Ferguson Consulting
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TXDOT AVIATION STATEWIDE AIRFIELD ELECTRICAL CONSTRUCTION PROJECT
GROUP ALPHA

TXDOT CSJ NO.: 4222AVSAEA RE-BID

26R Jackson County Airport (Edna)	**CSJ No. 2413EDDNA**
T20 Roger M. Dreyer Memorial Airport (Gonzales)	**CSJ No. 2416GONZA**
RKP Aransas County Airport (Rockport)	**CSJ No. 2416ROCKP**
84R Smithville Crawford Municipal Airport	**CSJ No. 2414SMITH**
TRL Terrell Municipal Airport	**CSJ No. 2418TEREL**

RE-BID ADDENDUM NO. 1

September 17, 2025

TO ALL PROSPECTIVE BIDDERS:

All bidders shall acknowledge receipt of this and all other addenda on page 21 of 22 of the Bid Form. **Failure to acknowledge receipt of an addendum may be cause for rejection of the bid.** This addendum becomes a part of the contract documents. All provisions of the original plans, specifications, and contract documents shall remain in full force and effect, except as modified by this addendum.

A. You are hereby notified of the following amendments to the Bid Form for the subject project.

   a) A revised Bid Form will be provided along with this Addendum #1.

B. You are hereby notified of the following amendments to the Contract Documents/Specifications for the subject project.

   a) Two new line items have been added to the Measurement and Payment section of Specification "L-105 – Alteration, Removal, Demolition":
      i. Item L-105-5.24 – Remove Concrete Encased Duct in Earth (Including Cable), per Linear Foot
      ii. Item L-105-5.25 – Remove 600V Circuit in Duct, per Linear Foot
      iii. Item L-110 – Removal of non-applicable pay items
      iv. Item L-125 – Removal of non-applicable pay items

C. You are hereby notified of the following amendments to the Construction Plans for the subject project.

   a) Two new line items have been added to the Summary of Quantities on sheets

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G.02, G.03 and G.04.

i. **Subsequent quantity items to Quantity Item No. 54 have been reordered in numerical order to accommodate new Nos. 55 and 56.**

ii. **Added Quantity Item No. 55 - Item L-105-5.24 – Remove Concrete Encased Duct in Earth (Including Cable)**

iii. **Added Quantity Item No. 56 - Item L-105-5.25 – Remove 600V Circuit in Duct**

iv. **Added Quantity item No. 84 L-110-5.16 - Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased VIA Open Cut**

b) **Directional drill call-outs on sheets ES2.1 and ES2.4 have been updated to reflect the correct quantity of conduits to be installed.**

c) **Keyed note 7 has been added to sheets ET1.1, ET1.2, ET1.3, ET1.4, and ET1.5 to clarify the airfield guidance sign demolition scope.**

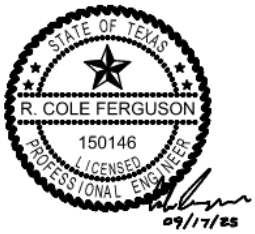
d) **ET2.6 – Revised to clarify size of duct bank for utility service, and that this duct will be directionally drilled under existing terminal drive pavement.**

e) **ER2.2 – Revised to clarify installation of Edge Light T66 is to be in existing pavement**

f) **ER6.6 – Revised to reflect scope of edge light T66 being installed in existing pavement section**

D. Responses to bidder questions are included with this addendum.

RE-BID ADDENDUM NO. 1 ISSUED BY:



Cole Ferguson, P.E.
Airfield Electrical Engineer

TBPE Firm Registration No. F-6864

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TXDOT AVIATION STATEWIDE AIRFIELD ELECTRICAL
TXDOT CSJ NO.: 4222AVSAEA RE-BID

RE-BID ADDENDUM NO. 1 BIDDER QUESTIONS

1. For Smithville Airport (84R), CSJ No. 2414SMITH - Would it be possible to change the lights from their current frequency from 123.3 to the airport common frequency of 122.9 during this project?

   RESPONSE: No objections were made. This change will be considered and coordinated during construction.

2. For Smithville Airport, bid item #46, 0 were found and the summary of quantities total is 3. Please verify quantity.

   RESPONSE: For Smithville, bid item #46 is a placeholder quantity for unknown site conditions.

3. For Smithville Airport, bid item #33, 275 LF is shown on the drawings, and the summary of quantities does not list this bid item. Please verify quantity.

   RESPONSE: Bid item 55, L-105-5.24 "Remove Concrete Encased Duct in Earth (Including Cable)" has been added. Please see revised bid tab included with Addendum 1 for updated quantities.

4. For Smithville Airport, page ES2.1 lists a directional drill (75 LF) 4-Way Run with 2" conduit, but also calls out 2 as the number of ducts. Please verify if this is a 2-way or 4-way run with 2" conduit.

   RESPONSE: The directional drill callout has been revised. See updated plan sheets included in Addendum 1.

5. For Smithville Airport, the summary of quantities lists bid items #71 & #72 as 100 LF & 165 LF, respectively. Per our takeoff, we found 0 LF for both. Please verify.

   RESPONSE: Bid item 71 (revised to 73) should have a quantity of 0 LF. Bid item 72 (revised to 74) quantity has been verified at 165 LF. See revised bid tab included with Addendum 1 for updated quantities.

6. For Terrell Airport, bid item #59, 9,655 LF of #8 cable was shown and the summary of quantities total is 3,750 LF. Please verify quantity.

   RESPONSE: Bid item 59 (revised to 61) refers to the circuit powering the voltage driven RWY

36 PAPI, and does not account any 5kV airfield lighting conductors. The quantity of 3750 LF is correct.

7. For Terrell Airport, bid item #60 4,045 LF of #12 cable was shown and the summary of quantities total is 2,000 LF. Please verify quantity.

   RESPONSE: Bid item 60 (revised to 62) refers to the circuit powering the voltage driven primary wind cone and does not account for any 5kV airfield lighting conductors. The quantity of 2,000 LF is correct.

8. For Terrell Airport, bid item #68 has a quantity of 0 LF on the bid form. Please verify quantity.

   RESPONSE: Bid item 68 (revised to 70) should have a quantity of 0 LF. There is no conduit being installed via saw kerf.

9. For Terrell Airport, bid item #32 has a quantity of 11,830 LF and the summary of quantities total is 175 LF. Please verify quantity.

   RESPONSE: Bid item 32 (revised to 34) has been updated. Bid item 56, L-105-5.25 "Remove 600V Circuit in Duct" has been added to the bid tab. See revised bid tab included with Addendum 1 for updated quantities.

10. For Terrell Airport, pages ET1.1, ET1.2, ET1.3, ET1.4 & ET1.5 have airfield guidance signs to be removed. Please verify if the foundations are to remain or be removed.

    RESPONSE: A keyed note has been added to the ET1 series for clarification. See updated plan sheets included in Addendum 1.

11. For Terrell Airport, pages ET2.1, ET2.2, ET2.3, ET2.4 & ET2.5 have airfield guidance signs to be installed. Please verify if the foundations are new or existing.

    RESPONSE: Refer to ET6.1 for clarification.

12. Drawing ER2.2 (Aransas County Airport) shows approximately 75 LF of 4-Way, 2" Sch-40 PVC Conduit installed via Open Cut (per Keyed Note 10). There is no Line Item in the Bid Form for this installation.

    RESPONSE: Line item L-110-5.16 has been added to account for this work.

13. Reference Drawing ER2.2 (Aransas County Airport): Please confirm if T/W Edge Light T66 is to be installed in turf (L-125-5.1) or in existing pavement (L-125-5.4)

RESPONSE: Taxiway edge light T66 is to be installed in existing pavement. This has been clarified on drawings and the quantity for this item has been updated.

14. Please confirm the quantity of demolition item L-105-5.21 'Remove Existing PAPI-2 Unit'. The Base Bid lists a quantity of 5 but the total quantity of this line item in Deductive Alternates 1 thru 5 is only 4.

    RESPONSE: These have been reviewed and revised.

15. Base Bid item L-110-5.4 'Procure and Install 1-Way, 2" Sch. 40 PVC Conduit VIA Open Cut' shows a quantity of '0'. The Deductive Alternates 1 thru 5 have a combined quantity of 185 LF for this item. Additionally, the layout plans for Edna, Rockport & Smithville depict locations for this duct bank type. Please provide a revised Base Bid form with a quantity for this line item.

    RESPONSE: These have been reviewed and revised.

16. Reference Drawing ET2.6 (Terrell): What is the conduit configuration for the new Utility Company Service Entrance Infrastructure?

    RESPONSE: The conduit configuration shall be (2) 4"Cs. See addendum 1 revisions for clarification.

17. Reference Drawing ET2.6 (Terrell): Is it the engineer's intent that the contractor is to bore under the roadway for the new utility company service entrance duct bank?

    RESPONSE: Yes this section of conduit will have to be bored. See addendum 1 revisions for clarification.

18. Can all of the ground rods be standardized to a ¾" x 10' copper clad type in lieu of showing stainless steel and copper clad being used in different details?

    RESPONSE: Yes, all ground rods may be copped clad steel.

19. Should all unit prices in the deductive alternate be the same value as what is in the base bid unit price.

    RESPONSE: Yes, all deductive unit prices should be the same value as what is used by the contractor in the base bid unit prices.

TXDOT AVIATION
ELECTRICAL STATWIDE IMPROVEMENTS
GROUP ALPHA

BASE BID

SUMMARY OF QUANTITIES

ITEM NO.	SPEC.	ITEM DESCRIPTION	UNIT	QUANTITY	
				ESTIMATED	AS-CONST.
1	C-105-6.1	Mobilization - Edna	LS	1	
2	C-105-6.2	Mobilization - Gonzales	LS	1	
~~3~~	~~C-105-6.3~~	~~Mobilization - Palacios~~	~~LS~~	~~0~~	
4	C-105-6.4	Mobilization - Rockport	LS	1	
5	C-105-6.5	Mobilization - Smithville	LS	1	
6	C-105-6.6	Mobilization - Terrell	LS	1	
7	SS-1-1	Temporary Marking, Lighting and Barricades Edna	LS	1	
8	SS-1-2	Temporary Marking, Lighting and Barricades Gonzales	LS	1	
~~9~~	~~SS-1-3~~	~~Temporary Marking, Lighting and Barricades Palacios~~	~~LS~~	~~0~~	
10	SS-1-4	Temporary Marking, Lighting and Barricades Rockport	LS	1	
11	SS-1-5	Temporary Marking, Lighting and Barricades Smithville	LS	1	
12	SS-1-6	Temporary Marking, Lighting and Barricades Terrell	LS	1	
13	P-152-4.1d	Unclassified Excavation - Rockport	CY	20	
14	P-152-4.1e	Unclassified Excavation - Smithville	CY	5	
15	P-152-4.1f	Unclassified Excavation - Terrell	CY	25	
16	P-152-4.2d	Embankment - Rockport	CY	350	
17	P-152-4.2e	Embankment - Smithville	CY	100	
18	P-152-4.2f	Embankment - Terrell	CY	5	
~~19~~	~~P-620-5.1~~	~~Surface Preparation - Palacios~~	~~LS~~	~~0~~	
~~20~~	~~P-620-5.2a~~	~~Reflectorized Pavement Marking - Palacios~~	~~SF~~	~~0~~	
~~21~~	~~P-620-5.2b~~	~~Non-Reflectorized Pavement Marking - Palacios~~	~~SF~~	~~0~~	
22	T-901-5.1a	Seeding - Edna	AC	1	
23	T-901-5.1b	Seeding - Gonzales	AC	1	
~~24~~	~~T-901-5.1c~~	~~Seeding - Palacios~~	~~AC~~	~~0~~	
25	T-901-5.1d	Seeding - Rockport	AC	4	
26	T-901-5.1e	Seeding - Smithville	AC	4	
27	T-901-5.1f	Seeding - Terrell	AC	2	
28	D-701-5.1	24 inch Class IV RCP	LF	95	
29	D-701-5.2	RCP End Section	EA	4	
30	L-103-5.1	Install New Beacon on New 50' Tip Down Pole, including Foundation	EA	2	
31	L-103-5.2	Install Salvaged Beacon on New 50' Tip Down Pole, including Foundation	EA	2	
32	L-105-5.1	Remove No. 8 AWG, L-824C in duct	LF	33,225	
33	L-105-5.2	Remove 2-inch conduit including cable(s)	LF	2,150	
34	L-105-5.3	Remove Existing Stake Mounted Elevated Taxiway Edge Light and associated brooks box	EA	47	
35	L-105-5.4	Remove Existing Elevated Taxiway Edge Light and Base Can	EA	8	
36	L-105-5.5	Remove Existing Elevated Taxiway Edge Light, Base Can to Remain	EA	40	
37	L-105-5.6	Remove Existing Stake Mounted Elevated Runway Edge Light And Associated Brooks Box	EA	156	
~~38~~	~~L-105-5.7~~	~~Remove Existing Elevated Runway Edge Light and Base Can~~	~~EA~~	~~0~~	
39	L-105-5.8	Remove Existing Elevated Runway Edge Light, Base Can to Remain	EA	100	
40	L-105-5.9	Remove Existing Stake Mounted Elevated Threshold End Light And Associated Brooks Box	EA	60	
41	L-105-5.10	Remove Existing Elevated Threshold End Light, Base Can to Remain	EA	40	
~~42~~	~~L-105-5.11~~	~~Remove Existing Elevated Threshold End Light and Base Can~~	~~EA~~	~~0~~	
43	L-105-5.12	Remove Guidance Sign, Foundation to Remain	EA	17	
44	L-105-5.13	Remove Guidance Sign and Foundation	EA	37	
45	L-105-5.14	Remove Existing Manhole	EA	9	
46	L-105-5.15	Remove Existing Pullbox	EA	29	
47	L-105-5.16	Remove Existing Duct Marker	EA	8	
48	L-105-5.17	Demolish Existing Electrical Vault Building and Equipment	LS	1	
49	L-105-5.18	Remove Existing Wind Cone and Associated Foundation	EA	4	
50	L-105-5.19	Remove Existing Beacon, Pole, and Foundation	EA	2	
51	L-105-5.20	Remove Existing Beacon and Pole, Beacon to be Salvaged	EA	2	
52	L-105-5.21	Remove Existing PAPI-2 Unit	EA	4	
53	L-105-5.22	Remove Existing PAPI-4 Unit	EA	3	
54	L-105-5.23	Remove Existing REIL Unit	EA	2	
55	L-105-5.24	Remove Concrete Encased Duct in Earth (Including Cable)	LF	282	
56	L-105-5.25	Remove 600V Circuit in Duct	LF	4,950	
57	L-107-5.1	Install New L-807(L) LED Wind Cone Including Tip Down Pole	EA	4	
58	L-107-5.2	Paint Existing Segmented Circle Around Wind Cone	LS	5	
59	L-108-5.1	No.8 AWG, L-824C 5kV Cable, Installed in Conduit or Duct	LF	139,950	
60	L-108-5.2	No. 6 AWG Bare Counterpoise Wire, Installed in Conduit Trench, Including Ground Rods	LF	79,790	
61	L-108-5.3	Electrical Circuit (2) #8, #8G, Installed in Conduit or Duct	LF	9,750	
62	L-108-5.4	Electrical Circuit (2) #10, #10G, Installed in Conduit or Duct	LF	5,800	
63	L-108-5.5	Electrical Circuit (2) #12, #12G, Installed in Conduit or Duct	LF	6,240	
64	L-108-5.6	Temporary Electrical Provisions	LS	1	
65	L-109-5.1	Vault Equipment Modifications	LS	4	
66	L-109-5.2	4kV Constant Current Regulator	EA	7	
67	L-109-5.3	Install New Vault Building and Equipment	LS	2	
68	L-109-5.4	Replace Existing ALCMS System	LS	1	
69	L-110-5.1	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit in Earth	LF	56,175	
~~70~~	~~L-110-5.2~~	~~Procure and Install 1-Way, 2" Sch. 40 PVC Conduit in Existing Pavement VIA Saw Kerf~~	~~LF~~	~~0~~	
~~71~~	~~L-110-5.3~~	~~Procure and Install 1-Way, 2" SDR 11 HDPE Conduit VIA Directional Drill~~	~~LF~~	~~0~~	
72	L-110-5.4	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit VIA Open Cut	LF	185	

BASE BID (CONTINUED)

SUMMARY OF QUANTITIES

ITEM NO.	SPEC.	ITEM DESCRIPTION	UNIT	QUANTITY	
				ESTIMATED	AS-CONST.
73	L-110-5.5	Procure and Install 2-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	7,725	
74	L-110-5.6	Procure and Install 2-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	1,515	
75	L-110-5.7	Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	7,215	
76	L-110-5.8	Procure and Install 4-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	1,195	
77	L-110-5.9	Procure and Install 6-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	1,600	
78	L-110-5.10	Procure and Install 6-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Existing Pavement VIA Open Cut	LF	25	
79	L-110-5.11	Procure and Install 6-Way, 2" SDR 11 HDPE Conduit, VIA Directional Drill	LF	265	
80	L-110-5.12	Procure and Install 10-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	415	
81	L-110-5.13	Procure and Install 10-Way, 2" Sch. 40 PVC Conduit, Concrete Encased VIA Open Cut	LF	40	
82	L-110-5.14	Procure and Install 10-Way, 2" SDR 11 HDPE Conduit, VIA Directional Drill	LF	360	
83	L-110-5.15	Procure and Install Utility Company Service entrance Infrastructure	LS	1	
84	L-110-5.16	Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased VIA Open Cut	LF	75	
85	L-115-5.1	Install New 2 Way JCP incl Sump Drain	EA	48	
86	L-115-5.2	Install New 4 Way JCP incl Sump Drain	EA	23	
87	L-115-5.3	Install New 6 Way JCP incl Sump Drain	EA	11	
88	L-115-5.4	Install New 10 Way JCP incl Sump Drain	EA	3	
89	L-115-5.5	Install New L-867D Pull Can in Earth	EA	14	
90	L-125-5.1	Install New L-861T(L) Elevated Taxiway Edge Light with New L867B Base Can in Earth	EA	91	
91	L-125-5.2	Install New L-861T(L) Elevated Taxiway Edge Light in Existing Base Can	EA	27	
92	L-125-5.3	Install Salvaged L-861T(L) Elevated Taxiway Edge Light in Existing Base Can	EA	3	
93	L-125-5.4	Install New L-861T(L) Elevated Taxiway Edge Light with New L867B Base Can in Existing Shoulder Pavement	EA	9	
94	L-125-5.5	Install New L-861(L) Elevated Runway Edge Light with New L867B Base Can in Earth	EA	154	
95	L-125-5.6	Install New L-861(L) Elevated Runway Edge Light in Existing L867B Base Can	EA	100	
~~96~~	~~L-125-5.7~~	~~Install New L-861(L) Elevated Runway Edge Light with New L867B Base Can in Existing Shoulder Pavement~~	~~EA~~	~~0~~	
~~97~~	~~L-125-5.8~~	~~Install New L-850C(L) Inpavement Runway Edge Light with New L868B Base Can in Existing Shoulder Pavement~~	~~EA~~	~~0~~	
98	L-125-5.9	Install New L-861E(L) Elevated Runway Threshold Light with New L867B Base Can in Earth	EA	60	
99	L-125-5.10	Install New L-861E(L) Elevated Runway Threshold Light in Existing Base Can	EA	40	
100	L-125-5.11	Install New Guidance Sign on New Sign Foundation, 1 Module	EA	18	
101	L-125-5.12	Install New Guidance Sign on New Sign Foundation, 2 Module	EA	15	
102	L-125-5.13	Install New Guidance Sign on New Sign Foundation, 3 Module	EA	12	
103	L-125-5.14	Install New Guidance Sign on New Sign Foundation, 4 Module	EA	3	
104	L-125-5.15	Install New Guidance Sign on Existing Sign Foundation, 1 Module	EA	16	
105	L-125-5.16	Install New Guidance Sign on Existing Sign Foundation, 2 Module	EA	1	
~~106~~	~~L-125-5.17~~	~~Install New Guidance Sign on Existing Pavemnt VIA Coring, 2 Module~~	~~EA~~	~~0~~	
107	L-125-5.18	Install New Isolation Transformer and Connector Kit in Existing Sign/ Fixture	EA	10	
108	L-125-5.19	Install New REIL Unit	EA	5	
109	L-130-5.1	Install New LED 2-Box Papi System incl Flight Check	EA	6	
110	L-130-5.2	Install New LED 4-Box Papi System incl Flight Check	EA	5	

DEDUCTIVE ALTERNATE 1 (EDNA) JACKSON COUNTY AIRPORT (26R)

