(#) KEYED NOTES:

(1) (2) 1" CONDUIT TO SCALE HOUSE FOR POWER & COMMUNICATION. VERIFY EXACT LOCATION & ALL ELECTRICAL REQ'S.

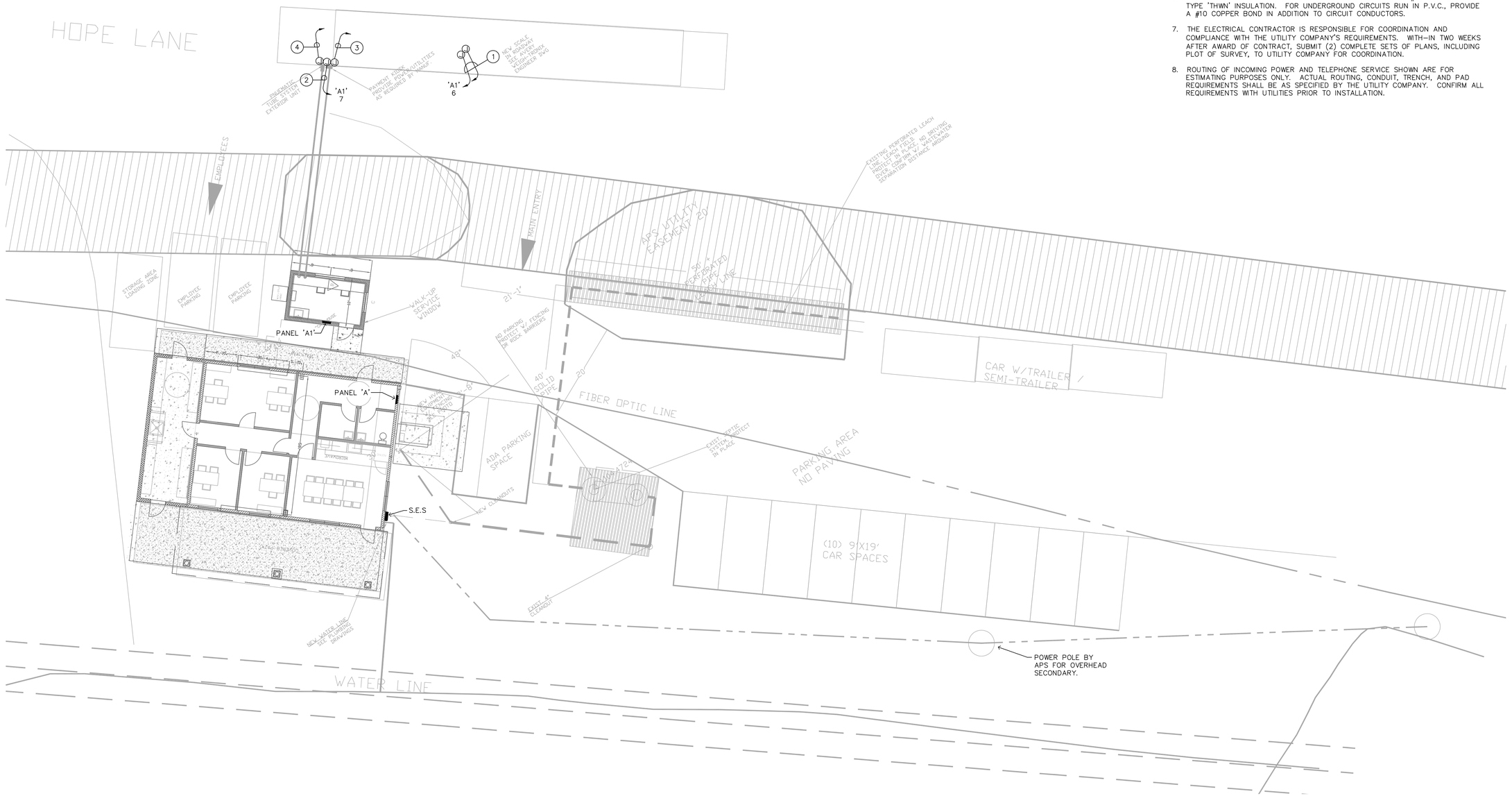
(2) 120V. CONNECTION TO PAY KIOSK.

(3) 1" CONDUIT FOR DATA CONNECTION TO PAY KIOSK.

(4) PNEUMATIC TUBE STATION. PROVIDE 1" C. TO SCALE HOUSE FOR LOW VOLTAGE CONNECTION. VERIFY EXACT LOCATION & REQ'S.

SITE PLAN GENERAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL CONTACT POWER CO. REGARDING EXACT LOCATION OF ALL PRIMARY SERVICE EQUIPMENT, TRENCH LOCATIONS, TRANSFORMER LOCATION, METER LOCATION, ETC.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE NECESSARY SECONDARY CONDUITS, POWER TRENCHING, BACKFILL, CONCRETE PADS FOR TRANSFORMERS AND SERVICE EQUIPMENT AND CONDUIT STUBS INTO TRENCH AS REQUIRED BY POWER CO. AND TO THEIR SPECIFICATIONS.
3. ELECTRICAL CONTRACTOR SHALL CONTACT TELEPHONE COMPANY REGARDING EXACT LOCATION OF ALL PRIMARY SERVICE EQUIPMENT, TRENCH LOCATIONS, ETC.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY TELEPHONE TRENCHING, BACKFILL, AND CONDUIT STUBS INTO TRENCH AS REQUIRED BY TELEPHONE COMPANY AND TO THEIR SPECIFICATIONS.
5. ALL WIRING SHALL BE COPPER UNLESS NOTED OTHERWISE. INSULATION SHALL BE TYPE 'XHHW' OR 'THHN/THWN'.
6. ALL WIRING FOR OUTSIDE LIGHTING SHALL BE A MINIMUM OF #10 COPPER WITH TYPE 'THWN' INSULATION. FOR UNDERGROUND CIRCUITS RUN IN P.V.C., PROVIDE A #10 COPPER BOND IN ADDITION TO CIRCUIT CONDUCTORS.
7. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION AND COMPLIANCE WITH THE UTILITY COMPANY'S REQUIREMENTS. WITH-IN TWO WEEKS AFTER AWARD OF CONTRACT, SUBMIT (2) COMPLETE SETS OF PLANS, INCLUDING PLOT OF SURVEY, TO UTILITY COMPANY FOR COORDINATION.
8. ROUTING OF INCOMING POWER AND TELEPHONE SERVICE SHOWN ARE FOR ESTIMATING PURPOSES ONLY. ACTUAL ROUTING, CONDUIT, TRENCH, AND PAD REQUIREMENTS SHALL BE AS SPECIFIED BY THE UTILITY COMPANY. CONFIRM ALL REQUIREMENTS WITH UTILITIES PRIOR TO INSTALLATION.



