



LIGHTING FIXTURE SCHEDULE					
SYMBOL	DESCRIPTION	LAMP/FIXTURE INFORMATION	APPROVED MANUFACTURERS	CATALOG NUMBER	
T-1	POLE MOUNTED SPORTS LUMINAIRE WITH SPILL AND GLARE SHIELD.	LAMP	1500K HZ/PH	MUSCO	GREEN GENERATION
		VOLTAGE	120	USL	USL/CE, 1500K, 1H, SPILL/GLARE
		MOUNT	POLE		
		COLOR			
		BALLAST	REMOTE		
T-2	POLE MOUNTED EMERGENCY EGRESS LUMINAIRE WITH SPILL AND GLARE SHIELD.	LAMP	1500K QUARTZ	MUSCO	GREEN GENERATION
		VOLTAGE	120	USL	USL/CE, 1500K, QUARTZ, SPILL/GLARE
		MOUNT	POLE		
		COLOR			
		BALLAST	REMOTE		
T-3	WALL MOUNTED LUMINAIRE WITH SPILL AND GLARE SHIELD.	LAMP	1500K HZ/PH	MUSCO	GREEN GENERATION
		VOLTAGE	120	USL	USL/CE, 1500K, 1H, SPILL/GLARE
		MOUNT	WALL		
		COLOR			
		BALLAST	INTEGRAL		

**NOTES:**

- FIELD VERIFY ALL LIGHTING VOLTAGES PRIOR TO PLACING ANY ORDER.
- THE WRITTEN CRITERIA OF THE FIXTURE DESCRIPTION TAKES PRECEDENCE OVER THE CATALOG NUMBER.
- PROVIDE A 5 YEAR TIME AND MATERIAL WARRANTY FOR ALL BALLASTS.
- PROVIDE ALL ELECTRONIC BALLASTS.

**\*SPECIAL INSPECTION AND TESTING UNDER THE PROVISIONS OF IBC 1704 AND FOR MISCELLANEOUS AREAS**

Indicate required Special inspections for project by checking the appropriate boxes and provide specific instructions as to the inspection requirements and the expectations of the architect, engineer and owner.

**FABRICATORS (IBC 1704.2)**

Approved Fabricator	Fabricator Name:
X	Fabricator Name: The fabricator is required to be on the DFCM approved fabricator list or the fabricator shall have prior approval and provisions shall be provided for the fabricator to pay for in-shop special inspections.
	In-shop inspections: X Steel X Welding Details Construction

**STEEL (IBC 1704.3)**

Item	Detailed Instructions and Frequencies		
<b>WELDING</b>			Welding inspections shall be in compliance with AWS D1.1. The basis for inspector qualifications shall be AWS D1.1
Complete & partial penetration groove welds	X Continuous	Periodic	Ultrasonic testing shall be provided for all CJP welds.
Multipass fillet welds	X Continuous	Periodic	All welds shall be visually inspected.
Single-pass fillet welds > 5/16"	X Continuous	Periodic	All welds shall be visually inspected.
Single-pass fillet welds ≤ 5/16"	Continuous	X Periodic	All welds shall be visually inspected.

**CONCRETE CONSTRUCTION (IBC 1704.4)**

Item	Detailed Instructions and Frequencies		
Use of required design mix	Continuous	X Periodic	Verify proper mix prior to every pour.
Concrete sampling for strength test, slump, air content, and temperature of concrete	Continuous	X Periodic	Verify required items prior to every pour.
Concrete placement	X Continuous	Periodic	Verify that concrete placement is in accordance with the pole designer and manufacturers specifications.

**Special Inspectors Shall:**

- Be approved by the Building Official prior to performing any duties;
- Provide proof of licensure as a special inspector by the State of Utah for each type of inspection;
- Inspection reports are to meet the requirements of IBC 1704.1.2 and DFCM standards;
- Inspection reports are to be submitted to the code consultant, architect, DFCM project manager, and the State of Utah Building Official within 48 hrs. of inspections;
- A final inspection report shall be submitted following completion of the project documenting the types of special inspections performed and a statement indicating that the structure is in compliance with the drawings, specifications and applicable codes. IBC 1704.1.2

1 of 2

POWER SYSTEMS SYMBOL LIST	
SYMBOL	DESCRIPTION
	DUPLEX CONVENIENCE OUTLET - 20 AMP
	DUPLEX CONVENIENCE OUTLET - 20 AMP GROUND FAULT INTERRUPTER
	4-FLEX CONVENIENCE OUTLET - 20 AMP
	4-FLEX CONVENIENCE OUTLET - 20 AMP GROUND FAULT INTERRUPTER
	DUPLEX CONVENIENCE OUTLET - 20 AMP ELECTRIC WATER COOLER
	SPECIAL PURPOSE SINGLE PHASE OUTLET
	SPECIAL PURPOSE THREE PHASE OUTLET
	JUNCTION BOX - SIZE AND FUNCTION AS REQUIRED
	FUSED DISCONNECT SWITCH - SIZE AS REQUIRED
	ELECTRICAL PANEL LOCATION
	REFERENCE NOTE CALLOUT

LIGHTING SYSTEMS SYMBOL LIST	
SYMBOL	DESCRIPTION
	FLUORESCENT STRIP LIGHT FIXTURE
	SPORTS LIGHTING POST
	SINGLE POLE TOGGLE SWITCH - 20 AMP
	LIGHTING FIXTURE CALLOUT NUMBER INDICATES A SUGGESTED QUANTITY- TO BE VERIFIED
	REFERENCE NOTE CALLOUT

COMMUNICATION SYSTEMS SYMBOL LIST	
SYMBOL	DESCRIPTION
	TELEPHONE TERMINAL BOARD

ABBREVIATIONS SYMBOL LIST	
SYMBOL	DESCRIPTION
W.P.	INDICATES WEATHER PROOF EQUIPMENT
T.V.S.S.	TRANSIENT VOLTAGE SURGE SUPPRESSOR

	1	2	3	4
1	BID FORM #1	MUSCO	USL	OTHER PER ENGINEER APPROVAL
2	POLES & LIGHT FIXTURES	\$	\$	\$
3	WIRELESS CONTROL SYSTEM	\$	\$	\$
4	POWER DISTRIBUTION	\$	\$	\$
5	25 YEAR WARRANTY	\$	\$	\$
6	ON SITE DELIVERY LEAD TIME (WEEKS)	\$	\$	\$
7	FIXTURE TOTAL HATTAGE	\$	\$	\$

**INSTRUCTIONS:**

- THE CONTRACTOR SHALL PROVIDE THE INFORMATION REQUIRED IN THIS TABLE AT BID TIME.
- PROVIDE A BREAKDOWN PER EACH CATEGORY IN COLUMN #1 FOR EACH SYSTEM IN ROW #1.
- ALL SYSTEMS SHALL COMPLY WITH ALL OF THE REQUIREMENTS SPECIFIED IN THE CONTRACT DOCUMENTS. OTHER SYSTEMS SHALL ONLY BE ALLOWED WITH PRIOR ENGINEER OF RECORD APPROVAL.
- BREAKDOWN SHALL INCLUDE THE COST FOR ALL LABOR, MATERIAL, ENGINEERING, ETC. NECESSARY TO PROVIDE A COMPLETE, FUNCTIONAL INSTALLATION OF THE SYSTEM.
- DRAWINGS AND CALCULATIONS FOR THE STRUCTURAL BASES AND POLES ARE BASED ON MUSCO PRODUCT AND ARE INTENT TO BE A BASIS OF DESIGN ONLY. THE SUCCESSFUL BIDDER SHALL PROVIDE DRAWINGS AND CALCULATIONS APPROPRIATE TO THEIR OWN LIGHTING SYSTEM. CALCULATIONS AND SPECIFICATIONS SHALL BE SIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN UTAH.

