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ADDENDUM NO. 1

Issue Date:	March 5, 2024
School / Facility Name:	DeLand High
Project Name:	Softball Field Lighting
Owner's Project No.:	2448067

Owner:	School Board of Volusia County Florida 200 N. Clara Avenue, DeLand Florida 32720
Owner's Project Manager:	James Bott
Project Manager's Location:	3750 Olson Drive, Daytona Beach Florida 32124

Engineer's Representative:	Adrian W. Baus, PE, RCDD
Engineer's Project No.:	2023-130

The following modifications shall be incorporated to the previously distributed construction documents. Any questions regarding these modifications should be directed to the project architect or engineer for consideration.

The Drawings and Specifications are hereby modified as follows:

PRE-BID MEETING – February 28, 2024, 11:00 am

The following items as discussed at the Pre-Bid Meeting shall clarify and modify the Contract Documents:

- This is a Mandatory Pre-Bid Conference. Attendees must sign in on sign-in-sheet.
- Prime Bidders for this project are required to hold a current Certificate of Prequalification issued by the School Board of Volusia County Florida at the time of bid opening.
- Overview of some items in the Project Manual:

Construction Time:	Three Hundred and Sixty-Five (365) consecutive calendar days after written "Notice to Proceed"
Bid Date and Time:	March 13, 2024, 1:30 pm
Liquidated Damages:	$300.00 per calendar day
Bid Bond A310:	Required
Performance and Payment Bond 640:	Required

- Questions from bidders must be submitted by midnight March 5, 2024. Email questions to Adrian Baus abaus@matern.net and copy James Bott jdbott@volusia.k12.fl.us.

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- Use of the Owner's Toilets is permitted. A set of toilets will be designated for the contractor's use. Contractor will be responsible for keeping said toilets stocked with soap, toilet paper and paper towels. Contractor will also be responsible for keeping said toilets clean.

- All workers on site shall have a current Jessica Lunsford Badge regardless if students are present at site or not.

- This project does not have permit or inspection fees from the School Board Building Department. Project will require inspections by the School Board Building Department. Contractor will need to request these inspections via the School Board Building Department's on-line system.

- Board Approval of the Bid is anticipated at the April 9, 2024 Board Meeting.

- VCS does intend to do Owner Direct Purchase (ODP) for the Gear and Lighting Packages per AIA Document A201-2017, Article 3.4.5 and FAC Document 641 Contractor's Direct Material Purchase Affidavit.

- The existing ball field must not be damaged. Contractor shall avoid driving on ball field.

- Addendums will be posted to the School Boards website page were the bid documents for the project are posted.

- Substitutions for the Sports Lighting must be approved prior to bid by Engineer and bidders notified via Addendum. At this time, there are not any approved substitutions for the Sports Lighting.

- Panels shall have NEMA 4SS Stainless Steel enclosures.

- Both 304 and 316 Stainless Steel are acceptable for outdoor enclosures and panels.

- Square D, Siemens, and GE/ABB are all approved manufacturer's for panelboards.

- The area lighting is going to be made an additive alternate.

- Fencing shall be provided for all trenches and work areas. Four foot orange safety fence may be utilized at trenches that are only going to be open for less than 5 days. Trenches and work areas that will be active for more than 5 days shall be guarded with six foot tall temporary fence panels.

- Trench faces and bottoms shall be hand dug to avoid damage to existing utilities. Equipment may be used to remove loose soil in trenches that has been initially moved by hand within trench. Equipment may be utilized for back filling.

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- Trenches shall dug outside of playing field.

- Conduits running under the softball field shall be directionally bored. Counterpoise conductor may be run with bore pipe(s). Minimum depth for directional boring is 5 feet.

- Due to existing utilities in areas, conduits not running under the softball field shall be hand dug.

- Contractor is responsible for locating existing utilities and protecting them from damage.

- Contractor is responsible for all layout and surveying required to locate poles and confirm pole geometry prior to finalization of fixture pre-aiming at factory. Contractor is responsible for layout and surveying required for pole foundation placements. Final pole placements shall be reviewed at site with Engineer and VCS Project Manager prior to finalization.

- Schedule 80 PVC may be utilized for above ground installations of conduits rising up from below grade in lieu of provide GRC conduit up to bottom of enclosures. PVC conduits shall be strapped every 3 feet regardless of size. Schedule 40 PVC is acceptable for below grade installations.

- Conduits rising up exterior of existing building or structure shall be Galvanized Rigid Steel Conduit or Rigid Aluminum Conduit.

- Insulation resistance of all light pole feeds shall be tested regardless of conductor size. This requirement applies to both the sports field and general area light poles. Minimum acceptable insulation resistance is 100 megohm.

- A 45 KVA transformer with stainless steel enclosure and a corresponding 120/208 volt panel are going to be added to project via addendum. This will be used to provide 120 volt control power for the Musco Lighting Control and power for pole mounted receptacles.

- Contractor is responsible for all cutting and patching of existing paving and sidewalks required to install conduits and light poles.

- When any work is occurring on site a superintendent, that is a direct employee of the prime contractor, shall be at site. A licensed journeyman foreman shall also be present at site. One licensed journeyman foreman may serve as both the superintendent and the on-site journeyman.

- The prime contractor for this project shall have documented experience with projects of similar scope and complexity. The electrical contractor for this project shall have documented experience with projects of similar scope and complexity. The pole

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installation contractor for this project shall have documented experience with projects of similar scope and complexity.

SPECIFICATIONS

1. Table of Contents
    a. ADD: Section 01 23 00 – Alternates to Table of Contents.
    b. ADD: Section 26 22 13 Dry Type Transformers to Table of Contents.
    c. ADD: Section 31 00 00 - Geotechnical Report to Table of Contents.

2. Index of Drawings
    a. ADD: Sheet E602 PANEL SCHEDULES to Index of Drawings.

3. Section 632 Bid Form
    a. ADD: Alternate No.1 to Bid Form.

4. Section 01 23 00 - Alternates
    a. Add new Section 01 23 00 attached.

5. Section 26 22 13 - Dry Type Transformers
    a. Add new Section 26 22 13 attached.

6. Section 31 00 00 - Geotechnical Report
    a. Add Section 31 00 00 with new Section 31 00 00 attached.

DRAWINGS

1. SHEET G001 COVER SHEET
    a. ADD: Sheet E602 to Drawing Index.

2. SHEET E101 PARTIAL SITE PLAN – ELECTRICAL - RENOVATION
    a. ADD: Receptacles to Poles A4, B3, and B4.

3. SHEET E601 POWER RISER DIAGRAM
    a. ADD: Panel LSBF and Transformer LSBF to power riser diagram.
    b. DELETE: HSBF Panel Schedule from this sheet. Schedule has been relocated to Sheet E602.

4. SHEET E602 PANEL SCHEDULES
    a. ADD: Sheet E602 attached.

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Attachments:

Specifications:
Table of Contents
Index of Drawings
Bid Form
01 23 00 Alternates
26 22 13 Dry Type Transformers
31 00 00 Geotechnical Report

Drawings:
G001, E101, E601, E602

END OF ADDENDUM

TABLE OF CONTENTS

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA

Facility Name: DeLand High
Project Name: Softball Field Lighting
VCS Project No.: 2448067

DIVISION 0
BIDDING REQUIREMENTS, CONTRACT FORMS, CONDITIONS OF THE CONTRACT AND FORMS

Note:
Project $100,000 or more, utilize the A101-2017 Standard Form of Agreement, A101-2017 Exhibit A and the A201-2017 General Conditions of the Contract (Standard Bid); project is less than $100,000 utilize the 625 Standard Form of Agreement (Proposals).

Specific documents listed above may not apply to this particular project. Select "N/A" for document(s) which do not apply to this project. ***Required: consult the Owner's Construction Project Manager in charge to make this determination.***

Facility Name: DeLand High
Project Name: Softball Field Lighting
VCS Project No.: 2448067

(Insert remainder of specification sections below to complete the table of contents.)

INDEX OF DRAWINGS

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA

Facility Name: DeLand High
Project Name: Softball Field Lighting
VCS Project No.: 2448067

Complete Index of Drawings information including division headings, page numbers and page titles below:

BID FORM

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 632

TO: School Board of Volusia County Florida
Facilities Services
3750 Olson Drive, Daytona Beach Florida 32124
(386) 947-8786

The undersigned, having become familiarized with the local conditions affecting the cost of the work and with the Drawings and Specifications as prepared by Matern Professional Engineering, Inc hereby submits the following bid / proposal:

Facility Name: DeLand High
Project Name: Softball Field Lighting
VCS Project No.: 2448067

COMPANY NAME: _____
ADDRESS: _____
PHONE: _____

I (We) propose to furnish all labor, materials, equipment and services necessary for the completion of the above project, all in accordance with the Drawings and Specifications hereof, including any addenda issued, as indicated below.

BASE BID
Note: modify the format in the box below as needed for this project.

As shown on the drawings and specifications, the sum of:
_____ ($_____).

ALTERNATES - As described below.
(Note: A/E insert description below; add additional Alternates as needed.)

ALTERNATE NO.1: Provide area lighting as shown on Sheet E100.
If the owner elects to proceed with Alternate No. 1, as described in the Contract Documents:

☐ add / ☐ deduct

_____

($_____).

UNIT PRICES - No unit prices for this project.
(Note: A/E insert description below; add additional Unit Prices as needed.)