SUMMARY OF QUANTITIES

ITEM NO.	SPEC.	ITEM DESCRIPTION	UNIT	QUANTITY	
				ESTIMATED	AS-CONST.
1	C-105-6.1	Mobilization - Edna	LS	-1	
7	SS-1-1	Temporary Marking, Lighting and Barricades - Edna	LS	-1	
22	T-901-5.1a	Seeding - Edna	AC	-1	
30	L-103-5.1	Install New Beacon on New 50' Tip Down Pole, including Foundation	EA	-1	
37	L-105-5.6	Remove Existing Stake Mounted Elevated Runway Edge Light And Associated Brooks Box	EA	-32	
40	L-105-5.9	Remove Existing Stake Mounted Elevated Threshold End Light And Associated Brooks Box	EA	-16	
44	L-105-5.13	Remove Guidance Sign and Foundation	EA	-10	
49	L-105-5.18	Remove Existing Wind Cone and Associated Foundation	EA	-1	
50	L-105-5.19	Remove Existing Beacon, Pole, and Foundation	EA	-1	
57	L-107-5.1	Install New L-807(L) LED Wind Cone Including Tip Down Pole	EA	-1	
58	L-107-5.2	Paint Existing Segmented Circle Around Wind Cone	LS	-1	
59	L-108-5.1	No.8 AWG, L-824C 5kV Cable, Installed in Conduit or Duct	LF	-10,550	
60	L-108-5.2	No. 6 AWG Bare Counterpoise Wire, Installed in Conduit Trench, Including Ground Rods	LF	-12,200	
62	L-108-5.4	Electrical Circuit (2) #10, #10G, Installed in Conduit or Duct	LF	-3,800	
63	L-108-5.5	Electrical Circuit (2) #12, #12G, Installed in Conduit or Duct	LF	-950	
65	L-109-5.1	Vault Equipment Modifications	LS	-1	
66	L-109-5.2	4kV Constant Current Regulator	EA	-1	
69	L-110-5.1	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit in Earth	LF	-8,675	
72	L-110-5.4	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit VIA Open Cut	LF	-50	
73	L-110-5.5	Procure and Install 2-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-1,975	
74	L-110-5.6	Procure and Install 2-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-400	
75	L-110-5.7	Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-150	
76	L-110-5.8	Procure and Install 4-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-75	
77	L-110-5.9	Procure and Install 6-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-425	
78	L-110-5.10	Procure and Install 6-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Existing Pavement VIA Open Cut	LF	-25	
85	L-115-5.1	Install New 2 Way JCP incl Sump Drain	EA	-11	
86	L-115-5.2	Install New 4 Way JCP incl Sump Drain	EA	-1	
87	L-115-5.3	Install New 6 Way JCP incl Sump Drain	EA	-3	
94	L-125-5.5	Install New L-861(L) Elevated Runway Edge Light with New L867B Base Can in Earth	EA	-33	
98	L-125-5.9	Install New L-861E(L) Elevated Runway Threshold Light with New L867B Base Can in Earth	EA	-16	
100	L-125-5.11	Install New Guidance Sign on New Sign Foundation, 1 Module	EA	-8	
102	L-125-5.13	Install New Guidance Sign on New Sign Foundation, 3 Module	EA	-2	
109	L-130-5.1	Install New LED 2-Box Papi System incl Flight Check	EA	-2	

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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

GROUP ALPHA
TXDOT CSJ NO. 4222AVSAE

NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

PROJECT NO. :	20616
DATE OF ISSUE :	08/08/2025
REVIEWED BY :	SLS/CAW
DRAWN BY :	VM/AB
DESIGNED BY :	AM/JDR

SUMMARY OF QUANTITIES

G0.2

DEDUCTIVE ALTERNATE 2 (GONZALES) ROGER M. DREYER MEMORIAL AIRPORT (T20)					
SUMMARY OF QUANTITIES					
ITEM NO.	SPEC.	ITEM DESCRIPTION	UNIT	QUANTITY	
				ESTIMATED	AS-CONST.
1	C-105-6.2	Mobilization - Gonzales	LS	-1	
8	SS-1-2	Temporary Marking, Lighting and Barricades - Gonzales	LS	-1	
22	T-901-5.1a	Seeding - Gonzales	AC	-1	
31	L-103-5.2	Install Salvaged Beacon on New 50' Tip Down Pole, including Foundation	EA	-1	
33	L-105-5.2	Remove 2-inch conduit including cable(s)	LF	-350	
34	L-105-5.3	Remove Existing Stake Mounted Elevated Taxiway Edge Light and associated brooks box	EA	-4	
37	L-105-5.6	Remove Existing Stake Mounted Elevated Runway Edge Light And Associated Brooks Box	EA	-32	
40	L-105-5.9	Remove Existing Stake Mounted Elevated Threshold End Light And Associated Brooks Box	EA	-12	
46	L-105-5.15	Remove Existing Pullbox	EA	-4	
48	L-105-5.17	Demolish Existing Electrical Vault Building and Equipment	LS	-1	
49	L-105-5.18	Remove Existing Wind Cone and Associated Foundation	EA	-1	
51	L-105-5.20	Remove Existing Beacon and Pole, Beacon to be Salvaged	EA	-1	
57	L-107-5.1	Install New L-807(L) LED Wind Cone Including Tip Down Pole	EA	-1	
58	L-107-5.2	Paint Existing Segmented Circle Around Wind Cone	LS	-1	
59	L-108-5.1	No.8 AWG, L-824C 5kV Cable, Installed in Conduit or Duct	LF	-9,000	
60	L-108-5.2	No. 6 AWG Bare Counterpoise Wire, Installed in Conduit Trench, Including Ground Rods	LF	-10,825	
61	L-108-5.3	Electrical Circuit (2) #8, #8G, Installed in Conduit or Duct	LF	-2,500	
63	L-108-5.5	Electrical Circuit (2) #12, #12G, Installed in Conduit or Duct	LF	-1,115	
66	L-109-5.2	4kV Constant Current Regulator	EA	-1	
67	L-109-5.3	Install New Vault Building and Equipment	LS	-1	
69	L-110-5.1	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit in Earth	LF	-8,300	
73	L-110-5.5	Procure and Install 2-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-1,750	
74	L-110-5.6	Procure and Install 2-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-100	
75	L-110-5.7	Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-400	
76	L-110-5.8	Procure and Install 4-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-75	
77	L-110-5.9	Procure and Install 6-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-75	
85	L-115-5.1	Install New 2 Way JCP incl Sump Drain	EA	-4	
86	L-115-5.2	Install New 4 Way JCP incl Sump Drain	EA	-2	
87	L-115-5.3	Install New 6 Way JCP incl Sump Drain	EA	-1	
89	L-115-5.5	Install New L-867D Pull Can in Earth	EA	-2	
94	L-125-5.5	Install New L-861(L) Elevated Runway Edge Light with New L867B Base Can in Earth	EA	-32	
98	L-125-5.9	Install New L-861E(L) Elevated Runway Threshold Light with New L867B Base Can in Earth	EA	-12	
100	L-125-5.11	Install New Guidance Sign on New Sign Foundation, 1 Module	EA	-2	
101	L-125-5.12	Install New Guidance Sign on New Sign Foundation, 2 Module	EA	-1	
108	L-125-5.19	Install New REIL Unit	EA	-1	
109	L-130-5.1	Install New LED 2-Box Papi System incl Flight Check	EA	-2	

DEDUCTIVE ALTERNATE 3 (ROCKPORT) ARANSAS COUNTY AIRPORT (RKP)					
		SUMMARY OF QUANTITIES			
ITEM NO.	SPEC.	ITEM DESCRIPTION	UNIT	QUANTITY	
				ESTIMATED	AS-CONST.
1	C-105-6.4	Mobilization - Rockport	LS	-1	
10	SS-1-4	Temporary Marking, Lighting and Barricades - Rockport	LS	-1	
13	P-152-4.1d	Unclassified Excavation - Rockport	CY	-20	
16	P-152-4.2d	Embankment - Rockport	CY	-350	
25	T-901-5.1d	Seeding - Rockport	AC	-4	
28	D-701-5.1	24 inch Class IV RCP	LF	-40	
29	D-701-5.2	RCP End Section	EA	-2	
31	L-103-5.2	Install Salvaged Beacon on New 50' Tip Down Pole, including Foundation	EA	-1	
32	L-105-5.1	Remove No. 8 AWG, L-824C in duct	LF	-30,600	
33	L-105-5.2	Remove 2-inch conduit including cable(s)	LF	-1,800	
34	L-105-5.3	Remove Existing Stake Mounted Elevated Taxiway Edge Light and associated brooks box	EA	-43	
35	L-105-5.4	Remove Existing Elevated Taxiway Edge Light and Base Can	EA	-8	
36	L-105-5.5	Remove Existing Elevated Taxiway Edge Light, Base Can to Remain	EA	-40	
39	L-105-5.8	Remove Existing Elevated Runway Edge Light, Base Can to Remain	EA	-100	
41	L-105-5.10	Remove Existing Elevated Threshold End Light, Base Can to Remain	EA	-40	
43	L-105-5.12	Remove Guidance Sign, Foundation to Remain	EA	-17	
44	L-105-5.13	Remove Guidance Sign and Foundation	EA	-19	
45	L-105-5.14	Remove Existing Manhole	EA	-1	
46	L-105-5.15	Remove Existing Pullbox	EA	-15	
51	L-105-5.20	Remove Existing Beacon and Pole, Beacon to be Salvaged	EA	-1	
52	L-105-5.21	Remove Existing PAPI-2 Unit	EA	-2	
53	L-105-5.22	Remove Existing PAPI-4 Unit	EA	-2	
54	L-105-5.23	Remove Existing REIL Unit	EA	-1	
58	L-107-5.2	Paint Existing Segmented Circle Around Wind Cone	LS	-1	
59	L-108-5.1	No.8 AWG, L-824C 5kV Cable, Installed in Conduit or Duct	LF	-93,400	
60	L-108-5.2	No. 6 AWG Bare Counterpoise Wire, Installed in Conduit Trench, Including Ground Rods	LF	-23,615	
63	L-108-5.5	Electrical Circuit (2) #12, #12G, Installed in Conduit or Duct	LF	-2,450	
64	L-108-5.6	Temporary Electrical Provisions	LS	-1	
65	L-109-5.1	Vault Equipment Modifications	LS	-1	
66	L-109-5.2	4kV Constant Current Regulator	EA	-3	
68	L-109-5.4	Replace Existing ALCMS System	LS	-1	
69	L-110-5.1	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit in Earth	LF	-12,300	
72	L-110-5.4	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit VIA Open Cut	LF	-105	

DEDUCTIVE ALTERNATE 3 (ROCKPORT) ARANSAS COUNTY AIRPORT (RKP) (CONTINUED)					
		SUMMARY OF QUANTITIES			
ITEM NO.	SPEC.	ITEM DESCRIPTION	UNIT	QUANTITY	
				ESTIMATED	AS-CONST.
73	L-110-5.5	Procure and Install 2-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-1,800	
74	L-110-5.6	Procure and Install 2-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-775	
75	L-110-5.7	Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-6,320	
76	L-110-5.8	Procure and Install 4-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-725	
80	L-110-5.12	Procure and Install 10-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-415	
81	L-110-5.13	Procure and Install 10-Way, 2" Sch. 40 PVC Conduit, Concrete Encased VIA Open Cut	LF	-40	
82	L-110-5.14	Procure and Install 10-Way, 2" SDR 11 HDPE Conduit, VIA Directional Drill	LF	-360	
84	L-110-5.16	Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased VIA Open Cut	LF	-75	
85	L-115-5.1	Install New 2 Way JCP incl Sump Drain	EA	-15	
86	L-115-5.2	Install New 4 Way JCP incl Sump Drain	EA	-18	
90	L-125-5.1	Install New L-861T(L) Elevated Taxiway Edge Light with New L867B Base Can in Earth	EA	-91	
91	L-125-5.2	Install New L-861T(L) Elevated Taxiway Edge Light in Existing Base Can	EA	-27	
92	L-125-5.3	Install Salvaged L-861T(L) Elevated Taxiway Edge Light in Existing Base Can	EA	-3	
93	L-125-5.4	Install New L-861T(L) Elevated Taxiway Edge Light with New L867B Base Can in Existing Shoulder Pavement	EA	-9	
95	L-125-5.6	Install New L-861(L) Elevated Runway Edge Light in Existing L867B Base Can	EA	-100	
99	L-125-5.10	Install New L-861E(L) Elevated Runway Threshold Light in Existing Base Can	EA	-40	
101	L-125-5.12	Install New Guidance Sign on New Sign Foundation, 2 Module	EA	-14	
102	L-125-5.13	Install New Guidance Sign on New Sign Foundation, 3 Module	EA	-10	
103	L-125-5.14	Install New Guidance Sign on New Sign Foundation, 4 Module	EA	-3	
104	L-125-5.15	Install New Guidance Sign on Existing Sign Foundation, 1 Module	EA	-16	
105	L-125-5.16	Install New Guidance Sign on Existing Sign Foundation, 2 Module	EA	-1	
108	L-125-5.19	Install New REIL Unit	EA	-1	
110	L-130-5.2	Install New LED 4-Box Papi System incl Flight Check	EA	-4	

DEDUCTIVE ALTERNATE 4 (SMITHVILLE) SMITHVILLE CRAWFORD MUNICIPAL AIRPORT (84R)					
		SUMMARY OF QUANTITIES			
ITEM NO.	SPEC.	ITEM DESCRIPTION	UNIT	QUANTITY	
				ESTIMATED	AS-CONST.
1	C-105-6.5	Mobilization - Smithville	LS	-1	
11	SS-1-5	Temporary Marking, Lighting and Barricades - Smithville	LS	-1	
14	P-152-4.1e	Unclassified Excavation - Smithville	CY	-5	
17	P-152-4.2e	Embankment - Smithville	CY	-100	
26	T-901-5.1a	Seeding - Smithville	AC	-4	
28	D-701-5.1	24 inch Class IV RCP	LF	-55	
29	D-701-5.2	RCP End Section	EA	-2	
30	L-103-5.1	Install New Beacon on New 50' Tip Down Pole, including Foundation	EA	-1	
32	L-105-5.1	Remove No. 8 AWG, L-824C in duct	LF	-550	
37	L-105-5.6	Remove Existing Stake Mounted Elevated Runway Edge Light And Associated Brooks Box	EA	-42	
40	L-105-5.9	Remove Existing Stake Mounted Elevated Threshold End Light And Associated Brooks Box	EA	-16	
45	L-105-5.14	Remove Existing Manhole	EA	-8	
46	L-105-5.15	Remove Existing Pullbox	EA	-3	
49	L-105-5.18	Remove Existing Wind Cone and Associated Foundation	EA	-1	
50	L-105-5.19	Remove Existing Beacon, Pole, and Foundation	EA	-1	
52	L-105-5.21	Remove Existing PAPI-2 Unit	EA	-2	
55	L-105-5.24	Remove Concrete Encased Duct in Earth (Including Cable)	LF	-282	
57	L-107-5.1	Install New L-807(L) LED Wind Cone Including Tip Down Pole	EA	-1	
58	L-107-5.2	Paint Existing Segmented Circle Around Wind Cone	LS	-1	
59	L-108-5.1	No.8 AWG, L-824C 5kV Cable, Installed in Conduit or Duct	LF	-11,600	
60	L-108-5.2	No. 6 AWG Bare Counterpoise Wire, Installed in Conduit Trench, Including Ground Rods	LF	-14,350	
61	L-108-5.3	Electrical Circuit (2) #8, #8G, Installed in Conduit or Duct	LF	-3,500	
63	L-108-5.5	Electrical Circuit (2) #12, #12G, Installed in Conduit or Duct	LF	-1,725	
65	L-109-5.1	Vault Equipment Modifications	LS	-1	
66	L-109-5.2	4kV Constant Current Regulator	EA	-1	
69	L-110-5.1	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit in Earth	LF	-12,750	
72	L-110-5.4	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit VIA Open Cut	LF	-30	
74	L-110-5.6	Procure and Install 2-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-165	
75	L-110-5.7	Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-155	
76	L-110-5.8	Procure and Install 4-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-210	
77	L-110-5.9	Procure and Install 6-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-350	
79	L-110-5.11	Procure and Install 6-Way, 2" SDR 11 HDPE Conduit, VIA Directional Drill	LF	-200	
85	L-115-5.1	Install New 2 Way JCP incl Sump Drain	EA	-5	
86	L-115-5.2	Install New 4 Way JCP incl Sump Drain	EA	-1	
87	L-115-5.3	Install New 6 Way JCP incl Sump Drain	EA	-4	
89	L-115-5.5	Install New L-867D Pull Can in Earth	EA	-9	
94	L-125-5.5	Install New L-861(L) Elevated Runway Edge Light with New L867B Base Can in Earth	EA	-39	
98	L-125-5.9	Install New L-861E(L) Elevated Runway Threshold Light with New L867B Base Can in Earth	EA	-16	
107	L-125-5.18	Install New Isolation Transformer and Connector Kit in Existing Sign/ Fixture	EA	-5	
108	L-125-5.19	Install New REIL Unit	EA	-2	
109	L-130-5.1	Install New LED 2-Box Papi System incl Flight Check	EA	-2	

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TBPE Firm Registration No. 10488

TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

GROUP ALPHA
TXDOT CSJ NO. 4222AVSAE

NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

PROJECT NO. :	20616
DATE OF ISSUE :	08/08/2025
REVIEWED BY :	SLS/CAW
DRAWN BY :	VM/AB
DESIGNED BY :	AM/JDR

SUMMARY OF QUANTITIES

G0.3

		DEDUCTIVE ALTERNATE 5 (TERRELL) TERRELL MUNICIPAL AIRPORT (TRL)			
		SUMMARY OF QUANTITIES			
ITEM NO.	SPEC.	ITEM DESCRIPTION	UNIT	QUANTITY	
				ESTIMATED	AS-CONST.
1	C-105-6.6	Mobilization - Terrell	LS	-1	
12	SS-1-6	Temporary Marking, Lighting and Barricades - Terrell	LS	-1	
15	P-152-4.1f	Unclassified Excavation - Terrell	CF	-25	
18	P-152-4.2f	Embankment - Terrell	CF	-5	
22	T-901-5.1a	Seeding - Terrell	AC	-2	
32	L-105-5.1	Remove No. 8 AWG, L-824C in duct	LF	-2,075	
37	L-105-5.6	Remove Existing Stake Mounted Elevated Runway Edge Light And Associated Brooks Box	EA	-50	
40	L-105-5.9	Remove Existing Stake Mounted Elevated Threshold End Light And Associated Brooks Box	EA	-16	
44	L-105-5.13	Remove Guidance Sign and Foundation	EA	-8	
46	L-105-5.15	Remove Existing Pullbox	EA	-7	
47	L-105-5.16	Remove Existing Duct Marker	EA	-8	
49	L-105-5.18	Remove Existing Wind Cone and Associated Foundation	EA	-1	
53	L-105-5.22	Remove Existing PAPI-4 Unit	EA	-1	
54	L-105-5.23	Remove Existing REIL Unit	EA	-1	
56	L-105-5.25	Remove 600V Circuit in Duct	LF	-4,950	
57	L-107-5.1	Install New L-807(L) LED Wind Cone Including Tip Down Pole	EA	-1	
58	L-107-5.2	Paint Existing Segmented Circle Around Wind Cone	LS	-1	
59	L-108-5.1	No.8 AWG, L-824C 5kV Cable, Installed in Conduit or Duct	LF	-15,400	
60	L-108-5.2	No. 6 AWG Bare Counterpoise Wire, Installed in Conduit Trench, Including Ground Rods	LF	-18,800	
61	L-108-5.3	Electrical Circuit (2) #8, #8G, Installed in Conduit or Duct	LF	-3,750	
62	L-108-5.4	Electrical Circuit (2) #10, #10G, Installed in Conduit or Duct	LF	-2,000	
65	L-109-5.1	Vault Equipment Modifications	LS	-1	
66	L-109-5.2	4kV Constant Current Regulator	EA	-1	
67	L-109-5.3	Install New Vault Building and Equipment	LS	-1	
69	L-110-5.1	Procure and Install 1-Way, 2" Sch. 40 PVC Conduit in Earth	LF	-14,150	
73	L-110-5.5	Procure and Install 2-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-2,200	
74	L-110-5.6	Procure and Install 2-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-75	
75	L-110-5.7	Procure and Install 4-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-190	
76	L-110-5.8	Procure and Install 4-Way, 2" SDR 11 HDPE Conduit, Installed VIA Directional Drill	LF	-110	
77	L-110-5.9	Procure and Install 6-Way, 2" Sch. 40 PVC Conduit, Concrete Encased in Earth	LF	-750	
79	L-110-5.11	Procure and Install 6-Way, 2" SDR 11 HDPE Conduit, VIA Directional Drill	LF	-65	
83	L-110-5.15	Procure and Install Utility Company Service entrance Infrastructure	LS	-1	
85	L-115-5.1	Install New 2 Way JCP incl Sump Drain	EA	-13	
86	L-115-5.2	Install New 4 Way JCP incl Sump Drain	EA	-1	
87	L-115-5.3	Install New 6 Way JCP incl Sump Drain	EA	-3	
89	L-115-5.5	Install New L-867D Pull Can in Earth	EA	-3	
94	L-125-5.5	Install New L-861(L) Elevated Runway Edge Light with New L867B Base Can in Earth	EA	-50	
98	L-125-5.9	Install New L-861E(L) Elevated Runway Threshold Light with New L867B Base Can in Earth	EA	-16	
100	L-125-5.11	Install New Guidance Sign on New Sign Foundation, 1 Module	EA	-8	
107	L-125-5.18	Install New Isolation Transformer and Connector Kit in Existing Sign/ Fixture	EA	-5	
108	L-125-5.19	Install New REIL Unit	EA	-1	
110	L-130-5.2	Install New LED 4-Box Papi System incl Flight Check	EA	-1	
	ALLOW	Utility Allowance NTE $100,000.00	ALLOW	-1	