**GENERAL NOTES:**

- MINIMUM SIZE OF CONDUIT TO BE 3/4". ALUMINUM CONDUITS SHALL NOT BE USED.
- USE RIGID STEEL SET SCREW TYPE FITTINGS ONLY. DIE CAST FITTINGS SHALL NOT BE USED INCLUDING ANY FLEX FITTINGS. NO SCREW IN FLEX FITTINGS.
- ALL NEW WORK MUST MEET THE CURRENT ADOPTED NATIONAL ELECTRICAL CODE (NEC 2008) AND INTERNATIONAL BUILDING CODE (IBC 2008).
- NOT MORE THAN THREE (3) CIRCUITS SHALL BE INSTALLED IN A CONDUIT. EACH CIRCUIT SHALL CONSIST OF (1) CONDUCTOR FOR EACH PHASE, (1) NEUTRAL PER PHASE, AND (1) GROUND, FOR A TOTAL OF SEVEN (7) CONDUCTORS.
- ALL J-BOXES SHALL HAVE MINIMUM DEPTH OF 2-1/8" UNLESS OTHERWISE SPECIFIED. SECURE ALL J-BOXES AS SHOWN IN THE DETAILS. FURNISH AND INSTALL PROPER RING RINGS.
- ALL METALLIC CONDUITS, JOINTS, FITTINGS, ETC., IN CONTACT WITH THE GROUND SHALL BE SPIRALLY WRAPPED WITH 3M SCOTCH-RAP-51, 20 MIL TAPE (OR APPROVED EQUAL). 1/2" OVERLAP IS REQUIRED.
- ALL NEW EXPOSED CONDUIT MUST RUN AGAINST THE WALLS OR CEILING DECK. DO NOT PENDANT MOUNT ANY CONDUIT FROM THE CEILING.
- THE FIRST 10' LENGTH OF ALL BURIED CONDUIT OVER 1" SHALL BE RIGID GALVANIZED STEEL OR 1 1/2" WHERE THEY ARE LEAVING OR ENTERING THE BUILDING, MANHOLE, VAULT, ETC.
- ALL UNDERGROUND CONDUIT SHALL BE BURIED 24" MINIMUM UNDER THE GROUND UNLESS INDICATED OTHERWISE.
- USE EPOXY ANCHORS TO SUPPORT THE ELECTRICAL EQUIPMENT. EXPANSION ANCHOR BOLTS ARE NOT ACCEPTED.
- ALL DISCONNECTS, J-BOXES AND CONDUITS EXPOSED TO THE OUTSIDE WEATHER SHALL BE NON-CORROSIVE, WEATHER PROOF TYPE.
- ALL DISCONNECTS SHALL BE HEAVY DUTY TYPE.
- ALL MATERIALS USED IN THIS INSTALLATION SHALL BE UL, APPROVED AND NEW.
- ALL ELECTRICAL WIRING MUST BE IN CONDUIT (RXPET AND MC CABLE NOT PERMITTED).
- FLEXIBLE CONDUITS CAN ONLY BE USED FOR SHORT RUNS (6' MAXIMUM). NO MC CABLE ALLOWED.
- TEMPORARY ELECTRICAL SERVICE IS TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR AND REMOVED BY THE ELECTRICAL CONTRACTOR.
- PRIOR TO SUBMITTING A BID, THE ELECTRICAL CONTRACTOR SHALL INSPECT THE SITE AND INCLUDE IN HIS BID PACKAGE ALL CHARGES DUE TO EXISTING CONDITIONS. SHOP DRAWINGS ARE REQUIRED.
- THE ELECTRICAL CONTRACTOR SHALL TERMINATE THE ELECTRICAL CONNECTIONS TO ALL THE EQUIPMENT BY PROVIDING THE NECESSARY MALE/FEMALE CONNECTOR, RECEPTACLE, PLUG, ETC.
- ALL DUPLEX OUTLETS AND SWITCHES SHALL BE 20 AMP, 120 VOLT SPEC GRADE. HUBBELL AND PASS 4 SEY-HOUR AND LEVITON ARE APPROVED MANUFACTURERS.
- ELECTRICAL CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS (VOLTAGE, PHASE, CONNECTION REQUIREMENT, ETC.) OF EQUIPMENT FURNISHED UNDER OTHER DIVISIONS WITH APPROVED SHOP DRAWINGS PRIOR TO BEGINNING ROUGH-IN.
- THE CONTRACTOR SHALL INFORM THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES FOUND BETWEEN THE INTENDED FUNCTION OF EQUIPMENT AND EQUIPMENT SPECIFIED IN THE CONTRACT DOCUMENTS A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO ISSUANCE OF THE FINAL BID. FAILURE TO REPORT ANY DISCREPANCY (CATALOG NUMBERS, DISCONTINUED ITEMS, ETC.) DOES NOT RELIEVE THE CONTRACTOR FROM PROVIDING EQUIPMENT WHICH SHALL CONFORM TO AND FULFILL THE INTENT OF THE CONTRACT DOCUMENTS. NOR SHALL IT BE USED AS A CONDITION TO OBTAIN ADDITIONAL FUNDS FROM THE OWNER AFTER THE CONTRACT IS AWARDED. THE CONTRACTOR SHALL REQUEST ALL CLARIFICATIONS OF CONTRACT DOCUMENT REQUIREMENTS IN WRITING TO THE ARCHITECT/ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO ISSUANCE OF THE FINAL ADDENDUM.
- CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE OVER SHOP DRAWINGS UNLESS SPECIFICALLY NOTED OTHERWISE.
- PANELBOARDS SHALL BE FIELD MARKED TO HARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. THE MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT. (NEC 10-6)
- A ONE YEAR MINIMUM WARRANTY SHALL BE PROVIDED TO COVER ALL LABOR AND MATERIAL FURNISHED AND INSTALLED AS PART OF THIS CONTRACT. REPAIR, REPLACE, PROVIDE ALL LABOR AND MATERIAL NECESSARY TO REDRESS ALL DEFECTS DURING THE WARRANTY PERIOD. THE WARRANTY PERIOD SHALL START FROM THE DATE SHOWN IN THE SUBSTANTIAL COMPLETION CERTIFICATE.
- OWNER WILL LOCATE ALL MEDIUM VOLTAGE LINES. COORDINATE THIS WORK WITH THE OWNER SO THAT THE MEDIUM VOLTAGE LINES ARE NOT DAMAGED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE, RESTORE OR REPAIR ALL DAMAGE TO ALL EXISTING STRUCTURES, FIXTURES, PAVEMENT, TURF, LANDSCAPING, WALLS, CEILINGS, BUILDINGS, FINISHES, SURFACES, UNDERGROUND UTILITIES, ETC. CAUSED DIRECTLY OR INDIRECTLY BY WORK PERFORMED UNDER THIS CONTRACT. DAMAGED ITEMS SHALL BE RESTORED TO THEIR PREVIOUS OR BETTER CONDITION.

**PROJECT SCHEDULE NOTES:**

- SUBSTANTIAL COMPLETION AND PROJECT TURN OVER SHALL OCCUR ON OR BEFORE JULY 15TH, 2010. A \$500 LIQUIDATED COST PER DAY WILL BE CHARGED TO THE CONTRACTOR FOR EACH DAY THE PROJECT IS EXTENDED.
- WEST POLES SHALL BE DEMOLISHED AND INSTALLED AFTER MAY 15TH.
- THERE WILL BE NO STAGING AREAS AVAILABLE ON THE WEST SIDE OF THE PROJECT UNTIL AFTER MAY 15TH.
- CONTRACTOR SHALL PROVIDE A DETAILED CONSTRUCTION SCHEDULE AT THE TIME OF BID.
- CONTRACTOR SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH THE OWNER AT LEAST TWO WEEKS PRIOR TO PERFORMING ANY WORK. THE CONTRACTOR SHALL PROVIDE A REVISED CONSTRUCTION SCHEDULE ON A WEEKLY BASIS.



DIVISION OF FACILITY AND CONSTRUCTION MANAGEMENT

ELIZABETH DEE SHAW STEWART STADIUM-  
 FIELD LIGHTING UPGRADE  
 WEBER STATE UNIVERSITY  
 DFCM PROJECT NO. 09061810



DCM PROJECT NO. 3891

DESIGN BY: JAE CHECKED BY: VGL

ISSUED:

NO.	DATE	DESCRIPTION

REVISIONS:

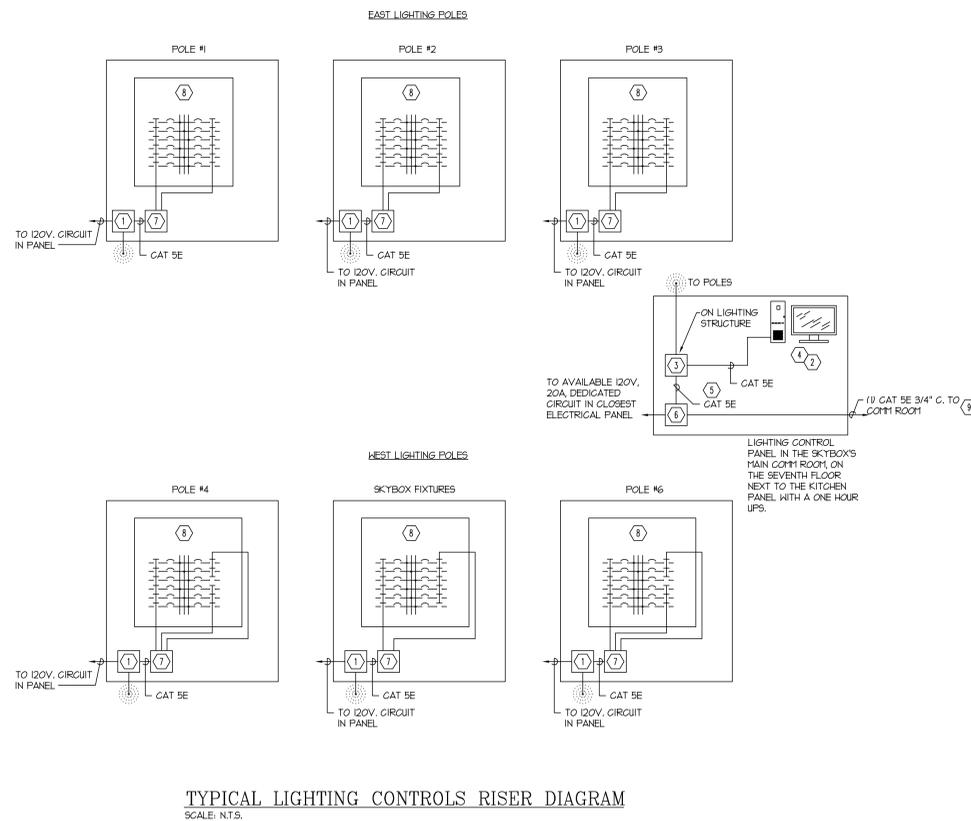
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**GENERAL NOTES AND SCHEDULES**

