL MOUNTED LIGHTING FIXTURES WITH ARCHITECTURAL DRAWINGS AND ACTUAL CONDITIONS. VERIFY ALL CEILING TYPES WITH ARCHITECTURAL DRAWINGS BEFORE ORDERING FIXTURES.
4. PRIOR TO ROUGH–IN AND FINAL CONNECTION, VERIFY ELECTRICAL CHARACTERISTICS AND EXACT LOCATION OF EQUIPMENT.
5. GROUT AND SEAL ALL CONDUIT PENETRATIONS OF WALLS AND FLOOR SLABS TO PRESERVE FIRE RATING AND WATERTIGHT INTEGRITY.
6. BRANCH CIRCUIT WIRING SHALL BE THHN/THWN INSULATION. PANEL FEEDERS SHALL BE TYPE XHHW. ALL WIRE SHALL BE COPPER. MINIMUM WIRE SIZE SHALL BE #12. AS AN ALTERNATIVE TO WIRE IN CONDUIT, NONMETALLIC– SHEATHED CABLE (NM), OFTEN REFERRED TO AS "ROMEX" AS DEFINED BY ARTICLE 336 OF THE NEC MAY BE USED FOR GENERAL, WIRING AS ACCEPTED BY THE OWNER AND BY THE LOCAL CODE ENFORCING AUTHORITY.
7. ALL WIRING TO BE INSTALLED IN RACEWAYS. TYPE OF RACEWAY SHALL BE AS REQUIRED BY CODE. "MINIMUM CONDUIT SIZE SHALL BE 1/2". EMT WITH STEEL SET SCREW FITTINGS"
8. PROVIDE CODE SIZED BOND WIRE IN ALL EMT, FLEXIBLE CONDUIT
9. ALL ELECTRICAL EQUIPMENT SHALL BE NEW , U.L. APPROVED AND COMMERCIAL GRADE.
10. WIRE RATED FOR 150° CENTIGRADE SHALL BE USED FOR ALL INCANDESCENT LIGHTING FIXTURES.
11. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL CODE, (N.E.C.), AND ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES.
12. PROVIDE TYPEWRITTEN DESCRIPTIVE PANEL DIRECTORIES

GENERAL ELECTRICAL DEMOLITION NOTES

1. RETURN REMOVED MATERIAL DEEMED SALVAGEABLE TO OWNER'S REPRESENTATIVE. MATERIALS DEEMED NOT SALVAGEABLE SHALL BE REMOVED FROM THE PREMISES.
2. THE CONTRACTOR WILL EXAMINE THE PREMISES AND SATISFIED HIMSELF AS TO EXISTING CONDITIONS UNDER WHICH HE WILL BE OBLIGED TO PERFORM HIS WORK. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND THE CONTRACTOR SHALL FIELD VERIFY ALL DETAILS OF DEMOLITION.
3. REMOVE ALL EXISTING WIRING DEVICES, LIGHT FIXTURES, WIRE, CONDUIT, DISCONNECTS, ETC., AS NOTED OR INDICATED WITHIN DEMOLITION AREA. (ALL ITEMS MAY NOT BE SHOWN.) REWORK AS NECESSARY ALL CIRCUITING WHICH REQUIRES CONTINUATION THROUGH THE AREA.
4. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK REQUIRED TO REMOVE/RELOCATE ANY EXISTING ELECTRICAL EQUIPMENT SUCH THAT ELECTRIC SHOCK HAZARDS TO WORKMEN ARE ELIMINATED DURING DEMOLITION AND NEW CONSTRUCTION.
5. REMOVED OR DAMAGED CONDUIT, WIRE AND FITTINGS SHALL NOT BE RE–USED
6. WORK REQUIRED FOR EXISTING EQUIPMENT NOTED AS "EXISTING TO BE REMOVED" SHALL INCLUDE:
   - A. SALVAGING OR DISPOSING OF ALL MATERIAL OR EQUIPMENT AS DIRECTED BY OWNER OR OWER'S REPRESENTATIVE.
   - B. REMOVAL OF FEEDER OR CABLING FROM EQUIPMENT TO POINT OF FEED.
   - C. REMOVAL OR RECIRCUITING (AS REQUIRED OR AS NOTED ON PANELS) OF ALL BRANCH CIRCUITING.
   - D. REMOVAL OF ALL FITTINGS, SUPPORTS, BRACKETS, ETC.
   - E. REPAIR AND PATCHING OF WALLS, FLOORS AND CEILINGS TO MATCH EXISTING OR PER ARCHITECT'S INSTRUCTIONS.
   - F. CAPPING OF IN–SLAB FEEDER CONDUITS FLUSH WITH THE FINISHED FLOOR.
   - G. CAPPING OF FEEDER CIRCUITS AT 6" ABOVE OR BELOW THE FLOOR OR CEILING FOR IN–SLAB CONDUITS LOCATED UP NEXT TO A WALL OR FOR CEILING AREA CONDUITS.
   - H. THE OPPOSITE END LOCATION OF ALL EMPTY FEEDER CONDUITS AT SWITCHBOARDS, PANELBOARDS, ETC., SHALL BE MARKED USING AN ENGRAVED BRASS TAG ATTACHED TO THE CONDUIT.
   - I. EXISTING FEEDER CONDUITS SHALL BE REMOVED OR CUT OFF AND ABANDONED IF FOUND TO BE UNSALVAGEABLE BY THE OWNER, ARCHITECT OR ENGINEER.
7. EXISTING EQUIPMENT NOT IMPICITLY SHOWN ON THE DRAWINGS IS INTENDED TO BE "EXISTING TO REMAIN, " UNLESS NOTED OTHERWISE.