1

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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

GROUP ALPHA
TXDOT CSJ NO. 4222AVSAE

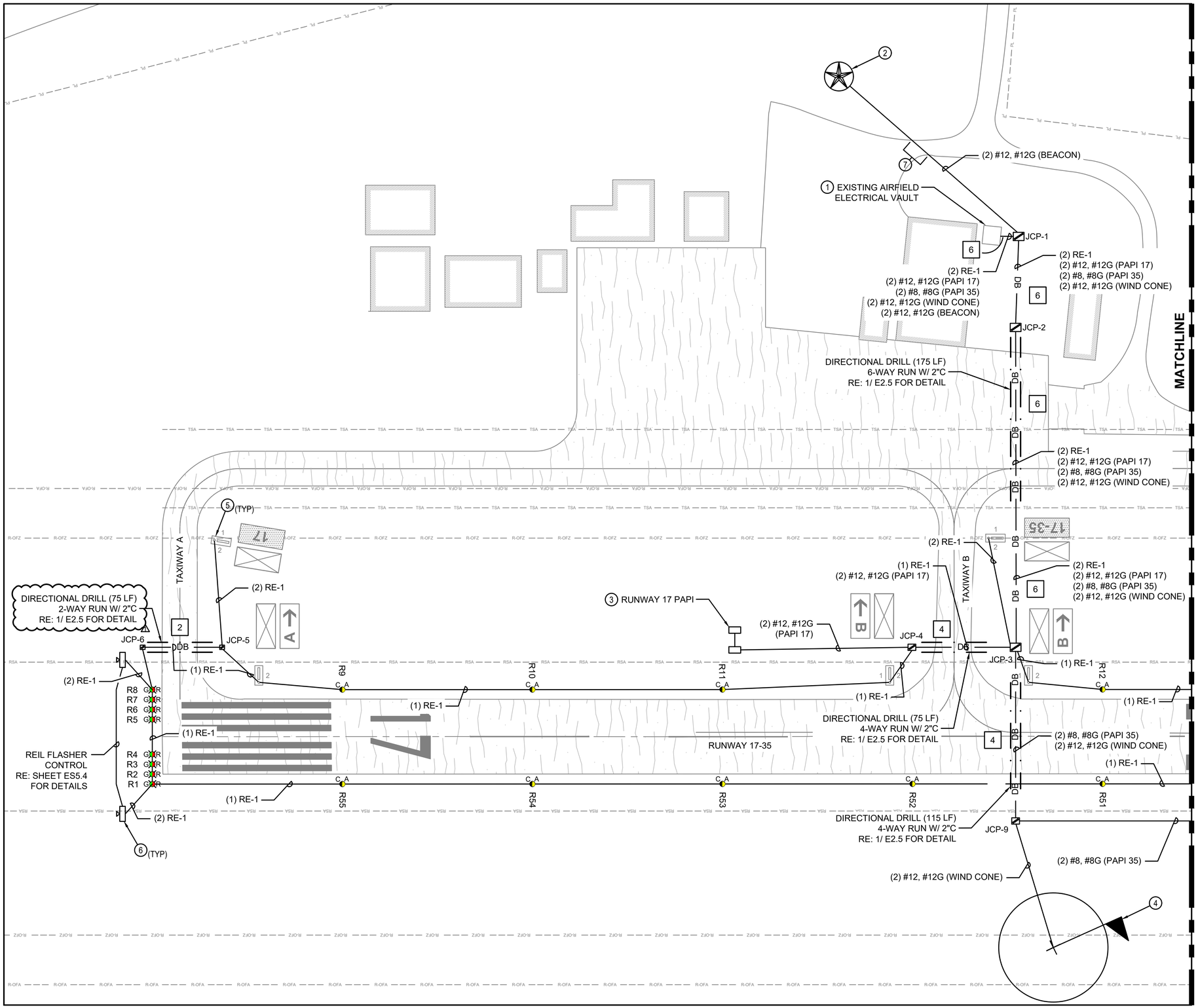
NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

STATE OF TEXAS
CHRIS A. WHITFIELD
91216
LICENSED
PROFESSIONAL ENGINEER
09/15/2025

PROJECT NO. :	20616
DATE OF ISSUE :	08/08/2025
REVIEWED BY :	SLS/CAW
DRAWN BY :	VM/AB
DESIGNED BY :	AM/JDR

SUMMARY OF QUANTITIES

G0.4

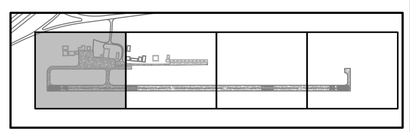


GENERAL NOTES

1. ALL ITEMS SHOWN IN HEAVY LINEWEIGHT ARE NEW OR MODIFIED, ALL ITEMS SHADED ARE EXISTING TO REMAIN. REFER TO SHEET E1.1 FOR ELECTRICAL SYMBOL LEGEND.
2. THE CONTRACTOR SHALL PROVIDE LOCK-OUT PROCEDURES PER NEC TO INSURE SAFETY OF PERSONNEL. REFER TO SECTION L-104
3. REFER TO ES1 SERIES FOR EXISTING AIRFIELD ELECTRICAL PLANS.
4. REFER TO ES6 SERIES FOR AIRFIELD LIGHTING AND SIGNAGE SCHEDULES.
5. KEYED NOTES ARE TYPICAL FOR ALL SHEETS OF THIS SERIES (ES2 SERIES). ALL LISTED KEYED NOTES FOR A PARTICULAR SHEET MAY NOT APPLY AND THEREFORE THE KEYED NOTE IDENTIFIER WILL NOT BE SHOWN ON THE PLAN PORTION OF THE SHEET.
6. EXISTING AIRFIELD CIRCUITS AND DUCT CROSSINGS HAVE BEEN TAKEN FROM AS-BUILT DOCUMENTATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CIRCUIT ROUTES PRIOR TO WORK.

KEYED NOTES

1. AIRFIELD LIGHTING VAULT AND EQUIPMENT TO BE MODIFIED. REFER TO ES4 SERIES FOR DETAILS.
2. INSTALL NEW LED BEACON ON NEW TIP DOWN POLE INCLUDING FOUNDATION. REFER TO SHEET ES5.4 FOR DETAIL.
3. INSTALL NEW L-881(L) PAPI. REFER TO ES5 SERIES FOR DETAILS.
4. INSTALL NEW LED WIND CONE ON NEW TIP DOWN POLE INCLUDING FOUNDATIONS. REPAINT EXISTING SEGMENTED CIRCLE. REFER TO SHEET E2.6 FOR DETAILS.
5. INSTALL NEW ISOLATION TRANSFORMER IN EXISTING SIGN.
6. INSTALL NEW L-849E(L) REIL. REFER TO SHEET ES5.5 FOR DETAIL. SEE NOTE 7 IN GENERAL NOTES.
7. OPEN CUT EXISTING PAVEMENT TO INSTALL PROPOSED CONDUIT. RE: 2/ E2.7 FOR DETAIL.



NORTH

0 25 50 100
HORIZ SCALE IN FEET

PRINT IN COLOR

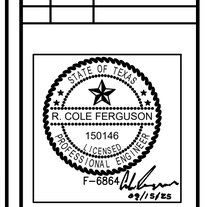
Ferguson Consulting
Aviation Specialists for Electrical, Telecommunications and Security Systems
Ferguson Consulting Inc.
10200 Grogans Mill Rd. Ste. #420
The Woodlands, TX 77380
(281) 252-9232 Firm No. 6864

TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

SMITHVILLE CRAWFORD MUNI (84R)

765 N W LOOP 230 SMITHVILLE, TEXAS

NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1



PROJECT NO. :	23062
DATE OF ISSUE :	03/07/2025
REVIEWED BY :	RCF
DRAWN BY :	ALC
DESIGNED BY :	RCF

AIRFIELD LIGHTING LAYOUT PLAN

ES2.1

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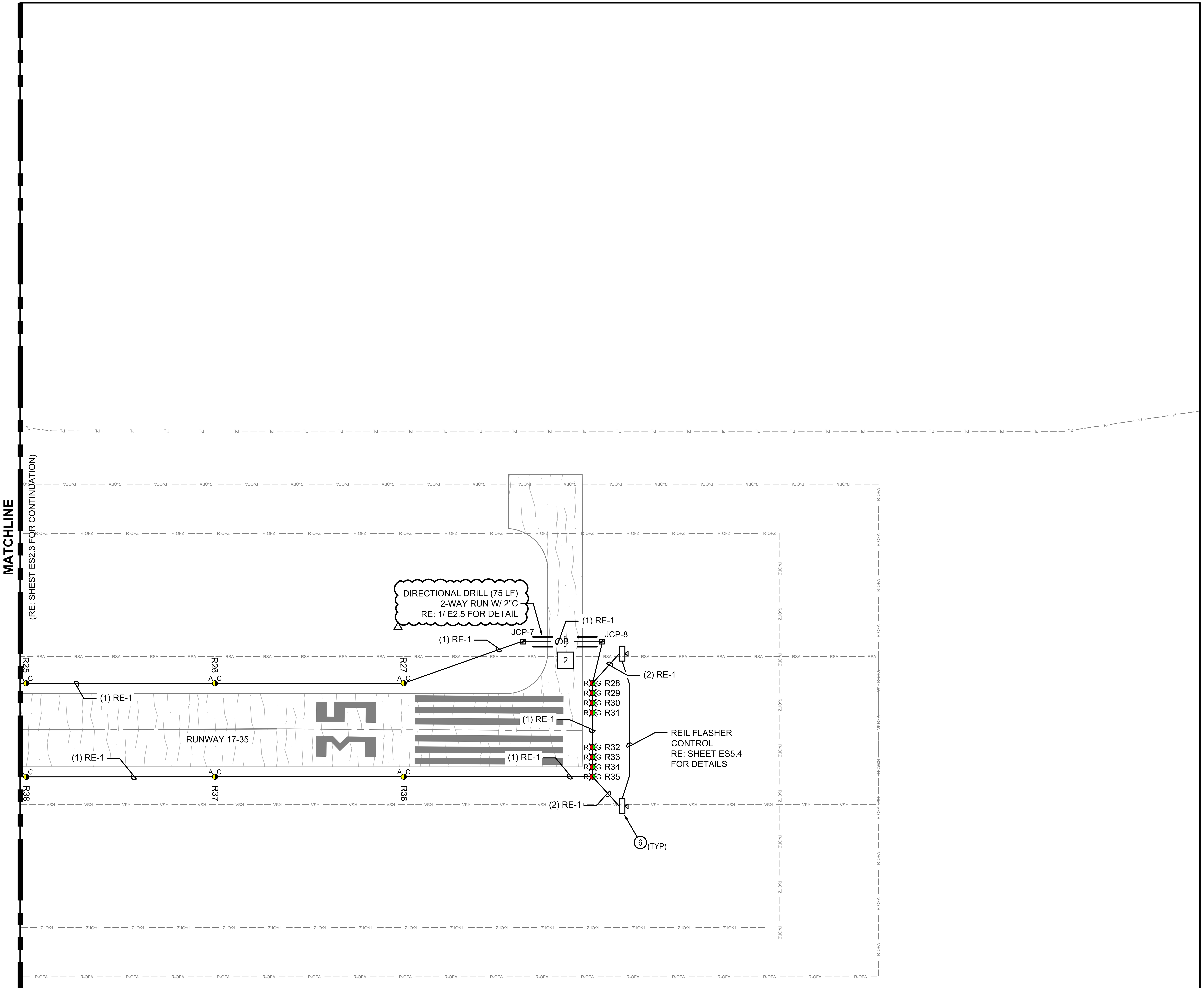
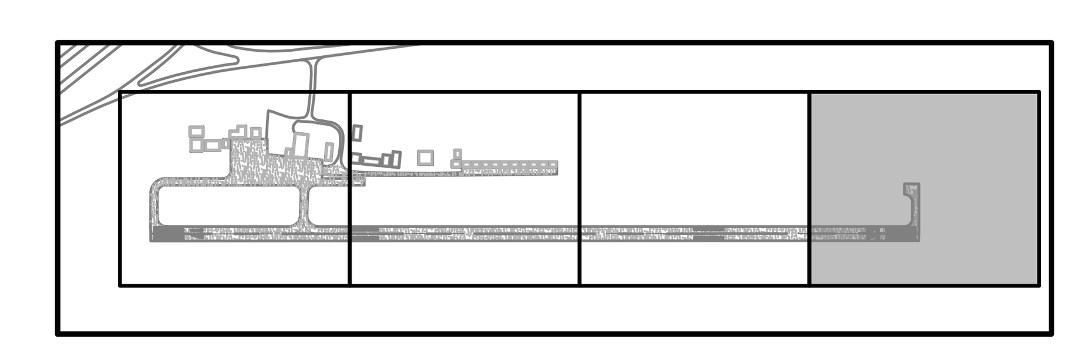


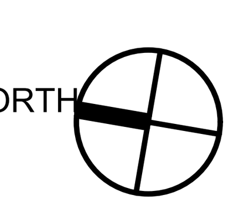
GENERAL NOTES

1. ALL ITEMS SHOWN IN HEAVY LINEWEIGHT ARE NEW OR MODIFIED, ALL ITEMS SHADED ARE EXISTING TO REMAIN. REFER TO SHEET E1.1 FOR ELECTRICAL SYMBOL LEGEND.
2. THE CONTRACTOR SHALL PROVIDE LOCK-OUT PROCEDURES PER NEC TO INSURE SAFETY OF PERSONNEL. REFER TO SECTION L-104
3. REFER TO ES1 SERIES FOR EXISTING AIRFIELD ELECTRICAL PLANS.
4. REFER TO ES6 SERIES FOR AIRFIELD LIGHTING AND SIGNAGE SCHEDULES.
5. KEYED NOTES ARE TYPICAL FOR ALL SHEETS OF THIS SERIES (ES2 SERIES). ALL LISTED KEYED NOTES FOR A PARTICULAR SHEET MAY NOT APPLY AND THEREFORE THE KEYED NOTE IDENTIFIER WILL NOT BE SHOWN ON THE PLAN PORTION OF THE SHEET.
6. EXISTING AIRFIELD CIRCUITS AND DUCT CROSSINGS HAVE BEEN TAKEN FROM AS-BUILT DOCUMENTATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CIRCUIT ROUTES PRIOR TO WORK.

KEYED NOTES

1. AIRFIELD LIGHTING VAULT AND EQUIPMENT TO BE MODIFIED. REFER TO ES4 SERIES FOR DETAILS.
2. INSTALL NEW LED BEACON ON NEW TIP DOWN POLE INCLUDING FOUNDATION. REFER TO SHEET ES5.4 FOR DETAIL.
3. INSTALL NEW L-881(L) PAPI. REFER TO ES5 SERIES FOR DETAILS.
4. INSTALL NEW LED WIND CONE ON NEW TIP DOWN POLE INCLUDING FOUNDATIONS. REPAINT EXISTING SEGMENTED CIRCLE. REFER TO SHEET E2.6 FOR DETAILS.
5. INSTALL NEW ISOLATION TRANSFORMER IN EXISTING SIGN.
6. INSTALL NEW L-849E(L) REIL. REFER TO SHEET ES5.5 FOR DETAIL. SEE NOTE 7 IN GENERAL NOTES.
7. OPEN CUT EXISTING PAVEMENT TO INSTALL PROPOSED CONDUIT. RE: 2/ E2.7 FOR DETAIL.





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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

SMITHVILLE CRAWFORD MUNI (84R)

765 N W LOOP 230 SMITHVILLE, TEXAS

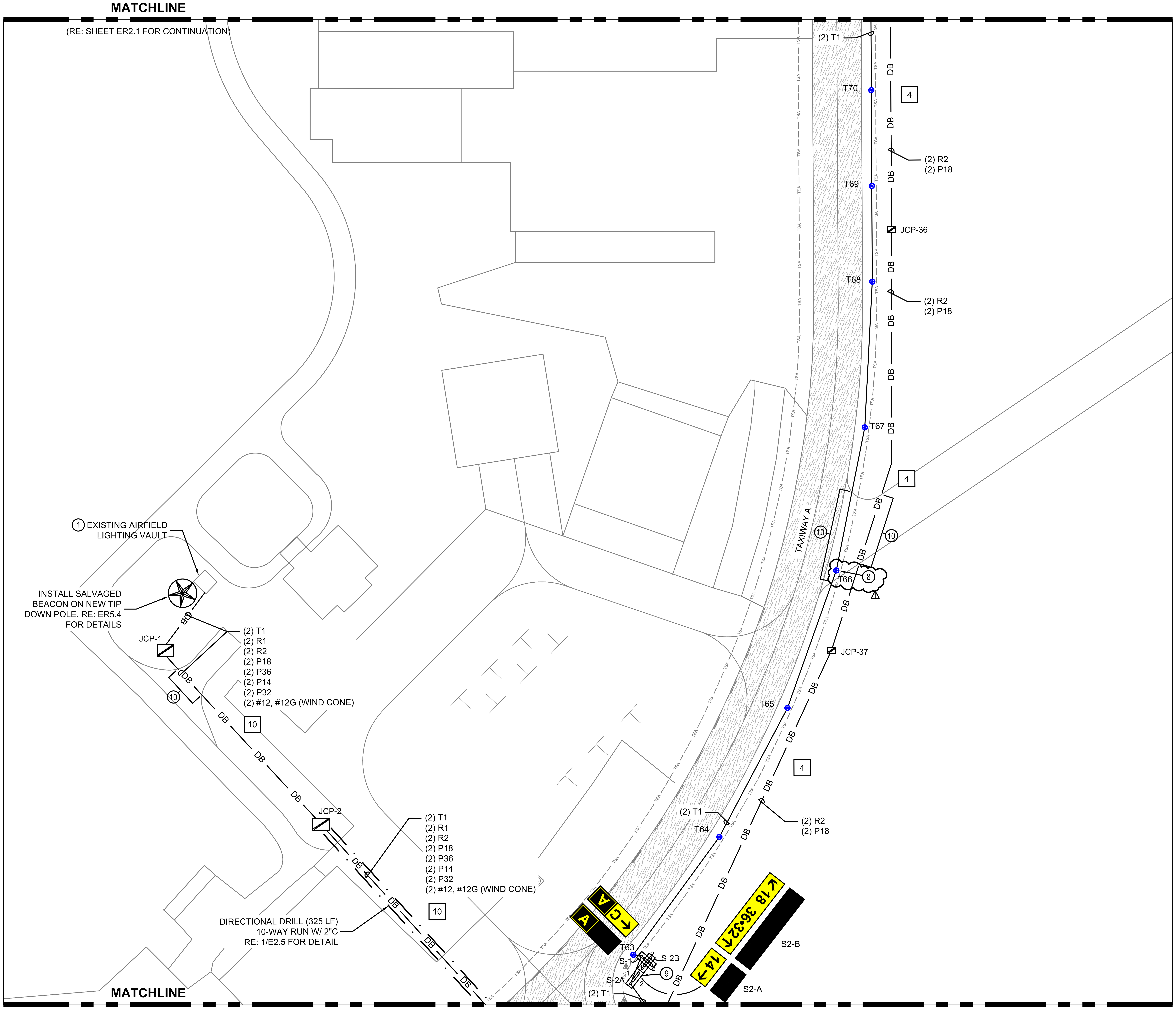
NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

STATE OF TEXAS
R. COLE FERGUSON
150146
LICENSED PROFESSIONAL ENGINEER
F-6864
09/15/25

PROJECT NO. :	23062
DATE OF ISSUE :	03/07/2025
REVIEWED BY :	RCF
DRAWN BY :	ALC
DESIGNED BY :	RCF

AIRFIELD LIGHTING LAYOUT PLAN

ES2.4

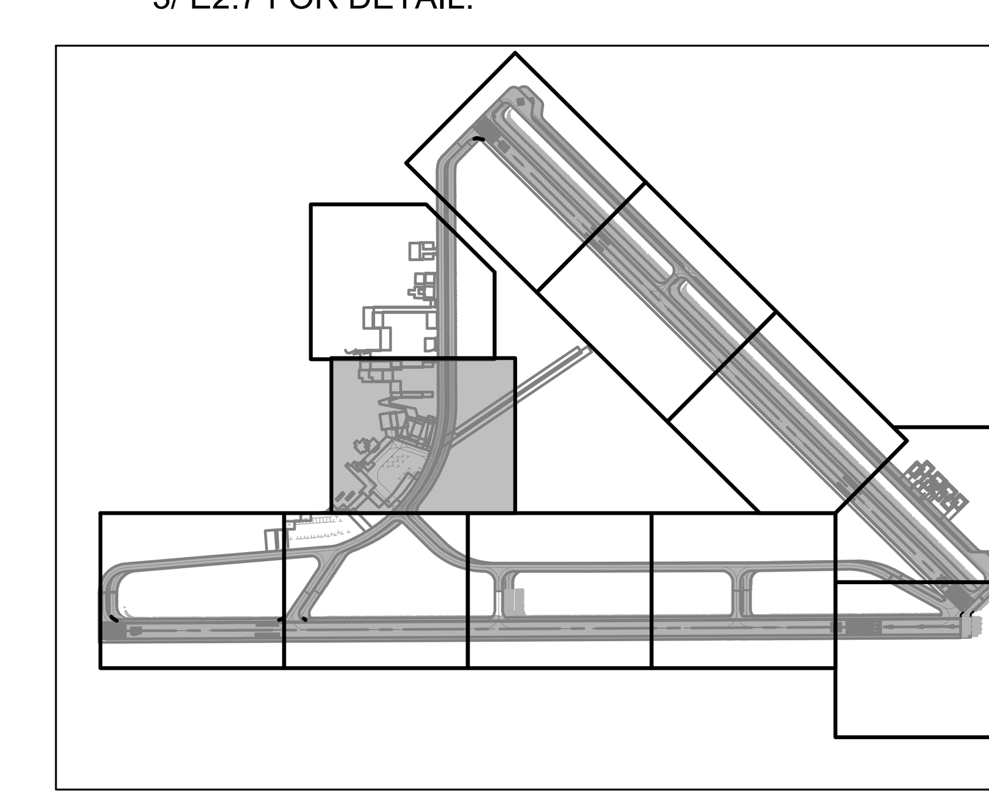


GENERAL NOTES

1. ALL ITEMS SHOWN IN HEAVY LINEWEIGHT ARE NEW OR MODIFIED, ALL ITEMS SHADED ARE EXISTING TO REMAIN. REFER TO SHEET E1.1 FOR ELECTRICAL SYMBOL LEGEND.
2. THE CONTRACTOR SHALL PROVIDE LOCK-OUT PROCEDURES PER NEC TO INSURE SAFETY OF PERSONNEL. REFER TO SECTION L-104.
3. REFER TO ER1 SERIES FOR EXISTING AIRFIELD ELECTRICAL PLANS.
4. REFER TO ER6 SERIES FOR AIRFIELD LIGHTING AND SIGNAGE SCHEDULES.
5. KEYED NOTES ARE TYPICAL FOR ALL SHEETS OF THIS SERIES (ER2 SERIES). ALL LISTED KEYED NOTES FOR A PARTICULAR SHEET MAY NOT APPLY AND THEREFORE THE KEYED NOTE IDENTIFIER WILL NOT BE SHOWN ON THE PLAN PORTION OF THE SHEET.
6. EXISTING AIRFIELD CIRCUITS AND DUCT CROSSINGS HAVE BEEN TAKEN FROM AS-BUILT DOCUMENTATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CIRCUIT ROUTES PRIOR TO WORK.