BID SECURITY - REQUIRED
If required, bid security in an amount equal to 5% of the total bid proposal is enclosed with the understanding that this proposal shall remain in full effect for a period of 60 days starting at the bid opening date and time.

The undersigned agrees to commence work under the Contract on or before a date to be specified in the written FAC Document 650 Notice to Proceed, and to substantially complete the project within Three Hundred Sixty-Five (365) consecutive calendar days thereafter, as specified in Article 3 of AIA Document A101-2017 Agreement, or Article 2 of FAC Document 625 Agreement, which ever is applicable to this project.

The Bidder acknowledges the following addendum (addenda) is made an integral part of the bid documents:

Addendum No.	Date Issued	Addendum No.	Date Issued

In submitting this bid / proposal, the Bidder acknowledges this bid / proposal is based on all construction documents and addenda as posted on the Owner's website or otherwise provided by the Owner's representative. The Owner reserves the right to accept or reject any or all bids / proposals and is not obligated to accept the lowest responsible bid / proposal.

OFFICIAL COMPANY NAME AND ADDRESS:

By: _____
(Signature)

_____
(Print Name, Title)

SECTION 01 23 00 – ALTERNATES

- GENERAL

1.1 REQUIREMENTS INCLUDED

A. Identification and description of Alternate work.

1.2 RELATED REQUIREMENTS

A. Bid Documents: Quotation of cost of each Alternate.

B. Owner-Contractor Agreement: Alternates accepted by Owner for incorporation into the Work.

C. Sections of Specifications identified in each Alternate.

1.3 PROCEDURES

A. Alternates will be exercised at the option of Owner.

B. Coordinate related work and modify surrounding work as required to complete the Work, including changes under each Alternate, when acceptance is designated in Owner-Contractor Agreement.

C. Base Bid to include:

1. All work shown on drawings or these specifications that is not specifically identified as an alternate.

2. All panelboard breakers shown on these plans are to be in base contract, so that if these alternates are not accepted, the work included in the alternates can be added in the future without modifications to base contract panelboard.

1.4 ALTERNATE SCHEDULE

A. Alternates: Additive Alternate No. 1: Provide area lighting as shown on Sheet E100.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 26 22 13 – DRY TYPE TRANSFORMERS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Dry-type distribution transformers with primary and secondary voltages of 600V and less and capacity ratings through 2000kVA.

B. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for energy efficient dry type transformers per TP-1 and CSA 802.2-00.

1.3 REFERENCES

A. Comply with all rules and/or standards from:

1. NECA National Electrical Contractors Association
2. NFPA 70 - National Electrical Code
3. NEMA ST 1 Specialty Transformers
4. NEMA ST20
5. Underwriters Laboratory (UL) and Canadian Standard Association
    a) UL 1561 – Dry-Type General Purpose and Power Transformers
6. UL 250 Enclosure for Electrical Equipment
7. 2005 Energy Act PUBLIC LAW 109–58 - AUG. 8, 2005

B. Comply with all rules from Department of Energy

1. 10 CFR 429
2. 10 CFR 431

1.4 SUBMITTALS

A. Submit Product Data: Provide outline and support point dimensions of enclosures and accessories, unit weight, voltage, kVA and impedance ratings and characteristics, tap configurations, insulation system type, and rated temperature rise, energy code compliance, and compliance with all standards/rules referenced above.

B. Shall Include the following:

1. Confirmation that transformer(s) are UL 1561 Listed
2. Construction Details including enclosure dimensions, kVA rating, primary and secondary nominal voltages, voltage tap, unit weight.
    a) Wire Access Points – showing Wire Bending Dimensions
    b) Location for Ground Lug Provisions
3. Basic Performance characteristics including insulation class, temperature rise, core and coil materials, impedances & audible noise level, unit weight, inrush data RMS.
4. Efficiency Data
5. No load and full load losses will be calculated per NEMA ST20 test methods.

6. Efficiency Curves
   a) Linear Loads
   b) Data per the non-linear load test program.

1.5 STANDARDS

A. Transformers 1000kVA and smaller shall be listed by Underwriters Laboratories.

B. Conform to the requirements of ANSI/NFPA 70.

C. Transformers are to be manufactured and tested in accordance with NEMA ST20.

D. Efficiency – Per DOE 10 CFR 431.192 April 2013

Prior to January 1, 2016 Energy Conservation Standards for Low-Voltage Dry-Type Distribution Transformers			
Single phase		Three phase	
kVA	Efficiency (%)	kVA	Efficiency (%)
15	97.7	15	97.0
25	98.0	30	97.5
37.5	98.2	45	97.7
50	98.3	75	98.0
75	98.5	112.5	98.2
100	98.6	150	98.3
167	98.7	225	98.5
250	98.8	300	98.6
333	98.9	500	98.7
		750	98.8
		1000	98.9

After January 1, 2016 Energy Conservation Standards for Low-Voltage Dry-Type Distribution Transformers			
Single phase		Three phase	
kVA	Efficiency (%)[1]	kVA	Efficiency (%)[1]
15	97.70	15	97.89
25	98.00	30	98.23
37.5	98.20	45	98.40
50	98.30	75	98.60
75	98.50	112.5	98.74
100	98.6	150	98.83
167	98.70	225	98.94
250	98.80	300	99.02
333	98.90	500	99.14
		750	99.23
		1000	99.28

Note: All efficiency values are at 35 percent of nameplate-rated load, determined according to the DOE Test Method for Measuring the Energy Consumption of Distribution Transformers under Appendix A to Subpart K of 10 CFR part 431.

E. Seismic Standards:

1. Florida Building Code 7th edition

F. Conform to all requirements of the Florida Building Code 7th Edition, in addition to all other applicable codes and standards.

1.6 PACKAGING FOR SHIPMENT

A. Transformers shall be packaged for shipment using materials that will protect transformer during shipping and facilitate handling of transformers.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store, protect, and handle products to site.

B. Deliver transformers, packaged as noted above.

C. Accept transformers on site. Inspect for damage.

D. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

E. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to transformer internal components, enclosure and finish.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Same manufacturer as panelboards

2.2 RATINGS INFORMATION

A. All insulating materials are to exceed standards and be rated for 220°C UL component recognized insulation system

B. Transformers 15kVA and larger shall be 150°C temperature rise above 40°C ambient.

C. The maximum temperature of the top of the enclosure shall not exceed 50°C rise above a 40°C ambient.

D. The transformer(s) shall be rated as indicated on panel schedules and/or riser diagrams

2.3 CONSTRUCTION

A. Transformer windings shall be continuous wound copper with brazed or welded terminations.

B. Transformer coils shall be of the continuous wound construction and shall be impregnated with non-hygroscopic, thermosetting varnish

C. All cores to be constructed with low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below the saturation point to prevent core overheating.

D. The completed core and coil shall be bolted to the base of the enclosure but isolated by means of rubber vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap. Sound isolation systems requiring the complete removal of all fastening devices will not be acceptable.

E. The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL and NEC standards.

F. All terminals, including those for changing taps, must be readily accessible by removing a front cover plate.

G. Taps shall have a 5% FCAN and 10% FCBN (150C Rise)

1. 2.5% Steps On all voltages 350 V and above
    a) 15 to 300kVA
    b) 500 and 750kVA range change to 5% FCBN instead of 10%
    c) 1000kVA and greater per Manufacture Design
2. 5% Steps On all voltages below 350 V
    a) 15 to 300kVA
    b) 500 and 750kVA range change to 5% FCBN instead of 10%
    c) 1000kVA and greater per Manufacture Design

H. Transformers shall have provisions for Bonding Neutral to Ground

I. Transformers ventilated OPENS shall not be located in wire access areas.

J. Transformer access areas shall allow for NEC bending radius for the following cable ranges

by Kva:

kVA	Entering Bottom Access Point Wire Range Bending Space 480V / 600V	Entering Side Access Point Wire Range Bending Space 480V / 600V	Entering Bottom Access Point Wire Range Bending Space 208V / 240V	Entering Side Access Point Wire Range Bending Space 208V / 240V
15	(1) #14-#2AWG	(1) #14-#2/0 AWG	(1) #14-#2AWG	(1) #14-#2/0 AWG
30	(1) #14-#2AWG	(1) #14-#2/0 AWG	(1) #14-#3/0 AWG	(1) #14-250kcmil
45	(1) #14-#2/0 AWG	(1) #14-500kcmil	(1 or 2) #6-#4/0 AWG	(1) #6-500kcmil (2) #6 - 250kcmil
75	(1) #14-#4/0 AWG	(1) #14-500kcmil	(1 or 2) 1/0 - 500kcmil	(1 or 2) 1/0 - 500kcmil
112.5	(1 or 2) #6-#4/0 AWG	(1) #6-500kcmil (2) #6 - 250kcmil	(2) 2/0 - 500kcmil (3) 2/0 - 400kcmil	(2 or 3) 2/0 - 500kcmil
150	(1 or 2) #4 - 350kcmil	(1 or 2) #4 - 500kcmil	(2) 2/0 - 500kcmil (4) 2/0 - 250kcmil (3) 2/0 - 400kcmil	2, 3 or 4) 2/0 - 500kcmi
225	(1 or 2) 3/0 - 500kcmil	(1 or 2) 3/0 - 500kcmil	(4) 2/0 - 500kcmil	(4) 3/0 - 500kcmil
300	(2) 2/0 - 500kcmil (3) 2/0 - 400kcmil	(2 or 3) 2/0 - 500kcmil	(6) 2/0 - 500kcmil	(6) 3/0 - 600kcmil
500	(4) 2/0 - 500kcmil	(4) 3/0 - 500kcmil	(9) 2/0 - 500kcmil	(9) 3/0 - 600kcmil
750	(6) 2/0 - 500kcmil	(6) 3/0 - 600kcmil	(15) 2/0 - 500kcmil	(15) 3/0 - 600kcmil