FIRE WALL/FLOOR PENETRATION

ALL PENETRATIONS OF FIRE RESISTIVE FLOORS OR SHAFT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAIL THAT CONFORM TO UNDERWRITERS LABORATORY'S LISTINGS FOR THROUGH PENETRATION FIRESTOP SYSTEMS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS WHICH SHOW COMPLETE CONFORMANCE WITH THE LISTING TO THE ARCHITECT AND SUCH DRAWINGS SHALL BE AVAILABLE TO THE LOCAL GOVERNING INSPECTORS. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION WITH ALL VARIABLES DEFINED.

OUTLET MOUNTING HEIGHTS PER AMERICAN DISABILITY ACT

SWITCHES	+48" (MAX)
RECEPTACLES	+18" (MIN.)
TELEPHONE/DATA	+18" (MIN.)
SIDE REACH	+54" (MAX)

ONE LINE GENERAL NOTES:

1. SYSTEM SHOWN IS A TWO TIER SERIES RATED SYSTEM 22/10K. MANUFACTURER SHALL PROVIDE A UL LISTED SYSTEM TO MATCH THIS RATING.
2. MOTOR SHORT CIRCUIT CONTRIBUTION IS LESS THAN 1% OF SYSTEM SHORT CIRCUIT AMPS.
3. NO DESIGN CHANGES MAY BE MADE TO THE SYSTEM WITHOUT THE PRIOR APPROVAL OF THE DESIGN ELECTRICAL ENGINEER AND THE ELECTRICAL INSPECTOR

ONE LINE KEYNOTES:

1. PROVIDE A PERMANENT LABEL READING "THIS CIRCUIT BREAKER IS PART OF A SERIES RATED SYSTEM WITH DOWNSTREAM PANELS 22/10K. 22,000 AMPS AVAILABLE. IDENTIFIED REPLACEMENT COMPONENT REQUIRED"
2. PROVIDE A PERMANENT LABEL READING "CAUTION– SERIES RATED SYSTEM 22/10, IDENTIFIED REPLACEMENT COMPONENTS REQUIRED"

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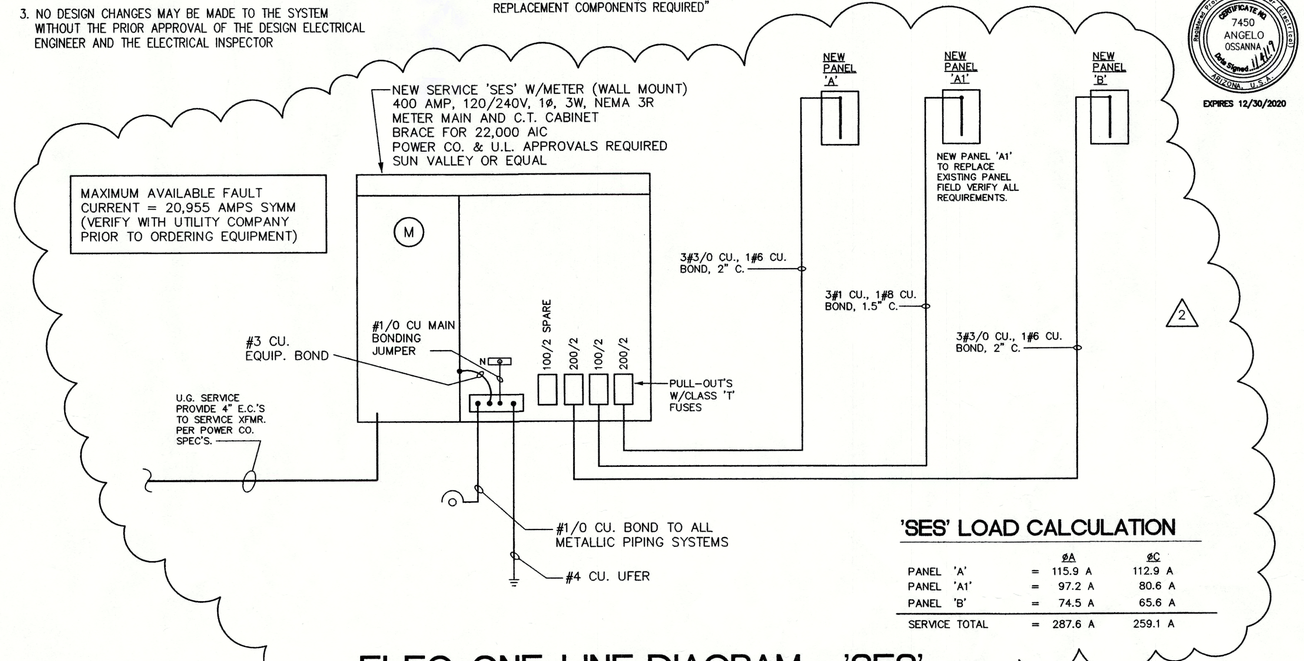
JOB #18-23

Angelo V. Ossanna
Registered Professional Engineer (Electrical)
CERTIFICATE NO. 7450
ANGELO OSSANNA
Date Signed 11/1/19
ARIZONA, U.S.A.
EXPIRES 12/30/2020



'SES' LOAD CALCULATION

		ØA	ØC
PANEL 'A'	=	115.9 A	112.9 A
PANEL 'A1'	=	97.2 A	80.6 A
PANEL 'B'	=	74.5 A	65.6 A
SERVICE TOTAL	=	287.6 A	259.1 A

ELEC. ONE-LINE DIAGRAM – 'SES' N.T.S.

NOTE: ALL CONDUCTOR SIZES ARE BASED ON 'XHHW', 'THHN'/'THWN' COPPER.

PANELBOARD A1 SCHEDULE

MAINS: 100A MLO
VOLTAGE: 120/240V, 1ø, 3W
TYPE: SQ. D OR EQUAL
LOAD–VA
LOCATION: SEE PLAN
MOUNTING: SURFACE
MIN. A.I.C.: 22K FULLY RATED

CIRCUIT DESCRIPTION	BKR.	CIR. NO.	ØA	ØB	CIR. NO.	BKR.	CIRCUIT DESCRIPTION
LIGHTS	20/1	1	1293		2	20/1	RECEPT'S. –
			900				
LIGHTS		3		775	4		
				900			
LIGHTS		5	1635		6		
			720				
LIGHTS		7		420	8		
				720			
RECEPT'S. – REFRIGERATOR		9	600		10		
			540				
– MICROWAVE		11		1500	12		
				600			
– DISH WASHER		13	800		14		
– ABOVE COUNTER		15		600	16		– I.T. ROOM
				360			
– DRINKING FOUNTAIN		17	600		18		
			360				
EXIST. EQUIPMENT IF REQUIRED		19		720	20		
				360			
		21	720		22		SPARE
		23		720	24		
		25			26		
		27			28		
		29			30		
		31			32	30/1	EXIST. WATER HEATER
		33		2000	34	40/1	NEW TANKLESS WATER HEATER
			3500				
SPACE		35			36		SPACE
		37			38		
		39			40		
		41			42		
TOTAL LOAD PER PHASE:			11668	9675	H# 11668 / 120V 97.2 AMPS		

PANELBOARD A SCHEDULE

MAINS: 200A MLO
VOLTAGE: 120/240V, 1ø, 3W
TYPE: SQ. D OR EQUAL
LOAD–VA
LOCATION: SEE PLAN
MOUNTING: SURFACE (NEMA 3R)
MIN. A.I.C.: 22K FULLY RATED

CIRCUIT DESCRIPTION	BKR.	CIR. NO.	ØA	ØB	CIR. NO.	BKR.	CIRCUIT DESCRIPTION
EXIST. A/C UNIT WEST	60	1	5175		2	60	EXIST. A/C UNIT EAST
			4830				
	2	3		5175	4	2	
				4830			
MINI–SPLIT A/C UNIT OH–1	20	5	1368		6	30	MINI–SPLIT A/C UNIT OH–2
			2185				
11.9 MCA, 230V, 1ø	2	7		1368	8	2	19.0 MCA, 230V, 1ø
				2185			
SPARE	20/1	9	360		10	20/1	RECEPT'S. – ROOF MOUNTED
		11			12		
		13			14		
SPACE		15			16		SPACE
		17			18		
		19			20		
		21			22		
		23			24		
		25			26		
		27			28		
		29			30		
		31			32		
		33			34		
		35			36		
		37			38		
		39			40		
		41			42		
TOTAL LOAD PER PHASE:			13918	13558	H# 13918 / 120V = 115.9 AMPS		

REVISIONS:
1. COUNTY COMMENTS 8–28–2018
2. SERVICE CHANGES 1–4–2019

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REMODEL FOR:
CITY OF SEDONA
55 SINAGUA DRIVE, SEDONA, ARIZONA.

SHEET TITLE:
ELECTRICAL SYMBOLS, SPEC'S., ONE-LINE DIAGRAM, SCHEDULES & NOTES

E-1