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
SECTION 26 55 88
SPORTS LIGHTING FIXTURES (Soccer Stadiums)

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, and the following apply to the work of this Section:
- Section 26 05 00, Basic Electrical Requirements.
- Section 26 05 19, Low-Voltage Electrical Power Conductors and Cables.
- Section 26 05 26, Grounding and Bonding for Electrical Systems.
- Section 26 05 29, Hangers and Supports for Electrical Systems.
- Section 26 05 33, Raceways and Boxes for Electrical Systems.

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

SUMMARY

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

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

These bid documents are for LED technology.

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

Applications of sports lighting fixtures required for this project include the following:
- The performance of the light fixture shall be guaranteed with the normal electricity supply voltage at 277-Volts plus or minus 10% at 60 HZ.

Site Conditions:
- The project is located in Madison, Wisconsin. The maximum wind speed the fixtures and brackets shall be able to withstand is 110 mph with a 1.3 gust factor.
SUBMITTALS

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

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

Shop Drawing Submittal:
- Submit plans showing proposed mounting brackets using manufacturer’s application software with the catwalk mounting heights, with the spacing of all fixtures on a 3'-0” grid for both horizontal and vertical.
- Submit computer generated photometric information as required.
- Array Test Points: Shall be provided on a 30 feet x 30 feet grid covering the entire playing surface and seating bowl as required.
- Computer photometrics shall be provided at 3 feet above playing field, 20 feet above playing field and 50 feet above playing field.
- Glare ratings, GR, shall be calculated for all calculation points on the field, seating bowl and for all camera locations.
- Luminaire dirt depreciation shall be utilized in the calculations.
- The contractor shall be responsible for installing the sports fixture to the structure, and aiming of each fixture to maintain the computer generated photometric design.
- The manufacturers shall submit a complete set of aiming diagrams showing the target aiming point coordinates and an alpha numeric aiming assignment on the playing surface for each luminaire, as part of the shop drawing submittal.
- Submit documentation depicting luminaire locations on the structure and indicate coordinate, vector and target assignments for each luminaire.
- The engineer may visit the manufacturer prior to shop drawing approval to review and analyze the computer model for the field and seating bowl.

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

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

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

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

Codes and Standards:

- Electrical Code Compliance: Comply with applicable local code requirements of the authority having jurisdiction and NEC Articles 225, 250 & 410 as applicable to installation, and construction of lighting fixtures.
- NEMA Compliance: Comply with applicable requirements of NEMA Standards Pub/No. LE 2 pertaining to lighting equipment.
- IES Compliance: Comply with IES RP-6-88, pertaining to sports lighting.
- UL Compliance: Comply with requirements of UL standards, including Standards 486A and 486B, pertaining to exterior lighting fixtures. Provide lighting fixtures and components which are UL-listed and labeled.

DELIVERY, STORAGE, AND HANDLING

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

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

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

SEQUENCING AND SCHEDULING

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

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

MAINTENANCE

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

Extra Stock:

- LED Boards: Furnish stock or replacement LED boards amounting to not less than 2% of each type and size board used in each type fixture. Deliver replacement stock as directed to owner’s storage area.
Drivers: Furnish stock or replacement drivers amounting to not less than 5% of each type and size driver used for each type of fixture. Driver replacement stock as directed to Owner’s storage space.

PART 2 - PRODUCTS

MANUFACTURERS

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

- SL1 / SL2 - 900 1200 Watt LED Fixtures
- Musco Dome 136
- GigaTera USA
- Carolina High Mast

SPORTS LIGHTING FIXTURES

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

Wiring: Provide electrical wiring within fixtures which are suitable for connection to branch circuit wiring as follows:
- NEC Type SF-2 for 277-Volts, minimum No. 18 AWG.

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

SPORTS LIGHTING FIXTURES

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

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

LED Luminaires

- Provide enclosed, gasketed and filtered heavy duty, narrow beam trunnion-mounted flood light which has a separate optical assembly completely enclosed by an all-aluminum housing.
- Each LED shall have a reflector to control light and limit glare.
- Driver assembly shall be remote from the optical LED assembly and have a cast aluminum housing.
- An adjustable yoke or knuckle shall be secured to the luminaire housing. A calibrated indicator shall be integral to each luminaire for vertical and horizontal angular aiming. Each yoke or knuckle support shall have after typical maintenance repositioning mechanism. Each luminaire shall have a retractable target aiming site mechanism secured to the housing.
- The optical assembly shall be gasketed using a continuous extruded silicone rubber at the door and lens to seal the optical assembly from dust particles.
- Reflector shall have door enclosure of tempered glass mounted to the reflector body by means of a hinged and secured by no less than three spring type stainless-steel clamps.
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:

<table>
<thead>
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<th></th>
<th>Average</th>
<th>Maximum</th>
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</thead>
<tbody>
<tr>
<td>100’ Horizontal Footcandles – 3’</td>
<td>.1 fc</td>
<td>.45 fc</td>
</tr>
<tr>
<td>100’ Max. Vertical Illuminance Metric – 3’</td>
<td>.2 fc</td>
<td>.5 fc</td>
</tr>
<tr>
<td>100’ Maintained Candela – 5’</td>
<td>4,000 Cd</td>
<td>7,500 Cd</td>
</tr>
</tbody>
</table>

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.

