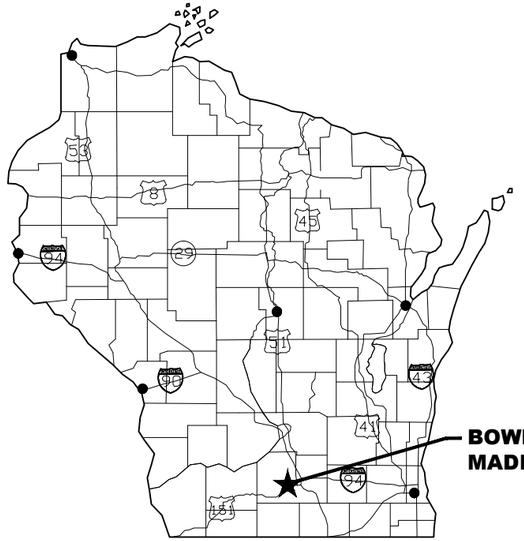
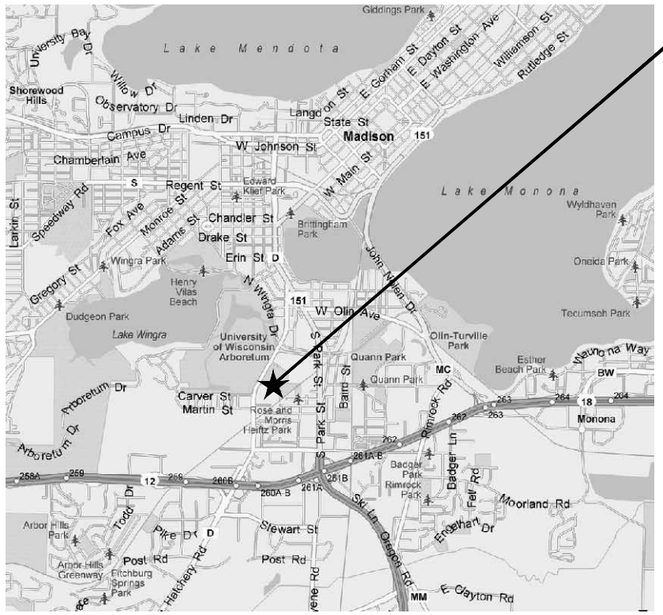
BOWMAN LIGHTING IMPROVEMENTS - PHASE TWO

FOR THE

CITY OF MADISON
MADISON, WISCONSIN
JULY 2014





PROJECT LOCATION MAP
NO SCALE

LIST OF DRAWINGS

SHEET NO.	DRAWING NO.	DRAWING TITLE
1	G0.1	TITLE SHEET, LOCATION MAP, AND LIST OF DRAWINGS
2	G0.2	ELECTRICAL SYMBOLS AND ABBREVIATIONS
3	D1.0	DEMOLITION SITE PLAN
4	E1.0	ELECTRICAL SITE PLAN
5	E5.1	ELECTRICAL DETAILS
6	E6.1	ELECTRICAL ONELINE DIAGRAM AND SCHEDULES

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7/18/14

STRAND ASSOCIATES®

SHEET
1
G0.1

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ELECTRICAL ABBREVIATIONS

A	AMPERE
A/V	AUDIO VISUAL
AF	AMPERE FRAME
AFM	AIR FLOW METER
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CR	CARD READER
CS	CONTROL STATION
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DISC	DISCONNECT
DM	DENSITY METER
DO	DISSOLVED OXYGEN DEVICE
DP	DOOR POSITION SWITCH
DT	DIFFERENTIAL PRESSURE TRANSDUCER
E	EMERGENCY
EMS	EMERGENCY STOP
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE DEVICE
ES	ELECTRIC STRIKE
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FIT	FLOW INDICATING TRANSMITTER
FLA	FULL LOAD AMPERES
FLS	FLOW SWITCH
FM	FLOW METER
FPCP	FIRE PUMP CONTROL PANEL
FS	FLOAT SWITCH
FT	FEET
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GFI	GROUND FAULT INTERRUPTER
GFM	GAS FLOW METER
GFP	GROUND FAULT PROTECTION (EQUIPMENT)
GRD	GROUND
GRS	GALVANIZED RIGID STEEL
HOA	HAND OFF AUTO
HP	HORSEPOWER
HV	HIGH VOLTAGE
HZ	HERTZ
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
J	JUNCTION BOX
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWATT
LIT	LEVEL INDICATING TRANSMITTER
LP	LIGHTING PANEL
LTG	LIGHTING
LV	LOW VOLTAGE
MATV	MASTER ANTENNA TELEVISION
MC	METAL CLAD
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED CASE CIRCUIT BREAKER
MCM	THOUSAND CIRCULAR MILS
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANELBOARD
MFM	MAGNETIC FLOW METER
ML	MAGNETIC LOCK
MLO	MAIN LUGS ONLY
MO	MOTOR OPERATED
MS	MOTION SENSOR
MSB	MAIN SWITCHBOARD
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE

ELECTRICAL ABBREVIATIONS

N/A	NOT APPLICABLE
NAC	NOTIFICATION APPLIANCE CIRCUIT PANEL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NM	NONMETALLIC
NO	NORMALLY OPEN
NTS	NOT TO SCALE
ø	PHASE
OCB	OIL CIRCUIT BREAKER
OL	OVERLOAD
OS	OCCUPANCY SENSOR
OT	OVERTEMP
P	POLE
PB	PULL BOX
PC	PULL CORD
PH	PH SENSOR
PNL	PANELBOARD
PR	PAIR
PRI	PRIMARY
PS	PRESSING SWITCH
PT	PRESSURE TRANSDUCER
PTF	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
RE	REQUEST TO EXIT
RTS	REMOTE TEST SWITCH
RVSS	REDUCED VOLTAGE SOLID STATE
SC	SHORT CIRCUIT
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCC	SUPERVISORY CONTROL CENTER
SE	SERVICE ENTRANCE
SEC	SECONDARY
SH	SHIELDED
SPD	SURGE PROTECTION DEVICE
SPT	SUBMERSIBLE PRESSURE TRANSDUCER
SS	STAINLESS STEEL
SV	SOLENOID VALVE
SW	SWITCH
TEL	TELEPHONE
T	THERMOSTAT
TS2W	TWO SPEED TWO WINDING
TYP	TYPICAL
UFM	ULTRASONIC FLOW METER
UG	UNDERGROUND
ULT	ULTRASONIC LEVEL TRANSMITTER
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE OR WATT
WP	WEATHERPROOF
WT	SCALE
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

ELECTRICAL SYMBOLS

LIGHTING

- FIXTURE SYMBOL (TYPICAL) A–INDICATES FIXTURE TYPE 2–INDICATES CIRCUIT NUMBER b–INDICATES SWITCHING SOLID CIRCLE INDICATES ALWAYS ON
- HID, SURFACE OR PENDANT
- HID, POLE
- 1X4 FLUORESCENT, SURFACE OR PENDANT
- 1X8 FLUORESCENT, SURFACE OR PENDANT
- FLUORESCENT, WALL
- 1X4 FLUORESCENT, RECESSED
- 2X2 FLUORESCENT, RECESSED
- 2X4 FLUORESCENT, RECESSED
- CAN, FLUORESCENT OR HID
- EXIT, SURFACE, PENDANT OR RECESSED
- EXIT, WALL
- EMERGENCY LIGHTING

SWITCHES

- $ SINGLE POLE
- $2 TWO POLE
- $3 THREE WAY
- $4 FOUR WAY
- $K KEYED
- $D DIMMER
- $M MANUAL MOTOR SWITCH (3 PHASE)
- $WP WEATHER PROOF
- $P SWITCH WITH PILOT LIGHT
- LC LIGHTING CONTROL STATION
- R3 LOCKOUT STOP SWITCH
- DP DOOR POSITION SWITCH
- PC PHOTOCELL

POWER SYMBOLS

- A ABANDONED ELECTRIC
- E UNDERGROUND ELECTRIC
- OH OVERHEAD ELECTRIC
- 2(X) CIRCUIT NUMBER (TYPICAL) OTHERWISE SHOWN PANEL DESIGNATION (TYP.)
- DUPLEX, 125 VOLT, WP INDICATES WEATHERPROOF
- DUPLEX, 125 VOLT, ABOVE FURNITURE
- DOUBLE DUPLEX, 125 VOLT, ABOVE FURNITURE
- DOUBLE DUPLEX, 125 VOLT
- EWC SINGLE CONVENIENCE, 125 VOLT FOR ELECTRIC WATER COOLER
- EXPLOSION–PROOF, ABOVE FURNITURE
- EXPLOSION–PROOF
- FIXED EQUIPMENT CONNECTION
- POWER OUTLET, VOLTAGE & AMPERAGE AS INDICATED
- AUTOMATIC TRANSFER SWITCH (ONE–LINE DIAGRAM)
- CIRCUIT BREAKER (ONE–LINE DIAGRAM)
- M METER (ONE–LINE DIAGRAM)
- PANELBOARD

INSTRUMENTATION EQUIPMENT

- AE ANALYSIS ELEMENT
- AIT* ANALYSIS INDICATING TRANSMITTER, *: DO=DISSOLVED OXYGEN, PH=PH, TRB=TURBIDITY, TSS=TOTAL SUSPENDED SOLIDS, GD=GAS DETECTOR, CA=CHLORINE ANALYZER, OP=OXYGEN PURITY, LEL=LOWER EXPLOSIVE LIMIT, PR=PROXIMITY
- CS 1,2 CONTROL SWITCH DEVICE TYPE (SEE MCC SCHEDULE)
- DE DENSITY ELEMENT
- DIT DENSITY INDICATING TRANSMITTER
- FE FLOW ELEMENT
- FIT* FLOW INDICATING TRANSMITTER, *: M=MAGNETIC, TM= THERMAL MASS DP=DIFFERENTIAL PRESSURE, U=ULTRASONIC
- FS* FLOW SWITCH *: P=PADDLE, T=THERMAL, C=CAPACITANCE
- HS* FLOW SWITCH *: SS=SAFETY SWITCH
- IE OR EE POWER ELEMENT (CURRENT XFMR, POTENTIAL XFMR)
- JIT POWER INDICATING TRANSMITTER
- KS TIME SWITCH
- LE LEVEL ELEMENT
- LIT* LEVEL INDICATING TRANSMITTER, *: S=SUBMERSIBLE, U=ULTRASONIC
- LS* LEVEL SWITCH, *: C=CONDUCTANCE, F=BALL FLOAT, V=VIBRATING FORK, B=BUILDING FLOODING
- PDIT DIFFERENTIAL PRESSURE INDICATING TRANSMITTER
- PIT PRESSURE INDICATING TRANSMITTER
- PS PRESSURE SWITCH
- SS SPEED SWITCH
- TE* TEMPERATURE ELEMENT, *: R=RTD, T=THERMOCOUPLE
- TIT TEMPERATURE INDICATING TRANSMITTER
- TS TEMPERATURE SWITCH
- VE VIBRATION ELEMENT
- VIT VIBRATION INDICATING TRANSMITTER
- WE WEIGHT ELEMENT
- WIT WEIGHT INDICATING TRANSMITTER
- WS TORQUE SWITCH
- YS PRESENCE/ABSENCE DETECTOR
- ZS* POSITION SWITCH, *: D=DOOR, L=LIMIT
- SOLENOID VALVE