KEYED NOTES

1. AIRFIELD LIGHTING VAULT AND EQUIPMENT TO BE MODIFIED. REFER TO ER4 SERIES FOR DETAILS.
2. LED WIND CONE TO REMAIN. CONDUCTORS TO BE REPLACED BACK TO AIRFIELD LIGHTING VAULT. SEGMENTED CIRCLE TO BE RE-PAINTED. RE: 3/ E2.6 FOR DETAIL.
3. INSTALL NEW L-880(L) PAPI. REFER TO ER5 SERIES FOR DETAILS.
4. INSTALL NEW LIGHT FIXTURE WITH A NEW ISOLATION TRANSFORMER AND ALL ASSOCIATED EQUIPMENT ON EXISTING BASE CAN. REFER TO DETAILS AND SCHEDULES FOR EQUIPMENT SPECIFICS.
5. INSTALL SALVAGED LIGHT FIXTURE WITH A NEW ISOLATION TRANSFORMER AND ALL ASSOCIATED EQUIPMENT ON EXISTING BASE CAN. REFER TO DETAILS AND SCHEDULES FOR EQUIPMENT SPECIFICS.
6. INSTALL NEW LED AIRFIELD GUIDANCE SIGN ON EXISTING FOUNDATION.
7. INSTALL NEW L-849E(L) REIL. REFER TO SHEET ER5.5 FOR DETAILS.
8. INSTALL NEW LIGHT FIXTURE ON NEW L-867B BASE CAN IN EXISTING PAVEMENT. REFER TO SHEET ER5.6 FOR DETAILS.
9. INSTALL TWO SEPARATE SIGNS ON ONE FOUNDATION TO COMPLETE THE LEGEND. SIGN "A" WILL BE THE SIGN CLOSEST TO THE EDGE OF PAVEMENT AND SIGN "B" WILL BE SET BEHIND IT. RE: 2/ E2.2 FOR DETAIL.
10. INSTALL CONDUIT OR DUCT BANK VIA OPEN CUT. RE: 3/ E2.7 FOR DETAIL.



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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

ARANSAS COUNTY AIRPORT
421 JOHN D WENDELL RD, ROCKPORT, TX 78382

NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

STATE OF TEXAS
R. COLE FERGUSON
150146
LICENSED PROFESSIONAL ENGINEER
F-6864

PROJECT NO.:	23062
DATE OF ISSUE:	03/07/25
REVIEWED BY:	RCF
DRAWN BY:	ALC
DESIGNED BY:	RCF

AIRFIELD ELECTRICAL LAYOUT PLAN

ER2.2

ROCKPORT COUNTY AIRPORT - EDGE LIGHT FIXTURES (R2)

FIXTURE NUMBER	FAA TYPE	FAA BASE	LIGHT ORIENTATION	COLOR	NORTHING	EASTING	REGULATOR ID	CIRCUIT NAME	KEYNOTES
R2-26	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13219287.2924	2600380.6636	R2	R2	3
R2-27	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13219093.1046	2600348.1133	R2	R2	3
R2-28	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13218899.5054	2600315.5763	R2	R2	3
R2-29	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13218706.8281	2600283.4709	R2	R2	3
R2-30	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13218513.0360	2600251.2288	R2	R2	3
R2-31	L-861E(L)	L-867	BIDIRECTIONAL	GREEN-RED	13218309.6526	2600217.4148	R2	R2	3
R2-32	L-861E(L)	L-867	BIDIRECTIONAL	GREEN-RED	13218311.3212	2600207.7584	R2	R2	3
R2-33	L-861E(L)	L-867	BIDIRECTIONAL	GREEN-RED	13218313.0239	2600197.9045	R2	R2	3
R2-34	L-861E(L)	L-867	BIDIRECTIONAL	GREEN-RED	13218314.7267	2600188.0505	R2	R2	3
R2-35	L-861E(L)	L-867	BIDIRECTIONAL	GREEN-RED	13218324.5516	2600127.9569	R2	R2	3
R2-36	L-861E(L)	L-867	BIDIRECTIONAL	GREEN-RED	13218326.2202	2600118.3005	R2	R2	3
R2-37	L-861E(L)	L-867	BIDIRECTIONAL	GREEN-RED	13218327.9229	2600108.4466	R2	R2	3
R2-38	L-861E(L)	L-867	BIDIRECTIONAL	GREEN-RED	13218329.6257	2600098.5926	R2	R2	3
R2-39	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13218533.0229	2600132.9059	R2	R2	3
R2-40	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13218726.3655	2600165.0720	R2	R2	3
R2-41	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13218919.6997	2600197.2877	R2	R2	3
R2-42	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13219113.0030	2600229.6897	R2	R2	3
R2-43	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13219306.2901	2600262.1874	R2	R2	3
R2-44	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13219499.6133	2600294.4693	R2	R2	3
R2-45	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13219692.8960	2600326.9974	R2	R2	3
R2-46	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13219886.2216	2600359.2616	R2	R2	3
R2-47	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13220079.5257	2600391.6577	R2	R2	3
R2-48	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-AMBER	13220272.8299	2600424.0539	R2	R2	3
R2-49	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-CLEAR	13220466.1228	2600456.5166	R2	R2	3
R2-50	L-861(L)	L-867	BIDIRECTIONAL	CLEAR-CLEAR	13220659.4270	2600488.9127	R2	R2	3
R2-51	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13220852.7311	2600521.3089	R2	R2	3
R2-52	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13221046.0352	2600553.7050	R2	R2	3
R2-53	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13221239.3505	2600586.0345	R2	R2	3
R2-54	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13221432.6546	2600618.4307	R2	R2	3
R2-55	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13221625.9691	2600650.7648	R2	R2	3
R2-56	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13221819.2156	2600683.0186	R2	R2	3
R2-57	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13222012.5872	2600715.4983	R2	R2	3
R2-58	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13222205.8982	2600747.8534	R2	R2	3
R2-59	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13222399.2092	2600780.2085	R2	R2	3
R2-60	L-861(L)	L-867	BIDIRECTIONAL	AMBER-CLEAR	13222592.5062	2600812.6470	R2	R2	3

GENERAL NOTES - LIGHTING

1. REFER TO ER2 SERIES FOR PROPOSED LIGHTING PLANS, THE ER3 SERIES FOR DIMENSIONS PLANS AND ER5 SERIES FOR DETAILS.
2. FIXTURES NORTHINGS AND EASTINGS HAVE BEEN PROVIDED FOR CONTRACTORS TO USE IN LOCATING NEW BASE CANS. HOWEVER THE CONTRACTOR MUST INSTALL ALL FIXTURES FOLLOWING THE DETAILS, WHERE NORTHINGS AND EASTINGS CONFLICT WITH DETAILS, THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR GUIDANCE. TYPICALLY, THE DETAILS SUPERSEDE NORTHINGS AND EASTINGS INFORMATION. IF MARKINGS ARE MODIFIED, THE NORTHINGS AND EASTINGS MAY NO LONGER BE ACCURATE.

KEYED NOTES - LIGHTING

(1) PROCURE AND INSTALL NEW ELEVATED FIXTURE (TYPE AS NOTED) ON NEW BASE CAN IN TURF WITH NEW ISOLATION TRANSFORMER, CONNECTOR KIT, BOLTING HARDWARE, ETC FOR A COMPLETE ACCEPTED SYSTEM.

(2) PROCURE AND INSTALL NEW ELEVATED FIXTURE (TYPE AS NOTED) ON NEW BASE CAN IN EXISTING PAVEMENT WITH NEW ISOLATION TRANSFORMER, CONNECTOR KIT, BOLTING HARDWARE, ETC FOR A COMPLETE ACCEPTED SYSTEM.

(3) PROCURE AND INSTALL NEW ELEVATED FIXTURE (TYPE AS NOTED) ON EXISTING BASE CAN WITH NEW ISOLATION TRANSFORMER, CONNECTOR KIT, BOLTING HARDWARE, ETC FOR A COMPLETE ACCEPTED SYSTEM.

LIGHT FIXTURE ELECTRICAL INFORMATION:

FIXTURE TYPE	FAA TYPE	LAMP WATTAGE	ISOLATION TRANSFORMER
RUNWAY ELEVATED LED EDGE LIGHT	L-861(L)	12VA	L-830-16 (10/15W)
RUNWAY ELEVATED LED THRESHOLD END LIGHT	L-861E(L)	12VA	L-830-16 (10/15W)
TAXIWAY ELEVATED LED EDGE LIGHT	L-861T(L)	12VA	L-830-16 (10/15W)

ARANSAS COUNTY AIRPORT - TAXIWAY EDGE LIGHT FIXTURES

FIXTURE NUMBER	FAA TYPE	FAA BASE	LIGHT ORIENTATION	COLOR	NORTHING	EASTING	REGULATOR ID	CIRCUIT NAME	KEYNOTES
T1	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222284.2733	2597818.2853	T1	T1	1
T2	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222416.0000	2597707.6790	T1	T1	1
T3	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222547.7266	2597597.0727	T1	T1	1
T4	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222679.4504	2597486.4569	T1	T1	1
T5	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222811.1707	2597375.8431	T1	T1	1
T6	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222943.0701	2597264.9512	T1	T1	1
T7	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222981.1406	2597232.5378	T1	T1	1
T8	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13223029.3481	2597176.6165	T1	T1	1
T9	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13223053.3098	2597106.7811	T1	T1	1
T10	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13223049.5907	2597033.0429	T1	T1	1
T11	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13223018.7239	2596965.9729	T1	T1	1
T12	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222987.4411	2596922.1974	T1	T1	1
T13	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222956.1582	2596878.4220	T1	T1	1
T14	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222935.4969	2596849.5097	T1	T1	1
T15	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222914.8356	2596820.5975	T1	T1	1
T16	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222809.7242	2596886.6285	T1	T1	2
T17	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222843.2638	2596884.6675	T1	T1	2
T18	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222874.8753	2596896.0455	T1	T1	1
T19	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222899.4716	2596918.9314	T1	T1	1
T20	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222930.4626	2596962.4075	T1	T1	1
T21	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222961.6891	2597006.6545	T1	T1	1
T22	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222981.4568	2597048.6796	T1	T1	1
T23	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222984.3860	2597095.0294	T1	T1	1
T24	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222970.0663	2597139.2089	T1	T1	1
T25	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222940.5042	2597175.0273	T1	T1	1
T26	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222897.8126	2597211.5494	T1	T1	1
T27	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222766.1548	2597322.2375	T1	T1	1
T28	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222634.4344	2597432.8513	T1	T1	1
T29	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222502.7136	2597543.4645	T1	T1	1
T30	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222370.9870	2597654.0708	T1	T1	1
T31	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222239.2604	2597764.6771	T1	T1	1
T32	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222164.8043	2597827.1306	T1	T1	1
T33	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222090.3322	2597889.5649	T1	T1	1
T34	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13222015.8601	2597951.9992	T1	T1	1
T35	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221984.7581	2597962.1540	T1	T1	1
T36	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221954.9982	2597948.5599	T1	T1	1
T37	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221942.0785	2597918.4085	T1	T1	1
T38	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221938.2539	2597772.3651	T1	T1	1
T39	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221935.1964	2597626.3040	T1	T1	1
T40	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221934.2567	2597579.7206	T1	T1	1
T41	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221933.1788	2597533.1433	T1	T1	1
T42	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221938.8553	2597515.3939	T1	T1	2
T43	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221949.3169	2597499.9724	T1	T1	2
T44	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221808.9715	2597600.0627	T1	T1	2
T45	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221842.7304	2597601.1869	T1	T1	1
T46	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221863.5971	2597627.7484	T1	T1	1
T47	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221868.5100	2597774.1916	T1	T1	1
T48	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221872.3346	2597920.2348	T1	T1	1
T49	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221873.4704	2597963.6040	T1	T1	1
T50	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221874.6061	2598006.9733	T1	T1	1
T51	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221875.7419	2598050.3425	T1	T1	1
T52	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221868.4758	2598075.7370	T1	T1	1
T53	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221857.9394	2598099.9720	T1	T1	1
T54	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221817.9623	2598162.5281	T1	T1	1
T55	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221782.6238	2598227.8169	T1	T1	1
T56	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221752.1098	2598295.4951	T1	T1	1
T57	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221726.5807	2598365.2066	T1	T1	1
T58	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221706.1708	2598436.5850	T1	T1	1
T63	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221679.5112	2598595.8484	T1	T1	1
T64	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221677.0916	2598745.2155	T1	T1	1
T65	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221696.2479	2598893.3688	T1	T1	1
T66	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221736.5791	2599037.2082	T1	T1	2
T67	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221797.2413	2599173.7237	T1	T1	1
T68	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221876.9651	2599300.0585	T1	T1	1
T69	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221933.8972	2599379.8853	T1	T1	1
T70	L-861T(L)	L-867	OMNIDIRECTIONAL	BLUE	13221990.8162	2599459.7214	T1	T1	1

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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

ARANSAS COUNTY AIRPORT
421 JOHN D WENDELL RD, ROCKPORT, TX 78382

NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

STATE OF TEXAS
R. COLE FERGUSON
150146
LICENSED
PROFESSIONAL ENGINEER
F-6864
09/15/25

PROJECT NO. :	23062
DATE OF ISSUE :	03/07/25
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AIRFIELD LIGHTING SCHEDULES

ER6.2

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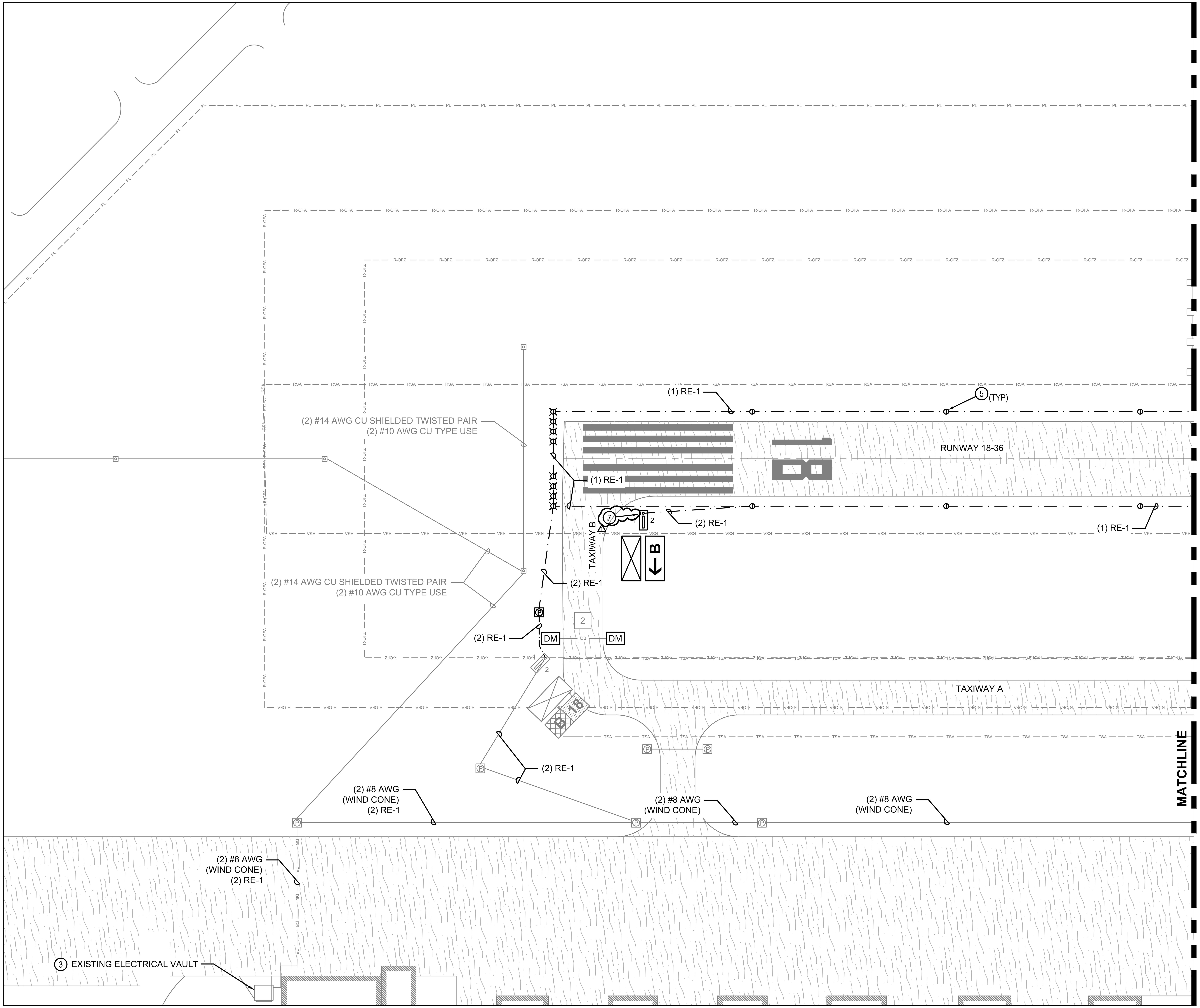

GENERAL NOTES

1. ALL ITEMS SHOWN IN HEAVY LINEWEIGHT ARE NEW OR MODIFIED, ALL ITEMS SHADED ARE EXISTING TO REMAIN. REFER TO SHEET E1.1 FOR ELECTRICAL SYMBOL LEGEND.
2. REFER TO ET2 SERIES FOR PROPOSED AIRFIELD ELECTRICAL PLANS.
3. KEYED NOTES ARE TYPICAL FOR ALL SHEETS OF THIS SERIES (ET1 SERIES). ALL LISTED KEYED NOTES FOR A PARTICULAR SHEET MAY NOT APPLY AND THEREFORE THE KEYED NOTE IDENTIFIER WILL NOT BE SHOWN ON THE PLAN PORTION OF THE SHEET.
4. THE CONTRACTOR SHALL PROVIDE LOCK-OUT PROCEDURES PER NEC TO INSURE SAFETY OF PERSONNEL. REFER TO SECTION L-104.
5. EXISTING AIRFIELD CIRCUITS AND DUCT CROSSINGS HAVE BEEN TAKEN FROM AS-BUILT DOCUMENTATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CIRCUIT ROUTES PRIOR TO WORK.
6. DIRECT BURIED CABLES NOTED MARKED FOR DEMOLITION ARE TO BE ABANDONED IN PLACE. ONLY REMOVE ABANDONED CIRCUITS WHERE EXPOSED BY PROPOSED TRENCHING OPERATIONS. REMOVAL IN THIS INSTANCE WILL BE INCIDENTAL TO THE LINE ITEM ASSOCIATED WITH THE TRENCHING OPERATIONS.