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

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

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

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

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

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

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

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

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

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

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

Drivers

Driver shall be capable of dimming the LED array from 10% to 100%.
Driver shall have DMX input capable of dimming and controlling fixtures.
Driver casing shall be constructed from aluminum.
Driver shall have universal voltage input – 277 to 480-Volt.
All drivers shall comply with IEC 61347-2-13.

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

Lighting Control:
The lighting control computer shall be located in the Building Engineer’s office.

- Provide individual luminaire DMX control for all fixtures. Provide remote Control Link software system or control of fixtures from remote location. Coordinate with owner for exact programming requirements.
- UL 924 listed transfer devices shall be provided for designated emergency luminaires.
- Provide show controller for theatrical playback of dynamic scenes. Manufacturer to assume a minimum of 12 dynamic scenes for programming.
- Provide DMX hold up device to maintain last scene in the event of loss of DMX.
- Provide Hand-Over-Auto switches connected to the lighting control system for manual control of the sports lights.

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

PART 3 - EXECUTION

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

INSTALLATION OF LIGHTING FIXTURES
Install lighting fixtures at locations and heights as indicated, in accordance with fixture manufacturer’s written instructions, applicable requirements of NEC, NECA’s “Standard of Installation”, NEMA standards, and with recognized industry practices to ensure that lighting fixtures fulfill requirements.

Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturers published torque tightening values for equipment connectors. Where manufacturer’s torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and 486B.
Fasten electrical lighting fixtures and brackets securely to indicated structural supports and ensure that installed fixtures are plumb and level.

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

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

GROUNDING

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

FIELD QUALITY CONTROL

Warranty

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

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

ADJUSTING AND CLEANING

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

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

DEMONSTRATION

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

BIENNIAL LIGHTING MEASUREMENT EVALUATION

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

END OF SECTION
The Board of Regents of the University of Wisconsin System

DRIVEWAY CURB AND GUTTER
FIBER SURFACING AND CURB
SYNTHETIC TURF

18 INCH CONCRETE CURB & GUTTER

EXPANSION JOINT

PLAN VIEW

LOCATIONS FOR CONTAINMENT CURB OR RETAINING WALL

C100 - LAYOUT AND MATERIALS PLAN

1. NEW ASPHALT SURFACE

09/28/2023

3) PROVIDE TOOLED CONTROL JOINTS EVERY 10' O.C.

2) PROVIDE FULL DEPTH EXPANSION JOINT AT ALL CORNERS OR

1) ALL EXPOSED CONCRETE SHALL RECEIVE LIGHT BROOM FINISH

IN ALL CASES, CONCRETE CURB AND GUTTER SHALL BE PLACED ON THOROUGHLY

· DIMENSIONS AS CURB & GUTTER AT THAT STATION AND BE

· RADIUS 200' OR LESS, AND AT ANGLE POINTS, OR AS DIRECTED BY THE ENGINEER. THE

NOTE:

DENSE GRADED BASE

MIN TYP.

3" INTO

DRAINAGE AGGREGATE

7" GEOTEXTILE SEPARATION FABRIC

SYNTHETIC TURF FILAMENT

FULL DEPTH SAWCUT

1'-0"

BASE (1"

DENSE GRADED

SURFACE COURSE

BINDER COURSE

MIN TYP.

3" 4"

3"

13"

IN ALL CASES, CONCRETE CURB AND GUTTER SHALL BE PLACED ON THOROUGHLY

· DIMENSIONS AS CURB & GUTTER AT THAT STATION AND BE

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1'-0"

BASE (1"

DENSE GRADED

SURFACE COURSE

BINDER COURSE

MIN TYP.

