OAKCREEK WISCONSIN

Meeting Date: April 11, 2023

Item No. **7d**

PLAN COMMISSION REPORT

Proposal:	Lighting Plan Review – MATC Baseball Field
Description:	Lighting plan review for the existing MATC baseball field.
Applicant(s):	Ray Zukauskas, MATC
Address(es):	6665 S. Howell Ave. (1st Aldermanic District)
Suggested Motion:	That the Plan Commission approves the plans submitted by Ray Zukauskas, MATC, for MATC baseball field on the property at 6665 S. Howell Ave. with the following conditions: 1. That all relevant Code requirements remain in effect. 2. That all required permits and approvals are obtained prior to installation. 3. That all final plans are submitted in digital format for review by the Department of Community Development prior to the submission of permit applications.

Owner(s):	MILWAUKEE AREA VOC TECH ADULT EDUC DISTRICT
Tax Key(s):	718-9961-002
Lot Size(s):	109.883 ac
Current Zoning District(s):	I-1, Institutional
Overlay District(s):	CU
Wetlands:	☒ Yes ☐ No
Floodplain:	☒ Yes ☐ No
Comprehensive Plan:	Public/Semi-Public

Background:

The Applicant is requesting approval for a new lighting system for the existing baseball field on the property at 6665 S. Howell Ave. As proposed, six (6) poles would be installed around the field supporting 60 fixtures. Each pole would be 70 – 80 feet in height, with seven (7) of the 60 fixtures installed at a height of 16 feet.

Due to the nature of the fixture, the proposed color temperature is 5,700 Kelvins. Per Sec. 17.0509(b)(1)(b)(1), the maximum color temperature of fixtures in nonresidential districts is 5,000 Kelvins.

The Applicant's consultants provided the following information regarding the proposed pole heights and color temperatures of the fixtures:

1. Height – Plans have been submitted to the FAA as requested by Ryan Donnelly & Kim Berry at Milwaukee County General Mitchell International Airport.

2. Color Temperature - Light fixtures are 5,700K, which is standard for this type of college level ball field and is installed as such in many other locations in the Milwaukee area. Musco said they could change the light fixture to the next standard level down, which would be 4,500K; however, the field will have more of a yellow look, and the light output of the current design may be reduced, requiring potential re-design (5,000K is not a standard Kelvin for this type of light fixture).

The existing field is at the southwest corner of the property. No residentially-zoned properties are within the area of the proposal; however, the lights will be the tallest structures on the property. It will be at the Plan Commission's discretion whether the proposal qualifies for modifications from the lighting portion of the Zoning Code.

Options/Alternatives: The Plan Commission has the discretion to approve the plans as presented, approve with specified conditions, or disapprove the proposal. Should the request not be approved, Plan Commissioners must provide the Code Sections upon which the denial is based so that the Applicant may revise and resubmit.

Respectfully submitted:

Douglas Seymour, AICP
Director of Community Development

Prepared:

Kari Papelbon, CFM, AICP
Senior Planner

Attachments:

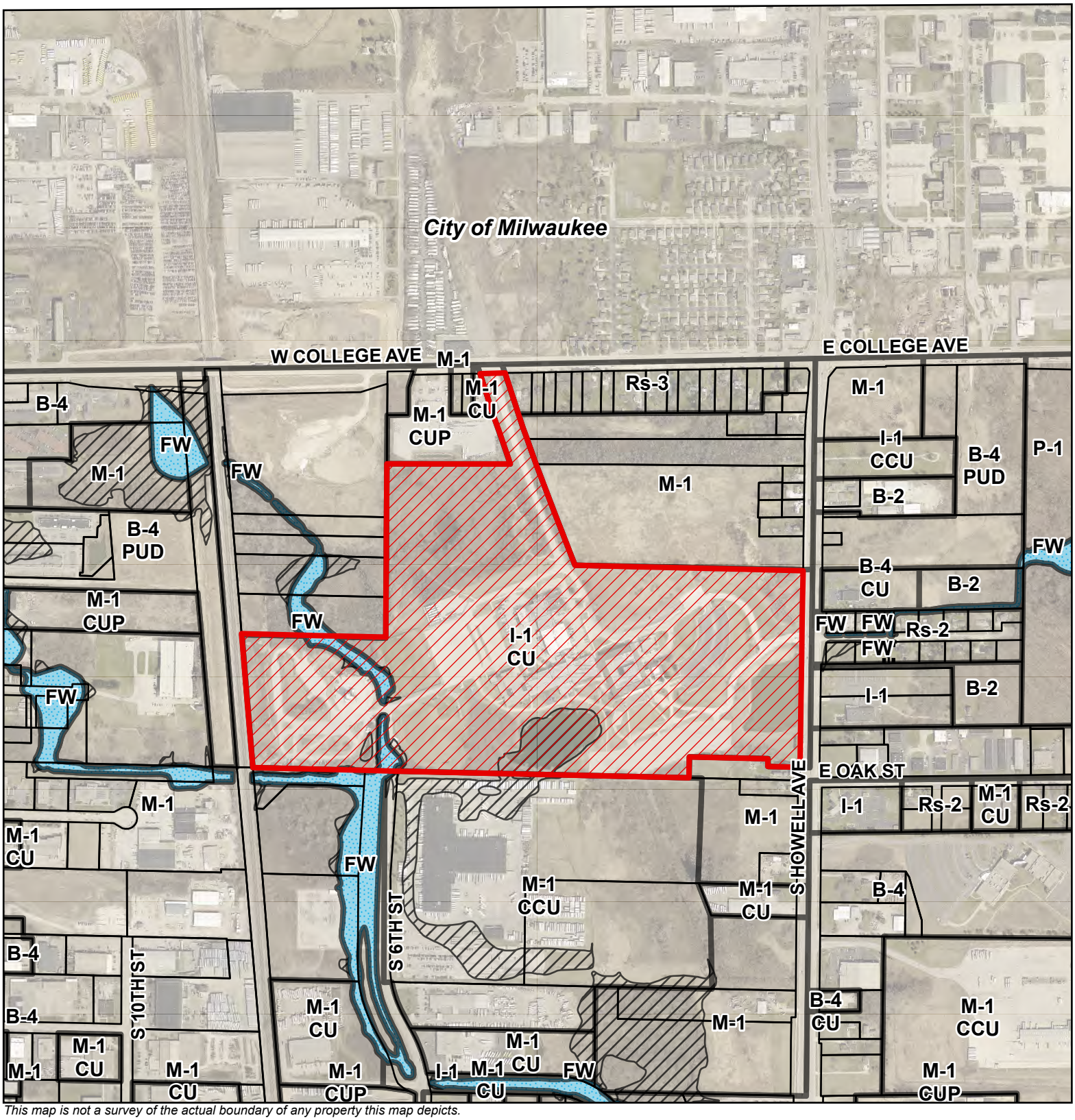
Location Map

Narrative (2 pages)

Plans (13 pages)

Lighting Cut Sheets (11 pages)

LOCATION MAP



This map is not a survey of the actual boundary of any property this map depicts.

OAKCREEK WISCONSIN

Community Development

0 0.05 0.1 0.2 Miles

N

Legend

- Zoning
- Official Map
- Floodway
- Flood Fringe
- 6665 S. Howell Ave.

OCC BASEBALL FIELD LIGHTING
OAK CREEK CAMPUS
MILWAUKEE AREA TECHNICAL COLLEGE
OAK CREEK, WISCONSIN

MATC BID REFERENCE NO: 2023-001

MATC PROJECT NO: 2023319.01

INSPEC PROJECT NO: 301845

ENGINEER / ARCHITECT

Project Manager: Dan Roehrdanz, P.E.

WISCONSIN — DANIEL C. ROEHRDANZ — 34171 — CUDAHY, WI — PROFESSIONAL ENGINEER

02-17-2023

INSPEC

INSPEC, INC.
126 North Jefferson St,
Suite 120
Milwaukee, WI 53202
Ph. 414-744-6962

DRAWINGS C1 THROUGH C2

ELECTRICAL AND PLUMBING CONSULTANT

Project Manager: Heather St. Ledger, P.E.

Ring & DuChateau , LLP
17400 West Capitol Drive
Brookfield, WI 53045
Ph. 414-778-1700

WISCONSIN — HEATHER ST. LEDGER — E-44873 — MILWAUKEE, WI — PROFESSIONAL ENGINEER

02/17/2023

DRAWINGS E01 THROUGH E10

LIST OF DRAWINGS

LIST OF BASE BIDS AND ALTERNATES

SUMMARY OF WORK

1. BASE BID: ALL WORK SHOWN MINUS THE ALTERNATES. BASE BID WORK GENERALLY INCLUDES SPORTSFIELD LIGHTING SYSTEM, ALL COMPONENTS, AND ALL ASSOCIATED WORK. BASE BID INCLUDES LOCKING ACCESS DOOR INSTALLATION FOR ELECTRICAL ROOM.
2. MANDATORY ALTERNATE 1: INSTALL SPEAKER SYSTEM ON THE LIGHT POLES, INSTALL SOUND SYSTEM COMPONENTS, AND ALL ASSOCIATED WORK.

GENERAL PROJECT NOTES

1. VERIFY MEASUREMENTS AND CONDITIONS ON THE PROJECT.
2. REVIEW SPECIFICATIONS FOR INSTRUCTIONS NOT SHOWN ON DRAWINGS.
3. EXISTING AND NEW MATERIALS COMMON TO SEVERAL DETAILS MAY BE NOTED ON ONLY ONE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SAFE WORKING CONDITIONS ON AREAS FOR EMPLOYEES AND OTHER PERSONS AT THE SITE.
5. CONTRACTOR TO PROVIDE EMERGENCY VEHICLE ACCESS AT ALL TIMES.
6. CONTRACTOR TO PERFORM ALL CONSTRUCTION STAKING. CONTRACTOR SHALL SET CONTROL POINTS AND BENCHMARKS FOR CONSTRUCTION.

CIVIL SITE PLAN LEGEND:

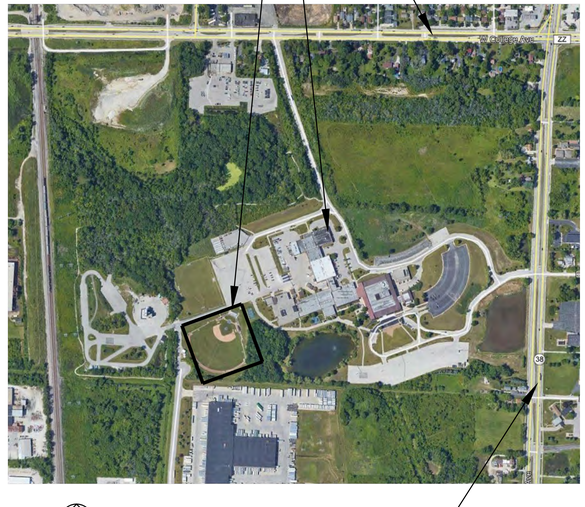
	EXISTING CONSTRUCTION
	NEW CONSTRUCTION
	PROPERTY LINE
	EXISTING DRAINAGE SWALE
	NEW DRAINAGE SWALE
x x	EXISTING FENCE
x x	NEW FENCE
	PAVEMENT STRIPING
	EXISTING BUILDING
	GRADING AND RESTORATION LIMITS
731	EXISTING CONTOUR
729	NEW CONTOUR
731.00	NEW SPOT ELEVATION - FINISHED GRADE
730.15 SG	NEW SUBGRADE ELEVATION FOR SYNTHETIC TURF AREAS ONLY
735.80	EXISTING SPOT ELEVATION
STORM STORM	EXISTING STORM SEWER
NEW 4" PVC STORM	NEW STORM SEWER
ELEC ELEC	EXISTING ELECTRIC LINE
SAN SAN	EXISTING SANITARY SEWER
GAS GAS	EXISTING GAS LINE
TELE TELE	EXISTING TELEPHONE LINE
FIBER FIBER	EXISTING FIBER OPTIC LINE
WATER WATER	EXISTING WATER LINE
CABLE TV	EXISTING CABLE TV LINE
S	SIGN
LP	EXISTING LIGHT POLE
FP	EXISTING FLAG POLE
	EXISTING DECIDUOUS TREE
	EXISTING EVERGREEN TREE

PROJECT LOCATION MAP

WEST COLLEGE AVENUE

MATC - OAK CREEK CAMPUS
6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

PROJECT SITE



SOUTH HOWELL AVENUE

NORTH

INSPEC
126 North Jefferson Street
Suite 120
Milwaukee, WI 53202
Ph. 414-744-6962

Consultants:

Signature:

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
FINAL REVIEW SET	02/06/2023	
BID SET	02/17/2023	

Client:

MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

TITLE SHEET, PARTICIPANTS,

LIST OF DRAWINGS, SUMMARY OF WORK,

GENERAL PROJECT NOTES, AND

PROJECT LOCATION MAP

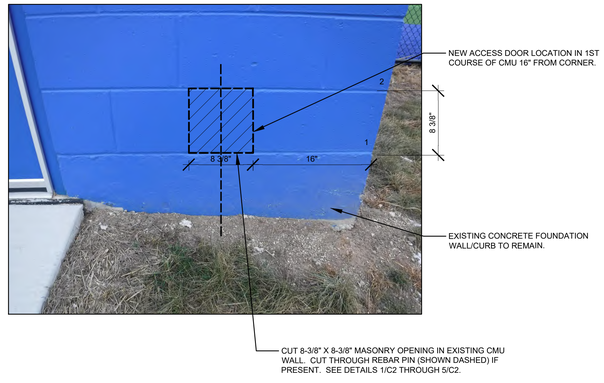
DATE:	02/17/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	DR
DRAWN BY:	TR/DR
CHECKED BY:	DR

Sheet No.:

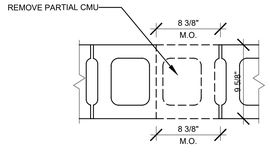
C1

2/15/2023 5:35 PM DAN ROEHRDANZ
C:\Users\DanRoehrdanz\Inspec\Inspec - IL-WI\PROJECTS\MATC\301845_OCC Baseball Field_Lighting System\2-Design\CAD Files\MATC Baseball Lights Turf - Title sheet and Details 2023-02-15.dwg

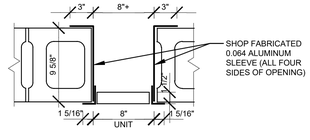
1 C2 FIRST BASE DUGOUT ELECTRICAL ROOM ACCESS DOOR INSTALLATION LOCATION
NO SCALE



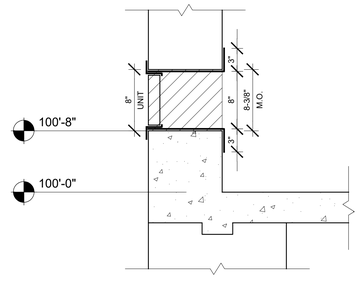
2 C2 FIRST BASE DUGOUT ELECTRICAL ROOM PARTIAL ELEVATION - REMOVAL
1-1/2" = 1'-0"



3 C2 REMOVAL PLAN OF LOCKING ACCESS DOOR INSTALLATION
1-1/2" = 1'-0"



4 C2 PLAN VIEW OF LOCKING ACCESS DOOR INSTALLATION
1-1/2" = 1'-0"



5 C2 SECTION VIEW OF LOCKING ACCESS DOOR INSTALLATION
1-1/2" = 1'-0"

SPECIFICATIONS

LT-4000 8" X 8" LOCKING ALUMINUM ACCESS DOOR BY ACCESS DOORS, OR EQUAL

DOOR/DOOR FRAME: ALUMINUM: 0.064 DOOR AND 0.080 FRAME FLUSH TO EDGE OF FRAME, 1-5/16" MITERED ALUMINUM EXTRUSION FLANGE WITH 1-1/2" DEEP MOUNTING FRAME. MILL FINISH.

HINGE: DOORS WITH WIDTH 24" OR LESS TO HAVE CONCEALED PIN HINGE.

INSULATION: 3/4" TYPE 3 EXPANDED POLYSTYRENE (EPS) FOIL LINED INSULATION, WITH A 3.18 R VALUE.

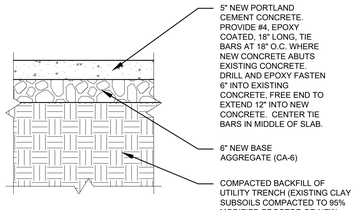
GASKET: 1/8" X 3/8" CLOSED NEOPRENE GASKETING.

LATCHES/LOCKS: CYLINDER LOCK AND KEY.

INSTALL LOCKING ALUMINUM ACCESS DOOR PER MANUFACTURER'S INSTRUCTIONS. SECURELY FASTEN FLANGES OF ACCESS DOOR FRAME TO EXISTING CMU MASONRY BLOCK.

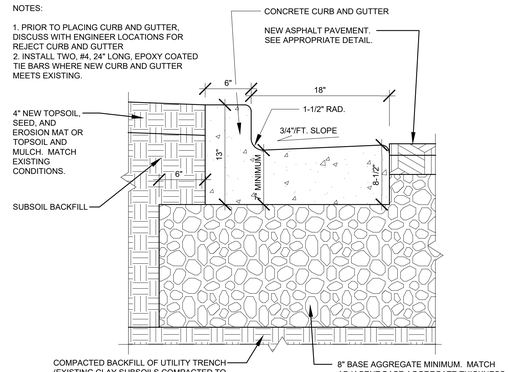
SHOP FABRICATED ALUMINUM SLEEVE: FULL SURROUND 0.064 MILL ALUMINUM SLEEVE WITH MITERED INSIDE 3" FLANGE. MILL FINISH.

NOTE:
1. CONTROL JOINT SPACING SHALL ME A MAXIMUM OF 10'-0" ON CENTER EACH WAY. MATCH EXISTING JOINT LAYOUT WHENEVER POSSIBLE. MATCH SIDEWALK WIDTH IF UNDER 10'-0" WIDE.

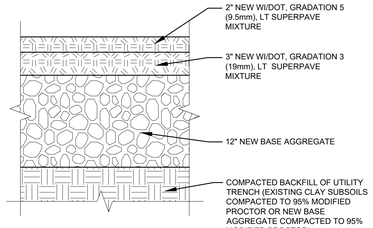


6 C2 CONCRETE SIDEWALK REPAIR DETAIL
NO SCALE

NOTES:
1. PRIOR TO PLACING CURB AND GUTTER, DISCUSS WITH ENGINEER LOCATIONS FOR REJECT CURB AND GUTTER
2. INSTALL TWO, #4, 24" LONG, EPOXY COATED TIE BARS WHERE NEW CURB AND GUTTER MEETS EXISTING.



7 C2 B6-18 CONCRETE CURB AND GUTTER CONSTRUCTION DETAIL
NO SCALE



8 C2 PAVEMENT REPAIR DETAIL
NO SCALE

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MINNEAPOLIS | MILWAUKEE | CHICAGO

Consultants:

Signature:

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
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MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

DETAILS FOR LOCKING ACCESS DOOR

FOR ELECTRICAL ROOM

AND SITE RESTORATION DETAILS

DATE:	02/17/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	DR
DRAWN BY:	TR/DR
CHECKED BY:	DR

Sheet No.:

C2

SYMBOLS:

(ALL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWINGS)

- LIGHTING FIXTURE - CEILING MOUNTED, RECESSED, SURFACE, SUSPENDED
- LIGHTING FIXTURE - WALL MOUNTED
- INDUSTRIAL LIGHT
- LIGHTING FIXTURE - CEILING SURFACE, SUSPENDED, BOLLARD
- LIGHTING FIXTURE - WALL SURFACE
- OUTDOOR POLE MOUNTED FIXTURE - SEE LIGHTING POLE AND FIXTURE SCHEDULE

K a — SINGLE POLE SWITCH - TOGGLE TYPE
- a: SWITCH DESIGNATION
- K: SWITCH TYPE
  - (2) DOUBLE POLE
  - (3) 3 WAY
  - (4) 4 WAY
  - (K) KEY OPERATED
  - (P) WITH PILOT LIGHT INDICATION
  - (T) TIMER SWITCH

DLS — INDICATES DUAL LEVEL SWITCHING - SEE DUAL LEVEL SWITCHING DETAIL

- SINGLE POLE TOGGLE SWITCH WITH DUPLEX RECEPTACLE COMBINATION
- WALL BOX DIMMER
- SURGICAL LIGHT CONTROL
- MOMENTARY CONTACT SWITCH

X [L] LOW VOLTAGE SWITCH STATION - SEE LOW VOLTAGE SWITCHING STATION SCHEDULE
- "X" DENOTES SPECIFIC UNIT

- [D] DIGITAL DISTRIBUTED SYSTEM LOW VOLTAGE SWITCH STATION - SEE DIGITAL LOW VOLTAGE SWITCH STATION SCHEDULE
- [T] TIME CLOCK - SEE TIME CLOCK SCHEDULE
- [C] CONTACTOR - SEE CONTACTOR SCHEDULE
- [PC] OUTDOOR PHOTO-CELL
- [W] WIRELESS SWITCH

X/X,a [OS] OCCUPANCY SENSOR - SHOWN WITHIN A SPACE ARE TO CONTROL ALL THE LIGHTING WITHIN THAT SPACE, INCLUDING BUT NOT LIMITED TO GENERAL AMBIENT LIGHTING AND UNDERCABINET TASK LIGHTING.
- SWITCH DESIGNATION
- DENOTES THE FOLLOWING:
  - (HV) HVAC INTERFACE
  - (D) DIGITAL SENSOR
- "X" DENOTES SPECIFIC TYPE - SEE SPECIFICATIONS

X/X,a [DL] DAYLIGHT SENSOR
- SWITCH DESIGNATION
- DENOTES THE FOLLOWING
  - (D) DIGITAL SENSOR
- "X" DENOTES SPECIFIC TYPE - SEE SPECIFICATIONS

X [S] SWITCH STATION - SEE SWITCH STATION SCHEDULE
- "X" DENOTES SPECIFIC UNIT

X [EC] EMERGENCY LIGHTING CONTROL UNIT - SEE SPECIFICATIONS AND DETAILS FOR TYPE AND APPLICATION
- "X" DENOTES SPECIFIC TYPE

MLI 1 — MINIATURE LIGHTING INVERTER - SEE MINIATURE LIGHTING INVERTER SCHEDULE

LCP 1 — LIGHTING CONTROL PANEL

DUPLEX RECEPTACLE
- (DD) DOUBLE DUPLEX
- (GFI) GROUND FAULT INTERRUPTING
- (GFB) GROUND FAULT INTERRUPTING VIA CIRCUIT BREAKER
- (IG) ISOLATED GROUND
- (SH) SWITCHED TOP HALF
- (TD) TRIPLE DUPLEX
- (TR) TAMPER RESISTANCE
- (USB) DUPLEX RECEPTACLE WITH USB CHARGING
- (WP) WEATHERPROOF WITH GFI RECEPTACLE

DUPLEX RECEPTACLE - MOUNTED ABOVE COUNTER BACKSPLASH

46" — DUPLEX RECEPTACLE - MOUNTED AT SPECIAL MOUNTING HEIGHT INDICATED ON DRAWING OR AS INDICATED IN THE ASSOCIATED ARCHITECTURAL ELEVATION.
- INDICATES MOUNTING HEIGHT WHEN SHOWN.

EQUIPMENT CONNECTION: SPECIAL PURPOSE RECEPTACLE OR MOTOR CONNECTION - SEE EQUIPMENT SCHEDULE

1 / E1
- INDICATES DETAIL DESIGNATION
- SEE DETAIL SYMBOL
- INDICATES SHEET NUMBER

KEYED NOTE SYMBOL

- #X TELECOMMUNICATIONS OUTLET
- #X TELECOMMUNICATIONS OUTLET MOUNTED ABOVE COUNTER BACKSPLASH
- XX,#X TELECOMMUNICATIONS OUTLET MOUNTED WITHIN ENCLOSURE
- XX,#X TELECOMMUNICATIONS OUTLET, SPECIAL MOUNTING HEIGHT
  - INDICATES OUTLET TYPE. SEE THE TELECOMMUNICATIONS HORIZONTAL CABLING SCHEDULE FOR ADDITIONAL INFORMATION.
  - # INDICATES OUTLET JACK AND CABLE QUANTITY
  - INDICATES SPECIAL OUTLET MOUNTING HEIGHT, WHEN SHOWN.
    - (CLG) MOUNTED IN OR ABOVE CEILING
    - (F) MOUNTED IN FLOOR BOX SHOWN ON POWER PLAN
    - (M) MOUNTED IN MULTI-OUTLET ASSEMBLY SHOWN ON POWER PLAN
    - (P) MOUNTED IN POKE-THRU SHOWN ON POWER PLAN
    - (S) SPECIAL MOUNTING HEIGHT AS INDICATED IN THE ASSOCIATED ARCHITECTURAL ELEVATIONS.
    - (TP) MOUNTED IN TELEPOWER POLE SHOWN ON POWER PLAN
    - (T) MOUNTED IN AV/TELEVISION BOX SHOWN ON POWER PLAN

W — WALL PHONE OUTLET. SEE THE TELECOMMUNICATIONS HORIZONTAL CABLING SCHEDULE FOR ADDITIONAL INFORMATION

SYSTEMS EQUIPMENT CABINET (X / X)
- DENOTES THE FOLLOWING:
  - (DB) DOOR BELL
  - (CA) CABLE TELEVISION
  - (CB) CODE BUTTON
  - (CC) CLOSED CIRCUIT TELEVISION
  - (CLK) CLOCK SYSTEM
  - (DV) DIGITAL TELEVISION
  - (FA) FIRE ALARM
  - (HP) HOUSE PAGING
  - (IC) INTERCOM
  - (IS) INFANT SECURITY
  - (LM) LOCAL MUSIC
  - (LP) LOCAL PAGING
  - (MA) MASTER ANTENNAE TELEVISION
  - (MS) MUSIC SYSTEM
  - (NC) NURSE CALL
  - (P1) PROCEDURE ROOM - TWO WAY COMMUNICATION
  - (P2) PROCEDURE ROOM - MUSIC SYSTEM
  - (PA) PUBLIC ADDRESS
  - (SA) SECURITY ACCESS
  - (SC) SYSTEM CLOCK
  - (TC) TELECOMMUNICATIONS
  - (TV) TELEVISION
  - (RA) RESCUE ASSISTANCE
  - (VD) VOICE DATA
  - (WR) WIRED RADIO
- DENOTES THE FOLLOWING:
  - (AN) ANNUNCIATOR
  - (BB) BACKBOARD
  - (CP) CONTROL PANEL
  - (ER) EQUIPMENT RACK
  - (TC) TERMINAL CABINET
  - (TP) TRANSPONDER PANEL
  - (WF) WALL FIELD

XX/XX (P) PAGING AND SOUND SYSTEM
- DENOTES THE FOLLOWING:
  - (DB) DOOR BELL
  - (DP) DEPARTMENTAL PAGING
  - (HP) HOUSE PAGING
  - (HW) COMBINATION HOUSE PAGING & WIRED RADIO
  - (LM) LOCAL MUSIC
  - (PC) PROCEDURE ROOM - TWO WAY COMMUNICATION
  - (PM) PROCEDURE ROOM - MUSIC SYSTEM
  - (TS) TELEVISION SOUND REINFORCEMENT SYSTEM
  - (WR) WIRED RADIO
- DENOTES THE FOLLOWING:
  - (CR) CEILING MOUNTED RECESSED SPEAKER
  - (CS) CEILING MOUNTED SURFACE SPEAKER
  - (FS) FOOT SWITCH
  - (MC) MICROPHONE JACK - CEILING MOUNTED
  - (MD) MICROPHONE JACK - DESK MOUNTED
  - (MF) MICROPHONE JACK - FLOOR MOUNTED
  - (MW) MICROPHONE JACK - WALL MOUNTED
  - (RE) RE-ENTRANT TYPE HORN
  - (VC) VOLUME CONTROL
  - (VS) VOLUME CONTROL WITH 6 POSITION STATION SELECTOR
  - (WR) WALL MOUNTED RECESSED SPEAKER
  - (WS) WALL MOUNTED SURFACE SPEAKER

ELECTRICAL CIRCUITING:

LIGHTING FIXTURES:

A 1a,X-3b — A X-3b,1a — A 1a,3b — A X-3* — A X-3* (X-*)

- INDICATES FIXTURE TYPE (TYPICAL)
- SECOND DESIGNATOR (TYPICAL)
- FIRST DESIGNATOR (TYPICAL)
- SINGLE DESIGNATOR (TYPICAL)
- EMERGENCY LIGHTING CONTROL DESIGNATOR (TYPICAL)

LIGHTING CIRCUITING NOTES -

1. FIRST DESIGNATOR INDICATES THE CIRCUIT AND CONTROL MEANS ASSOCIATED WITH THE OUTBOARD LAMPS.
2. SECOND DESIGNATOR INDICATES THE CIRCUIT AND CONTROL MEANS ASSOCIATED WITH THE INBOARD LAMPS.
3. SINGLE DESIGNATOR INDICATES THE CIRCUIT AND MEANS OF CONTROL FOR THE ENTIRE FIXTURE.