K. Terminals shall be sized to handle cables for the following wire range as standard/minimum. Increase sizes as required for feeders called for in feeder schedule:

	480 / 600 V		208 / 240 V	
kVA	Terminal Mechanical Lugs	Terminal Compression Lugs NEMA TWO HOLE	Terminal Mechanical Lugs	Terminal Compression Lugs NEMA TWO HOLE
15	2/0-14 AWG	(1) #12-10 AWG (1) #8-#1/0 AWG	2/0-14 AWG	(1) #8-#1/0 AWG
30	2/0-14 AWG	(1) #8-#1/0 AWG	350 kcmil-6 AWG	(1) #8-#1/0 AWG (1) #4-300kcmil (1) 250kcmil-350kcmil
45	2/0-14 AWG 350 kcmil-6 AWG	(1) #8-#1/0 AWG (1) #4-300kcmil	350 kcmil-6 AWG (1) 600 kcmil-4 AWG or (2) Equal 250 kcmil-1/0 AWG	(1) 250kcmil-350kcmil (1) #2/0-500kcmil (2) #4-300kcmil
75	2/0-14 AWG 350 kcmil-6 AWG	(1) #8-#1/0 AWG (1) #4-300kcmil (1) 250kcmil-350kcmil	(1) 600 kcmil-4 AWG or (2) Equal 250 kcmil-1/0 AWG	(2) #2/0-500kcmil (1) 400kcmil-600kcmil (AL) (2) #4-300kcmil (2) 250kcmil-350kcmil
112.5	350 kcmil-6 AWG (1) 600 kcmil-4 AWG or (2) Equal 250 kcmil-1/0 AWG	(1) 250kcmil-350kcmil (1) #2/0-500kcmil (2) #4-300kcmil	(2) 350 kcmil-6 AWG (2) 600 kcmil-2 AWG	(3) 250kcmil-350kcmil (3) #4-300kcmil (2) 400kcmil-600kcmil(AL)
150	(1) 600 kcmil-4 AWG or (2) Equal 250 kcmil-1/0 AWG	(1) 250kcmil-350kcmil (2) #4-300kcmil	(3) 350 kcmil-6 AWG (2) 600 kcmil-2 AWG	(3) #2/0-500kcmil (3) #4-300kcmil (3) 400kcmil-600kcmil(AL) (4) 250kcmil-350kcmil
225	(1) 600 kcmil-2 AWG (2) 600 kcmil-2 AWG	(2) #2/0-500kcmil (2) 400kcmil-600kcmil (AL) (2) #4-300kcmil	(3) 600 kcmil-2 AWG	(4) #4-300kcmil (4) #2/0-500kcmil
300	(2) 600 kcmil-2 AWG	(3) 250kcmil-350kcmil (3) #2/0-500kcmil (3) 400kcmil-600kcmil(AL)	(4) 600 kcmil-2 AWG	(6) #2/0-500kcmil (6) 400kcmil-600kcmil(AL)
500	(3) 600 kcmil-2 AWG	(4) #4-300kcmil (4) #2/0-500kcmil	(6) 600 kcmil-2 AWG	(9) #2/0-500kcmil (9) 400kcmil-600kcmil(AL)
750	(4) 600 kcmil-2 AWG	(6) #2/0-500kcmil (6) 400kcmil-600kcmil(AL)	(9) 600 kcmil-2 AWG	(15) #2/0-500kcmil (15) 400kcmil-600kcmil(AL)

L. The transformer enclosures shall be ventilated and be fabricated of heavy gauge, sheet stainless steel construction

1. Minimum clearance from rear and sides 1/2”.
2. Transformers located outdoors shall have enclosures constructed of stainless steel and shall be configured for outdoor installation.

M. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap.

N. Nameplate: Include transformer connection data.

2.4 SOUND LEVELS

A. Sound levels shall be warranted by the manufacturer not to exceed Nema ST 20 and/or the following:

1.	15 to 50 kVA	45dB
2.	51 to 150 kVA	50dB
3.	151 to 300 kVA	55dB
4.	301 to 500 kVA	60dB
5.	501 to 700 kVA	62dB
6.	701 to 100 kVA	64dB
7.	1001 to 1500 kVA	65dB
8.	1501 to 2000 kVA	66dB

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify site condition.

B. Verify that surfaces are suitable for installing transformer supports.

3.2 PREPARATION

A. Provide concrete pad sized minimum of 3" larger on all sides of the transformer.

3.3 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Set transformer plumb and level.

C. Use flexible conduit, under the provisions of Section 26 05 33 Conduit, 1’ minimum length for connections to transformer case. Make conduit connections to side panel of enclosure.

D. Mount transformers on vibration isolating pads suitable for isolating the transformer noise from the building structure.

E. Provide grounding and bonding in accordance with Section 26 05 26 Grounding and Bonding.

F. Ground per NEC 250.26 and all applicable codes per Authority Having Jurisdiction.

3.4 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed.

B. Check for damage and tight connections prior to energizing transformer.

C. Measure primary and secondary voltages and make appropriate tap adjustments.

3.5 SOURCE QUALITY CONTROL

A. Provide testing of transformers under provisions of Section 26 08 13 Tests and Performance Verification of Electrical Systems.

B. Provide production testing of each unit in accordance with NEMA ST 20.

END OF SECTION

SECTION 31 00 00 - GEOTECHNICAL REPORT

PART 1 - GENERAL

1.1 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information but are not a warranty of existing conditions.

B. A **Preliminary** geotechnical investigation report for Project, prepared by Universal Engineering Sciences is appended to this section and consists of the following:

1. **Preliminary Geotechnical Evaluation dated February 29, 2024.**

END OF SECTION

February 29, 2024

Mr. James Bott
Volusia County School Board
3750 Olson Drive
Daytona Beach, Florida 32124

Reference: **Preliminary Geotechnical Evaluation**
Deland High School – Softball Field Lighting
Deland, Volusia County, Florida
UES Project No. 0430.2400050.0000
UES Report No. 2073952P

Dear Mr. Bott:

UES has completed a preliminary subsurface evaluation for the subject project located in Deland, Volusia County, Florida. We understand the proposed project will consist of installing new light poles around the existing softball field at Deland High School. We were provided with an aerial photograph indicating the locations of the proposed light poles.

The purpose of this report is to discuss the findings of the portion of the fieldwork we have currently performed, to provide a preliminary evaluation of the underlying subsurface conditions based on the results of soil boring completed thus far, and to provide soil design parameters to aid in design.

FIELD EXPLORATION

At this time, UES has performed one (1) Standard Penetration Test (SPT) boring to a depth of approximately 60 feet below existing grade (designated B-4) at the approximate location shown on the attached Boring Location Plan in Appendix A. The SPT boring was performed in accordance with the procedures of ASTM D-1586.

FINDINGS

SUBSURFACE CONDITIONS

The results of the SPT boring we have currently performed generally indicated intermittent layers of very loose to dense fine sand (SP), fine sand with silt (SP-SM), and clayey fine sand (SC) to the boring termination depth of approximately 60 feet below existing grade.

Groundwater was encountered at a depth of approximately 9.0 feet below existing grade.

ANTICIPATED RECOMMENDATIONS

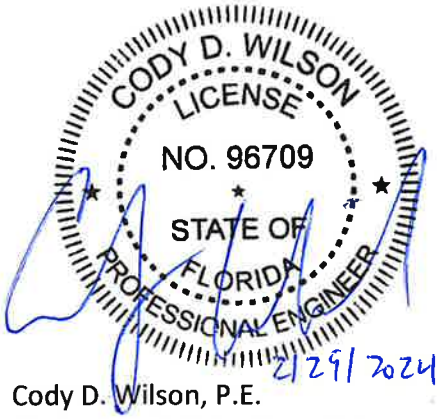
Anticipated general soil design parameters for drilled shaft design consisting of phi angle (degrees), soil unit weight (lb/cubic ft.), Cohesion (lb/square ft.) and Earth Pressure coefficients are provided on the attached Soil Design Parameters in Appendix A.

