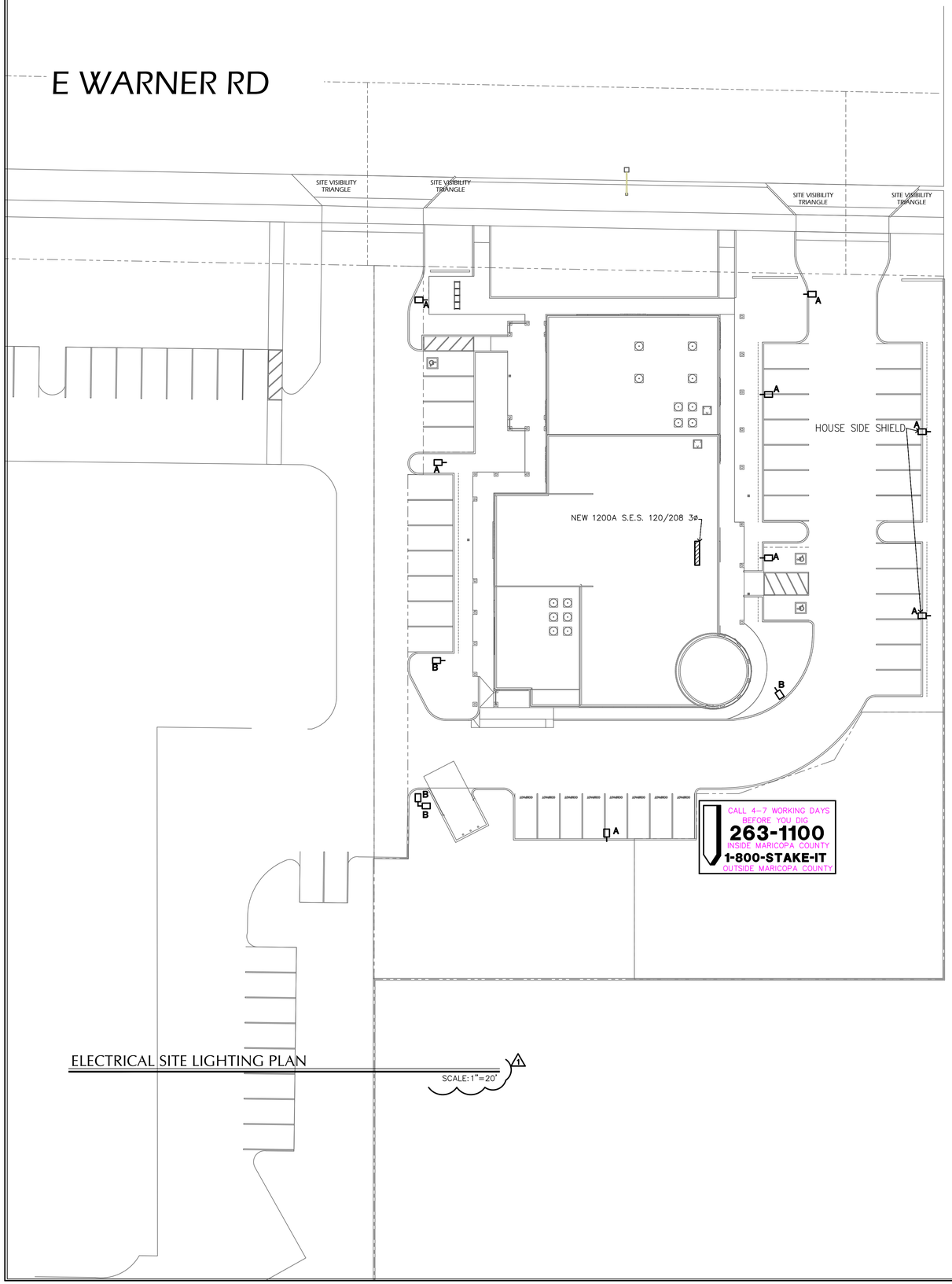


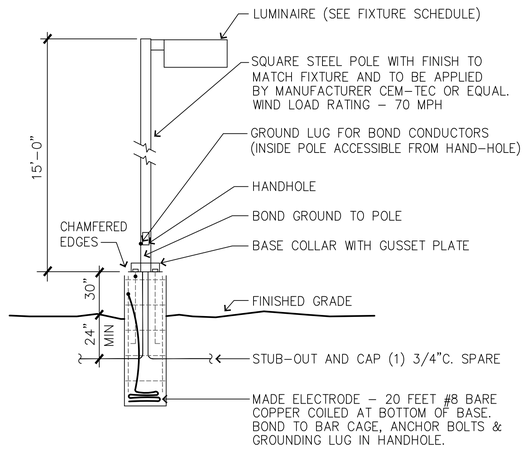
ELECTRICAL SITE LIGHTING PLAN

SCALE: 1"=20'

LIGHT FIXTURE SCHEDULE

MARK	DESCRIPTION	MFR.	CATALOG #	VOLT.	LAMPS #	LAMPS TYPE	REMARKS
A	LED POLE MOUNTED SITE LIGHTING	HUBBELL OUTDOOR	RAR1-160L-100 3K7-4W-U	208V UNIV.	-	90W LED 3000K	DARK BRONZE SMOOTH FINISH 15' MTG. HEIGHT SEE NOTE #1
B	LED POLE MOUNTED SITE LIGHTING	HUBBELL OUTDOOR	RAR1-160L-100 3K7-5QW-U	208V UNIV.	-	90W LED 3000K	DARK BRONZE SMOOTH FINISH 15' MTG HEIGHT SEE NOTE #1

NOTE 1: PROVIDE HOUSE SIDE SHIELD IF NOTED ON THE PLAN



POLE LIGHT FIXTURE 'SA1', 'SA2', DETAIL

N.T.S.