SITE SYMBOLS

- x CHAIN LINK FENCE
- w WATER PIPING

EQUIPMENT AND WIRING

- GROUND ROD 10'–5/8" DIA. COPPER CLAD
- TRANSFORMER
- F DISCONNECT, F=FUSED, B=CIRCUIT BREAKER, BLANK=NON–FUSED
- MOTOR STARTER MAGNETIC
- CIRCUIT BREAKER COMBINATION STARTER
- J JUNCTION BOX
- T LINE VOLTAGE THERMOSTAT
- T LINE VOLTAGE THERMOSTAT W/REMOTE BULB
- P–01–01 480V LOAD, REFER TO MCC SCHEDULE FOR EQUIPMENT NUMBER
- VFD VARIABLE FREQUENCY DRIVE

TECHNOLOGY SYMBOLS

- DATA JACK
- PHONE JACK
- VOICE AND DATA JACKS
- VOIP WALL MOUNT VOIP PHONE JACK 54" AFF
- SCADA NETWORK JACK
- DATA RACK
- COAX CABLE
- POWER POLE
- PA H* PA SYSTEM HORN SPEAKER; 10'–0" AFF * : WATTAGE TAP
- PA S* PA SYSTEM SPEAKER * : WATTAGE TAP
- K KEY PAD
- GBD GLASS BREAK DETECTOR
- MS MOTION SENSOR
- P PUSH BUTTON
- ES ELECTRIC STRIKE
- ML MAGNETIC LOCK
- I INTERCOM STATION
- DS DOOR SWITCH
- OS OCCUPANCY SENSOR
- ## SEE SCHEDULE FOR SENSOR TYPE
- YE CARD READER
- RVC REMOTE VOLUME CONTROL
- * # PA SPEAKER; CEILING MOUNT * : SPEAKER TYPE # : WATTAGE TAP
- FIX FIXED SECURITY CAMERA
- PTZ PAN, TILT, ZOOM SECURITY CAMERA

DATE:

REVISIONS

NO.