CLOSURE

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully Submitted,
Universal Engineering Sciences, LLC
Certificate of Authorization No. 549

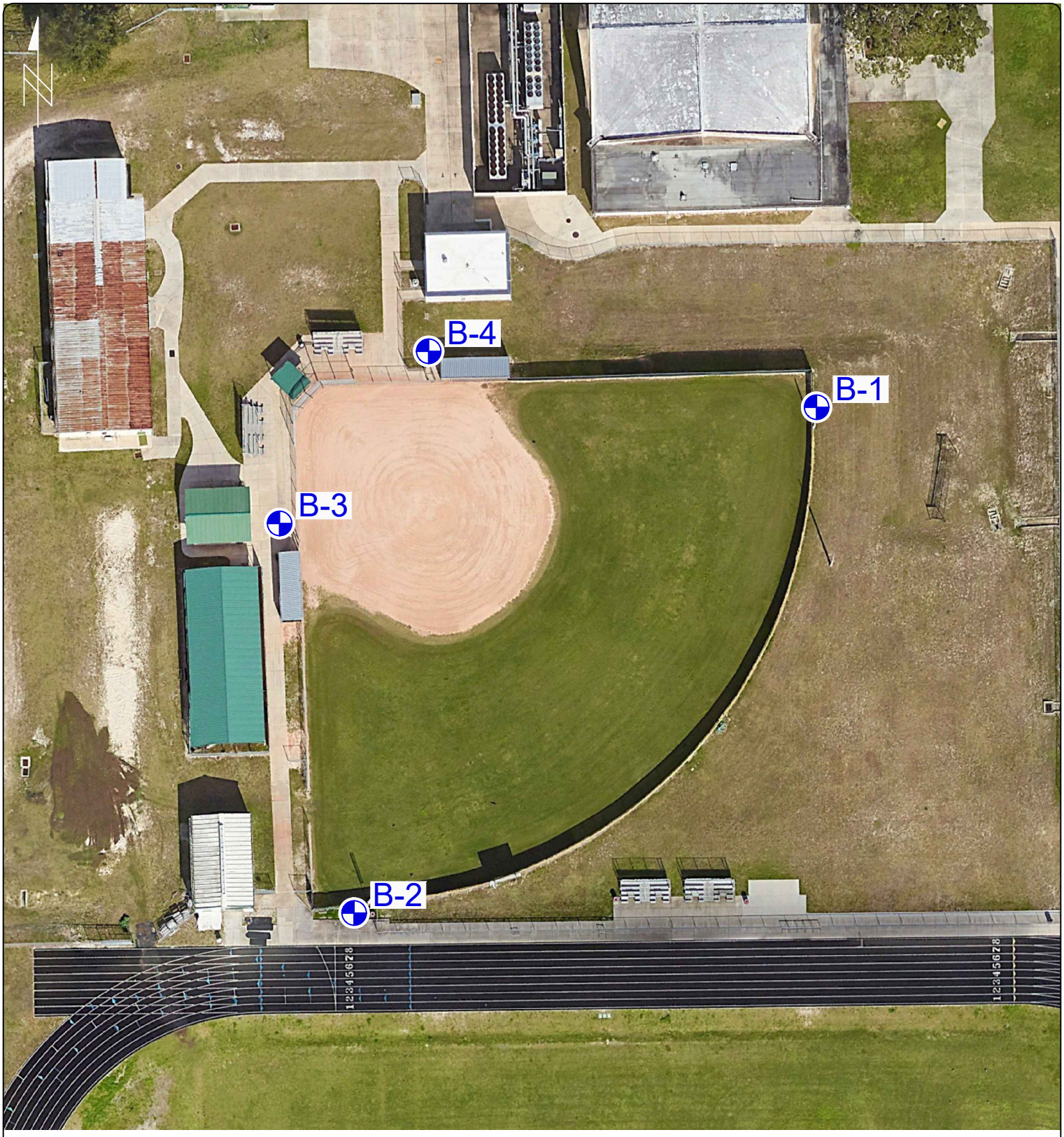
Michael Mohney, M.S.
Geotechnical Staff Engineer



Cody D. Wilson, P.E.
Geotechnical Department Manager
Florida Registration No. 96709

APPENDIX A

UES™



GRAPHIC SCALE
0 30 60
(IN FEET)
1 INCH ≈ 60 ft.

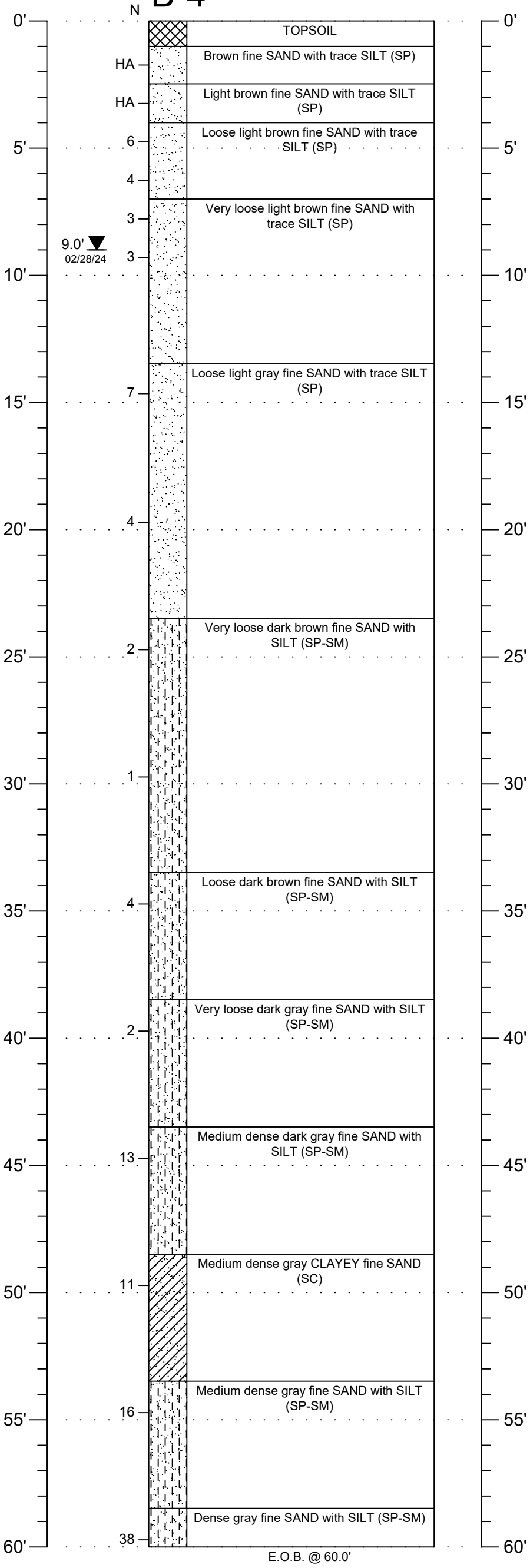
LEGEND

APPROXIMATE LOCATION OF STANDARD PENETRATION TEST (SPT) BORING

UES™

TITLE: BORING LOCATION PLAN			SCALE: 1" ≈ 60'
PROJECT: GEOTECHNICAL EVALUATION DELAND HIGH SCHOOL 800 N. HILL AVENUE DELAND, FLORIDA			PAGE/FIG. NO.: A-1
DRAWN BY: MKL	DATE: 02/29/24	PROJECT NO.: 0430.2400050.0000	
CHECKED BY: BP	DATE: 02/29/24	REPORT NO.: 2073952	

B-4



NOTES:

▼	Measured Groundwater Level 24 (+) Hours Subsequent to Time of Drilling
(SP)	Unified Soil Classification System
EOB	End of Boring
N	Penetr. Resistance, Blows/ft.
HA	Hand Auger Method
WOH	Weight of Hammer
Kv	Coefficient of Permeability, (ft/day)
-200	% Passing No. 200 Sieve

Fine SAND (SP)

Fine SAND with SILT (SP-SM)

CLAYEY fine SAND (SC)

Topsoil (PT) ... some to many ORGANICS (PT), sometimes DEBRIS

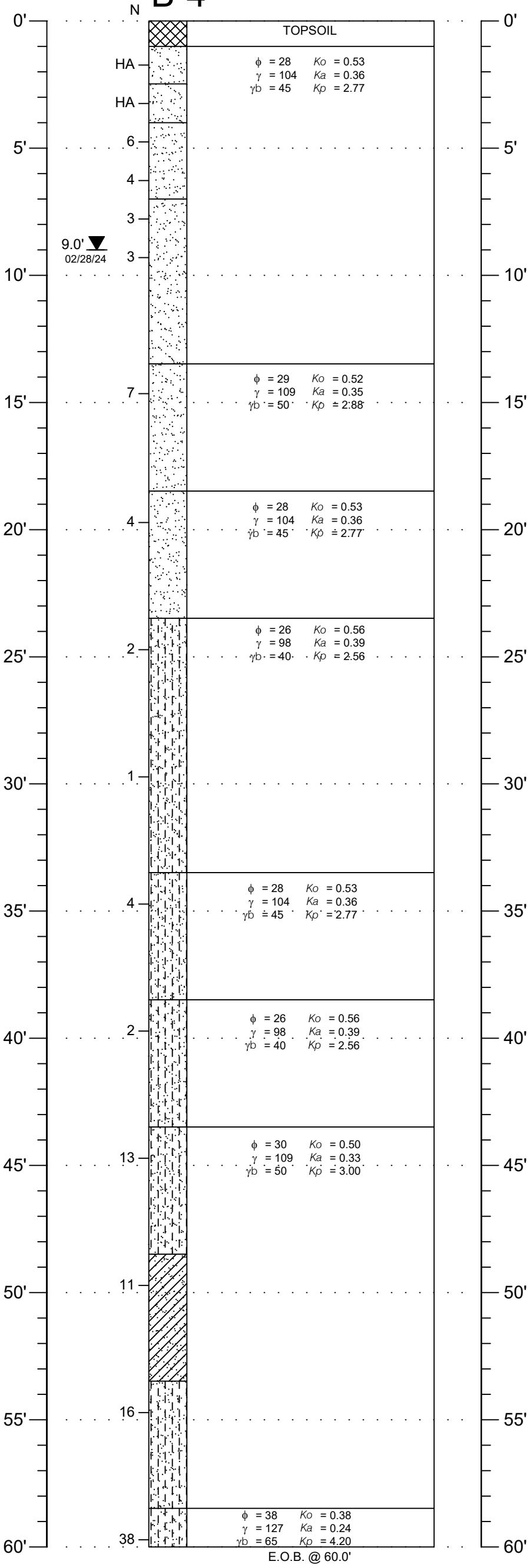
UES™

PROJECT:
GEOTECHNICAL EVALUATION
DELAND HIGH SCHOOL
800 N. HILL AVENUE
DELAND, FLORIDA

TITLE:
SUBSURFACE PROFILE

DRAWN BY:	MKL	DATE:	02/29/24	PROJECT NO.:	0430.2400050.0000	SCALE: NA (in feet)	PAGE/FIG. NO.: A-2
CHECKED BY:	BP	DATE:	02/29/24	REPORT NO.:	2073952		