DESIGNATOR DESCRIPTION:

X-3b
- LOWER CASE LETTERS INDICATE SWITCH DESIGNATION CONTROLLING ASSOCIATED LAMP(S). ABSENCE OF ANY LETTER INDICATES FIXTURE/LAMP(S) CONTROLLED VIA SWITCH(ES) IN THE ASSOCIATED ROOM. UPPERCASE "U" INDICATES ASSOCIATED LAMP(S) ARE UNSWITCHED.
- INDICATES THE CIRCUIT NUMBER SERVING FIXTURE/LAMP(S)
- INDICATES BRANCH PANELBOARD SERVING THE DEVICE. SEE PLAN FOR AREAS SERVED BY PANELBOARD(S).

ELECTRICAL DEVICES:

X-3 — DESIGNATOR — XX X-3

- XX: SPECIAL OUTLET DESIGNATOR

DESIGNATOR DESCRIPTION:

X-3
- INDICATES THE CIRCUIT NUMBER SERVING DEVICE
- INDICATES BRANCH PANELBOARD SERVING THE DEVICE. SEE PLAN FOR AREAS SERVED BY PANELBOARD(S).

ABBREVIATIONS:

(ALL ABBREVIATIONS SHOWN MAY NOT APPEAR ON DRAWINGS)

ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ALT	ALTERNATE
ALT SW	ALTERNATE SWITCH
ARCH	ARCHITECT
BFC	BELOW FINISHED CEILING
BFG	BELOW FINAL GRADE
BLDG	BUILDING
BOL	BUILT IN OVERLOAD
BPC	BOLTED PRESSURE CONTACT SWITCH
BRKR	BREAKER
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
CP	CONTROL PANEL
CS	COMBINATION STARTER
DE	DUAL ELEMENT FUSES
DIR	DIRECT
DISC	DISCONNECT
DN	DOWN
EC	ELECTRICAL CONTRACTOR
ELEV	ELEVATION
EMER	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
EOL	END OF LINE RESISTOR
EP	EXPLOSION PROOF
ER	EXISTING REMOVE FROM SERVICE
ERL	EXISTING RELOCATED
ES	EXPOSED STRUCTURE
ETR	EXISTING TO REMAIN
EX	EXISTING
EWC	ELECTRIC WATER COOLER
F	FLUSH
FBO	FURNISHED BY OTHERS
FDR	FEEDER
FIXT	FIXTURE
FLUOR	FLUORESCENT
FLR	FLOOR
FS	FLOW SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
GC	GENERAL CONTRACTOR
GFB	GROUND FAULT BREAKER
GFI	GROUND FAULT INTERRUPTED
GRC	GALVANIZED RIGID CONDUIT
GRD	GROUND
GRDG	GROUNDING
GYP	GYPSUM BOARD
HOA	HAND-OFF-AUTO SWITCH
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
HW	HEAVYWALL
IL	INTERLOCK
IMC	INTERMEDIATE METALLIC CONDUIT
JB	JUNCTION BOX
kVA	KILO VOLTAMPERE
LG	LAY-IN GRID
LTG	LIGHTING
LV	LOW VOLTAGE
LVT	LINE VOLTAGE THERMOSTAT
MAG	MAGNETIC STARTER
MAN	MANUAL STARTER
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
NIC	NOT IN CONTRACT
NU	NEAR UNIT
OU	ON UNIT
P	POLE
PB	PUSH BUTTON
PEND	PENDANT
PC	PLUMBING CONTRACTOR
PE SW	PNEUMATIC SWITCH
PLBG	PLUMBING
PNL	PANEL
PVC	POLYVINYL CHLORIDE
R	RELAY
RAI	REMAIN AS IS
RE/CKT	RECONNECT TO EXISTING CIRCUIT
RECEPT	RECEPTACLE
RM	ROOM
RVS	REDUCED VOLTAGE STARTING
S	SPLINE
SEL SW	SELECTOR SWITCH
SP SW	SPEED SWITCH
SURF	SURFACE
SW	SWITCH
TC	TIME CLOCK
TCC	TEMPERATURE CONTROL CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TYP	TYPICAL
UG	UNDERGROUND
UNIV	UNIVERSAL
USS	UNIT SUBSTATION
WP	WEATHERPROOF
XFMR	TRANSFORMER

NOTE DESCRIPTIONS:

- GENERAL NOTES - NOTES THAT APPLY TO ALL DRAWINGS WITHIN THE DRAWING SET.
- SHEET NOTES - NOTES THAT APPLY TO THE SHEET ON WHICH THEY APPEAR.
- KEYED NOTES - NOTES THAT APPLY TO AN AREA, ITEM AND/OR DEVICE ON A FLOOR PLAN OR DETAIL.
- DETAIL NOTES - NOTES THAT APPLY TO A SPECIFIC DETAIL.

THE LIGHTING DESIGN FOR THIS PROJECT SET IS IN COMPLIANCE WITH SPS 363.0501. COMPLIANCE IS DEMONSTRATED BY USING 2015 IECC.

EDITION	CODE
APRIL 2018	WISCONSIN 361 - 366 ADMINISTRATION AND ENFORCEMENT THIS INCLUDES THE 2015 EDITION OF: INTERNATIONAL BUILDING CODE INTERNATIONAL ENERGY CODE INTERNATIONAL MECHANICAL CODE INTERNATIONAL FUEL GAS CODE INTERNATIONAL EXISTING BUILDING CODE ADOPTING THE 2015 INTERNATIONAL BUILDING CODE, THE FOLLOWING NFPA CODES ARE ADOPTED: 2013 NFPA 20 STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION 2013 NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE 2015 NFPA 101 LIFE SAFETY CODE 2013 NFPA 110 STANDARD FOR EMERGENCY AND STANDBY SYSTEMS
DEC. 2019	WISCONSIN SPS 316 STATE ELECTRICAL CODE INCLUDES 2017 EDITION OF NFPA 70
	LIGHTING ENERGY CALCULATION METHOD: IECC 2015 OR ASHRAE 90.1-2013

ELECTRICAL SHEET INDEX

No.	TITLE
E01	ELECTRICAL SYMBOLS, ABBREVIATIONS AND SHEET INDEX
E02	OVERALL ELECTRICAL SITE PLAN
E03	ELECTRICAL SITE PLAN
E04	ELECTRICAL ENLARGED PLANS
E05	ELECTRICAL DETAILS
E06	ONE LINE DIAGRAM
E07	ELECTRICAL SCHEDULES
E08	SPORTS LIGHTING PLAN AND PHOTOMETRICS
E09	SPORTS LIGHTING FIXTURE CUTSHEETS
E10	SPORTS LIGHTING DETAILS
E11	SPORTS LIGHTING PLAN

1

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R&D Project No.: 220332.02

Signature:

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
95% REVIEW	02/06/2023	
BID SET	02/17/2023	
ADDENDUM 1	03/02/2023	1

Client:

MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

ELECTRICAL SYMBOLS, ABBREVIATIONS AND SHEET INDEX

DATE:	01/03/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
DRAWN BY:	HSL
CHECKED BY:	VAD

Sheet No.:

E01

NORTH

1
E03
OVERALL ELECTRICAL SITE PLAN
SCALE = 1" = 30'-0"

SHEET NOTES -

1. FIELD VERIFY EXISTING CONDITIONS INSIDE MATC BUILDING.
2. WORK INSIDE MATC CORRIDOR SHALL BE DONE DURING OFF HOURS. COORDINATE SCHEDULE WITH OWNER.
3. CALL DIGGERS HOTLINE TO HAVE UNDERGROUND UTILITIES LOCATED PRIOR TO ALL UNDERGROUND WORK.
4. CONDUIT ROUTES SHOWN ON PLAN TO INDICATE THE INTENDED PATH FOR CONDUIT TO AVOID SPECIFIC AREAS OF CONSTRUCTION. ELECTRICAL CONTRACTOR SHALL SUBMIT WRITTEN REQUEST TO RECEIVE APPROVAL DEVIATE FROM PATH SHOWN.
5. PROVIDE QUAZITE PULL BOXES AS REQUIRED IN NEC 352. WHERE LOCATED IN PARKING LOT AND DRIVE LOCATIONS CONTRACTOR SHALL PROVIDE BOX RATED FOR VEHICULAR TRAFFIC.
6. INCLUDE SAW-CUTTING, TRENCHING AND REPAIRING OF SURFACES FOR ELECTRICAL FEEDER ROUTE, UNLESS OTHERWISE INDICATED. ALL SURFACES SHALL BE RETURNED TO ORIGINAL FINISH AFTER ELECTRICAL WORK IS COMPLETE. REFER TO SHEET C2 FOR MORE INFORMATION.

KEYED NOTES -

1. APPROXIMATE LOCATION OF ELECTRICAL ROOM EC-B153.
2. DIRECTIONAL BORE FEEDER BETWEEN THESE POINTS.
3. SUGGESTED MDP/A FEEDER ROUTE.
4. PROVIDE EMPTY 4" CONDUIT WITH PULL STRING FROM ELECTRICAL ROOM EC-B153 TO QUAZITE BOX, FOR FUTURE SHOWER BUILDING FEEDER.
5. REFER TO DETAIL 1/E05 FOR FEEDER ELEVATION DETAIL.

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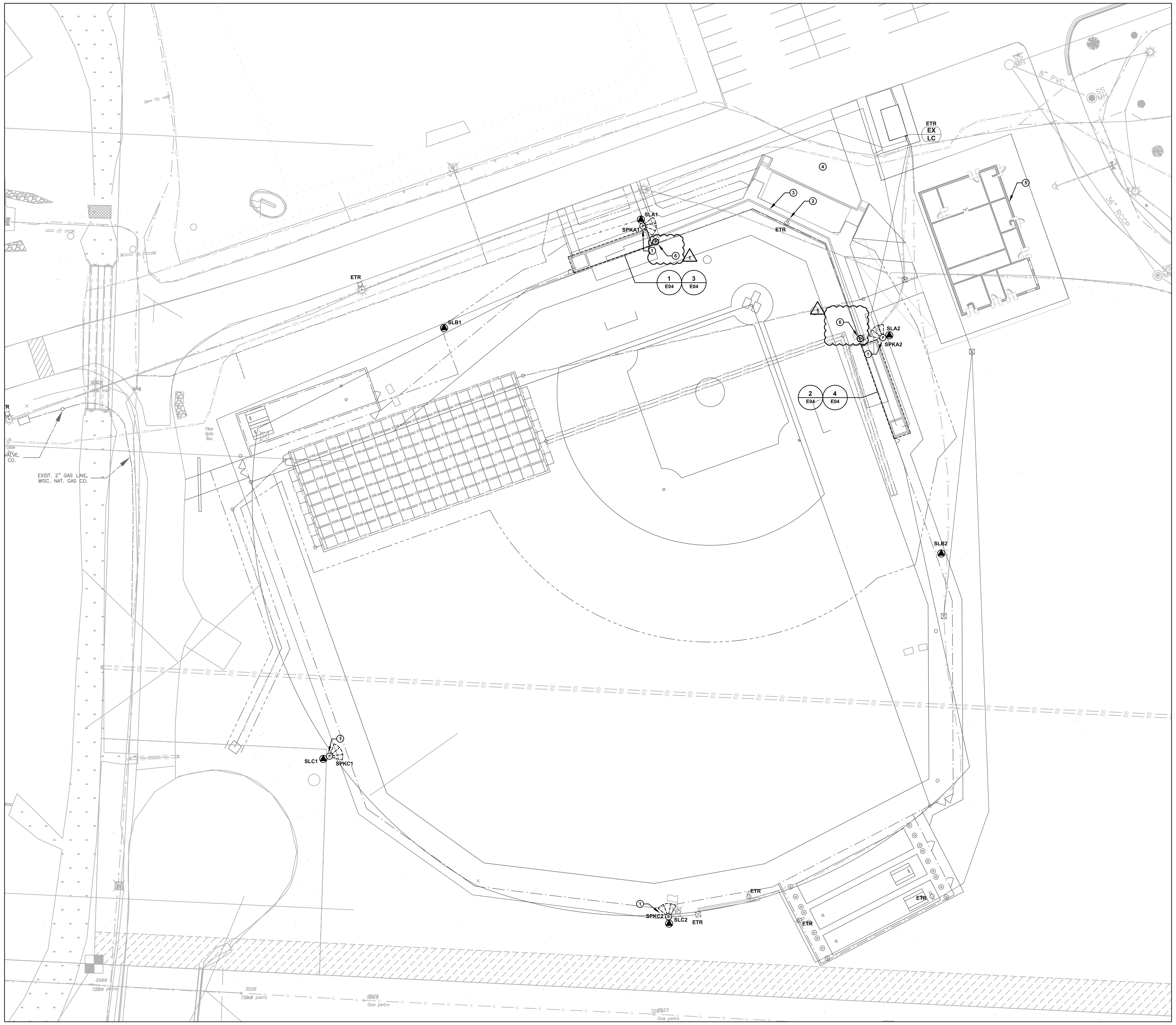
Sheet No.:

E02



NORTH

1 E03 ELECTRICAL SITE PLAN
SCALE = 1" = 30'-0"

SHEET NOTES -

1. SPORTS LIGHT POLE LOCATIONS SHOWN ARE APPROXIMATE FOR BIDDING PURPOSES ONLY, FINAL LIGHT POLE LOCATIONS SHALL BE VERIFIED WITH SPORTS LIGHTING VENDOR AND COORDINATED WITH EXISTING SITE UTILITIES PRIOR TO PRODUCTION. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL ELECTRICAL REQUIREMENTS AT EACH POLE LOCATION.
3. CALL DIGGERS HOTLINE TO HAVE UNDERGROUND UTILITIES LOCATED PRIOR TO ALL UNDERGROUND WORK.
4. PROVIDE QUAZITE PULL BOXES ALONG ALL CONDUIT ROUTES AS REQUIRED IN NEC 352.
5. COORDINATE ELEVATION OF STUB UPS, QUAZITE BOXES AND POLE BASES WITH FINAL GRADING PLANS. GRADING WORK IN SOME AREAS MAY NOT BE COMPLETE UNTIL FUTURE PHASES.
6. SPORTS LIGHTING CIRCUITS SHALL BE RUN AROUND THE OUTSIDE OF THE FIELD AND WILL NOT BE PERMITTED TO RUN THROUGH THE FIELD.

KEYED NOTES -

1. MANDATORY ALTERNATE #1: SPEAKERS SHALL BE PROVIDED AND MOUNTED ON THE (4) LIGHT POLES AS SHOWN. PROVIDE CABLING AS REQUIRED TO EACH SPEAKER LOCATION FROM THE HEAD END AUDIO/VISUAL EQUIPMENT LOCATED WITHIN THE DUG-OUT ELECTRICAL ROOM. REFERENCE SHEETS E05 AND E07 FOR ADDITIONAL INFORMATION.
2. EXISTING DOUBLE DUPLEX RECEPTACLE TO REMAIN. RE-FEED RECEPTACLE FROM BP-A-7.
3. EXISTING EMPTY 2" CONDUIT WITH PULL STRING. UTILIZE EXISTING CONDUIT FOR DUGOUT LIGHTING AND POWER BRANCH CIRCUITS BP-A-1,5 CONDUCTOR ROUTING.
4. AREA BEHIND BLEACHERS SHALL BE KEPT FREE OF NEW UTILITIES. FUTURE PRESS BOX MAY BE INSTALLED BEHIND EXISTING BLEACHERS.
5. FUTURE BUILDING, SHOWN FOR REFERENCE ONLY.
6. (1) DEMOLISH EXISTING POLE MOUNTED SPEAKER AND ASSOCIATED CABLING BACK TO SOURCE.

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OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

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INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
DRAWN BY:	HSL
CHECKED BY:	VAD

Sheet No.:

E03

3/2/2023 11:56 AM NICK ROBERTS
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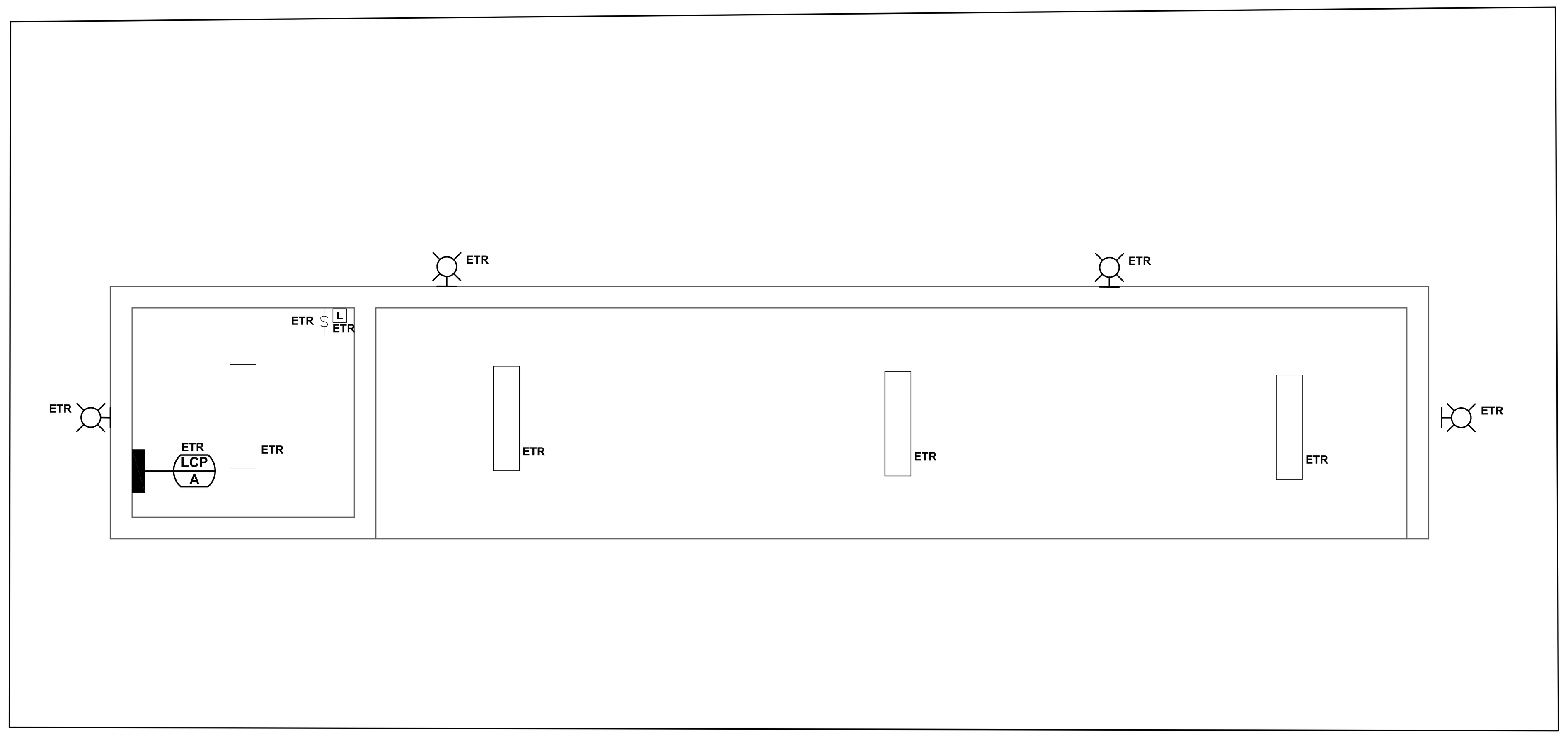
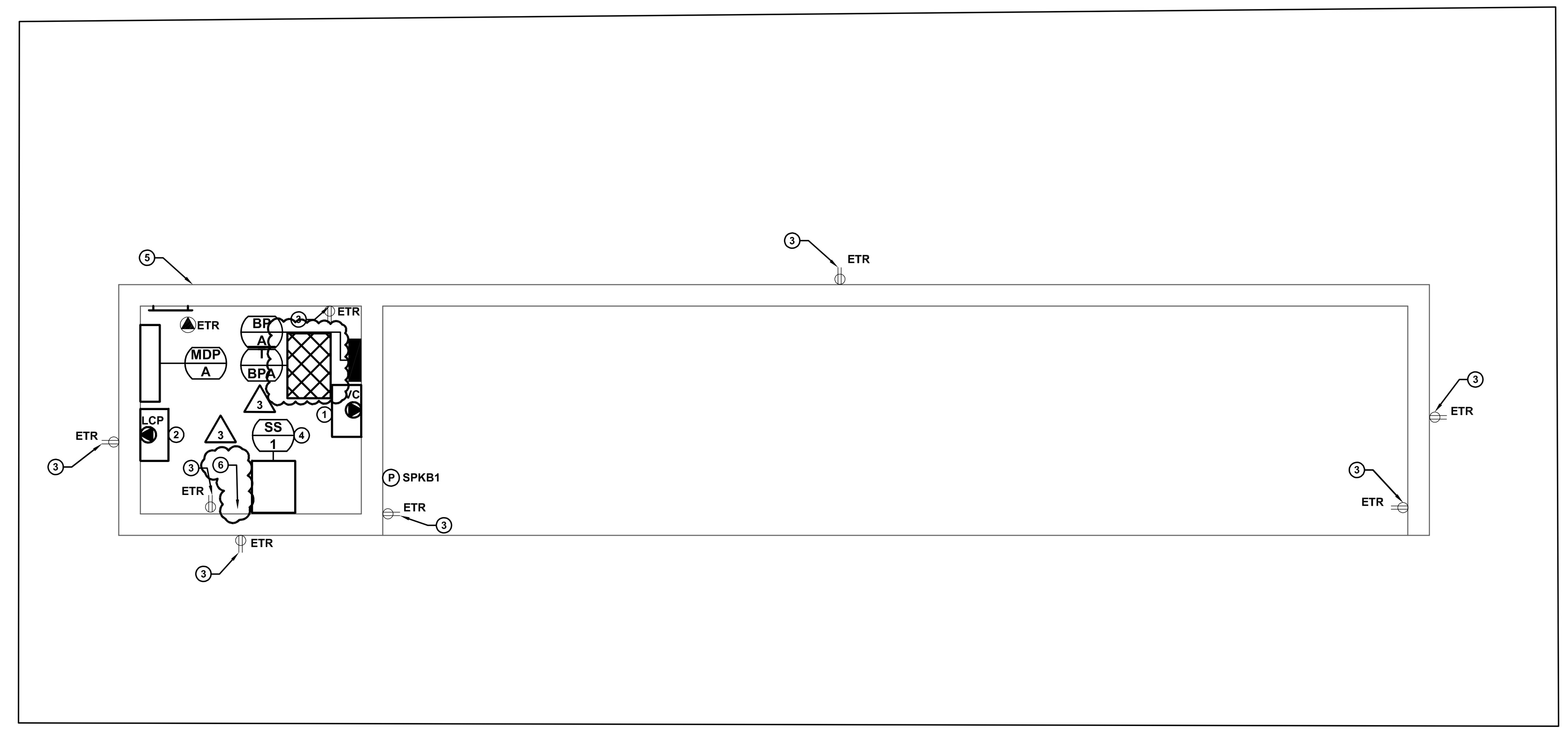
SHEET NOTES -

1. EXISTING LIGHT FIXTURE CONTROLS AND LOW VOLTAGE PROGRAMMING TO REMAIN. ELECTRICAL CONTRACTOR SHALL DISCONNECT EXISTING PANEL 'EX/LC' FEED AND RE-FEED FROM PANEL 'BP/A-5'. LIGHTING SHOWN ON THIS PLAN FOR REFERENCE ONLY.