SHEET NUMBER

EE-001

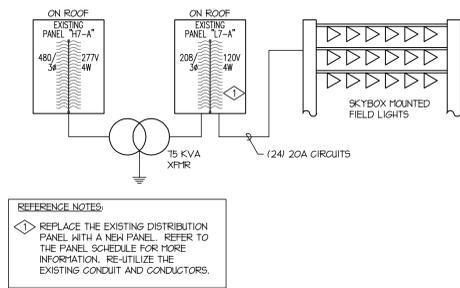




1. HEATHER PROOF WIRELESS BRIDGE:
  - INTEGRAL ANTENNA
  - POLE MOUNTED HARDWARE
  - CISCO AIRONET 1500 OR ENGINEER APPROVED EQUIVALENT
  - 120V. POWER SUPPLY
2. LIGHTING CONTROL SOFTWARE WITH:
  - ADDRESSABLE COMMUNICATION SYSTEM.
  - ASTRONOMICAL CLOCK WITH AUTOMATIC DAYLIGHT SAVINGS ADJUSTMENT.
  - MINIMUM OF 24 SCHEDULES.
  - DIGITAL PROCESSING UNIT WITH EMBEDDED OPERATING SYSTEM AND WEB-BASED INTERFACE.
  - PASSWORD PROTECTED REMOTE ACCESS.
  - NETWORK INTERFACE TO LOCAL COMPUTER.
  - LINUX OR APPLE COMPATIBLE.
3. WIRELESS ROUTER MODULE WITH:
  - 128 BIT ENCRYPTION/DECRYPTION PROTOCOLS.
  - INTEGRAL ANTENNA AND CARRIER FREQUENCY AMPLIFIER SIZED FOR A SIGNAL ATTENUATION OF NO MORE THAN 5dB AT THE FARTHEST POLE RECEIVER.
  - CISCO HWV5440N OR ENGINEER APPROVED EQUIVALENT
4. COMPUTER TERMINAL WITH:
  - 17" LCD DISPLAY.
  - 2.4 GHZ QUAD-CORE CPU MINIMUM.
  - 2 GB RAM MINIMUM.
  - KEYBOARD AND MOUSE.
  - 80 GB 5200 RPM HARD DRIVE MINIMUM.
  - LINUX OR APPLE OPERATING SYSTEM.
  - LIGHTING CONTROL SOFTWARE AND HARDWARE.
  - NETWORK INTERFACE FIREWALL.
5. LIGHTING CONTROL PANEL SHALL BE CONTAINED IN A LOCKABLE NEMA 3R ENCLOSURE. COORDINATE THE EXACT LOCATION WITH THE OWNER PRIOR TO ROUGH-IN. CONTROL PANEL SHALL BE INSTALLED 8' A.F.F. ON THE POLE.
6. 120V POWER SUPPLY APPROPRIATELY SIZED FOR LOAD. SQUARE-D N5000093 OR ENGINEER APPROVED EQUIVALENT.
7. ADDRESSABLE CONTROL MODULE. REFER TO PANEL SCHEDULES FOR MORE REQUIREMENTS.
8. LIGHTING CONTACTOR AND DISTRIBUTION MODULE REFER TO CORRESPONDING SCHEDULE AND SINGLE LINE DIAGRAM. LIGHTING CONTACTOR AND DISTRIBUTION PANEL SHALL BE INSTALLED 8' A.F.F. ON THE POLE.
9. THE STADIUM LIGHTING SHALL BE CONTROLLED BY THE CAMPUS WIDE JOHANSON CONTROL SYSTEM. COORDINATE WITH SEBASTIAN ANDERSON WITH WEBER STATE UNIVERSITY AT 801-626-6221 FOR CONNECTION REQUIREMENTS.

- NOTES:
1. THIS RISER DIAGRAM DEPICTS MINIMUM SYSTEM REQUIREMENTS. SUCCESSFUL BIDDER SHALL PROVIDE DETAILED SHOP DRAWINGS AND SUBMITTALS FOR APPROVAL BASED ON THEIR OWN SYSTEMS.
  2. CONTRACTOR SHALL PROVIDE ALL RELAYS, MODULES, INTERFACES, DEVICES, CONNECTIONS, CONDUIT, CONDUCTORS, ETC. NECESSARY FOR A COMPLETE, FUNCTIONING INSTALLATION.
  3. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
  4. APPROVED MANUFACTURERS ARE:
    - 4a. USL
    - 4b. MUSCO
    - OR AS NOTED ON DRAWINGS.
  5. COORDINATE ALL PASSWORDS AND NETWORKING CONNECTIONS WITH THE OWNER.
  6. PROVIDE THE OWNER WITH A MINIMUM OF 2 HOUR TRAINING COURSE AND OPERATING MANUAL IN ELECTRONIC FORMAT.
  7. PROVIDE ALL POWER, CAT 5E, PATCH CORDS, TERMINATIONS, CONNECTIONS, CONDUIT, CONDUCTORS, ETC. NECESSARY FOR A COMPLETE, FUNCTIONING INSTALLATION.
  8. PROVIDE A MINIMUM OF FOUR ZONES PER LIGHTING STRUCTURE. EACH ROW OF FIXTURES SHALL BE CONTROLLED BY ITS OWN ZONE.

TYPICAL LIGHTING CONTROLS RISER DIAGRAM  
 SCALE: N.T.S.



REFERENCE NOTES:  
 ◊ REPLACE THE EXISTING DISTRIBUTION PANEL WITH A NEW PANEL. REFER TO THE PANEL SCHEDULE FOR MORE INFORMATION. RE-UTILIZE THE EXISTING CONDUIT AND CONDUCTORS.

SKYBOX'S EXISTING PARTIAL SINGLE LINE DIAGRAM  
 SCALE: N.T.S.



DCM PROJECT NO. 09061810

DESIGNED BY: JAK

DATE: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

CONTRACTOR DRAWINGS: \_\_\_\_\_

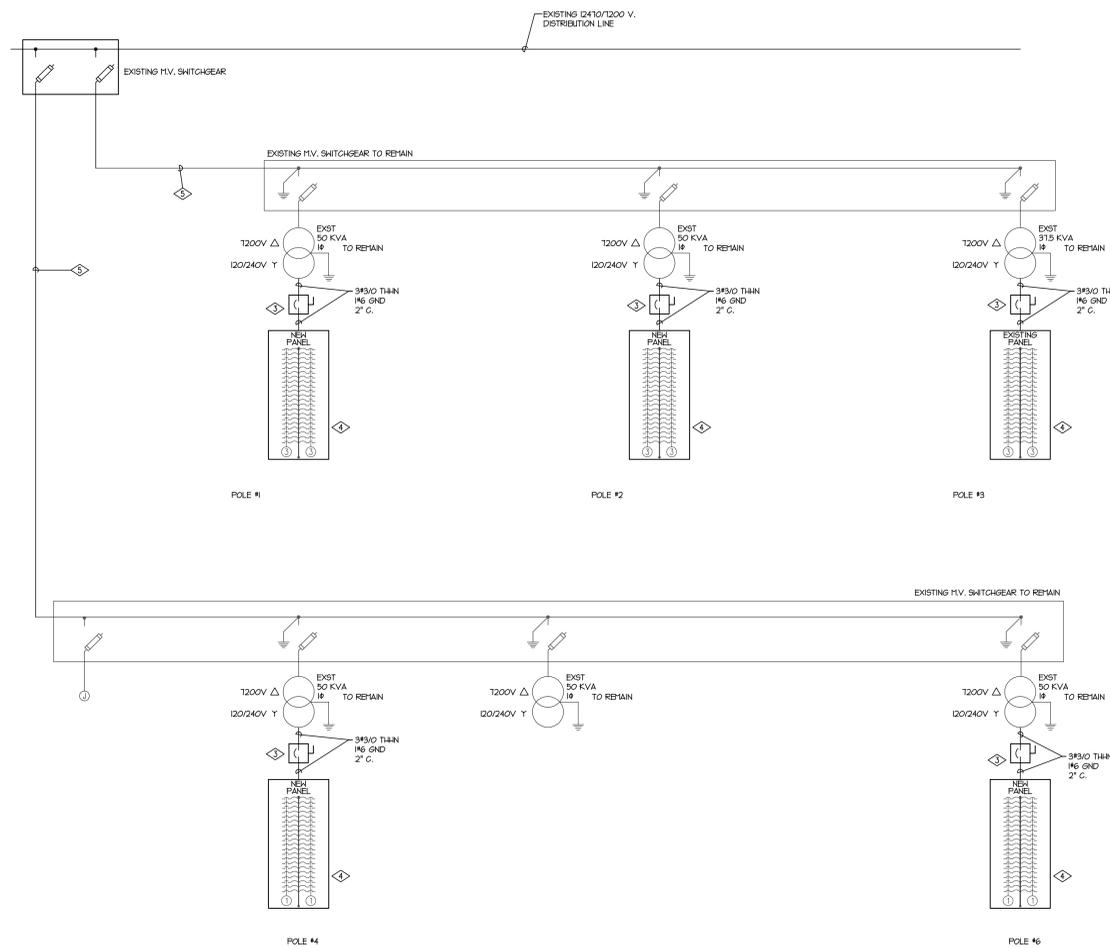
REVISIONS:

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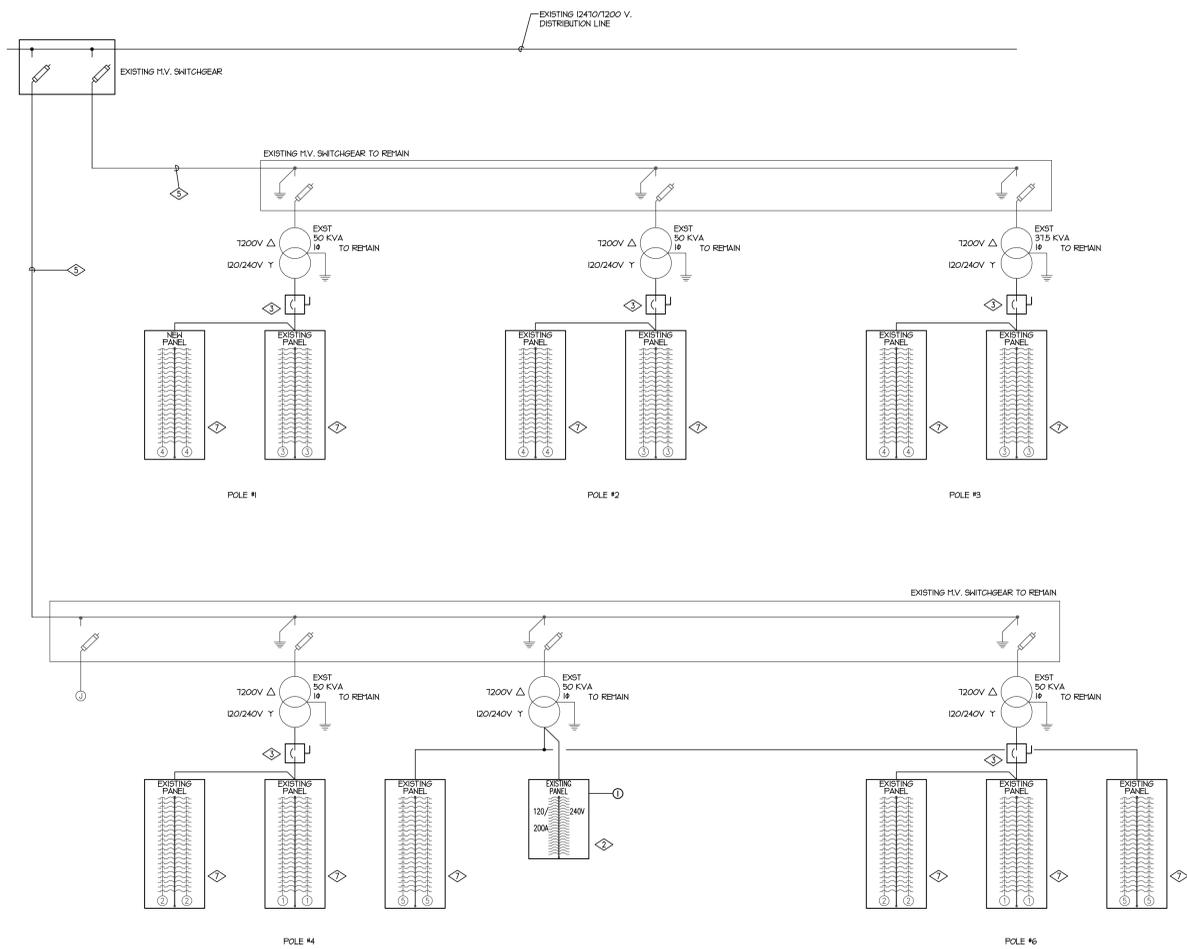
LIGHTING CONTROLS RISER DIAGRAM

SHEET NUMBER

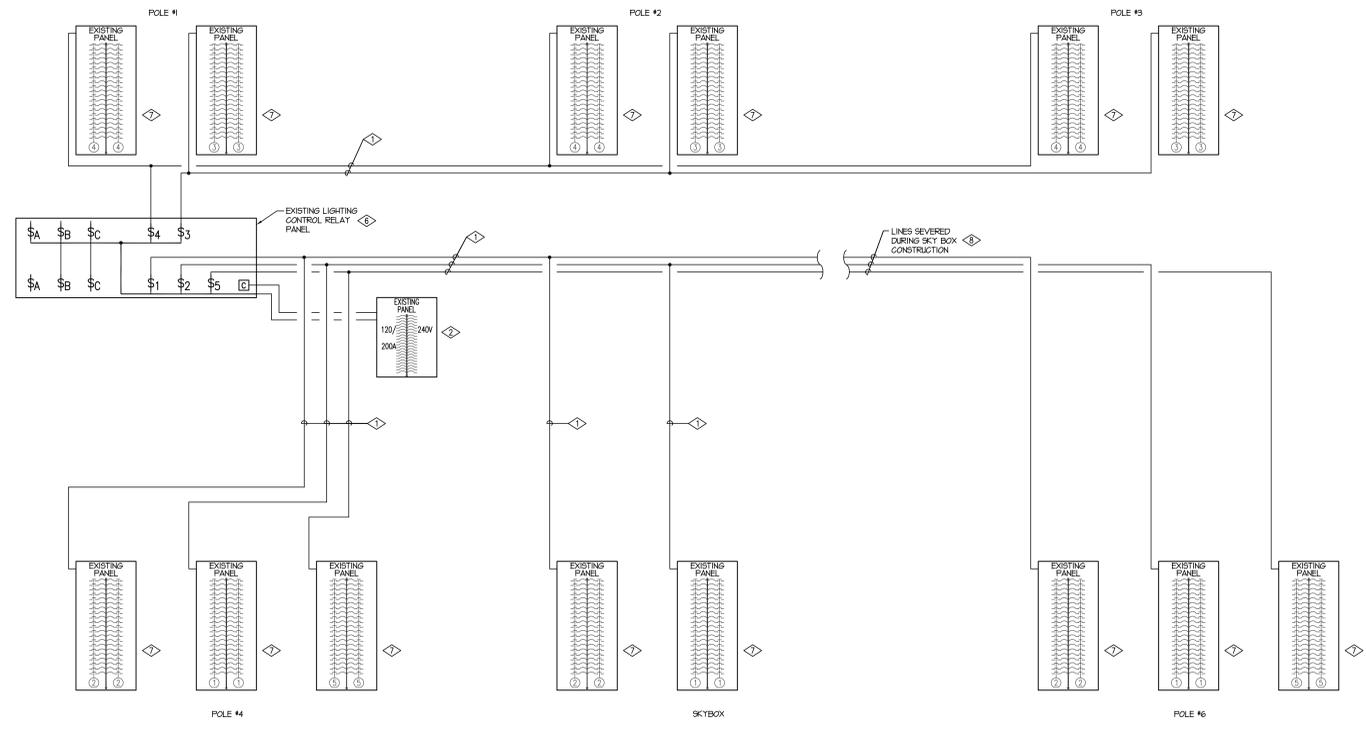
EE-003



**NEW POWER SINGLE LINE DIAGRAM**  
 SCALE: N.T.S.



**EXISTING POWER SINGLE LINE DIAGRAM**  
 SCALE: N.T.S.



**EXISTING LIGHTING CONTROL SINGLE LINE DIAGRAM**  
 SCALE: N.T.S.

- REFERENCE NOTES:**
- ① REMOVE THE EXISTING LIGHTING CONTROL CONDUCTORS FROM CONDUITS. RE-USE CONDUIT FOR NEW EMERGENCY LIGHTING CIRCUITS.
  - ② EXISTING PANEL FEEDING THE LIGHTING CONTROL RELAY PANEL SHALL BE REMOVED. REMOVE ASSOCIATED CONDUIT AND CONDUCTORS ALL THE WAY BACK TO THEIR POINTS OF ORIGIN.
  - ③ EXISTING 200A BREAKER DISCONNECTS SHALL BE RE-USED. CLEAN AND TEST BREAKERS. REMOVE FROM EXISTING STRUCTURES. STORE AND REINSTALL ON A NEW UNISTRUT PEDESTAL. REFER TO UNISTRUT MOUNTING DETAIL FOR MORE INFORMATION. PROVIDE ALL CONDUITS, CONDUCTORS, TRENCHING, BACK FILL, ETC. NECESSARY FOR A COMPLETE RELOCATION.
  - ④ FURNISH AND INSTALL NEW NETWORKABLE PANELS. REFER TO PANEL SCHEDULES AND LIGHTING CONTROL WIRING DIAGRAM FOR MORE INFORMATION. DO NOT EXCEED THE TRANSFORMER LOAD RATING.
  - ⑤ MAINTAIN THE INTEGRITY OF THE EXISTING HIGH VOLTAGE FEED. THE OWNER WILL IDENTIFY AND LOCATE ALL THE UNDERGROUND UTILITIES.
  - ⑥ THE LIGHTING CONTACTOR PANEL SHALL BE REMOVED. REMOVE ASSOCIATED CONDUITS, CONDUCTORS, ENCLOSURES, ETC. ALL THE WAY BACK TO THEIR POINTS OF ORIGIN.
  - ⑦ EXISTING CONTACTOR/DISTRIBUTION PANEL SHALL BE REMOVED. REMOVE ALL ASSOCIATED CONDUITS AND CONDUCTORS ALL THE WAY BACK TO THEIR POINTS OF ORIGIN.
  - ⑧ THE CONTROL CONDUITS TO POLE #6 FIXTURES HAVE BEEN SEVERED. RUN NEW CONDUIT FROM THE EMERGENCY PANEL INDICATED TO THE POLE. SURFACE MOUNT ALL CONDUIT BELOW THE STANDS.
  - ⑨ THE EXISTING TRANSFORMERS SHALL REMAIN. THE TRANSFORMER SIZE IS BASED ON THE OWNER'S RECORD DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY THE TRANSFORMER RATINGS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.