KEYED NOTES

1. CONTRACTOR TO DEMOLISH EXISTING WIND CONE, POLE, AND REMOVE CONDUCTORS BACK TO SOURCE. SEGMENTED CIRCLE TO REMAIN.
2. CONTRACTOR TO DEMOLISH EXISTING PAPI LIGHT UNITS ALONG WITH ALL ASSOCIATED EQUIPMENT AND FOUNDATIONS. REMOVE OR ABANDONED EXISTING CONDUITS AND CONDUCTORS BACK TO EXISTING EQUIPMENT RACK.
3. DEMOLISH EXISTING CCRS, S-1 CUTOUTS, PILOT CONTROLLED RADIO, AND 5KV CONDUCTORS THAT SUPPORT EXISTING RUNWAY EDGE LIGHTING SYSTEM. ALL EXISTING 600V EQUIPMENT AND CONDUCTORS TO REMAIN.
4. EXISTING ELECTRICAL EQUIPMENT RACK TO BE MODIFIED. REMOVE ALL EQUIPMENT ASSOCIATED WITH RWY 36 PAPI AND REILS.
5. CONTRACTOR TO DEMOLISH EXISTING STAKE MOUNTED ELEVATED LIGHT FIXTURE, ASSOCIATED BROOKS BOX, AND ALL OTHER ASSOCIATED EQUIPMENT.
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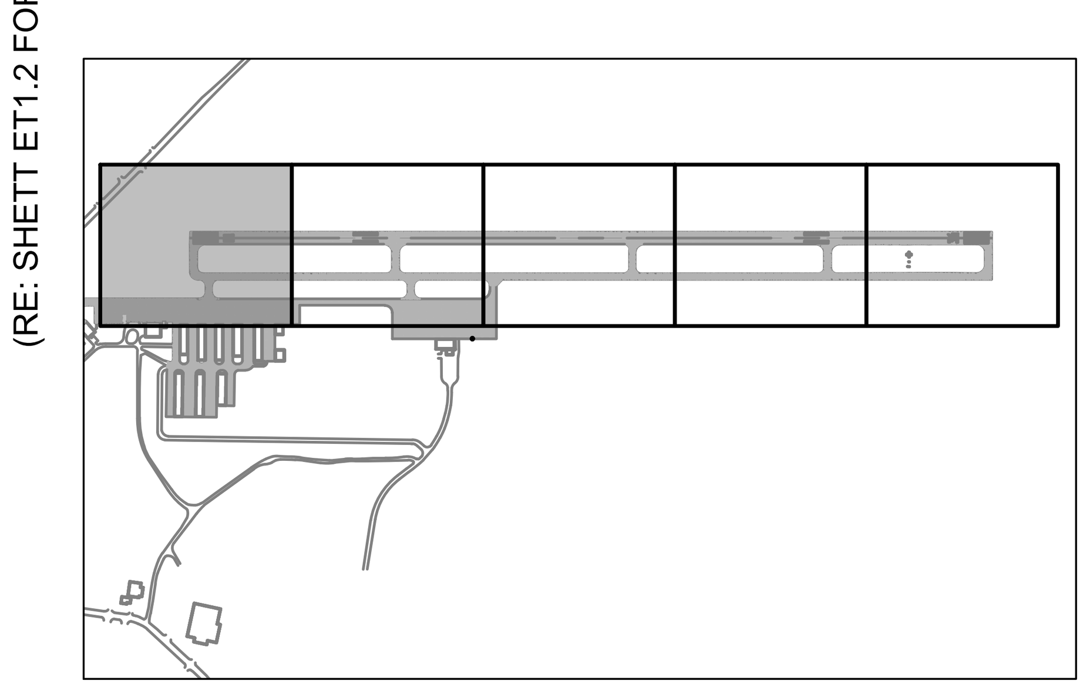

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(281) 252-9232 Firm No. 6864

TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

TERRELL MUNICIPAL AIRPORT
400 BRITISH FLYING SCHOOL BLVD, TERRELL, TX 75160

NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

STATE OF TEXAS
R. COLE FERGUSON
150146
LICENSED PROFESSIONAL ENGINEER
F-6864
09/15/25

PROJECT NO.:	23062
DATE OF ISSUE:	03/07/2025
REVIEWED BY:	RCF
DRAWN BY:	ALC
DESIGNED BY:	RCF

AIRFIELD LIGHTING DEMOLITION PLAN

ET1.1

FILE PATH: C:\pw_working\lochner-pw-01\d0184196
FILE NAME: 26416 TRL ET1.1.dwg
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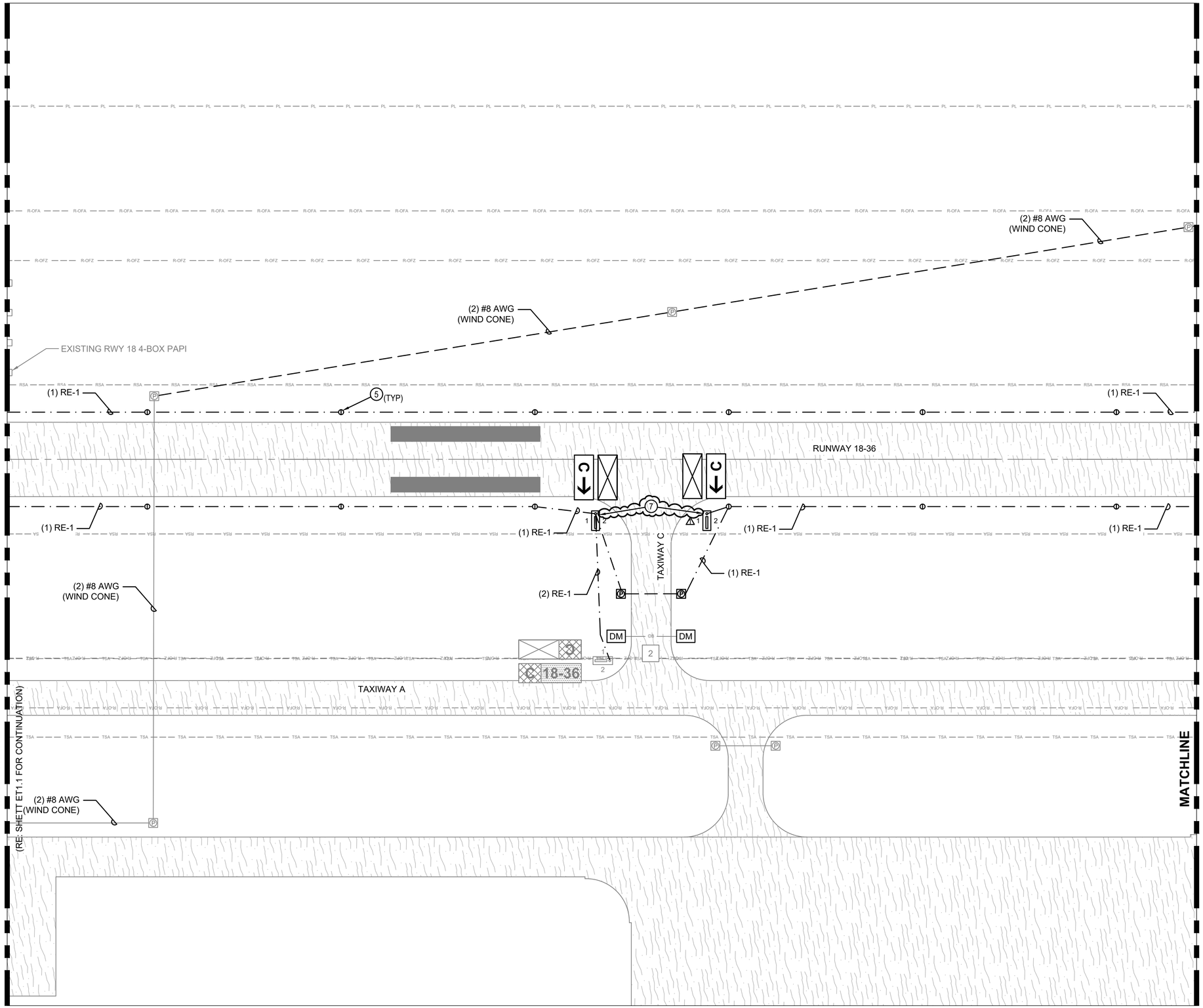

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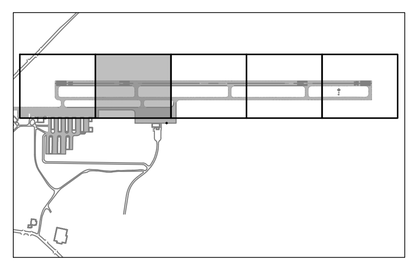

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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

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R. COLE FERGUSON
150146
LICENSED
PROFESSIONAL ENGINEER
F-6864
9/15/25

PROJECT NO. :	23062
DATE OF ISSUE :	03/07/2025
REVIEWED BY :	RCF
DRAWN BY :	ALC
DESIGNED BY :	RCF

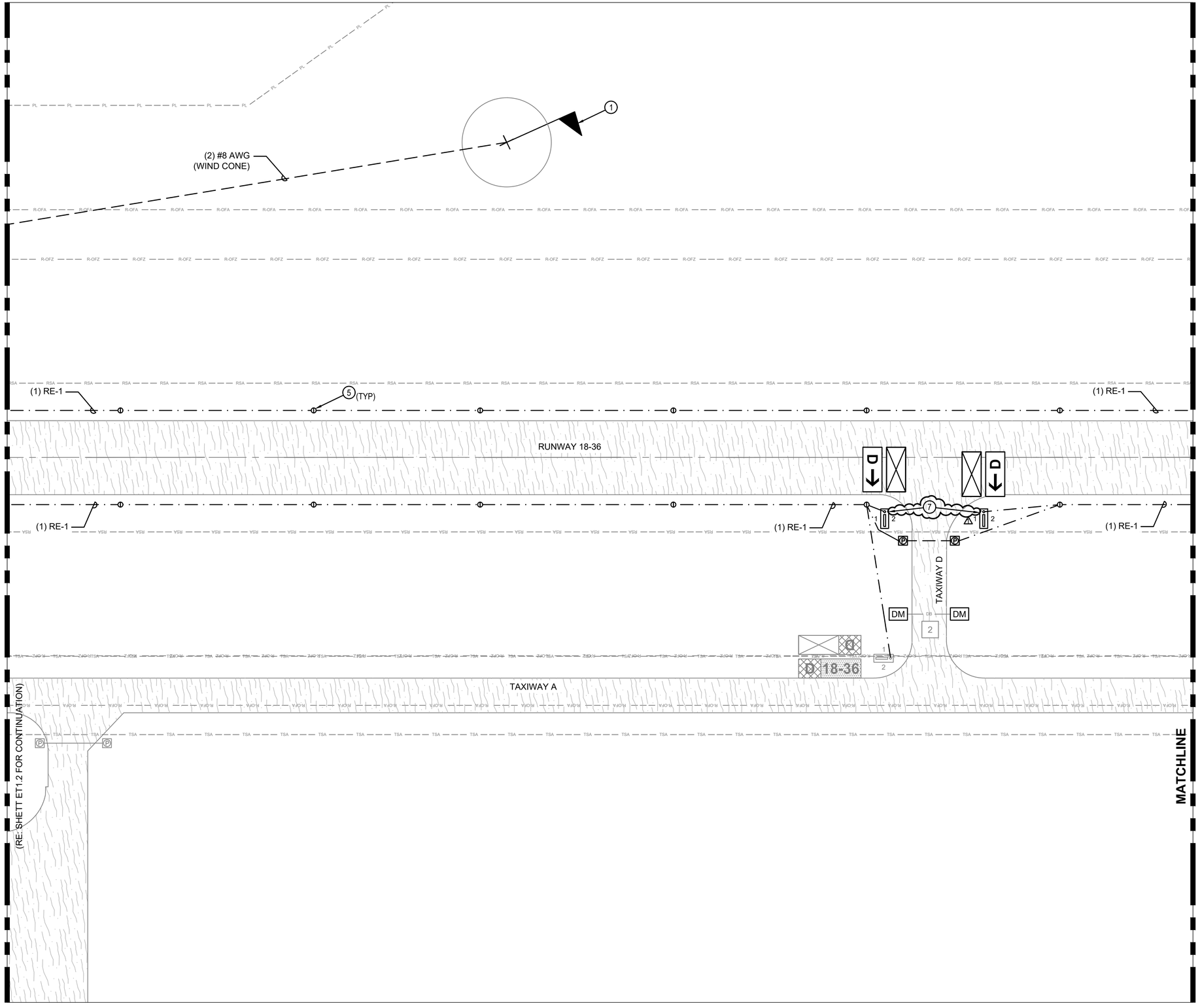
AIRFIELD LIGHTING DEMOLITION PLAN

ET1.2

FILE PATH:
C:\pw_working\bcohner-pw-01\d0184196

FILE NAME:
206 N TRL ET1.1.dwg

PLOT DATE:
9/15/2025 4:15:02 PM, Austin Cole



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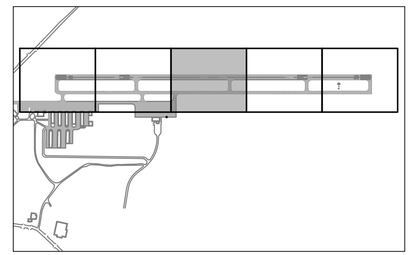

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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

TERRELL MUNICIPAL AIRPORT
400 BRITISH FLYING SCHOOL BLVD. TERRELL, TX 75160

NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

STATE OF TEXAS
R. COLE FERGUSON
150146
LICENSED
PROFESSIONAL ENGINEER
F-6864
09/15/25

PROJECT NO. :	23062
DATE OF ISSUE :	03/07/2025
REVIEWED BY :	RCF
DRAWN BY :	ALC
DESIGNED BY :	RCF

AIRFIELD LIGHTING DEMOLITION PLAN

ET1.3

FILE PATH: C:\pw_working\bodmer-pw-01\d0184196
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PLOT DATE: 9/15/2025 4:15:03 PM, Austin Cole

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FILE NAME: 20616 TRL ET1.1.dwg
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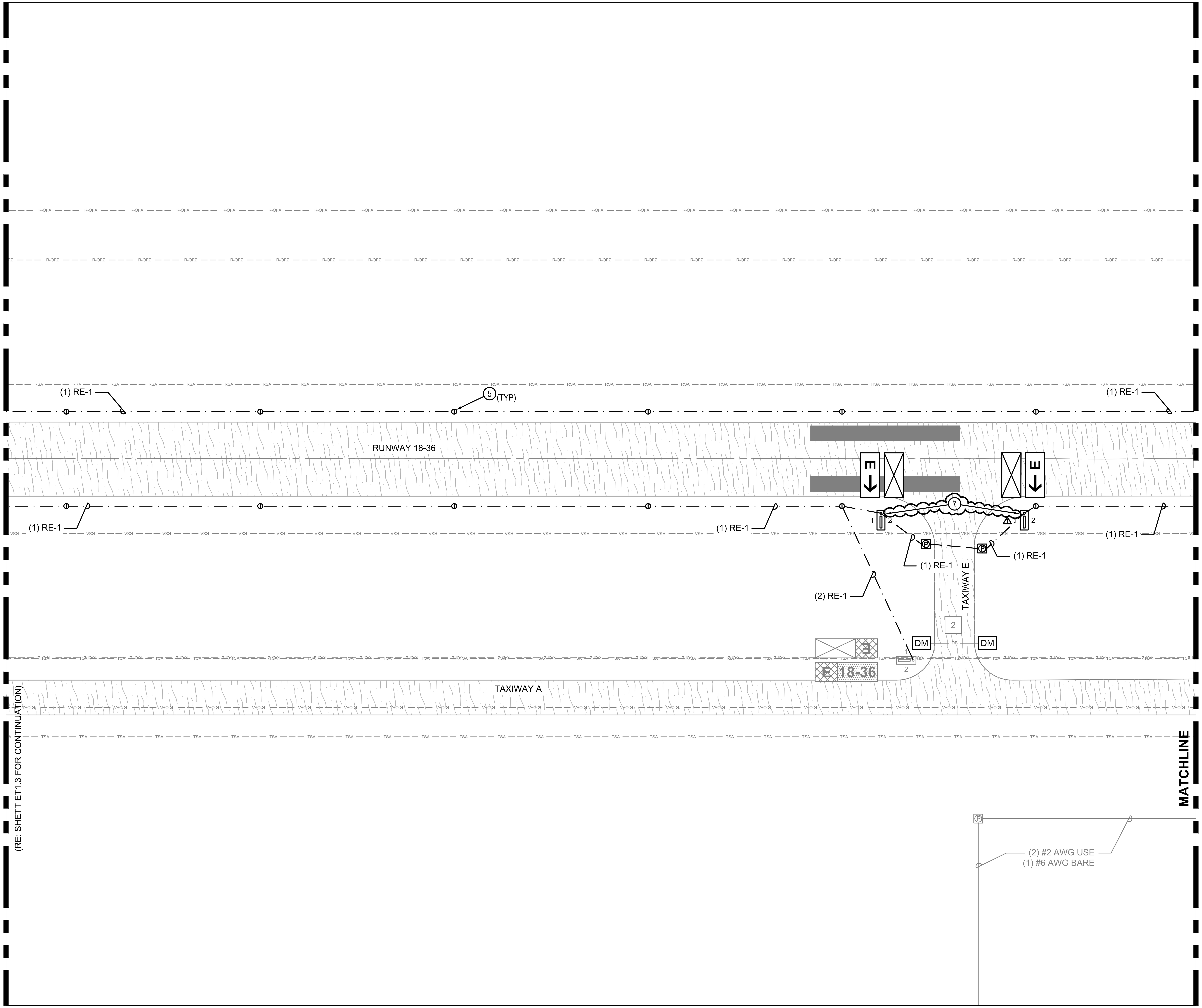

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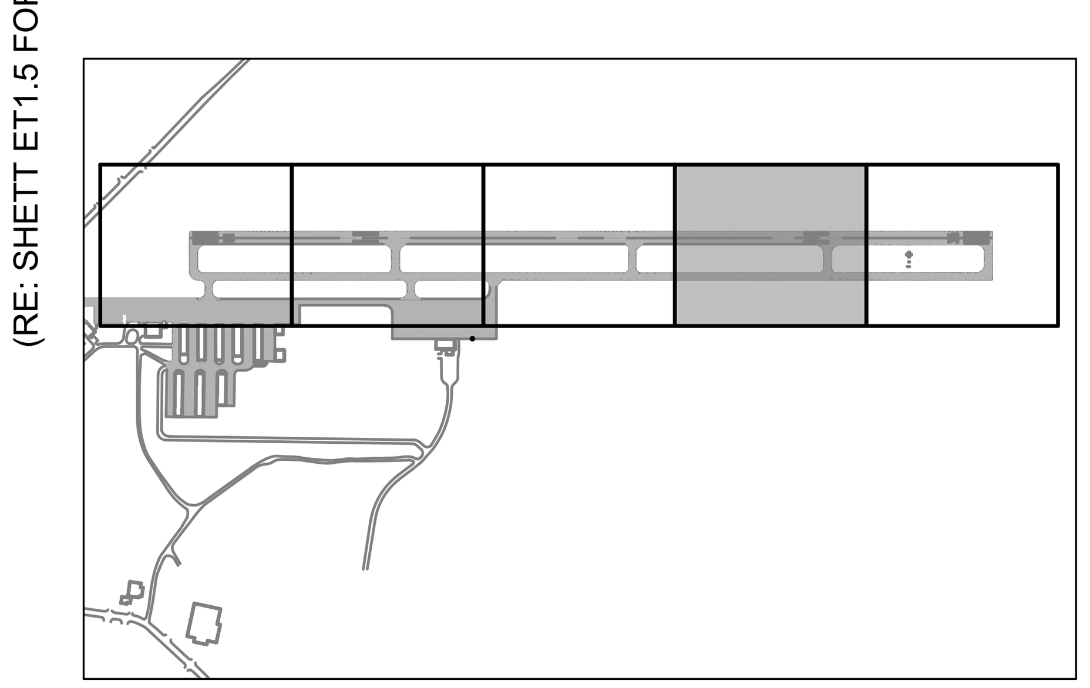

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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