B-4



ϕ = Angle of Internal Friction (degrees)
γ = Effective Unit Weight (PCF)
γb = Unit Weight Below Water Table (PCF)
Ka = Coefficient of Active Lateral Earth Pressure
Kp = Coefficient of Passive Lateral Earth Pressure
Ko = Coefficient at Rest Lateral Earth Pressure
C = Cohesion (psf)

NOTES:

▼	Measured Groundwater Level 24 (+) Hours Subsequent to Time of Drilling
(SP)	Unified Soil Classification System
EOB	End of Boring
N	Penetr. Resistance, Blows/ft.
HA	Hand Auger Method
WOH	Weight of Hammer
Kv	Coefficient of Permeability, (ft/day)
-200	% Passing No. 200 Sieve

Fine SAND (SP)

Fine SAND with SILT (SP-SM)

CLAYEY fine SAND (SC)

Topsoil (PT) ... some to many ORGANICS (PT), sometimes DEBRIS

UES™

PROJECT:
GEOTECHNICAL EVALUATION
DELAND HIGH SCHOOL
800 N. HILL AVENUE
DELAND, FLORIDA

TITLE:
SOIL DESIGN PARAMETERS

DRAWN BY:	MKL	DATE:	02/29/24	PROJECT NO.:	0430.2400050.0000	SCALE: NA (in feet)	PAGE/FIG. NO.: A-3
CHECKED BY:	BP	DATE:	02/29/24	REPORT NO.:	2073952		

KEY TO BORING LOGS

SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
NP	Non-Plastic (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% retained on the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Poorly graded sands and gravelly sands, little or no fines
		SANDS with 12% or more passing No. 200 sieve	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SIOLS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts
			CH	Inorganic clays or clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

*Based on the material passing the 3-inch (75 mm) sieve
** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

RELATIVE DENSITY
(Sands and Gravels)
Very loose – Less than 4 Blow/Foot
Loose – 4 to 10 Blows/Foot
Medium Dense – 11 to 30 Blows/Foot
Dense – 31 to 50 Blows/Foot
Very Dense – More than 50 Blows/Foot

CONSISTENCY
(Silts and Clays)
Very Soft – Less than 2 Blows/Foot
Soft – 2 to 4 Blows/Foot
Firm – 5 to 8 Blows/Foot
Stiff – 9 to 15 Blows/Foot
Very Stiff – 16 to 30 Blows/Foot
Hard – More than 30 Blows/Foot

RELATIVE HARDNESS
(Limestone)
Soft – 100 Blows for more than 2 Inches
Hard – 100 Blows for less than 2 Inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample
Trace – 5% or less
With Silt or With Clay – 6% to 11%
Silty or Clayey – 12% to 30%
Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample
Trace – Less than 3%
Few – 3% to 4%
Some – 5% to 8%
Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample
Trace – 5% or less
Few – 6% to 12%
Some – 13% to 30%
Many – 31% to 50%

APPENDIX B

UES™

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

UES

VOLUSIA COUNTY SCHOOLS

DELAND HIGH SCHOOL SOFTBALL FIELD LIGHTING

VCS Project NO. 2448067

800 NORTH HILL AVE.
DELAND, FLORIDA 32724

THE SCHOOL BOARD OF VOLUSIA
COUNTY FLORIDA
200 North Clara Avenue
Deland, Florida 32720

SCHOOL BOARD MEMBERS

Jamie M. Haynes	CHAIRMAN
Anita Burnette	VICE CHAIRMAN
Ruben Colon	MEMBER
Carl G. Persis	MEMBER
Jessie Thompson	MEMBER
Carmen J. Balgobin	SUPERINTENDENT

DESCRIPTION OF WORK

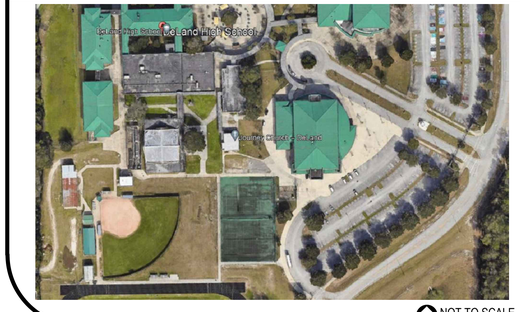
ADDING SOFTBALL FIELD LIGHTING TO THE EXISTING SOFTBALL FIELD AS SHOWN ON THESE DRAWINGS AND DESCRIBED IN THE PROJECT MANUAL.

Engineer's Statement of Compliance
To the best of my knowledge, these drawings and the project manual are complete and comply with the Florida Building Code.

BUILDING DATA

A.	SURVEY PARCEL ID	XXX
B.	LEGAL DESCRIPTION	XXX
C.	OCCUPANCY TYPE	Educational
D.	CONSTRUCTION TYPE	XXX
E.	RISK CATEGORY	XXX
F.	AUTOMATIC SPRINKLER	XXX
G.	BUILDING AREA	XXX
H.	BUILDING HEIGHT	XXX
I.	OCCUPANT LOAD	XXX

LOCATION MAP



NOT TO SCALE

ENGINEERS & CONSULTANTS

MATERN PROFESSIONAL ENGINEERING
130 Candace Drive
Maitland, Fl 32715
407-740 -5020
Adrian Baus
abaus@matern.net
http://matern.net

MATERN
Mechanical • Electrical • Plumbing • Fire Protection
Technology • Commissioning • Energy Engineers
130 Candace Drive
Maitland, FL 32751
ENG. BUS. No. EB-0005096 PHONE (407) 740-5020
CERT. OF AUTH. No. 5096 FAX (407) 740-0365

SHEET NO.	SHEET NAME	SCALE
G001	COVER SHEET	NONE
E001	GENERAL NOTES, SYMBOL LEGEND, AND ABBREVIATIONS	NONE
E100	SITE PLAN - ELECTRICAL	1" = 30'
E101	PARTIAL SITE PLAN - ELECTRICAL - RENOVATION	1" = 20'-0"
E102	PARTIAL SITE PLAN - PHOTOMETRICS	1" = 20'-0"
E501	DETAILS	NONE
E502	DETAILS	NONE
E503	DETAILS	NONE
E601	POWER RISER DIAGRAM AND SCHEDULES	NONE
E602	PANEL SCHEDULES	NONE

CONSTRUCTION DOCUMENTS 01/04/2024

MATERN
Mechanical • Electrical • Plumbing • Fire Protection
Technology • Commissioning • Energy Engineers
130 Candace Drive
Maitland, FL 32751
ENG. BUS. No. EB-0005096 PHONE (407) 740-5020
CERT. OF AUTH. No. 5096 FAX (407) 740-0365
MPE JOB #: 2023-130