DCM PROJECT NO. 3891

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**POWER SINGLE LINE DIAGRAM**

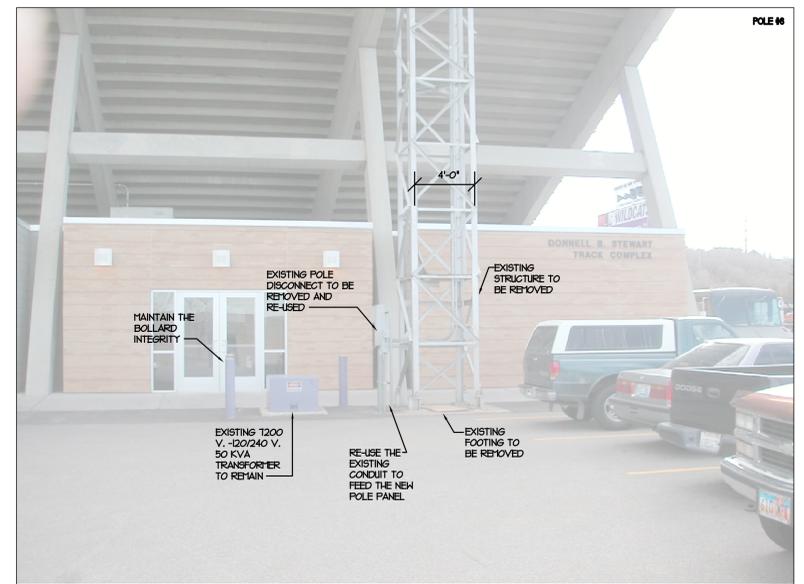
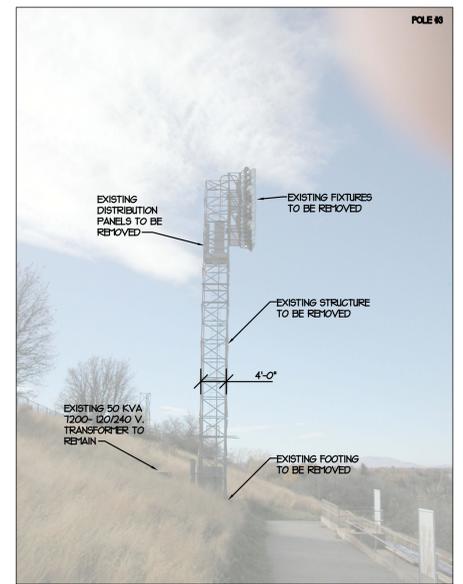
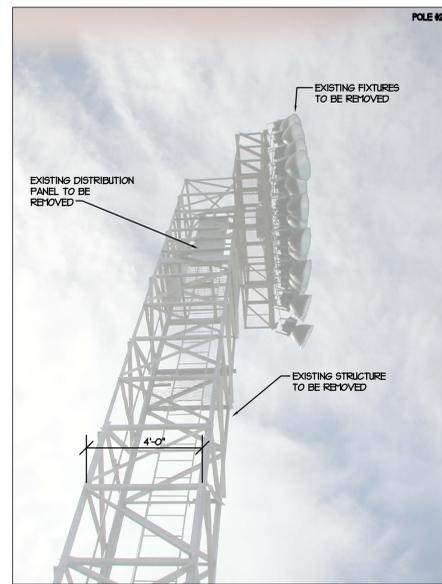
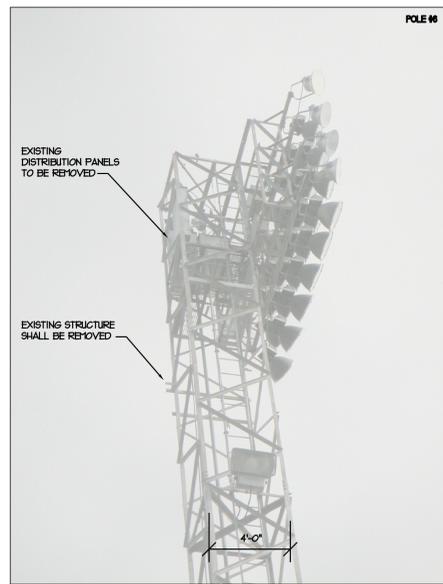
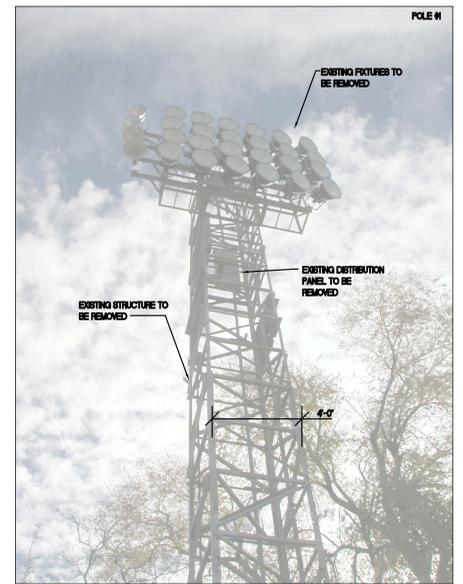
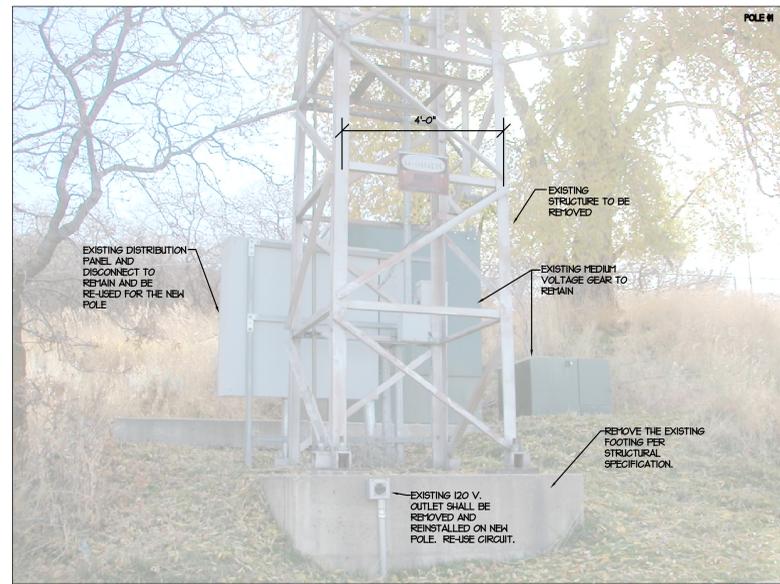
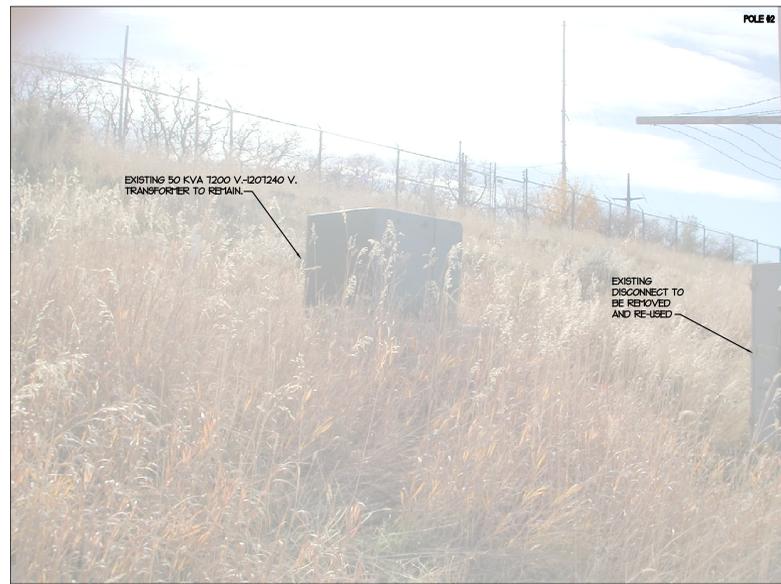
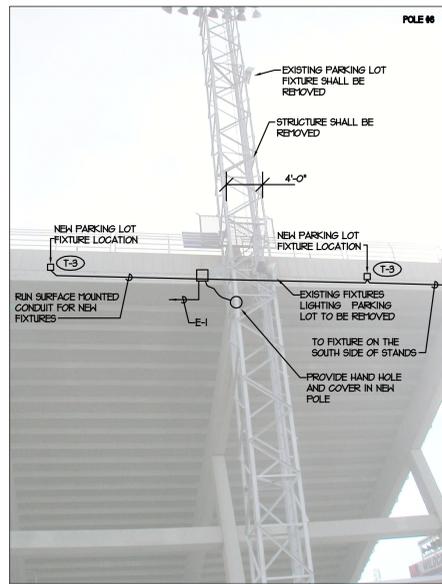
EXISTING PANEL		"E-STADIUM"		AIC RATING		22K A/FPS								
PHASE/WIRE		3/4		RATING		120/240 VOLTS								
MAIN LUG		225 A/FPS		SUBFEED LUGS		NO								
MAIN BREAKER		-- A/FPS		COMMENT										
CKT	LOCATION	RECEPT	LTG	OTHER	POLE	SIZE	PHASE	SIZE	POLE	OTHER	LTG	RECEPT	LOCATION	CKT
1	PRESS BOX *				I	20	A	20	I				LIGHTS 2ND FLOOR EXITS *	2
3	PRESS BOX *				I	20	B	20	I				LIGHTS CORRIDOR 2ND FLOOR *	4
5	PANEL *				I	20	C	20	I				LIGHTS 2ND FLOOR R.R. *	6
7	LIGHTS SHOWERS R.R. *				I	20	A	20	I				LIGHTS STAIRWELL *	8
9	LIGHTS CORR 121 *				I	20	B	20	I				SPARE	10
11	SHOWERS R.R. *				I	20	C	20	I				SPARE	12
13	LIGHTS MEN'S R.R. *				I	20	A	20	I				SPARE	14
15	LIGHTS WOMEN'S R.R. *				I	20	B	20	I				LIGHTS *	16
17	LIGHTS TRAIN CORR. *				I	20	C	20	I				SPACE	18
19	LIGHTS FOTER *				I	20	A	20	I				TRAINING ROOM LIGHTS *	20
21	LIGHTS CORRIDOR *				I	20	B	20	I				TRAINING ROOM LIGHTS *	22
23	LIGHTS HEIGHT ROOM *				I	20	C	20	I				TRAINING ROOM LIGHTS *	24
25	SPARE				I	20	A	20	I				SPARE	26
27	SPARE				I	20	B	20	I				SPARE	28
29	SPARE				I	20	C	20	I				SPARE	30
31	PANEL LG1 *				I	20	A	20	I				TRANSFORMER T1 *	32
33	POLE #4 E-LTG		1500		I	20	B	20	I				SKYBOX E-LTG	34
35	POLE #2 E-LTG		1500		I	20	C	20	I				SKYBOX E-LTG	36
37	POLE #3 E-LTG		1500		I	20	A	20	I				SPARE	38
39	POLE #4 E-LTG		1500		I	20	B	20	I				SPARE	40
41	POLE #6 E-LTG		1500		I	20	C	20	I				SPARE	42
VA		VA	VA	VA	A/FPS	KVA		VA	VA	VA				
0		1500	0	A	1250	A	15000	A	0	0	0	0	0	* EXISTING LOAD TO REMAIN
0		3000	0	B	2500	B	15000	B	0	0	0	0	0	
0		3000	0	C	2500	C	15000	C	0	0	0	0	0	
0		1500	0		2082	TOTAL	750		0	0	0	0	0	

