

PROJECT	Near East Play Fields Reconstruction	ADDENDUM NUMBER	2
PROJECT NO.	0629-2220, A-22-011, 14272	DATE	9/28/2023
PROJECT LOCATION	Madison, WI		
OWNER	Board of Regents of the University of Wisconsin-Madison		
PREPARED BY	SmithGroup, ME Engineers		

*This Addendum is issued pursuant to the Instructions to Bidders and/or Conditions of the Contract. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.*

---

## **PART 1 - NEW DOCUMENTS ISSUED WITH THIS DOCUMENT**

### **1.1 NEW PROJECT MANUAL DOCUMENTS AND SPECIFICATIONS**

A. None

### **1.2 NEW DRAWING SHEETS**

A. None

### **1.3 NEW SKETCHES**

A. None

## **PART 2 - DOCUMENTS DELETED BY THIS DOCUMENT**

### **2.1 DELETE THE FOLLOWING FROM THE PROJECT MANUAL**

A. 26 09 43 Distributed Digital Lighting Controls

### **2.2 DELETE THE FOLLOWING DRAWING SHEETS**

A. None

## **PART 3 - REVISED DOCUMENTS ISSUED WITH THIS DOCUMENT**

### **3.1 REVISED PROJECT MANUAL DOCUMENTS AND SPECIFICATIONS**

A. 26 55 88 Sports Lighting Fixtures (Soccer Stadiums)

1. Description: Sports Lighting Specifications
2. Removed DMX controls. Added section on sports lighting pole specifications. Added spill and glare requirements. Updated fixture type specifications.

## 3.2 REVISED DRAWING SHEETS

- A. CS404 – SITE DETAILS
- B. L300 – LANDSCAPE PLAN ENLARGEMENTS
- C. E0-2 – ELECTRICAL ONE-LINE DIAGRAM
- D. E0-3 – ELECTRICAL SCHEDULES
- E. E2-0 – ELECTRICAL SITE PLAN
- F. E2-1 – ELECTRICAL GROUND LEVEL FLOOR PLAN
- G. E2-2 – ELECTRICAL GROUND LEVEL FLOOR PLAN
- H. E3-1 – LIGHTING GROUND LEVEL FLOOR PLAN
- I. E4-0 – SPORTS LIGHTING
- J. E8-1 – ELECTRICAL DETAILS

## **PART 4 - PROPOSED CHANGES IN THE WORK**

4.1 None

## **PART 5 - CLARIFICATIONS**

5.1 None

END OF DOCUMENT

1 SECTION 26 55 88  
2 SPORTS LIGHTING FIXTURES (~~Soccer Stadiums~~)  
3

4 PART 1 - GENERAL  
5

6 RELATED DOCUMENTS  
7

8 Drawings and general provisions of Contract, including General and Supplementary Conditions and  
9 Division 01 Specification sections, and the following apply to the work of this Section:

- 10 Section 26 05 00, Basic Electrical Requirements.  
11 Section 26 05 19, Low-Voltage Electrical Power Conductors and Cables.  
12 Section 26 05 26, Grounding and Bonding for Electrical Systems.  
13 Section 26 05 29, Hangers and Supports for Electrical Systems.  
14 Section 26 05 33, Raceways and Boxes for Electrical Systems.  
15

16 Division 26 Basic Electrical Materials and Methods sections apply to work specified in this section.  
17

18 SUMMARY  
19

20 The intent of this specification and the field lighting drawings is to bid the sports lighting fixtures for the  
21 project. This bid document includes lighting fixtures, lamps, brackets, mounting hardware, shop drawings  
22 and nighttime field aiming prior to the first event.  
23

24 The basis for this bid document is for the listed manufactures to provide the quantity of fixtures along with  
25 lamps, mounting brackets/hardware complete for complete installation by electrical contractor. The  
26 manufacturers bid submittal shall include separate cost for the following items and work activities.

27 These bid documents are for LED technology.  
28

29 Types of sports lighting fixtures in this section include the following:

30 Light Emitting Diode (LED) Sports Lights.

- 31 • Types SL1 and SL2: 900 1200 Watt LED, Sports lighting luminaire with high power LEDs.  
32 Individual lensing for glare controlled optics. Heavy duty cast aluminum housing, flicker free  
33 control gear, high power factor, energy conserving, 20,000 hour constant light output,  
34 stainless-steel hardware, trunnion mount with protractor base-plate, vertical adjustment  
35 aiming, safety cable, beam spreads and aiming as determined by the engineer's computer  
36 study of the stadium geometry for uniform lighting. Full DMX enabled (per fixture head) and  
37 controlled for dynamic effects.  
38 • ~~Type SL3: 394 Watt LED, forward throw luminaire with aluminum heavy duty reflector  
39 assembly, cast aluminum housing, high power factor, energy conserving, 50,000 hour  
40 constant light output, clear tempered and impact resistant glass, stainless steel hardware,  
41 trunnion mount with protractor base plate, safety cable, vertical adjustment aiming, beam  
42 spreads and aiming as determined by the engineer's computer study of the stadium geometry.~~

43  
44  
45 Applications of sports lighting fixtures required for this project include the following:  
46

47  
48 The performance of the light fixture shall be guaranteed with the normal electricity supply voltage at  
49 277-Volts plus or minus 10% at 60 HZ.  
50

51 Site Conditions:

52 The project is located in Madison, Wisconsin. The maximum wind speed the fixtures and  
53 brackets shall be able to withstand is 110 mph with a 1.3 gust factor.  
54

1 **SUBMITTALS**

2  
3 Product Data: Submit manufacturer’s product data and installation instructions on each type sports lighting  
4 fixture and component. Product data shall include but not limited to noise level, starting current, running  
5 current, power factor and the time it takes to change from starting current to running current.  
6

7 Shop Drawings: After the successful manufacturer is awarded the project the manufacturer may be given  
8 the aiming strategy prepared by the engineer for the manufacturer to prepare their shop drawings. The  
9 design will include aiming diagrams, illumination levels for both horizontal and vertical angles. Submit  
10 fixture shop drawings in booklet form with separate sheet for each fixture, assembled in “luminaire type”  
11 alphabetical or numerical order, with proposed fixture and accessories clearly indicated on each sheet.  
12

13 Shop Drawing Submittal:

14 Submit plans showing proposed mounting brackets using manufacturer’s application software  
15 with the catwalk mounting heights, with the spacing of all fixtures on a 3’-0” grid for both  
16 horizontal and vertical.  
17

18 Submit computer generated photometric information as required.  
19

20 Array Test Points: Shall be provided on a 30 feet x 30 feet grid covering the entire playing surface  
21 ~~and seating bowl~~ as required.  
22

23 Computer photometrics shall be provided at 3 feet above playing field, 20 feet above playing field  
24 and 50 feet above playing field.  
25

26 Glare ratings, GR, shall be calculated for all calculation points on the field, ~~seating bowl~~ and for  
27 all camera locations.  
28

29 Luminaire dirt depreciation shall be utilized in the calculations.  
30

31 The contractor shall be responsible for installing the sports fixture to the structure, and aiming of  
32 each fixture to maintain the computer generated photometric design.  
33

34 The manufacturers shall submit a complete set of aiming diagrams showing the target aiming  
35 point coordinates and an alpha numeric aiming assignment on the playing surface for each  
36 luminaire, as part of the shop drawing submittal.  
37

38 Submit documentation depicting luminaire locations on the structure and indicate coordinate,  
39 vector and target assignments for each luminaire.  
40

41 The engineer may visit the manufacturer prior to shop drawing approval to review and analyze the  
42 computer model for the field ~~and seating bowl~~.  
43

44 Illumination Data: Provide isolux plot diagram of footcandles on horizontal and vertical surface which  
45 shows composite values of illuminance projected from the arrangement of light sources for indicated  
46 fixture locations and heights.  
47

48 Maximum spill calculation and maximum glare calculation will be required by the successful  
49 manufacturers. Using a ~~400~~ 100 foot dimension from the ~~stadium field~~ perimeter footprint provide a  
50 perimeter ring around the facility, reporting spill light vertically and horizontally at 50 foot increments,  
51 provide for additional rings if light readings exceed 1 footcandle on a horizontal plan 3 feet above grade.  
52

1 **QUALITY ASSURANCE**

2  
3 Manufacturer's Qualifications: Firms regularly engaged in manufacture of sports lighting fixtures of types  
4 and ratings required, whose products have been in satisfactory use in similar professional soccer stadiums  
5 and installed in the last 5 years. Only the manufacturers listed on the drawings will be allowed.