TERRELL MUNICIPAL AIRPORT
400 BRITISH FLYING SCHOOL BLVD, TERRELL, TX 75160

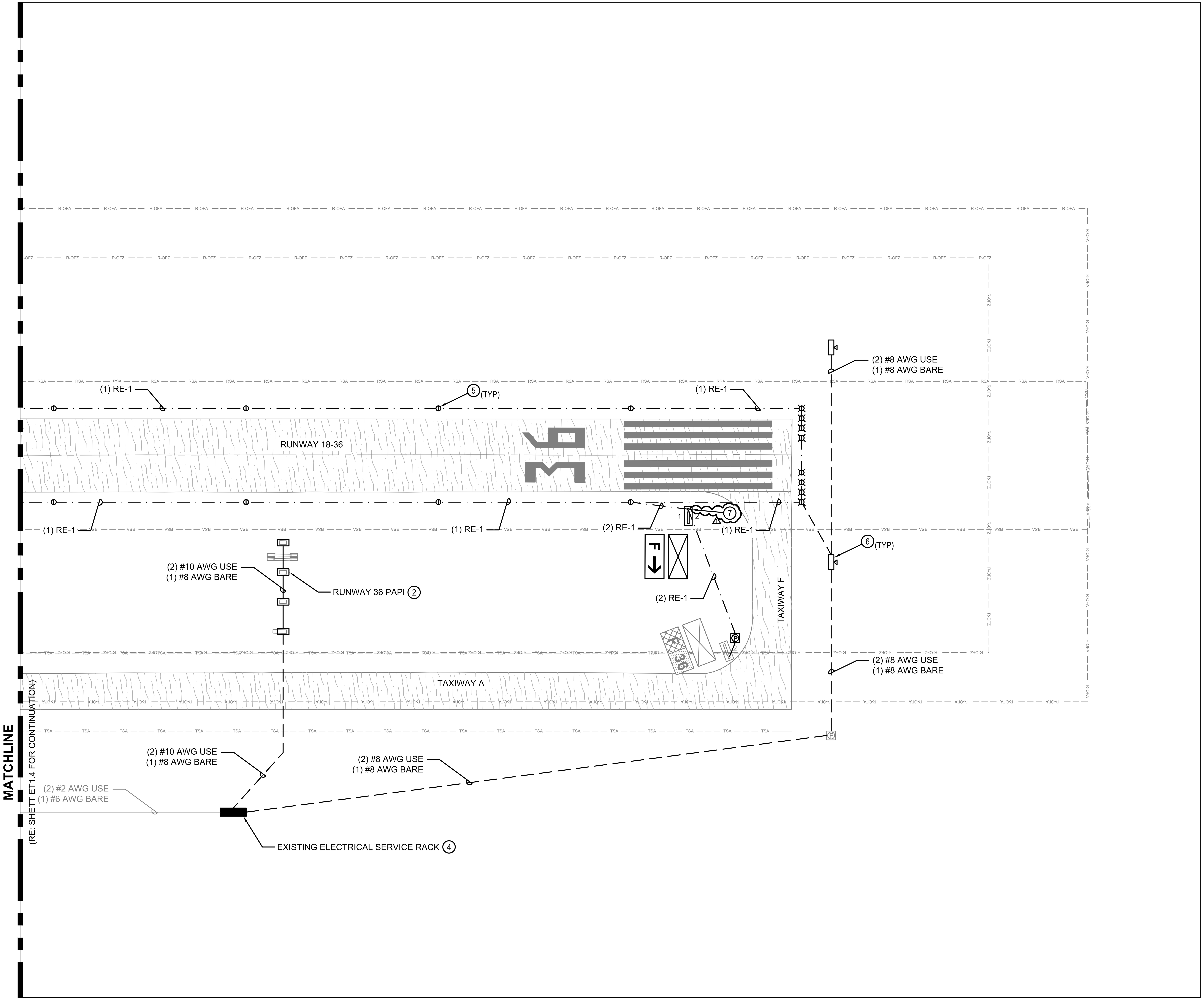
NO.	DATE	DESCRIPTION
1	09/15/25	ADDENDUM 1

STATE OF TEXAS
R. COLE FERGUSON
150146
LICENSED PROFESSIONAL ENGINEER
F-6864
09/15/25

PROJECT NO. :	23062
DATE OF ISSUE :	03/07/2025
REVIEWED BY :	RCF
DRAWN BY :	ALC
DESIGNED BY :	RCF

AIRFIELD LIGHTING DEMOLITION PLAN

ET1.4



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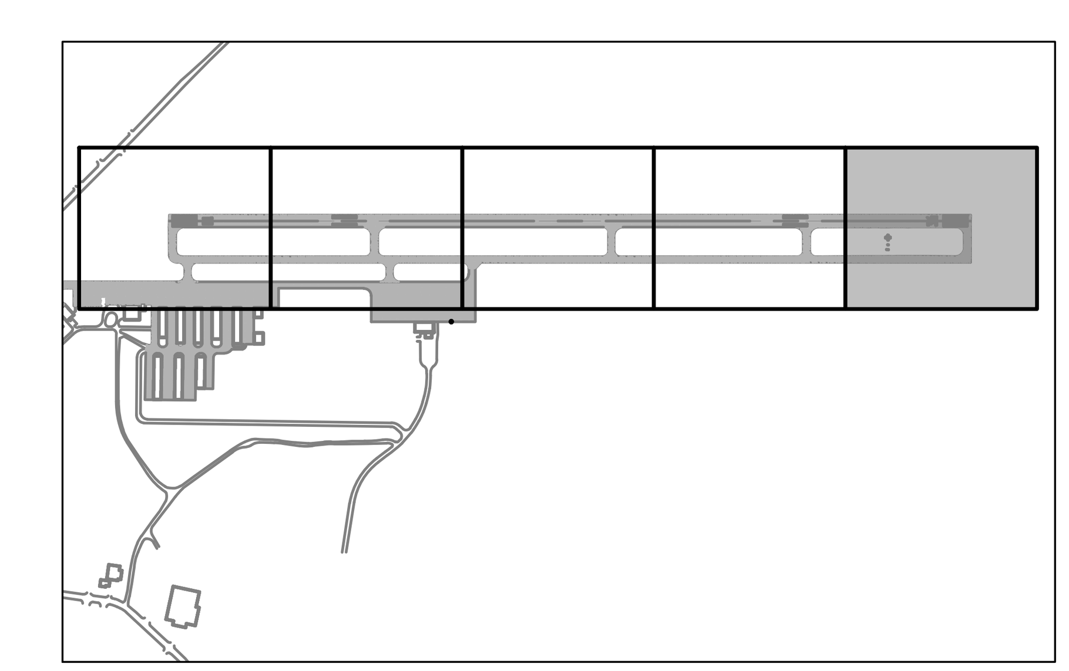

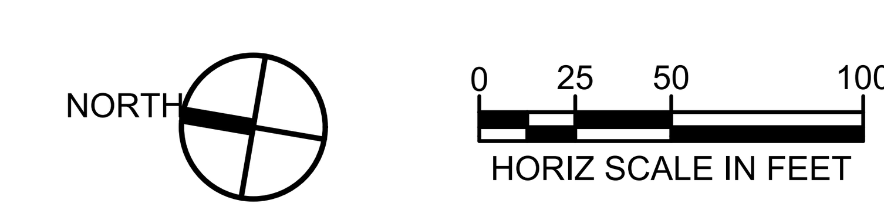

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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

TERRELL MUNICIPAL AIRPORT
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NO.	DATE	DESCRIPTION
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LICENSED PROFESSIONAL ENGINEER
F-6864
09/15/25

PROJECT NO. :	23062
DATE OF ISSUE :	03/07/2025
REVIEWED BY :	RCF
DRAWN BY :	ALC
DESIGNED BY :	RCF

AIRFIELD LIGHTING DEMOLITION PLAN

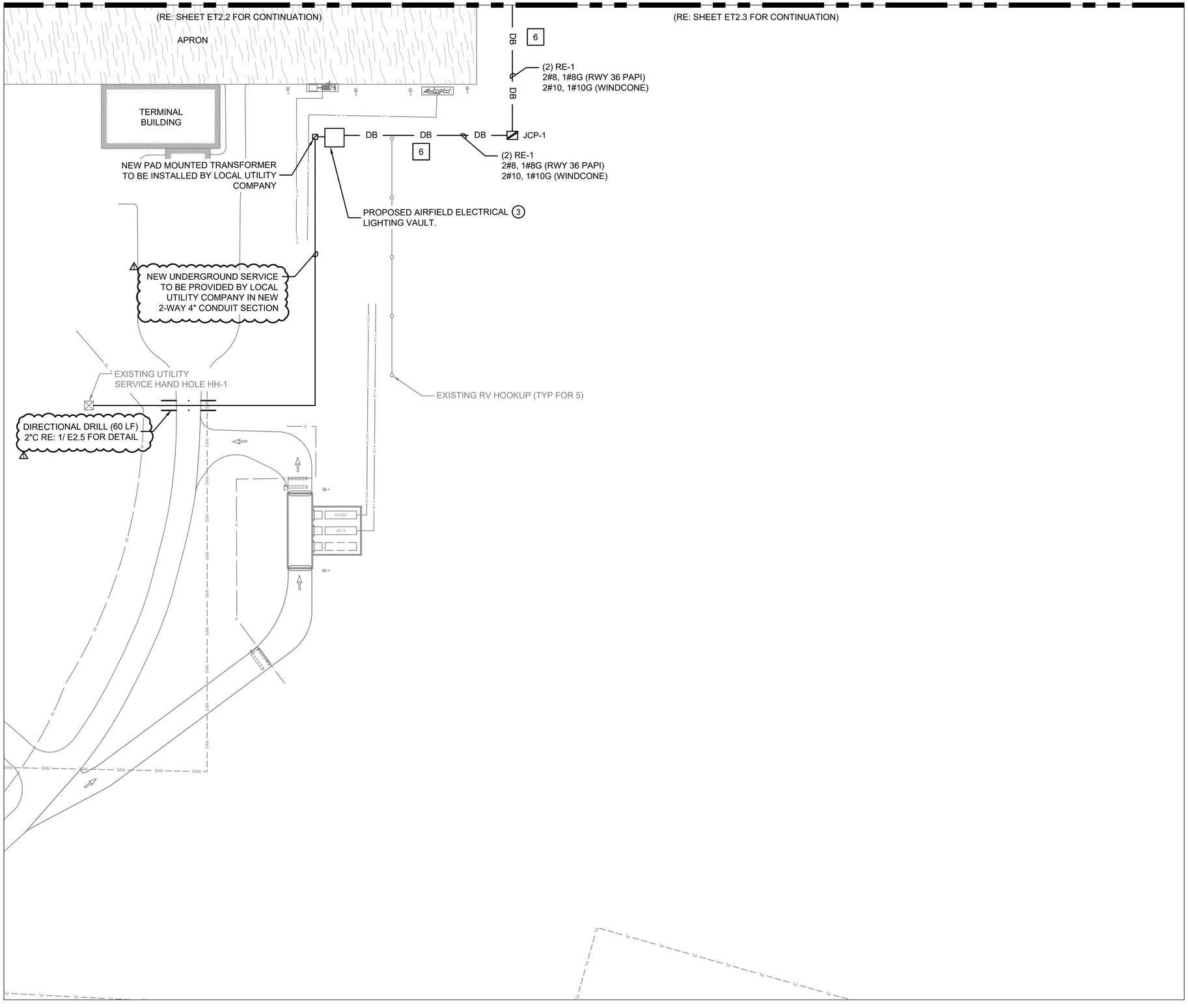
ET1.5

MATCHLINE

(RE: SHEET ET2.2 FOR CONTINUATION)

MATCHLINE

(RE: SHEET ET2.3 FOR CONTINUATION)



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3. REFER TO ET1 SERIES FOR EXISTING AIRFIELD ELECTRICAL PLANS.
4. REFER TO ET6 SERIES FOR AIRFIELD LIGHTING AND SIGNAGE SCHEDULES.
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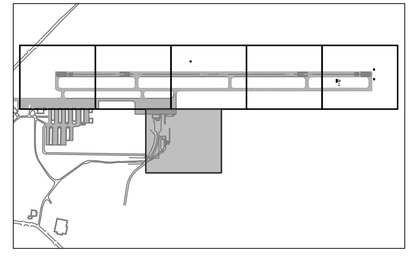
KEYED NOTES

1. INSTALL NEW L-880(L) PAPI. REFER TO ET5 SERIES FOR DETAILS.
2. INSTALL NEW WIND CONE AND TIP DOWN POLE. EXISTING SEGMENTED CIRCLE TO BE REPAINTED. REFER TO SHEET E2.6 FOR DETAILS.
3. INSTALL NEW AIRFIELD ELECTRICAL LIGHTING VAULT. REFER TO ET4 SERIES FOR ENLARGED PLAN AND DETAILS.
4. INSTALL NEW ISOLATION TRANSFORMER IN EXISTING SIGN.
5. INSTALL NEW 2-WAY JCP TO INTERCEPT EXISTING 2-WAY 2" DUCT CROSSING.
6. INSTALL NEW L-849E(L) REIL. REFER TO SHEET ET5.3 FOR DETAILS.



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TXDOT ELECTRICAL STATEWIDE IMPROVEMENTS - GROUP A

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NO.	DATE	DESCRIPTION
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DESIGNED BY :	RCF

AIRFIELD ELECTRICAL LAYOUT PLAN

ET2.6

FILE PATH: C:\pw_working\bohmer-pw-01\d0184196
FILE NAME: 20618 TRL ET2.1.dwg
PLOT DATE: 9/16/2025 2:10:09 PM, Fred Rocha

Item L-105 Alterations, Removal and Demolition

DESCRIPTION

105-1.1 Definitions.

a. Alterations shall mean any change or rearrangement in the component parts, including structural, mechanical, electrical systems, or internal or external arrangements of an existing structure.

b. Removal shall mean the dismantling of existing materials, components, equipment, and utilities. Removed items shall be handled, prepared for storage, transported to storage areas as specified.

c. Demolition shall mean the dismantling and disposal of existing materials, components, equipment, and utilities which cannot or will not be reused or which will have no salvage value, or which cannot be reused due to unrepairable damage caused by age, non-demolition related reasons, etc. All demolished items not designated to be turned over to the Airport shall be disposed of in a safe manner and at a location acceptable to the RPR.

d. All items to be turned over to the Airport shall be properly enclosed or boxed to protect the items from damage and transported by the Contractor to a location on the Airport property, designated by the Engineer and/or the RPR.

e. The installation and/or removal of lighting equipment may be critical to airport operations; therefore, the Contractor shall follow the work schedule established in the plans and specifications or as directed by the Engineer. The system shall be installed in accordance with the National Electrical Code and/or local code requirements.

f. The Contractor shall provide temporary wiring as required to reconnect existing circuits to provide guidance for aircraft to pass through the construction areas on those taxiways/runways which must remain open. The Contractor shall check all temporary circuits before dark each day to assure that they are operational. In the event of failure, the Contractor shall immediately take steps to restore operation. The cost of temporary and reconnected lighting shall be absorbed in the various work items.

105-1.2 Condition of existing facilities.

a. The Contractor shall verify the areas, conditions, and features necessary to tie into existing construction. This verification shall be done prior to submittal of shop drawings, fabrication or erection, construction or installation. The Contractor shall be responsible for the accurate tie-in of the new work to existing facilities.

b. Special attention is called to the fact that there may be piping, fixtures or other items in the existing systems which must be removed or relocated in order to perform the alteration work. All conduit, wiring, boxes, etc., that do not comply with these specifications shall be removed or corrected to comply with these specifications. All unused conduit not removed shall be identified and a pull line shall be installed. The work shall include all removal and relocation required for completion of the alterations and the new construction.

c. Whenever the scope of work requires connection to an existing circuit, the circuit's insulation resistance shall be tested, in the presence of the RPR and Engineer. The Contractor shall record the results on the forms included in these specifications. When the circuit is returned to its final condition, the circuit's insulation resistance shall be checked again in the presence of the RPR and Engineer. The Contractor shall record the results on the forms included in these specifications. The second reading shall be equal to or

greater than the first reading or the Contractor shall make the necessary repairs to the circuit to bring the second reading above the first reading. All repair costs including a complete replacement of the cable, if necessary, shall be borne by the Contractor. All test results shall be submitted in the Operation and Maintenance Manuals as described in Item L-106, Submittals, Record Documents and Maintenance Manuals.

d. Occupancy and use of existing facilities. The RPR will occupy and use the facilities within the areas of work during the entire construction period. The Contractor shall be required to plan and coordinate his activities in order to provide all necessary controls for the abatement of dust, noise, and inconvenience to the Airport personnel during all phases of the work.

e. Vacating occupied areas. The RPR will remove all portable items of furniture, equipment, and fixtures prior to the start of work.

f. Safety requirements. The Contractor shall conduct alterations and removal operations in a manner that will ensure the safety of persons in accordance with the requirements of CFR 29 PART 1926 and 1910.

105-1.3 Classification of removed/demolished items.

a. Existing materials and equipment indicated to be removed will be classified as "salvageable" and shall remain the property of the Airport or will be classified as "debris" and shall be disposed of legally off the airport.

b. Reusable salvaged items:

1. Salvaged materials and equipment shall be reused in the work as described on the contract drawings, unless noted otherwise.

2. Items classified as debris shall be legally disposed of off the airport property. The cost of such disposal shall be included in the cost of other items of work.

c. Retained salvaged items:

1. Salvaged materials and equipment to be retained by the Airport but not reused in the work shall be turned over to the RPR at a site at the facility to be determined by the RPR. Retained salvaged items shall be stored on Airport property where indicated by the RPR.

105-1.4 Temporary protection.

a. The Contractor shall provide and maintain the following requirements:

1. Protection of persons and property shall be provided throughout the progress of the work in accordance with these specifications.

2. Provide temporary enclosures and partitions prior to starting alterations and removal of work. Such items shall protect existing materials, equipment, and other remaining building or system components from damage by weather and construction operations.

3. Provide temporary enclosures to isolate space utilized by equipment during construction, from dirt, dust, noise, and unauthorized entry.

4. Provide temporary exits, entrances, and protected passages where work prevents the use of existing facilities.

5. Provide weathertight temporary enclosures over and around openings to be made in existing exterior construction prior to the start of work. The Contractor shall maintain such temporary enclosures until new construction will protect the interior of existing facilities from the elements.

6. Provide temporary exterior wall construction which will be designed and fabricated to resist an applied horizontal wind pressure of not less than 130 mph.

7. Provide temporary exterior roof construction which will be capable of supporting an applied vertical live load of not less than 200 psf, uniformly distributed over the entire roof area.

8. Design and fabricate temporary enclosures to maintain temperatures inside the existing facilities within a range of plus-or-minus 5 degrees F of normal operating conditions.

9. Provide temporary jet blast structures which will withstand the jet blast with a safety factor of 2.

PRODUCTS (Not Used)

EXECUTION

105-3.1 Disconnecting utilities. Prior to the start of work, the necessary utilities serving each area of alteration or removal will be shut off by the RPR and shall be disconnected and sealed by the Contractor, as required. Lockout/Tag/Try procedures shall be utilized.

105-3.2 Temporary utility services The Contractor shall install temporary utility services in satisfactory operating condition before disconnecting existing utilities. Such temporary services shall be maintained during the period of construction and removed only after new permanent services have been tested and are in operation.

105-3.3 Removal work.

a. The Contractor shall not disturb the existing construction beyond that indicated or necessary for installation of new work. Temporary shoring and bracing for support of building components to prevent settlement or other movement shall be as indicated and as required to protect the work.

b. The Contractor shall provide protective measures to control accumulation and migration of dust and dirt in all areas of work, particularly those adjacent to occupied areas. The Contractor shall remove dust, dirt, and debris from the areas of work daily.

105-3.4 Salvageable materials and equipment.

a. The Contractor shall remove all salvageable materials and equipment in a manner that will cause the least possible damage thereto. The equipment shall be properly supported during the removal operation to prevent damage. Removed items which are to be retained by the Airport shall be carefully handled, stored, and protected.

b. The Contractor shall provide identification tags on all items boxed or placed in containers, indicating the type, size, and quantity of materials.

105-3.5 Buildings and structures.

a. The Contractor shall perform removal operations in existing buildings as indicated and as otherwise required to complete the work.

b. Existing concrete shall be demolished, removed, and disposed of. Square, straight edges shall be provided where existing concrete adjoins new work and at other locations where indicated. Existing steel reinforcement shall be protected where indicated; otherwise, it shall be cut off flush with face of concrete.

c. The Contractor shall dismantle steel components at field connections and in a manner that will prevent bending or damage.

d. The use of flame-cutting torches will be permitted only when other methods of dismantling are not practical, and when approved in writing by the RPR and/or Engineer.

105-3.6 Electrical equipment and fixtures.

a. Wiring systems and components shall be salvaged. Loose items shall be boxed and tagged for identification.

b. All unused conduit not removed shall have a pull string installed and shall be noted on the record drawings.

c. Primary, secondary, control, communication, and signal circuits shall be disconnected at the point of attachment to their distribution system.

d. The Contractor shall remove and salvage electrical fixtures. Incandescent lamps, mercury-vapor lamps, and fluorescent lamps shall be salvaged, boxed and tagged for identification, and protected from breakage.

e. The Contractor shall remove and salvage switches, receptacles, fixtures, transformers, constant current regulators, meters, instruments, plates, circuit breakers, panelboards, outlet boxes, and similar items. These items shall be boxed, and tagged for identification according to type and size.

f. The Contractor shall remove and dispose of conductors and conduits not used in the finished work and shown to be demolished on the plans.