NEW PANEL		"POLE-1"		AIC RATING		65K A/FPS								
PHASE/WIRE		1/3		RATING		120/240 VOLTS								
MAIN LUG		225 A/FPS		SUBFEED LUGS		NO								
MAIN BREAKER		-- A/FPS		COMMENT		SQUARE-D POWER LINK NF3000G3-ECB4020G3- NF216BLRG3-1/2NF120P5G3								
CKT	LOCATION	RECEPT	LTG	OTHER	POLE	SIZE	PHASE	SIZE	POLE	OTHER	LTG	RECEPT	LOCATION	CKT
1	LAMP 1		500		I	20	A	20	YES	I	500		LAMP 2	2
3	LAMP 3		500		I	20	B	20	YES	I	500		LAMP 4	4
5	LAMP 5		500		I	20	C	20	YES	I	500		LAMP 6	6
7	LAMP 7		500		I	20	A	20	YES	I	500		LAMP 8	8
9	LAMP 9		500		I	20	B	20	YES	I	500		LAMP 10	10
11	LAMP 11		500		I	20	C	20	YES	I	500		LAMP 12	12
13	LAMP 13		500		I	20	A	20	YES	I	500		LAMP 14	14
15	LAMP 15		500		I	20	B	20	YES	I	500		LAMP 16	16
17	LAMP 17		500		I	20	C	20	YES	I	500		LAMP 18	18
19	SPARE				I	20	A	20	NO	I			SPARE	20
21	SPARE				I	20	B	20	NO	I			SPARE	22
23	SPARE				I	20	C	20	NO	I			SPARE	24
25	SPARE				I	20	A	20	NO	I			SPARE	26
27	SPARE				I	20	B	20	NO	I			SPARE	28
29	SPARE				I	20	C	20	NO	I			SPARE	30
31	SPARE				I	20	A	20	NO	I			SPARE	32
33	SPARE				I	20	B	20	NO	I			SPARE	34
35	SPARE				I	20	C	20	NO	I			SPARE	36
37	SPARE				I	20	A	20	NO	I			SPARE	38
39	SPARE				I	20	B	20	NO	I			SPARE	40
41	SPARE				I	20	C	20	NO	I			SPARE	42
VA		VA	VA	VA	A/FPS	KVA		VA	VA	VA				
0		4500	0	A	1500	A	9000	A	0	4500	0	0	0	G3B = ECB-G3 BREAKER. PROVIDE A DEDICATED G3B BREAKER PER LIGHT FIXTURE. NE1A 3R ENCLOSURE.
0		4500	0	B	1500	B	9000	B	0	4500	0	0	0	
0		4500	0		4330	TOTAL	1800		0	4500	0	0	0	

NEW PANEL		"POLE-2"		AIC RATING		65K A/FPS								
PHASE/WIRE		1/3		RATING		120/240 VOLTS								
MAIN LUG		225 A/FPS		SUBFEED LUGS		NO								
MAIN BREAKER		-- A/FPS		COMMENT		SQUARE-D POWER LINK NF3000G3-ECB4020G3- NF216BLRG3-1/2NF120P5G3								
CKT	LOCATION	RECEPT	LTG	OTHER	POLE	SIZE	PHASE	SIZE	POLE	OTHER	LTG	RECEPT	LOCATION	CKT
1	LAMP 1		500		I	20	A	20	YES	I	500		LAMP 2	2
3	LAMP 3		500		I	20	B	20	YES	I	500		LAMP 4	4
5	LAMP 5		500		I	20	C	20	YES	I	500		LAMP 6	6
7	LAMP 7		500		I	20	A	20	YES	I	500		LAMP 8	8
9	LAMP 9		500		I	20	B	20	YES	I	500		LAMP 10	10
11	LAMP 11		500		I	20	C	20	YES	I	500		LAMP 12	12
13	LAMP 13		500		I	20	A	20	YES	I	500		LAMP 14	14
15	LAMP 15		500		I	20	B	20	YES	I	500		LAMP 16	16
17	LAMP 17		500		I	20	C	20	YES	I	500		LAMP 18	18
19	SPARE				I	20	A	20	NO	I			SPARE	20
21	SPARE				I	20	B	20	NO	I			SPARE	22
23	SPARE				I	20	C	20	NO	I			SPARE	24
25	SPARE				I	20	A	20	NO	I			SPARE	26
27	SPARE				I	20	B	20	NO	I			SPARE	28
29	SPARE				I	20	C	20	NO	I			SPARE	30
31	SPARE				I	20	A	20	NO	I			SPARE	32
33	SPARE				I	20	B	20	NO	I			SPARE	34
35	SPARE				I	20	C	20	NO	I			SPARE	36
37	SPARE				I	20	A	20	NO	I			SPARE	38
39	SPARE				I	20	B	20	NO	I			SPARE	40
41	SPARE				I	20	C	20	NO	I			SPARE	42
VA		VA	VA	VA	A/FPS	KVA		VA	VA	VA				
0		4500	0	A	1500	A	9000	A	0	4500	0	0	0	G3B = ECB-G3 BREAKER. PROVIDE A DEDICATED G3B BREAKER PER LIGHT FIXTURE. NE1A 3R ENCLOSURE.
0		4500	0	B	1500	B	9000	B	0	4500	0	0	0	
0		4500	0		4330	TOTAL	1800		0	4500	0	0	0	

EXISTING PANEL		"POLE-3"		AIC RATING		65K A/FPS								
PHASE/WIRE		1/3		RATING		120/240 VOLTS								
MAIN LUG		225 A/FPS		SUBFEED LUGS		NO								
MAIN BREAKER		-- A/FPS		COMMENT		SQUARE-D POWER LINK NF3000G3-ECB4020G3- NF216BLRG3-1/2NF120P5G3								
CKT	LOCATION	RECEPT	LTG	OTHER	POLE	SIZE	PHASE	SIZE	POLE	OTHER	LTG	RECEPT	LOCATION	CKT
1	LAMP 1		500		I	20	A	20	YES	I	500		LAMP 2	2
3	LAMP 3		500		I	20	B	20	YES	I	500		LAMP 4	4
5	LAMP 5		500		I	20	C	20	YES	I	500		LAMP 6	6
7	LAMP 7		500		I	20	A	20	YES	I	500		LAMP 8	8
9	LAMP 9		500		I	20	B	20	YES	I	500		LAMP 10	10
11	LAMP 11		500		I	20	C	20	YES	I	500		LAMP 12	12
13	LAMP 13		500		I	20	A	20	YES	I	500		LAMP 14	14
15	LAMP 15		500		I	20	B	20	YES	I	500		LAMP 16	16
17	LAMP 17		500		I	20	C	20	YES	I	500		LAMP 18	18
19	LAMP 19		500		I	20	A	20	YES	I	500		LAMP 20	20
21	LAMP 21		500		I	20	B	20	YES	I	500		LAMP 22	22
23	LAMP 23		500		I	20	C	20	YES	I	500		LAMP 24	24
25	LAMP 25		500		I	20	A	20	YES	I	500		LAMP 26	26
27	LAMP 27		500		I	20	B	20	YES	I	500		LAMP 28	28
29	SPARE				I	20	A	20	NO	I			SPARE	30
31	SPARE				I	20	B	20	NO	I			SPARE	32
33	SPARE				I	20	C	20	NO	I			SPARE	34
35	SPARE				I	20	A	20	NO	I			SPARE	36
37	SPARE				I	20	B	20	NO	I			SPARE	38
39	SPARE				I	20	C	20	NO	I				



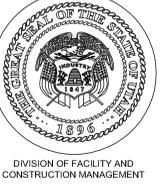


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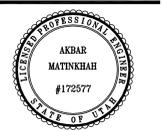
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ELIZABETH DEE SHAW STEWART STADIUM-  
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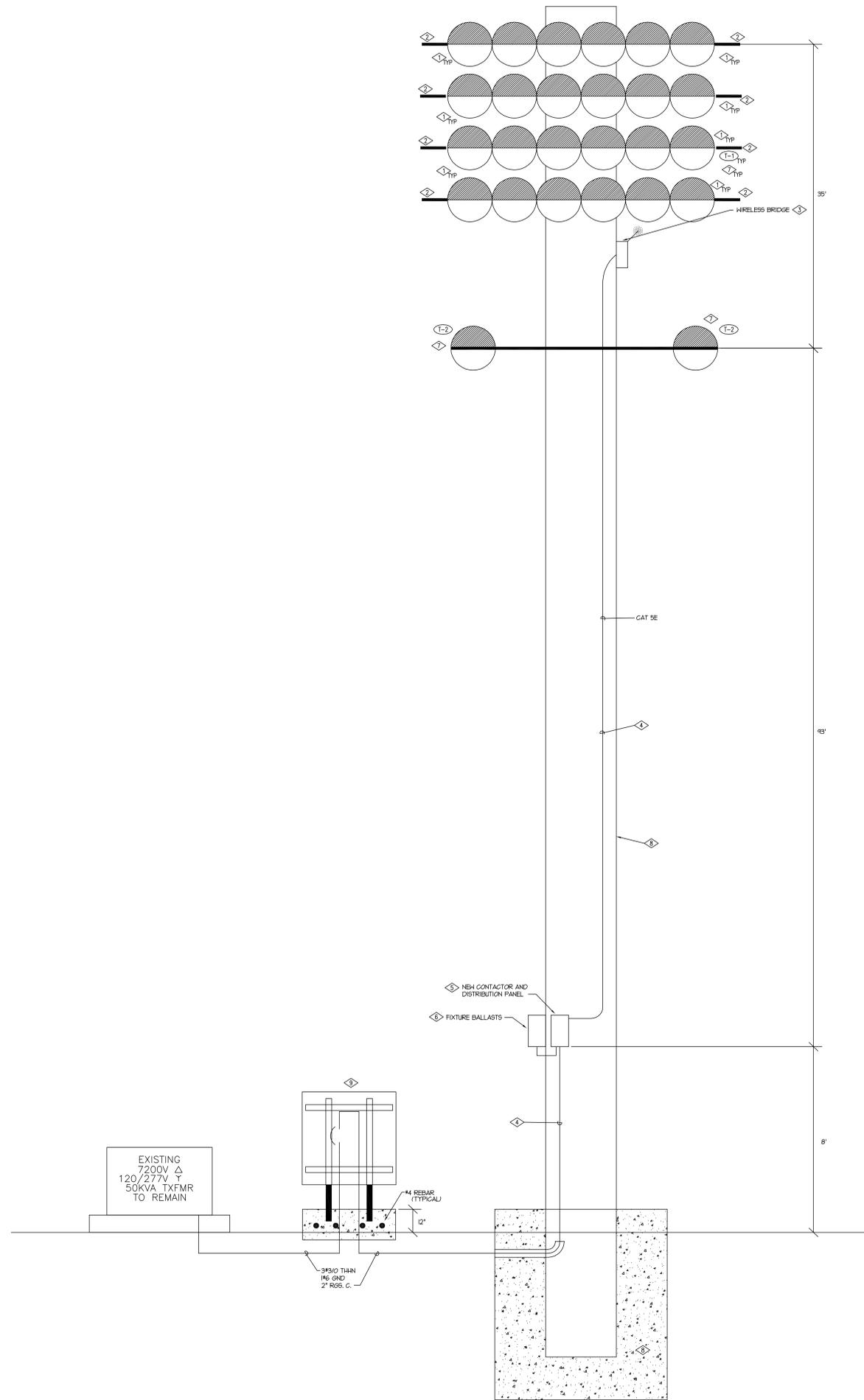
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PHOTOGRAPH NOTES



TYPICAL SPORTS LIGHTING POLE DIAGRAM  
SCALE: N.T.S.

- REFERENCE NOTES:**
- FURNISH AND INSTALL ALL FIXTURES NECESSARY TO ACCOMPLISH THE ILLUMINATION LEVEL SPECIFIED ON SHEET E5-101. TIE EACH FIXTURE TO A DEDICATED 60 BREAKER IN THE CORRESPONDING PANEL THROUGH ITS BALLAST. REFER TO PANEL SCHEDULES FOR FURTHER INFORMATION.
  - PROVIDE ADDITIONAL SUPPORT BRACKETS FOR FUTURE INSTALLATION OF LIGHT FIXTURES. MAKE PROVISIONS FOR THE AMOUNT OF FIXTURES NECESSARY TO ACCOMPLISH A NATIONAL BROADCAST ILLUMINATION LEVEL PER NGAIA STANDARD.
  - FURNISH AND INSTALL WIRELESS BRIDGE AT THE ELEVATION SHOWN. REFER TO THE LIGHTING CONTROLS RISER DIAGRAM FOR MORE INFORMATION.
  - ALL CONDUCTORS SHALL RUN INSIDE THE POLE. PROVIDE ALL HARNESS, STRAIN RELIEF DEVICES, CONDUITS, ETC. NECESSARY. ALL STRAIN RELIEF DEVICES SHALL BE ACCESSIBLE THROUGH WEATHER PROOF HAND HOLES. PROVIDE A STRAIN RELIEF DEVICE EVERY 25'.
  - FURNISH AND INSTALL A NEW CONTACTOR/DISTRIBUTION PANEL. REFER TO PANEL SCHEDULE FOR MORE REQUIREMENTS. PROVIDE ALL SUPPORT HARDWARE NECESSARY FOR A COMPLETE INSTALLATION.
  - FURNISH AND INSTALL REMOTE BALLASTS AT THE ELEVATION SHOWN. PROVIDE ALL SUPPORT HARDWARE NECESSARY FOR A COMPLETE INSTALLATION.
  - FURNISH AND INSTALL ENOUGH T-2 TYPE FIXTURES TO MAINTAIN A MINIMUM OF ONE FOOTCANDLE AT THE STADIUM STANES FOR SAFE EMERGENCY EGRESS. TIE EACH FIXTURE TO A SPARE 20A, 120V CIRCUIT BREAKER IN PANEL "E-STADIUM" OR PANEL "EMERGENCY" THROUGH A 20A EMERGENCY TRANSFER DEVICE. FIXTURES SHALL TURN ON UPON FAILURE OF NORMAL POWER. TIE THE VOLTAGE SENSING LEAD OF THE GTD TO THE UNSWITCHED CIRCUIT FEEDING THE GENERATOR'S TRANSFER SWITCH. PROVIDE ALL CONDUITS AND CONDUCTORS.
  - SUCCESSFUL SPORTS LIGHTING MANUFACTURER SHALL DESIGN ALL FOOTINGS, STRUCTURES, ETC. TO PROPERLY SUPPORT THE LIGHT POLE PER STRUCTURAL SPECIFICATION. SUCCESSFUL LIGHTING MANUFACTURER SHALL PROVIDE DESIGN DRAWINGS STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER. ALL COSTS ASSOCIATED WITH DESIGNING, FABRICATING AND INSTALLING THE POLE BASES SHALL BE INCLUDED AT TIME OF BID. CONTACT MUSCO OR USI FOR MORE INFORMATION. THE CONTRACTOR SHALL PROVIDE POLE BASES PER LIGHTING MANUFACTURER'S APPROVED DRAWINGS.
  - RELOCATE THE EXISTING MAIN BREAKER DISCONNECT FOR EACH POLE NEXT TO ITS TRANSFORMER. MOUNT THE DISCONNECT ON UNSTRUT SUPPORTED BY A 12" THICK REBAR REINFORCED PAD. EXTEND ALL CONDUIT, CONDUCTORS, ETC. FROM THE EXISTING LOCATION TO THE DISCONNECT'S NEW LOCATION AND FROM THE DISCONNECT TO THE DISTRIBUTION PANEL. USE #4 REBAR EVERY 12" O.C. REFER TO DETAILS FOR FURTHER CONCRETE AND UNISTRUT SUPPORT REQUIREMENTS. REFER TO THE NEW POWER SINGLE LINE DIAGRAM FOR MORE REQUIREMENTS.

- SPECIAL NOTES:**
- THIS IS A SCHEMATIC DRAWING. SUCCESSFUL BIDDER SHALL SUBMIT ACTUAL DESIGN DRAWINGS FOR THE LIGHTING, POLE AND STRUCTURAL SYSTEMS SIGNED AND STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER.
  - REFER TO THE DRAWINGS AND SPECIFICATIONS FOR EXACT DETAILS AND REQUIREMENTS FOR EACH POLE.



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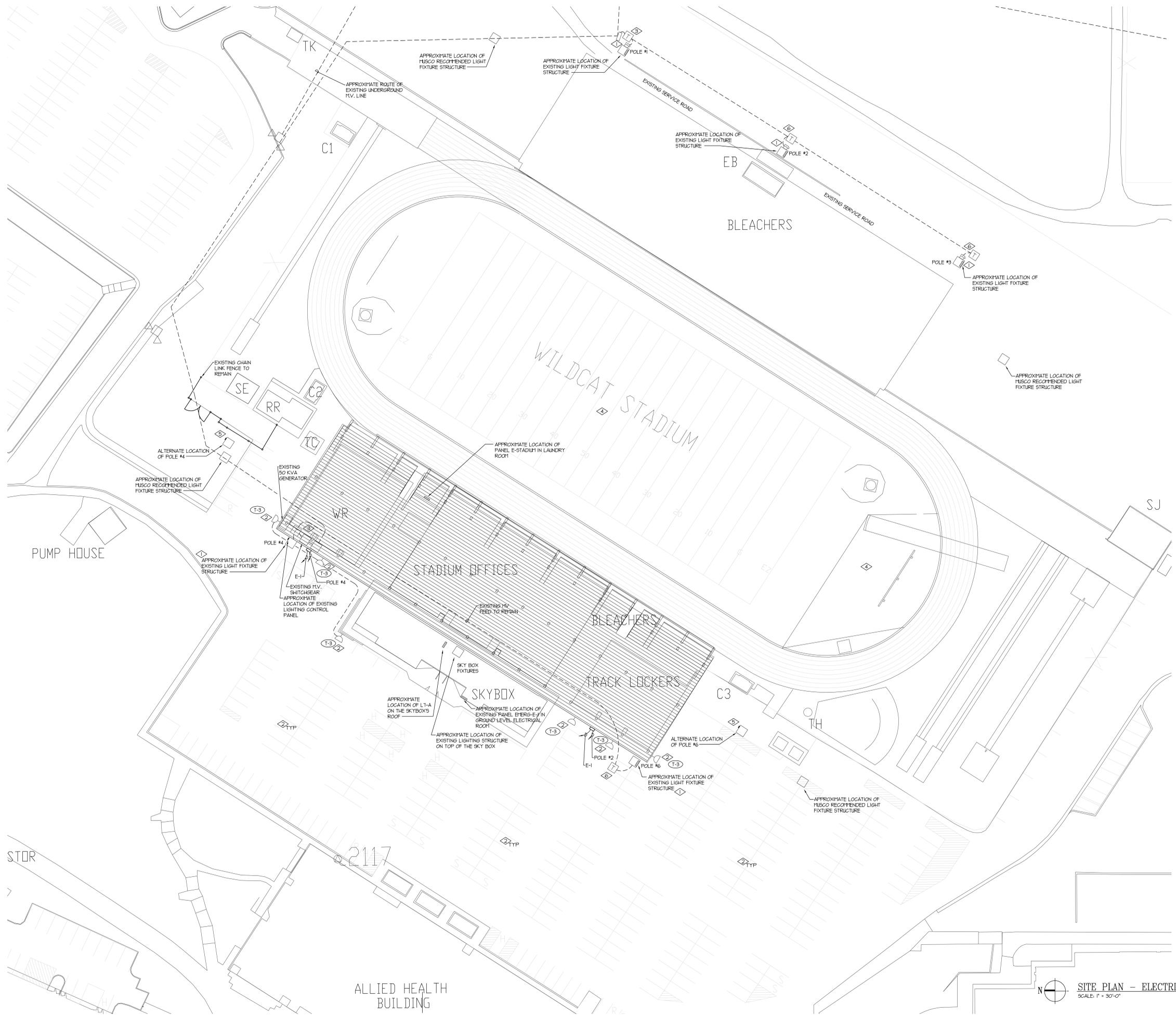
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SPORTS POLE  
DETAIL

EE-009



**REFERENCE NOTES:**

- 1. REMOVE THE EXISTING LIGHTING STRUCTURE, FOOTINGS AND FIXTURES. REFER TO PHOTOGRAPH NOTES AND DETAILS FOR MORE INFORMATION. REPLACE THE LIGHTING STRUCTURE WITH A NEW LIGHTING POLE. THE LIGHTING POLE SHALL BE SIZED TO SUPPORT ENOUGH FIXTURES TO PROVIDE A LIGHTING ILLUMINATION LEVEL IN ACCORDANCE WITH THE NATIONAL BROADCAST LEVEL REQUIRED BY THE NCAA. THE POLE SHALL ALSO BE DESIGNED TO SUPPORT EMERGENCY EGRESS ILLUMINATION. THE POLE MANUFACTURER SHALL SUBMIT FOR APPROVAL, STRUCTURAL SHOP DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER PRIOR TO COMMENCING POLE FABRICATION. REFER TO SPECIFICATION, GEO TECHNICAL REPORT AND THE TYPICAL SPORTS LIGHTING POLE DETAIL FOR FURTHER REQUIREMENTS. REMOVE ANY UNUSED CONDUITS AND CONDUCTORS ALL THE WAY BACK TO THEIR POINTS OF ORIGIN. FURNISH AND INSTALL LIGHT POLES TALL ENOUGH FOR FIXTURES TO BE 16' ABOVE THE FOOTBALL FIELD. REFER TO THE GEO TECHNICAL STUDY FOR THE GRADING INFORMATION. REFER TO STRUCTURAL SPECIFICATION FOR FURTHER REQUIREMENTS.
- 2. THE PARKING LOTS SHALL BE ILLUMINATED FROM THE EXISTING STADIUM STANDS. REFER TO THE LIGHTING CONTROL DIAGRAM, PHOTOGRAPH NOTES AND POWER SINGLE LINE DIAGRAMS FOR MORE INFORMATION AND REQUIREMENTS. RUN THE CONDUIT FOR FIXTURE POWER SURFACE MOUNTED UNDER THE STANDS. LIGHT FIXTURES SHALL BE CONTROLLED BY THE CAMPUS WIDE PHOTOCELL AND JOHNSON CONTROLS SYSTEM. COORDINATE CONNECTIONS WITH OWNER. TIE EACH FIXTURE TO THE INDICATED NORMAL AND EMERGENCY PANEL THROUGH A BOONE 20A GTD DEVICE. RUN THE UNSWITCHED NORMAL CIRCUIT TO THE GTD DEVICES SO THAT THEY TRANSFER POWER TO THE EMERGENCY SOURCE IN THE EVENT OF A NORMAL POWER OUTAGE. THE GTD DEVICES SHALL BE CONTAINED IN A SURFACE MOUNTED NEMA 3R ENCLOSURE. TIE EACH FIXTURE TO AN EXISTING 20A SPARE CIRCUIT BREAKER IN PANEL E-1.
- 3. EXISTING PAD MOUNTED TRANSFORMER, M.V. SWITCH GEAR FOR STADIUM LIGHTING AND GENERATOR SHALL REMAIN. MAINTAIN CIRCUIT INTEGRITY. PROTECT FROM DAMAGE DURING THE DEMOLITION OF THE EXISTING STRUCTURE.
- 4. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL LIGHT FIXTURES, CONCRETE BASES, BALLASTS, CONTROLS, STRUCTURES, ETC. TO ACCOMPLISH THE FOLLOWING ILLUMINATION REQUIREMENTS PER NCAA BEST LIGHTING PRACTICES:
  - 1. TYPE OF ILLUMINATION: REGIONAL BROADCAST.
  - 2. HORIZONTAL FOOTCANDLES: 80 FC. AVERAGE
  - 3. HORIZONTAL UNIFORMITY: .2:1
  - 4. 50 YARD VERTICAL FOOTCANDLES: 50 FC. AVERAGE
  - 5. 50 YARD VERTICAL UNIFORMITY: .2:1
  - 6. END ZONE VERTICAL FOOTCANDLES: 45 FC. AVERAGE
  - 7. EMERGENCY LIGHTING: 1 FC. MINIMUM
  - 8. TRACK AND FIELD ARENA: 24 FC, 3:1 UNIFORMITY
 ALL BALLASTS, DISTRIBUTION PANELS, CONTACTORS, CONTROL BOXES, ETC. SHALL BE MOUNTED 8' A.F.F. REPAIR THE EXISTING EMERGENCY CIRCUITS FOR THE NEW EMERGENCY LIGHTING. PROVIDE ALL CONDUITS, CONDUCTORS, J-BOXES, PANELS, ETC. NECESSARY FOR A COMPLETE INSTALLATION.
- 5. UNDER BID ALTERNATE #1 THE CONTRACTOR SHALL REMOVE THE EXISTING STRUCTURES FOR POLES #4 AND #6. LEAVE THE EXISTING FOOTINGS FOR THESE POLES IN PLACE AND EXTEND THE LOW VOLTAGE FEED TO THE ALTERNATE POLE LOCATIONS SHOWN. CONTRACTOR SHALL PROVIDE ALL TRENCHING, BACK FILLING, RE-SURFACING, CONDUITS, CONDUCTORS, J-BOXES, ETC. NECESSARY FOR A COMPLETE, FUNCTIONING INSTALLATION AND RE-LOCATION.
- 6. EXISTING PAD MOUNTED TRANSFORMER SHALL REMAIN. REFER TO THE NEW POWER SINGLE LINE DIAGRAM FOR MORE REQUIREMENTS. PROTECT TRANSFORMER AGAINST DAMAGE DURING DEMOLITION.

**SPECIAL NOTES:**

- 1. WSU WILL LOCATE ALL UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL TAKE EXTRA PRECAUTIONS WHEN DIGGING AROUND THESE LINES. ANY DAMAGE INCURRED AS A RESULT OF THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE. COORDINATE THE WORK WITH THE OWNER.
- 2. THESE DRAWINGS ARE ONLY SCHEMATIC. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS AND ELEVATIONS OF ALL EXISTING DEVICES, STRUCTURES, ETC. PRIOR TO ROUGH-IN.



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**SITE PLAN - ELECTRICAL**

ES-101

**SITE PLAN - ELECTRICAL**  
SCALE: 1" = 30'-0"