3" 4"

3"

13"
THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO COMMENCING WORK UNDER THIS CONTRACT AND REQUEST THAT UNDERGROUND UTILITIES BE LOCATED. ANY UTILITY LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY, AND OTHER UTILITIES MAY BE PRESENT. SODDING APPLIES TO ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES EVEN IF ACTIVITIES EXTEND BEYOND THE APPROXIMATED SODDING LIMITS INDICATED ON THE DRAWINGS. REPAIR ANY DISTURBED AREAS TO THE SAME CONDITION AS ORIGINALLY FOUND AND TO THE OWNER'S SATISFACTION. IN AREAS WHERE LAWN IS DISTURBED BEYOND THE LIMITS OF CONSTRUCTION, REPLACE LAWN WITH NEW LAWN SOD (INCLUDING TOPSOIL) AT NO ADDITIONAL COST TO THE OWNER. ALL SOD AREAS SHALL BE HEALED IN LEVEL AND SMOOTH WITH ADJACENT LAWNS. SOIL OF SOD SHALL BE FLUSH WITH SOIL OF EXISTING LAWN. MINIMIZE CULTIVATION WITHIN THE DRIPLINES OF EXISTING TREES. PREPARE SOIL FOR SODDING BY MINIMIZING DISTURBANCE TO 4-INCH DEPTH. HAND CULTIVATE WHEN ENCOUNTERING ROOTS. NO HEAVY EQUIPMENT ALLOWED WITHIN DRIPLINE OF EXISTING TREES.
### ME FEEDER TABLE

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### ALL ALUMINUM FEEDERS SHALL INCLUDE COPPER EQUIPMENT GROUND CONDUCTORS.

### ALL CONDUCTORS ARE WITH THHN/THWN WIRE WITH 75DEG TERMINATIONS.

### FAULT SCHEDULE

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### FEEDER/PIPE [3W]

- (3#500,#4G) 3-1/2"C
- (3#300,#4G) 2-1/2"C
- (3#4,#8G) 1-1/4"C
- (3#600,#350G) 4"C
- (3#500,#1/0G) 3"C
- (3#4,#8G) 1-1/2"C
- (3#350,#3/0G) 3-1/2"C
- (4#3,#6G) 1-1/2"C
- (4#6,#8G) 1"C
- (4#6,#250G) 3-1/2"C
- (4#700,#1/0G) 3-1/2"C

### FEEDER/PIPE [4W]

- (4#500,#3G) 3-1/2"C
- (4#3/0,#6G) 2"C
- (4#600,#500G) 4"C
- (4#500,#400G) 4"C
- (4#300,#1/0G) 3"C
- (5#6,#8G) 1"C
- (4#600,#250G) 3-1/2"C
- (4#700,#400G) 4"C

### COPPER

- (4#700,#1/0G) 3-1/2"C
- (4#600,#250G) 3-1/2"C
- (4#400,#2/0G) 3"C

### TRANSFORMER

- 800 KVA
- 500 KVA
- 300 KVA
- 200 KVA
- 150 KVA
- 100 KVA
- 50 KVA
- 33 KVA

### BREAKERS IN EACH SECTION, FOR CALCULATION PURPOSES MAXIMUM SHORT CIRCUIT VALUES FOR CALCULATION PURPOSES.

### KEY AVAILABLE (AMPS)

- 09/28/2023 Addendum 2
GENERAL NOTES:

1. REFER TO SHEET E0.04 FOR LIGHTING FIXTURE SCHEDULE.

2. 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.

3. ALL LANDSCAPE OR EXTERIOR BUILDING LIGHTING SHALL BE CONTROLLED VIA THE LIGHTING CONTROL SYSTEM.

4. 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.

5. PROVIDE A MINIMUM 1" PVC CONDUIT FOR ALL UNDERGROUND BRANCH CIRCUITS. ALL 90DEGREE ELBOWS SHALL BE PVC COATED RIGID.

6. 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) DEDICATED 120V, 20A CIRCUITS TO TE-1 & TE-2 ENCLOSURES FOR RECEPTACLE MOUNTED INSIDE ENCLOSURE AND AC UNIT ... PER DETAIL #4/E8.1. FINAL EXACT LOCATION TO BE COORDINATE WITH EXISTING UNDERGROUND CONDITIONS AND BUILDING FOUNDATION.

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GENERAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH MECHANICAL CONTRACTOR.

2. 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 THE 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.

3. 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.

4. MAXIMUM OF (5) DUPLEX RECEPTACLES PER CIRCUIT.

5. 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.

6. CALCULATE 120V BRANCH CIRCUITS AS FOLLOWS:
   a. PROVIDE A DEDICATED CIRCUIT FOR ALL EQUIPMENT INDICATED ON ARCHITECTURAL DRAWINGS, INCLUDING REFRIGERATORS, VENDING MACHINES, ETC.
   b. 25% OF ALL 120V NEMA 5-20R RECEPTACLES SHALL BE ON DEDICATED CIRCUITS.