ELECTRICAL SYMBOLS AND ABBREVIATIONS

BOWMAN LIGHTING IMPROVEMENTS - PHASE TWO
CITY OF MADISON
MADISON, WISCONSIN

JOB NO. 1020.076

PROJECT MGR. DAVID GOHDES

STRAND ASSOCIATES®

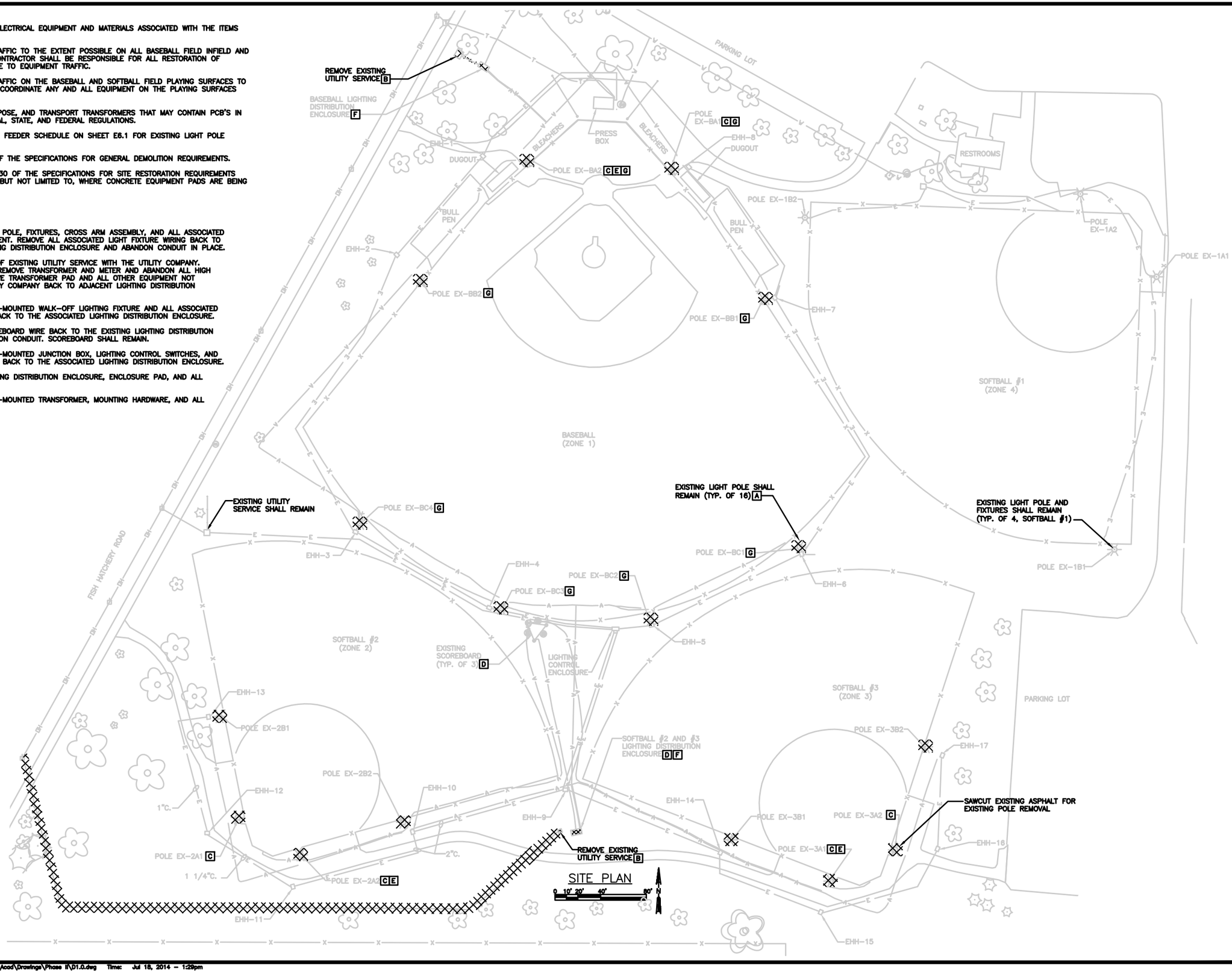
SHEET 2 G0.2

GENERAL NOTES:

1. REMOVE ALL EXISTING ELECTRICAL EQUIPMENT AND MATERIALS ASSOCIATED WITH THE ITEMS BEING REMOVED.
2. MINIMIZE EQUIPMENT TRAFFIC TO THE EXTENT POSSIBLE ON ALL BASEBALL FIELD INFIELD AND OUTFIELD SURFACES. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RESTORATION OF DAMAGED SURFACES DUE TO EQUIPMENT TRAFFIC.
3. MINIMIZE EQUIPMENT TRAFFIC ON THE BASEBALL AND SOFTBALL FIELD PLAYING SURFACES TO THE EXTENT POSSIBLE. COORDINATE ANY AND ALL EQUIPMENT ON THE PLAYING SURFACES WITH THE OWNER.
4. PROPERLY HANDLE, DISPOSE, AND TRANSPORT TRANSFORMERS THAT MAY CONTAIN PCB'S IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
5. REFER TO THE LIGHTING FEEDER SCHEDULE ON SHEET E6.1 FOR EXISTING LIGHT POLE HEIGHTS.
6. REFER TO DIVISION 1 OF THE SPECIFICATIONS FOR GENERAL DEMOLITION REQUIREMENTS.
7. REFER TO SECTION 02930 OF THE SPECIFICATIONS FOR SITE RESTORATION REQUIREMENTS FOR AREAS INCLUDING, BUT NOT LIMITED TO, WHERE CONCRETE EQUIPMENT PADS ARE BEING DEMOLISHED.

DEMOLITION NOTES:

- [A] REMOVE EXISTING LIGHT POLE, FIXTURES, CROSS ARM ASSEMBLY, AND ALL ASSOCIATED HARDWARE AND EQUIPMENT. REMOVE ALL ASSOCIATED LIGHT FIXTURE WIRING BACK TO THE ASSOCIATED LIGHTING DISTRIBUTION ENCLOSURE AND ABANDON CONDUIT IN PLACE.
- [B] COORDINATE REMOVAL OF EXISTING UTILITY SERVICE WITH THE UTILITY COMPANY. UTILITY COMPANY WILL REMOVE TRANSFORMER AND METER AND ABANDON ALL HIGH VOLTAGE WIRING. REMOVE TRANSFORMER PAD AND ALL OTHER EQUIPMENT NOT REMOVED BY THE UTILITY COMPANY BACK TO ADJACENT LIGHTING DISTRIBUTION ENCLOSURE.
- [C] REMOVE EXISTING POLE-MOUNTED WALK-OFF LIGHTING FIXTURE AND ALL ASSOCIATED CONDUIT AND WIRING BACK TO THE ASSOCIATED LIGHTING DISTRIBUTION ENCLOSURE.
- [D] REMOVE EXISTING SCOREBOARD WIRE BACK TO THE EXISTING LIGHTING DISTRIBUTION ENCLOSURE AND ABANDON CONDUIT. SCOREBOARD SHALL REMAIN.
- [E] REMOVE EXISTING POLE-MOUNTED JUNCTION BOX, LIGHTING CONTROL SWITCHES, AND ALL ASSOCIATED WIRING BACK TO THE ASSOCIATED LIGHTING DISTRIBUTION ENCLOSURE.
- [F] REMOVE EXISTING LIGHTING DISTRIBUTION ENCLOSURE, ENCLOSURE PAD, AND ALL ENCLOSURE CONTENTS.
- [G] REMOVE EXISTING POLE-MOUNTED TRANSFORMER, MOUNTING HARDWARE, AND ALL ASSOCIATED WIRING.



NO.	REVISIONS	DATE:

DEMOLITION SITE PLAN

BOWMAN LIGHTING IMPROVEMENTS - PHASE TWO
CITY OF MADISON
MADISON, WISCONSIN

JOB NO. 1020.076

PROJECT MGR. DAVID GOHDES

STRAND ASSOCIATES®

SHEET 3 D1.0

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GENERAL NOTES:

1. MINIMIZE EQUIPMENT TRAFFIC TO THE EXTENT POSSIBLE ON ALL BASEBALL FIELD INFIELD AND OUTFIELD SURFACES. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RESTORATION OF DAMAGED SURFACES DUE TO EQUIPMENT TRAFFIC.
2. CONTRACTOR SHALL REPAIR OR REPLACE EXISTING EQUIPMENT AND UTILITIES NOT BEING REMOVED IF THEY ARE DAMAGED AS A RESULT OF WORK PROVIDED AS PART AT THIS CONTRACT.
3. REFER TO LIGHTING FEEDER SCHEDULE ON SHEET E6.1 FOR LIGHT POLE ASSEMBLY FEEDER CONDUCTOR QUANTITIES AND SIZES.

KEY NOTES:

(1) ALL LIGHT FIXTURE ELECTRICAL COMPONENT ENCLOSURES SHALL BE POWERED FROM EXISTING POWER PANEL CIRCUIT BREAKERS IN THE EXISTING LIGHTING CONTROL ENCLOSURE THROUGH CONTACTORS IN THE NEW LIGHTING SYSTEM CONTROLLERS.

(2) MOUNT ELECTRICAL COMPONENT ENCLOSURE (ECE) 10'–0" ABOVE FINISHED GRADE. COORDINATE EXACT LOCATION WITH PRE–FABRICATED POLE OPENING. PROVIDE STAINLESS STEEL MOUNTING HARDWARE.

(3) PROVIDE AN ON–OFF SELECTOR SWITCH CONTROL STATION IN A PAD–LOCKABLE JUNCTION BOX. MOUNT JUNCTION BOX OVER PRE–FABRICATED POLE OPENING. PROVIDE STAINLESS STEEL MOUNTING HARDWARE AS REQUIRED. PROVIDE 2~#14 FROM CONTROL STATION TO ASSOCIATED SPORTS LIGHTING CONTROLLER. INSTALL WIRE THROUGH POLE AND IN EXISTING CONDUIT.

(4) PROVIDE NEW CONDUIT OR EXTEND EXISTING CONDUIT STUB (WHERE APPLICABLE) FROM HANDHOLE TO LIGHT POLE. SAWCUT ASPHALT WITH STRAIGHT, PARALLEL LINES WHERE REQUIRED. PATCH SAWCUTS TO MATCH EXISTING WITH HOT PATCH ASPHALT.

(5) IN ADDITION TO POLE–TOP LIGHT FIXTURE ASSEMBLY, PROVIDE WALK–OFF LIGHT FIXTURE AS MANUFACTURED BY BETA, MODEL FLD–EDG–40–AA–06–D–UL–BZ–525–40K. PROVIDE MOUNTING HARDWARE AS REQUIRED TO MOUNT FIXTURE OVER PRE–FABRICATED POLE OPENING. PROVIDE 90° CONDUIT ELBOW OUT OF HUB FOR FIXTURE AIMING. POWER EACH ZONE'S WALK–OFF LIGHT FIXTURES FROM MPZ–A THROUGH LIGHTING CONTACTORS IN LCP–C. ROUTE WIRING FROM MPZ–A THROUGH LCP–C IN EXISTING CONDUIT AND THROUGH POLE TO EACH FIXTURE.

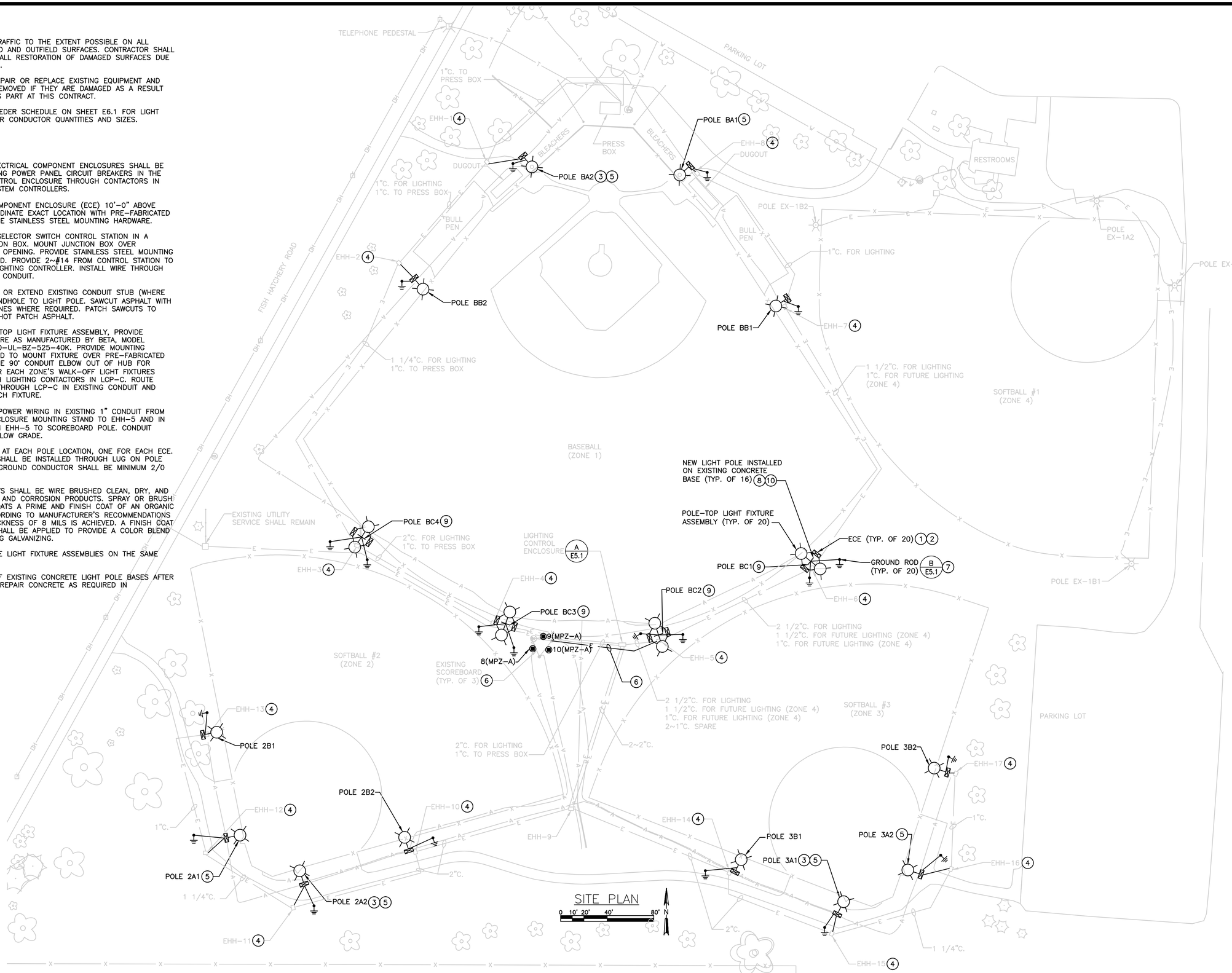
(6) INSTALL SCOREBOARD POWER WIRING IN EXISTING 1" CONDUIT FROM LIGHTING CONTROL ENCLOSURE MOUNTING STAND TO EHH–5 AND IN NEW 1" CONDUIT FROM EHH–5 TO SCOREBOARD POLE. CONDUIT SHALL ENTER POLE BELOW GRADE.

(7) PROVIDE GROUND ROD AT EACH POLE LOCATION, ONE FOR EACH ECE. GROUND CONDUCTOR SHALL BE INSTALLED THROUGH LUG ON POLE CONTINUOUS TO ECE. GROUND CONDUCTOR SHALL BE MINIMUM 2/0 BARE COPPER.

(8) EXISTING ANCHOR BOLTS SHALL BE WIRE BRUSHED CLEAN, DRY, AND FREE OF OIL, GREASE, AND CORROSION PRODUCTS. SPRAY OR BRUSH APPLY IN MULITPLE COATS A PRIME AND FINISH COAT OF AN ORGANIC ZINC–RICH PAINT ACCORDING TO MANUFACTURER'S RECOMMENDATIONS UNTIL A DRY FILM THICKNESS OF 8 MILS IS ACHIEVED. A FINISH COAT OF ALUMINUM PAINT SHALL BE APPLIED TO PROVIDE A COLOR BLEND WITH THE SURROUNDING GALVANIZING.

(9) PROVIDE TWO SEPARATE LIGHT FIXTURE ASSEMBLIES ON THE SAME POLE.

(10) OBSERVE CONDITION OF EXISTING CONCRETE LIGHT POLE BASES AFTER LIGHT POLE REMOVAL. REPAIR CONCRETE AS REQUIRED IN SPECIFICATIONS.



NO.	REVISIONS	DATE:

ELECTRICAL SITE PLAN

BOWMAN LIGHTING IMPROVEMENTS - PHASE TWO
CITY OF MADISON
MADISON, WISCONSIN

JOB NO. 1020.076

PROJECT MGR. DAVID GOHDES

STRAND ASSOCIATES®

SHEET 4 **E1.0**

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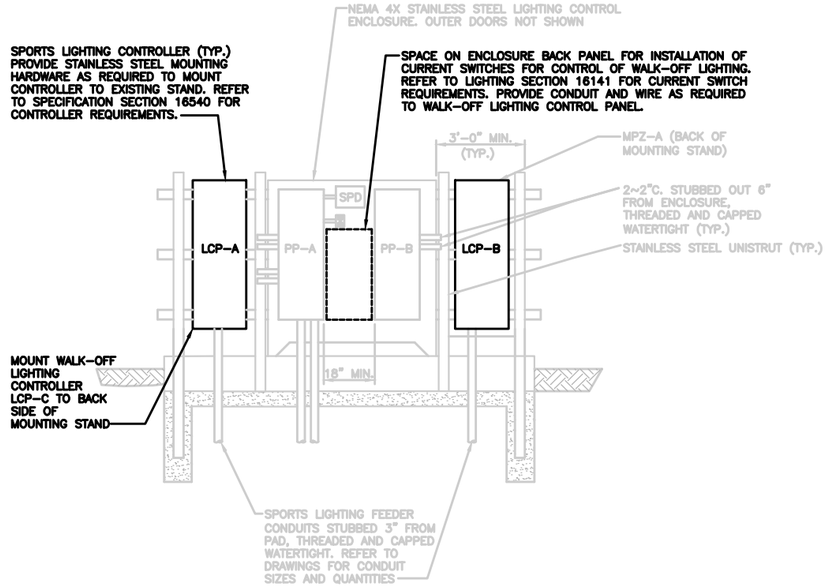

A E5.1 LIGHTING CONTROL ENCLOSURE/MOUNTING STAND ELEVATION
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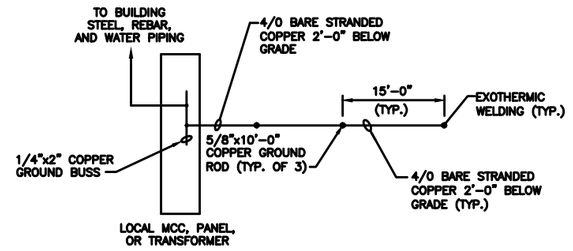


B E5.1 GROUND GRID
NO SCALE

DATE:
REVISIONS
NO.