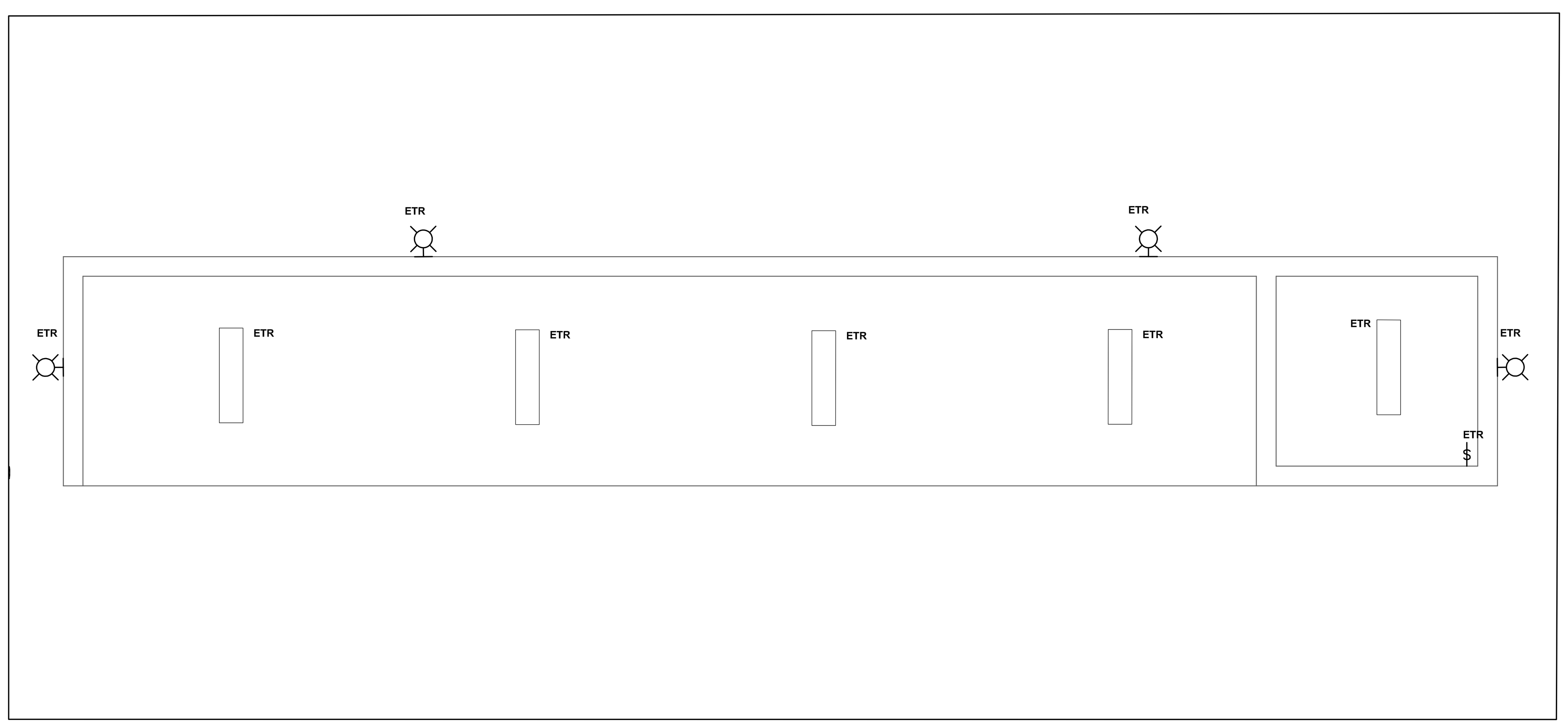
NORTH
3 / E04 — 1ST BASE VISITOR DUGOUT ENLARGED LIGHTING PLAN
SCALE = 1/4" = 1'-0"



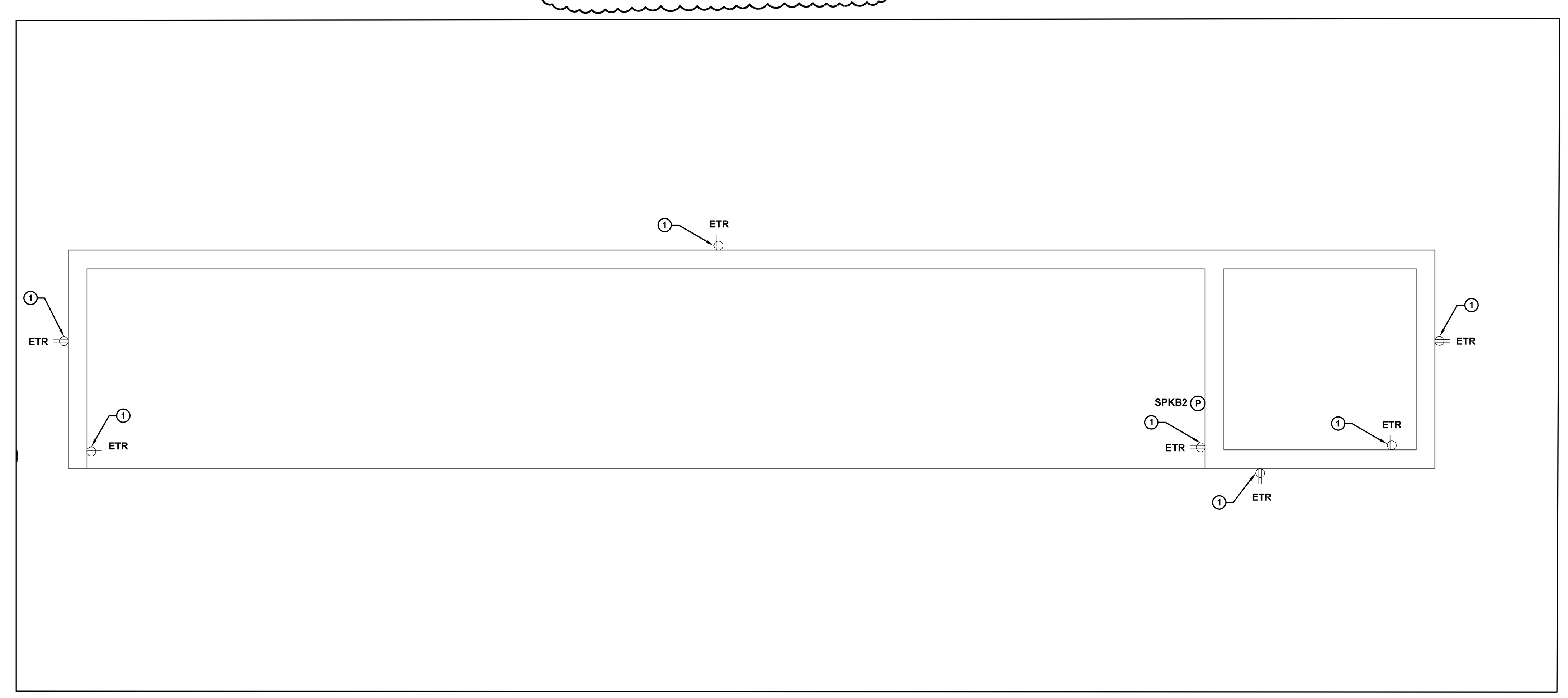
NORTH
1 / E04 — 1ST BASE VISITOR DUGOUT ENLARGED POWER PLAN
SCALE = 1/4" = 1'-0"

KEYED NOTES -

1. PROVIDE ESL MODEL NUMBER #OB-200-C-208-2-1-5-S-C OR EQUAL, MPBS VAN TEMPORARY CONNECTION CABINET WITH CAMLOCK SERIES 16 CONNECTORS. SHOP DRAWING SHALL BE APPROVED BY MPBS PRIOR TO PURCHASE.
2. PROVIDE SPORTS LIGHTING CONTROL CABINET, FIELD LIGHTING CONNECTIONS AND CONTROLS.
3. EXISTING RECEPTACLE TO REMAIN. DISCONNECT RECEPTACLE FROM EXISTING PANEL 'EX/LC' AND RE-FEED FROM 'BP/1-3'.
4. PROVIDE (1) 20A-1P, 120V CIRCUIT, FROM PANEL BP/A, FOR SOUND SYSTEM RACK ENCLOSURE AND ASSOCIATED EQUIPMENT. REFERENCE SHEET E03, E05, AND E07 FOR ADDITIONAL INFORMATION.
5. PROVIDE ACCESS DOOR INTO EXISTING MASONRY WALL, REFER TO SHEET C2 FOR MORE INFORMATION.
6. (3) MOUNT (3) VOLUME CONTROLS ADJACENT TO WALL MOUNTED SOUND SYSTEM EQUIPMENT RACK.



NORTH
4 / E04 — 3RD BASE HOME DUGOUT ENLARGED LIGHTING PLAN
SCALE = 1/4" = 1'-0"



NORTH
2 / E04 — 3RD BASE HOME DUGOUT ENLARGED POWER PLAN
SCALE = 1/4" = 1'-0"

KEYED NOTES -

1. EXISTING RECEPTACLE TO REMAIN. DISSCONNECT RECEPTACLE FROM EXISTING PANEL 'EX/LC' AND RE-FEED FROM 'BP/1-1'.

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MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

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OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

ELECTRICAL ENLARGED PLANS

DATE:	01/03/2023
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INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
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E04

3/7/2023 5:24 PM VIRGINIA DEPIES
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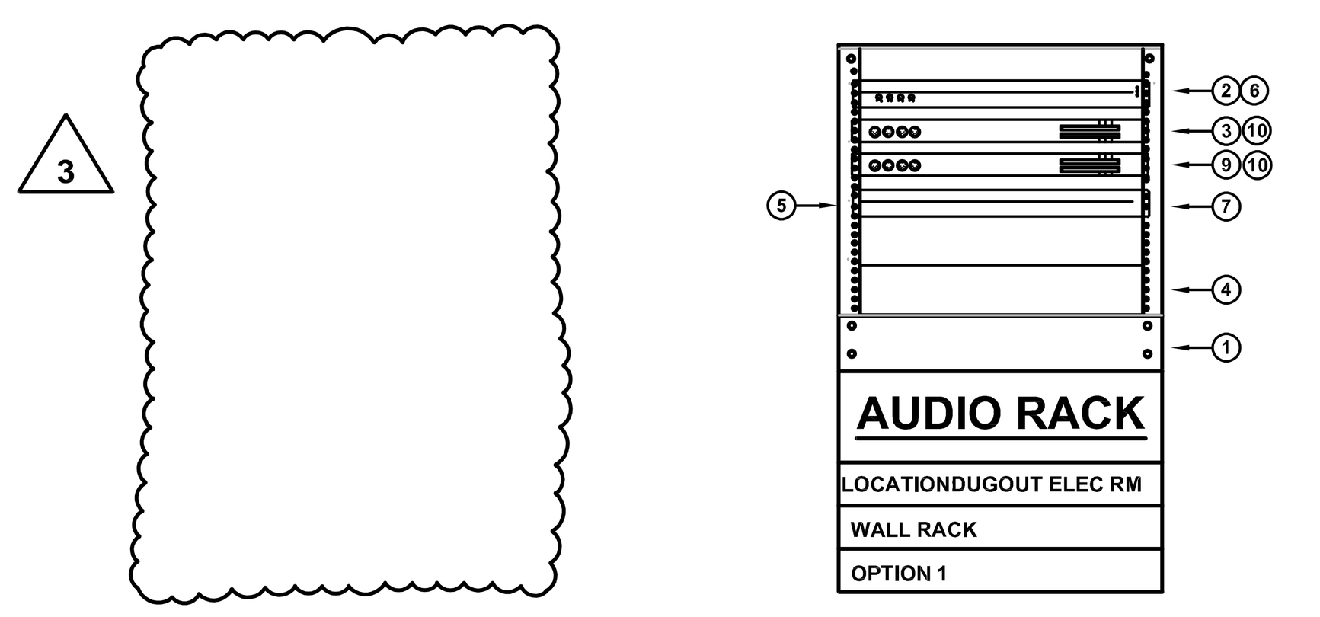


FIRST BASE SIDE DUGOUT
ELECTRICAL ROOM

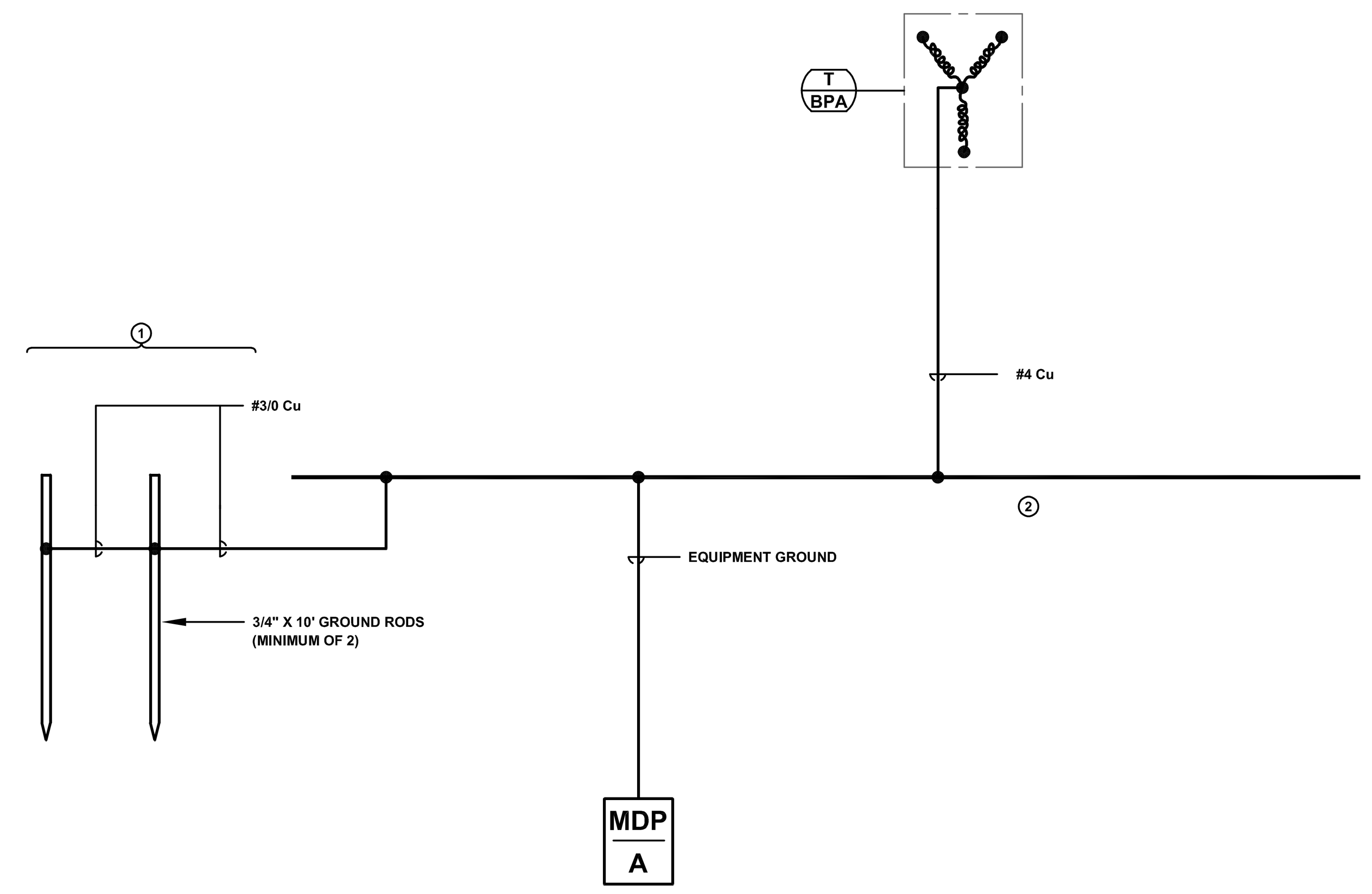
DETAIL NOTES -

1. ALL WORK ASSOCIATED WITH THE PROVISIONS AND INSTALLATION OF THE ATHLETIC FIELD SOUND SYSTEM SHALL BE PART OF MANDATORY ALTERNATE #1.
2. PROVIDE A COMPLETE AND OPERATIONAL ATHLETIC FIELD SOUND SYSTEM. SOUND SYSTEM SHALL INCLUDE, BUT NOT LIMITED TO, SPEAKERS/HORNS, PROCESSOR, AMPLIFIERS, DRIVERS, POWER CONDITIONER, INPUT/OUTPUT CONTROLS, AND CONTROLLERS.
3. PROVIDE BREAK OUT PRICING, AS LISTED BELOW, TO ADD A WIRELESS MICROPHONE WITH RECEIVER AND AN OPTION TO PROVIDE ZONING TO THE AUDIO SYSTEM.
4 SOUND SYSTEM SHALL INCLUDE ALL MOUNTING HARDWARE, CONDUIT AND CABLING FOR A COMPLETE AND OPERATIONAL SOUND SYSTEM. POLES PROVIDED BY OTHERS.
5. PROVIDE UV OUTDOOR RATED CABLING AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. CABLING SHALL BE ADVANCED DIGITAL CABLE, REPEL SERIES, OR APPROVED EQUAL. REFERENCE SOUND SYSTEM SCHEDULE FOR ADDITIONAL INFORMATION.

KEYED NOTES -

1. PROVIDE 10 RU WALL MOUNTED RACK, 23.5 INCH DEEP WITH PERFORATED DOOR FOR SOUND SYSTEM EQUIPMENT.
2. PROVIDE 4 ZONE AUDIO PROCESSOR WITH VOLUME CONTROL, ATLAS AZM4, OR APPROVED EQUAL.
   ZONE 1 - BLEACHERS
   ZONE 2 - OUTFIELD
   3 ZONE 3 - HOME & VISITOR DUGOUTS
   ZONE 4 - SPARE
3. PROVIDE 4-CHANNEL, 2600 WATT AMPLIFIER FOR FS HORNS, ATLAS HPA-2604, OR APPROVED EQUAL.
4. PROVIDE (1) 15A POWER CONDITIONER, AND DISTRIBUTION UNIT WITH IEC POWER CORD AND LAMP. POWER CONDITION SHALL BE ATLAS XAP-S15LA, OR APPROVED EQUAL.
5. PROVIDE A MIN OF 3 (1RU) RACK VENT PANELS BETWEEN THE HEAT GENERATING EQUIPMENT. VENT PANELS SHALL BE MIDDLE ATLANTIC XPPR1, OR APPROVED EQUAL.
6. (3) PROVIDE BREAKOUT PRICING TO INCLUDE (2) WIRED MICROPHONES WITH 3 PIN TYPE CONNECTOR FOR MANUAL INPUT CONNECTION TO 3X1 MIC/LINE/BT/AUX MIXER CONTROL. CONTROL PANEL 'CP1' IS LOCATED ON LIGHT POLE NEAREST 3 BASE SIDE DUGOUT, SERIES XLR INPUT. MICROPHONE SHALL BE ATLAS M300-HH SERIES, OR APPROVED EQUAL. PROVIDE 10 METERS OF CABLE, XLR SERIES. REFERENCE SHEET E03 FOR ADDITIONAL INFORMATION.
7. PROVIDE BREAKOUT PRICING TO INCLUDE (2) WIRELESS MICROPHONES, ATLAS XMW100 SERIES OR APPROVED EQUAL, WITH WIRELESS RECEIVER, ATLAS MWRCVR, OR APPROVED EQUAL.
8. (3) NOT USED.
9. PROVIDE 2 CHANNEL, 200 WATT AMPLIFIER FOR DUG OUT SPEAKERS. ATLAS DPA-102PM, OR APPROVED EQUAL.
10. PROVIDE RACK MOUNTING FOR AMPLIFIER EQUIPMENT, ATLAS AL24-30RNK, OR APPROVED EQUAL.
11. (3) PROVIDE (3) ATLAS SERIES C-V EXTERNAL VOLUME CONTROLS TO CONTROL THE VOLUME FOR EACH OF THE AZM4 AUDIO CHANNELS. PROVIDE (1) CAT 6 CABLE WITH 8-POSITION MODULAR PLUG AT EACH END. REFERENCE SHEET E04 FOR ADDITIONAL INFORMATION.

4 / E05 MANDATORY ALTERNATE #1 - SOUND SYSTEM RACK ELEVATION DRAWING
SCALE = NOT TO SCALE



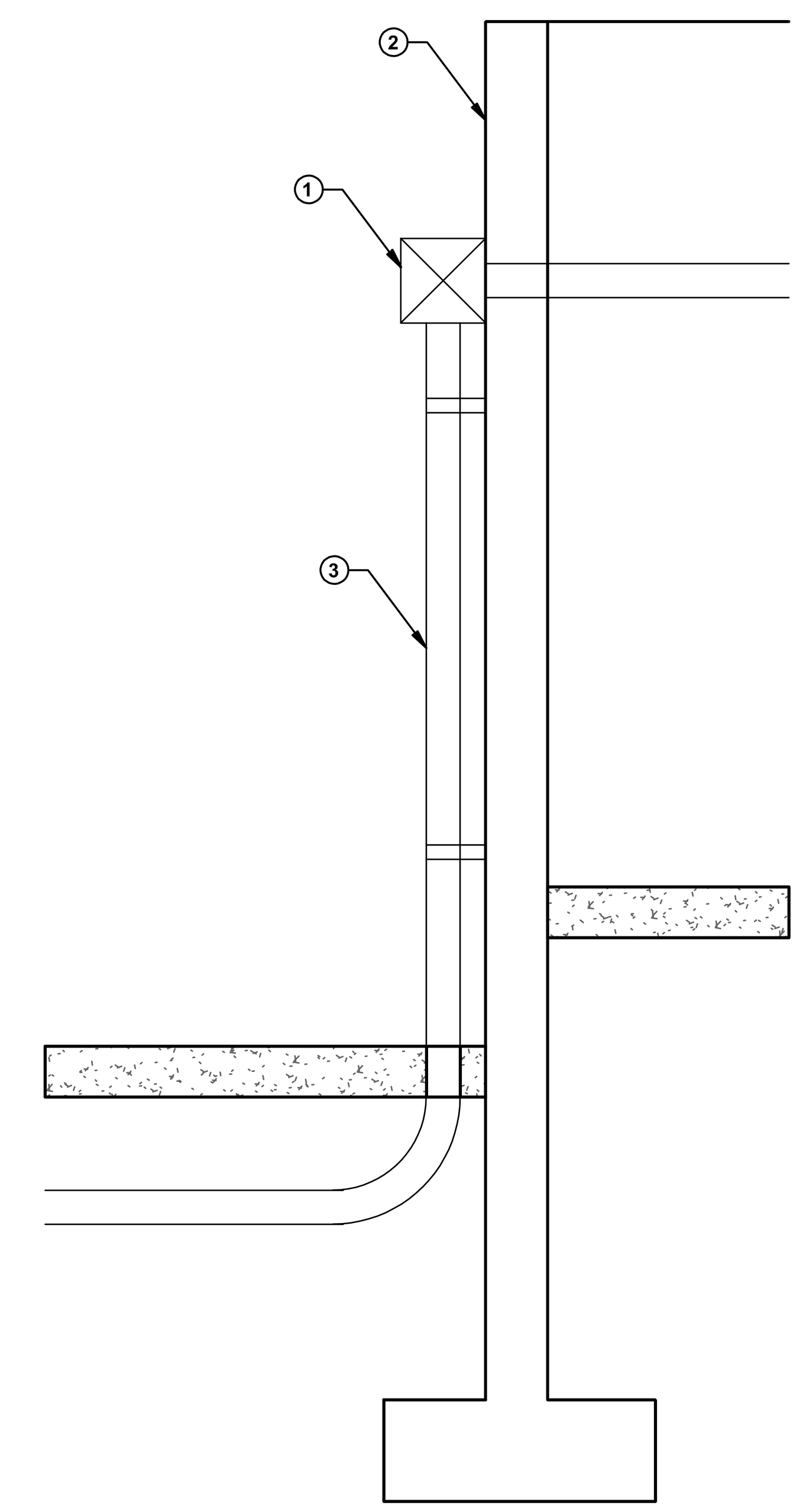
DETAIL NOTES -

1. ROUTE GROUNDING CONDUCTOR IN METAL CONDUIT. BOND RACEWAY AT BOTH ENDS TO GROUNDING CONDUCTOR.
2. SEE SPECIFICATION SECTION 26 05 26 FOR ADDITIONAL GROUNDING REQUIREMENTS.

KEYED NOTES -

1. GROUND RODS AS REQUIRED TO MEET THE RESISTIVE PERFORMANCE REQUIREMENTS AS INDICATED IN THE SPECIFICATIONS.
2. TYPE B GROUND BUS BAR. LOCATION AS INDICATED ON FLOOR PLAN. MOUNT BUS TO WALL ON 2" INSULATED STAND-OFFS.

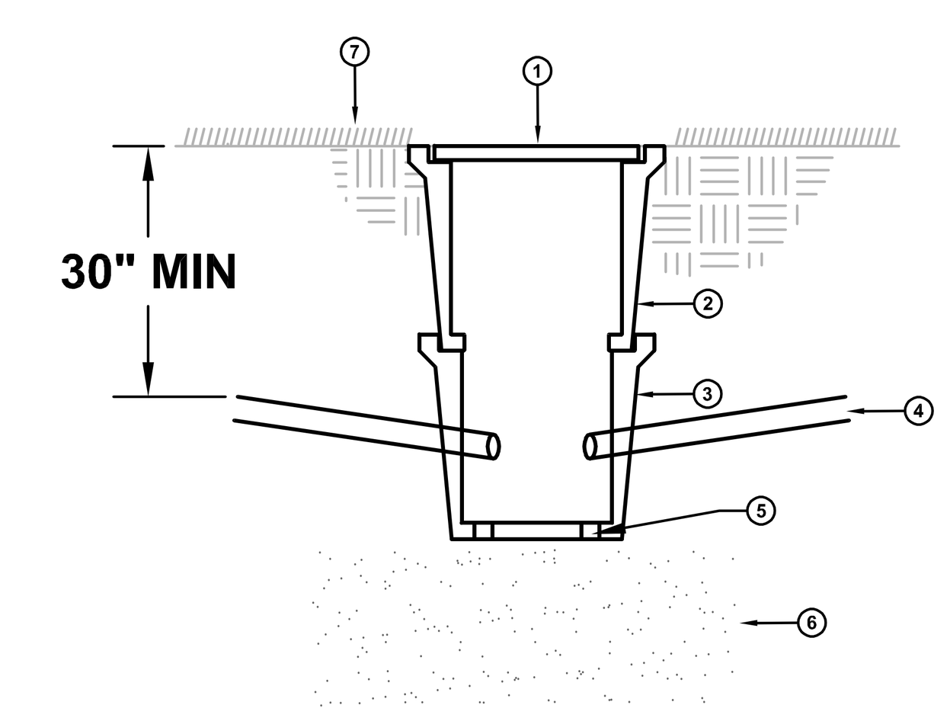
3 / E05 SYSTEM GROUNDING DETAIL
SCALE = NOT TO SCALE



KEYED NOTES -

1. JUNCTION BOX.
2. BUILDING EXTERIOR WALL.
3. MDP/A FEEDER CONDUIT.

1 / E05 BUILDING FEEDER ELEVATION
SCALE = NOT TO SCALE



KEYED NOTES -

1. QUAZITE COMPOSITE SERVICE BOX #PC1118JA18/PC1118DA18/PC1118HA00 HEAVY DUTY LOCKING COVER OPEN BOTTOM BOX STACKED ON TOP OF BOX WITH SOLID BASE. PROVIDE NUMBER OF OPEN BOXES REQUIRED TO INTERCEPT CONDUCTORS AT DEPTH INDICATED.
2. BOX WITH OPEN BOTTOM
3. BOX WITH SOLID BASE
4. SLOPE CONDUITS TO DRAIN INTO SERVICE BOX.
5. DRILL DRAIN HOLES IN BOTTOM OF BOX.
6. PROVIDE 1 INCH DIAMATER GRAVEL 12" DEEP, 24" WIDE, 24" LONG FOR DRAINAGE.
7. GRADE

2 / E05 ELECTRICAL EXTERIOR PULL BOX
SCALE = NOT TO SCALE

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OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

ELECTRICAL DETAILS

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E05

ONE-LINE SYMBOLS

XX ← DENOTES THE FOLLOWING:
(XX) DEVICE DESIGNATION TYPE - SEE SPECIFICATION

DENOTES THE FOLLOWING:
- (AM) AMMETER
- (AS) AMMETER SWITCH
- (DM) DIGITAL METER
- (M) KWHR METER
- (VM) VOLTMETER
- (VS) VOLTMETER SWITCH