REVISIONS

NO.	DATE	DESCRIPTION
1	03.05.2024	ADDENDUM NO. 1

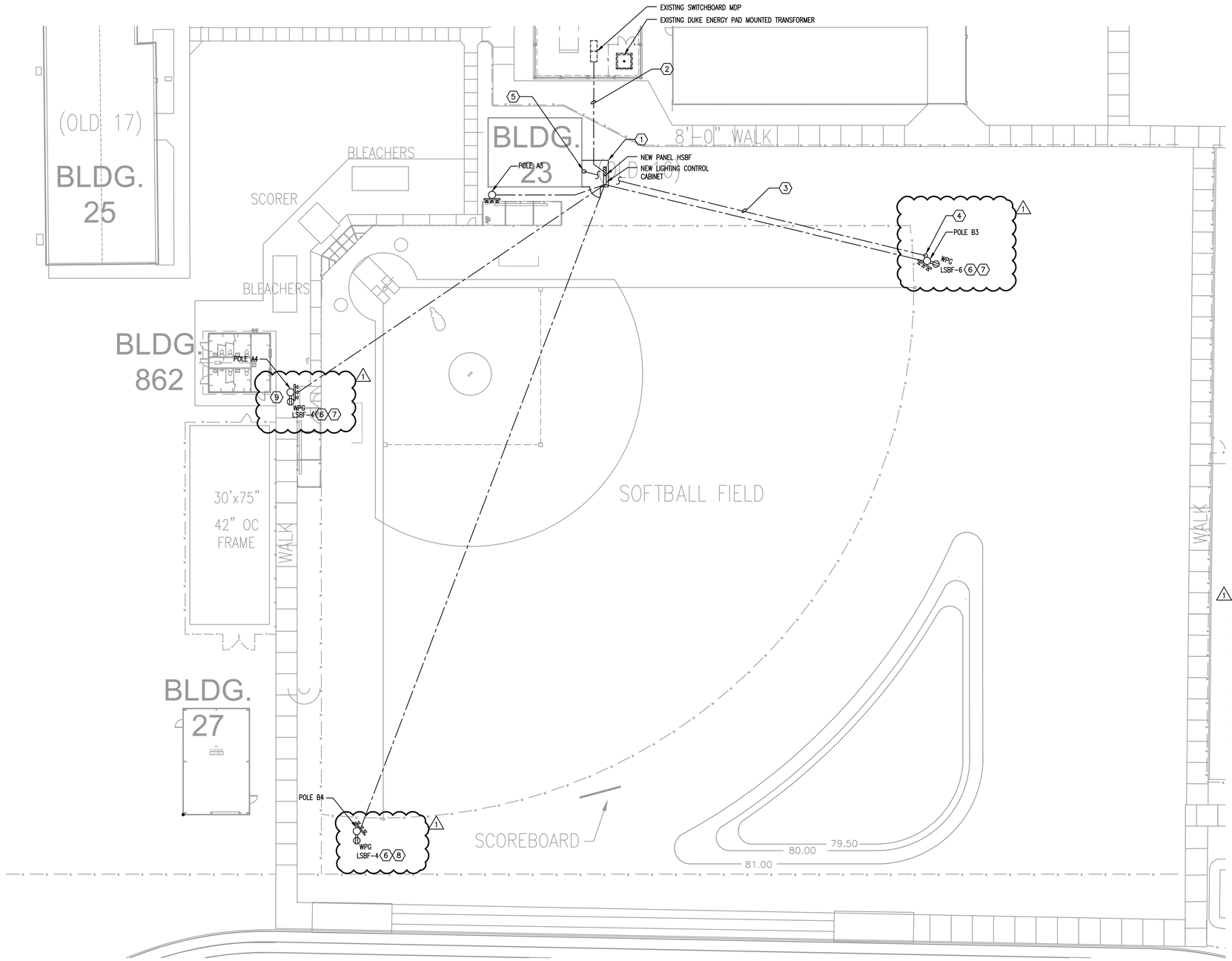
DELAND HIGH SCHOOL
SOFTBALL FIELD LIGHTING
VCS Project No. 2448067
800 NORTH HILL AVE.
DELAND, FLORIDA 32724

ARCH/ENGR OF RECORD
Engineer
Adrian Baus

DESIGNED BY: AWB	DRAWN BY: MM
ISSUE DATE: 01/04/2024	AE PROJECT NUMBER: 2023-130

SHEET TITLE
COVER SHEET

DRAWING NO.
G001



PARTIAL SITE PLAN - ELECTRICAL - RENOVATION

1"=20'-0"

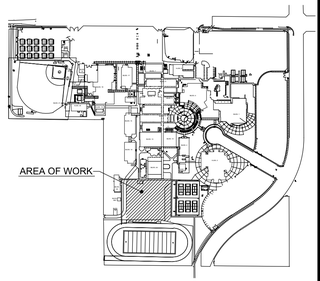
0 10' 20' 40'

GENERAL NOTES

1) REFER TO GENERAL NOTES FOR THIS DISCIPLINE.
2) REFER TO SPECIFICATIONS.
3) WHERE CONDUIT ROUTING IS SHOWN, THE CONDUITS ARE SHOWN FOR DIAGRAMMATIC PURPOSES AND ARE NOT NECESSARILY REPRESENTATIVE OF EXACT PLACEMENT.
4) REWORK/RELOCATE EXISTING ELECTRICAL AS REQUIRED TO FACILITATE CONSTRUCTION.
5) CONTRACTOR SHALL MAINTAIN CONTINUITY TO EXISTING DEVICES REMAINING.
6) ALL EXISTING ELECTRICAL IS NOT SHOWN.
7) VERIFY EXISTING PHASE ROTATIONS AT ALL EXISTING EQUIPMENT PRIOR TO DISCONNECTING ANY LOADS. VERIFY PHASE ROTATION HAS NOT CHANGED PRIOR TO REENERGIZING ANY LOADS.
8) ALL CONNECTIONS TO EXTERIOR ENCLOSURES MADE AT OTHER THAN BOTTOM OF ENCLOSURE SHALL BE MADE WITH WEATHERPROOF MYERS HUBS.
9) PROVIDE ALL CONTROL WIRING AND MISCELLANEOUS ELECTRICAL REQUIRED FOR COMPLETE AND OPERATIONAL INSTALLATIONS.
10) PROVIDE PERMANENT LOCKOUT PROVISIONS THAT REMAIN IN PLACE FOR ALL BREAKERS FEEDING NEW OR REPLACED EQUIPMENT.
11) DO NOT TRENCH ACROSS SOFTBALL FIELD. CONDUITS SHALL BE DIRECTIONALLY BORED AS SHOWN. DIRECTIONALLY BORED CONDUITS SHALL BE INSTALLED AT A DEPTH OF NOT LESS THAN 5 FEET.

HEX NOTES

1. PROVIDE APPROXIMATELY 10'-0" BY 10'-0" FENCED AREA WITH A 4'-0" GATE AS SHOWN. FENCING TO BE 6 FOOT TALL BLACK VINYL COATED CHAIN LINK.
2. CONDUITS SHALL BE INSTALLED IN HAND DUG TRENCHES. SITE IS HIGHLY CONGESTED IN THIS AREA WITH EXISTING UNDERGROUND UTILITIES. CONTRACTOR SHALL LOCATE EXISTING UTILITIES AND PROTECT THEM FROM DAMAGE.
3. PROVIDE 1-1/4" SPARE CONDUIT FROM POLE TO FENCED AREA FOR OWNER'S FUTURE USE.
4. TURN CONDUIT UP 24 INCHES ABOVE GRADE AS SCH 80 PVC AND CAP. SECURE CONDUIT TO SIDE OF CONCRETE FOUNDATION WITH STAINLESS STEEL BANDING SYSTEM. PROVIDE TWO STAINLESS STEEL BANDS NOT LESS 3/4" WIDE BY 0.030" THICK.
5. TURN CONDUIT UP 24 INCHES ABOVE GRADE AS SCH 80 PVC AND CAP. SECURE CONDUIT TO SIDE OF BUILDING WITH STAINLESS STEEL STRUT.
6. RECEPTACLE TO MOUNTED IN POLE HANDHOLE. PROVIDE MUSCO SBP-030 GFCI BASE COVER ASSEMBLY FOR MOUNTING OF RECEPTACLE.
7. PROVIDE #8 CONDUCTORS TO FEED 120 VOLT RECEPTACLE IN ADDITION TO POLE FEEDER CONDUCTORS SHOWN IN SCHEDULE ON SHEET E601.
8. PROVIDE #6 CONDUCTORS TO FEED 120 VOLT RECEPTACLE IN ADDITION TO POLE FEEDER CONDUCTORS SHOWN IN SCHEDULE ON SHEET E601.
9. EXISTING RECEPTACLE ON CONCRETE PEDESTAL ADJACENT TO NEW POLE TO BE ELIMINATED. RECEPTACE IS AT END OF A CIRCUIT. REMOVE EXISTING CONDUCTORS BACK TO UPSTREAM RECEPTACLE.



KEYPLAN

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REVISIONS

NO.	DATE	DESCRIPTION
1	02/5/2024	ADDENDUM NO. 1

DOCUMENT HISTORY

DELAND HIGH SCHOOL
SOFTBALL FIELD LIGHTING
VCS Project No. 2448067
800 NORTH HILL AVE.
DELAND, FLORIDA 32724

ARCH/ENGR OF RECORD
Engineer
Adrian Baus

DESIGNED BY	DRAWN BY
AWB	MM/AWB
ISSUE DATE	AE PROJECT NUMBER
01/04/2024	2023-130

SHEET TITLE
PARTIAL SITE PLAN - ELECTRICAL- RENOVATION

DRAWING NO.
E101

FEEDER SCHEDULE:	DELAND HIGH - SOFTBALL				DATE:	3/4/2024	COPYRIGHT: ME, LLC 2009	VERSION: A8d5R1		REV: 1-7-2021		
FEEDER FEEDING	OCP AMP SIZE	VOLTS	FEEDER AMPACITY	FEEDER VOLTAGE DROP (%)	WIRE/PHASE	NEUTRAL WIRE	GROUND WIRE	EXTRA NEUTRAL	FEEDER MATERIAL	PARALLEL RUNS	CONDUIT SIZE (IN)	SHORT CIRCUIT AMPS AT PANEL
HSBF	200	480	204	0%	#250 KCMIL	#250 KCMIL	#4		COPPER	1	3.5	25558
POLE A3	30	480	40	1%	#8	#8	#8		COPPER	1	1.25	
POLE A4	30	480	40	1%	#8	#8	#8		COPPER	1	1.25	
POLE B3	30	480	40	1%	#8	#8	#8		COPPER	1	1.25	
POLE B4	30	480	40	2%	#8	#8	#8		COPPER	1	1.25	
LSBF	175	208	175	0%	#2/0	#2/0	#4		COPPER	1	2.5	2076
LSBF XFMR PRI	70	480	85	0%	#4	-----	#8		COPPER	1	1.5	20182