6  
7 Installer's Qualifications: Firms with at least 5 years of successful installation experience on projects with  
8 sports lighting fixture work similar to that required for this project.

9  
10 **Codes and Standards:**

11  
12 Electrical Code Compliance: Comply with applicable local code requirements of the authority  
13 having jurisdiction and NEC Articles 225, 250 & 410 as applicable to installation, and  
14 construction of lighting fixtures.

15  
16 NEMA Compliance: Comply with applicable requirements of NEMA Standards Pub/No. LE 2  
17 pertaining to lighting equipment.

18  
19 IES Compliance: Comply with IES RP-6-88, pertaining to sports lighting.

20  
21 UL Compliance: Comply with requirements of UL standards, including Standards 486A and  
22 486B, pertaining to exterior lighting fixtures. Provide lighting fixtures and components which are  
23 UL-listed and labeled.

24  
25 **DELIVERY, STORAGE, AND HANDLING**

26  
27 Deliver lighting fixtures in factory-fabricated containers or wrappings, which properly protect fixtures from  
28 construction debris and physical damage.

29  
30 Store lighting fixtures in original wrappings in a clean dry space. Protect from weather, dirt, fumes, water,  
31 construction debris, and damage.

32  
33 Handle lighting fixtures carefully to prevent damage, breaking, and scoring. Do not install damaged  
34 fixtures or components. Remove damaged units from site and replace with new.

35  
36 **SEQUENCING AND SCHEDULING**

37  
38 Coordinate with other electrical work including wires/cables, electrical boxes and fittings, and raceways, to  
39 properly interface installation of lighting fixtures with other work.

40  
41 Sequence lighting fixtures installation with other work to reduce possibility of damage and soiling of  
42 fixtures during remainder of construction period.

43  
44 **MAINTENANCE**

45  
46 Maintenance Data: Submit maintenance data and parts list for each lighting fixture and accessory;  
47 including "trouble-shooting" maintenance guide. Include that data, product data, and shop drawings in a  
48 maintenance manual; in accordance with requirements of Division 01.

49  
50 ~~Extra Stock:~~

51 ~~LED Boards: Furnish stock or replacement LED boards amounting to not less than 2% of each~~  
52 ~~type and size board used in each type fixture. Deliver replacement stock as directed to owner's~~  
53 ~~storage area.~~

1 Drivers: Furnish stock or replacement drivers amounting to not less than 5% of each type and size  
2 driver used for each type of fixture. Driver replacement stock as directed to Owner's storage  
3 space.  
4

## 5 6 PART 2 - PRODUCTS

### 7 8 MANUFACTURERS

9  
10 Available Manufacturers: Subject to compliance with requirements, manufacturers offering products to be  
11 incorporated in the work, shall be limited to the manufacturers listed below. All luminaires shall include  
12 internal glare control on all diodes is required for full cutoff and control of glare. Exterior visor shall be  
13 provided, if necessary, for glare control.

14 SL1 / ~~SL2~~ - 900 1200 Watt LED Fixtures

15 Musco ~~Dome 136~~

16 GigaTera USA

17 Carolina High Mast  
18

### 19 SPORTS LIGHTING FIXTURES

20  
21 General: Provide lighting fixtures, of sizes, types and ratings indicated; complete with, but not limited to,  
22 housing, energy efficient drivers, safety chain, glass lens, heavy duty double shroud construction, and  
23 internal fitting wiring.  
24

25 Wiring: Provide electrical wiring within fixtures which are suitable for connection to branch circuit wiring  
26 as follows:

27 NEC Type SF-2 for 277-Volts, minimum No. 18 AWG.  
28

29 All light fixtures and drivers shall be U.L. listed and bear the label.  
30

### 31 SPORTS LIGHTING FIXTURES

32  
33 General: Provide lighting fixtures, of sizes, types and ratings indicated; complete with, but not limited to,  
34 housing, mounting brackets, energy efficient drivers, safety chain, glass lens, and internal fitting wiring.  
35

36 All light fixtures and drivers shall be U.L. listed and bear the label.

37 LED Luminaires

38  
39 Provide enclosed, gasketed and filtered heavy duty, narrow beam trunnion-mounted flood light  
40 which has a separate optical assembly completely enclosed by an all-aluminum housing.  
41

42 Each LED shall have a reflector to control light and limit glare.  
43

44 Driver assembly shall be remote from the optical LED assembly and have a cast aluminum  
45 housing.  
46

47 An adjustable yoke or knuckle shall be secured to the luminaire housing. A calibrated indicator  
48 shall be integral to each luminaire for vertical and horizontal angular aiming. Each yoke or  
49 knuckle support shall have after typical maintenance repositioning mechanism. Each luminaire  
50 shall have a retractable target aiming site mechanism secured to the housing.  
51

52 The optical assembly shall be gasketed using a continuous extruded silicone rubber at the door and  
53 lens to seal the optical assembly from dust particles.  
54

55 Reflector shall have door enclosure of tempered glass mounted to the reflector body by means of a  
56 hinged and secured by no less than three spring type stainless-steel clamps.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12

The door frame shall be hinged and secured by no less than three spring type stainless-steel clamps.

Target playing surface illumination design is based on the following photometric characteristics using lamp performance:

- Rated hours: Minimum 20,000 – 100,000 hours
- Color Temperature: ~~4,500K~~–~~5,000K~~–~~5,700K~~
- Color Rendering Index: ~~80+~~–~~75+~~

Spill Light and Glare Control: To minimize impact on adjacent properties, spill light and candela values must not exceed the following.

	Average	Maximum
100' Horizontal Footcandles – 3'	.1 fc	.45 fc
100' Max. Vertical Illuminance Metric – 3'	.2 fc	.5 fc
100' Maintained Candela – 5'	4,000 Cd	7,500 Cd

13  
14  
15  
16  
17

All external parts shall be corrosion resistant.

LED Lamps

Sources shall conform with the IESNA LM-79 and LM-80 published standards. They shall have a color temperature binning that does not exceed +/-200K. LED Lamp life shall be rated at 70% of initial lumens remaining. LED drivers shall be used @ 100% output for lumen output rating and not be underdriven or overdriven.

Initial delivered lumens – thermal losses should be less than 10% when operated at a steady state at an average ambient operating temperature of 25°C, and optical losses should be less than 15%.

Average Delivered Lumens – Average delivered lumens over 20,000 hours should be minimum of 100% of initial delivered lumens.

Poles

Provide metal, raceway type, lighting poles and standards, comprised of shafts and tenon joints. Equip with grounding connections readily accessible from handhole at the base of the pole. Heights shall be as required by the drawings. Registered structural engineer shall design the pole shaft, base, etc. as required by the latest AASHTO wind requirements.

Pole finish shall be hot dipped, galvanized for field lighting. Galvanizing shall be to ASTM A123, Galvanized.

Luminaire crossarms shall be made of tubular members to reduce wind drag. The crossarm shall consist of horizontal main members as determined by the structural engineer. Horizontal, angle luminaire supports shall have holes to accommodate luminaire adaptor plates or pipe tenons to accommodate specific size slipfitters. Luminaire mounting angle supports shall be attached to the main member. Crossarm to withstand maximum wind load and fixture weight without misalignment.

Pole shaft cross section shall be round or 16 sided with a 4" bend radius. Each pole shall be a constant tapered hollow high strength steel as determined by the structural engineer.

Located appropriately above ground level shall be a reinforced hand hole with a nominal opening size of ID 6" x 10" to have a hinged cover with provisions for lock. Pole to have plate internally mounted 180° from the handhole for mounting enclosure with contactor and disconnecting device.

51

1 Provide climbing steps with appropriate safety cable for safety harness connection. Wire entrance  
2 to the pole shaft shall be a standard 1" ID grommeted hole with 3" x 5" handhole.