NOTE:

LIGHT FIXTURE DETAIL SHOWN FOR SCHEMATIC PURPOSES ONLY! GENERAL CONTRACTOR SHALL OBTAIN FINAL, ENGINEERED POLE BASE DETAIL FROM POLE MANUFACTURER OR STRUCTURAL ENGINEER PRIOR TO ANY WORK.

NOTE:

ALL SITE LIGHTING IS DESIGNATED SECURITY AREA FROM DUSK TIL' DAWN AND WILL REMAIN AT 100% ILLUMINATION. PER IECC C405.2 EXCEPTION #1.

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.

SITE PLAN KEYED NOTES:

1. PROVIDE PRIMARY CONDUITS WITH MULETAPE FROM PRIMARY SIDE OF UTILITY TRANSFORMER TO UTILITY P.O.C., TRENCHING AND BACKFILL BY ELECTRICAL CONTRACTOR AS REQUIRED BY THE UTILITY. VERIFY EXACT ROUTING AND DISTANCE WITH UTILITY PRIOR TO DIGGING.
2. PROPOSED RELOCATION OF UTILITY TRANSFORMER. ELECTRICAL CONTRACTOR SHALL PROVIDE CONCRETE PAD PER UTILITY COMPANY REQUIREMENTS. COORDINATE WITH UTILITY COMPANY FOR EXACT REQUIREMENTS AND LOCATION. MAINTAIN MINIMUM CLEARANCE IN FRONT, SIDES AND BACK OF UTILITY TRANSFORMER PER UTILITY REQUIREMENTS.
3. PROVIDE SECONDARY CONDUIT WITH CONDUCTOR FROM NEW UTILITY COMPANY TRANSFORMER TO S.E.S. UTILITY PULL SECTION VIA SCC. COORDINATE WITH UTILITY COMPANY FOR EXACT ROUTING AND UTILITY REQUIREMENTS. TRENCHING, BACKFILL CONDUCTOR PROVIDED BY ELECTRICAL CONTRACTOR AS REQUIRED BY THE UTILITY. VERIFY EXACT ROUTING, DISTANCE AND P.O.C. WITH UTILITY PRIOR TO DIGGING. SEE SINGLE-LINE DIAGRAM FOR MORE INFORMATION.
4. TELE CO. SERVICE CONDUIT BY ELECTRICAL CONTRACTOR. EXTEND (2)-4"C+(2)-2"C FROM MAIN T.M.B. TO RESPECTIVE TELCO PEDESTAL OR HANDHOLE AS REQUIRED. INSTALL MULETAPE THROUGHOUT. TRENCHING AND BACKFILL BY ELECTRICAL CONTRACTOR AS REQUIRED BY THE UTILITY. VERIFY EXACT ROUTING, DISTANCE AND P.O.C. WITH UTILITY PRIOR TO DIGGING.
5. NEW SERVICE ENTRANCE SECTION 120/208V, 3PH, 4W S.E.S. SEE ONE LINE DIAGRAM FOR ADDITIONAL INFORMATION.
6. PROVIDE NEW SITE POLE LIGHT FIXTURE, ROUTE LIGHTING CIRCUIT THRU TIME CLOCK/LIGHTING CONTACTOR PANEL.

SITE PLAN KEYED NOTES: (CONT.)

7. PROVIDE AND INSTALL (1) 1" CONDUIT LABELED WITH PULL STRINGS FROM DIRECTIONAL SIGN TO ELECTRICAL TENANT PANEL.
8. FIELD VERIFY DIRECTIONAL SIGN LOCATION WITH TENANT FIELD REPRESENTATIVE PRIOR TO ROUGH-IN. TYPICAL.
9. PROVIDE CONCRETE BOLLARD PROTECTION FOR SERVICE ENTRANCE SECTION AND TRANSFORMER PER UTILITY CO. REQUIREMENTS. COORDINATE LOCATION PRIOR TO ROUGH IN. FIELD VERIFY BOLLARDS CLEAR PATH OF EQUIPMENT SWINGING DOORS.