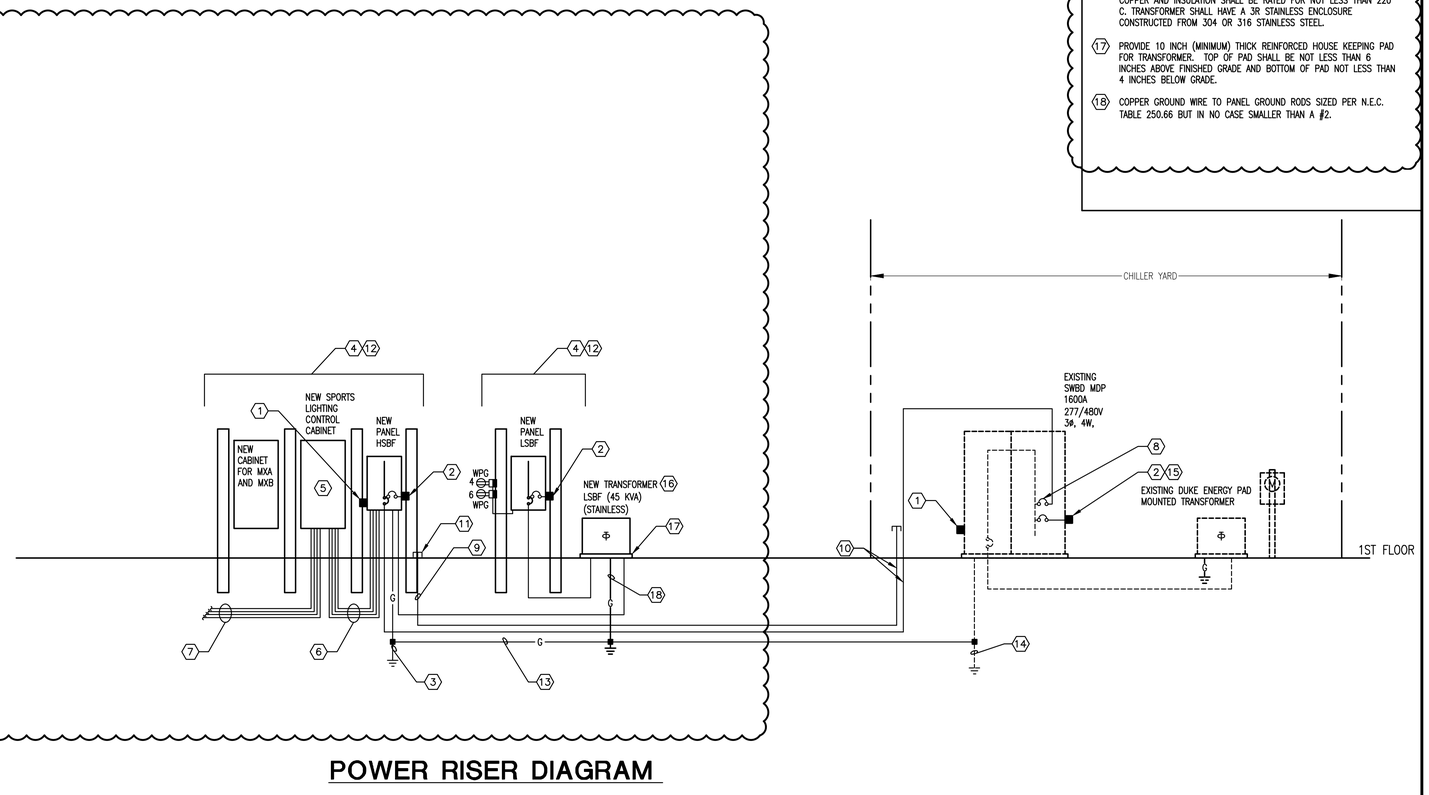
GENERAL NOTES:

1) CONDUIT SIZE IS BASED ON 2017 N.E.C. FOR EMT, IMC, RMC, FLEXIBLE METAL, AND SCHED 40 PVC. IF ANY OTHER TYPE OF CONDUIT/TUBING IS USED, THE CONTRACTOR SHALL RESIZE CONDUIT AND SIZE AS REQUIRED TO COMPLY WITH THE N.E.C..

2) USE CABLE REDUCERS AT TERMINATIONS AND/OR AT/IN JUNCTION BOX NEAR TERMINATIONS AS REQUIRED TO COORDINATE OVERSIZED PHASE OR NEUTRAL CONDUCTORS WITH TERMINATION LUG SIZE OR PROVIDE TERMINATION/LUGS SIZED FOR FEEDERS.

3) CONTRACTOR IS TO MEGGER TEST ALL FEEDERS PER SPECIFICATIONS.

4) WHERE DISCONNECT SWITCH (DISC SW) IS INCLUDED IN THE NAME UNDER "FEEDER FEEDING", PROVIDE DISC SW TO MEET ALL ELECTRICAL CHARACTERISTICS PER THIS SCHEDULE, INCLUDING SCCR RATING. PROVIDE FUSE IN FUSIBLE SWITCHES OR PROVIDE UPSTREAM CIRCUIT BREAKER, WHERE NON-FUSED SWITCHES ARE USED, AS REQUIRED BY DISCONNECT SWITCH MANUFACTURER FOR SHORT CIRCUIT AMPS SHOWN.



POWER RISER DIAGRAM

GENERAL NOTES

1) REFER TO GENERAL NOTES FOR THIS DISCIPLINE.
2) REFER TO SPECIFICATIONS.
3) WHERE CONDUIT ROUTING IS SHOWN, THE CONDUITS ARE SHOWN FOR DIAGRAMMATIC PURPOSES AND ARE NOT NECESSARILY REPRESENTATIVE OF EXACT PLACEMENT.
4) ALL CONNECTIONS TO EXTERIOR ENCLOSURES MADE AT OTHER THAN BOTTOM OF ENCLOSURE SHALL BE MADE WITH WEATHERPROOF MYERS HUBS.
5) PROVIDE ALL MISCELLANEOUS ELECTRICAL REQUIRED FOR COMPLETE AND OPERATIONAL INSTALLATIONS.
6) PROVIDE PERMANENT LOCKOUT PROVISIONS THAT REMAIN IN PLACE FOR ALL BREAKERS FEEDING NEW OR REPLACED EQUIPMENT.

KEY NOTES

1. LIGHTNING ARRESTOR.
2. SURGE SUPPRESSION DEVICE. SEE SPECIFICATIONS.
3. #3/0 COPPER GROUND WIRE TO (THREE) 80' X 5/8' COPPERWELD DRIVEN GROUND RODS.
4. COORDINATE PLACEMENT OF EQUIPMENT WITH VCS PROJECT MANAGER.
5. MUSCO LIGHTING CONTROL CABINET WITH CONTACTORS AND CONTROLS FOR LIGHTS.
6. LIGHTING CIRCUITS RUNNING FROM PANEL TO CONTROL CABINET.
7. LIGHTING CIRCUITS OUT TO POLES.
8. PROVIDE 3 POLE 200 AMP BREAKER IN EXISTING SWITCHBOARD.
9. TWO RUNS OF 3.5" SPARE CONDUIT FOR FUTURE.
10. SAW CUT INTO CHILLER YARD SO THAT CONDUITS ARE CONCEALED IN CHILLER YARD.
11. TURN CONDUITS UP AT RACK AND CAP.
12. MOUNT EQUIPMENT ON FREE STANDING RACK. REFER TO DETAILS.
13. INTERCONNECT MDP GROUNDING WITH NEW PANEL GROUNDING USING A #3/0 COPPER CONDUCTOR.
14. RECONDITION EXISTING MDP GROUNDING. PROVIDE ADDITIONAL GROUND ROD WITH WELL IF EXISTING GROUND ROD AT MDP EXCEEDS 5 OHMS.
15. PROVIDE NEW CIRCUIT BREAKER FOR NEW SURGE PROTECTION DEVICE.
16. STEP DOWN TRANSFORMER. 480V, 3Ø PRIMARY. 120/208V, 3Ø, 4W SECONDARY; 150° C RISE. WINDINGS OF TRANSFORMER SHALL BE COPPER AND INSULATION SHALL BE RATED FOR NOT LESS THAN 220° C. TRANSFORMER SHALL HAVE A 3R STAINLESS ENCLOSURE CONSTRUCTED FROM 304 OR 316 STAINLESS STEEL.
17. PROVIDE 10 INCH (MINIMUM) THICK REINFORCED HOUSE KEEPING PAD FOR TRANSFORMER. TOP OF PAD SHALL BE NOT LESS THAN 6 INCHES ABOVE FINISHED GRADE AND BOTTOM OF PAD NOT LESS THAN 4 INCHES BELOW GRADE.
18. COPPER GROUND WIRE TO PANEL GROUND RODS SIZED PER N.E.C. TABLE 250.66 BUT IN NO CASE SMALLER THAN A #2.

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REVISIONS

NO.	DATE	DESCRIPTION
1	02/5/2024	ADDENDUM NO. 1

DELAND HIGH SCHOOL
SOFTBALL FIELD LIGHTING
VCS Project No. 2448067
800 NORTH HILL AVE.
DELAND, FLORIDA 32724

ARCH/ENGR OF RECORD
Engineer
Adrian Baus

DESIGNED BY	DRAWN BY
AWB	MM/AWB
ISSUE DATE	AE PROJECT NUMBER
01/04/2024	2023-130

SHEET TITLE
POWER RISER DIAGRAM AND SCHEDULES

DRAWING NO.
E601

VERSION: C11e8 REVISED: 09/09/21

VOLTS L/N:	277
VOLTS PH.:	480
PHASE :	3
MOUNTING :	Surface
TYPE :	P2
MFR :	SIEMENS

PANEL : HSBF

MLO(***) LOCATION:

MCB 200

SH.TRIP

EXISTING : NO
SECTIONS : 1
NEMA 4SS : YES

GENERAL NOTES:
(1) ALL C.B.'S FEEDING HVAC EQUIPMENT TO BE HACR TYPE.
(2) ALL C.B.'S FEEDING ELEV EQUIP TO BE SHUNT-TRIP TYPE.
(3) ALL C.B.'S FEEDING ELEV EQUIP TO BE SIZED AS REQ'D BY MFR.
(4) ALL C.B.'S FEEDING HID LTG TO BE HID RATED.
(5) NO MULTIWIRE BRANCH CKTS ARE ALLOWED
(6) NOT USED.

<----------AIC RATING---------->

SERIES RATED		KA(*)
FULLY RATED	65	KA

(*) NOTE: MAY REQUIRE FULL RATING TO ACHIEVE

NOTES AND REFERENCE NOTES:

MFR = SIZE CB PER MFR. RECOMMENDATIONS.
$ = NEW CB IN EXIST SPACE
& = REPLACE EXIST CB WITH NEW
SH = SHUNT TRIP C.B.
AF = ARC FAULT CB
G1 GFCI CB
G2 GFPE CB

TOTAL AMPS A PH	43			
TOTAL AMPS B PH	41			
TOTAL AMPS C PH	41			
INFO CODE:				

(***) NOTE: SIZE SHOWN IS MINIMUM ACCEPTABLE MLO AMPERAGE. INCREASE SIZE IF REQUIRED TO ACHIEVE QUANTITY OF POLES OR BREAKER SIZE/AIC RATING AS CALLED FOR IN SCHEDULE.

OPTIONAL CALC	NO			
CONNECTED LOAD	34	KVA	41	AMPS
DEMAND	34	KVA	41	AMPS
DIVERSITY	34	KVA	41	AMPS
TRANSFORMER SIZE		KVA		

SECTION 1 WITH MAINS — WIDTH: 20 DEPTH: 5.75

LOAD DESCRIPTION	CONN	TYPE	AMPS	AMPS	AMPS	C.B. AMPS	C.B. POLE	REF NOTE	CKT. NO.	CKT. NO.	REF NOTE	C.B. POLE	C.B. AMPS	AMPS	AMPS	AMPS	LOAD DESCRIPTION	CONN	TYPE
POLE A3	6	2.0	6			15	3		1	2		1	20	2			SITE LIGHTING	2	2.0
---------	6	2.0		6		--------	--------		3	4		1	20		2		SITE LIGHTING	2	2.0
---------	6	2.0			6	---------	---------		5	6		1	20			2	SITE LIGHTING	2	2.0
POLE A4	6	2.0	6			15	3		7	8		1	20	2			SITE LIGHTING	2	2.0
---------	6	2.0		6		--------	--------		9	10		1	20				SPARE		0.2
---------	6	2.0			6	---------	---------		11	12		1	20				SPARE		0.2
POLE B3	13	2.0	13			20	3		13	14		1	20				SPARE		0.2
---------	13	2.0		13		---------	---------		15	16		1	20				SPARE		0.2
---------	13	2.0			13	---------	---------		17	18		1	20				SPARE		0.2
POLE B4	13	2.0	13			20	3		19	20		1	20				SPARE		0.2
---------	13	2.0		13		---------	---------		21	22		1	20				SPARE		0.2
---------	13	2.0			13	---------	---------		23	24		1	20				SPARE		0.2
PANEL: LSBF	1	14.0	1			70	3		25	26		1	20				SPARE		0.2
---------	1	14.0		1		---------	---------		27	28		1	20				SPARE		0.2
---------	1	14.0			1	---------	---------		29	30		1	20				SPARE		0.2
SPARE		0.2				20	1		31	32		1	20				SPARE		0.2
SPARE		0.2				20	1		33	34		1	20				SPARE		0.2
SPARE		0.2				20	1		35	36		1	20				SPARE		0.2
SPARE		0.2				20	1		37	38	MFR	3	30				SPD		18.0
SPARE		0.2				20	1		39	40		--------	--------				--------		18.0
SPARE		0.2				20	1		41	42		--------	--------				--------		18.0
SUBFEED LUGS/BREAKER									S.F.	S.F.							SUBFEED LUGS/BREAKER		
----------						--------	--------		S.F.	S.F.		--------	--------				----------		
----------						--------	--------		S.F.	S.F.		--------	--------				----------		

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VERSION: C11e8 REVISED: 09/09/21

VOLTS L/N:	120
VOLTS PH.:	208
PHASE :	3
MOUNTING :	Surface
TYPE :	P1
MFR :	SIEMENS

PANEL : LSBF

MLO(***) LOCATION:

MCB 175

SH.TRIP

EXISTING : NO
SECTIONS : 1
NEMA 4SS : YES

GENERAL NOTES:
(1) ALL C.B.'S FEEDING HVAC EQUIPMENT TO BE HACR TYPE.
(2) ALL C.B.'S FEEDING ELEV EQUIP TO BE SHUNT-TRIP TYPE.
(3) ALL C.B.'S FEEDING ELEV EQUIP TO BE SIZED AS REQ'D BY MFR.
(4) ALL C.B.'S FEEDING HID LTG TO BE HID RATED.
(5) NO MULTIWIRE BRANCH CKTS ARE ALLOWED
(6) NOT USED.

<----------AIC RATING---------->

SERIES RATED		KA(*)
FULLY RATED	10	KA

(*) NOTE: MAY REQUIRE FULL RATING TO ACHIEVE

NOTES AND REFERENCE NOTES:

MFR = SIZE CB PER MFR. RECOMMENDATIONS.
$ = NEW CB IN EXIST SPACE
& = REPLACE EXIST CB WITH NEW
SH = SHUNT TRIP C.B.
AF = ARC FAULT CB
G1 GFCI CB
G2 GFPE CB

TOTAL AMPS A PH	3			
TOTAL AMPS B PH	3			
TOTAL AMPS C PH	3			
INFO CODE:				

(***) NOTE: SIZE SHOWN IS MINIMUM ACCEPTABLE MLO AMPERAGE. INCREASE SIZE IF REQUIRED TO ACHIEVE QUANTITY OF POLES OR BREAKER SIZE/AIC RATING AS CALLED FOR IN SCHEDULE.

OPTIONAL CALC	NO			
CONNECTED LOAD	1	KVA	3	AMPS
DEMAND	1	KVA	3	AMPS
DIVERSITY	1	KVA	3	AMPS
TRANSFORMER SIZE	45.0	KVA		

SECTION 1 WITH MAINS — WIDTH: 20 DEPTH: 5.75

LOAD DESCRIPTION	CONN	TYPE	AMPS	AMPS	AMPS	C.B. AMPS	C.B. POLE	REF NOTE	CKT. NO.	CKT. NO.	REF NOTE	C.B. POLE	C.B. AMPS	AMPS	AMPS	AMPS	LOAD DESCRIPTION	CONN	TYPE
POLE A4 RECEPTACLE	1	4.0	1			20	1		1	2		1	20	2			MUSCO LIGHTING CONTROLS	2	5.0
POLE B4 RECEPTACLE	1	4.0		1		20	1		3	4		1	20		1		RACK RECEPTACLES	1	4.0
POLE B3 RECEPTACLE	1	4.0			1	20	1		5	6		1	20			1	RACK RECEPTACLES	1	4.0
SPARE		0.2				20	1		7	8		1	20				SPARE		0.2
SPARE		0.2				20	1		9	10		1	20				SPARE		0.2
SPARE		0.2				20	1		11	12		1	20				SPARE		0.2
SPARE		0.2				20	1		13	14		1	20				SPARE		0.2
SPARE		0.2				20	1		15	16		1	20				SPARE		0.2
SPARE		0.2				20	1		17	18		1	20				SPARE		0.2
SPARE		0.2				20	1		19	20		1	20				SPARE		0.2
SPARE		0.2				20	1		21	22		1	20				SPARE		0.2
SPARE		0.2				20	1		23	24		1	20				SPARE		0.2
SPACE							1		25	26		1					SPACE		
SPACE							1		27	28		1					SPACE		
SPACE							1		29	30		1					SPACE		
SPACE							1		31	32		1					SPACE		
SPACE							1		33	34		1					SPACE		
SPACE							1		35	36		1					SPACE		
SPACE							1		37	38	MFR	3	30				SPD		18.0
SPACE							1		39	40		--------	--------				--------		18.0
SPACE							1		41	42		--------	--------				--------		18.0
SUBFEED LUGS/BREAKER									S.F.	S.F.							SUBFEED LUGS/BREAKER		
----------						--------	--------		S.F.	S.F.		--------	--------				----------		
----------						--------	--------		S.F.	S.F.		--------	--------				----------		

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REVISIONS

DOCUMENT HISTORY

NO.	DATE	DESCRIPTION
1	03/5/2024	ADDENDUM NO. 1

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ISSUE DATE	AE PROJECT NUMBER
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SHEET TITLE
PANEL SCHEDULES

DRAWING NO.
E602 1