7. THIS CONTRACTOR SHALL REFER TO “MEP” SERIES DRAWINGS FOR ALL MECHANICAL EQUIPMENT ELECTRICAL CONNECTIONS.

8. CIRCUITS TO ALL MECHANICAL EQUIPMENT SHALL BE DEDICATED UNLESS NOTED OTHERWISE.

9. 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 LIGHTNING PROTECTION SYSTEM. INSTALL LIGHTNING PROTECTION CABLING ALONG PERIMETER ON ROOF.

1/8" = 1'-0" MEET NFPA 780 REQUIREMENTS
**SPORTS LIGHTING DESIGN CRITERIA**

1. **The intent of this drawing is to represent the sports lighting quantity of fixtures and the contractor.**
2. The input of the photometric layout is to provide design bases for the sports lighting.
3. The design must fully comply with local authority requirements.
4. The final horizontal value may be greater than those shown on this drawing.
5. The Glare rating needs to meet or exceed NCAA Intramural criteria.
6. The final luminaire count dependent upon individual design criteria.
7. The final pole layout must coordinate with architectural and structural design.
8. The use of multi-zoned aiming strategies is required.
9. The location of the electrical controls is representative of the sports lighting quantity of fixtures and equipment.

**GROUND LUG IN POLE**

- MDP: 60, 62, 64
- MDP: 30, 32, 34
- MDP: 18, 20, 22
- MDP: 48, 50, 52
- MDP: 42, 44, 46

**CONTACTORS FOR EACH POLE**

- Two additional for electrical controls.
- The final pole layout must coordinate with architectural and structural design.

**SPORTS LIGHTING POLE DETAIL**

- 3/4" x 8' COPPER GROUND ROD
- 10 ft PRECAST CONCRETE BASE WITH THERMWELD BARE ASSEMBLY
- 4" X 4" X 8' GALVANIZED STEEL POLE

**SPORTS LIGHTING CONTROL DIAGRAM**

- ON/OFF SELECTOR SWITCH
- CONTROL CIRCUIT RELAY COIL
- CONTACTOR ENCLOSURE NEMA 3R
- CONTROL FOR AVAILABLE

**GENERAL NOTES**

- The layout of lights cannot be modified without written authority.
- All vertical and horizontal coordinates are approximate.
- All electrical connections are made in the electrical room.
- The final horizontal value may be greater than those shown on this drawing.
- The Glare rating needs to meet or exceed NCAA Intramural criteria.

**SPORTS LIGHTING CONTROL DIAGRAM**

- ON/OFF SELECTOR SWITCH
- CONTROL CIRCUIT RELAY COIL
- CONTACTOR ENCLOSURE NEMA 3R
- CONTROL FOR AVAILABLE

**Remarks:**

- Drawn by: J. Ballew
- Sheet Date: 9/27/2023 6:09:02 PM
- Scale: 1/8" = 1'-0"
TABLE 250-66 & MADE FROM "X0" TO 1.

BUILDING STEEL

ELECTROSTATIC SHIELD

ALL GROUND CONDUCTORS ON THIS DIAGRAM SHALL BE COPPER.

TINNED COPPER PLATE

#3 AWG SERVICE GROUND

ENCLOSURE INSULATOR

ELECTRICAL ROOMS. SEE PLANS FOR ELEC (101B)

MAIN EQUIPMENT CONDUCTOR FOR TELECOMMUNICATIONS TO EQPMT.

TELECOMMUNICATIONS BACKBONE (TBB)

COPPER CONDUCTOR IN AV/IT ELEC

EFFECTIVELY GROUNDED STRUCTURAL ELECTRODE PER NEC 250-50.

#3 AWG GROUND BAR

PROVIDE NEW BAR

(TYPICAL) BOND ALL METAL

AND TELECOMMUNICATIONS REFERENCE TO SECTION 26 05 26 2.

#3 GRD. 1 ROD.

SEE FLOOR PLANS AND #6 GRD. #3 AWG BARE.

WATER METER. CONNECT TO 3/0 COPPER WIRE BASIS OF DESIGN IS LEGRAND XPP2G30C

2. FORM PAD ON A FIRM DRY GRAVEL BASE. BASE SHALL BE 6 IN

DRAWING PRIOR TO CONSTRUCTION. CONCRETE PAD TO REQUIREMENTS WITH FOR ELECTRICAL POWER REMOVABLE 6"

CHAMFER ALL SIDES. TOP 109/28/2023 Addendum 2

Near East Play Fields Reconstruction

14143 Denver West Pkwy.

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

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31 AUG 23 BID SET