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RED ROCK

RMDC DANCE STUDIO

PROJECT ADDRESS
E WARNER RD
MESA, AZ

REVISION HISTORY

No	Description	Date
	MESA BIZ OVERLAY APPLICATION	3/17/25
1	EXT LTG COMMENT	12/22/25

ISSUED PLAN SETS
Description & Date

Registered Professional Engineer (Electrical)
CERTIFICATE NO.
31172
DAVID G. WATSON
8/28/2025
PHOENIX, ARIZONA

8/28/2025 9:28:14 PM

0 1/2" 1" 2"
PAGE FORMAT: 24"x36"

ELECTRICAL SITE PLAN

PAGE NUMBER
ES1

Job No. 25116
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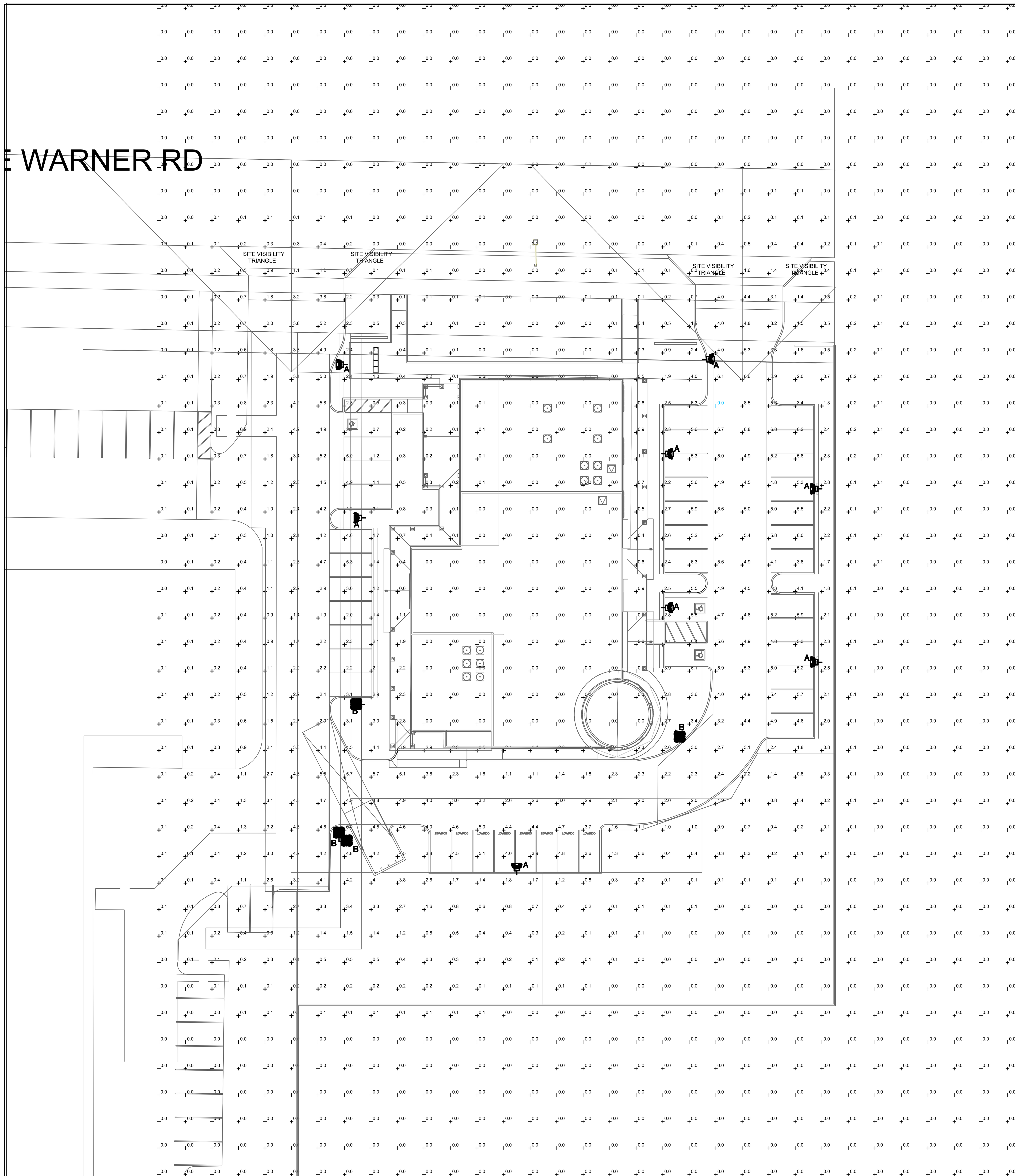

ELECTRICAL PHOTOMETRIC PLAN

SCALE: 1"=20'

LIGHT FIXTURE SCHEDULE

MARK	DESCRIPTION	MFR.	CATALOG #	VOLT.	LAMPS #	LAMPS TYPE	REMARKS
A	LED POLE MOUNTED SITE LIGHTING	HUBBELL OUTDOOR	RAR1-160L-100 3K7-4W-U	208V UNIV.	–	90W LED 3000K	DARK BRONZE SMOOTH FINISH 15' MTG. HEIGHT SEE NOTE #1
B	LED POLE MOUNTED SITE LIGHTING	HUBBELL OUTDOOR	RAR1-160L-100 3K7-5QW-U	208V UNIV.	–	90W LED 3000K	DARK BRONZE SMOOTH FINISH 15' MTG HEIGHT SEE NOTE #1

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RMDC DANCE STUDIO

PROJECT ADDRESS

E WARNER RD
MESA, AZ

REVISION HISTORY

No	Description	Date
	MESA BIZ OVERLAY APPLICATION	3/17/25
1	EXT LTG COMMENT	12/22/25

ISSUED PLAN SETS

Description & Date

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

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PAGE FORMAT: 24"x36"

PHOTOMETRIC PLAN

PAGE NUMBER

ES2

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RATIO Series
AREA/SITE LIGHTER