3  
4 The shaft shall be supplied with an integrally welded steel base plate as designed by the structural  
5 engineer.

6  
7 Steel climbing steps shall begin approximately 20 feet above ground and shall be staggered on 15"  
8 centers to top of pole. Poles shall be equipped with 3/8" galvanized safety cable at step initiation  
9 and step attached at top and bottom with welded brackets.

10  
11 Each pole shall include an electrical enclosure (NEMA 3R) mounted to the pole, equipped with a  
12 UL listed thermal magnetic circuit breaker such that electrical power to all equipment on the pole  
13 served by the feeder circuit shall be disengaged by the operation of one switch. The breaker  
14 ampacity shall be sized in accordance with NEC. The breaker shall be located in a compartment  
15 separated from any capacitors or ballasts. There shall be provided by the manufacturer a set of  
16 distribution terminal blocks which shall be factory wired from the breaker to the blocks. These  
17 blocks shall provide for termination of all ballast connection wiring. In addition, the enclosure  
18 shall have a control contactor rated for the pole load to turn the pole on and off. Disconnect  
19 device to be located at 12 feet above grade

20  
21 Anchor bolts shall be furnished loose with a checking template as standard. Anchor bolts shall be  
22 galvanized and designed by the structural engineer. All exposed anchor bolts shall be provided  
23 with steel cover.

24  
25 A 3" and 2" diameter hole in the pole base shall be provided for wiring access. The hole shall be  
26 located at 2' 6" below the ground line and 90° clockwise with respect to the luminaire arm when  
27 viewed from the top of the pole. This contractor shall have a professional engineer design the  
28 concrete pole base to meet AASHTO requirements for the project location. The engineer shall use  
29 the project soils report to determine their design.

30  
31 Vertical forces due to pole weight, luminaries, attachments and maintenance device shall be  
32 included in the maximum stress at the base. Wind pressures, adjusted for shape and height, to be  
33 applied to the centroids of all projected areas. Eccentric moments due to deflection under  
34 maximum wind and eccentric loads shall be considered. Sum of maximum stresses shall not  
35 exceed the guaranteed minimum yield strength of the material. Base and anchor bolts shall be  
36 designed to withstand the maximum combined stress at the base of the pole.

37  
38 Pole structures shall be shipped by rail or truck at the option of the manufacturer. All structures  
39 will be firmly secured and adequately packed to assure protection of the structures and finish.

40  
41 All poles shall be capable of being slip fitted in the field, full telescoping points shall be marked,  
42 and sections match marked. Pole assembly procedure with suggested equipment shall be  
43 provided.

44  
45 All poles structure shall be equipped with lightning protection in accordance with NFPA 780.

46  
47 Pole Shop Drawings: Submit shop drawings of electrical poles and standards, including mast  
48 arms; wind loading, and wire/cable connections which are custom work. Light pole drawings shall  
49 be submitted with the seal of the Professional Structural Engineer responsible for the design of the  
50 poles.

51  
52 Drivers

53 Driver shall be capable of dimming the LED array from 10% to 100%.

54 ~~Driver shall have DMX input capable of dimming and controlling fixtures.~~

55 Driver casing shall be constructed from aluminum.

56 Driver shall have universal voltage input – 277 to 480-Volt.

1 All drivers shall comply with IEC 61347-2-13.

2  
3 **Field Measurements:**

4 A minimum of sixty days prior to the first event, a complete and comprehensive testing and final  
5 adjusting schedule shall be completed by the manufacturer of the fixtures and the contractors. The  
6 goal of the testing is to permanently aim and permanently mark each fixture in the position for  
7 service. It is anticipated that five consecutive nights will be set aside for this testing. The electrical  
8 contractor shall conduct the tests. This will include personnel available for aiming, marking the  
9 field, providing a cosign corrected digital light meter for recording values, a man lift capable of  
10 reaching the fixtures from the field and attendance of lighting fixture manufacturer's  
11 representative and other personnel and equipment needed to complete the testing. The engineer  
12 shall be notified thirty days prior to testing and will be available to observe and participate in the  
13 testing. All suggestions and observations made by the engineer must be completed. At the end of  
14 the aiming, the engineer will approve the installation and turn the system over to the Owner.

15  
16 **Lighting Control:**

17 The lighting control computer shall be located in the Building Engineer's office.

18  
19 ~~Provide individual luminaire DMX control for all fixtures. Provide remote Control Link software~~  
20 ~~system or control of fixtures from remote location. Coordinate with owner for exact programming~~  
21 ~~requirements.~~

22  
23 UL924 listed transfer devices shall be provided for designated emergency luminaires.

24  
25 Provide show controller for theatrical playback of dynamic scenes. Manufacturer to assume a  
26 minimum of 12 dynamic scenes for programming.

27  
28 ~~Provide DMX hold up device to maintain last scene in the event of loss of DMX.~~

29  
30 Provide Hand-Over-Auto switches connected to the lighting control system for manual control of  
31 the sports lights.

32  
33 ~~Manufacturer shall show evidence of successful participation in similar major league soccer stadiums.~~

34  
35  
36  
37  
38 **PART 3 - EXECUTION**

39  
40 **EXAMINATION**

41  
42 Examine areas and conditions under which lighting fixtures are to be installed, and substrate which will  
43 support lighting fixtures. Notify Architect and Engineer in writing of conditions detrimental to proper  
44 completion of the Work. Do not proceed with Work until unsatisfactory conditions have been corrected.

45  
46 **INSTALLATION OF LIGHTING FIXTURES**

47  
48 Install lighting fixtures at locations and heights as indicated, in accordance with fixture manufacturer's  
49 written instructions, applicable requirements of NEC, NECA's "Standard of Installation", NEMA  
50 standards, and with recognized industry practices to ensure that lighting fixtures fulfill requirements.

51  
52 Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturers  
53 published torque tightening values for equipment connectors. Where manufacturer's torquing  
54 requirements are not indicated, tighten connectors and terminals to comply with tightening torques  
55 specified in UL Standards 486A and 486B.

56

1 Fasten electrical lighting fixtures and brackets securely to indicated structural supports and ensure that  
2 installed fixtures are plumb and level.

3  
4 Provide a safety cable for each external glare louver that prevents the louver from falling when means of  
5 fastening are removed. All safety cables shall be wrapped around permanent building steel. Wrapping  
6 around manufacturer provided bracketry is not considered acceptable.

7  
8 Upon completion of installation, protect installed fixtures from damage during remainder of construction  
9 period.

## 10 11 **GROUNDING**

12  
13 Provide equipment grounding connections for lighting fixtures as indicated. Tighten connections to comply  
14 with tightening torques specified in UL Std 486A to assure permanent and effective grounds.

## 15 16 **FIELD QUALITY CONTROL**

### 17 18 **Warranty**

19 LED boards, drivers and associated components shall have a Warranty of ~~15~~ 25 years on the  
20 LEDs, LED boards, the driver, the paint finish, and guaranteed illumination levels for the full ~~15~~  
21 25 year period from the date of product shipment.

- 22 • Warranty shall cover all fixtures, drivers, etc. including but not limited to material costs,  
23 labor, shipping, etc.

## 24 25 **ADJUSTING AND CLEANING**

26  
27 Aim adjustable lighting fixtures and lamps in night test of system. Verify that measured illuminance values  
28 comply with computer calculated values submitted.

29  
30 Clean lighting fixtures of dirt and debris upon completion of installation. Two weeks prior the first event,  
31 the contractor shall re-clean all fixtures which have accumulated dust, fingerprints and smudges on the  
32 reflector and lens.

## 33 34 **DEMONSTRATION**

35  
36 Upon completion of installation of sports lighting fixtures, and associated electrical supply circuitry, apply  
37 electrical energy to circuitry to demonstrate capability and compliance with requirements. Where possible,  
38 correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace  
39 with new units, and proceed with retesting. Reference field measurements section within this document for  
40 commissioning and turn over to Owner.

## 41 42 **BIENNIAL LIGHTING MEASUREMENT EVALUATION**

43  
44 The successful lighting fixture manufacturer shall include in his/her formal bid the cost to perform a  
45 biennial (every two years during the warranty period) lighting measurement of the sports lighting for  
46 identification of performance compliance and required maintenance. The stadium personnel with assistance  
47 of the lighting fixture manufacturer will perform field illumination footcandle level readings and submit to  
48 the lighting fixture manufacturer for evaluation and recommendation.

49  
50 **END OF SECTION**

Page Intentionally Left Blank









Table with 3 columns: REV, DATE, DESCRIPTION. Row 1: 1, 09/28/2023, Addendum 2

Table with 2 columns: SCALE, UWSA NO. Row 1: UWSA NO. A-22-011

Table with 2 columns: SET TYPE, BID SET

Table with 2 columns: DATE, 31 AUG 23

Table with 2 columns: SHEET NO., E0.3

ME Engineers Inc. R1. UNIVERSITY of WISCONSIN, MADISON. 120/208 Wye. 3 Phase, 4 Wire + Gnd. 60Hz. Includes panel schedule, load summary, and conductor colors.

ME Engineers Inc. MDP. UNIVERSITY of WISCONSIN, MADISON. 480/277 Wye. 3 Phase, 4 Wire + Gnd. 60Hz. Includes panel schedule, load summary, and conductor colors.

ME Engineers Inc. MDP. UNIVERSITY of WISCONSIN, MADISON. 480/277 Wye. 3 Phase, 4 Wire + Gnd. 60Hz. Includes panel schedule, load summary, and conductor colors.

ME Engineers Inc. R4. UNIVERSITY of WISCONSIN, MADISON. 120/208 Wye. 3 Phase, 4 Wire + Gnd. 60Hz. Includes panel schedule, load summary, and conductor colors.

ME Engineers Inc. R3. UNIVERSITY of WISCONSIN, MADISON. 120/208 Wye. 3 Phase, 4 Wire + Gnd. 60Hz. Includes panel schedule, load summary, and conductor colors.

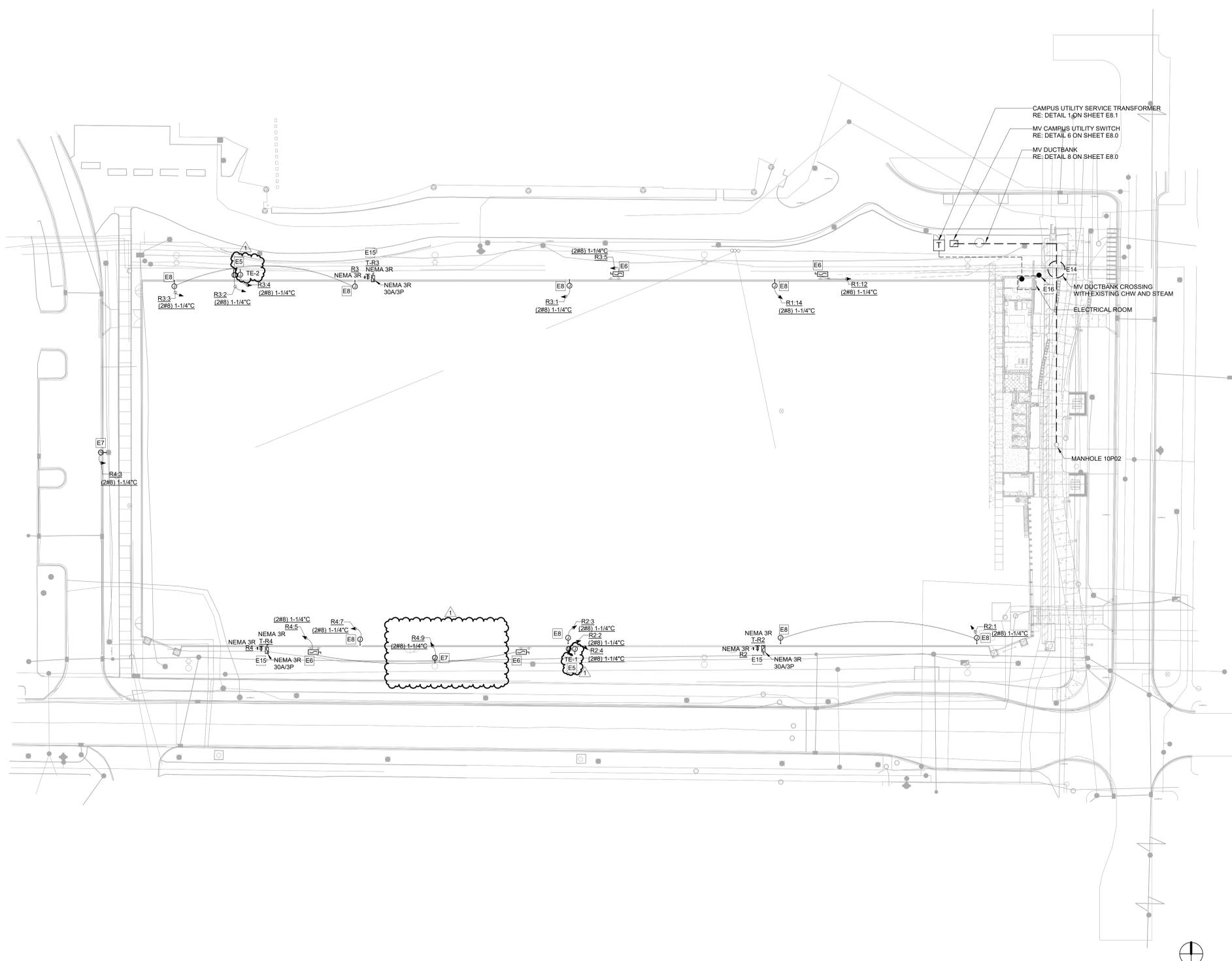
ME Engineers Inc. R2. UNIVERSITY of WISCONSIN, MADISON. 120/208 Wye. 3 Phase, 4 Wire + Gnd. 60Hz. Includes panel schedule, load summary, and conductor colors.

**GENERAL NOTES:**

- REFER TO SHEET E0.04 FOR LIGHTING FIXTURE SCHEDULE.
- REFER TO LANDSCAPE DRAWINGS FOR ALL SITE FIXTURE LOCATIONS MOUNTED IN HARDSCAPE OR SOFTSCAPE. FIXTURE LOCATIONS ARE DIAGRAMMATIC. THE INTENT IS TO ALIGN, CENTER, OR SPACE FIXTURES BETWEEN ARCHITECTURAL AND LANDSCAPE ELEMENTS.
- ALL LANDSCAPE OR EXTERIOR BUILDING LIGHTING SHALL BE CONTROLLED VIA THE LIGHTING CONTROL SYSTEM.
- REFER TO ARCHITECTURAL EXTERIOR ELEVATIONS FOR ALL FIXTURE LOCATIONS ON THE EXTERIOR OF THE BUILDING. FIXTURE LOCATIONS ARE DIAGRAMMATIC. THE INTENT IS TO ALIGN, CENTER, OR SPACE FIXTURES BETWEEN ARCHITECTURAL AND STRUCTURAL ELEMENTS.
- PROVIDE A MINIMUM 1" PVC CONDUIT FOR ALL UNDERGROUND BRANCH CIRCUITS. ALL 90-DEGREE ELBOWS SHALL BE PVC COATED RIGID.
- ALL BACK BOXES SHALL BE FLUSH MOUNTED UNLESS NOTED OTHERWISE. ALL VERTICAL SECTIONS OF CONDUIT SHALL BE CONCEALED. CONTRACTOR SHALL COORDINATE INSTALLATION OF CONDUIT AND BACK BOXES IN CONCRETE, MASONRY AND GYP. WALLS.

**KEYNOTES**

- E5 PROVIDE (2) DESIGNATED 120V, 20A CIRCUITS TO TE-1 & TE-2 ENCLOSURES FOR RECEPTACLE MOUNTED INSIDE ENCLOSURE AND AC UNIT ATTACHED TO ENCLOSURE. CONTRACTOR TO COORDINATE EXACT CONNECTION TYPE REQUIREMENTS FOR COMPONENTS.
- E6 PROVIDE NEMA 3R 30A/3P DISCONNECT MOUNTED TO
- E7 PROVIDE 120V 20A CIRCUIT TO NEMA 3R AV ENCLOSURE MOUNTED TO NEW SPORTS LIGHTING POLE. ENCLOSURE APPROX. 16"H x 16"W x 6"D. CONFIRM WITH AV CONTRACTOR FOR FINAL PROCURED PRODUCT SPECIFICATIONS.
- E8 PROVIDE EXTERIOR ELECTRICAL PEDESTAL WITH (2) GFCI DUPLEX RECEPTACLES. REFER TO DETAIL #2/E8.1.
- E14 CONTRACTOR TO COORDINATE ALL EXISTING UNDERGROUND UTILITIES WITH NEW DUCT BANK ROUTING.
- E15 REFER TO DETAIL #9/E8.0 FOR MOUNTING.
- E16 LOCATION FOR GROUND RODS PER DETAIL #4/E8.1. FINAL EXACT LOCATION TO BE COORDINATE WITH EXISTING UNDERGROUND CONDITIONS AND BUILDING FOUNDATION.



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

The Board of Regents of the  
University of Wisconsin on behalf of the  
University of Wisconsin - Madison



PROJECT ADDRESS:  
1810 Observatory Drive  
Madison, Wisconsin 53706

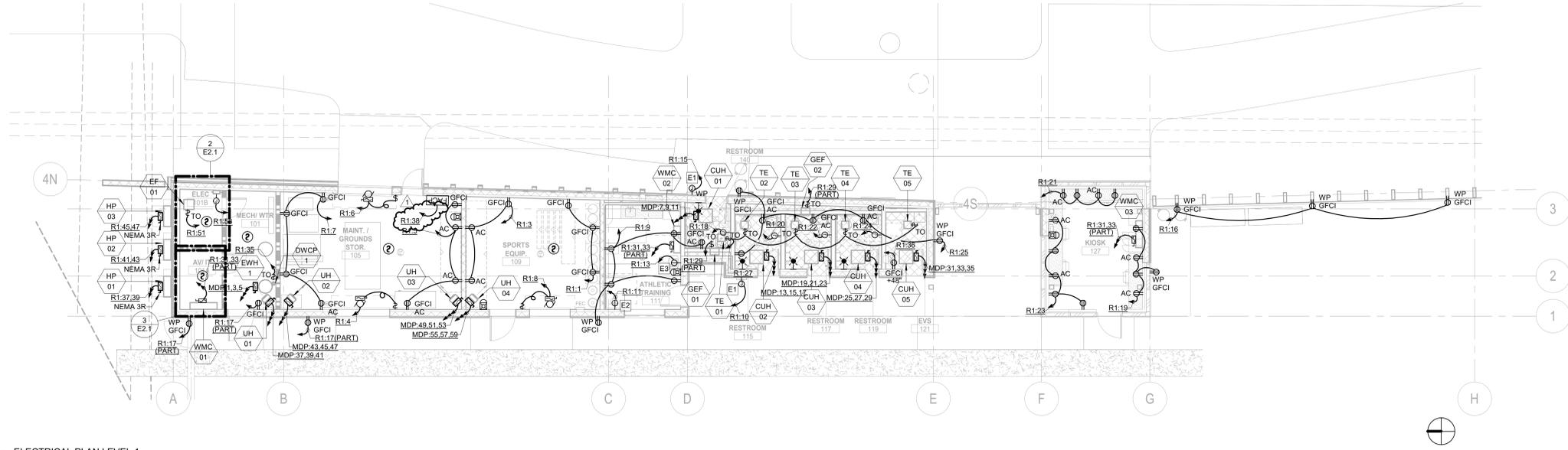
UWSA PROJ. NO.: A-22-011  
UWMD PROJ. NO.: 0628-2223  
DFD NO.: 262R

**Near East Play Fields Reconstruction**  
University of Wisconsin - Madison  
Madison, Wisconsin

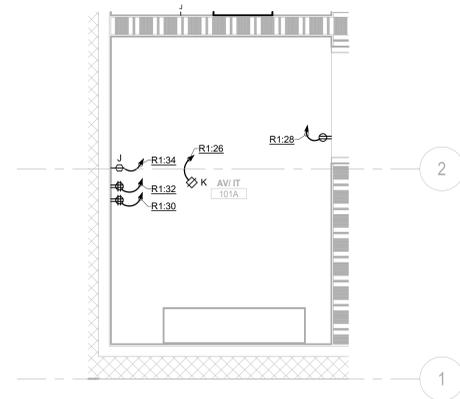
SHEET TITLE: ELECTRICAL SITE PLAN

REV	DATE	DESCRIPTION
1	09/28/2023	Addendum 2

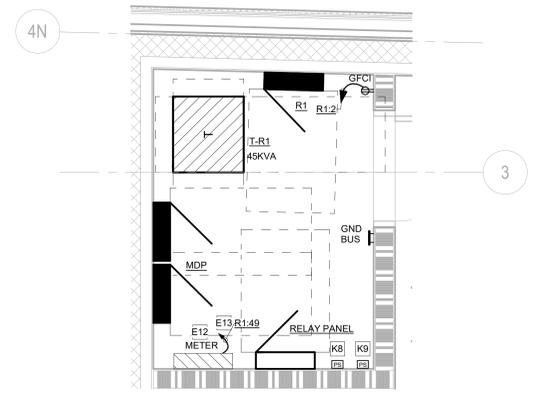
SCALE	
UWSA NO.	A-22-011
SET TYPE	BID SET
DATE	31 AUG 23
SHEET NO.	E2.0



1 ELECTRICAL PLAN LEVEL 1  
1/8" = 1'-0"



3 ENLARGED AV/IT ROOM ELECTRICAL PLAN  
1/2" = 1'-0"



2 ENLARGED ELECTRICAL ROOM ELECTRICAL PLAN  
1/2" = 1'-0"

- GENERAL NOTES:**
- ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH MECHANICAL CONTRACTOR.
  - ALL EXPOSED CONDUIT SHALL BE ROUTED PERPENDICULAR, PARALLEL, AND TIGHT TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT ROUTING SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION AND INSTALLED IN A NEAT AND CONSISTENT MANNER. NO ADDITIONAL COST TO OWNER WILL BE ALLOWED FOR RELOCATING CONDUIT DUE TO THE LACK OF COORDINATION WITH ARCHITECT. ALL SURFACE MOUNTED CONDUIT WHERE EXPOSED TO PUBLIC AREAS SHALL BE PAINTED. PAINT COLOR TO BE DETERMINED BY THE ARCHITECT. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INDICATING ALL PROPOSED EXPOSED CONDUIT ROUTING.
  - ALL BACK BOXES SHALL BE FLUSH MOUNTED UNLESS NOTED OTHERWISE. ALL VERTICAL SECTIONS OF CONDUIT SHALL BE CONCEALED. CONTRACTOR SHALL COORDINATE INSTALLATION OF CONDUIT AND BACK BOXES IN CONCRETE, MASONRY AND GYP. WALLS.
  - MAXIMUM OF (5) DUPLEX RECEPTACLES PER CIRCUIT.
  - PROVIDE 120V 20A DUPLEX RECEPTACLE FOR EACH TELEVISION LOCATION. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS. MAXIMUM OF (4) TELEVISIONS PER CIRCUIT. ROUTE ALL TELEVISION CIRCUITS THROUGH LIGHTING CONTROL SYSTEM.
  - CALCULATE 120V BRANCH CIRCUITS AS FOLLOWS:
    - PROVIDE A DEDICATED CIRCUIT FOR ALL EQUIPMENT INDICATED ON ARCHITECTURAL DRAWINGS, INCLUDING REFRIGERATORS, VENDING MACHINES, ETC.
    - 25% OF ALL 120V NEMA 5-20R RECEPTACLES SHALL BE ON DEDICATED CIRCUITS.
  - THIS CONTRACTOR SHALL REFER TO "MEP" SERIES DRAWINGS FOR ALL MECHANICAL EQUIPMENT ELECTRICAL CONNECTIONS.
  - CIRCUITS TO ALL MECHANICAL EQUIPMENT SHALL BE DEDICATED UNLESS NOTED OTHERWISE.
  - ALL 277V LIGHTING CIRCUITS TERMINATING AT LIGHTING CONTROL PANELS SHALL HAVE A MINIMUM LENGTH OF 20 FEET BETWEEN LIGHTING CONTROL PANEL AND BRANCH LIGHTING PANEL.

- KEYNOTES**
- PROVIDE 120V 20A CONNECTION TO WATER COOLER. PROVIDE WEATHER PROTECTED JUNCTION BOX AND GFCI TYPE CIRCUIT BREAKER UPSTREAM OF DEVICE. COORDINATION EXACT LOCATION WITH ARCHITECTURAL DRAWINGS PRIOR TO ROUGH IN.
  - PROVIDE DEDICATED 120V 20A SIMPLEX RECEPTACLE FOR ICE MAKER WITH GFCI TYPE CIRCUIT BREAKER UPSTREAM OF DEVICE.
  - PROVIDE DEDICATED 120V 20A SIMPLEX RECEPTACLE FOR COMPUTER CART.
  - PROVIDE LOW VOLTAGE 3 CONDUCTOR PAIR FROM METER TO IT ROOM DDC CABINET. PROVIDE SIGNAL FROM MODBUS TO BACNET GATEWAY.
  - PROVIDE DEDICATED 120V 20A 1PH CONNECTION TO UTILITY METER. CONTRACTOR TO COORDINATE EXACT REQUIREMENTS PRIOR TO PROCUREMENT.
  - PROVIDE IOTA MICRO INVERTER FOR EXTERIOR EMERGENCY LIGHTING ZONE 3. PROVIDE IOTA #IS 50 I. EMERGENCY CIRCUIT TO GO THROUGH RELAY PANEL THEN THROUGH INVERTER BEFORE GOING OUT TO FIXTURES.
  - PROVIDE IOTA INVERTER FOR EXTERIOR EMERGENCY LIGHTING ZONE 2. PROVIDE IOTA #IS 250 HE DR. EMERGENCY CIRCUIT TO GO THROUGH RELAY PANEL THEN THROUGH INVERTER BEFORE GOING OUT TO FIXTURES.

**SMITHGROUP**  
44 E Mifflin St.  
Suite 500  
Madison, WI 53703  
608.251.1177  
smithgroup.com

PROJECT NUMBER 14272.000  
SEALS AND SIGNATURES

CONSULTANT:  
**me engineers**  
14143 Denver West Pkwy.  
Suite 300  
Golden, CO 80401  
+1 303.421.6655  
www.me-engineers.com

The Board of Regents of the  
University of Wisconsin on behalf of the  
University of Wisconsin - Madison

PROJECT ADDRESS:  
1810 Observatory Drive  
Madison, Wisconsin 53706

UWSA PROJ. NO.: A-22-011  
UWMD PROJ. NO.: 0628-2223  
DFD NO.: 262R

**Near East Play Fields Reconstruction**  
University of Wisconsin - Madison  
Madison, Wisconsin

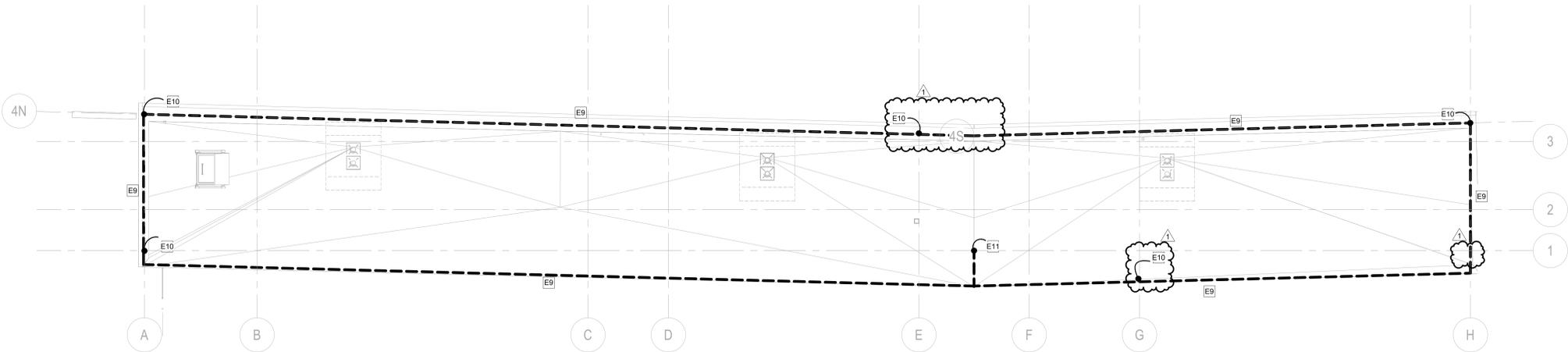
SHEET TITLE: ELECTRICAL GROUND LEVEL FLOOR PLAN

REV	DATE	DESCRIPTION
1	09/28/2023	Addendum 2

SCALE: \_\_\_\_\_

UWSA NO.: A-22-011  
SET TYPE: BID SET  
DATE: 31 AUG 23  
SHEET NO.: **E2.1**

MEET NFPA 780 REQUIREMENTS



1 ELECTRICAL PLAN ROOF  
1/8" = 1'-0"

- GENERAL NOTES:**
- ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH MECHANICAL CONTRACTOR.
  - ALL EXPOSED CONDUIT SHALL BE ROUTED PERPENDICULAR, PARALLEL, AND TIGHT TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT ROUTING SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION AND INSTALLED IN A NEAT AND CONSISTENT MANNER. NO ADDITIONAL COST TO OWNER WILL BE ALLOWED FOR RELOCATING CONDUIT DUE TO THE LACK OF COORDINATION WITH ARCHITECT. ALL SURFACE MOUNTED CONDUIT WHERE EXPOSED TO PUBLIC AREAS SHALL BE PAINTED. PAINT COLOR TO BE DETERMINED BY THE ARCHITECT. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INDICATING ALL PROPOSED EXPOSED CONDUIT ROUTING.
  - ALL BACK BOXES SHALL BE FLUSH MOUNTED UNLESS NOTED OTHERWISE. ALL VERTICAL SECTIONS OF CONDUIT SHALL BE CONCEALED. CONTRACTOR SHALL COORDINATE INSTALLATION OF CONDUIT AND BACK BOXES IN CONCRETE, MASONRY AND GYP. WALLS.
  - MAXIMUM OF (5) DUPLEX RECEPTACLES PER CIRCUIT.
  - PROVIDE 120V 20A DUPLEX RECEPTACLE FOR EACH TELEVISION LOCATION. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS. MAXIMUM OF (4) TELEVISIONS PER CIRCUIT. ROUTE ALL TELEVISION CIRCUITS THROUGH LIGHTING CONTROL SYSTEM.
  - CALCULATE 120V BRANCH CIRCUITS AS FOLLOWS:
    - PROVIDE A DEDICATED CIRCUIT FOR ALL EQUIPMENT INDICATED ON ARCHITECTURAL DRAWINGS, INCLUDING REFRIGERATORS, VENDING MACHINES, ETC.
    - 25% OF ALL 120V NEMA 5-20R RECEPTACLES SHALL BE ON DEDICATED CIRCUITS.
  - THIS CONTRACTOR SHALL REFER TO "MEP" SERIES DRAWINGS FOR ALL MECHANICAL EQUIPMENT ELECTRICAL CONNECTIONS.
  - CIRCUITS TO ALL MECHANICAL EQUIPMENT SHALL BE DEDICATED UNLESS NOTED OTHERWISE.
  - ALL 277V LIGHTING CIRCUITS TERMINATING AT LIGHTING CONTROL PANELS SHALL HAVE A MINIMUM LENGTH OF 20 FEET BETWEEN LIGHTING CONTROL PANEL AND BRANCH LIGHTING PANEL.

- KEYNOTES**
- E9 PROVIDE LIGHTNING PROTECTION SYSTEM ALONG ENTIRE ROOF PERIMETER. CONTRACTOR TO ADJUST CABLING AND AIR TERMINALS FOR VARYING ROOF LEVELS.
  - E10 PROVIDE LIGHTNING PROTECTION DOWNLEAD ENCASED IN CONCRETE. DOWNLEAD SHALL BE INSTALLED IN CONDUIT IF NOT ENCASED.
  - E11 PROVIDE AIR TERMINAL ON TOP OF PIXELLOT CAMERA POLE MOUNTED 30'-0" AFF ON TOP OF BUILDING. CONNECT TO LIGHTNING PROTECTION CABLING ALONG PERIMETER ON ROOF.

**SMITHGROUP**  
44 E Mifflin St.  
Suite 500  
Madison, WI 53703  
608.251.1177  
smithgroup.com

PROJECT NUMBER 14272.000  
SEALS AND SIGNATURES

CONSULTANT:  
**me engineers**  
14143 Denver West Pkwy.  
Suite 300  
Golden, CO 80401  
+1 303.421.6655  
www.me-engineers.com

The Board of Regents of the  
University of Wisconsin on behalf of the  
University of Wisconsin - Madison

PROJECT ADDRESS:  
1810 Observatory Drive  
Madison, Wisconsin 53706

UWSA PROJ. NO.: A-22-011  
UWMD PROJ. NO.: 0628-2223  
DFD NO.: 2062R

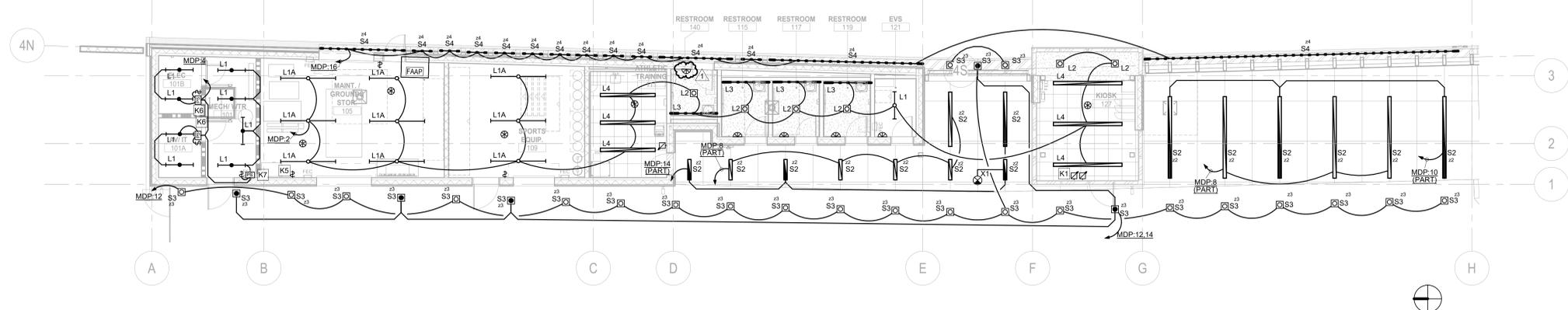
**Near East Play Fields Reconstruction**  
University of Wisconsin - Madison  
Madison, Wisconsin

SHEET TITLE: ELECTRICAL ROOF LEVEL FLOOR PLAN

REV	DATE	DESCRIPTION
1	09/28/2023	Addendum 2

SCALE: \_\_\_\_\_

UWSA NO.: A-22-011  
SET TYPE: BID SET  
DATE: 31 AUG 23  
SHEET NO.: **E2.2**



1 LEVEL 1  
1/8" = 1'-0"

SITE LIGHTING							
Basis of Design							
Zones	Zone Description	Control	Source Type	Input Voltage	Dimmer Type	Circuit No.	Notes
Z1	S1 - SITE POLE	NON-DIM	LED	277V	-		1,2
Z2	S2 - RECESSED LINEAR	DIM	LED	277V	0-10V		1,2,3
Z3	S3 - RECESSED DOWNLIGHT	DIM	LED	277V	0-10V		1,2,3
Z4	S4 - RECESSED PERIMETER COVE	DIM	LED	277V	0-10V		1,2,3

Refer to lighting plans for identification of EM lights (indicated with EM designation and shading). All power supplies for dimmed luminaires must be coordinated for compatibility with accepted building lighting control system.

NOTES:

- Main Campus Photocell Control
- Lighting to be controlled through BAS system via low voltage relay/lighting contactor in lighting control panel.
- Local override 4-zone with on/off and raise/lower for each zone to be located in Kiosk 101.

- GENERAL NOTES:**
- REFER TO SHEET E0.4 FOR LIGHT FIXTURE SCHEDULE.
  - REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ALL FIXTURE LOCATIONS WITHIN A CEILING OR CEILING GRID. FOR AREAS WITHOUT CEILING, FIXTURE LOCATIONS ARE DIAGRAMMATIC. THE INTENT IS TO ALIGN, CENTER, OR SPACE FIXTURES BETWEEN ARCHITECTURAL AND STRUCTURAL ELEMENTS.
  - ALL EXPOSED CONDUIT SHALL BE ROUTED PERPENDICULAR, PARALLEL, AND TIGHT TO COLUMNS AND BEAMS. ALL EXPOSED CONDUIT ROUTINGS SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO INSTALLATION AND INSTALLED IN A NEAT AND CONSISTENT MANNER. NO ADDITIONAL COST TO OWNER WILL BE ALLOWED FOR RELOCATING CONDUIT DUE TO THE LACK OF COORDINATION WITH ARCHITECT. ALL SURFACE MOUNTED CONDUIT WHERE EXPOSED TO PUBLIC AREAS SHALL BE PAINTED. PAINT COLOR TO BE DETERMINED BY THE ARCHITECT. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INDICATING ALL PROPOSED EXPOSED CONDUIT ROUTING.
  - PROVIDE DIMMABLE DRIVERS WHERE REQUIRED PER LIGHTING CONTROL.
  - SEE ELECTRICAL NARRATIVE FOR ADDITIONAL INFORMATION REGARDING OVERALL LIGHTING EQUIPMENT ONLY COSTS. SF COST ALLOWANCES SHOWN ARE ESTIMATES OF ALLOCATIONS ONLY, AND WILL BE VALIDATED DURING FUTURE DESIGN PHASES.
  - FIELD VERIFY EXACT FIXTURE LENGTHS FOR CONTINUOUS ILLUMINATION FOR COVES AND LINEAR RUNS. PROVIDE CONTINUOUS ILLUMINATION WITH NO MORE THAN 8" GAP BETWEEN THE END OF THE EDGE OF THE WALL, CEILING AND THE FIXTURE.
  - ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR PLACEMENT OF FIXTURES WITHIN MECHANICAL ROOMS.
  - ALL EXIT LIGHTS OF ALL TYPES SHALL BE MOUNTED AT 8'-0" AFF UNLESS OTHERWISE NOTED.

KEYNOTES	
K1	PROVIDE LOCAL OVERRIDE SWITCH FOR EXTERIOR SITE LIGHTING. PROVIDE A 6-BUTTON SWITCH FOR ON/OFF, RAISE/LOWER CONTROL OF (4) EXTERIOR ZONES.
K5	PROVIDE SPORTS LIGHTING CONTACT PER DETAIL #1E4.0. FINAL LOCATION TO BE COORDINATED WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.
K6	PROVIDE IOTA MICRO INVERTER FOR EMERGENCY LIGHTING IN ROOM. PROVIDE IOTA #IIS 50 I.
K7	PROVIDE IOTA INVERTER FOR EMERGENCY LIGHTING IN MECH/WTR ROOM. PROVIDE IOTA #IIS 125 HE 5M.

**SMITHGROUP**  
44 E Mifflin St.  
Suite 500  
Madison, WI 53703  
608.251.1177  
smithgroup.com

PROJECT NUMBER 14272.000  
SEALS AND SIGNATURES

CONSULTANT:  
**me engineers**  
14143 Denver West Pkwy.  
Suite 300  
Golden, CO 80401  
+1 303.421.6655  
www.me-engineers.com

The Board of Regents of the  
University of Wisconsin on behalf of the  
University of Wisconsin - Madison

PROJECT ADDRESS:  
1810 Observatory Drive  
Madison, Wisconsin 53706

UWSA PROJ. NO.: A-22-011  
UWMD PROJ. NO.: 0628-2223  
DFD NO.: 2062R

**Near East Play Fields Reconstruction**  
University of Wisconsin - Madison  
Madison, Wisconsin

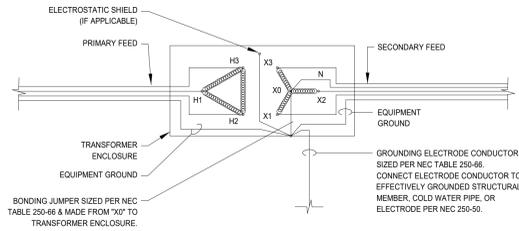
SHEET TITLE: LIGHTING GROUND LEVEL FLOOR PLAN

REV	DATE	DESCRIPTION
1	09/28/2023	Addendum 2

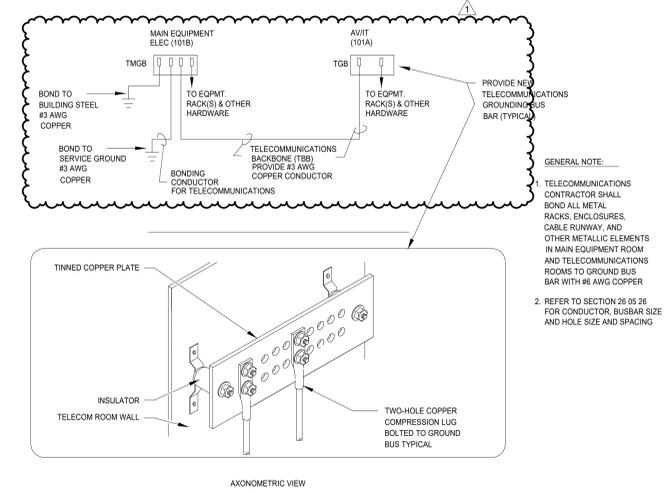
SCALE: \_\_\_\_\_

UWSA NO.	A-22-011
SET TYPE	BID SET
DATE:	31 AUG 23
SHEET NO.	<b>E3.1</b>

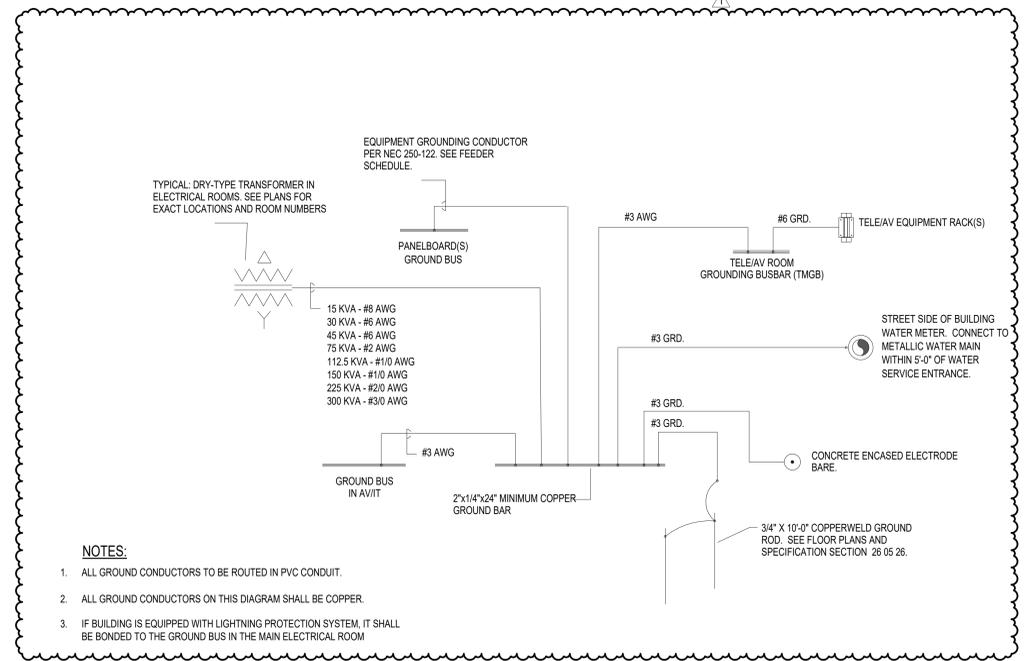




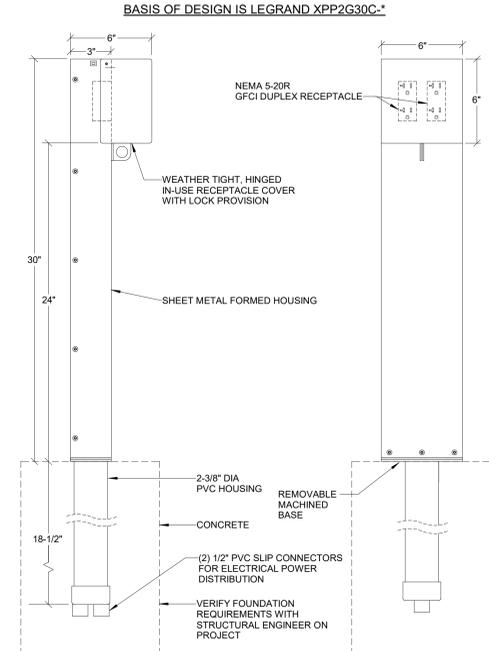
3 Separately Derived System  
1/8" = 1'-0"



5 Grounding Riser Diagram  
1/8" = 1'-0"



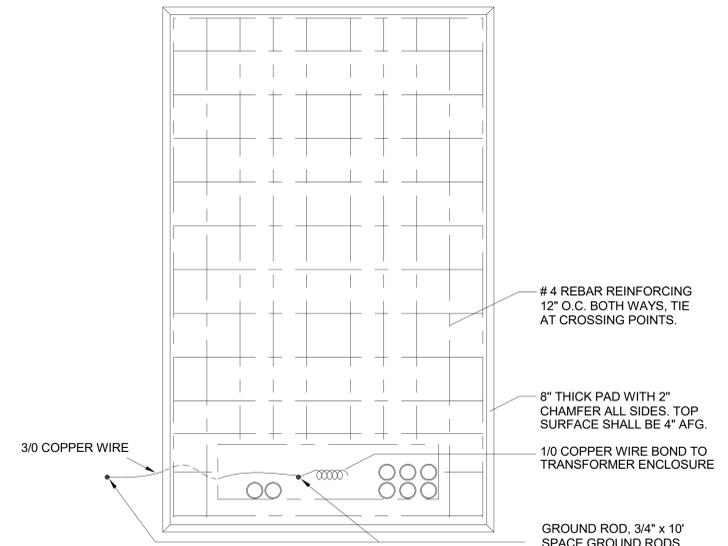
4 Grounding System  
1/4" = 1'-0"



DESIGNER NOTES:

- VERIFY POWDER COAT COLOR WITH ARCHITECT. (GRAY & BLACK ARE STANDARD)
- STRUCTURAL ENGINEER TO VERIFY ANCHOR BASE REQUIREMENTS.

2 DUPLEX PEDESTAL W/IN-USE COVER (HARDSCAPE)  
NO SCALE



NOTES:

1. VERIFY PAD DIMENSIONS WITH MANUFACTURER'S SHOP DRAWING PRIOR TO CONSTRUCTION. CONCRETE PAD TO EXTEND 12" BEYOND TRANSFORMER ENCLOSURE AND COOLING FINS IN ALL DIRECTIONS. EXTEND PAD 60" ON FRONT TO INCLUDE CLEARANCE DISTANCE WITHIN PAD FOUNDATION.
2. FORM PAD ON A FIRM DRY GRAVEL BASE. BASE SHALL BE 6" MINIMUM COMPACTED GRAVEL ON UNDISTURBED SOIL. IN

1 PAD MOUNTED TRANSFORMER MOUNTING DETAIL  
1/4" = 1'-0"