105-3.7 Demolition.

a. Demolition Operations:

1. Demolition operations shall be conducted to ensure the safe passage of persons to and from facilities occupied and used by the Airport and to prevent damage by falling debris or other cause to adjacent buildings, structures, and other facilities.

2. The sequence of operations shall be such that maximum protection from inclement weather will be provided for materials and equipment located in partially dismantled structures.

b. Maintaining Traffic

1. Demolition operations and removal of debris to disposal areas shall be conducted to ensure minimum interference with runways, taxiways, aprons, roads, streets, walks, and other facilities occupied and used by the Airport.

2. Streets, walks, runways, taxiways and other facilities occupied and used by the Airport shall not be closed or obstructed without written permission from the RPR.

c. Reference Standards Requirements

1. Demolition operations shall be conducted to ensure the safety of persons in accordance with ANSI A 10.6 Safety Requirements for Demolition.

2. Demolition shall be conducted in accordance with OSHA, State and local requirements.

105-3.8 Disposal of demolished materials.

a. General

1. The Contractor shall dispose of debris, rubbish, scrap, and other non-salvageable materials resulting from demolition operations. Demolished materials shall not be stored or disposed of on Airport property.

b. Removal from Airport Property

1. Materials classified as debris shall be transported from Airport property and legally disposed of at no additional cost to the Airport. Permits and fees for disposal shall be paid by the Contractor.

105-3.9 Alteration work.

a. General.

1. Cutting, patching, repairing, and other alteration work shall be done by tradesman skilled in the particular trade or work required.

2. Where required to patch or extend existing construction, or both, such alteration work shall match existing exposed surface materials in finish, color, texture, and pattern.

3. Salvaged items for reuse shall be as approved by the Engineer and RPR.

METHOD OF MEASUREMENT

105-4.1 This item provides for the removal and disposal of cable, conduit or concrete duct bank as described in the item description and identified in the drawings and specifications. Where this item pertains to removal of conduit or duct bank, removing all associated cables or cable bundles, counterpoise wire, ground rods, etc. is incidental to the work. This item does not require any excavation for the sole purpose of the conduit demolition. It is assumed that the conduit will be demolished because it is located in the same trench where the new conduit pathway will be installed. In instances when that is not the case, only the cables will be removed and the conduit will be abandoned, This item additionally includes restoration of the site, where required, including site grading to prohibit ponding and installation of vegetation in accordance with the specifications. Measurement for this item will be per linear foot, installed complete and accepted by the RPR.

105-4.2 This item provides for the removal of elevated edge lights and base cans as described in the line-item description and identified in the drawings and specifications. This item includes the salvaging or protecting of existing equipment as noted in the description and contract drawings, or as directed by the RPR. For elevated edge lights being removed, this includes removal of the light fixture, isolation transformer, connector kit, and ground connections. Where this item pertains to base cans being demolished, this item includes the removal of the base can, hubs, spacer rings, gaskets, bolting hardware, ground rod, foundations, and all other incidentals. Where there is a brooks box or small junction structure associated with a stake mounted edge light, this item includes the removal of that structure as well. All other equipment, devices, components, and materials not required by RPR must be removed and disposed of off-site by the Contractor. This item includes all materials, labor, preparation, incidentals and services required for full completion of this item to the satisfaction of the RPR. Measurement for this item will be per each, complete and accepted by the RPR.

105-4.3 This item provides for the removal of electrical junction structures and duct markers as described in the item description and identified in the drawings and specifications. This item includes all materials, labor, transportation incidentals and services required for the removal and disposal of existing electrical structures of the type noted and associated equipment, as shown on the plans. Measurement of this item will be per each, complete and accepted by the RPR. This includes the plugging or capping of all existing conduits entering the electrical structure that are not scheduled to be removed. Site restoration and grading area around structure removal are incidental to this item.

105-4.4 This item provides for the removal of guidance signs including foundations as described in the item description and identified in the drawings and specifications. This item includes removal of the sign panels, housing, foundation with L-867D base can, ground rods, ground connections, isolation transformers, tethers, anchors, etc. for the complete removal of the sign. This item additionally includes restoration of the site including, but not limited to, sodding, including site grading to prohibit ponding and installation of vegetation in accordance with the specifications. Measurement for this item will be per each, complete and accepted by the RPR.

105-4.5 This item provides for the demolition of an existing electrical vault. This item includes demolition of the existing vault structure and all associated equipment within the vault, including the vaults foundation. This item additionally includes restoration of the site including, but not limited to, sodding, including site grading to prohibit ponding and installation of vegetation in accordance with the specifications. The demolition scope includes the disconnection and removal of all associated feeder cables and equipment attached to the electrical vault to the next point of termination beyond the vault limits. If there is a freestanding equipment rack serving the electrical vault, the removal of all abandoned equipment due to the vault demolition including the equipment rack in its entirety is incidental to this item. Measurement for this item will be per each, complete and accepted by the RPR.

105-4.6 This item provides for the demolition of an existing miscellaneous airfield visual aid, including wind cones, beacons, PAPIs, and REILs. This item includes demolition of the entire structure including foundation and all associated components, as outlined on the contract drawings. Incidental to this item is demolition of power conductors for the associated piece of equipment, back to source and disconnecting from source. Where the source equipment becomes abandoned, this item includes removal of the associated abandoned equipment. If there is a freestanding equipment rack supporting the equipment, the removal of the equipment rack if it becomes abandoned in its entirety is incidental to this item Measurement for this item will be per each, complete and accepted by the RPR. Separate payment will be made for type of equipment.

BASIS OF PAYMENT

105-5.1 Payment for this item will be made at the contract unit price per linear foot, which constitutes full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, supervision, equipment, tools and incidentals necessary to complete this item. Backfilling voids is incidental and shall be per FAA Items P-152, Excavation, Subgrade, and Embankment and P-610, Concrete for Miscellaneous Structures. No separate payment will be made for disposal or backfilling voids per Item. Waste and unsuitable materials removed must be disposed of off-site by the Contractor in accordance with local laws and regulations. All other materials removed must be hauled separately to the EMMS, unless otherwise directed by the RPR. The cost of removing and disposing of the material will not constitute a pay item and will be considered incidental to removal.

105-5.2 Payment for this item will be made at the contract unit price per each, which constitutes full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, supervision, equipment, tools and incidentals necessary to complete this item. Backfilling voids is incidental and shall be per FAA Items P-152, Excavation, Subgrade, and Embankment and P-610, Concrete for Miscellaneous Structures. No separate payment will be made for disposal or backfilling voids per Item. Waste and unsuitable materials removed must be disposed of off-site by the Contractor in accordance with local laws and regulations. All other materials removed must be hauled separately to the EMMS, unless otherwise directed by the RPR. The cost of removing and disposing of the material will not constitute a pay item and will be considered incidental to removal.

Payment will be made under:

Item L-105-5.1	Remove No. 8 AWG, L-824C in Duct, per Linear Foot
Item L-105-5.2	Remove 2-inch Conduit Including cable(s), per Linear Foot
Item L-105-5.3	Remove Existing Stake Mounted Elevated Taxiway Edge Light and associated brooks box, per Each
Item L-105-5.4	Remove Existing Elevated Taxiway Edge Light and Base Can, per Each
Item L-105-5.5	Remove Existing Elevated Taxiway Edge Light, Base Can to Remain, per Each

Item L-105-5.6	Remove Existing Stake Mounted Elevated Runway Edge Light and Associated Brooks Box, per Each
~~Item L-105-5.7~~	~~Remove Existing Elevated Runway Edge Light and Base Can, per Each~~
Item L-105-5.8	Remove Existing Elevated Runway Edge Light, Base Can to Remain, Per Each
Item L-105-5.9	Remove Existing Stake Mounted Elevated Threshold End Light and Associated Brooks Box, per Each
Item L-105-5.10	Remove Existing Elevated Threshold End Light, Base Can to Remain, per Each
~~Item L-105-5.11~~	~~Remove Existing Elevated Threshold End Light and Base Can, per Each~~
Item L-105-5.12	Remove Guidance Sign, Foundation to Remain, per Each
Item L-105-5.13	Remove Guidance Sign and Foundation, per Each
Item L-105-5.14	Remove Existing Manhole, per Each
Item L-105-5.15	Remove Existing Pullbox, per Each
Item L-105-5.16	Remove Existing Duct Marker, per Each
Item L-105-5.17	Demolish Existing Electrical Vault Building and Equipment, per Each
Item L-105-5.18	Remove Existing Wind Cone and Associated Foundation, per Each
Item L-105-5.19	Remove Existing Beacon, Pole, and Foundation, per Each
Item L-105-5.20	Remove Existing Beacon and Pole, Beacon to be Salvaged, per Each
Item L-105-5.21	Remove Existing PAPI-2 Unit, per Each
Item L-105-5.22	Remove Existing PAPI-4 Unit, per Each
Item L-105-5.23	Remove Existing REIL Unit, per Each
Item L-105-5.24	**Remove Concrete Encased Duct in Earth (Including Cable), per Linear Foot**
Item L-105-5.25	**Remove 600V Circuit in Duct, per Linear Foot**

END OF ITEM L-105

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Item L-110 Airport Underground Electrical Duct Banks and Conduits

DESCRIPTION

110-1.1 This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing of all underground electrical duct banks and individual and multiple underground conduits. It shall also include all turfing trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

EQUIPMENT AND MATERIALS

110-2.1 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 and acceptable to the RPR. 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 comply with 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 non-pertinent data. Submittals for 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 project that 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 electronically submitted in pdf 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 a period of at least twelve (12) months from 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.

110-2.2 Steel conduit. Rigid galvanized steel (RGS) conduit and fittings shall be hot dipped galvanized inside and out and conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242. All RGS conduits or RGS elbows installed below grade, in concrete, permanently wet locations or other similar environments shall be painted with a 10-mil thick coat of asphaltum sealer or shall have a factory-bonded polyvinyl chloride (PVC) cover. Any exposed galvanizing or steel shall be coated with 10 mils of asphaltum sealer. When using PVC coated RGS conduit, care shall be exercised not to damage the factory PVC coating. Damaged PVC coating shall be repaired per the manufacturer's written instructions. In lieu of PVC coated RGS, corrosion wrap tape shall be permitted to be used where RGS is in contact with direct earth.

110-2.3 Plastic conduit. Plastic conduit and fittings-shall conform to the following requirements:

UL 514B covers W-C-1094-Conduit fittings all types, classes 1 thru 3 and 6 thru 10.

UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).

UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.

UL 651A covers W-C-1094-Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

a. Type I–Schedule 40 and Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

110-2.4 Split conduit. Split conduit shall be pre-manufactured for the intended purpose and shall be made of steel or plastic.

110-2.5 Conduit spacers. Conduit spacers shall be prefabricated interlocking units manufactured for the intended purpose. They shall be of double wall construction made of high grade, high density polyethylene complete with interlocking cap and base pads. They shall be designed to accept No. 4 reinforcing bars installed vertically.

110-2.6 Concrete. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

110-2.7 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program. Precast concrete structures shall conform to ASTM C478.

110-2.8 Flowable backfill. Flowable material used to back fill conduit and duct bank trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

110-2.9 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) red (electrical power lines, cables, conduit and lighting cable), orange (telephone/fiber optic cabling) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

CONSTRUCTION METHODS

110-3.1 General. The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The RPR shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2 inches (50 mm) inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3 inches (75 mm) per 100 feet (30 m). On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points or conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. Under pavement, the top of the duct bank shall not be less than 18 inches (0.5 m) below the subgrade; in other locations, the top of the duct bank or underground conduit shall be be not less than 18 inches (0.5 m) below finished grade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than 1/4 inch (6 mm) smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed the light bases, manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor's expense. All accessible points shall be kept closed when not installing cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 200-pound (90 kg) test polypropylene pull rope. The ends shall be secured and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet (1.5 m).

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching

equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required conduit or duct bank depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. Flowable backfill may alternatively be used

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. Contractor shall submit a sample of the proposed warning tape for approval by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet (60 cm).

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the RPR, the unsuitable material shall be removed per Item P-152 and replaced with suitable material. Additional duct bank supports shall be installed, as approved by the RPR.

All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion per federal, state, and local requirements is incidental to Item L-110.

Unless otherwise specified, excavated materials that are deemed by the RPR to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the RPR and compacted per Item P-152.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables) cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

a. Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred

b. Trenching, etc., in cable areas shall then proceed with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair.

110-3.2 Duct banks. Unless otherwise shown in the plans, duct banks shall be installed so that the top of the concrete envelope is not less than 18 inches (0.5 m) below the bottom of the base or stabilized base course layers where installed under runways, taxiways, aprons, or other paved areas, and not less than 18 inches (0.5 m) below finished grade where installed in unpaved areas.

Unless otherwise shown on the plans, duct banks under paved areas shall extend at least 3 feet (1 m) beyond the edges of the pavement or 3 feet (1 m) beyond any under drains that may be installed alongside the paved area. Trenches for duct banks shall be opened the complete length before concrete is placed so that if any obstructions are encountered, provisions can be made to avoid them. Unless otherwise shown on the plans, all duct banks shall be placed on a layer of concrete not less than 3 inches (75 mm) thick prior to its initial set. The Contractor shall space the conduits not less than 3 inches (75 mm) apart (measured from outside wall to outside wall). All such multiple conduits shall be placed using conduit spacers applicable to the type of conduit. As the conduit laying progresses, concrete shall be placed around and on top of the conduits not less than 3 inches (75 mm) thick unless otherwise shown on the plans. All conduits shall terminate with female ends for ease of access in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Conduits forming the duct bank shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth prior to placing the concrete encasement. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where shown on the plans. Under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot (1.5-m) intervals.

All pavement surfaces that are to have ducts installed therein shall be neatly saw cut to form a vertical face. All excavation shall be included in the contract with price for the duct.

Install a plastic, detectable, color as noted, 3 to 6 inches (75 to 150 mm) wide tape, 8 inches (200 mm) minimum below grade above all underground conduit or duct lines not installed under pavement. Utilize the 3-inch (75-mm) wide tape only for single conduit runs. Utilize the 6-inch (150-mm) wide tape for multiple conduits and duct banks. For duct banks equal to or greater than 24 inches (600 mm) in width, utilize more than one tape for sufficient coverage and identification of the duct bank as required.

When existing cables are to be placed in split duct, encased in concrete, the cable shall be carefully located and exposed by hand tools. Prior to being placed in duct, the RPR shall be notified so that he may inspect the cable and determine that it is in good condition. Where required, split duct shall be installed as shown on the drawings or as required by the RPR.

110-3.3 Conduits without concrete encasement. Trenches for single-conduit lines shall be not less than 6 inches (150 mm) nor more than 12 inches (300 mm) wide. The trench for 2 or more conduits installed at the same level shall be proportionately wider. Trench bottoms for conduits without concrete encasement shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 4 inches (100 mm) thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a 1/4-inch (6.3 mm) sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches (0.5 m) below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24 inches (60 cm) below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and lot less than 6 inches (150 mm) apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

110-3.4 Markers. The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet (60 cm) square and 4 - 6 inches (100 - 150 mm) thick extending approximately one inch (25 mm) above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet (61 m) along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word “DUCT” or “CONDUIT” on each marker slab. Impression of letters shall be done in a manner, approved by the RPR, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the RPR. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the RPR. The letters shall be 4 inches (100 mm) high and 3 inches (75 mm) wide with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay item.

110-3.5 Backfilling for conduits. For conduits, 8 inches (200 mm) of sand, soft earth, or other fine fill (loose measurement) shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted per Item P-152 except that material used for back fill shall be select material not larger than 4 inches (100 mm) in diameter.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.6 Backfilling for duct banks. After the concrete has cured, the remaining trench shall be backfilled and compacted per Item P-152 “Excavation and Embankment” except that the material used for backfill shall be select material not larger than 4 inches (100 mm) in diameter. In addition to the requirements of Item P-152, where duct banks are installed under pavement, one moisture/density test per lift shall be made for each 250 linear feet (76 m) of duct bank or one work period’s construction, whichever is less.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.7 Restoration. Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to its original condition. The restoration shall include sodding and topsoiling shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

METHOD OF MEASUREMENT

110-4.1 This item provides for the procurement and installation of conduit of the type and number shown in trench, along with associated materials, as identified in the drawings and specifications. This item includes excavation and backfill of trenches with designated material, including concrete encasement where specified. Also included are trench marking tape, terminations, couplings, end bells, conduit plugs, conduit transitions, conduit connection to light or sign base, termination at drainage structure, mandrelling, pulling lines, plugging of conduits, and the installation as a completed system ready for installation of cables per the plans and specifications to the satisfaction of the RPR. Incidental to this item is open cutting existing pavement for installation as required by line item description and the contract drawings. Also incidental to this item is directional drilling as required by line item description, including all equipment, labor, and excavation of launching and receiving pits. Excavations must be backfilled with material equal to or better in quality than adjacent embankment, unless otherwise shown in the drawings or directed by the RPR. Excavation of existing materials for installation and subsequent embankment must be completed in accordance with FAA Item P-152, Excavation, Subgrade, and Embankment. This item also includes furnishing and installing conduits and all incidentals for providing positive drainage of the system. Measurement for this item will be per linear foot, installed in duct or conduit complete and accepted by the RPR.

110-4.2 This item provides for the procurement and installation of the Utility Company Service Entrance Infrastructures, along with associated materials, as identified in the drawings and specifications. This item includes all duct banks, handholes, transformer pad including associated excavation and backfill of trenches with designated material, including concrete encasement where specified. Also included are trench marking tape, terminations, couplings, end bells, conduit plugs, conduit transitions, conduit connection to pulling lines, plugging of conduits, and the installation as a completed system ready for installation of cables per the utility company requirements and specifications to the satisfaction of the RPR. Incidental to this item is open cutting existing pavement or HDD installation as shown on the contract drawings. Also incidental to this item is coordination with the utility company. Excavation of existing materials for installation and subsequent embankment must be completed in accordance with FAA Item P-152, Excavation, Subgrade, and Embankment. Measurement for this item will be per Lump Sum, complete and accepted by the RPR

BASIS OF PAYMENT

110-5.1 Payment for this item will be made at the contract unit price per linear foot, which constitutes full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, supervision, equipment, tools and incidentals necessary to complete this item. There will be no separate payment for excavation or embankment related to installation or any associated work. Excavation and embankment operations required for the installation or any associated work will instead be considered incidental to installation. Unsuitable materials removed must be disposed of off-site by the Contractor in accordance with local laws and regulations. All other materials removed must be hauled separately to the EMMS, unless otherwise directed by the RPR. The cost of removing and disposing of the material will not constitute a pay item and will be considered incidental to installation. This item does not include the installation of cable. There is no separate measurement for pipe color (gray or white).

Payment will be made under:

Item L-110-5.1	Procure and Install 1-Way, 2” Sch. 40 PVC Conduit in Earth, per Linear Foot
~~Item L-110-5.2~~	~~Procure and Install 1-Way, 2” Sch. 40 PVC Conduit in Existing Pavement VIA Saw Kerf, per Linear Foot~~
~~Item L-110-5.3~~	~~Procure and Install 1-Way, 2” SDR 11 HDPE Conduit VIA Directional Drill, per Linear Foot~~
Item L-110-5.4	Procure and Install 1-Way, 2” Sch. 40 PVC Conduit VIA Open Cut, per Linear Foot
Item L-110-5.5	Procure and Install 2-Way, Sch. 40 PVC Conduit, Concrete Encased in Earth, per Linear Foot
Item L-110-5.6	Procure and Install 2-Way, 2” SDR 11 HDPE Conduit, Installed VIA Direction Drill, per Linear Foot
Item L-110-5.7	Procure and Install 4-Way, 2” Sch. 40 PVC Conduit, Concrete Encased in Earth, per Linear Foot
Item L-110-5.8	Procure and Install 4-Way, 2” SDR 11 HDPE Conduit, Installed VIA Directional Drill, per Linear Foot
Item L-110-5.9	Procure and Install 6-Way, 2” Sch. 40 PVC Conduit, Concrete Encased in Earth, per Linear Foot
Item L-110-5.10	Procure and Install 6-Way, 2” Sch. 40 PVC Conduit, Concrete Encased in Existing Pavement VIA Open Cut, per Linear Foot
Item L-110-5.11	Procure and Install 6-Way, 2” SDR 11 HDPE Conduit, Via Directional Drill, per Linear Foot
Item L-110-5.12	Procure and Install 10-Way, 2” Sch. 40 PVC Conduit, Concrete Encased in Earth, per Linear Foot
Item L-110-5.13	Procure and Install 10-Way, 2” Sch 40 PVC Conduit, Concrete Encased VIA Open Cut, per Linear Foot
Item L-110-5.14	Procure and Install 10-Way, 2” SDR 11 HDPE Conduit, VIA Directional Drill, per Linear Foot
Item L-110-5.15	Procure and Install Utility Company Service Entrance Infrastructure, per Lump Sum

Item L-110-5.16 Procure and 4-Way 2” Sch. 40 PVC Conduit, Concrete Encased VIA Open Cut – Per Linear Foot

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 Circular (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program

ASTM International (ASTM)

ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)

Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit - Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 1242	Electrical Intermediate Metal Conduit Steel
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit

END OF ITEM L-110

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Item L-125 Installation of Airport Lighting Systems

DESCRIPTION

125-1.1 This item shall consist of airport lighting systems furnished and installed in accordance with this specification, the referenced specifications, and the applicable advisory circulars (ACs). The systems shall be installed at the locations and in accordance with the dimensions, design, and details shown in the plans. This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the RPR.