A/B

DATE: | LOCATION:
TYPE: | PROJECT:
CATALOG #: PER FIXTURE SCHEDULE

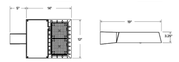
MICROSTRIKE | STRIKE optics

FEATURES

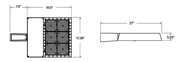
- Low profile LED area/site luminaire with a variety of IES distributions for lighting applications such as retail, commercial and campus parking lots
- Featuring Strike and Micro Strike Optics which maximizes target zone illumination with minimal losses at the house-side, reducing light trespass issues
- Visual comfort standard
- Compact and lightweight design with low EPA
- 3G rated for high vibration applications including bridges and overpasses
- Control options including photo control, occupancy sensing, NX Distributed Intelligence™ and 7-Pin with networked controls
- Best in class surge protection available

c UL us | IP66 | DLC LISTED | DLC LISTED PREMIUM | BAA | TAA | DESIGNED TO MEET BUY AMERICA REQUIREMENTS

RAR1



RAR2



	Weight	EPA at 0°
RAR1	13.5 lbs / 6.1 kg	.45ft.² / .13m²
RAR2	24 lbs / 10.9 kg	.55ft.² / .17m²

CONTROL TECHNOLOGY

NX CONNECT | NX WIRELESS

SERVICE PROGRAMS

STOCK | QS10

SPECIFICATIONS

CONSTRUCTION
- Rectilinear form mimics the traditional shoebox form factor keeping a similar but updated style and appearance, ideal for retrofit applications
- Die-cast housing with hidden vertical heat fins that are optimal for heat dissipation while keeping a clean smooth outer surface
- Corrosion resistant, die-cast aluminum housing with powder coat paint finish

OPTICS
- Entire optical aperture illuminates to create a larger luminous surface area resulting in a low glare appearance without sacrificing optical performance
- 80, 160, 320 or 480 midpower LEDs
- 3000K, 4000K or 5000K (70 CRI) CCT
- Zero uplight at 0 degrees of tilt
- Field rotatable optics

INSTALLATION
- Standard square arm mount, compatible with B3 drill pattern
- Optional universal mounting block for ease of installation during retrofit applications. Available as an option or accessory for square and round poles.
- Knuckle arm fitter option available for 2-3/8" OD tenon. Max tilt of 60 degrees with 4 degree adjustable increments. (Restrictions apply for 7-pin options)

ELECTRICAL
- Universal 120-277 VAC or 347-480 VAC input voltage, 50/60 Hz
- Ambient operating temperature -40°C to 40°C
- Drivers have greater than 90% power factor and less than 20% THD
- LED drivers have output power over-voltage, over-current protection and short circuit protection with auto recovery
- Field replaceable surge protection device provides 20kA protection meeting ANSI/ IEEE C62.41.2 Category C High and Surge Location Category C3; Automatically takes fixture off-line for protection when device compromised

CONTROLS
- Photo control, occupancy sensor and wireless available for complete on/off and dimming control
- 7-pin ANSI C136.41-2013 photocontrol receptacle option available for twist lock photocontrols or wireless control modules (control accessories sold separately)
- 0- 10 V Dimming Drivers are standard and dimming leads are extended out of the luminaire unless control options require connection to the dimming leads. Must specify if wiring leads are to be greater than the 6" standard
- NX Distributed Intelligence™ available with in fixture wireless control module, features dimming and occupancy sensor

CERTIFICATIONS
- DLC® (DesignLights Consortium Qualified), with some Premium Qualified configurations. Not all product variations on this page are DLC Qualified. Refer to www.designlights.org for the most up-to-date list.
- Listed to UL1598 and CSA C22.2#250.0-24 for wet locations and 40°C ambient temperatures
- 3G rated for ANSI C136.31 high vibration applications
- Fixture is IP66 rated
- Meets IDA recommendations using 3K CCT configuration at 0 degrees of tilt
- This product meets federal procurement law requirements under the Buy American Act (FAR 52.225-9) and Trade Agreements Act (FAR 52.225-11). See Buy America(n) Solutions (link to https://www.currentlighting.com/resources/america-solutions)

WARRANTY
- 5 year limited warranty
- See HLI Standard Warranty for additional information

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RATIO Series
AREA/SITE LIGHTER STRIKE

DATE: | LOCATION:
TYPE: | PROJECT:
CATALOG #:

STRIKE OPTIC - ORDERING GUIDE

Example: RAR1-36L-39-3K7-2-UNV-ASQ-BLT-NXW-BC

CATALOG #

ORDERING INFORMATION

Series		# LEDs - Wattage		CCT/CRI		Distribution		Optics Rotation		Voltage	
RAR1	Ratio Area Size 1 - Strike Optics	36L-39	39W - 5,000 Lumens	3K7	3000K, 70 CRI	FR	Auto Front Row	Blank for no rotation		UNV	Universal 120-277V
		36L-55	55W - 7,000 Lumens	4K7	4000K, 70 CRI	2	Type 2	L	Optic rotation left	120	120V
		36L-85	85W - 10,000 Lumens	5K7	5000K, 70 CRI	3	Type 3	R	Optic rotation right	208	208V
		36L-105	105W - 12,000 Lumens	3K8	3000K, 80 CRI	4F	Type 4 Forward			240	240V
		36L-120	120W - 13,000 Lumens	4K8	4000K, 80 CRI	4W	Type 4 Wide			277	277V
		72L-115	115W - 14,000 Lumens	5K8	5000K, 80 CRI	SQN	Type 5 Square Narrow			347	347V
		72L-145	145W - 17,000 Lumens			SQW	Type 5 Square Wide			480	480V
RAR2	Ratio Area Size 2 - Strike Optics	72L-180	180W - 20,000 Lumens			SQM	Type 5 Square Medium				
		72L-210	210W - 24,000 Lumens			5W	Type 5 Wide (Round)				
		72L-240	240W - 26,000 Lumens			SRW	Type 5 Rectangular				
		108L-215	215W - 27,000 Lumens			C	Corner Optic				
		108L-250	250W - 30,000 Lumens			TC	Tennis Court Optic				
		108L-280	280W - 33,000 Lumens								
		108L-325	325W - 37,000 Lumens								
		108L-365	365W - 40,000 Lumens								

Mounting		Color		Control Options Network		Options	
ASQ	Arm mount for square pole/flat surface	BLT	Black Matte Textured	NXSW16F	NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming [1,7]	BC	Backlight control
ASQU	Universal arm mount for square pole/flat surface- Does not include round pole adapt or B3 drill pattern	BLS	Black Gloss Smooth	NXSW40F	NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming [1,7]	F	Fusing [5]
Mounting Round Poles		DBT	Dark Bronze Matte Textured	NXW40F	NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor [4,7]	TB	Terminal block
A_	Arm mount for round pole/ B3 drill pattern	DBS	Dark Bronze Gloss Smooth	**Control Options Other**		2PF	2 power feed with 2 drivers [2]
A_U	Universal arm mount for round pole/	GTT	Graphite Matte Textured	SCP_F	Programmable occupancy sensor [3,4]		
Mounting Other		LGS	Light Grey Gloss Smooth	7PR	7-Pin twist lock receptacle		
WB	Wall bracket	PSS	Platinum Silver Smooth	7PR-SC	7-Pin receptacle with shorting cap		
MAF	Mast arm fitter for 2-3/8" OD horizontal arm	WHT	White Matte Textured	7PR-MD40F	Low voltage sensor for 7PR		
K	Knuckle	WHS	White Gloss Smooth	7PR-TL	7-Pin PCR with photocontrol		
		VGT	Verde Green Textured	ADD	AutoDim Timer Based Dimming		
		Color Option		ADT	AutoDim Time of Day Dimming		
		CC	Custom Color	BTS-14F	Bluetooth® Programmable, BTSMP-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens [6]		
				BTS-40F	Bluetooth® Programmable, BTSMP-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens [6]		
				BTSO-12F	Bluetooth® Programmable, BTSMP-OMNI-O PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens [6]		

Notes:
1 Replace "_" with "3" for 3.5"-4.13" OD pole, "4" for 4.18"-5.25" OD pole, "5" for 5.5"-6.5" OD pole
2 Not available with 2S, 5S, 25S, 29S & 340W configurations
3 At least one SCPREMOTE required to program SCP motion sensor
4 Replace "_" with 8F or 40F lens
5 Must specify voltage
6 Networked Controls cannot be combined with other control options
7 Not available with 2PF option
8 BTS and BTSO available for 50 Watts or higher and only on 120-277 voltage

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RATIO Series
AREA/SITE LIGHTER

DATE: | LOCATION:
TYPE: | PROJECT:
CATALOG #:

MICRO STRIKE OPTICS - ORDERING GUIDE

Gray Shading = Service Program Limit of 15 luminaires QS10

Example: RAR1-80L-25-3K7-2-UNV-ASQ-BL-NXW-BC

CATALOG #

ORDERING INFORMATION

Series		# LEDs - Wattage		CCT/CRI		Distribution		Optics Rotation		Voltage	
RAR1	Ratio Area Size 1 - Micro Strike	80L-25	25W - 3,000 Lumens	3K7	3000K, 70 CRI	2	IES TYPE II	Blank for no rotation		UNV	Universal 120-277V
		80L-39	39W -5,200 Lumens	4K7	4000K, 70 CRI	3	IES TYPE III	L	Optic rotation left	120	120V
		80L-50	50W - 6,000 Lumens	5K7	5000K, 70 CRI	4W	IES TYPE IV	R	Optic rotation right	208	208V
		160L-70	70W - 9,000 Lumens			4F	IES TYPE IV Forward			240	240V
		160L-100	100W - 12,000 Lumens			SQW	IES TYPE V			277	277V
		160L-115	115W - 15,000 Lumens							347	347V
		160L-135	135W - 18,000 Lumens							480	480V
RAR2	Ratio Area Size 2 - Micro Strike	320L-110	110W - 15,000 Lumens								
		320L-140	140W - 18,000 Lumens								
		320L-165	165W - 21,000 Lumens								
		480L-185	185W - 24,000 Lumens								
		480L-210	210W - 27,000 Lumens								
		480L-240	240W - 30,000 Lumens								
		480L-255	255W - 36,000 Lumens								
		480L-295	295W - 42,000 Lumens								
		480L-340	340W - 48,000 Lumens								

Mounting		Color		Control Options Network		Options	
ASQ	Arm mount for square pole/flat surface	BLT	Black Matte Textured	NXSW16F	NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming [1,7]	BC	Backlight control
ASQU	Universal arm mount for square pole/flat surface- Does not include round pole adapt or B3 drill pattern	BLS	Black Gloss Smooth	NXSW40F	NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming [1,7]	F	Fusing [5]
Mounting Round Poles		DBT	Dark Bronze Matte Textured	NXW	NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor [4,7]	TB	Terminal block
A_	Arm mount for round pole/ B3 drill pattern	DBS	Dark Brone Gloss Smooth	**Control Options Other**		2PF	2 power feed with 2 drivers [2]
A_U	Universal arm mount for round pole/	GTT	Graphite Matte Textured	SCP_F	Programmable occupancy sensor [3,4]		
Mounting Other		LGS	Light Grey Gloss Smooth	7PR	7-Pin twist lock receptacle		
WB	Wall bracket	PSS	Platinum Silver Smooth	7PR-SC	7-Pin receptacle with shorting cap		
MAF	Mast arm fitter for 2-3/8" OD horizontal arm	WHT	White Matte Textured	7PR-MD40F	Low voltage sensor for 7PR		
K	Knuckle	WHS	White Gloss Smooth	7PR-TL	7-Pin PCR with photocontrol		
		VGT	Verde Green Textured	ADD	AutoDim Timer Based Dimming		
		Color Option		ADT	AutoDim Time of Day Dimming		
		CC	Custom Color	BTS-14F	Bluetooth® Programmable, BTSMP-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens [6]		
				BTS-40F	Bluetooth® Programmable, BTSMP-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens [6]		
				BTSO-12F	Bluetooth® Programmable, BTSMP-OMNI-O PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens [6]		

Notes:
1 Replace "_" with "3" for 3.5"-4.13" OD pole, "4" for 4.18"-5.25" OD pole, "5" for 5.5"-6.5" OD pole
2 Not available with 2S, 5S, 25S, 29S & 340W configurations
3 At least one SCPREMOTE required to program SCP motion sensor
4 Replace "_" with 8F or 40F lens
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6 Networked Controls cannot be combined with other control options
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RATIO Series
AREA/SITE LIGHTER

DATE: | LOCATION:
TYPE: | PROJECT:
CATALOG #:

OUTDOOR LIGHTING CONTROLS OPTIONS

CONTROLS FUNCTIONALITY

	Control Option Ordering Logic & Description	Control Option Functionality: Networkable	Grouping	Scheduling	Occupancy/ Motion	Daylight Harvesting	0-10V Dimming	On/Off Control	Bluetooth App Programming	Sensor Height	Control Option Components
NX Wireless	NXOFMWRD-UNV: NX 7-Pin Twist-Lock® with NX Networked Wireless Radio, Integral Automatic Dimming Photocell, Bluetooth® and Pole Relay with Dimming, and Bluetooth Programming	✓	✓	✓	Paired with external control	✓	✓	✓	✓	–	NXOFM-SRD-LV
	NXW: NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor	✓	✓	✓	–	–	✓	✓	✓	–	NXSM2-H
	NXWSM: NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming	✓	✓	✓	✓	✓	✓	✓	✓	16ft	NXSMP2-LMO
	NXWS40F: NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming	✓	✓	✓	✓	✓	✓	✓	✓	40ft	NXSMP2-HMO
Unpowered	BTSO-12F: Bluetooth® Programmable, BTSMP-OMNI-O PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens	–	–	–	✓	✓	✓	✓	✓	12ft	BTSMP-OMNI-O
	BTS-14F: Bluetooth® Programmable, BTSMP-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens	–	–	–	✓	✓	✓	✓	✓	14ft	BTSMP-LMO
	BTS-40F: Bluetooth® Programmable, BTSMP-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and 360° Lens	–	–	–	✓	✓	✓	✓	✓	40ft	BTSMP-HMO

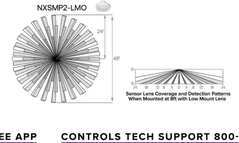
DEFAULT SETTINGS

NX Wireless		Stand Alone	
Occupancy Sensor	Enabled	Occupancy Sensor	Enabled
Occupancy Sensor Sensitivity	7	Occupancy Sensor Sensitivity	7
Occupancy Sensor Timeout	15 Minutes	Occupancy Sensor Timeout	8 Minutes
Occupied Dim Level	100%	Occupied Dim Level	100%
Unoccupied Dim Level	0%	Unoccupied Dim Level	50%
Daylight Sensor	Disabled	Daylight Sensor	Disabled
Bluetooth	Enabled		
2.4GHz Wireless Mesh	On		
"Passcode Factory Passcode: Hub6N3T7"	Enabled		

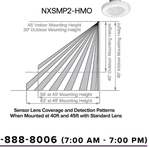
NX WIRELESS COVERAGE PATTERNS

NXSMP2-OMNI

NXSMP2-LMO



NXSMP2-HMO



NX LIGHTING CONTROLS FREE APP

The NX Lighting Controls App is free to use mobile application for programming both NX Lighting Controls System or Standalone Bluetooth Sensors. The mobile app allows you to configure devices, discover and setup wireless enable luminaires and program NX system settings.

Apple App: https://apps.apple.com/us/app/nx-lighting-controls/id962112904

Google Play: https://play.google.com/store/apps/details?id=io.cordova.NX8TR&hl=en_US&gl=US

Apple App | Google Play

CONTROLS TECH SUPPORT 800-888-8006 (7:00 AM - 7:00 PM)

RED ROCK
DESIGN | BUILD

RED ROCK CONTRACTORS
2105 N NEVADA ST
CHANDLER, AZ 85225
OFFICE: 480-539-0111

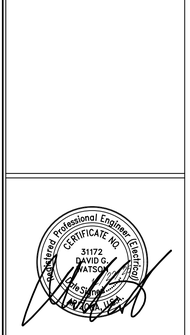
RED ROCK
RMDC DANCE STUDIO

PROJECT ADDRESS
E WARNER RD
MESA, AZ

REVISION HISTORY

No	Description	Date
	MESA BIZ OVERLAY APPLICATION	3/17/25
1	EXT LTG COMMENT	12/22/25

ISSUED PLAN SETS
Description & Date



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FIXTURE CUTSHEETS

PAGE NUMBER
ES3

Job No. 25116
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mw engineering, llc
Electrical Consulting Engineering Group

GENERAL NOTES:

a. PROVIDE A WORKING SPACE OF NOT LESS THAN 30 INCHES IN WIDTH, 36 INCHES IN DEPTH AND 78 INCHES IN HEIGHT IN FRONT OF ELECTRICAL SERVICE EQUIPMENT. IF THE ELECTRICAL EQUIPMENT IS WIDER THAN 30 INCHES, THE WORKING SPACE SHALL NOT BE LESS THAN THE WIDTH OF THE EQUIPMENT. THERE SHALL BE NO STORAGE WITHIN THE DESIGNATED WORK SPACE..

b. COORDINATION OF OVERCURRENT PROTECTIVE DEVICES SHALL BE BY ELECTRICAL CONTRACTOR AT THEIR OWN EXPENSE, INCLUDING SETTINGS OF CIRCUIT BREAKERS, FUSES AND GROUND FAULT DEVICES. CONTRACTOR SHALL PROVIDE COORDINATION STUDY AND SET ALL CIRCUIT PROTECTIVE DEVICE SETTINGS AS RECOMMENDED AT THE COMPLETION OF THE PROJECT.

c. BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

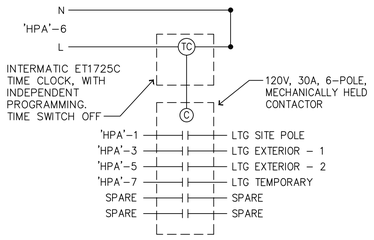
d. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RATED WALLS, PARTITIONS, FLOORS, AND CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS AND MATERIALS LISTED FOR THIS PURPOSE. REFER TO NEC ARTICLE 300.21 FOR REQUIREMENTS.

e. ELECTRICAL CONTRACTOR SHALL PROVIDE LABELING OF THE AVAILABLE FAULT CURRENT FOR EACH PANEL AS NOTED, PER NEC 110.24.

f. ELECTRICAL CONTRACTOR SHALL PROVIDE LABELING TO INDICATE WHERE EACH PIECE OF EQUIPMENT ORIGINATES, PER 408.4(B).

LOAD CALCULATION:

SIZED SERVICE 1200A		
SUITE D1	=	180 AMPS
SUITE D2	=	112 AMPS
SUITE T1	=	112 AMPS
SUITE T1-1	=	111 AMPS
SUITE T2	=	130 AMPS
SUITE T3	=	184 AMPS
SUITE T4	=	141 AMPS
HOUSE PANEL 'A'	=	12.75 AMPS
TOTAL LOAD ON S.E.S.	=	983 AMPS



LTG CONTACTOR DIAGRAM - LC-1

N.T.S.

SERIES-RATING NOTE:

THIS SERVICE IS A SERIES RATED SYSTEM: 2-TIER 65/10.

CONTRACTOR SHALL LABEL S.E.S. "CAUTION" - SERIES RATED SYSTEM (65/10). 53,011 AMPS AVAILABLE IDENTIFIED REPLACEMENT COMPONENT REQUIRED." IN ACCORDANCE WITH NEC 110.22.

CONTRACTOR SHALL LABEL PANEL '140'. "CAUTION" SERIES-RATED SYSTEM (65/10). 11,417 AMPS AVAILABLE IDENTIFIED REPLACEMENT COMPONENT REQUIRED." IN ACCORDANCE WITH NEC 110.22.

CONTRACTOR SHALL LABEL PANEL '150'. "CAUTION" SERIES-RATED SYSTEM (65/10). 14,137 AMPS AVAILABLE IDENTIFIED REPLACEMENT COMPONENT REQUIRED." IN ACCORDANCE WITH NEC 110.22.

CONTRACTOR SHALL LABEL PANEL '160'. "CAUTION" SERIES-RATED SYSTEM (65/10). 18,787 AMPS AVAILABLE IDENTIFIED REPLACEMENT COMPONENT REQUIRED." IN ACCORDANCE WITH NEC 110.22.

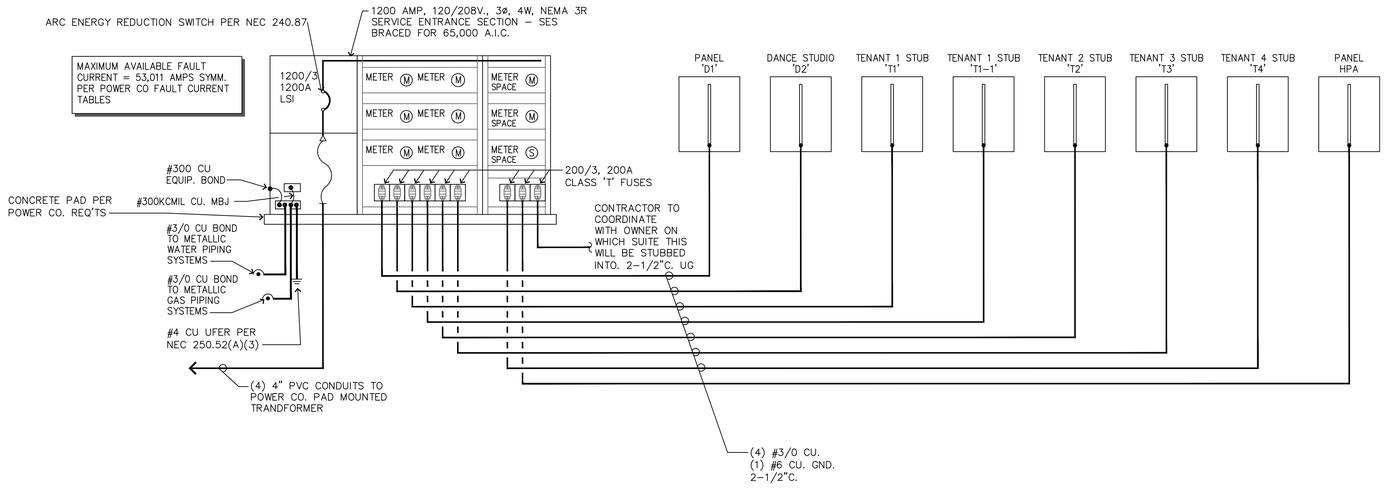
CONTRACTOR SHALL LABEL PANEL '170'. "CAUTION" SERIES-RATED SYSTEM (65/10). 26,099 AMPS AVAILABLE IDENTIFIED REPLACEMENT COMPONENT REQUIRED." IN ACCORDANCE WITH NEC 110.22.

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.



ONE-LINE DIAGRAM - 'SES'

N.T.S.

1. ALL CONDUCTOR SIZES BASED ON TYPE 'XHHW' & 'THHN/THWN' COPPER.
2. ELECTRICAL CONTRACTOR SHALL FIELD-VERIFY ALL EXISTING CONDITIONS PRIOR TO ANY WORK.
3. EVERYTHING IS NEW UNLESS NOTED OTHERWISE
4. COORDINATION STUDY IS REQUIRED TO PREVENT NUISANCE TRIPPING MW ENGINEERING, LLC. OFFERS THIS SERVICE. CALL 4807315050 FOR A QUOTE. GEAR MANUFACTURER SUBMITTALS IN PDF REQUIRED FOR QUOTE.

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ONELINE/CALCS

PAGE NUMBER
E-1.0

Job No. 25116
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ELECTRICAL SYMBOLS (NOTE: ALL SYMBOLS MAY NOT APPLY TO THIS PROJECT)

- FLUORESCENT FIXTURE
- FLUORESCENT 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
- FLUORESCENT 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
- IG 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_P SINGLE–POLE, ILLUMINATED HANDEL OR PILOT LIGHT TOGGLE SWITCH AT +42" OR AS NOTED ON PLANS
- S_M MOTOR RATED SWITCH WITH THERMAL PROTECTION
- S_V MOTOR SPEED CONTROL SWITCH. FURNISHED BY ELECTRICAL CONTRACTOR.
- 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.)
- 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
- DIMMER SWITCH AT + 42" A.F.F. "LUTRON" MRF OR EQUAL WITH FAN AND LIGHTING SIZED TO LOAD
- FS FLOW SWITCH
- T TAMPER SWITCH
  } BY OTHERS
- SD A.D.A.–APPROVED SMOKE DETECTOR MOUNTED IN CEILING OR AS INDICATED
- CEILING MOUNTED OCCUPANCY SENSOR. LUTRON OR EQUAL.
- 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

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.

RED ROCK DESIGN | BUILD
RED ROCK CONTRACTORS
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CHANDLER, AZ 85225
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RED ROCK
RMDC DANCE STUDIO

PROJECT ADDRESS
E WARNER RD
MESA, AZ

REVISION HISTORY

No	Description	Date
1	MESA BIZ OVERLAY APPLICATION	3/17/25
1	EXT LTG COMMENT	12/22/25

ISSUED PLAN SETS
Description & Date

8/28/2025 9:28:14 PM

0 1/2" 1" 2"
PAGE FORMAT: 24"x36"

SPEC

PAGE NUMBER
E-2.0

Job No. 25116
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