ELECTRICAL DETAILS

BOWMAN LIGHTING IMPROVEMENTS - PHASE TWO
CITY OF MADISON
MADISON, WISCONSIN

JOB NO.
1020.076

PROJECT MGR.
DAVID GOHDES

STRAND ASSOCIATES®

SHEET
5
E5.1

EXISTING POWER PANEL PP-A (1)

Service: 277/480V, 3Φ, 4W — Enclosure: NEMA 1 — Mounting: Surface
Main Breaker: 400A MLO — Main Bus: Copper
Location: Lighting Control Enclosure — SCIC: 22 kAIC

Room Number/Description	Amps	Poles	Cct. #	Phase A	Phase B	Phase C	Phase A	Phase B	Phase C	Cct. #	Poles	Amps	Room Number/Description
			1	4096			4096			2			
Lighting Feeder - Pole BA1	20	3	3		4096			4096		4	3	20	Lighting Feeder - Pole BC4 (Zone 1)
			5			4096			4096	6			
			7	4096						8			
Lighting Feeder - Pole BA2	20	3	9		4096					10	3	20	Future Lighting Feeder - Pole 1A1
			11			4096				12			
			13	6145						14			
Lighting Feeder - Pole BB1	35	3	15		6145					16	3	20	Future Lighting Feeder - Pole 1A2
			17			6145				18			
			19	6145						20			
Lighting Feeder - Pole BB2	35	3	21		6145					22	3	40	Future Lighting Feeder - Pole 1B1
			23			6145				24			
			25	4096						26			
Lighting Feeder - Pole BC1 (Zone 1)	20	3	27		4096					28	3	40	Future Lighting Feeder - Pole 1B2
			29			4096				30			
			31	4096			0			32			
Lighting Feeder - Pole BC2 (Zone 1)	20	3	33		4096			0		34	3	30	SPD
			35			4096			0	36			
			37	4096						38	-	-	Space
Lighting Feeder - Pole BC3 (Zone 1)	20	3	39		4096					40	-	-	Space
			41			4096				42	-	-	Space
Total Load per Phase per Side (VA)				32770	32770	32770	4096	4096	4096				

Total Load Phase A (VA)	36866	VA	-Panel has sub-feed lugs that feed Panel PP-B.	Total Connected Load (A)	133	A
Total Load Phase B (VA)	36866	VA		Total Connected Load + 25%	166	A
Total Load Phase C (VA)	36866	VA		Spare 25%	42	A
Total Connected Load (VA)	110598	VA		Feeder Load	208	A

EXISTING POWER PANEL PP-B

Service: 277/480V, 3Φ, 4W — Enclosure: NEMA 1 — Mounting: Surface
Main Breaker: 400A MLO — Main Bus: Copper
Location: Lighting Control Enclosure — SCIC: 22 kAIC

Room Number/Description	Amps	Poles	Cct. #	Phase A	Phase B	Phase C	Phase A	Phase B	Phase C	Cct. #	Poles	Amps	Room Number/Description
			1	4096			4096			2			
Lighting Feeder - Pole BC3 (Zone 2)	20	3	3		4096			4096		4	3	20	Lighting Feeder - Pole BC2 (Zone 3)
			5			4096			4096	6			
			7	4096			2048			8			
Lighting Feeder - Pole BC4 (Zone 2)	20	3	9		4096			2048		10	3	20	Lighting Feeder - Pole 3A1
			11			4096			2048	12			
			13	2048			2048			14			
Lighting Feeder - Pole 2A1	20	3	15		2048			2048		16	3	20	Lighting Feeder - Pole 3A2
			17			2048			2048	18			
			19	2048			4096			20			
Lighting Feeder - Pole 2A2	20	3	21		2048			4096		22	3	30	Lighting Feeder - Pole 3B1
			23			2048			4096	24			
			25	4096			4096			26			
Lighting Feeder - Pole 2B1	30	3	27		4096			4096		28	3	30	Lighting Feeder - Pole 3B2
			29			4096			4096	30			
			31	4096			0			32	-	-	Space
Lighting Feeder - Pole 2B2	30	3	33		4096			7680		34	2	40	Press Box Load Center
			35			4096			7680	36			
			37	4096			6240			38	2	60	MPZ-A
Lighting Feeder - Pole BC1 (Zone 3)	20	2	39		4096			6240		40			
			41			4096			0	42	-	-	Space
Total Load per Phase per Side (VA)				24576	24576	24576	22624	30304	24064				

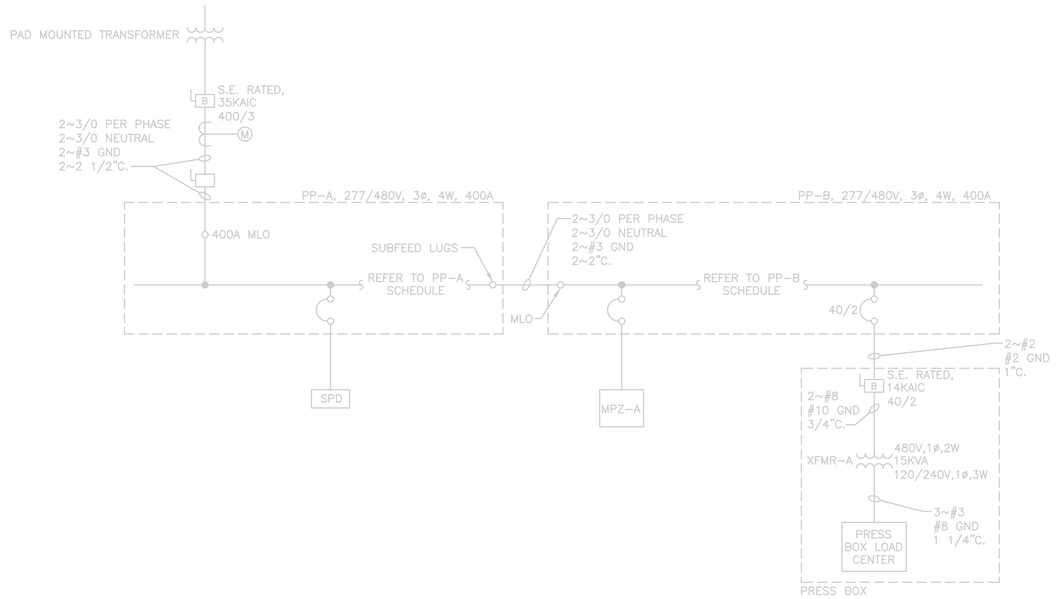
Total Load Phase A (VA)	47200	VA		Total Connected Load (A)	181	A
Total Load Phase B (VA)	54880	VA		Total Connected Load + 25%	227	A
Total Load Phase C (VA)	48640	VA		Spare 25%	57	A
Total Connected Load (VA)	150720	VA		Feeder Load	283	A

EXISTING MINI POWER ZONE MPZ-A

Service: 480Y/120/240V, 1Φ, 3W — Enclosure: NEMA 3R — Mounting: Surface
Main Breaker: 60A Primary MCB, 80A Secondary MCB — Main Bus: Copper
Location: Lighting Control Enclosure Mounting Stand — SCIC: 25 kAIC

Room Number/Description	Amps	Poles	Cct. #	Phase A	Phase B	Phase A	Phase B	Cct. #	Amps	Poles	Room Number/Description
LCP-A	**20****	1	1+	750		180		2	20	1	Receptacle in Lighting Control Enclosure
LCP-B	**20****	**1**	**3+**		750		750	**4+**	**20****	**1**	**LCP-C**
Walk-Off Lighting Baseball	**20****	**1**	**5+^**	250		250		**6+^**	**20****	**1**	**Walk-Off Lighting Softball 2**
Walk-Off Lighting Softball 3	**20****	**1**	**7+^**		250		2800	**8+**	**30****	**1**	**Scoreboard Softball 2**
Scoreboard Baseball	**30****	**1**	**9+**	2800		2800		**10+**	**30****	**1**	**Scoreboard Softball 3**
Space		1	11		0		0	12		1	Space
Space		1	13	0		0		14		1	Space
Space		1	15		0		0	16		1	Space
Space		1	17	0		0		18		1	Space
Space		1	19		0		0	20		1	Space
Space		1	21	0		0		22		1	Space
Space		1	23		0		0	24		1	Space
Total Load per Phase per Side (VA)				3800	1000	3230	3550				

Total Load Phase A (VA)	7030	VA	**+Provide branch circuit conduit and wiring.**	Total Connected Load (A)	48	A
Total Load Phase B (VA)	4550	VA	**^Minimum conductor size #8.**	Total Connected Load + 25%	60	A
Total Connected Load (VA)	11580	VA	****Provide new circuit breaker.**	Spare 25%	15	A
				Feeder Load	75	A



EXISTING ELECTRICAL ONE-LINE DIAGRAM
NO SCALE

KEY NOTES:

(1) REORGANIZE EXISTING CIRCUIT BREAKERS IN POWER PANEL AS REQUIRED FOR LIGHTING FEEDERS AS SHOWN IN THE LIGHTING FEEDER SCHEDULE BELOW.

LIGHTING FEEDER SCHEDULE

Zone	Pole No.	Lighting Control Panel No.	Lighting Control Panel Contactor	Fixture Assembly Height Above Playing Surface	Feeder Conductor Quantities and Sizes*
1: Baseball Field	BA1	LCP-A	C1	80'	3~#4, #8 GND
1: Baseball Field	BA2	LCP-A	C2	80'	3~#8, #10 GND
1: Baseball Field	BB1	LCP-A	C3	80'	3~#4, #8 GND
1: Baseball Field	BB2	LCP-A	C4	80'	3~#4, #8 GND
1: Baseball Field	BC1	LCP-A	C5	80'	3~#8, #10 GND
1: Baseball Field	BC2	LCP-A	C6	80'	3~#8, #10 GND
1: Baseball Field	BC3	LCP-A	C7	80'	3~#8, #10 GND
1: Baseball Field	BC4	LCP-A	C8	80'	3~#8, #10 GND
2: Softball Field #2	BC3	LCP-B	C13	80'	3~#8, #10 GND
2: Softball Field #2	BC4	LCP-B	C14	80'	3~#8, #10 GND
2: Softball Field #2	2A1	LCP-B	C15	60'	3~#8, #8 GND
2: Softball Field #2	2A2	LCP-B	C16	60'	3~#8, #8 GND
2: Softball Field #2	2B1	LCP-B	C17	60'	3~#6, #8 GND
2: Softball Field #2	2B2	LCP-B	C18	60'	3~#6, #8 GND
3: Softball Field #3	BC1	LCP-B	C19	80'	3~#8, #10 GND
3: Softball Field #3	BC2	LCP-B	C20	80'	3~#8, #10 GND
3: Softball Field #3	3A1	LCP-B	C21	60'	3~#8, #10 GND
3: Softball Field #3	3A2	LCP-B	C22	60'	3~#8, #10 GND
3: Softball Field #3	3B1	LCP-B	C23	60'	3~#6, #8 GND
3: Softball Field #3	3B2	LCP-B	C24	60'	3~#6, #8 GND

NOTES:
1. REFER TO DRAWING E1.0 FOR EXISTING CONDUIT SIZES AND ROUTING.
2. ZONE 4 DESIGNATION AND CONTACTORS C9 THROUGH C12 IN LCP-A RESERVED FOR FUTURE SOFTBALL FIELD #1 WIRING.

DATE:
REVISIONS
NO.

ELECTRICAL ONE-LINE DIAGRAM AND SCHEDULES
BOWMAN LIGHTING IMPROVEMENTS - PHASE TWO
CITY OF MADISON
MADISON, WISCONSIN

JOB NO. 1020.076
PROJECT MGR. DAVID GOHDES

STRAND ASSOCIATES®

SHEET 6
E6.1