125-1.2 General.

Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified under the Airport Lighting Equipment Certification Program in accordance with AC 150/5345-53, current version. FAA certified airfield lighting shall be compatible with each other to perform in compliance with FAA criteria and the intended operation. If the Contractor provides equipment that does not performs as intended because of incompatibility with the system, the Contractor assumes all costs to correct the system for to operate properly.

Manufacturer's certifications shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

All materials and equipment used 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. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be clearly made with arrows or circles (highlighting is not acceptable). The Contractor shall be responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

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 submitted in electronic PDF format, tabbed by specification section. The RPR reserves the right to reject any or all equipment, materials or procedures, which, in the RPR’s opinion, does not meet the system design and the standards and codes, specified herein.

All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least **[** twelve (12) months **]** from 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.

EQUIPMENT AND MATERIALS

125-2.1 Conduit/Duct. Conduit shall conform to Specification Item L-110 Airport Underground Electrical Duct Banks and Conduits.

125-2.2 Cable and Counterpoise. Cable and Counterpoise shall conform to Item L-108 Underground Power Cable for Airports.

125-2.3 Tape. Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88 respectively, as manufactured by 3M Company or an approved equal.

125-2.4 Cable Connections. Cable Connections shall conform to Item L-108 Installation of Underground Cable for Airports.

125-2.5 Retroreflective Markers. Retroreflective markers shall be type L-853 and shall conform to the requirements of AC 150/5345-39.

125-2.6 Runway and Taxiway Lights. Runway and taxiway lights shall conform to the requirements of AC 150/5345-46. Lamps shall be of size and type indicated, or as required by fixture manufacturer for each lighting fixture required under this contract. Filters shall be of colors conforming to the specification for the light concerned or to the standard referenced.

a. Refer to the contract documents for type of light, base and transformer including class, mode, style and option as appropriate for project.

b. See engineering FAA Engineering Brief No. 67 “Light Sources other than Incandescent and Xenon for Airport Lighting and Obstruction Lighting Fixtures for additional information on LED fixtures.

c. Refer to plan drawings for fixture installation details.

d. Fixture Hold Down Bolts. Fixture hold down bolts and installations shall adhere to the following requirements.

1. Bolts shall be all-thread, 18-8, Grade 2 Carbon Steel with Fluoropolymer Coating. Bolts shall be colored orange or pink.

2. Bolts information shall be submitted for approval of the Engineer. Submittal shall be specifically identified, at a minimum, the bolt material, dimensions and threading.

3. Bolt material shall be readily identifiable in the field by appropriate ASTM markings on the bolts or by having material identified on bolt packaging, as approved by the Engineer.

4. Normally, bolts are supplied with the bases, not the fixtures. However, the usual bolts supplied with the bases are too short to extend into base can. The Contractor shall install bolts long enough to extend 1 inch inside the rim of the can after proper installation to hold down fixtures. Bolts of appropriate length and type shall be ordered accordingly.

5. Lock washers shall be installed on each bolt as per fixture base manufacturer's recommendations. Appropriate lock washers are usually provided with bases.

e. Spacer Rings. Install as allowed by the FAA criteria.

f. Concrete. Concrete shall adhere to requirements of Item P-610. Reinforcing steel shall conform to provisions of Item P-610. Precast base cans are not approved for use.

g. Sealer Products. Products used shall conform to applicable requirements for Joint Sealing Filler. Submit materials with satisfactory adhesive and waterproofing qualities for approval of the Owners representative. The joint sealer shall be a 2-component, Polyurethane P-606 compliant sealant similar to Q-Seal 295 or equal.

h. Joints. Use joint sealing material across concrete pavement joints. Where conduit is being installed in saw cut trench in existing pavement, OZ Gedney Type DX Expansion Fitting shall be installed at intersection of conduit installation and existing concrete pavement expansion joints.

125-2.7 Runway and Taxiway Signs. Runway and Taxiway Guidance Signs should conform to the requirements of AC 150/5345-44.

a. Refer to the contract documents for sign type, size style class and mode.

b. The nameplate required by 150/5345-44, latest edition, shall be made of metal with the data stamped into the metal nameplate.

c. Provide 6 inch high, die cut labels for each sign, labels shall be reflective film, with pressure-sensitive adhesive backing, suitable for exterior applications. Labels shall be UV resistant. Labels shall be yellow for installation on black surface, black for installation on other surfaces. Text shall be: number and letter style; Helvetica medium, upper case, 6-inch height.

d. The quantity of sign modules is based on two (2) characters per module. Payment shall be made on the basis of a module consisting of two characters, regardless of the manufacturing methods or techniques.

125-2.8 Runway End Identifier Light (REIL). Not required.

125-2.9 Precision Approach Path Indicator (PAPI). Not required.

125-2.10 Circuit Selector Cabinet. Not required.

125-2.11 Light Base and Transformer Housings. Light Base and Transformer Housings should conform to the requirements of AC 150/5345-42. Light bases shall be as noted on the contract documents and shall be provided as indicated or as required to accommodate the fixture or device installed thereon. Base plates, cover plates, and adapter plates shall be provided to accommodate various sizes of fixtures

125-2.12 Isolation Transformers. Isolation Transformers shall be Type L-830, size as required for each installation. Transformer shall conform to AC 150/5345-47.

INSTALLATION

125-3.1 Installation. The Contractor shall furnish, install, connect and test all equipment, accessories, conduit, cables, wires, buses, grounds and support items necessary to ensure a complete and operable airport lighting system as specified here and shown in the plans.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and state and local code agencies having jurisdiction.

The Contractor shall install the specified equipment in accordance with the applicable advisory circulars and the details shown on the plans.

125-3.2 Testing. All lights shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance. The test shall include operating the constant current regulator in each step not less than 10 times at the beginning and end of the 24-hour test. The fixtures shall illuminate properly during each portion of the test.

125-3.3 Shipping and Storage. Equipment shall be shipped in suitable packing material to prevent damage during shipping. Store and maintain equipment and materials in areas protected from weather and physical damage. Any equipment and materials, in the opinion of the RPR, damaged during construction or storage shall be replaced by the Contractor at no additional cost to the owner. Painted or galvanized surfaces that are damaged shall be repaired in accordance with the manufacturer's recommendations.

125-3.4 Elevated and In-pavement Lights. Water, debris, and other foreign substances shall be removed prior to installing fixture base and light.

A jig or holding device shall be used when installing each light fixture to ensure positioning to the proper elevation, alignment, level control, and azimuth control. Light fixtures shall be oriented with the light beams parallel to the runway or taxiway centerline and facing in the required direction. The outermost edge of fixture shall be level with the surrounding pavement. Surplus sealant or flexible embedding

material shall be removed. The holding device shall remain in place until sealant has reached its initial set.

a. Install and mount the products to comply with the requirements of the National Electric Code, Item L-111 and Item L-108.

b. General Cable Installation Requirements

1. The primary cable shall enter the light base and transformer housing as shown on the plans.

2. Primary cable slack shall be provided inside the light fixture base following Item L-108. In general, enough slack shall be left in the cable to permit installation aboveground of the connections between the primary cable and the isolation transformer primary leads. A similar length of primary cable slack shall be provided for any unconnected cable installed in a fixture base can.

3. The transformer secondary leads shall be connected to the lamp leads with a disconnecting plug and receptacle. The secondary connection shall not be taped; the cable connections to the insulating transformer's leads shall be made following Item L-108.

4. The connector joints in the primary circuit shall be wrapped with at least 3 layers of synthetic rubber tape and 2 layers of plastic tape, one-half lapped, extending at least 1-1/2 inches on each side of the joint. Refer to section L-108.

5. Ends of cables shall be sealed with heat shrinkable tubing until the splice is made to prevent the entrance of moisture.

c. General Duct and Conduit Installation Requirements. Trenching, installation of ducts and conduits, concrete backfilling, trench backfilling, installation of duct markers and the type of material used shall conform to Item L-110.

d. General Light Fixture Base Installation Requirements.

1. Caution shall be exercised during light base installation to prevent the collection of foreign matter in products and on operating components. All installation residue shall be collected as installation progresses. As directed by Owners Representative, a cover shield shall be used to protect components from foreign matter during installation.

2. Fixture base shall be installed in existing reinforced concrete or asphalt pavements with connecting conduit as shown on the plans. Precast base cans are not approved for use.

3. Light bases shall be set level. Leveling jig shall be required as specified and as directed by the RPR. Turn leveling tool over to owner for spare parts.

4. Where fixtures bases are encased in concrete, use PVC coated rigid galvanized steel conduit for fixture connection through the encasement. Transition to PVC Schedule 40 outside of the encasement.

5. Install reinforcement in the concrete encasement consisting of No. 4 bar tie bar cage. Base can encasement shall be cast-in-place. Pre-cast base cans are not allowed.

6. Flexible, seal tight steel conduit shall not be used unless specifically approved by the RPR. If approved for use, a maximum length of two (2) feet of flexible, sealtight steel conduit can be installed at the connection point to fixture base cans, only where rigid conduit connections cannot be made. Any flexible, sealtight steel conduit bend radius shall meet the cable manufacturer's minimum bend radius requirements or shall meet bend radius requirements for rigid conduit. The more stringent requirement shall govern, as determined by the RPR.

7. Light or bases shall have 1, 2 or more 2-inch threaded metallic hubs for all required conduit entrances, or as indicated on the plans. Grommeted conduit entrances are strictly prohibited. The cable entrance hubs shall be oriented in the proper direction so as to align with the connecting conduit.

8. Stub-in conduit connections into existing light bases shall be Meyers Hub installation, where required on the plans and as noted on plan details.

9. Furnish base with a drain conduit connection as shown in contract drawings.

10. Furnish a light base ground consisting of a #6 AWG bare copper wire jumper bonded to the external ground lug on the base to a ground rod installed adjacent to the base.

11. Furnish a light fixture bonding conductor consisting of a (minimum 6-foot length) #6 AWG stranded copper wire rated for 600V with green XHHW insulation. Connect conductor from internal ground lug on base can to light fixture base plate following light fixture manufacturers recommendations.

12. When existing light fixtures are removed for the purpose of installing new conductors, lockwashers shall be re-installed using new hold down bolts.

13. Breakage of fixture hold down bolts normally and regularly occurs in the field during fixture removal or fixture installation. When breakage occurs, the Contractor shall adhere to the following requirements:

a) The Contractor shall submit a broken bolt removal process for approval of the RPR.

b) Submittal shall include information about the planned broken bolt removal process and jig required to effectively drill and tap broken bolts, when necessary.

c) Whenever encountered, broken bolts shall be removed.

d) Where drilling and tapping is required, a jig approved for use by the RPR shall be used.

e) All broken bolts shall be replaced with new hold down bolts. In the event that light fixture bases are permanently damaged in the course of removing broken bolts, the Contractor shall be held responsible for the immediate repair/replacement of the lighting base. Permanent damage includes drilling of holes which exceed the required 3/8 inch bolt diameter and/or any “off centered” impressions that penetrate the inner lip of the existing bolt holes.

f) Use of "helicoils" shall be strictly prohibited as a method of dealing with stripped bolt holes, unless specifically approved in extreme emergency conditions by the Owners Representative.

g) Light fixture bases to be used as junction boxes shall be installed at the approximate locations indicated in the plans, or as directed by the Owners Representative.

h) For elevated fixtures installed on standard L-867

1) Use 18-8 stainless steel bolts with 2-piece locking washer sets.

2) Provide material submittal of anti-seize compound to Engineer for approval prior to use.

3) Perform Bolt Clamping Force Test as noted in Section X-100 to determine required bolt torque.

i) For fixtures installed on stainless steel base cans or L-868 type galvanized steel base cans:

1) Use ceramic coated "orange" bolts, MCB Industries #L201-2416x1.75 or equal, with 2-piece locking washer sets.

2) Do NOT apply anti-seize compound.

3) Perform Bolt Clamping Force Test as noted in Section X-100 to determine required bolt torque.

j) For new fixtures installed on existing L-868 type base cans:

1) Remove existing bolts and install new ceramic coated "orange" bolts, MCB Industries #L201-2416x1.75 or equal, with 2-piece locking washer sets.

2) Do NOT apply anti-seize compound.

3) Perform Bolt Clamping Force Test as noted in Section X-100 to determine required bolt torque.

4) Provide new fixture ID following contract documents.

e. General Cable Installation Requirements

1. The primary cable shall enter the light base and transformer housing as shown on the plans.

2. Primary cable slack shall be provided inside the light fixture base following Item L-108. In general, enough slack shall be left in the cable to permit installation aboveground of the connections between the primary cable and the isolation transformer primary leads. A similar length of primary cable slack shall be provided for any unconnected cable installed in a fixture base can.

3. The transformer secondary leads shall be connected to the lamp leads with a disconnecting plug and receptacle. The secondary connection shall not be taped; the cable connections to the insulating transformer's leads shall be made following Item L-108.

4. The connector joints in the primary circuit shall be wrapped with at least 1 layer of synthetic rubber tape and 2 layers of plastic tape, one-half lapped, extending at least 1-1/2 inches on each side of the joint.

5. Ends of cables shall be sealed with heat shrinkable tubing until the splice is made to prevent the entrance of moisture.

f. Installing Light Fixtures at Existing Bases

1. At locations indicated on the plans, the Contractor shall install light fixtures at existing fixture bases. This shall include providing the following items, as required and directed by the RPR.

a) Remove and salvage existing base cover plates.

b) Refurbish and prepare the base flange with flange rings or spacer rings, as required and directed by the RPR, in order to properly install the specified light fixture.

c) Clean out and refurbish the interior of the bases, including conduits.

d) If no ground lug exists on the interior, provide new ground lug with ground strap following base manufacturer's recommendations.

e) Install primary airfield lighting circuit cable or verify existing airfield light cable is properly installed.

f) Install fixture isolation transformers of proper specified rating and wattage.

g) Install specified fixtures.

h) Install concrete collar as shown on the contract documents.

g. An identification tag shall be installed with each light or sign as shown in the plans. Circuit identification tags identifying each circuit shall be attached to each circuit as shown in the plans. Refer to section L-108.

h. Dow Corning Compound III valve lubricant non-curing sealant or approved equal shall be used to seal between sections of base cans, spacer rings, adapter rings or fixtures.

i. Demolition and Salvage. At locations noted on plans, the following shall be required:

1. Existing light fixtures, bases, cables and other materials identified as salvageable by the RPR shall be removed. Salvageable materials shall be delivered to the owner's salvage area or disposed of as directed by the RPR.

125-3.5 Signs, base cans.

a. All signs, base cans, etc. shall be installed as shown in the plans or approved shop drawings and in accordance with the applicable FAA Advisory Circulars and manufacturers' recommendations. Survey instruments shall be used to position all items to insure precise orientation. Tolerances given in the FAA Advisory Circulars, these specifications, and the plans shall not be exceeded. Where no tolerance is given, no deviation is permitted. Items not installed in accordance with the FAA Advisory Circulars, these specifications and plans shall be removed and replaced by and at the expense of the Contractor.

b. Signs shall be oriented at 90 degrees to the direction of the taxing path from which it is viewed unless noted otherwise.

c. For all signs, the concrete pad shall extend to not less than eighteen (18) inches out from the edge of the sign all around. The concrete pad shall be a minimum of six (6) inches thick. The concrete pad shall be poured in place and rest on undisturbed soil. The pad shall be reinforced with steel bars formed and placed as indicated in the Plans. Exposed concrete surface shall be finished smooth with a steel trowel or rubbed to a smooth finish. All horizontal edges to be chamfered one (1) inch at 45 degrees.

d. During construction of the pad, the transformer base shall be adjusted and firmly held in place so that machined upper surface of base flange will be level within -2 degrees and not more than 1/4 inch above the surface of pad. All other bearing areas for additional flange supports shall be in the same horizontal plane as the transformer base flange.

e. The Contractor shall completely survey and stake out each areas signage layout prior to starting any installation. Should any irregularities occur in the layout, the RPR shall be notified immediately. The bid item price shall include the necessary surveyed layout for each item and the cost for any additional adjustment or resurvey of the location of the items due to the existing geometric conditions. The new signage installation shall be coordinated with and blend into the signage installation.

f. All loose material shall be removed from all excavations for electrical equipment, raceways, manholes, pads, etc. The bottom of the excavation shall be compacted to 95% compaction in accordance with ASTM D 1557 prior to the installation of the electrical item and backfill.

g. Assemble units and connect to the system in accordance with the manufacturer's recommendations and instructions.

h. An identification monument shall be installed with each fixture, sign, etc. as shown in the plans.

i. Provide three feet (3') of slack in each end of each cable in each base can. All connections shall be able to be made above ground.

j. Painted and galvanized surfaces that are damaged shall be repaired according to the manufacturer's recommendations, to the satisfaction of the RPR. Use cold galvanizing compound or to

repair galvanized surfaces. Obtain paint and primer, of same batch number, from the equipment manufacturer to repair painted surfaces.

k. All signs shall use an L-867D size Base Can shall be used.

l. Dewatering necessary to construct L-125 Items and related erosion and turbidity control shall be in accordance with federal, state, and local requirements and is incidental to its respective pay item as a part of L-125. The cost of all excavation regardless of type of material encountered, shall be included in the unit price bid for the L-125 Item.

METHOD OF MEASUREMENT

125-4.1 Measurement for this item will be per each, installed complete and accepted by the RPR. This item provides for the procurement and installation of a new elevated light of the type shown with new base can of the type shown in turf, existing pavement, or new shoulder pavement areas. This item includes installation of the light fixture with, lens, lamps, new L-867B base can with grade 2 carbon steel coated bolting hardware with CEC lock washers, nylon bushing, gasket, spacers, multi-hole adapter ring, connector kit, isolation transformer, heat shrinks, cable tags, light ID marker, concrete encasement with reinforcement, safety ground, stainless steel ground rod including all terminations, testing and all items necessary to complete installation. For installation in existing pavement, this item additionally includes coring the pavement to prepare a capture section for the can. Incidental to this item, if required, is the special height base can with bricks. Incidental to this item is the testing to determine the required bolt torque following section X-100 including, but not limited to, testing for determination of the K factor, mock-up of lighting assembly and all materials and tools necessary to conduct the test following EB-83A. Separate measurement will be made for various installation scenarios.

125-4.2 This item provides for the procurement and installation of a Size 1, L-858(L) airfield guidance sign, of the type and size shown on the drawings, and associated materials, as identified in the plans and specifications. This item includes procurement and installation of the new or salvaged sign structure with panels, lamps, isolation transformer, L-867D base can with steel cover, hubs, gasket, bolting hardware, sign, ID tag and marker, ground rod with test results, connector kit, tether, local on/off switch, cable tag with all testing, terminations and all incidentals required to provide a complete and operational system. In addition, this includes installation of concrete foundation with reinforcement bars. Where signs are installed on existing pavement, this includes cutting into the existing pavement as shown in the contract documents. Measurement for this item will be per each sign, installed complete and accepted by the RPR.

125-4.3 This item provides for the procurement and installation of a new isolation transformer in an existing light fixture or sign. Isolation transformer shall be sized as noted on contract drawings, and installed complete with all required connections, heat shrinking, cable ID markers, and all other components required for a complete and accepted system to the satisfaction of the RPR. Measurement for this item will be per each, installed complete and accepted by the RPR.

125-4.4 This item provides for the procurement and installation of a new style E, current driven LED REIL unit, complete and accepted by the RPR. Incidental to this item is the master and slave units, L-867D base cans, interconnecting conduit, isolation transformer, control cabling, foundation, and all other associated equipment required for a complete and accepted system. Measurement for this item will be per each, installed complete and accepted by the RPR.

BASIS OF PAYMENT

125-5.1 Payment for this item will be made at the contract unit price per each completed and accepted light assembly, which constitutes full compensation for furnishing all materials, for preparing and placing

these materials, and for all labor, supervision, equipment, tools and incidentals necessary to complete this item. Unsuitable materials removed must be disposed of off-site by the Contractor in accordance with local laws and regulations. All other materials removed must be hauled separately to the EMMS, unless otherwise directed by the RPR. The cost of removing and disposing of the material will not constitute a pay item and will be considered incidental to installation.

125-5.2 Payment for this item will be made at the contract unit price per each, which constitutes full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, supervision, equipment, tools and incidentals necessary to complete this item. No separate payment will be made for the various size and type of signs installed.

Payment will be made under:

Item L-125-5.1	Install New L-861T(L) Elevated Taxiway Edge Light with New L867B Base Can in Earth, per Each
Item L-125-5.2	Install New L-861T(L) Elevated Taxiway Edge Light in Existing Base Can, per Each
Item L-125-5.3	Install Salvaged L-861T(L) Elevated Taxiway Edge Light in Existing Base Can, per Each
Item L-125-5.4	Install New L-861T(L) