

April 18, 2025

Re: Taxiway and Access Road Improvements  
Miller Municipal Airport  
Miller, South Dakota  
AIP #3-46-0035-016-2025  
Helms #A-8967

Bid Opening: **April 25, 2025**  
**3:00 pm Local Time**

**ADDENDUM NUMBER 1**

The following modifications are made to the plans and specifications for the Taxiway and Access Road Improvements Project, Miller Municipal Airport:

**CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS**

**1. Instructions for Bidders, IB-7. Method of Bidding, Page 15, Bidding shall be as follows:**

**\*\*BIDDERS MUST BID ON THE BASE BID AND ALL ALTERNATE BIDS\*\***

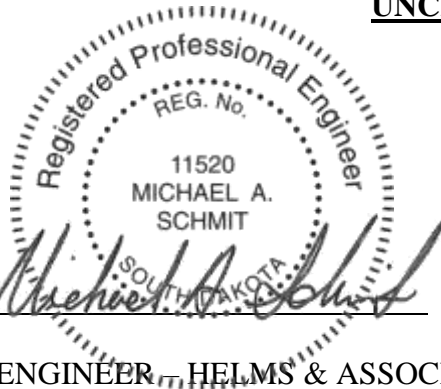
**2. Special Conditions, SC-6. Construction Limitations, Pages 21-22, Clarification:**

The completion dates shall apply to the Base Bid and ALL Alternate Bids.

**3. Proposal, Pages 427-430, replace with the attached pages:**

Added Alternate Bid No. 2 and Alternate Bid No. 3 for the installation and wiring for a new Airport Rotating Beacon. Bid Items and Quantities for the Base Bid and Alternate Bid No. 1 remain unchanged.

**ALL OTHER ITEMS OF THE PLANS AND SPECIFICATIONS REMAIN  
UNCHANGED**



BY: \_\_\_\_\_

PROJECT ENGINEER, HELMS & ASSOCIATES

**Acknowledge receipt of the Addendum by inserting its number on the Bid Form. Failure to do so may subject bidder to disqualification. This Addendum forms a part of the Contract Documents. It modifies them as above.**

**TAXIWAY AND ACCESS ROAD IMPROVEMENTS  
MILLER MUNICIPAL AIRPORT  
AIP #3-46-0035-016-2025  
A-8967**

**\*\*BIDDERS MUST BID ON THE BASE BID AND ALL ALTERNATE BIDS\*\***

**Base Bid**

Item #	Spec #	Item Description	Quantity	Unit	Unit Price	Total Price
1	C-105	Mobilization (Max of 10% of Total Project Cost)	1	L.S.	\$	\$
2	C-100	Contractor Quality Control Plan	1	L.S.	\$	\$
3	S-100	Construction Safety Phasing Plan	1	L.S.	\$	\$
4	P-101	Asphalt Pavement/Base Removal (12" Nominal Depth)	1,156	SqYd	\$	\$
5	P-101	Asphalt Pavement/Base Removal (8" Nominal Depth)	2,466	SqYd	\$	\$
6	P-101	Cold Milling (2" Nominal Depth)	56	SqYd	\$	\$
7	P-152	Unclassified Excavation	4,961	CuYd	\$	\$
8	P-152	Disposal of Excess Material	1,956	CuYd	\$	\$
9	P-154	Subbase Course (Furnished)	147	CuYd	\$	\$
10	P-154	Subbase Course (Recycled)	947	CuYd	\$	\$
11	P-154	Geotextile Separator Fabric	4,511	SqYd	\$	\$
12	P-154	Geogrid	1,000	SqYd	\$	\$
13	P-208	Aggregate Base Course	857	CuYd	\$	\$
14	P-401	Asphalt Base / Surface Course	980.0	Ton	\$	\$
15	P-401	Asphalt Binder (PG 64-34)	64.0	Ton	\$	\$
16	P-602	Emulsified Asphalt Prime Coat	6.0	Ton	\$	\$
17	P-603	Emulsified Asphalt Tack Coat	2.0	Ton	\$	\$
18	P-620	Pavement Marking	1	L.S.	\$	\$
19	D-701	15" RCP (Class III)	80	Ft	\$	\$
20	D-701	12" RCP (Class III)	28	Ft	\$	\$
21	D-701	15" RCP Flared End (Class III)	1	Each	\$	\$
22	D-701	12" RCP Flared End (Class III)	1	Each	\$	\$

**Base Bid**

Item #	Spec #	Item Description	Quantity	Unit	Unit Price	Total Price
23	D-701	Connect to Existing Storm Sewer	1	Each	\$	\$
24	D-705	4" Perforated Underdrain Pipe	567	Ft	\$	\$
25	D-705	4" Solid Underdrain Pipe	533	Ft	\$	\$
26	D-705	Underdrain Cleanout	4	Each	\$	\$
27	D-751	48" Storm Sewer Manhole w/Frame and Lid	1	Each	\$	\$
28	T-901	Seeding and Fertilizing	3.0	Acre	\$	\$
29	T-905	Topsoil (Removed from Stockpile)	536	CuYd	\$	\$
30	T-908	Mulching	14,520	SqYd	\$	\$
31	TL-100	Field Laboratory, Type I	1	Each	\$	\$
32	Plans	Remove and Salvage RCP	106	Ft	\$	\$
33	Plans	Remove and Salvage RCP Flared End	3	Each	\$	\$
34	Plans	Storm Water Pollution Prevention Plan	1	L.S.	\$	\$
35	Plans	9" Erosion Control Wattle	200	Ft	\$	\$
36	Plans	Culvert Protection	4	Each	\$	\$
37	01 51 26	Temporary Phasing Work, Electrical	1	L.S.	\$	\$
38	L-108	1/C No. 8 AWG, 5 kV, L-824, Type C Cable, Installed in Conduit	488	Ft	\$	\$
39	L-108	1/C No. 6 Cu. AWG, 600V, THWN-2, Installed in Conduit	728	Ft	\$	\$
40	L-108	1/C No. 10 Cu. AWG, 600V (GND), THWN-2, Installed in Conduit	364	Ft	\$	\$
41	L-108	1/C No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in Trench or Plowed, Including Above Conduit, Connections, Terminations, & Ground Rods	342	Ft	\$	\$
42	L-110	Abandon Existing DEB Cable	1	L.S.	\$	\$
43	L-110	Remove & Dispose of Existing Cable & Conduit	243	Ft	\$	\$
44	L-110	Remove & Dispose Existing Cable; Conduit to Remain	197	Ft	\$	\$
45	L-110	Trenching & Backfilling or Plowing for Conduit	600	Ft	\$	\$

**Base Bid**

Item #	Spec #	Item Description	Quantity	Unit	Unit Price	Total Price
46	L-110	Non-Encased, Electrical Conduit, 1-2 Inch, Type I, Sch. 40 PVC in Trench or SDR 13 HDPE Plowed	365	Ft	\$	\$
47	L-110	Non-Encased, Electrical Conduit, 2-2 Inch, Type I, Sch. 40 PVC in Trench or SDR 13 HDPE Plowed	113	Ft	\$	\$
48	L-110	Sand-Encased, Electrical Conduit, 2-2 Inch, Type III, Sch. 80 PVC in Trench	120	Ft	\$	\$
49	L-110	Cable Markers	2	Each	\$	\$
50	L-115	Remove & Salvage Existing Manhole	2	Each	\$	\$
51	L-115	L-867B (12"), Junction Box with Flat Blank Steel Cover	2	Each	\$	\$
52	L-125	Remove & Salvage Existing Reflectors	10	Each	\$	\$
53	L-125	Remove & Salvage Existing Unlighted Sign	1	Each	\$	\$
54	L-125	L-853, 30-Inch, Type II (Elevated), Style I (Plowable), Retroreflective Markers	9	Each	\$	\$
55	L-125	L-861T, 30-Inch Elevated, Mode 1, LED, Medium Intensity Taxiway Light (MITL), Blue (Omnidirectional), Including Base Can	8	Each	\$	\$
56	L-125	L-858R/Y/L Mandatory/Directional/Location Airfield Sign, Size 1, Style 4 (Unlighted), Mode 1, 3 Module, Including Sign Pad	1	Each	\$	\$
57	L-125	Spare Parts	1	L.S.	\$	\$
58	34 43 26.19	L-829 (Regulator w/ Monitoring), Class 1 (6.6A), Style 1 (3-Brightness Steps), Size 5 kW, Installed in Vault	1	Each	\$	\$

Subtotal Base Bid items 1 – 58 inclusive \$ \_\_\_\_\_

Written: \_\_\_\_\_ Dollars

All Items Furnished and Installed

\*For Base Bid, Unit Prices will govern where used. Incorrect extensions or totals will be corrected and the corrected figures will be used in determining the low bidder. Final contract amount after construction will be determined based upon final quantities and unit price.

**Alternate Bid No. 1 – Electrical Homerun**

Item #	Spec #	Item Description	Quantity	Unit	Unit Price	Total Price
A1-1	C-105	Mobilization (Max of 10% of Total Project Cost)	1	L.S.	\$	\$
A1-2	L-108	1/C No. 8 AWG, 5 kV, L-824, Type C Cable, Installed in Conduit	1,662	Ft	\$	\$
A1-3	L-108	1/C No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in Trench or Plowed, Including Above Conduit, Connections, Terminations, & Ground Rods	831	Ft	\$	\$
A1-4	L-110	Abandon Existing DEB Cable	1	L.S.	\$	\$
A1-5	L-110	Trenching & Backfilling or Plowing for Conduit	831	Ft	\$	\$
A1-6	L-110	Non-Encased, Electrical Conduit, 1-2 Inch, Type I, Sch. 40 PVC in Trench or SDR 13 HDPE Plowed	831	Ft	\$	\$
A1-7	L-110	Cable Markers	1	Each	\$	\$
A1-8	L-115	L-867B (12"), Junction Box with Flat Blank Steel Cover	2	Each	\$	\$

Subtotal Alternate Bid No. 1 items A1-1 – A1-8 inclusive \$ \_\_\_\_\_

Written: \_\_\_\_\_ Dollars

All Items Furnished and Installed

\*For Alternate Bid No. 1, Unit Prices will govern where used. Incorrect extensions or totals will be corrected and the corrected figures will be used in determining the low bidder. Final contract amount after construction will be determined based upon final quantities and unit price.

**Alternate Bid No. 2 – Airport Rotating Beacon (Mounted on Existing Pole)**

Item #	Spec #	Item Description	Quantity	Unit	Unit Price	Total Price
A2-1	C-105	Mobilization (Max of 10% of Total Project Cost)	1	L.S.	\$	\$
A2-2	L-101	L-801A LED, Class II Airport Rotating Beacon w/ Bird Spikes, Mounted on Existing Wooden Lighting Pole	1	L.S.	\$	\$
A2-3	L-108	1/C No. 8 AWG, Cu, 600V, THWN-2, Installed in Conduit	630	Ft	\$	\$
A2-4	L-108	1/C No. 8 AWG, Cu, 600V (GND), THWN-2, Installed in Conduit	315	Ft	\$	\$
A2-5	L-110	Abandon Existing DEB Cable	1	L.S.	\$	\$
A2-6	L-110	Trenching & Backfilling or Plowing for Conduit	275	Ft	\$	\$
A2-7	L-110	Non-Encased, Electrical Conduit, 1-2 Inch, Type III, Sch. 80 PVC in Trench or SDR 11 HDPE Plowed	275	Ft	\$	\$

Subtotal Alternate Bid No. 2 items A2-1 – A2-7 inclusive \$ \_\_\_\_\_

Written: \_\_\_\_\_ Dollars

All Items Furnished and Installed

\*For Alternate Bid No. 2, Unit Prices will govern where used. Incorrect extensions or totals will be corrected and the corrected figures will be used in determining the low bidder. Final contract amount after construction will be determined based upon final quantities and unit price.

**Alternate Bid No. 3 – Airport Rotating Beacon (Mounted on New Tip-Down Pole)**

Item #	Spec #	Item Description	Quantity	Unit	Unit Price	Total Price
A3-1	C-105	Mobilization (Max of 10% of Total Project Cost)	1	L.S.	\$	\$
A3-2	L-101	L-801A LED, Class II Airport Rotating Beacon w/ Bird Spikes, Mounted on New 40-Foot Tip-Down Pole	1	L.S.	\$	\$
A3-3	L-103	Tip-Down Pole, 40-Foot Beacon Tower, Including Footing and Concrete Site Pad	1	L.S.	\$	\$
A3-4	L-108	1/C No. 8 AWG, Cu, 600V, THWN-2, Installed in Conduit	630	Ft	\$	\$
A3-5	L-110	1/C No. 8 AWG, Cu, 600V (GND), THWN-2, Installed in Conduit	315	Ft	\$	\$
A3-6	L-110	Abandon Existing DEB Cable	1	L.S.	\$	\$
A3-7	L-110	Trenching & Backfilling or Plowing for Conduit	275	Ft	\$	\$
A3-8	L-110	Non-Encased, Electrical Conduit, 1-2 Inch, Type III, Sch. 80 PVC in Trench or SDR 11 HDPE Plowed	275	Ft	\$	\$

Subtotal Alternate Bid No. 3 items A3-1 – A3-8 inclusive \$ \_\_\_\_\_

Written: \_\_\_\_\_ Dollars

All Items Furnished and Installed

\*For Alternate Bid No. 3, Unit Prices will govern where used. Incorrect extensions or totals will be corrected and the corrected figures will be used in determining the low bidder. Final contract amount after construction will be determined based upon final quantities and unit price.



DATE: April 17, 2025

PROJECT: Taxiway and Access Road Improvements  
Miller Municipal Airport  
Miller, South Dakota  
AIP #3-46-0035-016-2025  
Helms Project No. A-8717  
DGR Project No. 731138  
Helms Project No. A-8967

LETTING DATE: April 25, 2025, 3:00 PM  
AND LOCATION: City of Miller City Office  
120 W. 2<sup>nd</sup> Street  
Miller, SD 57362

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**ADDENDUM NO. 1**

This Addendum forms a part of the Contract Documents and modifies the Contract Documents, Specifications, and Drawings as described below. The Bidder shall acknowledge receipt of this Addendum in the space provided on the Revised Bid Form, as failure to do so may subject the bid to disqualification.

**Construction Specifications:**

1. ADD the following technical specifications which are attached:
  - a. L-101 Rotating Beacons
  - b. L-103 Beacon Towers

**Plans:**

2. REPLACE the following plan sheets with the attached: E1, E4, E6, E7.
3. ADD the following new plan sheets which are attached: E106, and E107.

This addendum shall become a legal and binding part of the contract documents. All Bidders shall agree to accept the revisions indicated and prepare proposals in accordance therewith.

DGR Engineering

By \_\_\_\_\_  
Brian Meyer, PE



DGR Engineering — 1300 S Highline Avenue — Sioux Falls, SD 57110  
phone: 605.339.4157 — fax: 605.339.4175 — dgr.com

## Item L-101 Airport Rotating Beacons

### DESCRIPTION

**101-1.1** This item shall consist of removal of existing beacon and furnishing and installing new airport rotating beacons. The work shall include mounting, leveling, wiring, painting, maintaining, and testing of the beacon. In addition, this item also includes all materials and incidentals necessary to place the beacon in a serviceable condition (as a completed unit) to the satisfaction of the RPR. This item shall include a mounting platform if specified in the plans.

### EQUIPMENT AND MATERIALS

#### 101-2.1 General.

**a.** Airport lighting equipment and materials covered by advisory circulars (ACs) shall be certified in AC 150/5345-53, Airport Lighting Equipment Certification Program (ALECP) and listed in the ALECP Addendum.

**b.** All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

**c.** Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials that are per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials, that are per these specifications, at the Contractor's cost.

**d.** All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly mark each copy to identify the products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components or electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that accrue directly or indirectly from late submissions or resubmissions of submittals.

**e.** The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the Contract Documents plans and specifications. The Contractor's submittals shall be in an electronic pdf file format, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes, specified in this document.

**f.** All equipment and materials furnished and installed in this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

**101-2.2 Beacon.** The beacon shall be a Type L-801A, LED Class II beacon meeting the requirements of AC 150/5345-12, Specification for Airport and Heliport Beacons.

**101-2.3 Beacon installation.** Installation shall be as shown on the plans. Provide two lamp sets as spares.

**101-2.4 Panel boards and breakers.** Panel boards and breakers shall conform to the requirements of Federal Specification W-P-115, Panel, Power Distribution.

**101-2.5 Weatherproof cabinets.** The weatherproof cabinets shall conform to National Electrical Manufacturers Association Standards (NEMA) and shall be constructed of steel not less than No. 16 United States Standard (USS) gauge.

**101-2.6 Electrical wire.** For ratings up to 600 volts, moisture and heat resistant thermoplastic wire conforming to Commercial Item Description A-A-59544A Type THWN-2 shall be used. The wires shall be the type, size, number of conductors, and voltage shown in the plans or in the proposal.

**101-2.7 Conduit.** Rigid steel conduit and fittings shall be per Underwriters Laboratories Standards 6, 514B, and 1242.

**101-2.8 Paint.**

a. Priming paint for non-galvanized metal surfaces shall be a high solids alkyd primer compatible with the manufacturer's recommendations for the intermediate or topcoat.

b. Priming paint for galvanized metal surfaces shall be a zinc-rich epoxy primer paint per MIL-DTL-24441/19C, Formula 159, Type III. Use MIL-24441 thinner per paint manufacturer's recommendations.

c. Orange paint for the body and the finish coats on metal and wood surfaces shall consist of a ready-mixed non-fading paint meeting the requirements of Master Painter's Institute (MPI) Reference #9 (gloss). The color shall be per Federal Standard 595, International Orange Number 12197.

d. White paint for body and finish coats on metal and wood surfaces shall be ready-mixed paint per the Master Painter's Institute, Reference #9, Exterior Alkyd, Gloss, volatile organic content (VOC) Range E2.

e. Priming paint for wood surfaces shall be mixed on the job by thinning the above-specified orange or white paint with 1/2 pint (0.24 liter (l)) of raw linseed oil to each gallon (liter).

## CONSTRUCTION METHODS

**101-3.1. Placing the beacon.** The beacon shall be mounted as shown in the plans.

**101-3.2 Hoisting and mounting.** The beacon shall be hoisted to the mounting platform by using suitable slings and hoisting tackle. Before fastening the beacon to the mounting platform, the mounting holes shall be checked for correct spacing. Beacon base or mounting legs shall not be strained or forced out of position to fit incorrect spacing of mounting holes. The beacon base shall be raised first, set in position, and bolted in place. The drum shall then be raised and assembled to the base.

**101-3.3 Leveling.** After the beacon has been mounted, it shall be accurately leveled following the manufacturer's instructions. The leveling shall be checked in the presence of the RPR and shall be to the RPR's satisfaction.

**101-3.4 Servicing.** Before placing the beacon in operation, the Contractor shall check the manufacturer's manual for proper servicing requirements. Follow the manufacturer's servicing instructions for each size of beacon.

**101-3.5 Beam adjustment.** After the beacon has been mounted and leveled, the elevation of the beam shall be adjusted. The final beam adjustments shall be made at night so that results can be readily

observed. The beams shall be adjusted to the elevation directed by the RPR or as shown in the plans. See AC 150/5340-30 for additional information about airport beacon beam adjustment.

**101-3.6 Beacon mounting platform.** Where the beacon is to be mounted at a location other than the beacon tower and where a special mounting platform is required, the construction of the mounting platform and any necessary lightning protection equipment shall be per the details shown in the plans.

**101-3.7 Wiring.** The Contractor shall furnish all necessary labor and materials and shall make complete above ground electrical connections per the wiring diagram furnished with the project plans. The electrical installation shall conform to the requirements of the latest edition of National Fire Protection Association, NFPA-70, National Electrical Code (NEC).

If underground cable for the power feed from the transformer vault to the beacon site and duct for this cable installation is required, the cable, ground rods and duct shall be installed as shown on the plans.

If shown on the plans, the Contractor shall connect the tell-tale relay mechanism in the beacon to energize the tower obstruction light circuit when failure of the beacon service (primary) lamp occurs.

If lightning protection is specified in the plans, it shall be installed per Item L-103, Airport Beacon Towers, paragraph 103-2.3.

**101-3.8 Panel and cabinet.** If shown on the plans, the Contractor shall furnish and install at the top of the beacon tower or mounting platform a circuit-breaker panel consisting of four 15-ampere breakers mounted in a weather-proof cabinet to provide separate protection for the circuits to the beacon lamps, motor, obstruction lights, and other equipment. The cabinet shall be located on the side of the beacon platform as shown on the plans or as directed by the RPR.

**101-3.9 Conduit.** All exposed wiring shall be run in not less than 3/4 inch (19 mm) galvanized rigid steel conduit. Outdoor rated, liquid-tight, flexible metal conduit may be used for final connection at the beacon equipment. No conduit shall be installed on top of a beacon platform floor. All conduits shall be installed to provide for drainage. If mounted on a steel beacon tower, the conduit shall be fastened to the tower members with Wraplock® straps (or equivalent), clamps, or approved fasteners, spaced approximately 5 feet (1.5 m) apart. The conduit shall be fastened to wooden structures with galvanized pipe straps and with galvanized wood screws not less than No. 8 or less than 1-1/4 inches (32 mm) long. There shall be at least two fastenings for each 10 feet (3 m) length.

**101-3.10 Booster transformer.** Not used.

**101-3.11 Photoelectric control.** If shown in the plans or specified in the job specifications, the Contractor shall furnish and install an automatic control switch at the location indicated in the plans. The switch shall be a photoelectric type. It shall be a standard commercially available unit that will energize when the illumination on a vertical surface facing North decreases to 25 to 35 foot-candles (269 to 377 lux). The photoelectric switch should de-energize when the illumination rises to 50 to 60 foot-candles (538 to 646 lux). The photoelectronic switch shall be installed, connected, and adjusted per the manufacturer's instructions.

**101-3.12 Obstruction lights.** Unless otherwise specified, the Contractor shall install on the top of the beacon tower or mounting platform two L-810 obstruction lights on opposite corners. These lights shall be mounted on conduit extensions to a height of not less than 4 inches (100 mm) above the top of the beacon.

**101-3.13 Painting.** If construction of a wooden mounting platform is stipulated in the proposal as part of this item, all wooden parts of the platform shall be given one priming coat of white or aviation-orange paint after fabrication but before erection and one body and one finish coat of international-orange paint after erection. Steel mounting platforms shall be given one priming coat of corrosion-inhibiting primer before erection and one body and one finish coat of international-orange paint after erection. All equipment installed under this contract and exposed to the weather shall be given one body and one finish

coat of international-orange (per Federal Standard 595, Number 12197) or white paint as required. This shall include the beacon (except glass surfaces), beacon base, breaker cabinet, all conduit, and transformer cases. It shall not include lightning protection system air terminals or obstruction light globes.

Apply the paint uniformly at the proper consistency. The finished paint shall be free from sags, holidays, and smears. Each coat of paint shall be given ample time to dry and harden before the next coat of paint is applied. A minimum of three (3) days shall be allowed for drying on wood surfaces, and a minimum of four (4) days shall be allowed for drying on metal surfaces. Painting shall not be performed in cold, damp, foggy, dusty, or frosty atmospheres, or when the air temperature is below 40°F (4°C), nor started when the weather forecast indicates such conditions for the day.

All surfaces shall be cleaned before painting. The surfaces shall be dry and free from scale, grease, rust, dust, and dirt. All knots in wood surfaces shall be covered with shellac immediately before applying the priming coat of paint. Nail holes and permissible imperfections shall be filled with putty. The ready-mixed paint shall be thinned for the priming and body coats per the manufacturer's recommendations. In the absence of such recommendations, the following shall apply:

**a.** Body coats (for both wood and steel surfaces) - add 1/2 pint (0.24 liter) of turpentine to each gallon (liter) of ready-mixed paint for body coats.

**b.** Finish coats (for both wood and steel surfaces) the ready-mixed paint shall be used as it comes from the container for finish coats.

**101-3.14 Testing.** The beacon installation shall be fully tested as a completed unit prior to acceptance. These tests shall include operation of the lamp-changer and performing insulation resistance and voltage readings. The insulation resistance to ground of the beacon power supply circuit shall be not less than 100 megohms when measured ungrounded. The Contractor must furnish testing equipment. Tests shall be conducted in the presence of the RPR and shall be to the RPR's satisfaction.

### **METHOD OF MEASUREMENT**

**101-4.1** The quantity to be paid for shall be the number of beacons installed as completed units in place, accepted, and ready for operation.

### **BASIS OF PAYMENT**

**101-5.1** Payment will be made at the contract unit price for each completed and accepted job. This price shall be full compensation for removal of existing beacon; furnishing all materials; for all preparation, assembly, and installation of these materials; and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

#### **Bid Alternate 2**

<b>Item L-101-5.1a</b>	<b>L-801A LED, Class II Airport Rotating Beacon w/ Bird Spikes, Mounted on Existing Wooden Lighting Pole - per Lump Sum</b>
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#### **Bid Alternate 3**

<b>Item L-101-5.1a</b>	<b>L-801A LED, Class II Airport Rotating Beacon w/ Bird Spikes, Mounted on New 40-Foot Tip-Down Pole – per Lump Sum</b>
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## REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

### Advisory Circulars (AC)

AC 150/5345-7	Specification for L-824 Underground Cable for Airport Lighting Circuits
AC 150/5345-12	Specification for Airport and Heliport Beacons
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program
AC 150/5390-2	Heliport Design

### Commercial Item Description

A-A-59544A	Cable and Wire, Electrical (Power, Fixed Installation)
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### Federal Specification (FED SPEC)

FED SPEC W-P-115	Panel, Power Distribution
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### Federal Standard (FED STD)

FED STD 595	Colors Used in Government Procurement
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### Master Painter Institute (MPI)

MPI Reference #9	Alkyd, Exterior, Gloss (MPI Gloss Level 6)
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### Mil Spec

MIL-DTL-24441C/19C	Paint, Epoxy-Polyamide, Zinc Primer, Formula 159, Type III
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### National Fire Protection Association (NFPA)

NFPA-70	National Electric Code (NEC)
NFPA-780	Standard for the Installation of Lightning Protection Systems

### Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit – Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 1242	Electrical Intermediate Metal Conduit - Steel

**END OF ITEM L-101**

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## Item L-103 Airport Beacon Towers

### DESCRIPTION

**103-1.1** This item shall consist of removal of existing beacon tower and furnishing and installing an airport beacon tower of the type shown in the plans, per these specifications. This work shall include the clearing of the site, erection of the tower, installation of lightning protection, painting, and all incidentals necessary to place it in operating condition as a completed unit to the satisfaction of the RPR. See advisory circular (AC) 150/5340-30 for additional installation information about airport beacon towers.

### EQUIPMENT AND MATERIALS

#### 103-2.1 General.

**a.** All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

**b.** Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials, that are per these specifications, at the Contractor's cost.

**c.** All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals to components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

**d.** The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be in an electronic pdf file format, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes, specified in this document.

**e.** All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

**103-2.2 Tower.** The beacon tower shall be 40-foot tip-down non-galvanized pole with platform to accommodate a single L-810 LED red steady-burn obstruction light and lightning rod.

**103-2.3 Lightning protection.** Lightning protection shall comply with NFPA-780, Standard for the Installation of Lightning Protection Systems. All materials shall comply with NFPA 780 Class II material requirements regardless of the tower height.



**103-2.4 Paint.**

a. Priming paint for galvanized steel towers shall be zinc dust-zinc oxide primer paint per MIL-DTL-24441C/19B. Use MIL-24441 thinner per paint manufacturer's recommendations.

b. Priming paint for non-galvanized steel towers shall be a high solids alkyd primer per the Master Painter's Institute (MPI), Reference #9, Exterior Alkyd, Gloss.

c. Orange paint for the body and the finish coats on metal and wood surfaces shall consist of a ready-mixed non-fading paint MPI Reference #9 (gloss). The color shall be per Federal Standards 595, International Orange Number 12197.

d. White paint for a steel tower shall be ready-mixed paint per MPI #8.

**CONSTRUCTION METHODS**

**103-3.1 Clearing and grading.** The site on which the beacon tower is to be erected shall be cleared and leveled. All trees and brush shall be removed from the area within a distance of 25 feet (7.5 m) from the tower or as called for in the plans. Stumps shall be removed to a depth of 18 inches (0.5 m) below finished grade and the excavation filled with earth and tamped. If a transformer vault or other structure is included as part of the installation, the area shall be cleared to a distance of 25 feet (7.5 m) from these structures. The ground near the tower shall be leveled to permit the operation of mowing machines. The leveling shall extend at least 2 feet (60 cm) outside the tower legs. All debris removed from the tower site shall be disposed of by the Contractor to the satisfaction of the RPR and per federal, state, or local regulations.

**103-3.2 Excavation and fill.** Excavation for the tower footings shall be carried to a minimum of 4 inches (100 mm) below the footing depth. The excess excavation below the footing depth shall then be backfilled with gravel or crushed stone and compacted to the required level. The footing plates shall be installed, and a thickness of not less than 18 inches (0.5 m) of the same gravel or crushed stone shall be placed immediately above the footing plates in layers of not over 6 inches (150 mm). Each layer above the footing plates shall be thoroughly tamped in place. The remainder of the backfill may be of excavated earth placed in layers not to exceed 6 inches (150 mm). Each layer shall be thoroughly compacted by tamping.

Where solid rock is encountered, which prevents the carrying of the foundation legs to the required depth but which is of sufficient strength to use hold-down bolts, the tower anchor posts shall be cut off at the required length and the hold-down bolts shall be installed as indicated in the plans with the approval of the RPR. Each tower leg shall be anchored to the rock by means of two 7/8-inch (22 mm) diameter by 3 feet (1 m) long expansion or split bolts and shall be grouted with neat Portland cement into holes drilled into the natural rock. Except as required for rock foundations, the footing members shall not be cut off or shortened. If excavated material is of such consistency that it will not readily compact when backfilled, the RPR may order the excavation backfilled with concrete or other suitable material.

The concrete footing for tubular beacon towers shall be installed per the manufacturer's recommendations. Portions of the footing in the topsoil layer shall not be included in the footing height.

**103-3.3 Erection.** Tower erection as shown on the plans and detailed erection drawings furnished by the manufacturer shall be strictly followed during construction. All towers shall be erected in sections from the ground up unless otherwise specified. For final assembly, all bolts and fastenings shall be installed, and the structure shall be plumb, true, square, and level. Nuts shall be taken up to a firm bearing after which the bolts shall, if necessary, be cut to proper length to protrude three full threads. Approved locknuts shall be placed on each bolt over the regular nut. Ladder bolts shall be inserted with the head to the outer face of the tower. Diagonal, leg, and handrail bolts shall be installed with nuts on the outer face of the tower, unless otherwise specified. Bent parts shall be straightened before erection without damage

to the protective coating. Surfaces abraded or bared of protective coating shall be painted with the proper priming paint per these specifications.

The Contractor shall install the ladder on the side of the tower adjacent to the driveway or most accessible approach to the tower. Tubular beacon towers shall be erected per the manufacturer's recommendations. The safety cable shall be located on the side of the tower adjacent to the driveway or most accessible approach to the tower.

**103-3.4 Lightning protection.** The Contractor shall furnish and install a Class II lightning protection system in accordance with NFPA 780. Ground rods and underground cables shall be installed in accordance with the plans.

Down-conductor cables shall be securely fastened to the surface of the tower leg at 5 feet (1.5 m) intervals with suitable bronze fasteners having bronze or noncorrosive metal bolts. Sharp turns or bends in the down conductor will not be permitted.

All connections of cable to cable, cable to air terminals, and cable to ground plates or rods shall be made with solder-less connectors or noncorrosive metal approved by the RPR and shall be of substantial construction.

The down-conductor cable shall be securely attached to ground rods or plates placed at least 2 feet (60 cm) away from the tower foundations. The ground rod shall be driven into the ground so that the top is at least 6 inches (150 mm) below grade. The down-conductor shall be firmly attached to the ground plate or rod by means of an exothermic weld only. Plates shall be embedded in an area of permanent moisture.

The complete lightning protection installation shall be accomplished to the satisfaction of the RPR. The resistance to ground of any part of the lightning protection system shall not exceed 25 ohms. If a single rod grounding electrode has a resistance to earth of over 25 ohms, then install one supplemental rod not less than 10 feet from the first rod. If desired resistance to ground levels are still not achieved, see FAA-STD-019 for guidance on the application of coke breeze.

**103-3.5 Painting.** The Contractor shall furnish all materials and labor for painting the beacon tower. The color scheme for the steel tower shall be as shown in the plans.

**a. Parts to be painted.** Tower parts (except those parts to be exposed to earth) shall not be treated or primed before erection. All tower parts placed below ground level or within 12 inches (300 mm) above ground level shall be given two coats of approved asphalt paint.

Apply the proper consistency of paint uniformly. The finished paint shall be free from sags, holidays, and smears. Division lines between colors shall be sharply defined. Each coat of paint shall be given ample time to dry and harden before the next coat is applied. A minimum of four (4) days shall be allowed for drying on metal surfaces. Painting shall not be done in cold, damp, foggy, or dusty atmospheres, or when air temperature is below 40°F (4°C), nor started when the weather forecast indicates such conditions for the day.

All surfaces shall be cleaned before painting. The surfaces shall be dry and free from scale, grease, rust, dust, and dirt when paint is applied.

The number of coats of paint applied shall be per the following instructions:

**b. Steel towers, galvanized.** One priming coat of zinc dust-zinc oxide primer after erection and one body and one finish of white or orange paint (as required by the color scheme) shall be applied after erection.

**c. Steel towers, not galvanized.** One priming coat of corrosion-inhibiting primer and one body and one finish coat of white or orange paint (as required by the color scheme) shall be applied after erection.

The above specified orange and white ready-mixed paints shall be thinned for the body coats per the manufacturer's recommendations. In the absence of such recommendations, the following shall apply:

**d. Body coats.** Add not more than 1/2 pint (0.24 liters) of turpentine to each gallon (liter) of ready-mixed paint for body coats.

**e. Finish coats.** The ready-mixed paint shall be used as it comes from the container for finish coats.

### METHOD OF MEASUREMENT

**103-4.1** The quantity to be paid for under this item shall be the number of airport beacon towers installed as completed units in place, accepted, and ready for operation.

### BASIS OF PAYMENT

**103 5.1** Payment will be made at the contract unit price for each completed and accepted job. This price shall be full compensation for removal of existing beacon tower; furnishing all materials; for all preparation, assembly, and installation of these materials; and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

<b>Item L-103-5.1a</b>	<b>Tip-Down Pole, 40-Foot Beacon Tower, Including Footing and Concrete Site Pad – per Lump Sum</b>
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### REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5340-30	Installation and Design Details for Airport Visual Aids
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Master Painter's Institute (MPI)

MPI Reference #8	Alkyd, Exterior, Flat (MPI Gloss Level 1)
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MPI Reference #9	Alkyd, Exterior, Gloss (MPI Gloss Level 6)
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Federal Standard (FED STD)

FED STD 595	Colors Used in Government Procurement
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Mil Standard

MIL-DTL-24441C/19B	Paint, Epoxy-Polyamide, Zinc Primer, Formula 159, Type III
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National Fire Protection Association (NFPA)

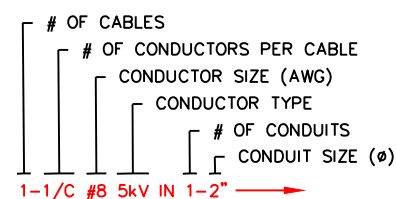
NFPA-780	Standard for the Installation of Lightning Protection Systems
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**END OF ITEM L-103**

EXISTING		PROPOSED LINETYPE LEGEND	
SCH 40	SCH 80	SCH 40	SCH 80 - HIGH VOLTAGE (HV)
SCH 40	SCH 80	SCH 40	SCH 80 - LOW VOLTAGE (LV)
			- DUCT BANK
			- COUNTERPOISE
			- ABANDON EXISTING DEB CABLE
			- REMOVE & DISPOSE OF EXISTING CABLE & CONDUIT
			- REMOVE & DISPOSE EXISTING CABLE; CONDUIT TO REMAIN
— RSA — RSA —	— RSA — RSA —	— RSA — RSA —	- RUNWAY SAFETY AREA
— ROFA — ROFA —	— ROFA — ROFA —	— ROFA — ROFA —	- RUNWAY OBJECT FREE AREA
— TSA — TSA —	— TSA — TSA —	— TSA — TSA —	- TAXIWAY SAFETY AREA
— TOFA — TOFA —	— TOFA — TOFA —	— TOFA — TOFA —	- TAXIWAY OBJECT FREE AREA

EXISTING		PROPOSED LIGHTING LEGEND	
- EDGE LIGHT			- INDICATES IN-PAVEMENT
			- TXY BLUE
			- RETROREFLECTIVE MARKER
			- JUNCTION CAN
			- MANHOLE
			- CABLE MARKER
			- ROTATING BEACON
			- PAPI
			- REIL
			- AIRFIELD SIGN
			- REMOVE & SALVAGE STRUCTURE
			- BUILDING

**CIRCUIT LEGEND**



INDEX OF SHEETS	
SECTION E	
E1	LEGEND, NOTES, & INDEX OF SHEETS*
E2	ABBREVIATIONS
E3-E4*	LIGHTING REMOVALS
E5-E6	LIGHTING PLAN*
E7	VAULT & AC PANEL DETAILS*
E101-E107*	LIGHTING DETAILS
* COLOR PLAN SHEETS	

**GENERAL NOTES**

- COORDINATE CONSTRUCTION ACTIVITIES WITH THE PLANS AND THE CSPP.
- COORDINATE VAULT ACTIVITIES WITH OWNER TO POWER ON/OFF CIRCUITS.
- COORDINATE REMOVAL & SALVAGING OF ITEMS WITH THE ENGINEER & OWNER.
- SEE CIVIL PLANS FOR ADDITIONAL REMOVALS & INSTALLATION.
- COORDINATE THE INSTALLATION OF ALL BELOW-GRADE AND CAST-IN-PLACE CIRCUITRY WITH OTHER TRADES.
- CONTRACTOR SHALL RETURN ALL DISTURBED SURFACES AND SOILS TO ORIGINAL OR PRE-CONSTRUCTION CONDITION UNLESS SPECIFICALLY INDICATED OTHERWISE.
- CONTRACTOR SHALL LOCATE OR SHALL HAVE THE SERVING UTILITIES LOCATE ALL UNDERGROUND CABLE, CONDUITS, PIPING, UTILITIES, ETC., PRIOR TO COMMENCING CONSTRUCTION (UNDERGROUND EXCAVATION). CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGES DUE TO CONSTRUCTION ACTIVITIES.
- EXISTING AND/OR NEW UNDERGROUND CONDUITS, DUCT BANK, AND OTHER CIRCUITRY SHOWN ON THE PLANS ARE INTENDED TO BE DIAGRAMMATIC IN NATURE. CONTRACTOR IS RESPONSIBLE FOR FIELD CONFIRMING ALL CIRCUITRY AND ROUTING.
- PROVIDE PANEL SCHEDULES FOR ALL NEW AND/OR MODIFIED PANELS. SCHEDULES SHALL BE TYPED (AS APPLICABLE).
- FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS, AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
- ALL EMPTY RACEWAY SYSTEMS SHALL HAVE A PULLWIRE OR EQUAL AND SHALL BE IDENTIFIED AT ALL JUNCTION, PULL, AND TERMINATION POINTS, USING PERMANENT METALLIC TAGS. TAG SHALL INDICATE INTENDED USE OF CONDUIT, ORIGINATION, AND TERMINATION POINTS OF EACH INDIVIDUAL CONDUIT.
- WORK, MATERIALS, AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE, AND NATIONAL CODES AND ORDINANCES.
- SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY AT NO COST TO OWNER
- SYSTEMS SHALL BE COMPLETE, OPERABLE, AND READY FOR CONTINUOUS OPERATION.
- LOCATING & VERIFYING UTILITY WORK SHALL CONSIST OF EXCAVATING MATERIAL TO LOCATE A UTILITY LINE (PRIVATE OR PUBLIC), TO VERIFY THE DEPTH OF AN EXISTING UTILITY LINE (PRIVATE OR PUBLIC), & TO AVOID POSSIBLE CONFLICTS. WHEN THE UTILITY OWNER CANNOT FIND SAID LINE, OR UTILITY LINE IS NOT WITHIN FOUR (4) FEET EITHER SIDE OF MARKINGS ESTABLISHED BY THE UTILITY OWNER. PAYMENT FOR THIS ITEM WILL BE INCIDENTAL TO THE BID ITEM, 1/C NO. 8 AWG, 5 KV, L-824, TYPE C CABLE, INSTALLED IN CONDUIT.
- CONTRACTOR SHALL FIELD LOCATE AND MARK W/ PAINT AND FLAGS THE FOLLOWING AIRFIELD CIRCUITS. RUNWAY 15/33, PAPI 33, PAPI 35, WINDCONE, AND SUPER AWOS. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCIDENTAL. THE 01 51 TEMPORARY PHASING WORK INCIDENTAL.

**INSTALLATION NOTES**

- FIELD VERIFY CIRCUIT LOCATIONS & EXISTING STRUCTURES.
- REFER TO LIGHTING DETAILS FOR ADDITIONAL INFORMATION.
- LOW VOLTAGE CABLES SHALL NOT BE INSTALLED IN HIGH VOLTAGE MHs, CANS, JUNCTION BOXES, CONDUITS, ETC.
- ALL CONDUIT UNDER PAVEMENT SHALL BE SCH. 80 PVC OR SDR 11 HDPE.
- ALL SPLICES SHALL BE LOCATED IN A JUNCTION STRUCTURE, EXCEPT COUNTERPOISE.
- ALL SPLICES & CONDUIT CONNECTIONS & FITTINGS SHALL BE CONSIDERED INCIDENTAL TO CORRESPONDING EQUIPMENT.
- PROVIDE MINIMUM 3 FEET OF CABLE SLACK IN EACH JUNCTION STRUCTURE. SLACK SHALL BE INCIDENTAL TO ITS RESPECTIVE WIRE BID ITEM.
- MARK PROPOSED CONDUIT & CABLE WITH CABLE MARKERS.

**CONSTANT CURRENT REGULATOR (CCR)**

- REMOVE & SALVAGE TO OWNER EXISTING L-828, 4 kW CCR. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE L-829 (REGULATOR W/ MONITORING) BID ITEM.
- INSTALLATION OF SURGE PROTECTION DEVICE (SPD) IN VAULT SHALL BE CONSIDERED INCIDENTAL TO THE L-829 CCR (REGULATOR W/ MONITORING) BID ITEM. ALSO SEE SPECIFICATION L-190.
- REFER TO LIGHTING VAULT PLAN & DETAIL FOR ADDITIONAL INFORMATION.
- REFER TO SECTION L-190 FOR SURGE PROTECTION DEVICE REQUIREMENTS.

**BID ALTERNATE 1**

- SHALL INCLUDE THE ABANDONMENT AND INSTALLATION OF THE RUNWAY 15/33 HIGH VOLTAGE CIRCUIT FROM THE PROPOSED TAXIWAY & CONNECTING TO THE CONSTANT CURRENT REGULATOR IN THE EXISTING AIRFIELD LIGHTING & ELECTRICAL VAULT.

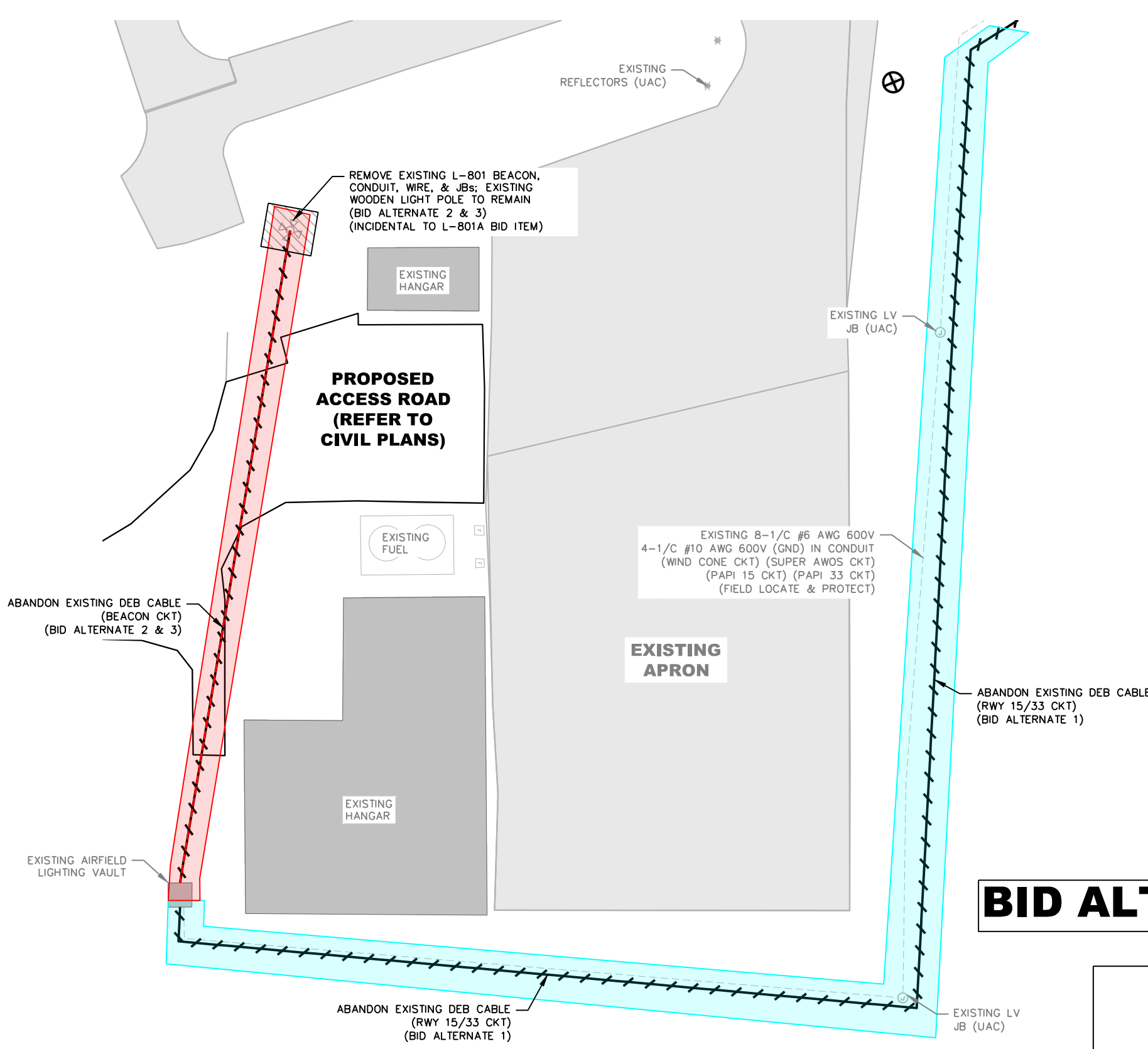
**BID ALTERNATE 2**

- REMOVE EXISTING BEACON, CONDUIT & JBs. LIGHT POLE & FIXTURE TO REMAIN.
- SHALL INCLUDE A NEW L-801A LED BEACON, CLASS 2 W/ BIRD SPIKES INSTALLED ON EXISTING WOOD LIGHT POLE.
- WORK SHALL ALSO INCLUDE ABANDONMENT OF THE EXISTING BEACON CIRCUIT AND INSTALLATION OF NEW CONDUIT AND CABLE(S) FROM THE VAULT TO THE NEW BEACON INCLUDING UP THE EXISTING WOOD LIGHT POLE.

**BID ALTERNATE 3**

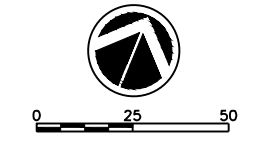
- REMOVE EXISTING BEACON, CONDUIT & JBs. LIGHT POLE & FIXTURE TO REMAIN.
- SHALL INCLUDE A NEW L-801A LED BEACON, CLASS 2 W/ BIRD SPIKES INSTALLED ON A NEW 40-FOOT TIP-DOWN POLE INCLUDING CONCRETE FOOTING.
- WORK SHALL ALSO INCLUDE ABANDONMENT OF THE EXISTING BEACON CIRCUIT AND INSTALLATION OF NEW CONDUIT AND CABLE(S) FROM THE VAULT TO THE NEW BEACON.



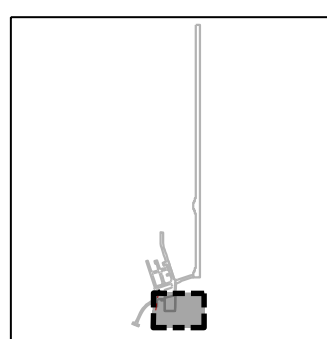


**LEGEND**

- BID ALTERNATE 1
- BID ALTERNATE 2
- BID ALTERNATE 3



**BID ALTERNATE 1, 2, & 3**



**VICINITY MAP**  
NOT TO SCALE



CONNECTOR TAXIWAY AND ACCESS ROAD RECONSTRUCTION  
MILLER MUNICIPAL AIRPORT  
MILLER, SOUTH DAKOTA

LIGHTING REMOVALS

APPENDIX #1

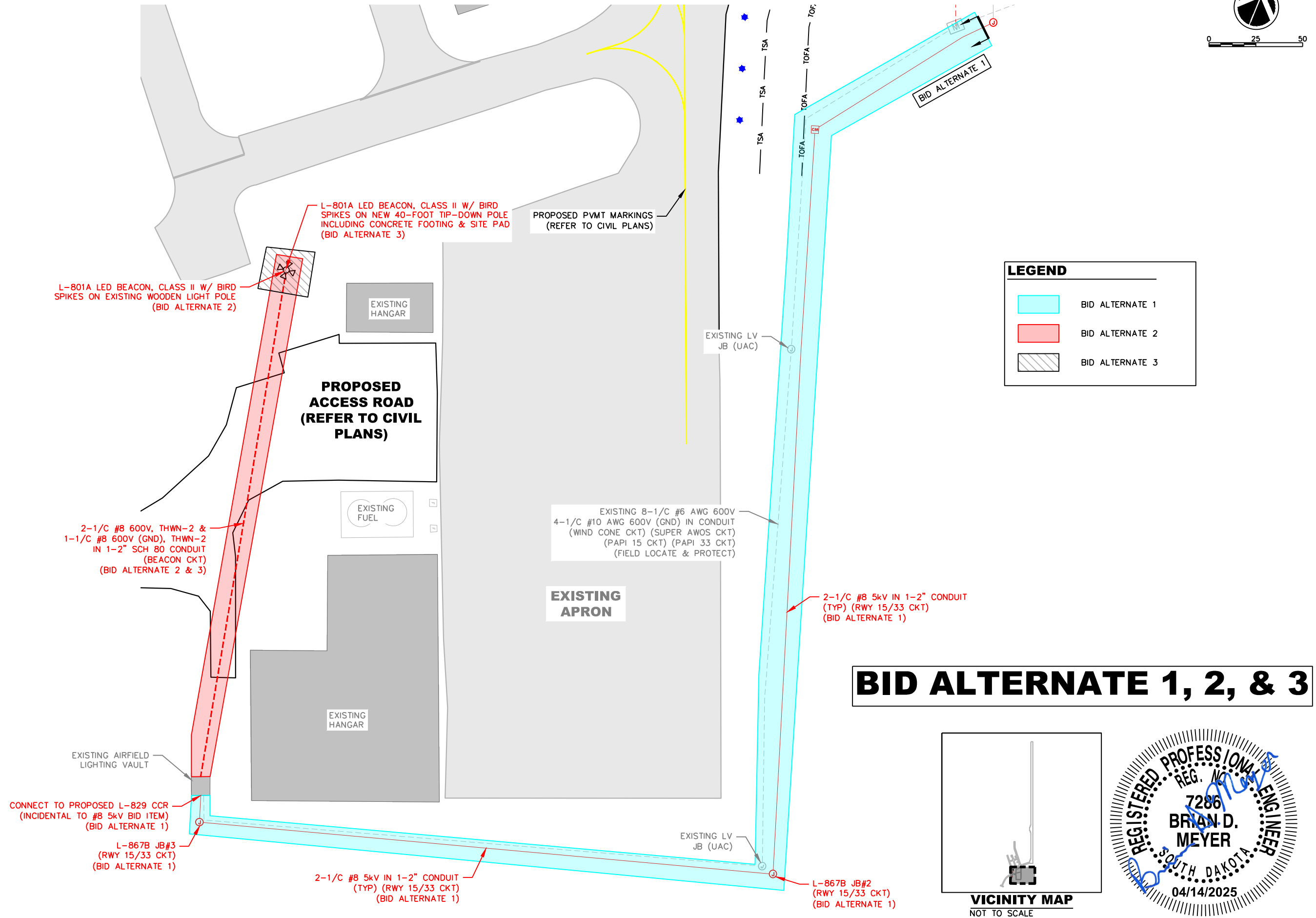
REVISIONS

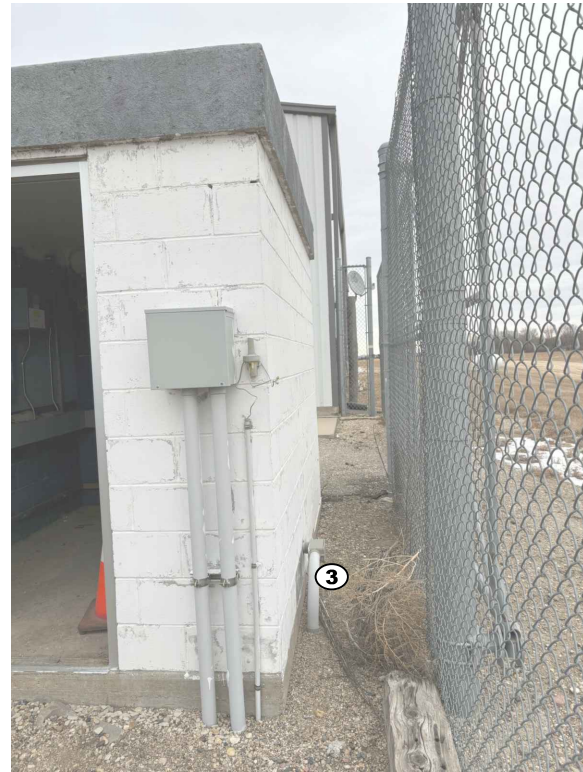
**Helm's & Associates**  
CIVIL ENGINEERS & LAND SURVEYORS

Project Manager: BDM  
Designer: DAF  
Project Number: 731603  
Phone: (605) 339-4157

**DGR ENGINEERING**

Sheet  
E4





**EXISTING HV & LV CONNECTIONS INTO VAULT (BID ALTERNATE 1)**  
NOT TO SCALE



**EXISTING L-828, 4kW CCR**  
NOT TO SCALE



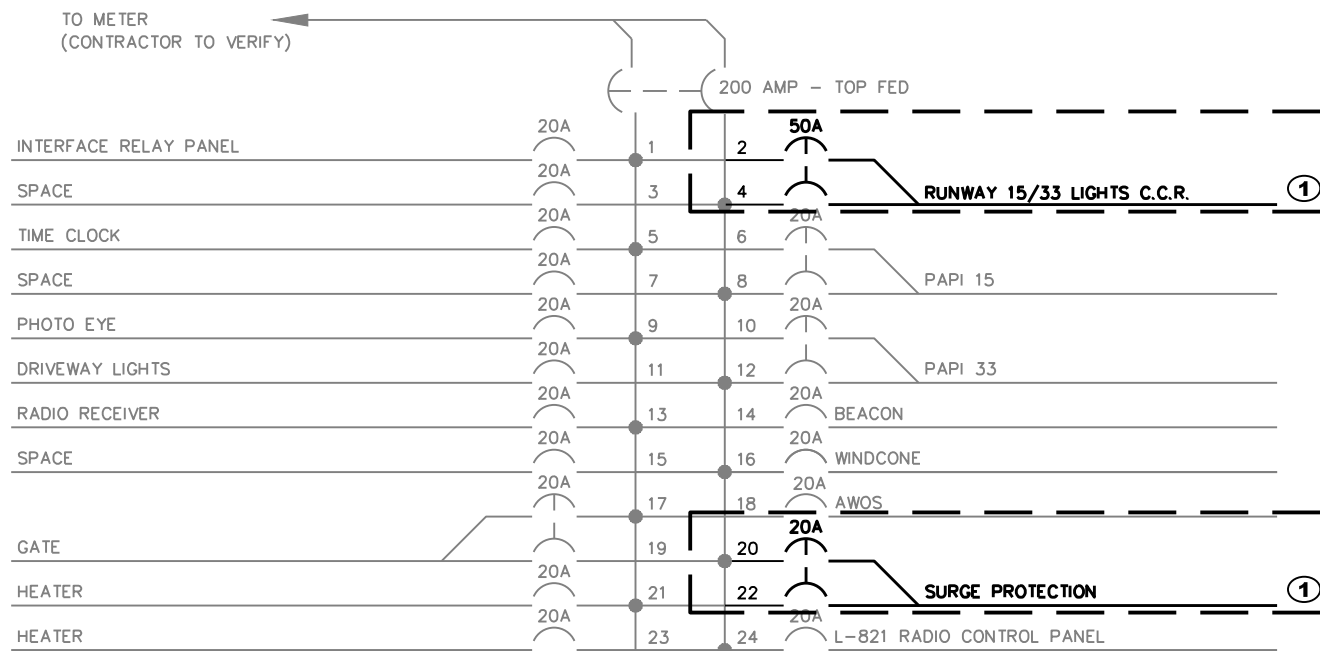
**EXTERIOR NORTH WALL OF VAULT BLDG (UAC) (BID ALTERNATE 2 & 3)**  
NOT TO SCALE

**AC PANEL GENERAL NOTE**

1. PANEL LAYOUT IS TYPICAL. MODIFY AS REQUIRED TO SUPPLY ALL EQUIPMENT.

**KEYNOTES**

- ① SIZE BREAKER & CIRCUIT PER SUPPLIED EQUIPMENT.
- ② REMOVE & SALVAGE TO OWNER EXISTING L-828, 4kW CCR. REMOVE & DISPOSE OF CONDUIT CONNECTIONS TO WIREWAY.
- ③ FIELD LOCATE & CONNECT VAULT ENTRY CONDUIT (BID ALTERNATE 1) FOR RWY 15/33 CKT.
- ④ INSTALL L-829 CCR (REGULATOR W/ MONITORING), CLASS 1 (6.6A), STYLE 1 (3-BRIGHTNESS STEPS), SIZE 5 kW. PROVIDE NEW CONDUITS TO WIREWAY.
- ⑤ INSTALL SURGE PROTECTION DEVICE & CONNECT TO EXISTING PANEL P1. ALSO SEE SPECIFICATION L-190.
- ⑥ REUSE EXISTING BEACON CONDUIT (BID ALTERNATE 2 & 3).

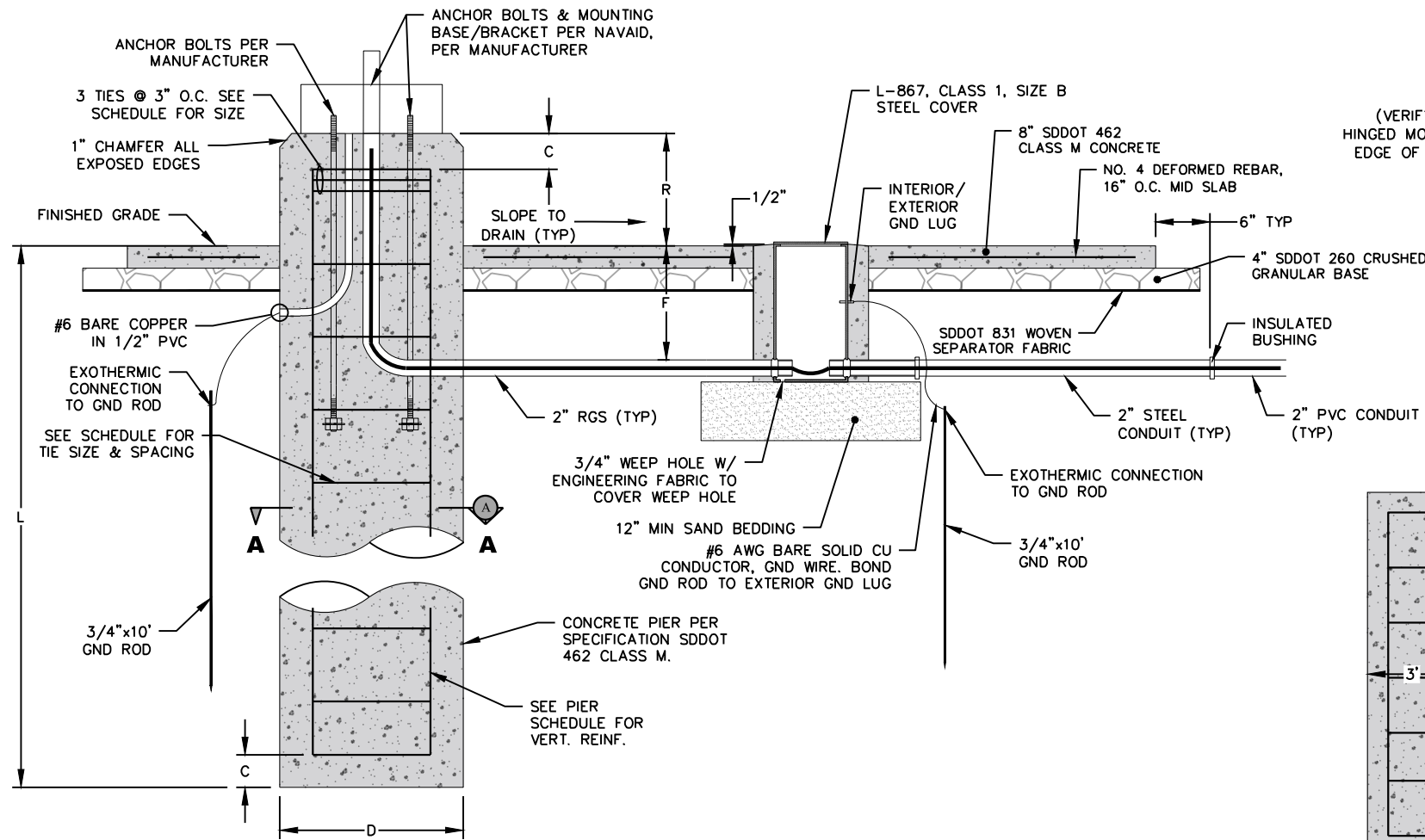


**PROPOSED PANEL P1 (VAULT BUILDING) - 120/240 V GE LOAD CENTER, CAT. NO. 252B3168P42**



**EXISTING AC PANEL P1**  
NOT TO SCALE





**NOTES**

1. CONCRETE SHALL CONFORM TO SDDOT 462 CLASS M CONCRETE.
2. COORDINATE ANCHOR BOLT SIZE, QUANTITY & PATTERN W/ MANUFACTURER/SUPPLIER.
3. WHERE GRADE IS NOT LEVEL @ PIER, PLACE 6" REVEAL ON THE HIGH SIDE OF THE PIER.
4. L-867 JUNCTION CAN, CONCRETE, AGGREGATE BASE, ENGINEERING FABRIC AND ACCESSORIES FOR A COMPLETE INSTALLATION SHALL BE INCIDENTAL.

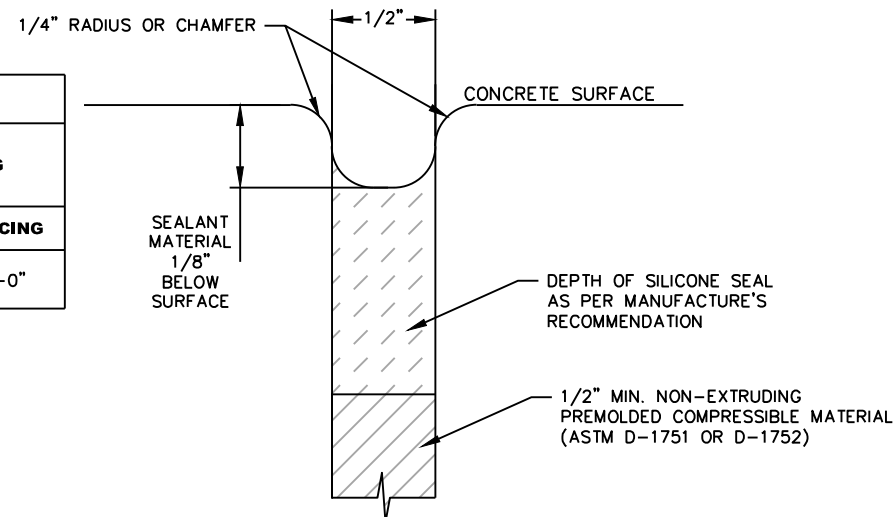
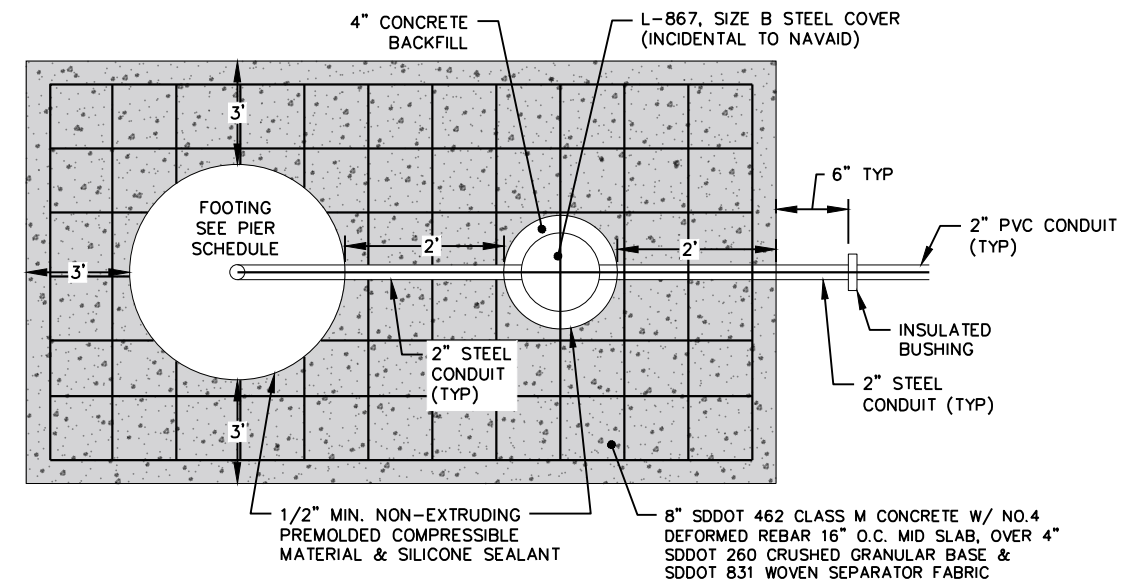
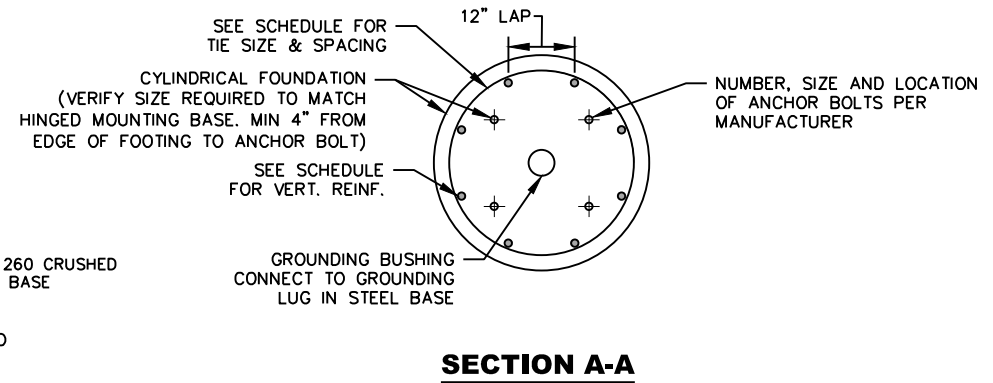
**CONCRETE FOOTING DETAIL**

NOT TO SCALE

STRUCTURE	PIER DIAMETER (D) (MIN)	PIER EMBEDMENT (L) (MIN)	PIER REVEAL (R)	FORM DEPTH (F)	CLEAR DISTANCE (C)	VERTICAL REINFORCING		HORIZONTAL REINFORCING		
						SIZE	QTY	SIZE	QTY	SPACING
BEACON FOOTING	* 28" MIN **	* 9'-0"	0'-6"	3'-0" MIN	0'-3"	#6	12	#4	12	1'-0"

- \* PER MANUFACTURER RECOMMENDATIONS
- \*\* ANCHOR BOLTS SHALL BE MINIMUM 4" FROM ANY CONCRETE EDGE

**BID ALTERNATE 3**



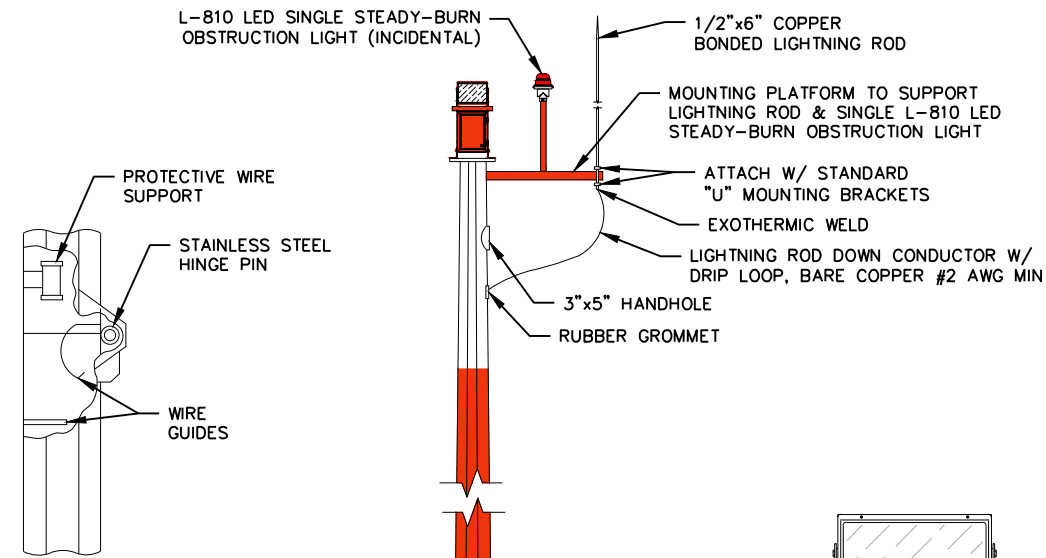




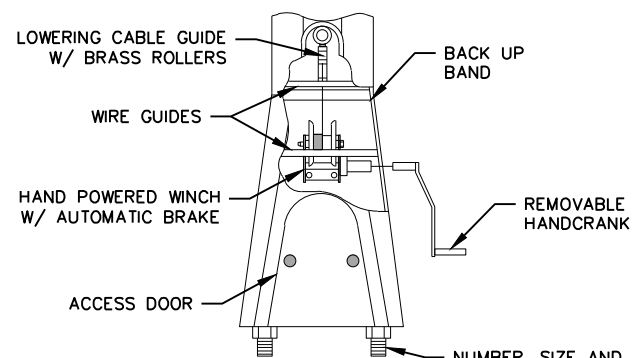
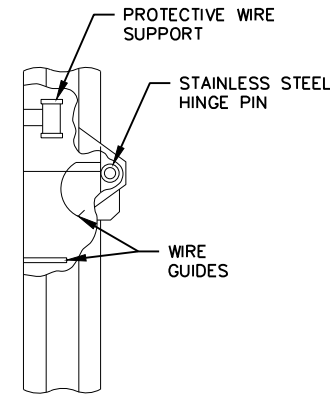
- EXISTING BEACON (REFER TO LIGHTING REMOVALS) (BID ALTERNATE 2 & 3)
- EXISTING BEACON JB (REFER TO LIGHTING REMOVALS) (BID ALTERNATE 2 & 3)
- EXISTING BEACON CONDUIT (TYP) (REFER TO LIGHTING REMOVALS) (BID ALTERNATE 2 & 3)
- EXISTING BEACON JB (REFER TO LIGHTING REMOVALS) (BID ALTERNATE 2 & 3)

**EXISTING TERMINAL BLDG (UAC)  
AND BEACON ON EXISTING  
WOODEN LIGHT POLE  
(BID ALTERNATE 2 & 3)**

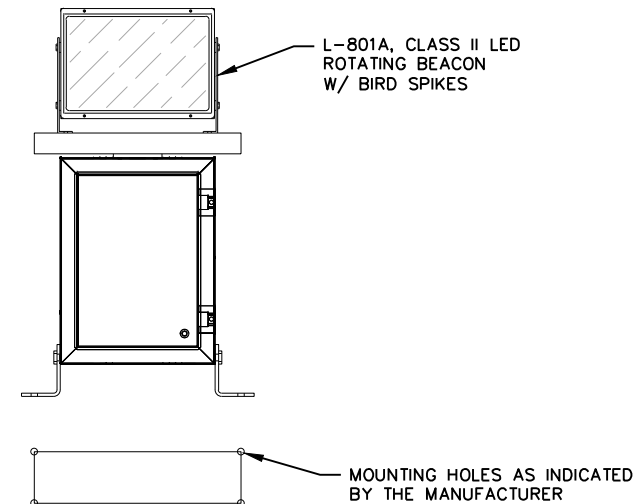
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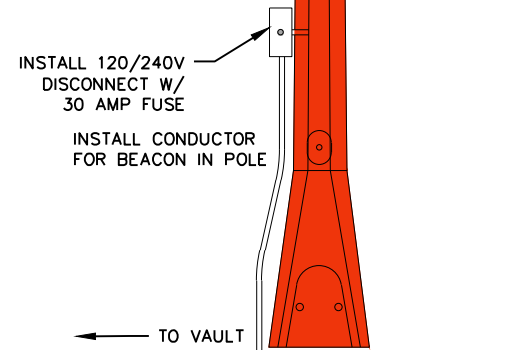
**HINGE**



**BASE**



**BEACON (LED)  
(BID ALTERNATE 2 & 3)**



**40' TIP DOWN BEACON POLE  
(BID ALTERNATE 3)**

**BID ALTERNATE 2 & 3**

**L-801A LED ROTATING BEACON & TIP-DOWN POLE DETAILS**

NOT TO SCALE