ELECTRICAL SITE PLAN

NORTH

SCALE: 1" = 10'-0"

REVISION | DATE

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Registered Professional Engineer (Electrical) CERTIFICATE NO. 31172 DAVID G. WATSON

PROJECT NUMBER: 22-103

DATE: 10/25/2022

DESIGNED BY: RM

DRAWN BY: RM

CHECKED BY: DW

RUSSELL GULCH LANDFILL
OFFICES / SCALES
5891 Hope Ln, Globe, AZ 85501

100% PERMIT SET

SHEET TITLE:

ELECTRICAL SITE PLAN

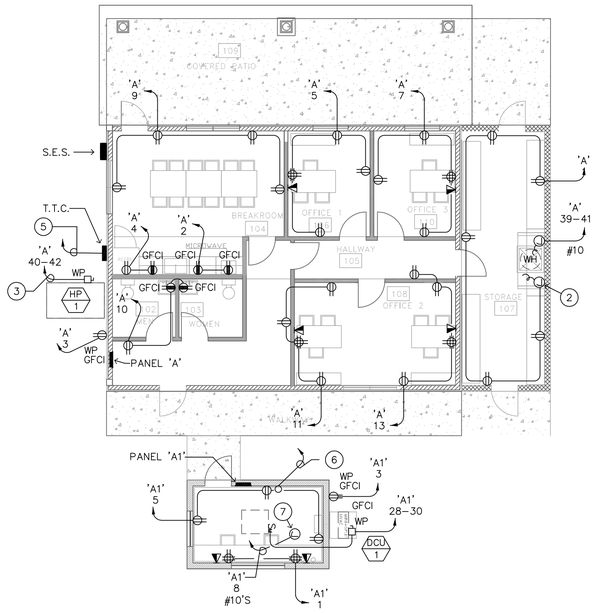
SHEET NUMBER:

E1

ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT*

EQUIP. NO.	VOLT./ PHASE	FLA	HP	HEATING (KW)	WIRE / CONDUIT SIZE	REMARKS
HP-1	240/1	27.2	–	–	2#6 CU, #8 CU GND, 1" C.	
DCU-1	240/1	9.6	–	–	2#10 CU, #10 CU GND, 3/4" C.	INDOOR UNIT POWERED FROM OUTDOOR UNIT

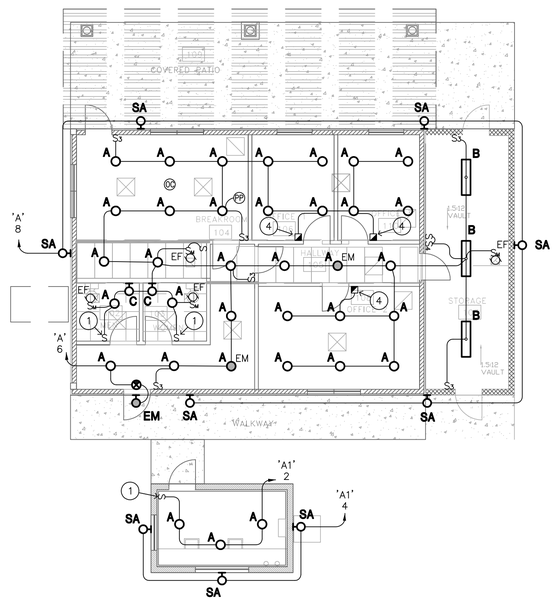
* VERIFY ELECTRICAL CHARACTERISTICS (ie: KW, FLA, VOLTAGE, etc.) OF ACTUAL SUPPLIED EQUIPMENT PRIOR TO ORDERING ANY ELECTRICAL DEVICES, etc. SIZE FUSES AND DISCONNECT SWITCHES PER SUPPLIED MECHANICAL EQUIPMENT MANUFACTURER'S SPECIFICATIONS.



POWER PLAN

SCALE: 1/8" = 1'-0"

NORTH



LIGHTING PLAN

SCALE: 1/8" = 1'-0"

NORTH

LIGHT FIXTURE SCHEDULE

MARK	DESCRIPTION	MFR.	CATALOG #	VOLT.	LAMPS #	LAMPS TYPE	REMARKS
A	4" LED DOWNLIGHT	PRESCOLITE	LTR-4RD-H-ML15L LTR-4RD-T-ML-35K-8 -WD-S	UNIV.	–	1500LM, 19W LED'S W/ FIXTURE	EM DENOTES 1400LM BATTERY BACK-UP
B	4' LED WRAP	COLUMBIA	RLW4-35LW-FAW-EDU	UNIV.	–	4205LM, 34W LED'S W/ FIXTURE	– –
C	LED VANITY	COLUMBIA	CWM2-35LWSM-FRFP -EDU	UNIV.	–	4205LM, 34W LED'S W/ FIXTURE	– –
SA	LED WALL MOUNTED	HUBBELL	SG1-20W-4K7-FT-UNV-DBT	UNIV.	–	2000LM, 20W LED'S W/ FIXTURE	– –
⊗	EXIT SIGN WITH BATTERY BACK-UP	DUAL LITE	EVEURWE	120/277	–	LED's W/FIXTURE	– –
EM	EXTERIOR EMERGENCY LIGHT WITH BATTERY	HUBBELL	PGZ	120/277	–	LED's W/FIXTURE	– –

GENERAL NOTES:

ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH LATEST ADOPTED NATIONAL ELECTRICAL CODES AND ALL APPLICABLE LOCAL CODES, ORDINANCES AND MAG AMENDMENTS TO N.E.C.

ALL WIRING SHALL BE COPPER UNLESS OTHERWISE NOTED. INSULATION SHALL BE TYPE XHHW OR THHN/THWN.

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

CONTRACTOR IS TO VERIFY CONDITION OF EXISTING INSTALLATIONS BY FIELD INSPECTION. CONTRACTOR IS TO PROVIDE NEW WIRE, CONDUIT, AND BOXES AS REQUIRED WITH NO ADDITIONAL COST.

CONTRACTOR IS TO COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATIONS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH-IN.

PROVIDE GFCI PROTECTION FOR RECEPTACLES WITHIN 6 FEET OF SINKS PER NEC 210.8(B).GFCI PROTECTION DEVICES SHALL BE READILY ACCESSIBLE PER NEC 210.8.

OUTDOOR RECEPTACLES; GFCI PROTECTION IS REQUIRED PER NEC 210.8(B) (4). RECEPTACLES IN DAMP OR WET LOCATIONS SHALL BE WEATHER PROOF AND WEATHER RESISTANT DEVICES PER NEC 406.9(A) AND (B).

PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL RACEWAYS, SIZED IN ACCORDANCE WITH N.E.C. ARTICLE 250.122.

CONTRACTOR IS TO VERIFY EXACT LOCATIONS, MOUNTING HEIGHTS AND ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT PROVIDED BY OTHERS PRIOR TO ROUGH-IN. CONTRACTOR IS TO PROVIDE DISCONNECT SWITCHES AND TRANSFORMERS AS REQUIRED, AND FINAL CONNECTIONS TO EQUIPMENT PER OWNER.

CONTRACTOR IS TO PROVIDE AND INSTALL ADDITIONAL EXIT SIGNS, EMERGENCY LIGHTS AND NIGHT LIGHTS IF REQUIRED BY GOVERNING INSPECTOR.

ELECTRICAL CONTRACTOR SHALL PROPERLY SUPPORT ALL EXISTING AND NEW CONDUIT FROM NEW SUPPORTS PER NEC ART. 300-11.

(#) KEYED NOTES:

1. OCCUPANCY SENSOR/SWITCH. LUTRON DUAL TECH OR EQUAL.
2. 120V. CONNECTION FOR RECIRC. PUMP. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH ARCHITECT/OWNER PRIOR TO ROUGH IN.
3. PROVIDE 2#6 CU, #8 CU GND, 1" C.
4. 0-10V. DIMMER SWITCH. PROVIDE 0-10V. CABLE TO FIXTURES.
5. 2" CONDUIT TO TELCO. POINT OF PRESENCE.
6. 1-1/2" CONDUIT TO OFFICE DATA/TEL.
7. PROVIDE 120V. CONNECTION TO PNEUMATIC TUBE BLOWER ABOVE CEILING. VERIFY EXACT LOCATION AND REQ'S.

REVISION | DATE

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Registered Professional Engineer (Electrical) CERTIFICATE NO. 31172 DAVID G. WATSON 6/30/2023 RENEWAL DATE

PROJECT NUMBER: 22-103

DATE: 10/25/2022

DESIGNED BY: RM

DRAWN BY: RM

CHECKED BY: DW

RUSSELL GULCH LANDFILL
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100% PERMIT SET

SHEET TITLE:
ELECTRICAL POWER & LIGHTING PLANS

SHEET NUMBER:
E2

ELECTRICAL SYMBOLS (NOTE: ALL SYMBOLS MAY NOT APPLY TO THIS PROJECT)

- LED FIXTURE
- LED FIXTURE WITH EMERGENCY BATTERY PACK, 1100 LUMENS NL = NIGHT LIGHT – UNSWITCHED EM = LINE SENSITIVE – OPERATES ONLY ON POWER OUTAGE – SWITCHED
- CEILING MOUNTED LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- LED FIXTURE
- EXIT SIGN – SEE LIGHT FIXTURE SCHEDULE
- SURFACE–MOUNT EMERGENCY LIGHTING BATTERY PACK–SINGLE OR DOUBLE HEAD– SEE LIGHT FIXTURE SCHEDULE
- RECESSED EMERGENCY LIGHTING BATTERY PACK–SINGLE OR DOUBLE HEAD– SEE LIGHT FIXTURE SCHEDULE
- JUNCTION BOX IN ACCESSIBLE LOCATION ABOVE REMOVABLE CEILING W/ FLEXIBLE CONDUIT CONNECTION TO LIGHT FIXTURE
- FLEXIBLE CONDUIT CONNECTION TO EQUIPMENT
- JUNCTION BOX IN ACCESSIBLE LOCATION
- DUPLEX CONVENIENCE RECEPTACLE AT +15" A.F.F. TO BOTTOM OR AS NOTED
- FOUR–PLEX CONVENIENCE RECEPTACLE AT +15" A.F.F. TO BOTTOM OR AS NOTED
- ISOLATED GROUND RECEPTACLE AT + 15" A.F.F. TO BOTTOM OR AS NOTED
- RECEPTACLE (TYPE AS SHOWN) AT + 42" A.F.F.
- SPECIAL USE RECEPTACLE. VERIFY NEMA NUMBER AND MOUNTING HEIGHT WITH EQUIPMENT
- $S\ S_3\ S_4$ TOGGLE SWITCH – SINGLE POLE, 3–WAY, 4–WAY AT +42" OR AS NOTED ON PLANS.
- S_M MOTOR RATED SWITCH WITH THERMAL PROTECTION
- DIMMER SWITCH AT + 42" A.F.F. "LUTRON" NP SERIES. SIZE DIMMER FOR LOAD. TRACK LIGHTING SHALL HAVE "LUTRON" NP2000 DIMMER
- PHOTOCELL – TORK #2100 – MOUNT ON ROOF AND AIM NORTH
- TS TIMESWITCH: TORK 'W' SERIES OR EQUAL
- CIRCUIT IN CONDUIT, CONCEALED. HASH MARKS INDICATE QUANTITY OF CONDUCTORS NO HASH MARKS INDICATE TWO CONDUCTORS, PLUS GROUND(S). (NOTE: WIRE AND OR CONDUIT SIZE SHOWN AT HOMERUN IS THE MINIMUM SIZE FOR THE ENTIRE CIRCUIT: #12 A.W.G. CU, 1/2"C. MINIMUM). LONG STROKE(S) INDICATE NEUTRAL CONDUCTOR(S), SHORT STROKES INDICATE PHASE OR SWITCHED CONDUCTORS AND LONG STROKES WITH DOT INDICATE GREEN INSULATED GROUNDING CONDUCTOR(S) TYPICAL. EACH ISOLATED GROUND CIRCUIT SHALL HAVE A SEPARATE NEUTRAL AND GROUND WIRE. BOND WIRES ARE NOT SHOWN ON DRAWINGS. BOND WIRES SHALL BE INSULATED CU. SIZED IN ACCORDANCE WITH N.E.C. #250.
- CIRCUIT IN CONDUIT CONCEALED IN FLOOR
- CIRCUIT IN CONDUIT CONCEALED IN WALLS OR ABOVE CEILING
- HOMERUN TO PANELBOARD OR AS NOTED
- PANELBOARD, MOUNT TOP OF PANEL AT + 6'–8". STUB (2) 3/4" E.C. INTO ACCESSIBLE CEILING SPACE ON FLUSH MOUNTED PANELS.
- MOTOR: SIZE AND RATING AS SHOWN. EF INDICATES 55–WATT, 120V. EXHAUST FAN
- A.C. MAGNETIC STARTER BY ELECTRICAL CONTRACTOR. HORSEPOWER, VOLTAGE AND PHASE RATED, NUMBER OF POLES REQUIRED. FURNISH WITH (1) N.O. AUXILLIARY CONTACT (120 V. CONTROL) SINGLE SPEED NON–REVERSING UNLESS OTHERWISE SHOWN ON PLAN
- DISCONNECT SWITCH – HORSEPOWER RATED, FUSED, NEMA 3R WHERE OUTSIDE. N.F. INDICATES NON–FUSED. (FUSE PER EQUIPMENT MANUFACTURERS' SPECIFICATIONS.)
- STRIP HEATER AND CONTROL
- MOTOR CONTROLLER – FURNISHED WITH EQUIPMENT
- TELEPHONE OUTLET AT +15" TO BOTTOM OR AS NOTED WITH 3/4"C. UP INTO ACCESSIBLE CEILING SPACE UNLESS SHOWN OTHERWISE
- DATA OUTLET AT + 15" A.F.F. TO BOTTOM OR AS NOTED. STUB 3/4"C. INTO ACCESSIBLE CEILING SPACE
- DATA/TELEPHONE OUTLET AT + 15" A.F.F. TO BOTTOM OR AS NOTED. STUB 3/4"C. INTO ACCESSIBLE CEILING SPACE
- APPROVED TEMPERATURE SEAL–OFF AND EXPANSION JOINTS AS REQ'D BY N.E.C. ART. #300–7
- FLUSH FLOOR FOURPLEX OUTLET AND DATA/TELPHONE OUTLET COMBO WITH BRASS DEVICE PLATE
- FLUSH FLOOR DATA RECEPTACLE WITH BRASS COVER PLATE AND 3/4"C. STUBBED TO ABOVE ACCESSIBLE CEILING LOCATION
- FLUSH FLOOR TELEPHONE RECEPTACLE WITH BRASS COVER PLATE AND 3/4"C. STUBBED TO ABOVE ACCESSIBLE CEILING LOCATION
- FLUSH FLOOR DUPLEX OUTLET WITH BRASS DEVICE PLATE
- FLUSH FLOOR FOURPLEX OUTLET WITH BRASS DEVICE PLATE
- IG ISOLATED GROUND RECEPTACLE "HUBBELL" # IG5263 20A, 125V, FLUSH FLOOR WITH BRASS DEVICE PLATE
- TV TELEVISION OUTLET AT + 15" TO BOTTOM OR AS NOTED. STUB 3/4"C INTO ACCESSIBLE CEILING SPACE
- F A.D.A.–APPROVED FIRE ALARM STROBE
- F A.D.A.–APPROVED FIRE ALARM HORN/STROBE
- F A.D.A.–APPROVED FIRE ALARM PULL STATION
- SD A.D.A.–APPROVED SMOKE DETECTOR MOUNTED IN CEILING OR AS INDICATED
- OS WIRELESS OCCUPANCY SENSOR, CEILING MOUNTED. LUTRON OR EQUAL, PAIR WITH POWER PACK.
- PP 0–10V POWER PACK MOUNTED ABOVE CEILING. SIZE PER LOAD AND PAIR WITH LOCAL OCCUPANCY SENSOR(S), DAYLIGHT SENSOR(S), AND WALLSTATION(S). LUTRON OR EQUAL.
- DL DAY LIGHT SENSOR: CEILING MOUNT
- WP WEATHER PROOF
- EDF ELECTRIC DRINKING FOUNTAIN
- S.E.S. SERVICE ENTRANCE SECTION
- T.M.B. TELEPHONE MOUNTING BOARD: 4' X 8' X 3/4" PLYWOOD WITH #6 CU. BOND WIRE TO GROUNDING ELECTRODE SYSTEM
- T.T.C. TELEPHONE TERMINAL CABINET: 36" W. X 36" H X 6" D 16 GA. WEATHERPROOF HINGED LOCKABLE COVER, 5/8" PLYWOOD BACKBOARD. PROVIDE A #6 CU BOND TO GROUNDING ELECTRODE SYSTEM

SHORT CIRCUIT CALCULATIONS

FAULT DESIG.	PANEL	LOAD AMPS	LENGTH (FT.)	SOURCE SHORT CKT AMPS	"1" OR "3" PHASE?	# OF CDTRS/ PHASE	"CU" OR "AL"	CDR SIZE (awg/kcmil)	METAL CONDUIT? "Y" OR "N"	"C" VALUE	V	f	m	SOURCE Isc (amps)	MOTOR CONTRIB.	TOTAL Isc (amps)
	SES/PANEL 'A'			14,318	1		CU				240			14318	0	14,318
F1	PANEL 'A'	200	25	14,318	1	1	CU	#3/0	Y	12843	240	0.2323	0.8115	11,619	0	11,619
F2	PANEL 'A1'	100	25	11,619	1	1	CU	#1	N	7493	240	0.3231	0.7558	8,782	0	8,782

FULLY RATED PANEL

PANEL A1 | 100 AMP | 120/240V., 1ø, 3W | MAIN 100/2 MCB | NEMA 1 | FLUSH MTG
LOCATION SEE PLAN | TYPE SEE C.B. NOTE | BREAKER RATING 10,000 AIC

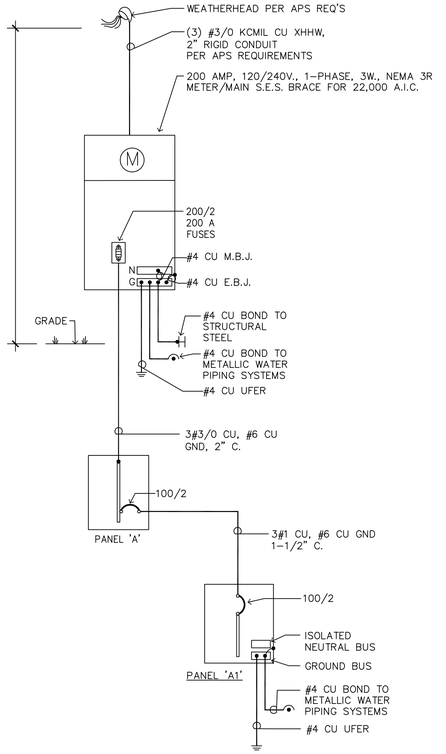
USE/AREA SERVED	CB	No	L1	L2	No	CB	USE/AREA SERVED
REC – S.H. QAUDS	20/1	1	720		2	20/1	LTG – SCALE HOUSE
REC – S.H. EXTERIOR	20/1	3	300	180	4	20/1	LTG – S.H. EXTERIOR
REC – SCALE HOUSE	20/1	5	720	300	6	20/1	SCALE
PAY KIOSK	20/1	7	600	360	8	20/1	PNEUMATIC TUBE BLOWER
SPARE	20/1	9	–	1500	10	20/1	SPARE
SPARE	20/1	11	–	–	12	20/1	SPARE
SPARE	20/1	13	–	–	14	20/1	SPARE
SPARE	20/1	15	–	–	16	20/1	SPARE
SPACE		17	–	–	18		SPACE
SPACE		19	–	–	20		SPACE
SPACE		21	–	–	22		SPACE
SPACE		23	–	–	24		SPACE
SPACE		25	–	–	26		SPACE
SPACE		27	–	–	28	20/2	DCU–1
SPACE		29	–	1152	30		
			1152				
TOTAL (CONNECTED)			3492	3492			
25 % CONTINUOUS			288	288			
			–	–			
TOTAL (CODE)			3780	3780	3780 VA / 120V. = 32 A.		

SERIES RATED PANEL

PANEL A | 200 AMP | 120/240V., 1ø, 3W | MAIN MLO | NEMA 1 | FLUSH MTG
LOCATION SEE PLAN | TYPE SEE C.B. NOTE | BREAKER RATING 22/10K AIC

USE/AREA SERVED	CB	No	L1	L2	No	CB	USE/AREA SERVED
REC – STORAGE/RECIRC.	20/1	1	800		2	20/1	REC – MICROWAVE
REC – EXTERIOR	20/1	3	1200	180	4	20/1	REC – BREAKROOM FRIDGE
REC – OFFICE 1	20/1	5	900	1200	6	20/1	LTG – OFF./STOR./BREAK
REC – OFFICE 3	20/1	7	900	900	8	20/1	LTG – EXTERIOR
REC – BREAK ROOM	20/1	9	720	600	10	20/1	REC – RESTROOMS
REC – E. OFFICE 2	20/1	11	540	900	12	20/1	SPARE
REC – W. OFFICE 2	20/1	13	900	–	14	20/1	SPARE
SPARE	20/1	15	–	–	16	20/1	SPARE
SPARE	20/1	17	–	–	18	20/1	SPACE
SPARE	20/1	19	–	–	20	20/1	SPACE
SPARE	20/1	21	–	–	22	20/1	SPACE
SPARE	20/1	23	–	–	24	20/1	SPARE
SPACE		25	–	–	26		SPACE
SPACE		27	–	–	28		SPACE
SPACE		29	–	–	30		SPACE
SPACE		31	–	–	32		SPACE
SPACE		33	–	–	34		SPACE
SPACE		35	–	3780	36	100/2	SUB PANEL 'A1'
SPACE		37	3780		38		
WATER HEATER	30/2	39	2250	2250	40	50/2	HP–1
		41	2250	3264	42		
TOTAL (CONNECTED)			15254	13074			
25 % CONTINUOUS			816	816			
			–	–			
TOTAL (CODE)			16070	13890	16070 VA / 120V. = 134 A.		

MAXIMUM AVAILABLE FAULT CURRENT = 14,318 AMPS SYMM. PER APS TABLE



ONE-LINE DIAGRAM

1. ALL CONDUCTOR SIZES BASED ON TYPE 'XHHW' & 'THHN/THWN' COPPER. N.T.S.
2. ELECTRICAL CONTRACTOR SHALL FIELD–VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY WORK.

PANEL LEGEND:

- ○ INDICATES EXISTING CIRCUIT BREAKER & LOAD.
- ● INDICATES NEW CIRCUIT BREAKER & LOAD.
- □ INDICATES CIRCUIT BREAKER WITH 'LOCK–OFF' DEVICE.
- ■ INDICATES EXISTING CIRCUIT BREAKER W/CHANGED LOAD.
- △ INDICATES CIRCUIT THRU
- ▲ MISCELLANEOUS.
- ✳ INDICATES CONTINUOUS LOAD TAKEN @ 125% PER N.E.C.

SERIES-RATING NOTE:

THIS SERVICE IS A SERIES RATED SYSTEM: 2–TIER 22/10.

CONTRACTOR SHALL LABEL S.E.S. "CAUTION" – SERIES RATED SYSTEM (22/10). 14,318 AMPS AVAILABLE IDENTIFIED REPLACEMENT COMPONENT REQUIRED." IN ACCORDANCE WITH NEC 110.22.

CONTRACTOR SHALL LABEL PANEL 'A'. "CAUTION" SERIES–RATED SYSTEM (22/10). 11,619 AMPS AVAILABLE IDENTIFIED REPLACEMENT COMPONENT REQUIRED." IN ACCORDANCE WITH NEC 110.22.

THE MOTOR CONTRIBUTION TO THE FAULT CURRENT MEETS THE 1% CRITERIA

NO DESIGN CHANGES MAY BE MADE TO THE SYSTEM WITHOUT THE PRIOR APPROVAL OF THE DESIGN ELECTRICAL ENGINEER AND THE ELECTRICAL INSPECTOR.

C.B. NOTE:

CIRCUIT BREAKERS SHALL BE A PLUG–ON TYPE, U.L.–LISTED SERIES–RATED COMBINATION WITH THE FUSES AT S.E.S.

REVISION | DATE

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Registered Professional Engineer (Electrical) CERTIFICATE NO. 31172 DAVID G. WATSON 6-30-2023

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RUSSELL GULCH LANDFILL
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5891 Hope Ln, Globe, AZ 85501

100% PERMIT SET

SHEET TITLE:
ELECTRICAL ONE-LINE DIAGRAM

SHEET NUMBER:
E3

ELECTRICAL SYSTEM SPECIFICATIONS - DIVISION 16000

(SOME SECTIONS MAY NOT APPLY)

1. GENERAL CONDITIONS

The General Provisions of the Contract, including the Conditions of the Contract (General, Supplementary and other Conditions) and Division 1 – General Requirements as appropriate, apply to the work specified in this Section.

2. SCOPE OF WORK

The work included under this section consists of furnishing all materials, equipment, and labor and the performing of all functions, except as otherwise specified herein or shown on the drawings to be performed by others, for the installation and placing into operation of a complete electrical system as specified and shown on the drawings.

3. GENERAL DESCRIPTION

3.1 The work in general shall consist of, but is not necessarily limited to the following.

3.1.1 Furnishing and installing all fixtures with lamps as indicated on the drawings and as specified herein unless noted.

3.1.2 Furnishing and installing all electrical work, panels, service, conduit, wiring, etc., for all outlets and equipment.

3.1.3 Furnishing and installing all telephone outlets, conduits with pull strings and telephone mounting boards including conduit from telephone mounting board to the building entrance as indicated on the plan.

3.1.4 Furnishing and installing a complete Fire Alarm system as indicated on plans.

3.1.5 Include $ hundred dollars) allowance for power and telephone company utility service charges. Difference between actual cost and allowance to be credited or billed to the Owner.

3.1.6 Furnishing and installing all motor starters and control components, not specifically specified to be furnished in accordance with other sections of the specifications.

3.1.7 Furnishing and installing all power and wiring except that which is pre–wired in factory assembled equipment.

3.1.8 Installing all LINE VOLTAGE mechanical control wiring and associated controls which are furnished by the Mechanical Contractor (low voltage control wiring and controls shall be furnished and installed by the Mechanical Contractor).

3.1.9 Painting work as described under other sections of these specifications. Clean and prepare all surfaces ready for painting.

3.1.10 Provide temporary construction power as outlined below. This service shall be maintained throughout the entire job as the work progresses. Provide outlets at convenient points and in sufficient numbers so that no extension cord over 50 feet in length is required to reach any work point. Maintain general lighting in corridors, stairs, basement and other areas not receiving sufficient daylight required for safety. Remove temporary work as rapidly as required for or allowed by installation of permanent work.

3.1.11 Certain items of work by other trades will be necessary for the completion of work under this division. Cooperate with other trades and arrange for these items to be performed in orderly course.

3.1.12 This Contractor shall review the mechanical control requirements as specified and shown on the drawings and shall furnish and install all necessary conduit, wiring, boxes, protective devices, switches, etc., for the completion and proper operation of the system.

3.1.13 Review all drawings and all specifications for each section of work. Unless specifically noted otherwise, herein or elsewhere, furnish and install items of any electrical nature required for completion of work for other trades, whether or not same is shown or noted in this or other sections.

4. REGULATIONS AND CODES

The Contractor must comply with all state, municipal and federal safety laws, construction codes, ordinances and regulations relating to building and public health and safety. In addition, comply with rules and regulations of the State Fire Protection Code. Fire protection material must bear the Fire Underwriters Laboratories label.

5. GENERAL REQUIREMENTS

5.1 The Contractor shall examine the premises and satisfy himself of existing conditions under which he will be obligated to operate in performing his part of the work or that will in any manner affect the work under the contract. The Contractor shall cooperate with other trades so that the installations of all equipment may be properly coordinated.

5.2 All equipment furnished shall fit the space available, with connection, etc., in the required locations and with adequate space for operating and servicing. The drawings are generally diagrammatic and indicate the manner and method of the installation, while the specifications and fixture list denote the type and quality of material and workmanship to be used. Where a conflict exists between the drawings and the specifications, the Contractor shall promptly notify the Architect/Engineer whose decision shall be final. No allowance will be made subsequently in this connection in behalf of the Contractor after award of the contract.

6. EQUIPMENT AND MATERIAL

6.1 All materials furnished under this contract shall be new (except as noted), free from defects of any character, shall conform with the standards of the Underwriters Laboratories, Inc. (U.L.) (or other nationally recognized Laboratory), in every case where such a standard has been established and shall be so labeled. It is the intention of these specifications to indicate a standard of quality for all materials incorporated in this work, and where materials are not specified herein and are required to complete the electrical installation, these materials shall be of first quality for use intended. Manufacturers of similar quality products will be considered unless the specifications or drawings indicate otherwise.

6.2 Materials shall be suitable for intended use and location. Unless otherwise shown use NEMA–1 for interior areas and NEMA–3R for exterior areas.

6.3 The Architect/Engineer decision as to equal in grade and quality shall rule and be final for all electrical materials incorporated in this work. Where two or more similar type items are furnished, all shall be of the same manufacturer (e.g., all disconnect switches shall be of the same manufacturer) unless otherwise noted herein or shown on the drawings. All material and installation methods used shall be in accordance with the latest and approved electrical and mechanical engineering practices.