CURRENT TRANSFORMER

JUNCTION BOX

PANELBOARD

TRANSFORMER

EQUIPMENT CONNECTION - SEE EQUIPMENT SCHEDULE

ENCLOSURE

DENOTES THE FOLLOWING:
(XX) DEVICE DESIGNNATION

DENOTES THE FOLLOWING:
- (ATS) AUTOMATIC TRANSFER SWITCH
- (BW) BUS WAY
- (CAP) CAPACITOR
- (CB) CIRCUIT BREAKER
- (CON) CONTACTOR
- (DS) DISCONNECT SWITCH
- (EDS) ELEVATOR DISCONNECT SWITCH
- (EDP) ELEVATOR DISTRIBUTION PANEL
- (F) FUSE
- (FS) FUSIBLE SWITCH
- (JB) JUNCTION BOX
- (MTS) MANUAL TRANSFER SWITCH
- (MVC) MEDIUM VOLTAGE FUSED CUTOUT
- (MVF) MEDIUM VOLTAGE FUSE
- (MVFS) MEDIUM VOLTAGE FUSIBLE SWITCH
- (MVS) MEDIUM VOLTAGE SWITCH
- (MVT) MEDIUM VOLTAGE CABLE TERMINATION
- (PLC) POWER LINE CONDITIONER
- (T) TRANSFORMER
- (SS) SURGE SUPPRESSION
- (UPS) UNINTERRUPTIBLE POWER SUPPLY
- (WW) WIREWAY

LOW VOLTAGE FUSED DISCONNECT SWITCH

LOW VOLTAGE CIRCUIT BREAKER

CIRCUIT BREAKER INFORMATION

"XXX" - DENOTES AMP RATING
XXXAF ← "AF" - DENOTES AMP FRAME
XXXAS ← "AS" - DENOTES AMP SENSOR
XXXAT ← "AT" - DENOTES AMP TRIP
3P

XX	XXX
XX	XXX
XX	XXX

CIRCUIT BREAKER ACCESSORIES
- ALS - ALARM SWITCH
- AXS - AUXILIARY SWITCH
- EOP - ELECTRIC OPERATOR
- ST - SHUNT TRIP
- UVT - UNDER VOLTAGE TRIP

CIRCUIT BREAKER OPTIONS
- AF - ARC FAULT CIRCUIT INTERRUPTER (RESIDENTIAL ONLY)
- AR - ARC FLASH REDUCTION
- CL - CURRENT LIMITING
- FR - FULLY RATED (100%)
- GE - GROUND FAULT PROTECTION - EQUIPMENT
- GP - GROUND FAULT PROTECTION - PERSONNEL
- GS - GROUND FAULT SENSING / ALARM
- HC - HEATING, COOLING, AIR CONDITIONING, REFRIGERATION - HCAR
- HM - HIGH MAGNETIC - HID, MOTORS
- MD - MODIFIED DIFFERENTIAL GROUND FAULT
- MP - MOTOR CIRCUIT PROTECTOR
- MS - MOLDED CASE SWITCH
- L1 - LONG TIME / INSTANTANEOUS - LI
- L2 - LONG TIME / SHORT TIME / INSTANTANEOUS - LSI
- L3 - LONG TIME / SHORT TIME / INSTANTANEOUS / GROUND FAULT TRIP - LSIG
- L4 - LONG TIME / SHORT TIME / INSTANTANEOUS / GROUND FAULT SENSING - LSIA
- SC - SYSTEM COMMUNICATION
- SD - SYSTEM DIAGNOSTICS
- SM - SYSTEM MONITORING
- ZS - ZONE SELECTIVE INTERLOCKING

CIRCUIT BREAKER TYPE
- MC - MOLDED CASE CIRCUIT BREAKER
- IC - INSULATED CASE CIRCUIT BREAKER
- PC - LOW VOLTAGE POWER CIRCUIT BREAKER
- SS - SOLID STATE MOLDED CASE CIRCUIT BREAKER

LOW VOLTAGE DISCONNECT SWITCH INFORMATION

XXXAS
3P
XXXAF

DS	XXX
XXX	XXX
XXX	XXX

"XXX" - DENOTES AMP RATING
XXXAS ← "AS" - DENOTES AMP SWITCH
3P
XXXAF ← "AF" - DENOTES AMP FUSE

FS	XXX
XXX	XXX
XXX	XXX

DISCONNECT SWITCH ACCESSORIES
- AXS - AUXILIARY SWITCH
- DL - DOUBLE LUGS
- PL - PILOT LIGHT
- VW - VIEWING WINDOW

DISCONNECT SWITCH TYPE
- DS - UNFUSED DISCONNECT SWITCH
- EDS - ELEVATOR DISCONNECT SWITCH
- FS - FUSED DISCONNECT SWITCH

TRANSFORMER INFORMATION

TYPE
- DT - DRY TYPE
- LF - LIQUID FILLED
- DP - DRY TYPE PAD MOUNT
- LP - LIQUID FILLED PAD MOUNT
- CR - CAST RESIN
- EC - ENCAPSULATED CORE

RATING
- EE - ENERGY EFFICIENT
- GP - GENERAL PURPOSE
- K-# - K-RATED

T		← TRANSFORMER ID
XX	XXX kVA	← kVA
P: XXX		← PRIMARY VOLTAGE
S: XXX		← SECONDARY VOLTAGE
XXX	XXX	← TEMPERATURE RISE
XXX		← MOUNTING TYPE
X / X / X		← OPTIONS

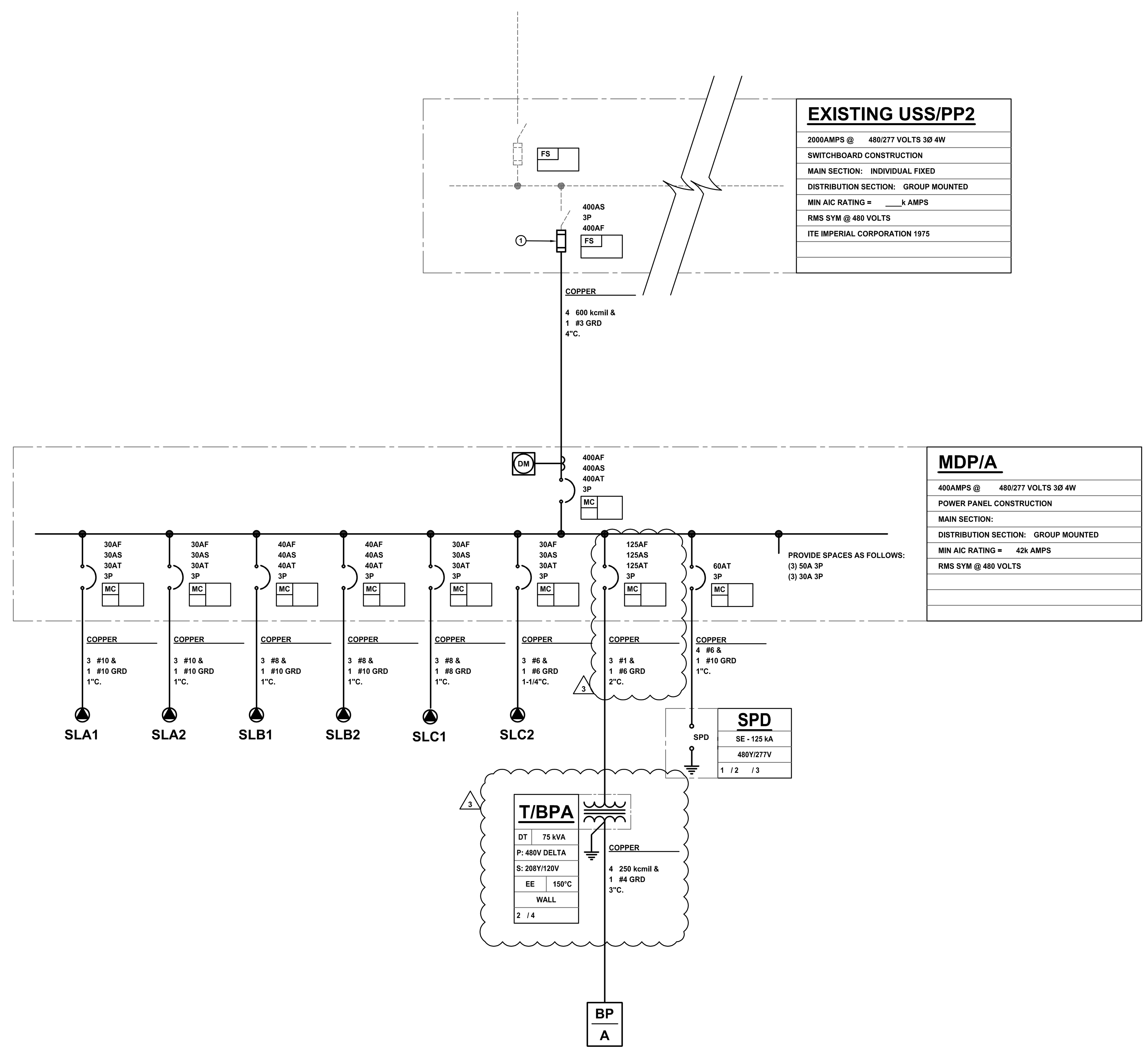
OPTIONS
1 - NON VENTILATED ENCLOSURE
2 - INTEGRAL STRIP HEATER
3 - WEATHER SHIELD
4 - NEMA 3R
5 - STAINLESS STEEL

SURGE PROTECTIVE DEVICE

SPD	← SPD ID
XXX	← TYPE
XXX	← VOLTAGE
X / X / X / X	← OPTIONS

TYPE
- SE - 125 kA - SERVICE ENTRANCE
- BP - 80 kA - BRANCH PANEL

OPTIONS
1 - UNIT STATUS INDICATORS
2 - AUDIBLE ALARM
3 - TRANSIENT COUNTER
4 - REMOTE MONITOR PANEL
5 - SERVICE DISCONNECT SWITCH
6 - SUMMARY ALARM RELAY CONTACTS
7 - HIGH PERFORMANCE INTERCONNECT CABLE
8 - MASTERMIND MONITORING



KEYED NOTES -

1. ELECTRICAL CONTRACTOR SHALL RE-USE EXISTING SPARE FUSIBLE SWITCH. PROVIDE NEW FUSE AND EXERCISE AND TEST SWITCH PRIOR TO INSTALLATION OF FEEDER.

2 / E05 ONE LINE DIAGRAM
SCALE = NOT TO SCALE

INSPEC
126 North Jefferson Street
Suite 120
Milwaukee, WI 53202
Ph. 414-744-6962

Consultants:

RING & DUCHATEAU
17400 West Capitol Drive, Brookfield, WI 53045
Phone: 414.778.1700 / Fax: 414.778.2360 / r-d@ringdu.com

THIS BAR IS 1" LONG. IF IT MEASURES ANYTHING OTHER THAN 1" ADJUST SCALE ACCORDINGLY.

R&D Project No.: 220332.02

Signature:

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
95% REVIEW	02/06/2023	
BID SET	02/17/2023	
ADDENDUM 1	03/02/2023	1
ADDENDUM 3	03/07/2023	3

Client:

MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

ONE LINE DIAGRAM

DATE:	01/03/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
DRAWN BY:	HSL
CHECKED BY:	VAD

Sheet No.:

E06

MANDATORY ALTERNATE 1 ATHLETIC FIELD - SOUND SYSTEM

ID	DESCRIPTION	LOC	MANUFACTURER	MODEL	CABLING	CONDUIT	VOLTAGE	SEE NOTE
SPKA1	12" 2-WAY MULTIPURPOSE HORN SPEAKER SYSTEM 90° x 40°, 400 WATT TAPS FREQUENCY: 80Hz - 17.6kHz	POLE	ATLAS OR EQUAL	FS12T-94	(2)#14 AWG	1"	70.7V	1,2,3,4
SPKA2	12" 2-WAY MULTIPURPOSE HORN SPEAKER SYSTEM 90° x 40°, 400 WATT TAPS FREQUENCY: 80Hz - 17.6kHz	POLE	ATLAS OR EQUAL	FS12T-94	(2)#14 AWG	1"	70.7V	1,2,3,4
SPKB1	6.5" 2-WAY ALL WEATHER SPEAKER, 32- WATT FREQUENCY: 104Hz - 20kHz	SURFACE	ATLAS OR EQUAL	SM63T-WH	(2)#16 AWG	1"	70V	1,2,3
SPKB2	6.5" 2-WAY ALL WEATHER SPEAKER, 32- WATT FREQUENCY: 104Hz - 20kHz	SURFACE	ATLAS OR EQUAL	SM63T-WH	(2)#16 AWG	1"	70V	1,2,3
SPKC1	12" 2-WAY MULTIPURPOSE HORN SPEAKER SYSTEM 60° x 60°, 400 WATT TAPS FREQUENCY: 80Hz - 17.6kHz	POLE	ATLAS OR EQUAL	FS12T-66	(2)#14 AWG	1"	70.7V	1,2,3,4
SPKC2	12" 2-WAY MULTIPURPOSE HORN SPEAKER SYSTEM 60° x 60°, 400 WATT TAPS FREQUENCY: 80Hz - 17.6kHz	POLE	ATLAS OR EQUAL	FS12T-66	(2)#14 AWG	1"	70.7V	1,2,3,4

SCHEDULE NOTES:

GENERAL NOTES:
1. ALL WORK ASSOCIATED WITH THE PROVISIONS AND INSTALLATION OF THE SOUND SYSTEM SHALL BE PRICED AS MANDATORY ALTERNATE #1.
1. ALL COMPONENTS OF THE ATHLETIC FIELD SOUND SYSTEM SHALL BE PROVIDED BY A SINGLE MANUFACTURER.

NOTES:
1. COORDINATE MOUNTING HEIGHT WITH APPROVED SPEAKER MANUFACTURER. PROVIDE MANUFACTURER APPROVED MOUNTING HARDWARE AT EACH LOCATION.
2. DEVICES PROVIDED SHALL BE WEATHERPROOF.
3. PROVIDED DIERCT BURIAL TYPE CABLE, PVC/NYLON INSULATED, SHIELDED, STRANDED BARE COPPER CONDUCTORS, WITH PVC JACKET.
4. PROVIDE CONDUIT FROM FIRST BASE SIDE DUGOUT ELECTRICAL ROOM, UNDERGROUND TO LIGHT FIXTURE POLE LOCATION INDICATED ON SHEET E03. PROVIDE CONDUIT VERTICALLY UP THE POLE AS REQURED. CABLING SHOULD NOT BE EXPOSED AT ANY POINT.

NEW PANEL SCHEDULE

PANEL DESIGNATION	CIRCUIT BREAKERS					CKTS/ TUB	# OF TUBS	MOUNT	PANEL LOCATION	BRANCH	PANEL TYPE	PANEL BUSSING (AMPS)	MAIN				VOLTAGE	AIC*	PANEL OPTIONS	PANEL NOTES
	QTY	AMP	P	TYPE	OPTIONS & ACC								TYPE	CB SIZE	CB TYPE	OPTIONS & ACC				
BP-A	19	20	1	MC	-	42	1	SM		N	B	400	MCB	250AF 250AT	MC		208/120 3Ø, 4W	42kA		
	1	30	1	MC	-															
	1	200	2	MC	-															
	20	SPC	1	---	----------															

3

ABBREVIATIONS:
- ACC = CIRCUIT BREAKER ACCESSORIES
- FM = FLUSH MOUNTED
- PM = PAD MOUNTED
- SM = SURFACE MOUNTED
- MLO = MAIN LUGS ONLY
- MCB = MAIN CIRCUIT BREAKER
- OPT = CIRCUIT BREAKER OPTIONS
- SFP = SEE FLOOR PLAN
- SD = SEE ONELINE DIAGRAM
- SPC = PREPARED SPACE

CIRCUIT BREAKER OPTIONS:
- ALS = ALARM SWITCH
- AXS = AUXILIARY SWITCH
- EOP = ELECTRICAL OPERATOR
- ST = SHUNT TRIP
- UVT = UNDER VOLTAGE TRIP
- CCB = CONTROLLABLE CIRCUIT BREAKER

CIRCUIT BREAKER TYPES:
- MC = MOLDED CASE
- SS = SOLID STATE

CIRCUIT BREAKER ACCESSORIES:
- AF = ARC FAULT CIRCUIT INTERRUPTER (RESIDENTIAL ONLY)
- AR = ARC FLASH REDUCTION
- CL = CURRENT LIMITING
- FR = FULLY RATED (100%)
- GE = GROUND FAULT PROTECTION (EQUIPMENT)
- GP = GROUND FAULT PROTECTION (PERSONNEL)
- GS = GROUND FAULT SENSING/ALARM
- HC = HEATING, COOLING, AC, REFRIGERATION(HCAR)
- HM = HIGH MAGNETIC (HID, MOTORS)
- MS = MOLDED CASE SWITCH
- MP = MOTOR CIRCUIT PROTECTOR
- L1 = LONG TIME/INSTANTANEOUS(LI)
- L2 = LONG TIME/SHORT TIME/INST.(LSI)
- L3 = LONG TIME/SHORT TIME/INST./GROUND FAULT TRIP(LSIG)
- L4 = LONG TIME/SHORT TIME/INST./GROUND FAULT SENSING(LSIA)
- SC = SYSTEM COMMUNICATION
- SD = SYSTEM DIAGNOSTICS
- SM = SYSTEM MONITORING
- ZS = ZONE SELECTIVE INTERLOCKING

PANEL OPTIONS:
- 1 = 200% NEUTRAL
- 2 = ISOLATED GROUND BUS
- 3 = DUAL MAIN LUGS
- 4 = THROUGH FEED LUGS

PANEL TYPES:
- P = POWER PANEL CONSTRUCTION
- B = BRANCH PANEL CONSTRUCTION
- L = LOAD CENTER CONSTRUCTION
- CB = CONTROLLABLE BRANCH PANEL

* REFER TO ONE-LINE DIAGRAM GENERAL NOTES FOR ADDITIONAL INFORMATION ON AIC RATING.

PANEL SCHEDULE NOTES:

1.

EQUIPMENT SCHEDULE - GENERAL

ID	DESCRIPTION	LOC	VOLTAGE / PHASE	LOAD			FEED FROM			OCPD			FEEDER				MOTOR CONTROLLER						DISCONNECT SWITCH					CONNECTION			SEE NOTE
				HP	FLA	KVA	PANEL	CIRCUIT	BRANCH	TYPE	SIZE	POLE	QTY	PHASE	GRD	COND	FURN BY	INST BY	WIRE BY	LOC	TYPE	OPTIONS	FURN BY	INST BY	WIRE BY	LOC	OPTIONS	NEMA TYPE	OPTIONS	MTG HEIGHT	
SLA1	SPORTS LIGHT POLE TYPE A	SITE	480/3	-	12.8	10.6	MDP-A	SD	N	CB	SD	SD	SD	SD	SD	SD	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1,2
SLA2	SPORTS LIGHT POLE TYPE A	SITE	480/3	-	14.5	12.1	MDP-A	SD	N	CB	SD	SD	SD	SD	SD	SD	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1,2
SLB1	SPORTS LIGHT POLE TYPE B	SITE	480/3	-	29.8	24.8	MDP-A	SD	N	CB	SD	SD	SD	SD	SD	SD	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1,2
SLB2	SPORTS LIGHT POLE TYPE B	SITE	480/3	-	29.8	24.8	MDP-A	SD	N	CB	SD	SD	SD	SD	SD	SD	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1,2
SLC1	SPORTS LIGHT POLE TYPE C	SITE	480/3	-	23.7	19.7	MDP-A	SD	N	CB	SD	SD	SD	SD	SD	SD	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1,2
SLC2	SPORTS LIGHT POLE TYPE C	SITE	480/3	-	23.7	19.7	MDP-A	SD	N	CB	SD	SD	SD	SD	SD	SD	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1,2
VC	MPTV VAN CONNECTION	SITE	208/1	-	150	31200.0	BP/A	11,13	N	CB	200	2	3	1/0	6	1-1/2"	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-
LCP	LIGHTING CONTROL PANEL POWER	SITE	120/1	-	5	500.0	BP/A	9	N	CB	20	1	2	12	12	3/4"	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-

ABBREVIATIONS:
- N = NORMAL BRANCH
- LS = ARTICLE 517, LIFE SAFETY BRANCH
- CR = ARTICLE 517, CRITICAL CARE BRANCH
- EQ = ARTICLE 517, EQUIPMENT BRANCH
- 700 = ARTICLE 700, EMERGENCY BRANCH
- 701 = ARTICLE 701, LEGALLY REQUIRED STANDBY BRANCH
- 702 = ARTICLE 702, OPTIONAL STANDBY BRANCH
- UPS = UNINTERRUPTIBLE POWER SUPPLY
- OCPD = OVERCURRENT PROTECTIVE DEVICE
- CB = CIRCUIT BREAKER
- F = FUSE
- BOL = BUILT-IN OVERLOAD
- CS = COMBINATION MOTOR CONTROLLER
- ECM = ELECTRICALLY COMMUTATED MOTOR
- MAG = MAGNETIC MOTOR CONTROLLER
- MAN = MANUAL MOTOR CONTROLLER
- RVS = REDUCE VOLTAGE MOTOR CONTROLLER
- SS = SOLID STATE MOTOR CONTROLLER
- VFD = VARIABLE FREQUENCY DRIVE
- IU = IN UNIT
- NU = NEAR UNIT
- OU = ON UNIT
- EC = ELECTRICAL CONTRACTOR
- FS = FOOD SERVICE EQUIP. CONTRACTOR
- GC = GENERAL CONTRACTOR
- MC = MECHANICAL CONTRACTOR
- MFR = MANUFACTURER
- OWN = OWNER
- PC = PLUMBING CONTRACTOR
- SA = SEE ARCHITECTURAL DETAILS
- SD = SEE DRAWINGS
- SFP = SEE FLOOR PLANS
- SFS = SEE FOOD SERVICE PLANS
- WP = WEATHERPROOF

OPTIONS:
- 1 = SINGLE RECEPTACLE
- 2 = DUPLEX RECEPTACLE
- 3 = DIRECT CONNECTION
- 4 = NON-FUSIBLE DISCONNECT
- 5 = FUSIBLE DISCONNECT
- 6 = WEATHERPROOF
- 7 = LOCKABLE
- 8 = CONCEALED
- 9 = TOGGLE SWITCH
- 10 = VERIFY WITH MANUFACTURER PRIOR TO INSTALLATION
- 11 = SURFACE MOUNTED
- 12 = FLUSH MOUNTED
- 13 = GFI RECEPTACLE
- 14 = GFI BREAKER
- 15 = LOCKABLE MOTOR RATED SWITCH
- 16 = SHUNT TRIP BREAKER

EQUIPMENT SCHEDULE NOTES:

1. SPORTS LIGHTING LOADS AND WIRE SIZES ARE APPROXIMATE FOR BIDDING PURPOSES ONLY, FINAL LOAD INFORMATION SHALL BE VERIFIED WITH SPORTS LIGHTING MANUFACTURER SITE SPECIFIC DRAWINGS.

2. SPORTS LIGHTING CIRCUITS SHALL BE RUN AROUND THE OUTSIDE OF THE FIELD AND WILL NOT BE PERMITED TO RUN THROUGH THE FIELD.

INSPEC
126 North Jefferson Street
Suite 120
Milwaukee, WI 53202
Ph. 414-744-6962

Consultants:

RING & DUCHATEAU
17400 West Capitol Drive, Brookfield, WI 53045
Phone: 414.778.1700 / Fax: 414.778.2360 / r-d@ringdu.com

THIS BAR IS 1" LONG. IF IT MEASURES ANYTHING OTHER THAN 1" ADJUST SCALE ACCORDINGLY.

R&D Project No.: 220332.02

Signature:

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
95% REVIEW	02/06/2023	
BID SET	02/17/2023	
ADDENDUM 1	03/02/2023	1
ADDENDUM 3	03/07/2023	3

Client:

MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

ELECTRICAL SCHEDULES

DATE:	01/03/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
DRAWN BY:	HSL
CHECKED BY:	VAD

Sheet No.:

E07

SHEET NOTES -

1. MUSCO DRAWINGS INCLUDED AS BASIS OF DESIGN FOR SPORTS FIELD LIGHTING. ELECTRICAL CONTRACTOR SHALL PROVIDE COMPLETE FIELD LIGHTING SYSTEM AS SHOWN ON MUSCO PLANS INCLUDED ON SHEETS E08, E09, & E10, OR EQUAL SYSTEM PROVIDED BY SPORTS BEAM LIGHTING, WISCONSIN LIGHTING LAB OR TRULY GREEN LIGHTING. SPORTS FIELD LIGHTING SYSTEM SHALL INCLUDE BUT NOT BE LIMITED TO LIGHTING DESIGN, PHOTOMETRIC PLANS, CUT SHEETS AND SUBMITTAL TO THE CITY, LIGHTING POLES, POLE BASE AND FIXTURES TO MEET THE LIGHTING LEVELS AND DESIGN INTENT INDICATED, LIGHTING CONTROL SYSTEM, PROGRAMMING AND ON SITE AIMING, WIRING AND ALL ASSOCIATED APPARATUS NECESSARY TO PROVIDE A COMPLETE TURN-KEY SYSTEM.
2. FIELD LIGHTING BACKGROUND IMAGE SHOWN IS SATELITE VIEW OF EXISTING FIELD. CONTRACTOR SHALL PROVIDE FIELD LIGHTING LAYOUT BASED ON CIVIL PLANS AND NEW FIELD LAYOUT AND FENCE LINES.

MATC Oak Creek Baseball
Oak Creek,WI

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
A1	70'	70'	5	TLC-LED-1500	7.11 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
A2	70'	70'	5	TLC-LED-1500	7.05 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
B1-B2	80'	80'	10	TLC-LED-1500	14.10 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
C1-C2	70'	70'	7	TLC-LED-1500	9.87 kW	A
		70'	2	TLC-LED-900	1.76 kW	A
		16'	3	TLC-BT-575	1.73 kW	A
6			*60*		*72.52 kW*	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Baseball	72.52 kW	60

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1500	LED 5700K - 75 CRI	1410W	181,000	>120,000	>120,000	>120,000	41
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>120,000	>120,000	>120,000	3
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	12
TLC-LED-900	LED 5700K - 75 CRI	880W	104,000	>120,000	>120,000	>120,000	4

Single Luminaire Amperage Draw Chart

Driver (.90 min power factor)	Max Line Amperage Per Luminaire						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1500	8.4	7.9	7.3	6.3	5.0	4.6	3.6
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3

From Hometown to Professional

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Baseball (Infield)	Horizontal Illuminance	71.7	58	82	1.41	1.24	A	60
Baseball (Outfield)	Horizontal Illuminance	51.4	37	67	1.80	1.39	A	60
Bullpens	Horizontal	26.5	20	32	1.63	1.32	A	60
Property Line	Horizontal	0.08	0	0.33	0.00		A	60
Property Line	Max Candela (by Fixture)	4874	37.8	13651	361.55	129.07	A	60
Property Line	Max Vert Illuminance (by Light Bank)	0.19	0	0.73	3340.48		A	60

ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

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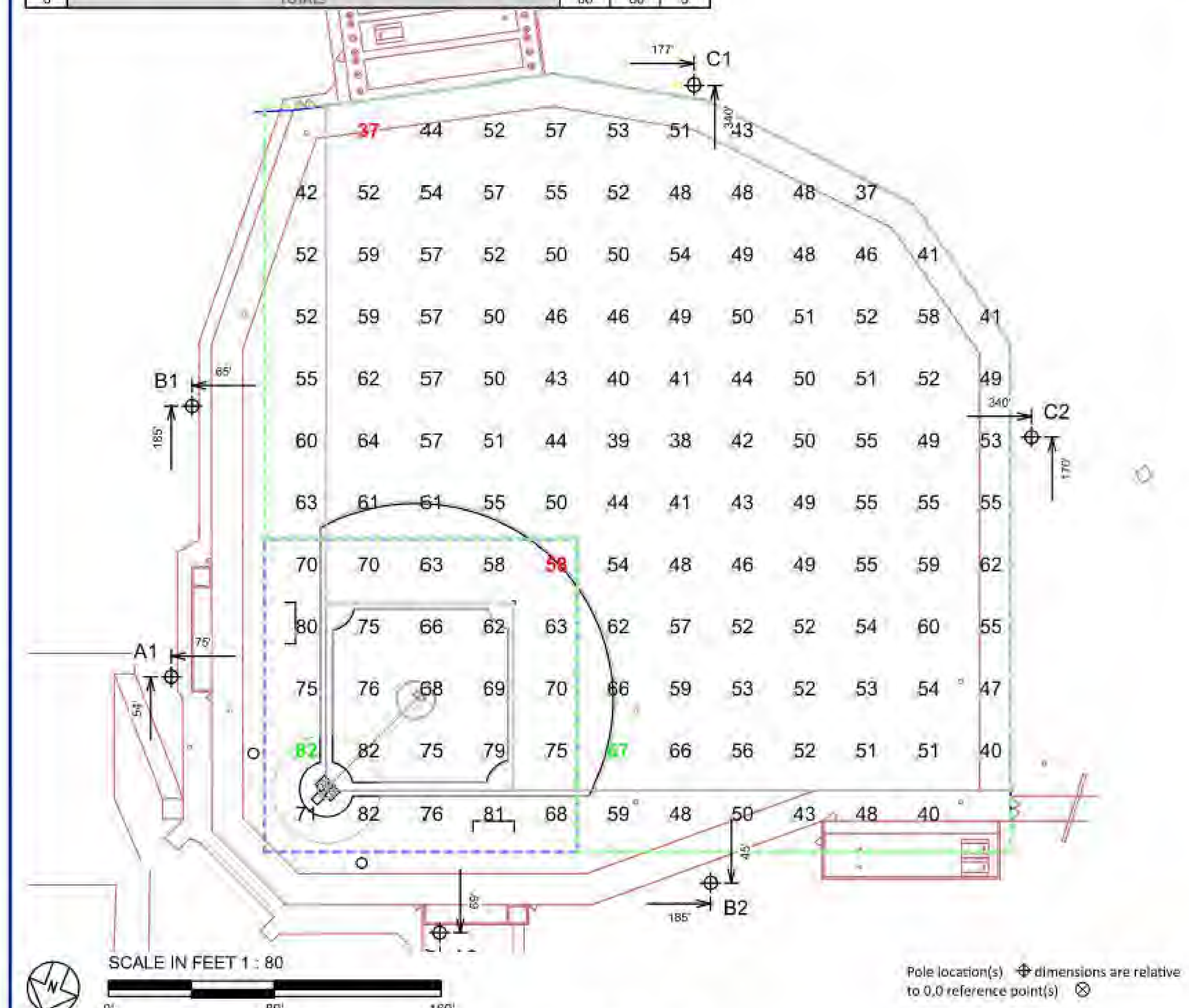
PROJECT SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



MATC Oak Creek Baseball
Oak Creek,WI

GRID SUMMARY

Name: Baseball
Size: Irregular 330' / 400' / 330'
Spacing: 30.0' x 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Infield	Outfield
Guaranteed Average:	70	50
Scan Average:	71.72	51.36
Maximum:	82	67
Minimum:	58	37
Avg / Min:	1.24	1.38
Guaranteed Max / Min:	2	2.5
Max / Min:	1.41	1.80
UG (adjacent pts):	1.19	1.41
CU:	0.74	
No. of Points:	25	110

LUMINAIRE INFORMATION

Applied Circuits: A
No. of Luminaires: 60
Total Load: 72.52 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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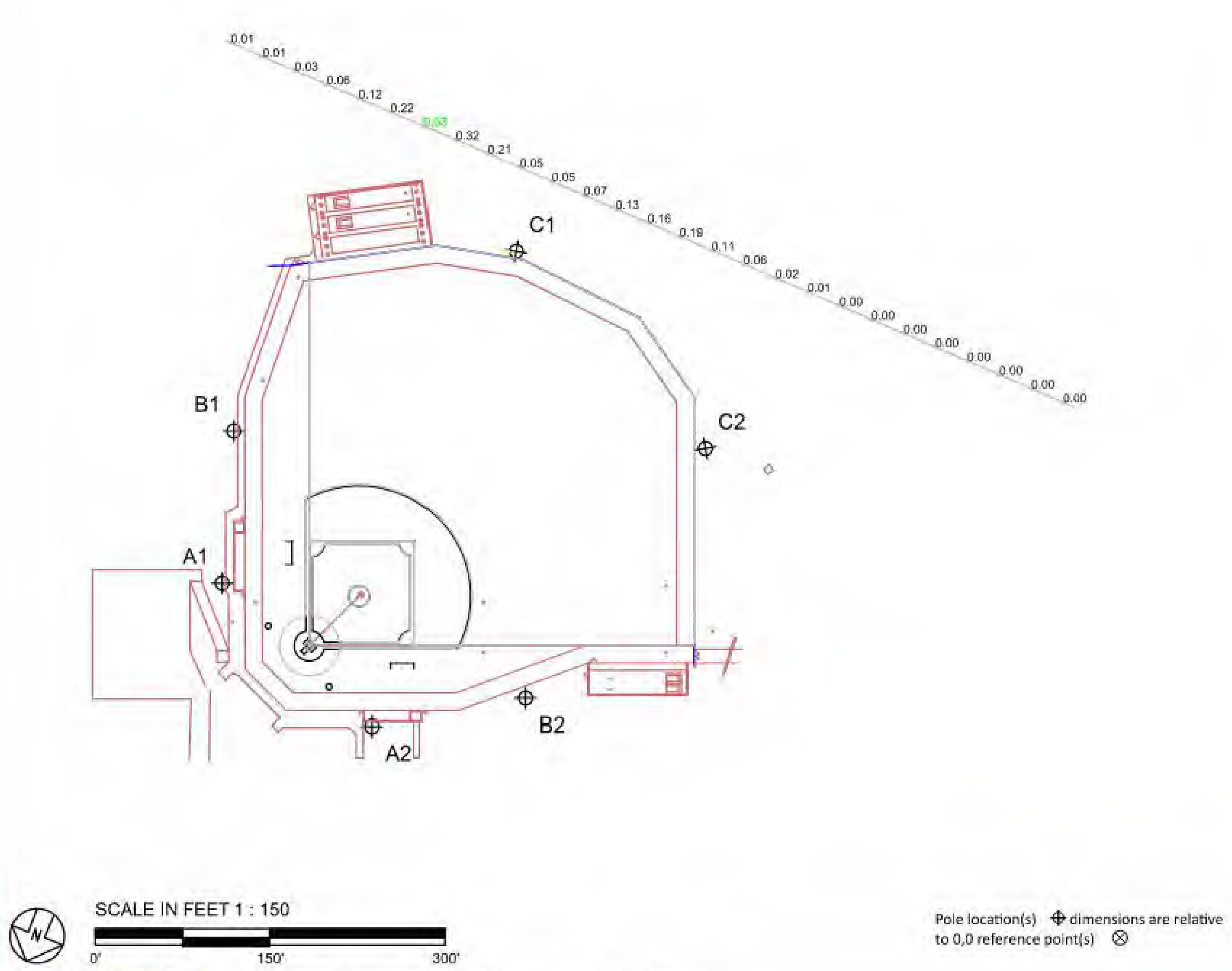
ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



MATC Oak Creek Baseball
Oak Creek,WI

GRID SUMMARY

Name: Property Line
Spacing: 30.0'
Height: 3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	0.0794
Maximum:	0.33
Minimum:	0.00
No. of Points:	27

LUMINAIRE INFORMATION

Applied Circuits: A
No. of Luminaires: 60
Total Load: 72.52 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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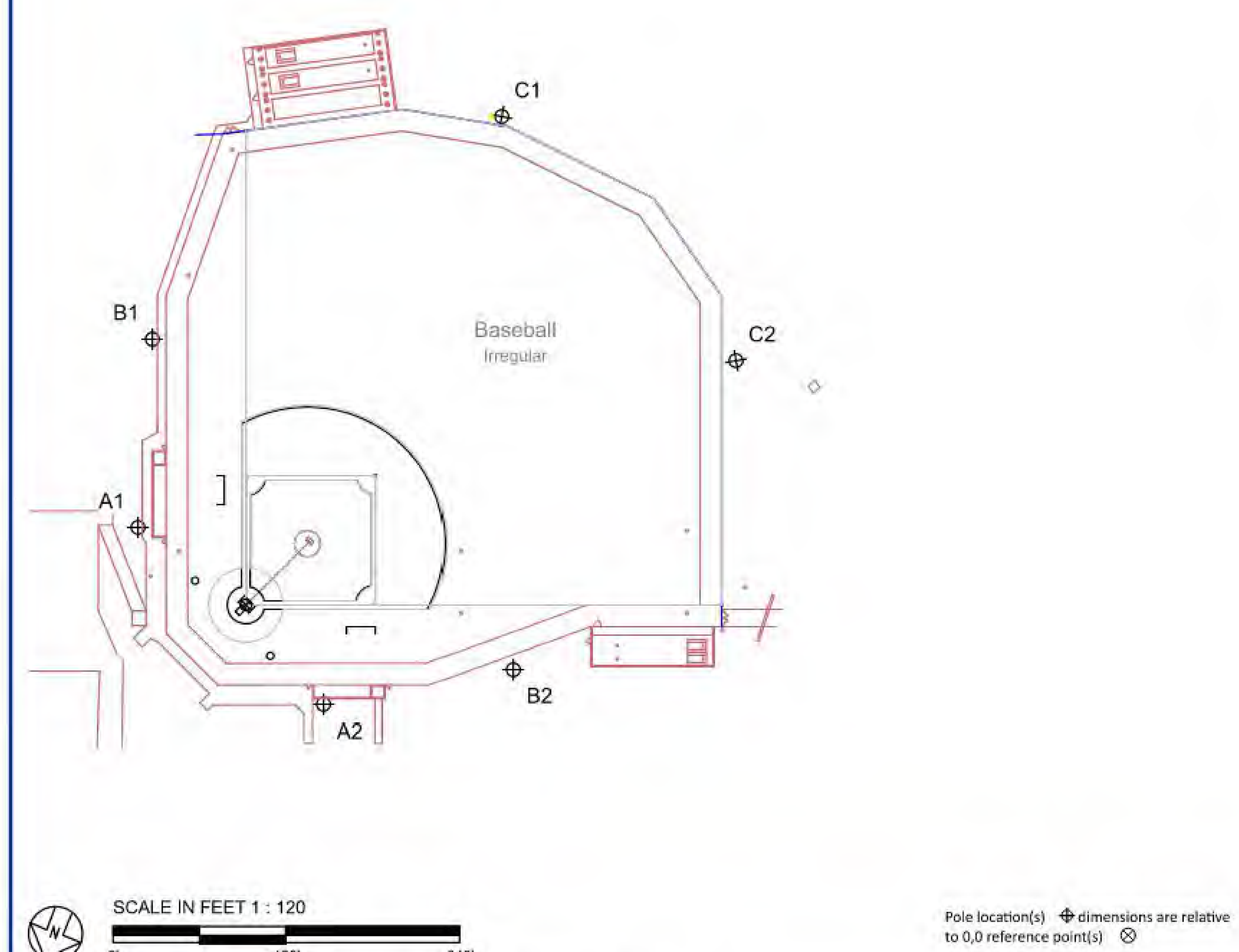
ILLUMINATION SUMMARY



MATC Oak Creek Baseball
Oak Creek,WI

EQUIPMENT LAYOUT

INCLUDES:
· Baseball

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
2	A1-A2	70'	-	15.5'	TLC-BT-575	1
				70'	TLC-LED-1500	5
2	B1-B2	80'	-	15.5'	TLC-BT-575	2
				80'	TLC-LED-1500	10
2	C1-C2	70'	-	70'	TLC-LED-900	2
				15.5'	TLC-BT-575	3
				70'	TLC-LED-1500	7
6	TOTALS					60

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Driver (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1500	8.4	7.9	7.3	6.3	5.0	4.6	3.6
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3

We Make It Happen.

ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

EQUIPMENT LAYOUT

INSPEC
126 North Jefferson Street
Suite 120
Milwaukee, WI 53202
Ph. 414-744-6962

Consultants:

RING & DUCHATEAU
17400 West Capitol Drive, Brookfield, WI 53045
Phone: 414.778.1700 / Fax: 414.778.2360 / r-d@ringdu.com

THIS BAR IS 1" LONG. IF IT MEASURES ANYTHING OTHER THAN 1" ADJUST SCALE ACCORDINGLY.

R&D Project No.: 220332.02

Signature:

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
95% REVIEW	02/06/2023	
BID SET	02/17/2023	
ADDENDUM 1	03/02/2023	1
ADDENDUM 3	03/07/2023	3

Client:

MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

SPORTS LIGHTING PLAN
AND PHOTOMETRICS

DATE:	01/03/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
DRAWN BY:	HSL
CHECKED BY:	VAD

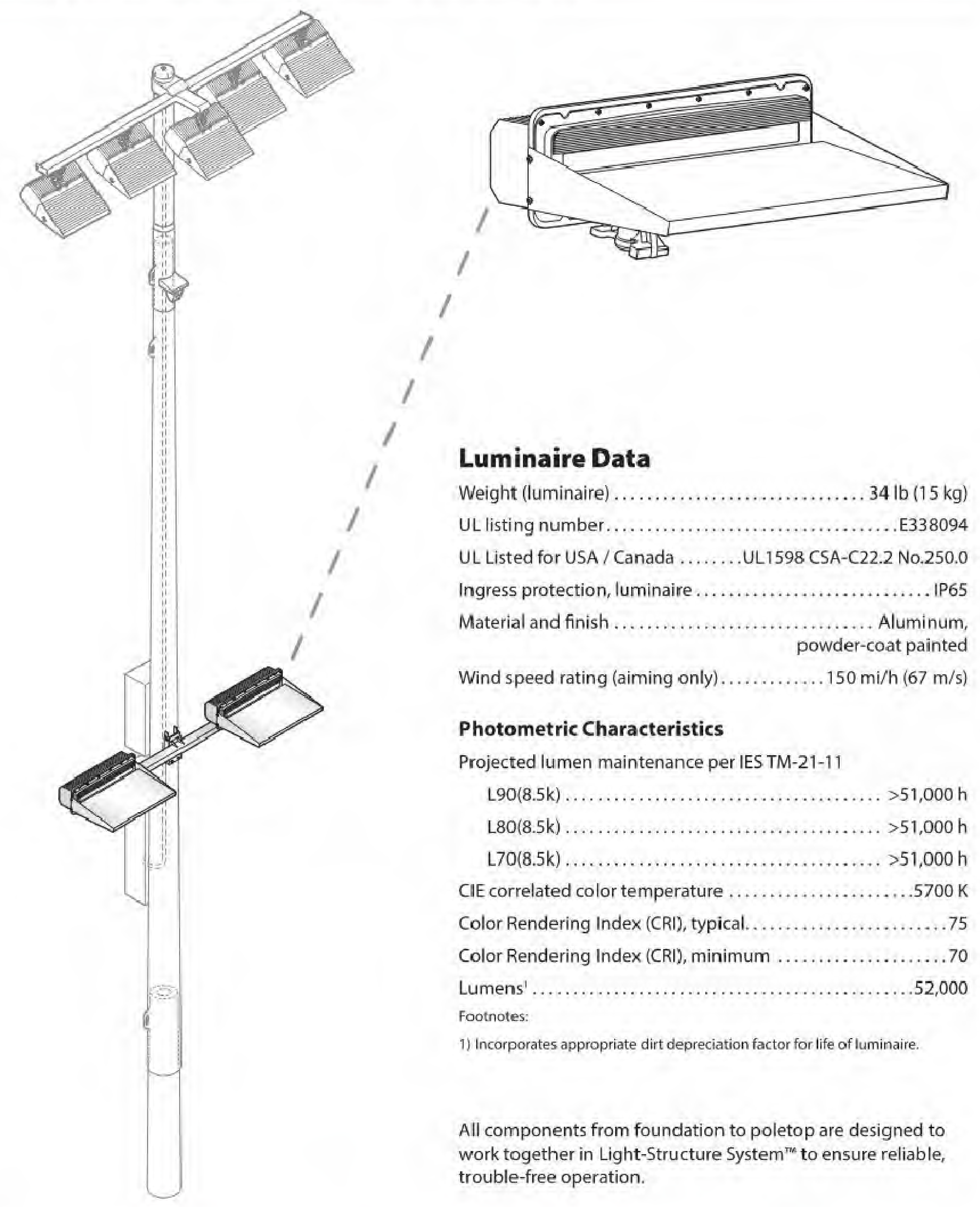
Sheet No.: 3 E08

SHEET NOTES -

1. MUSCO DRAWINGS INCLUDED AS BASIS OF DESIGN FOR SPORTS FIELD LIGHTING. ELECTRICAL CONTRACTOR SHALL PROVIDE COMPLETE FIELD LIGHTING SYSTEM AS SHOWN ON MUSCO PLANS INCLUDED ON SHEETS E08, E09, & E10, OR EQUAL SYSTEM PROVIDED BY SPORTS BEAM LIGHTING, WISCONSIN LIGHTING LAB OR TRULY GREEN LIGHTING. SPORTS FIELD LIGHTING SYSTEM SHALL INCLUDE BUT NOT BE LIMITED TO LIGHTING DESIGN, PHOTOMETRIC PLANS, CUT SHEETS AND SUBMITTAL TO THE CITY, LIGHTING POLES, POLE BASE AND FIXTURES TO MEET THE LIGHTING LEVELS AND DESIGN INTENT INDICATED, LIGHTING CONTROL SYSTEM, PROGRAMMING AND ON SITE AIMING, WIRING AND ALL ASSOCIATED APPARATUS NECESSARY TO PROVIDE A COMPLETE TURN-KEY SYSTEM.

Datasheet: **Light-Structure System™**

Luminaire and Driver Components – TLC-BT-575



Luminaire Data

Weight (luminaire) .... 34 lb (15 kg)
UL listing number E338094
UL Listed for USA / Canada UL1598 CSA-C22.2 No.250.0
Ingress protection, luminaire IP65
Material and finish .... Aluminum, powder-coat painted
Wind speed rating (aiming only) .... 150 mi/h (67 m/s)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11
L90(8.5k) .... >51,000 h
L80(8.5k) .... >51,000 h
L70(8.5k) .... >51,000 h
CIE correlated color temperature .... 5700 K
Color Rendering Index (CRI), typical 75
Color Rendering Index (CRI), minimum 70
Lumens[1] 52,000

Footnotes:
1) Incorporates appropriate dirt depreciation factor for life of luminaire.

All components from foundation to poletop are designed to work together in Light-Structure System™ to ensure reliable, trouble-free operation.

Datasheet: **Light-Structure System™**

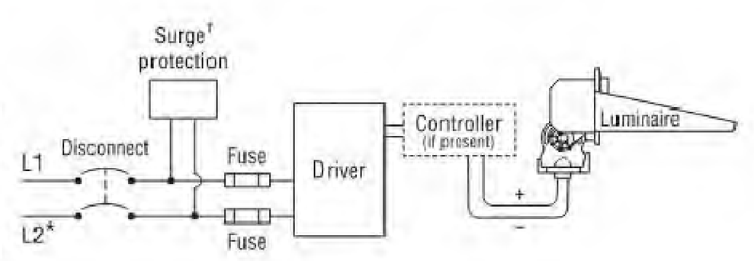
Luminaire and Driver Components – TLC-BT-575

Driver Data

Electrical Data

Rated wattage[1]
Per driver .... 575 W
Per luminaire .... 575 W
Number of luminaires per driver 1
Starting (inrush) current .... <40 A, 256 µ
Fuse rating .... 15 A
UL ambient temperature rating, electrical components enclosure .... 50°C (122°F)
Ingress protection, electrical components enclosure IP54
Efficiency 95%

Typical Wiring

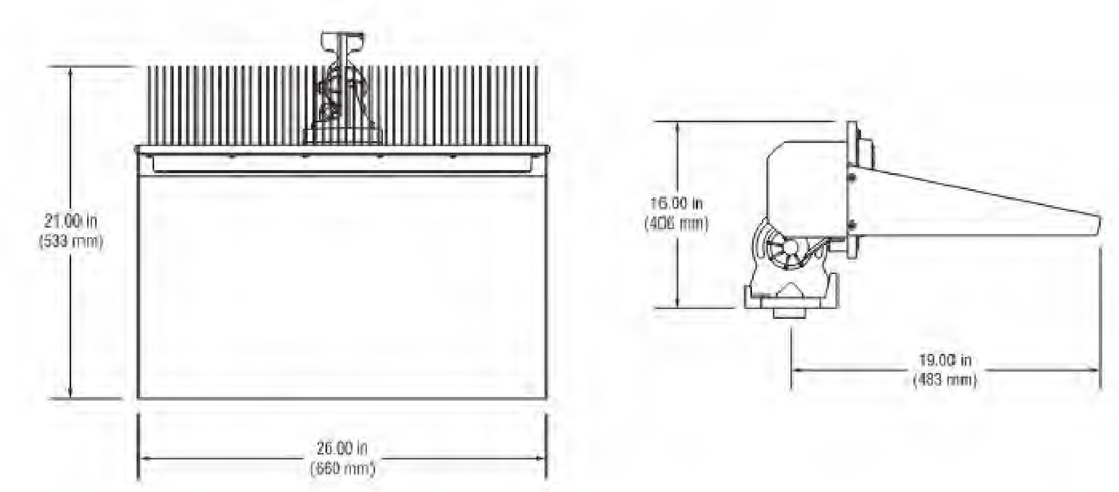


* If L2 (com) is neutral then not switched or fused.
† Not present if indoor installation.

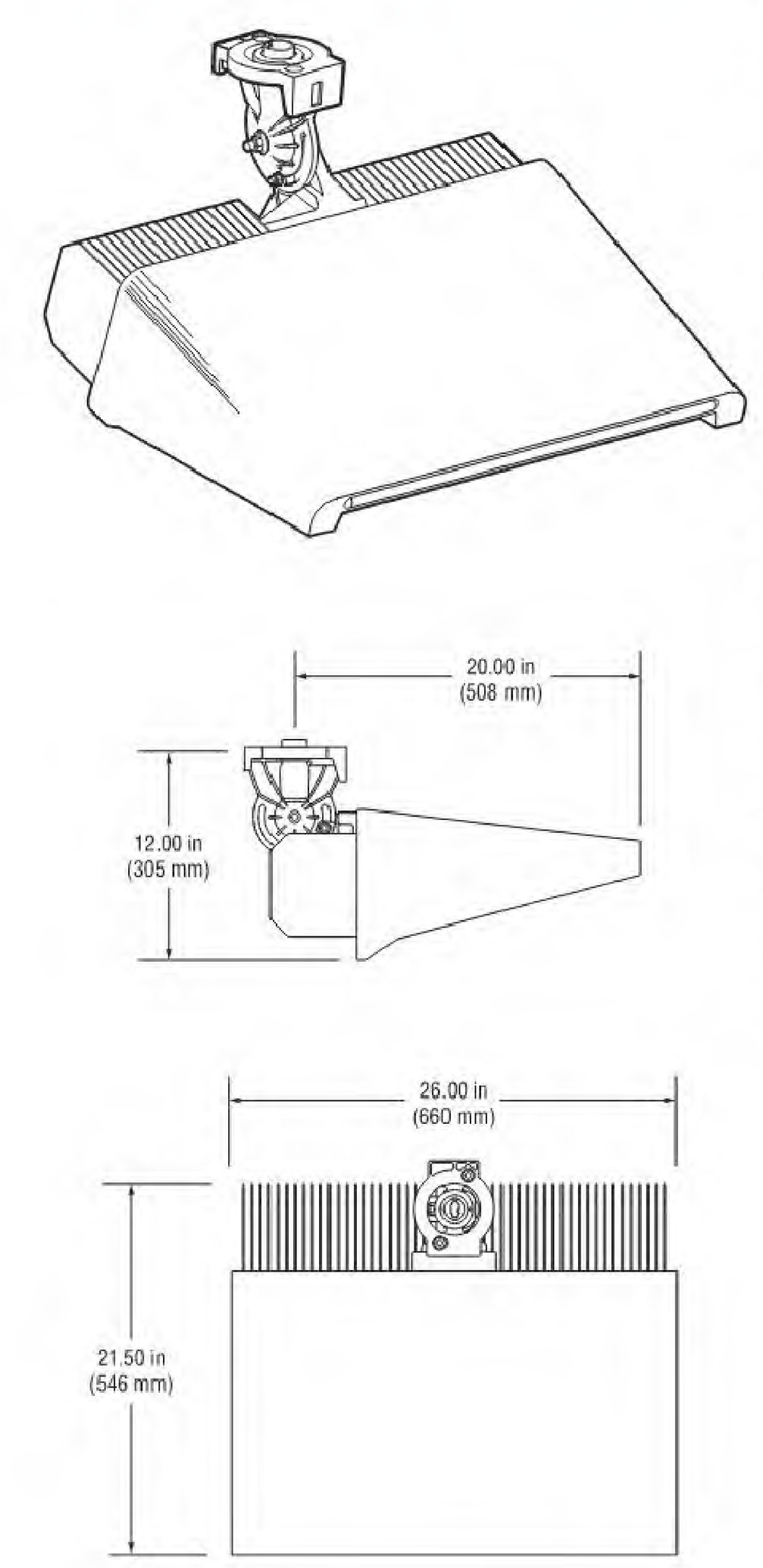
	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current[2]	3.30 A	3.17 A	3.00 A	2.87 A	2.75 A	2.38 A	1.90 A	1.74 A	1.65 A	1.59 A	1.38 A

Footnotes:
1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes
1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See Musco *Control System Summary* for circuit information.



Datasheet: **TLC-LED-900 Luminaire and Driver**



Luminaire Data

Weight (luminaire)	40 lb (18 kg)
UL listing number	E338094
UL listed for USA / Canada	UL1598 CSA-C22.2 No.250.0
CE Declaration	LVD, EMC, RoHS
Ingress protection, luminaire	IP65
Impact rating	IK07
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)
UL, IEC ambient temperature rating, luminaire	50°C (122°F)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (20k)	>120,000 h
L80 (20k)	>120,000 h
L70 (20k)	>120,000 h
Lumens[1]	89,600
CIE correlated color temperature	5700 K
Color rendering index (CRI)	75 typ, 70 min
LED binning tolerance	7-step MacAdam Ellipse

Footnotes:
1) Incorporates appropriate dirt depreciation factor for life of luminaire.

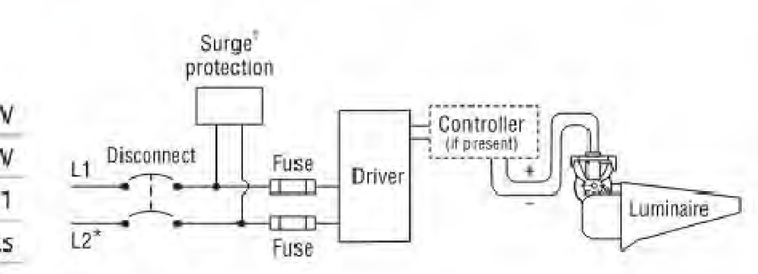
Datasheet: **TLC-LED-900 Luminaire and Driver**

Driver Data

Electrical Data

Rated wattage[1]	
Per driver	890 W
Per luminaire	890 W
Number of luminaires per driver	1
Starting (inrush) current	<40 A, 256 µs
Fuse rating	15 A
UL, IEC ambient temperature rating, electrical components enclosure	50°C (122°F)
Ingress protection, electrical components enclosure	IP54
Efficiency	95%
Dimming mode	optional
Range, energy consumption	25 – 100%
Range, light output	30 – 100%
Flicker	<2%
Total harmonic distortion (THD) at full output	<20%

Typical Wiring



* If L2 (com) is neutral then not switched or fused.
† Not present if indoor installation.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current per luminaire[2]	5.50 A	5.29 A	5.00 A	4.78 A	4.58 A	3.97 A	3.17 A	2.90 A	2.75 A	2.65 A	2.29 A

Footnotes:
1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes
1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.

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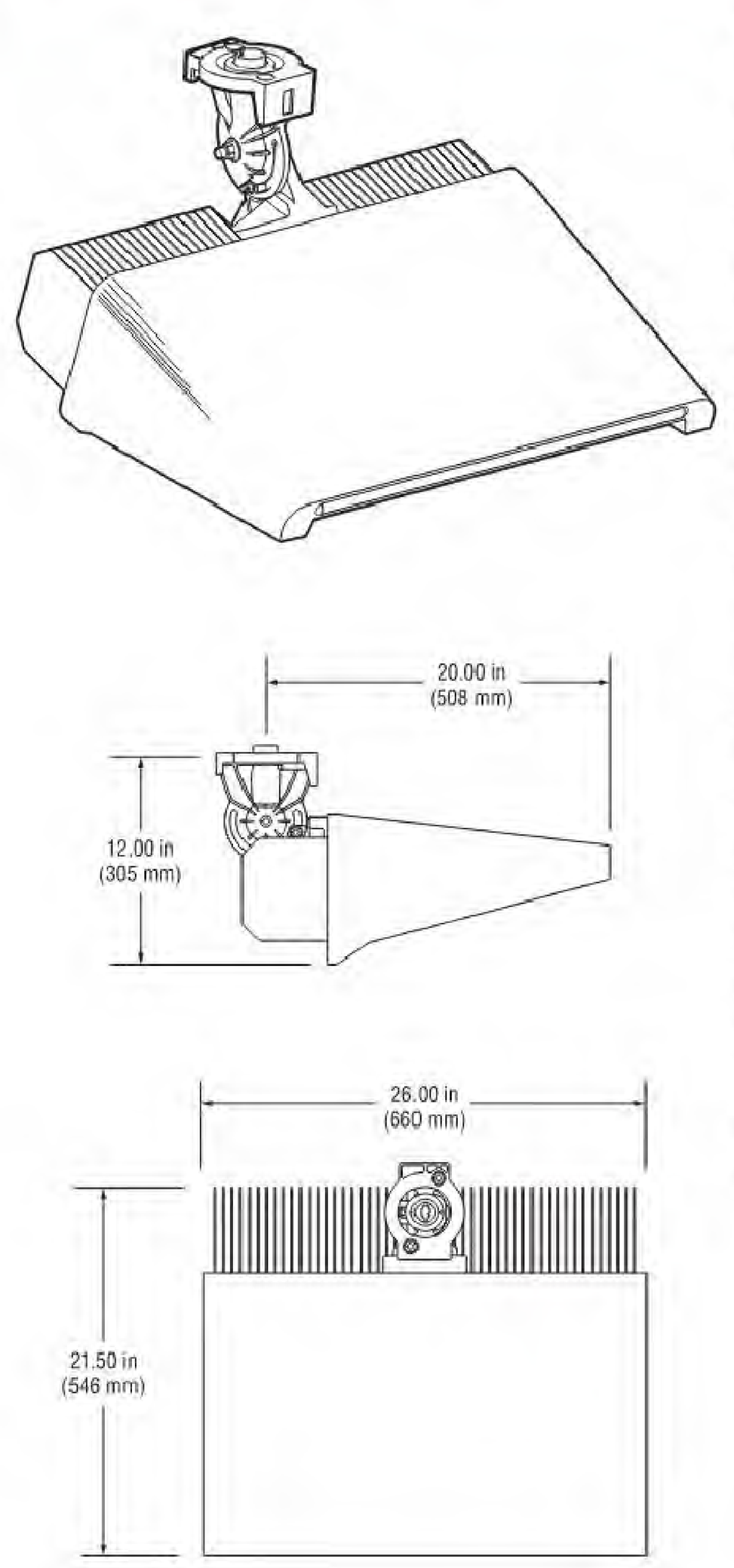
THIS BAR IS 1" LONG. IF IT MEASURES ANYTHING OTHER THAN 1" ADJUST SCALE ACCORDINGLY.

R&D Project No.: 220332.02

Signature:

Datasheet: **TLC for LED® RGBW Luminaire and Driver**



Luminaire Data

Weight (luminaire)	40 lb (18 kg)
UL listing number	E338094
UL listed for USA / Canada	UL 1598 CSA-C22-2 No.250.0
Ingress protection, luminaire	IP65
Impact rating	IK07
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)
UL ambient temperature rating, luminaire	50°C (122°F)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (20k) (white only)	>120,000 h
L80 (20k) (white only)	>120,000 h
L70 (20k) (white only)	>120,000 h
CIE correlated color temperature (white only)	5700 K
Color rendering index (CRI) (white only)	75 typ, 70 min
Lumens[1], white	28,500
Lumens[1], red	8,000
Lumens[1], green	20,000
Lumens[1], blue	8,000
LED binning tolerance	7-step MacAdam Ellipse (white LEDs only)

Footnotes:
1) Incorporates appropriate dirt depreciation factor for life of luminaire.

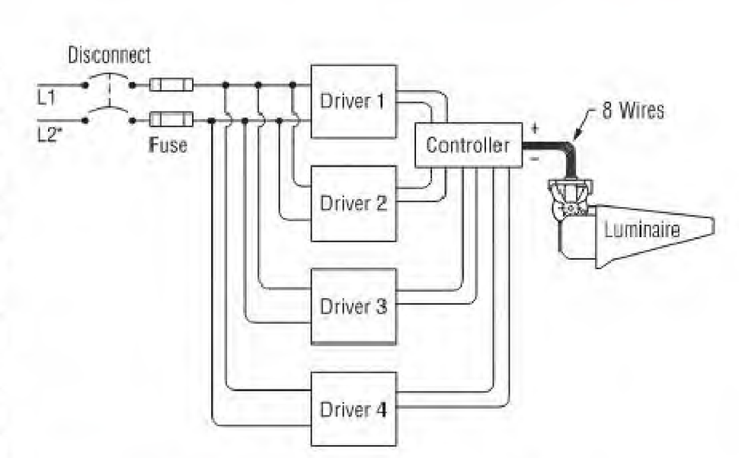
Datasheet: **TLC for LED® RGBW Luminaire and Driver**

Driver Data

Electrical Data

Rated wattage[1]	
Per luminaire, max	640 W
Number of drivers per luminaire	4
Starting (inrush) current	106 A, 5 ms
Fuse rating	20 A
UL, IEC ambient temperature rating, electrical components enclosure	50°C (122°F)
Ingress protection, electrical components enclosure	IP54
Efficiency	94%
Dimming mode	optional
Range, energy consumption	varies by color
Range, light output	varies by color

Typical Wiring



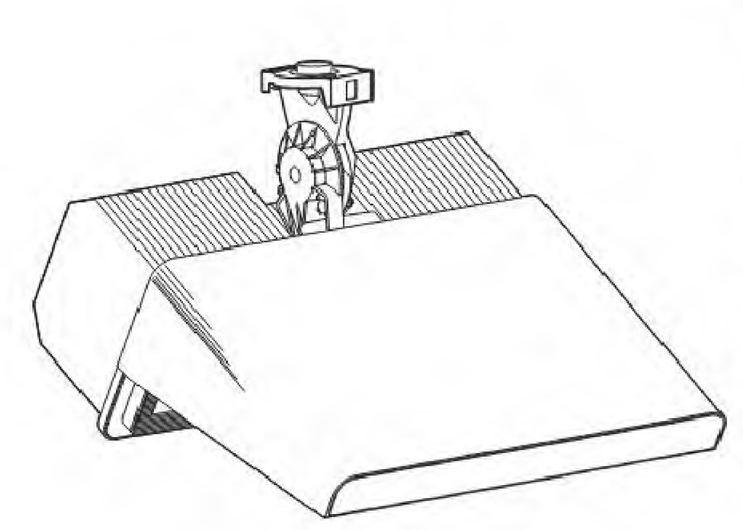
*If L2 is neutral then not switched or fused.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	480 Vac 60 Hz
Max operating current per luminaire[2]	3.56 A	3.44 A	3.24 A	3.08 A	2.96 A	2.56 A	2.04 A	1.48 A

Footnotes:
1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
2) Operating current includes allowance for power factor, operating temperature, and LED light source manufacturing tolerances.

Notes
1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.

Datasheet: **TLC-LED-1500 Luminaire and Driver**



Luminaire Data

Weight (luminaire)	67 lb (30 kg)
UL listing number	E338094 (pending)
UL listed for USA / Canada	UL1598 CSA-C22.2 No.250.0 (pending)
CE Declaration	LVD, EMC, RoHS
Ingress protection, luminaire	IP65
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)
UL, IEC ambient temperature rating, luminaire	50°C (122°F)

Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (13.5k)	>81,000 h
L80 (13.5k)	>81,000 h
L70 (13.5k)	>81,000 h
CIE correlated color temperature	5700 K
Color rendering index (CRI)	75 typ, 70 min
Lumens[1]	156,100

Footnotes:
1) Incorporates appropriate dirt depreciation factor for life of luminaire.

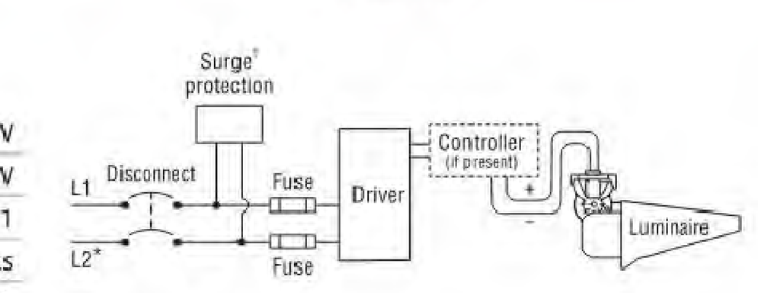
Datasheet: **TLC-LED-1500 Luminaire and Driver**

Driver Data

Electrical Data

Rated wattage[1]	
Per driver	1500 W
Per luminaire	1500 W
Number of luminaires per driver	1
Starting (inrush) current	<40 A, 256 µs
Fuse rating	15 A
UL, IEC ambient temperature rating, electrical components enclosure	45°C (113°F) - pending
Ingress protection, electrical components enclosure	IP54
Efficiency	95%
Dimming mode	optional
Range, energy consumption	11 – 100%
Range, light output	16 – 100%

Typical Wiring



* If L2 (com) is neutral then not switched or fused.
† Not present if indoor installation.

	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
Max operating current per luminaire[2]	9.30 A	8.95 A	8.46 A	8.09 A	7.75 A	6.72 A	5.36 A	4.90 A	4.65 A	4.49 A	3.88 A

Footnotes:
1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

Notes
1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
95% REVIEW	02/06/2023	
BID SET	02/17/2023	

Client:

MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

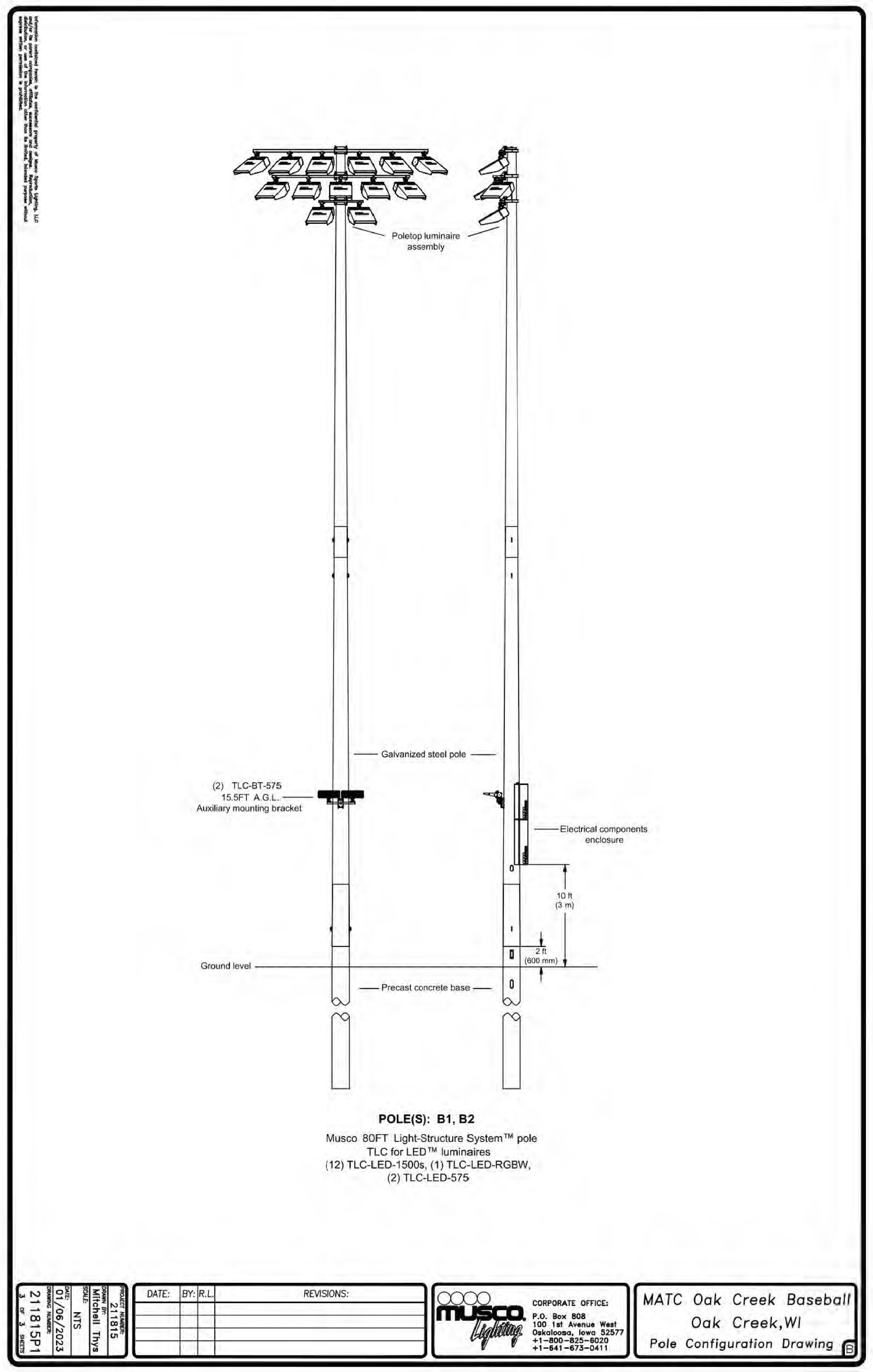
Sheet content:

SPORTS LIGHTING FIXTURE CUT SHEETS

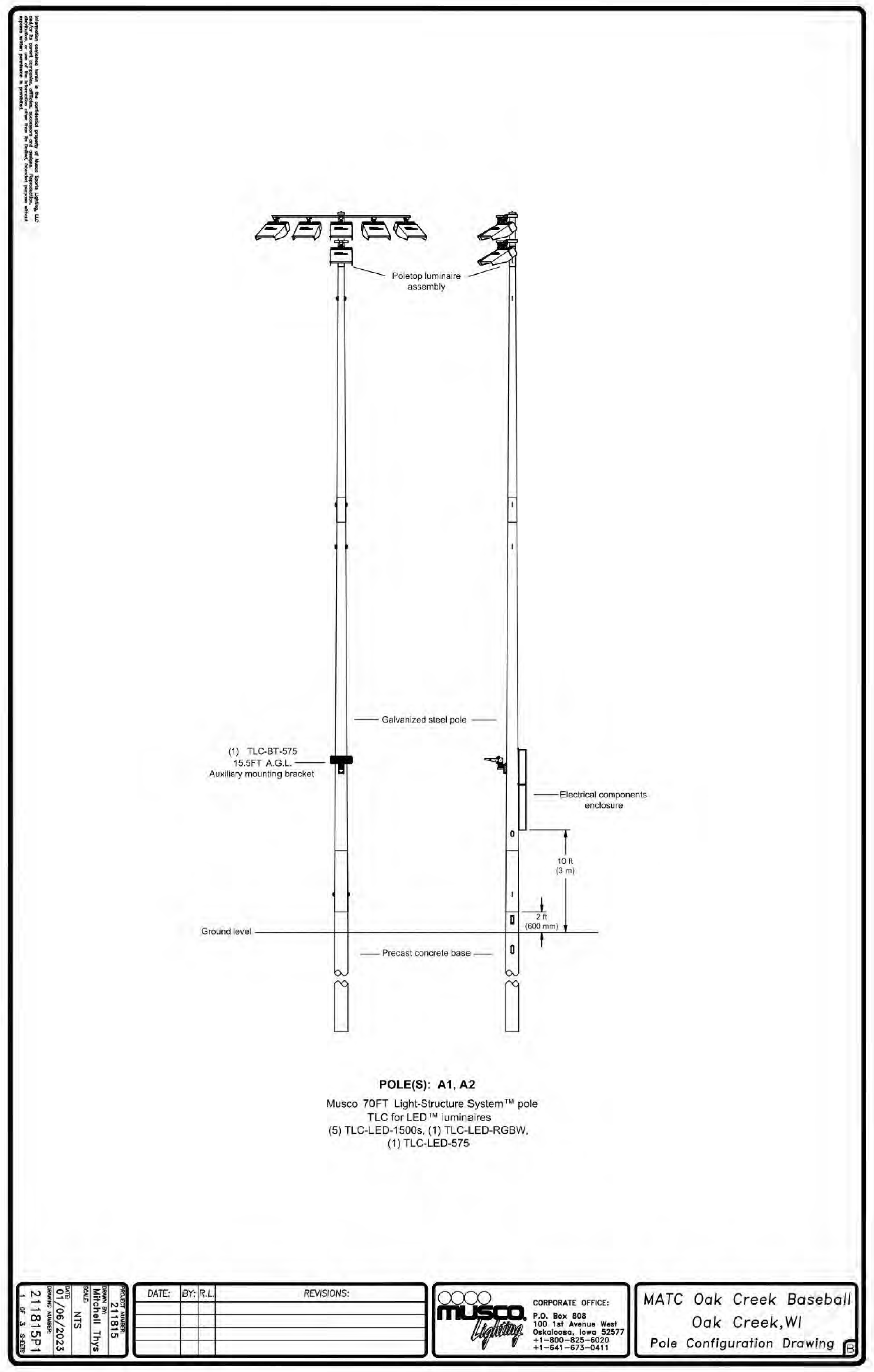
DATE:	01/03/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
DRAWN BY:	HSL
CHECKED BY:	VAD

Sheet No.:

E09



3 / E10 MANUFACTURER'S POLE DETAIL
SCALE = NOT TO SCALE

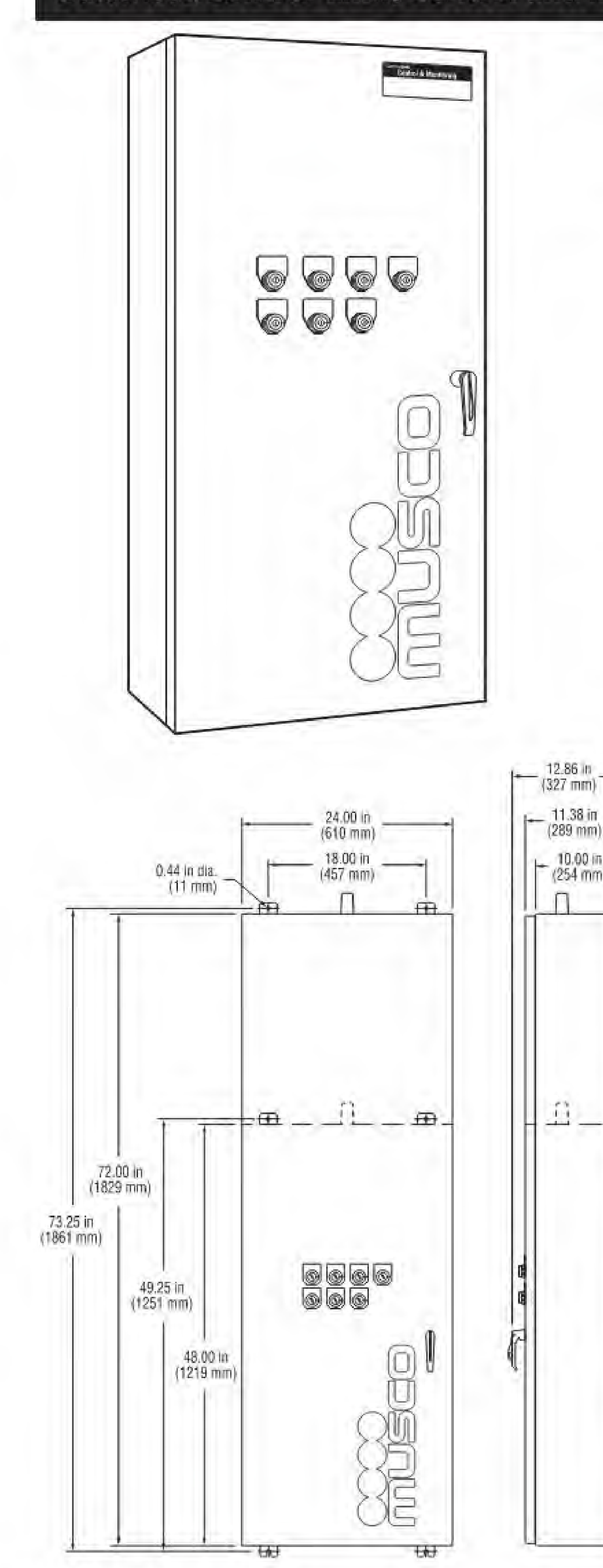


2 / E10 MANUFACTURER'S POLE DETAIL
SCALE = NOT TO SCALE

SHEET NOTES -

1. MUSCO DRAWINGS INCLUDED AS BASIS OF DESIGN FOR SPORTS FIELD LIGHTING. ELECTRICAL CONTRACTOR SHALL PROVIDE COMPLETE FIELD LIGHTING SYSTEM AS SHOWN ON MUSCO PLANS INCLUDED ON SHEETS E08, E09, & E10, OR EQUAL SYSTEM PROVIDED BY SPORTS BEAM LIGHTING, WISCONSIN LIGHTING LAB OR TRULY GREEN LIGHTING. SPORTS FIELD LIGHTING SYSTEM SHALL INCLUDE BUT NOT BE LIMITED TO LIGHTING DESIGN, PHOTOMETRIC PLANS, CUT SHEETS AND SUBMITTAL TO THE CITY, LIGHTING POLES, POLE BASE AND FIXTURES TO MEET THE LIGHTING LEVELS AND DESIGN INTENT INDICATED, LIGHTING CONTROL SYSTEM, PROGRAMMING AND ON SITE AIMING, WIRING AND ALL ASSOCIATED APPARATUS NECESSARY TO PROVIDE A COMPLETE TURN-KEY SYSTEM.

Datasheet: Control-Link® Control and Monitoring System



Overview

Control-Link® control and monitoring system provides flexible remote on/off control, monitoring, and management of your lighting system.

Features

Control

- Lighting system and auxiliary equipment
- Customized on/off control via phone, website, smartphone application, email, or fax up to 10 years in advance
- Multi-level user security settings
- Key-activated on/off/auto switches allow manual or automated control
- Seven controllable lighting zones

Monitoring

- Detects lamp outages and other issues that affect light quality

Management and Support

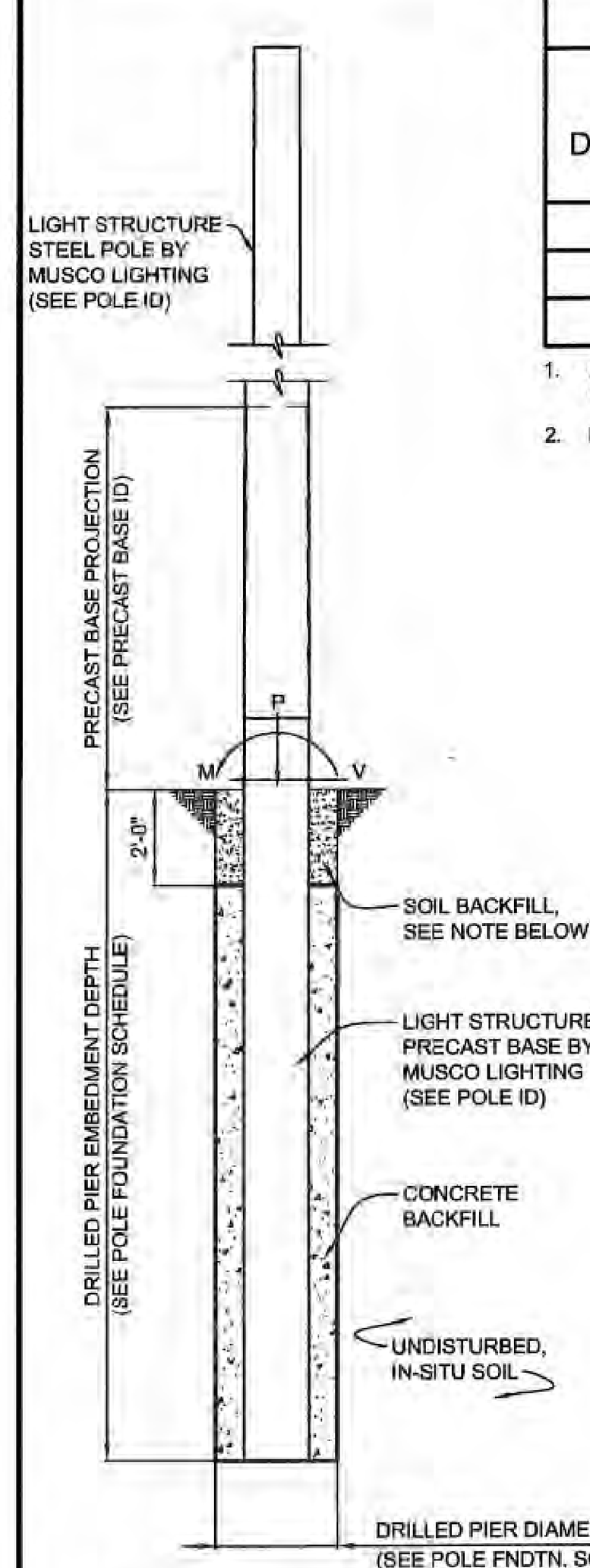
- Control-Link Central™ service center provides support 24 hours a day, 7 days a week for scheduling, monitoring, and reporting
- Luminaire outage notification within the next business day
- Customized usage reports through website

Technical Specifications

Ratings

UL 508A Listed E204954
FCC Part 15 .... Class A compliant
Operating temperature .... -4 °F to 140 °F (-20 °C to 60 °C)
Weight for 72 inch (1829 mm) cabinet .... 180 lb (82 kg)
Weight for 48 inch (1219 mm) cabinet .... 140 lb (64 kg)
Short Circuit Current Rating (SCCR)
with 30 A contactors* .... 18 kA
with 60 or 100 A contactors* .... 25 kA

*Minimum circuit breaker interrupt rating must be greater than or equal to SCCR rating listed above.



POLE FOUNDATION ELEV.
SCALE: NOT TO SCALE

SOIL BACKFILL NOTE:
THE TOP TWO FEET OF ANNULUS SHALL BE BACKFILLED WITH SOIL, WITH A CLASSIFICATION OF CLASS 5 (TABLE 1806.2) OR BETTER. COMPACTION, 95% FOR COHESIVE SOIL AND 98% FOR A COHESIONLESS SOIL BASED UPON STANDARD PROCTOR TESTING (ASTM D698).

POLE FOUNDATION SCHEDULE

POLE DESIGNATION	FORCES (1.)			DRILLED PIER		
	MOMENT (M) FT-LBS	SHEAR (V) LBS	VERTICAL (P) LBS	DIAMETER INCHES	EMBEDMENT DEPTH	CONCRETE BACKFILL YD^3 (2.)
A1, A2	88,915	1,556	2,198	42	14'-0"	3.7
B1, B2	150,831	2,777	4,376	42	18'-0"	4.4
C1, C2	93,911	2,045	3,434	42	16'-0"	4.1

1. ASD LOAD COMBINATION D + 0.6W.
VERTICAL FORCE IS WEIGHT OF DRESSED POLE (DOES NOT INCLUDE PRECAST BASE WEIGHT)
2. MINIMUM CONCRETE BACKFILL VOLUME, SITE CONDITIONS MAY REQUIRE ADDITIONAL BACKFILL.

PRECAST BASE IDENTIFICATION

PRECAST BASE TYPE	PRECAST BASE WEIGHT	PRECAST BASE LENGTH	PROJECTION ABOVE GRADE	STANDARD EMBEDMENT	OUTSIDE DIAMETER
4B	3,490 LBS	22'-0"	8'-0"	14'-0"	15.75"
5B	4,580 LBS	23'-11"	7'-11"	16'-0"	18.25"
6B	6,930 LBS	26'-1"	8'-1"	18'-0"	20.56"

POLE IDENTIFICATION

POLE DESIGNATION	POLE TYPE	PRECAST BASE TYPE	FIXTURE CONFIGURATION (FIX. PER XARM)	FIXTURE AND ACCESSORIES EPA (FT^2)
A1, A2	LSS70C	4B	7 (5+1)	20.1
B1, B2	LSS80C	6B	15 (6+5+2)	43.3
C1, C2	LSS70D	5B	13 (5+5)	33.6

- POLES A1 & A2 HAVE (1) BIA-100 SPEAKER AT 25'-0" AGL, INCLUDED IN EPA ABOVE.
- POLES B1 & B2 HAVE (1) PX40TN SPEAKER AT 25'-0" AGL, INCLUDED IN EPA ABOVE.
- POLES C1 & C2 HAVE (1) SM25T-8 SPEAKER AT 25'-0" AGL, INCLUDED IN EPA ABOVE.
- POLES A1 & A2 HAVE (1) LED FIXTURE AT 15'-6" AGL, INCLUDED ABOVE.
- POLES B1 & B2 HAVE (2) LED FIXTURES AT 15'-6" AGL, INCLUDED ABOVE.
- POLES C1 & C2 HAVE (3) LED FIXTURES AT 15'-6" AGL, INCLUDED ABOVE.

DESIGN NOTES

DESIGN PARAMETERS:
WIND: V_{ult} = 115 MPH, V_{asd} = 89 MPH (EXPOSURE C, RISK CATEGORY II) PER INTERNATIONAL BUILDING CODE, 2015 EDITION (ASCE 7-10). DESIGN WIND PARAMETERS ARE AS NOTED, ACTUAL EXPOSURE MUST BE VERIFIED FOR THE SITE BY THE PROPER GOVERNING OFFICIAL.

GEOTECHNICAL PARAMETERS:
ALLOWABLE END BEARING SOIL PRESSURE: 4,500 PSF
ALLOWABLE LATERAL SOIL BEARING PRESSURE:
0 PSF/FT (GRADE TO -5'-0"); 300 PSF/FT (-5'-0" TO -12'-0"); 225 PSF/FT (BELOW -12'-0")
IN ACCORDANCE WITH THE 2015 EDITION OF THE INTERNATIONAL BUILDING CODE, CHAPTER 18.

DESIGN SOIL PARAMETERS ARE AS NOTED. ACTUAL ALLOWABLE SOIL PARAMETERS MUST BE VERIFIED ON SITE. REFERENCE SOILS AND FOUNDATION REPORT, NO. 21054-10, PREPARED BY GESTRA ENGINEERING, INC., MILWAUKEE, WI.

A GEOTECHNICAL ENGINEER OR REPRESENTATIVE OF IS RECOMMENDED (NOT REQUIRED) TO BE AVAILABLE AT THE TIME OF THE FOUNDATION INSTALLATION TO VERIFY THE SOIL DESIGN PARAMETERS AND TO PROVIDE ASSISTANCE IF ANY PROBLEMS ARISE IN FOUNDATION INSTALLATION.

ENCOUNTERING SOIL FORMATIONS THAT WILL REQUIRE SPECIAL DESIGN CONSIDERATIONS OR EXCAVATION PROCEDURES MAY OCCUR. POLE FOUNDATIONS WILL NEED TO BE ANALYZED ACCORDING TO THE SOIL CONDITIONS THAT EXIST. IF ANY DISCREPANCIES OR INCONSISTENCIES ARISE, NOTIFY THE ENGINEER OF SUCH DISCREPANCIES. FOUNDATIONS WILL THEN BE REVISED ACCORDINGLY. REVISIONS WILL BE ANALYZED PER RECOMMENDATIONS DIRECTED BY A REGISTERED ENGINEER.

ALL EXCAVATIONS MUST BE FREE OF LOOSE SOIL AND DEBRIS PRIOR TO FOUNDATION INSTALLATION AND CONCRETE BACKFILL PLACEMENT. TEMPORARY CASINGS OR DRILLERS SLURRY MAY BE USED TO STABILIZE THE EXCAVATION DURING INSTALLATION. CASINGS MUST BE REMOVED DURING CONCRETE BACKFILL PLACEMENT. CONCRETE BACKFILL MUST BE PLACED WITH A TREMIE WHEN SLURRY OR WATER IS PRESENT WITHIN THE EXCAVATION OR WHEN THE FREE DROP EXCEEDS 6'-0".

CONTRACTOR MUST BE FAMILIAR WITH THE COMPLETE SOIL INVESTIGATION REPORT AND BORINGS, AND CONTACT THE GEOTECHNICAL FIRM (IF NECESSARY) TO UNDERSTAND THE SOIL CONDITIONS AND THE POSSIBILITY OF GROUND WATER PUMPING AND EXCAVATION STABILIZATION OR BRACING DURING PRECAST BASE INSTALLATION AND PLACEMENT OF CONCRETE BACKFILL.

CONCRETE:
CONCRETE SHALL BE AIR-ENTRAINED AND HAVE A MINIMUM COMPRESSIVE DESIGN STRENGTH AT 28 DAYS OF 3,000 PSI. 3,000 PSI CONCRETE SPECIFIED FOR EARLY POLE ERECTION, ACTUAL REQUIRED MINIMUM ALLOWABLE CONCRETE STRENGTH IS 1,000 PSI. ALL PIERS AND CONCRETE BACKFILL MUST BEAR ON AND AGAINST FIRM UNDISTURBED SOIL.

GENERAL NOTES:
FIXTURES MUST BE LOCATED TO MAINTAIN 10'-0" MINIMUM HORIZONTAL CLEARANCE FROM ANY OBSTRUCTION. ENGINEER MUST BE NOTIFIED IF FOUNDATIONS ARE NEAR ANY RETAINING WALLS OR WITHIN / NEAR ANY SLOPES STEEPER THAN 3H : 1V. POLES, FIXTURES, PRECAST BASES, ELECTRICAL ITEMS AND INSTALLATION PER MUSCO LIGHTING.

WISCONSIN KYLE G. LACINA E-42333 MARSHALLTOWN IA PROFESSIONAL ENGINEER

MATC OAK CREEK BASEBALL
FIELD LIGHTING
OAK CREEK, WI

STRUCTURAL ENGINEERS, P.C.

DRAWING TITLE: POLE AND FOUNDATION
SCALE: SEE PLAN
PROJECT NUMBER: 211815
DATE: 12 JANUARY 2023
DRAWING NUMBER: C1

1 / E10 MANUFACTURER'S POLE BASE DETAIL
SCALE = NOT TO SCALE

Datasheet: Control-Link® Control and Monitoring System

Technical Specifications

Construction

- NEMA type 4 cabinet
- Powder-coated aluminum 5052 H32 cabinet and panel
- Lockable, 3-point latch
- Supports lighting system voltage up to 480 V
- Requires 120 V phase-to-neutral control voltage
- Protective cover isolates high voltage

Internal Details

- Factory wired, programmed, and tested
- Internally fused
- Control power terminal blocks provided
- One control circuit operates entire cabinet
- Plug-in wire harnesses provided to connect multiple cabinets

Control Module

Receives and stores schedules from Control-Link Central™ service center, operates your equipment, and verifies schedules were carried out.

- Stores and executes schedules for up to 7 days
- Reboots automatically and executes current schedule when power is restored, in case of power interruption

Monitoring Modules

Monitors Musco lighting system and reports issues to keep facilities operating and to help plan routine maintenance. Alerts Control-Link Central service center to schedule appropriate action or maintenance.

Communication Module

Integrated communication system providing two-way reliable, high speed communication to Control-Link Central service center with no additional monthly charges during warranty period.

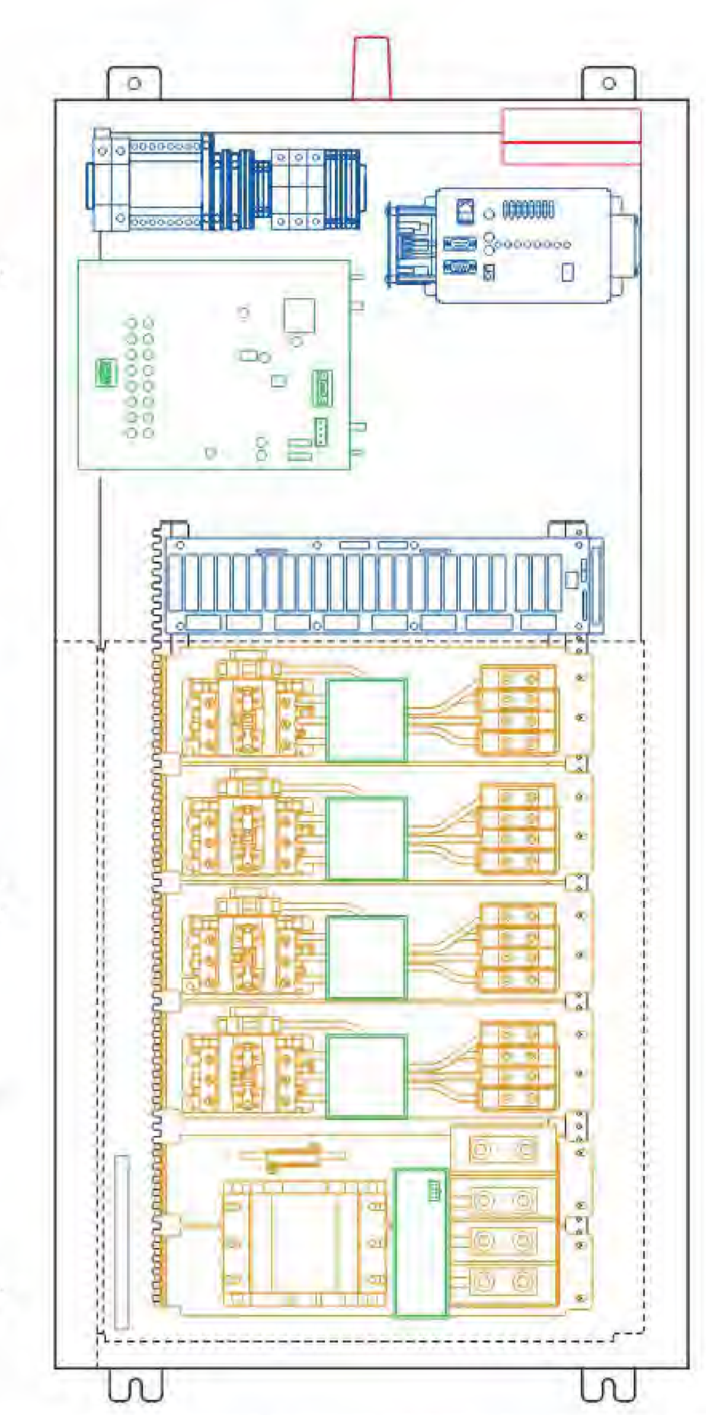
Contactor Modules

Switches equipment based on control module schedules.

- Tested and UL-listed for continuous operation at 100% of rated current
- Contactors rated for 30, 60, or 100 A

Ground Bar

Provides integral ground bar for lighting equipment grounding.



INSPEC
126 North Jefferson Street
Suite 120
Milwaukee, WI 53202
Ph. 414-744-6962

Consultants:

RING & DUCHATEAU
17400 West Capitol Drive, Brookfield, WI 53045
Phone: 414.778.1700 | Fax: 414.778.2360 | rd@rdgllc.com

THIS BAR IS 1" LONG. IF IT MEASURES ANYTHING OTHER THAN 1" ADJUST SCALE ACCORDINGLY.
R&D Project No.: 220332.02

Signature:

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
95% REVIEW	02/06/2023	
BID SET	02/17/2023	

Client:

MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

SPORTS LIGHTING DETAILS

DATE:	01/03/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
DRAWN BY:	HSL
CHECKED BY:	VAD

Sheet No.:

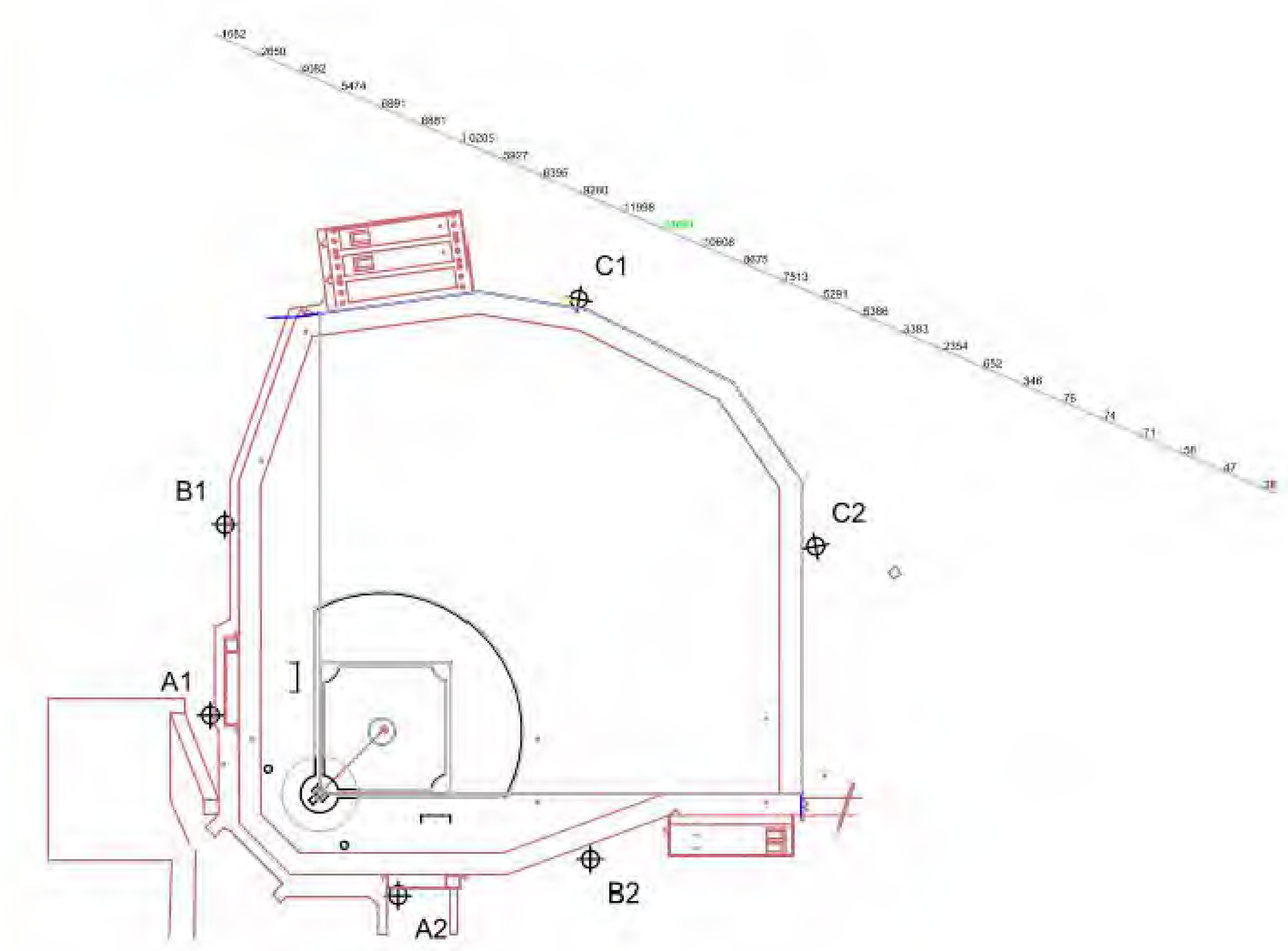
E10

SHEET NOTES -

1. MUSCO DRAWINGS INCLUDED AS BASIS OF DESIGN FOR SPORTS FIELD LIGHTING. ELECTRICAL CONTRACTOR SHALL PROVIDE COMPLETE FIELD LIGHTING SYSTEM AS SHOWN ON MUSCO PLANS INCLUDED ON SHEETS E08, E09, & E10, OR EQUAL SYSTEM PROVIDED BY SPORTS BEAM LIGHTING, WISCONSIN LIGHTING LAB OR TRULY GREEN LIGHTING. SPORTS FIELD LIGHTING SYSTEM SHALL INCLUDE BUT NOT BE LIMITED TO LIGHTING DESIGN, PHOTOMETRIC PLANS, CUT SHEETS AND SUBMITTAL TO THE CITY, LIGHTING POLES, POLE BASE AND FIXTURES TO MEET THE LIGHTING LEVELS AND DESIGN INTENT INDICATED, LIGHTING CONTROL
2. FIELD LIGHTING BACKGROUND IMAGE SHOWN IS SATELITE VIEW OF EXISTING FIELD. CONTRACTOR SHALL PROVIDE FIELD LIGHTING LAYOUT BASED ON CIVIL PLANS AND NEW FIELD LAYOUT AND FENCE LINES.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



SCALE IN FEET 1 : 150
0' 150' 300'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

MATC Oak Creek Baseball

Oak Creek,WI

GRID SUMMARY

Name:	**Property Line**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

CANDELA (PER FIXTURE)	
	Entire Grid
Scan Average:	4873.6245
Maximum:	13651.04
Minimum:	37.76
No. of Points:	27
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	**60**
Total Load:	72.52 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

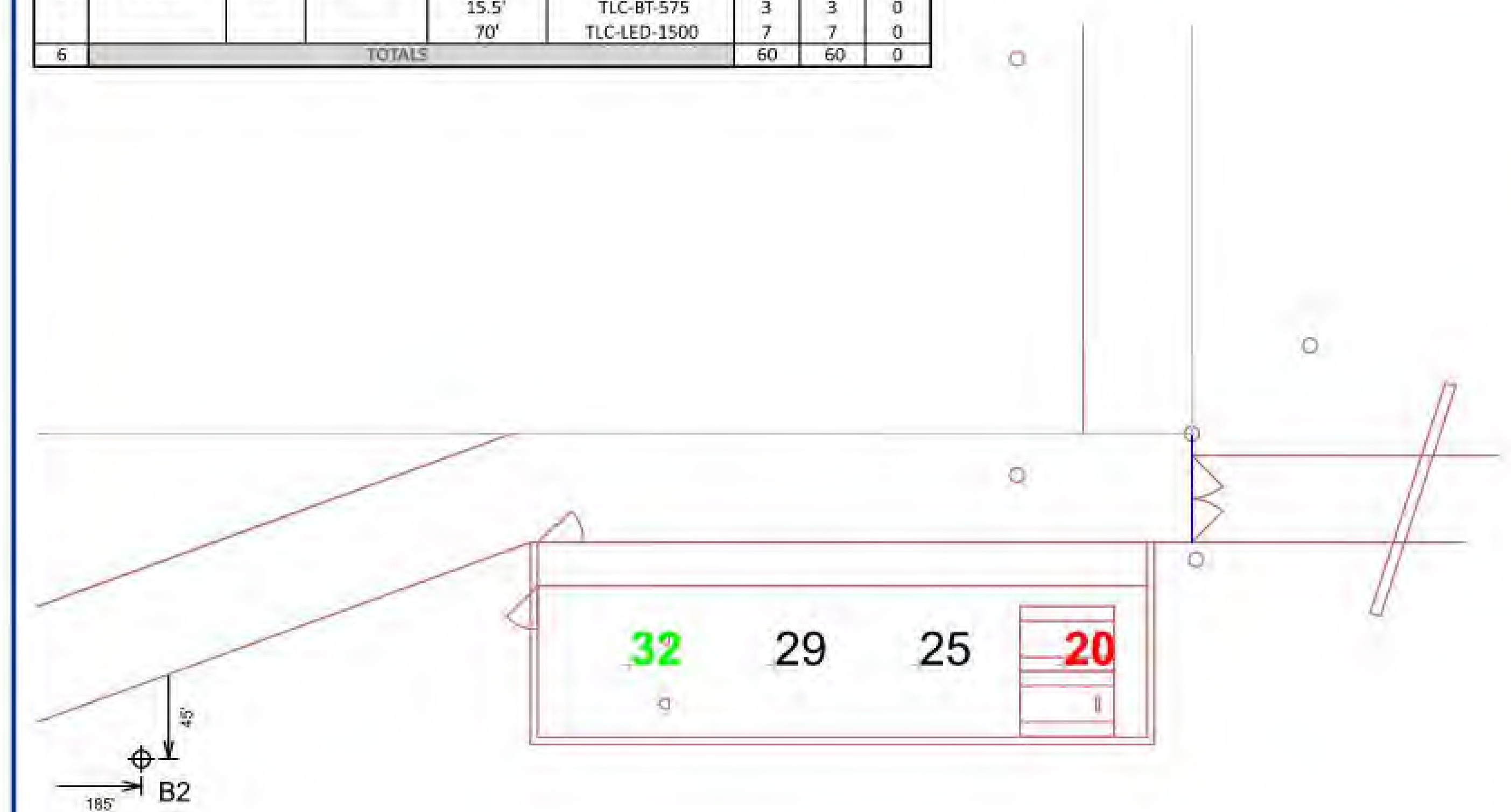
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



SCALE IN FEET 1 : 30
0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

MATC Oak Creek Baseball

Oak Creek,WI

GRID SUMMARY

Name:	**Bullpens**
Size:	Irregular 330' / 400' / 330'
Spacing:	20.0' x 20.0'
Height:	0.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES	
	Entire Grid
Scan Average:	**26.45**
Maximum:	32
Minimum:	20
No. of Points:	4
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	**60**
Total Load:	72.52 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

ILLUMINATION SUMMARY

INSPEC
126 North Jefferson Street
Suite 120
Milwaukee, WI 53202
Ph. 414-744-6962

Consultants:

RING & DUCHATEAU
17400 West Capitol Drive, Brookfield, WI 53045
Phone: 414.778.1700 / Fax: 414.778.2360 / r-d@ringdu.com

THIS BAR IS 1" LONG. IF IT MEASURES ANYTHING OTHER THAN 1" ADJUST SCALE ACCORDINGLY.

R&D Project No.: 220332.02

Signature:

Issues and revisions:

ISSUE LEVEL / REVISION:	DATE:	No.:
95% REVIEW	02/06/2023	
BID SET	02/17/2023	
ADDENDUM 1	03/02/2023	1
ADDENDUM 3	03/07/2023	3

Client:

MILWAUKEE AREA TECHNICAL COLLEGE

OAK CREEK CAMPUS (OCC)

Project title:

OCC BASEBALL FIELD LIGHTING

6665 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

Sheet content:

SPORTS LIGHTING PLAN
AND PHOTOMETRICS

DATE:	01/03/2023
CLIENT PROJECT No.:	2023319.01
INSPEC PROJECT No.:	301845
PROJECT MGR:	VAD
DRAWN BY:	HSL
CHECKED BY:	VAD

Sheet No.:

3 E11

MATC Oak Creek Baseball

Oak Creek,WI

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
A1	70'	70'	5	TLC-LED-1500	7.11 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
A2	70'	70'	5	TLC-LED-1500	7.05 kW	A
		16'	1	TLC-BT-575	0.58 kW	A
B1-B2	80'	80'	10	TLC-LED-1500	14.10 kW	A
		16'	2	TLC-BT-575	1.15 kW	A
C1-C2	70'	70'	7	TLC-LED-1500	9.87 kW	A
		70'	2	TLC-LED-900	1.76 kW	A
		16'	3	TLC-BT-575	1.73 kW	A
6			***60***		***72.52 kW***	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Baseball	72.52 kW	60

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1500	LED 5700K - 75 CRI	1410W	181,000	>120,000	>120,000	>120,000	41
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>120,000	>120,000	>120,000	3
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	12
TLC-LED-900	LED 5700K - 75 CRI	880W	104,000	>120,000	>120,000	>120,000	4

Single Luminaire Amperage Draw Chart

Driver (.90 min power factor)	Max Line Amperage Per Luminaire						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1500	8.4	7.9	7.3	6.3	5.0	4.6	3.6
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Baseball (Infield)	Horizontal Illuminance	71.7	58	82	1.41	1.24	A	60
Baseball (Outfield)	Horizontal Illuminance	51.4	37	67	1.80	1.39	A	60
Bullpens	Horizontal	26.5	20	32	1.63	1.32	A	60
Property Line	Horizontal	0.08	0	0.33	0.00		A	60
Property Line	Max Candela (by Fixture)	4874	37.8	13651	361.55	129.07	A	60
Property Line	Max Vert Illuminance (by Light Bank)	0.19	0	0.73	3340.48		A	60

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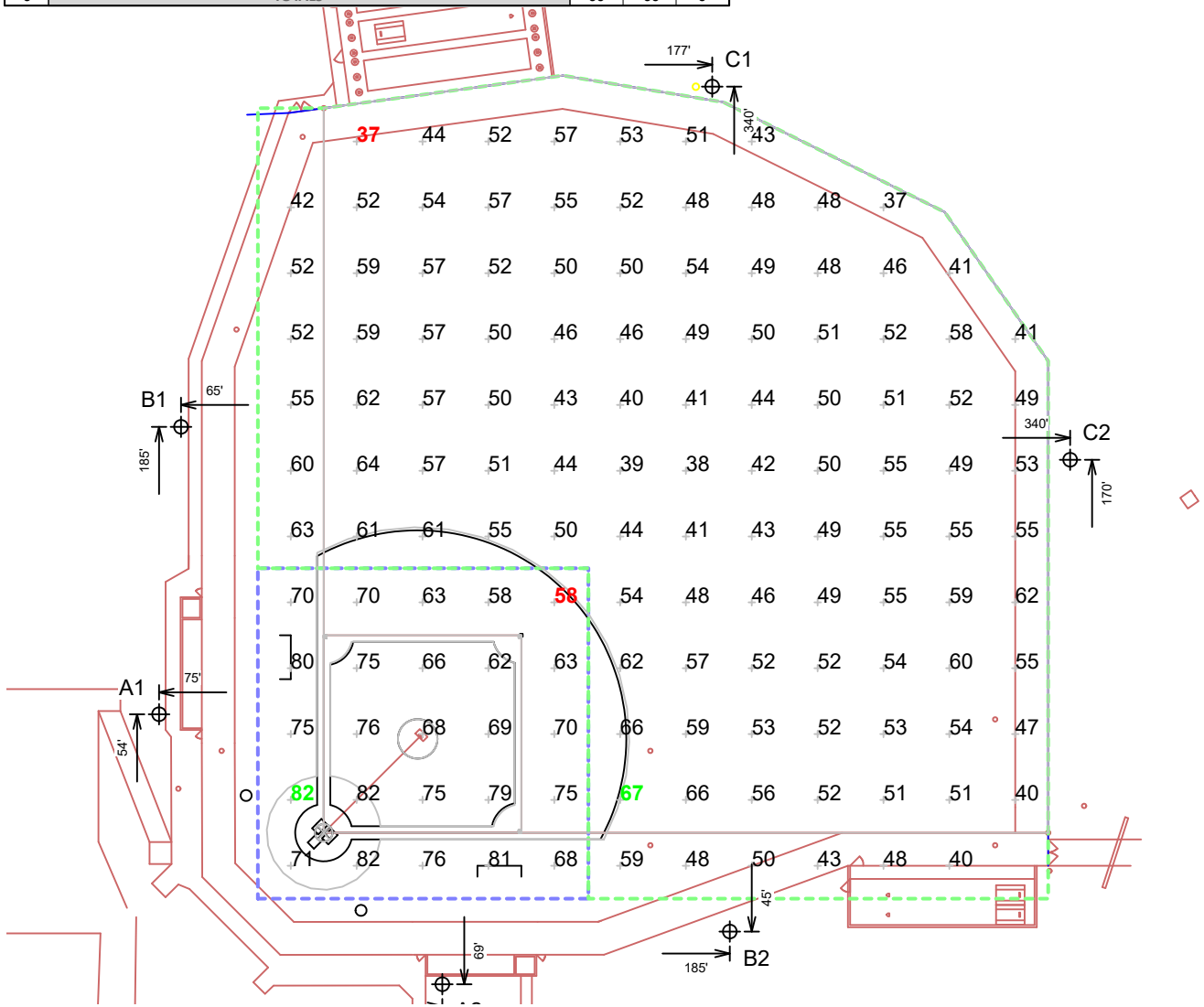
MATC Oak Creek Baseball

Oak Creek,WI

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Baseball**
Size:	Irregular 330' / 400' / 330'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Infield	Outfield
Guaranteed Average:	**70**	**50**
Scan Average:	71.72	51.36
Maximum:	82	67
Minimum:	58	37
Avg / Min:	1.24	1.38
Guaranteed Max / Min:	**2**	**2.5**
Max / Min:	1.41	1.80
UG (adjacent pts):	1.19	1.41
CU:	0.74	
No. of Points:	25	110

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**60**
Total Load:	72.52 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

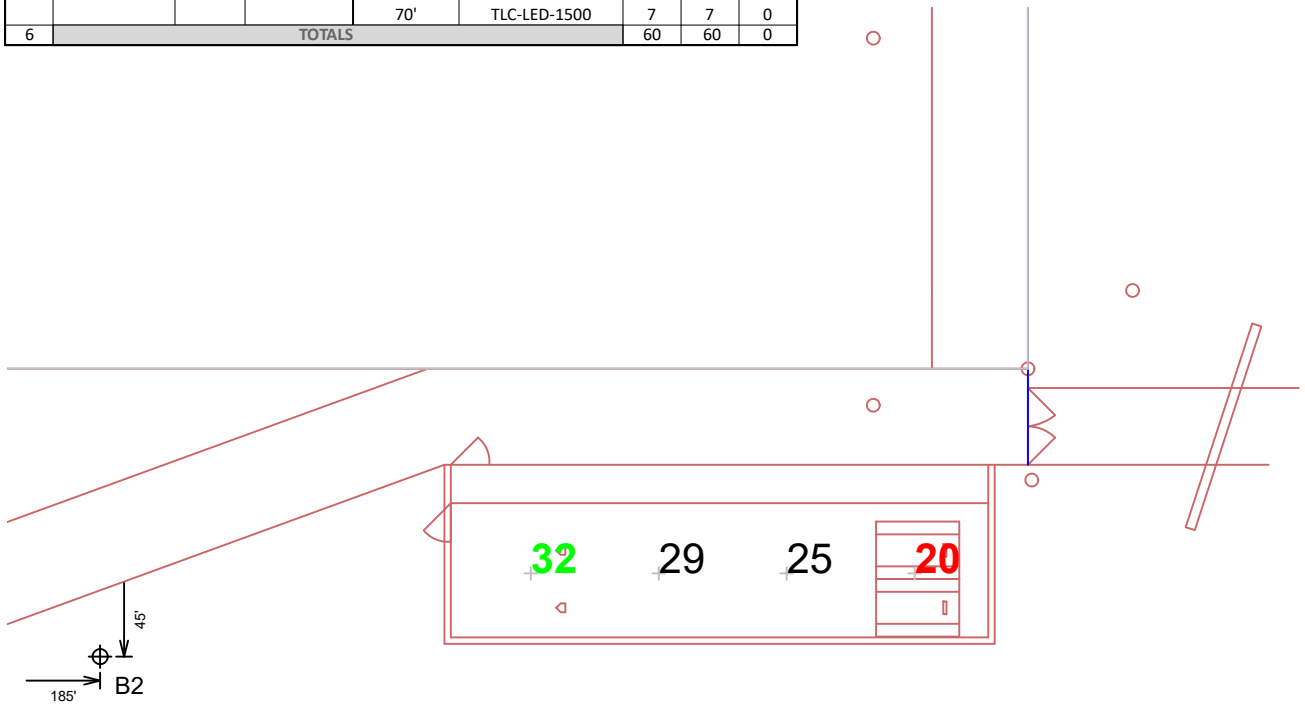
Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



MATC Oak Creek Baseball

Oak Creek,WI

GRID SUMMARY

Name:	**Bullpens**
Size:	Irregular 330' / 400' / 330'
Spacing:	20.0' x 20.0'
Height:	0.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**26.45**
Maximum:	32
Minimum:	20
No. of Points:	4

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**60**
Total Load:	72.52 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

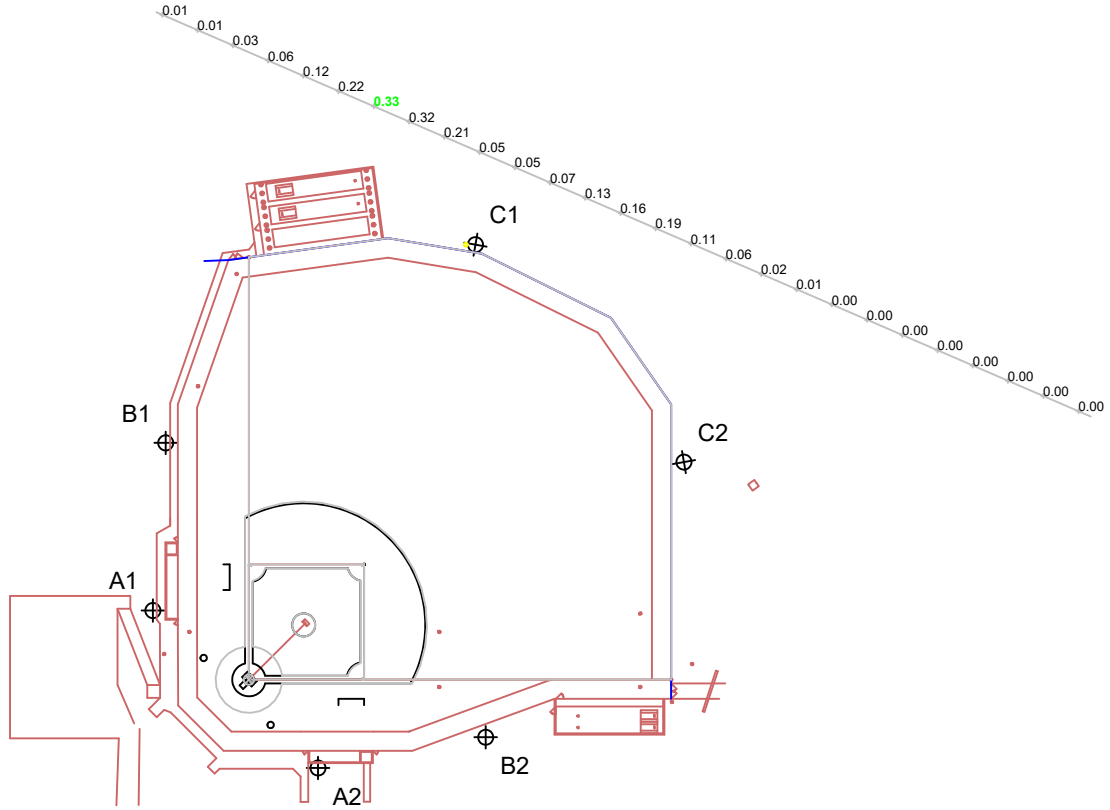
ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

MATC Oak Creek Baseball

Oak Creek,WI

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



SCALE IN FEET 1 : 150

0' 150' 300'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Property Line**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	0.0794
Maximum:	0.33
Minimum:	0.00
No. of Points:	27

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**60**
Total Load:	72.52 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

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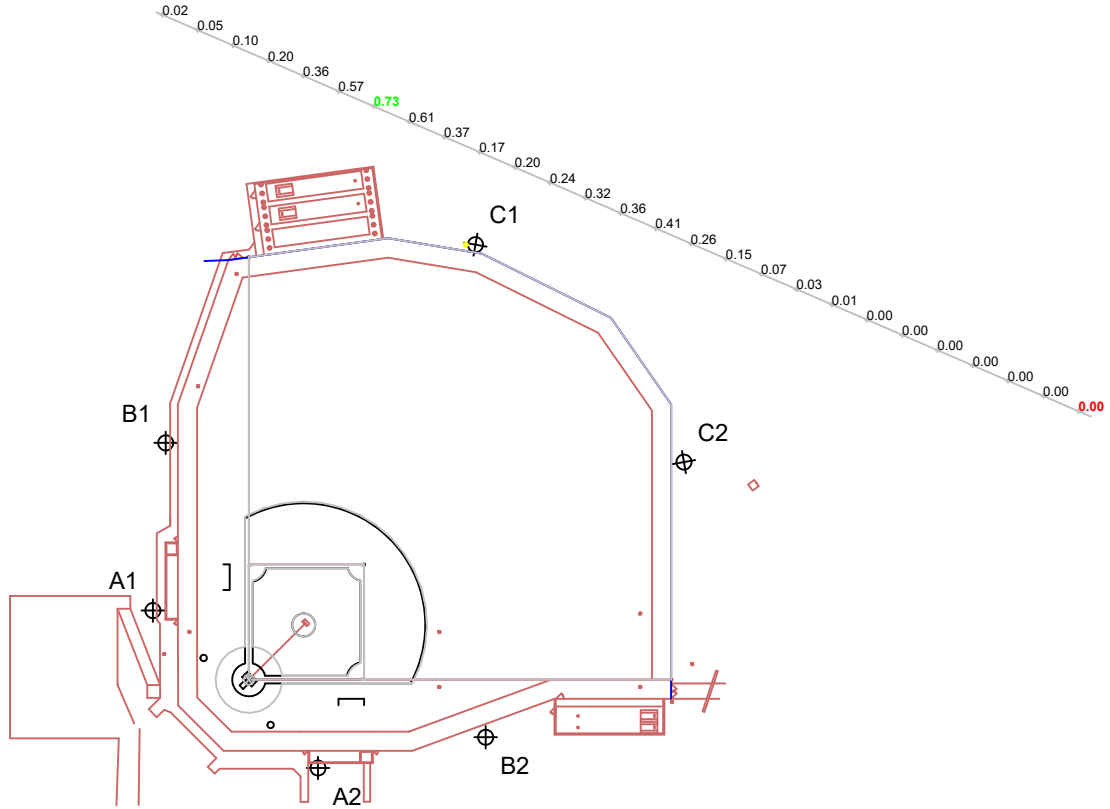
ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

MATC Oak Creek Baseball

Oak Creek,WI

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



SCALE IN FEET 1 : 150

0' 150' 300'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Property Line**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	0.1945
Maximum:	0.73
Minimum:	0.00
No. of Points:	27

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**60**
Total Load:	72.52 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

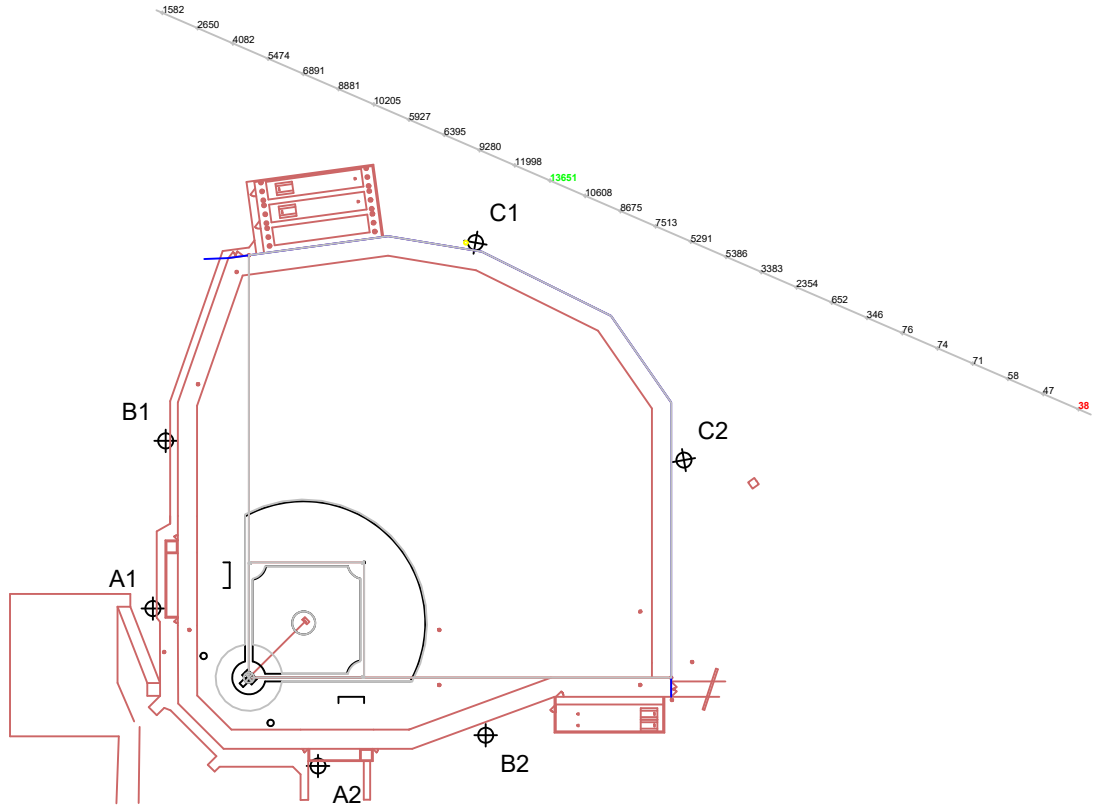
ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

MATC Oak Creek Baseball

Oak Creek,WI

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	70'	-	15.5'	TLC-BT-575	1	1	0
				70'	TLC-LED-1500	5	5	0
2	B1-B2	80'	-	15.5'	TLC-BT-575	2	2	0
				80'	TLC-LED-1500	10	10	0
2	C1-C2	70'	-	70'	TLC-LED-900	2	2	0
				15.5'	TLC-BT-575	3	3	0
				70'	TLC-LED-1500	7	7	0
6	TOTALS					60	60	0



SCALE IN FEET 1 : 150

0' 150' 300'

Pole location(s) ⌖ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Property Line**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

CANDELA (PER FIXTURE)

	Entire Grid
Scan Average:	4873.6245
Maximum:	13651.04
Minimum:	37.76
No. of Points:	27

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**60**
Total Load:	72.52 kW

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Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

MATC Oak Creek Baseball

Oak Creek,WI

EQUIPMENT LAYOUT

INCLUDES:

· Baseball

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

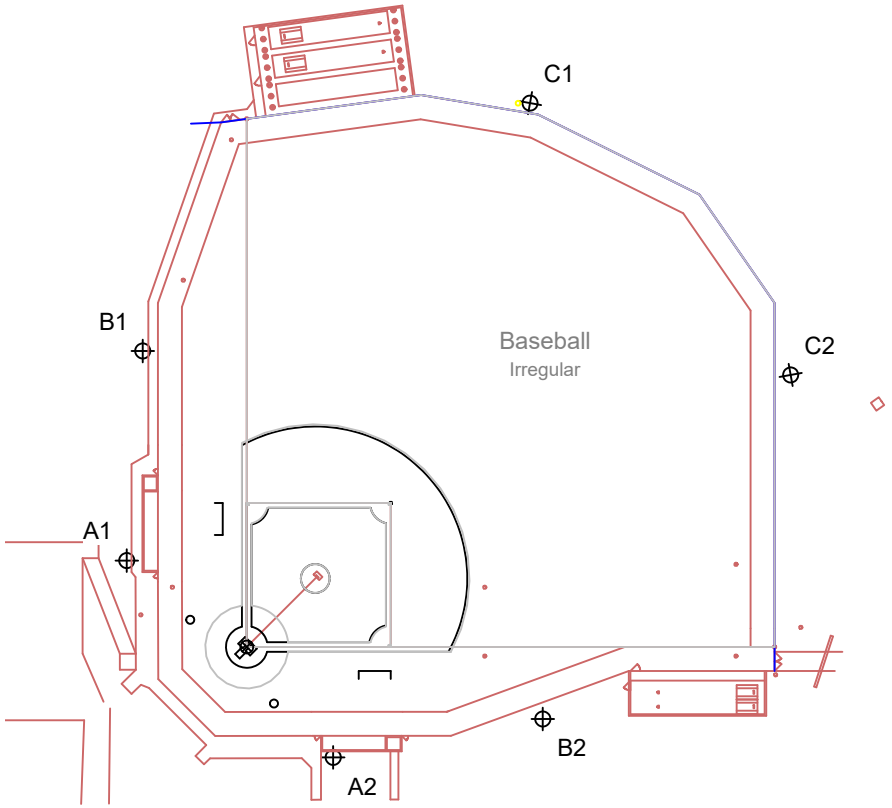
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
2	A1-A2	70'	-	15.5'	TLC-BT-575	1
				70'	TLC-LED-1500	5
2	B1-B2	80'	-	15.5'	TLC-BT-575	2
				80'	TLC-LED-1500	10
2	C1-C2	70'	-	70'	TLC-LED-900	2
				15.5'	TLC-BT-575	3
				70'	TLC-LED-1500	7
6	TOTALS					60

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Driver (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1500	8.4	7.9	7.3	6.3	5.0	4.6	3.6
TLC-BT-575	3.4	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3



SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⌖ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Connor Ramstead · File #211815G · 06-Mar-23

Control System Summary

Project Specific Notes:

Project Information

Project #:	211815
Project Name:	MATC Oak Creek Baseball
Date:	01/30/23
Project Engineer:	Connor Ramstead
Sales Representative:	Greg Smidt
Control System Type:	Control-Link™ Control and Monitoring System with Show-Light™ Special Effects
Communication Type:	PowerLine-ST
Scan:	211815D
Document ID:	211815P1V4-0130134428
Distribution Panel Location or ID:	Baseball
Total # of Distribution Panel Locations for Project:	1
Design Voltage/Hertz/Phase:	480/60/3
Control Voltage:	120

Equipment Listing

DESCRIPTION	APPROXIMATE SIZE
1.Control and Monitoring Cabinet	24 X 48

	QTY	SIZE (AMPS)
Total Contactors	6	30 AMP
Total Off/On/Auto Switches:	1	

Materials Checklist

Contractor/Customer Supplied:

- ❑ A dedicated control circuit must be supplied per distribution panel location
  - — If the control voltage is NOT available, a control transformer is required
- ❑ Electrical distribution panel to provide overcurrent protection for circuits
  - — HID rated or D-curve circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- ❑ Wiring
  - — See chart on page 2 for wiring requirements
  - — Equipment grounding conductor and splices must be insulated (per circuit)
  - — Lightning ground protection (per pole), if not Musco supplied
- ❑ Electrical conduit wireway system
  - — Entrance hubs rated NEMA 4, must be die-cast zinc, PVC, or copper-free die-cast aluminum
- ❑ Mounting hardware for cabinets
- ❑ Breaker lock-on device to prevent unauthorized power interruption to control power and powerline connection (if present)
- ❑ Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central™ operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation.

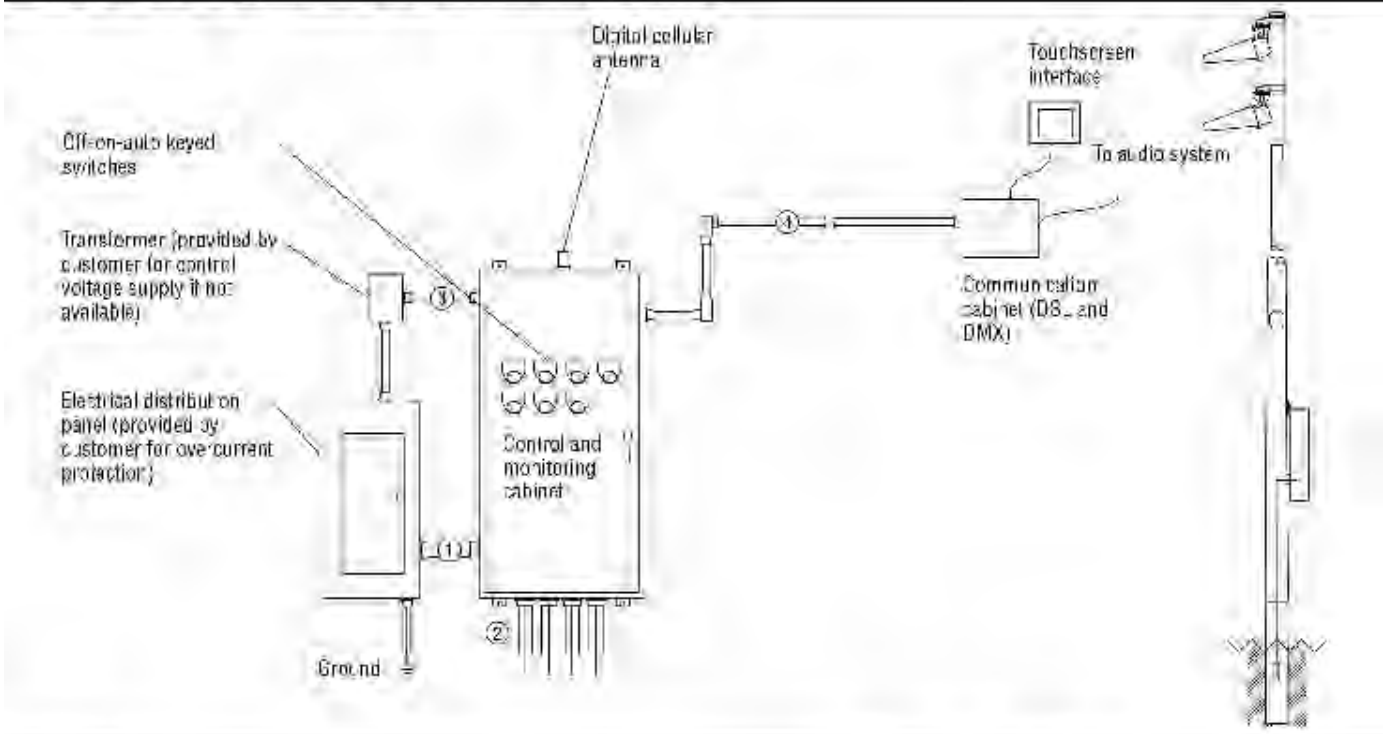
Note: Activation may take up to 1 1/2 hours.

IMPORTANT NOTES

1. Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are 100% rated for the published continuous load. All contactors are 3 pole.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. A single control circuit must be supplied per control system.
6. Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart- Minimum power factor is 0.9.

NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements.

Control-Link® Control and Monitoring System



Conduit ID	Description	# of Wires	Wire (AWG)	Conduit (in)	Max. Wire Length (ft)	MUSCO Supplied	Notes
1	Line power to contactors and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
2	Load power to lighting circuits and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
3	Control power (dedicated, 20A)	3	12	*D	N/A	No	C,E
4	Communication cable to touchscreen	*F	*F	*C	1500	No	C,E,F

* Notes:

A. See voltage and phasing per the notes on cover page.
B. Calculate per load and voltage drop.
C. All conduit diameters should be per code unless otherwise specified to allow for conductor size.
D. Equipment grounding conductor and any splices must be insulated.
E. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.
F. Cat5e cable (Belden 7937A or equal) is required. DSL modem (inside cabinet) receives power over DSL cable. Communication cabinet requires connection to earth ground. Standard wall outlets are required to power audio controller (inside cabinet) and touchscreen. Touchscreen connects to communication cabinet with Ethernet cable (<300 ft.).

IMPORTANT: Control wires (3) and communication wires (4) must be in separate conduit from line and load power wires (1, 2).

Control System Summary

SWITCHING SCHEDULE

Field/Zone Description	Zones
Baseball	1

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 1470.0
	SEALED: 156.0

CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	*FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
A1	Baseball	7	7	**12.8**	30	C1	1
A2	Baseball	7	7	**14.5**	30	C2	1
B1	Baseball	15	15	**29.8**	30	C3	1
B2	Baseball	15	15	**29.8**	30	C4	1
C1	Baseball	13	13	**23.7**	30	C5	1
C2	Baseball	13	13	**23.7**	30	C6	1

*Full Load Amps based on amps per driver.

Control System Summary

PANEL SUMMARY

CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole A1	12.82		
1	1	C2	Pole A2	14.48		
1	1	C3	Pole B1	29.81		
1	1	C4	Pole B2	29.81		
1	1	C5	Pole C1	23.72		
1	1	C6	Pole C2	23.72		

ZONE SCHEDULE

			CIRCUIT DESCRIPTION	
ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	POLE ID	CONTACTOR ID
Zone 1	1	Baseball	A1	C1
			A2	C2
			B1	C3
			B2	C4
			C1	C5
			C2	C6