7. SERVICE ENTRANCE EQUIPMENT

7.1 Service entrance equipment shall be in accordance with the requirements of the municipal governing body and serving utility. Shop drawings shall be submitted to the serving utility for written approval before ordering equipment.

7.2 Label equipment and each individual overcurrent device per Section 16000.22.

7.3 Approved manufacturers are: Sun Valley, Square D, Cutler–Hammer, Siemens/ITE, General Electric

8. PANELBOARDS

8.1 Each panel shall be provided with door lock and two keys, all keyed alike. Each panel shall be provided with typewritten sheet installed on door identifying the use of each branch circuit. Panels shall have bussing as indicated on the drawings.

8.2 Label equipment per Section 16000.22

8.3 Approved manufacturers are: Square D, Cutler–Hammer, Siemens/ITE, General Electric

9. STARTERS

9.1 All motor starters shall be furnished under this section of the specifications unless an integral part of equipment or noted as furnished with equipment specified under other sections of these specifications.

9.2 Separately mounted motor starters shall be across–the–line combination magnetic with 120V coils, fused disconnect contactors, additional auxiliary contact for interlocking of controls. Provide pushbutton or selector switch in cover. Switchboard mounted starters shall be magnetic with 120V coils and additional auxiliary contacts as required for interlocking of controls. Starters shall have an integral control circuit transformer or separate 120V control with control circuit disconnect switch in cover.

9.3 Manual starters shall be horsepower, voltage and phase rated with overload protection and green "on" pilot light. Surface mounted unless noted otherwise.

9.4 All starters shall have overload protection in all phase lines. Furnish and install the proper size overload heater elements determined from full load nameplate readings on motors and compensation for ambient temperature in all starters whether they be furnished under this Section or other Sections.

9.5 Label per Section 16000.22

9.6 Approved manufacturers are: Square D

10. TRANSFORMERS

10.1 Transformers shall be dry type, with voltage ratings as indicated on plans. Transformers shall be rated for for full load operation at a maximum 150 degree centigrade rise above a 40 degree centigrade ambient or as otherwise noted on drawings. Provide at least (4) 2 1/2 percent taps, two above normal and two below normal and have a sound rating not to exceed NEMA standards. Special "K" factor ratings as noted.

10.2 Submit complete transformer data with shop drawings for approval. The data shall include efficiencies, core and copper losses, impedance, regulation and sound level.

10.3 Installation of transformers shall be on vibration isolators and all wiring connections with flexible conduit.

10.4 Label per Section 16000.22

10.5 Approved manufacturers are: ACME, Square D, Jefferson, Cutler–Hammer, Westinghouse, General Electric, or same manufacturer as distribution equipment.

11. CONDUIT

11.1 Metallic conduits shall be hot dipped galvanized equal to LTV Steel.

11.2 Electric metallic tubing (EMT) is permitted for exposed work above 6'–0" A.F.F. or concealed work only. EMT is NOT permitted in the following: (1) in or under concrete, (2) in earth, (3) in grouted walls, (4) exterior of building, (5) with dissimilar metals, (6) where it will be subject to severe physical damage (either during or after installation), (7) in any hazardous (classified location) except as permitted by 502.10, 503.10 and 504.20, (8) without an equipment grounding conductor. Size and provide equipment grounding conductor per Article 250 and increase conduit size if required.

11.3 Rigid PVC conduit is permitted only underground or as noted on drawings. Provide rigid steel elbows and risers (NO MINIMUM SIZE). Size and provide equipment grounding conductor per Article 250 and increase conduit size if required.

11.4 Rigid galvanized or sheradized steel shall be used for all exposed conduit below 6'–0" A.F.F. or as noted on drawings. Where used in or under concrete or in earth, shall be code approved PVC coated or half lap wrapped with Polyken #900 tape or equal.

11.5 Install exposed raceways parallel and perpendicular to nearby surfaces or structural members and follow the surface contours as much as practical.

11.6 Run exposed, parallel, or banked raceways together. Make bends in parallel or banked runs from the same center line so that the bends are parallel. Factory elbows may be used in banked runs only where they can be installed parallel. This requires that there be a change in the plane of the run such as from wall to ceiling and that the raceways be of the same size. In other cases provide field bends for parallel raceways.

12. WIRE

12.1 Soft drawn annealed copper (unless otherwise noted on plans) having conductivity of not less than 98% of that of pure copper, uniform in cross section, free from flaws, scales, and other imperfections. All wire larger than #10 shall be stranded.

12.2 Insulation: Type THHN/THWN, or XHHW for all branch circuit and feeder wiring.

12.3 Sizes: No wire smaller than #12 unless otherwise noted on drawings.

12.4 Feeder conductors #2 awg and larger may be copper or AA–8000 series alluminum alloy. Alluminum conductors shall be equal or larger ampacity to copper. Conduit fill shall not exceed 40% factor as described in NEC, annex C, table C1 (copper) or C1A (alluminum).

13. MISCELLANEOUS MATERIALS:

13.1 Safety switches: Heavy duty, fused rejection type, minimum 200,000 A.I.C. rated. "NF" indicates not fused.

13.1.1 Label per Section 16000.22

13.1.2 Approved manufacturers are: Square D, Cutler–Hammer, Westinghouse, General Electric or same manufacturers as distribution equipment.

13.2 Fuses: "Bussmann" or "Gould Shawmut" mfg. No substitutions unless by prior written approval from Engineer, or as noted on drawings.

13.3 Conduit strap: Heavy gauge steel snap–on type.

13.4 Electrical metallic tubing fittings: Equal to T&B compression type. Connectors shall have insulated bushings.

13.5 Rigid conduit locknuts and bushings: Equal to T&B.

13.6 Flexible conduit and fittings: Equal to California Conduit and Cable Company, Inc.

13.7 Liquid tight conduit and fittings for all exterior and equipment connections.

13.8 Outlet boxes, plaster rings, pull, and junction boxes, etc: Equal to RACO. Zinc coated or Cadmium plated sheet steel for indoor locations, cast aluminum for outdoor locations.

13.8.1 For all light fixtures: Octagon or 4" square boxes.

13.8.2 For switches and receptacles: 4" or 4–11/16" square boxes.

13.8.3 Junction and pull boxes: 4" square minimum size. Provide with screwfastened covers located in accessible locations.

13.9 Condulets: Equal to Crouse–Hinds.

13.10 Wire and Cable: Equal to General Cable and/or Simplex.

13.11 Devices: "Hubbell", "Leviton", or approved equal. Receptacles: Duplex–20 amp #5362, isolated ground – 20 amp #IG–5362, GFCI– 20 amp #GF–5362. Switches: 20 amp #1221 single pole, 1222 double pole, 1223 three way, 1224 four way. Colors to be specified by Architect/Owner/Tenant.

13.12 Device plates: "Hubbell", "Leviton", or equal. Ivory nylon in interior areas or as noted on drawings. Zinc die cast flip lid mounted horizontally for exterior or weatherproof locations.

13.13 Lighting fixtures: Equal to as shown on fixture schedule or described on drawings, complete with lamps in original cartons and all canopies, stems, hangers and accessories including all structural members required for proper mounting. All fluorescent fixture ballasts shall be energy saving type. Submit shop drawings to Architect/Engineer for approval by the same. Must be C.E.C. approved in Calif.

13.14 Lamps: G.E. or equal and shall be for the maximum rated wattage of fixture unless otherwise shown on drawings.

14. SLEEVES, INSERTS, OPENINGS

14.1 Contractor shall layout and install his work in advance of pouring concrete floors or walls. Provide all sleeves and/or openings through floors or walls required for electrical conduits or ducts.

14.2 Sleeves shall be of rigid conduit or galvanized sheet steel rigidly supported and suitably packed to prevent entrance of wet concrete.

15. EXCAVATION/CUTTING/FITTING/REPAIRING/FINISHING

15.1 The Contractor shall include in his bid all excavation, compaction, fill, backfill, cutting, fitting, repairing and finishing of all work necessary for the installation of all equipment under this specification but no cutting of the work of other Contractors shall be done without the consent of the General Contractor.

15.2 Earthwork shall be done in accordance with latest industry standards.

16. CLEANUP OF PREMISES

Contractor shall at all times keep the premises clear of waste materials and debris caused by his employees and operation. Equipment not required in the work shall be removed prior to the termination of the contract.

17. TESTS AND INSPECTIONS

17.1 Contractor shall test wiring and devices as sections are completed and shall correct all defects immediately at his own expense, including any damage to walls, ceilings, floor or other portions of the building which may result from replacing defective equipment.

17.2 Furnish all meters, cable, connections and apparatus necessary for making tests.

17.3 Test system for shorts and grounds. Faulty wiring shall be removed and replaced. Any device, apparatus or fixture installed showing substandard performance shall be removed and replaced as directed by the Architect/Engineer.

17.4 Megger all systems neutrals to insure the neutral is not grounded within the system.

17.5 All equipment rated at 1,000 amps or more , or 480 volts shall be tested for insulation breakdown prior to its being energized. Such equipment shall withstand for a period of one minute without breakdown, the application of a 60HZ alternating potential of 1,000V plus twice the rated voltage of the device.

17.6 After the electrical wiring system installation is completed and at such time as the Architect/Engineer or his authorized representative may direct, the Contractor shall conduct an operating test for approval. Equipment shall be demonstrated to operate in accordance with requirements of specifications. Test shall be performed in presence of Architect/Engineer or his representative.

18. SHOP DRAWINGS

18.1 All data shall be submitted at one time, bound and indexed in an orderly manner. Prior to starting the work, submit to the Architect/Engineer for approval, six (6) sets of shop drawings of service (S.E.S.), panels, distribution sections, light fixtures, motor control centers, fire alarm system, dimmers, sound system, emergency generator, devices, transformers, labels as required by 16000.22, and all other equipment to be fabricated.

18.2 Procure shop drawings, wiring diagrams, etc., from other trades involved where such drawings may facilitate and expedite the work. Air conditioning and mechanical equipment shall be wired complete as per manufacturer's wiring diagrams furnished by the air conditioning and mechanical contractors.

19. DRAWINGS OF RECORD (AS–BUILT)

As–built drawings shall be submitted in accordance with and if required by Division 1 – General Requirements.

20. GUARANTEE

The Contractor shall guarantee all material and equipment to be free from defect of material and workmanship and shall replace or repair without cost to the owner all defective material and workmanship for a period of one year after final acceptance.

21. INSTRUCTIONS

21.1 Contractor shall instruct the Owner in the proper operating and maintenance of the equipment.

21.2 Contractor shall provide two (2) sets of operating and maintenance manuals for each piece of equipment provided by this discipline, only when such manuals are available from the manufacturer.

21.2.1 All manuals to be bound in a 3–ring binder and tabulated in an orderly manner.

22. LABELING

22.1 Labels shall be engraved, black on white melamine plastic laminate, 1/16" minimum thickness for signs up to 20 square inches or 8 inches long; 1/8" thick for larger sizes. Engraved legend shall be in white letters on black face with minimum 3/16" high letters. Labels shall be punched and fastened to equipment with aluminum rivets or self tapping stainless steel screws or number 10/32 stainless steel machine screws with nuts, flat and lock washers.

22.2 Label equipment with name, amperage, voltage, phase, and wires (i.e. Panel "A", 400A., 120/208V,3Ø,4W). Submit list of all labels with wording for review as per 16000.18.

22.3 Equipment to be labeled shall include service (S.E.S.) and all overcurrent devices, distribution sections and all overcurrent devices, motor control centers (M.C.C.) and all overcurrent devices, fusible panelboards and all overcurrent devices, panels, starters and transformers. Label other equipment as noted on plans.

REVISION | DATE | △

Job No. 22161
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Registered Professional Engineer (Electrical) CERTIFICATE NO. 31172 DAVID G. WATSON

PROJECT NUMBER: 22–103
DATE: 10/25/2022
DESIGNED BY: RM
DRAWN BY: RM
CHECKED BY: DW

RUSSELL GULCH LANDFILL
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5891 Hope Ln, Globe, AZ 85501

100% PERMIT SET

SHEET TITLE:
ELECTRICAL SPECIFICATIONS

SHEET NUMBER:
E4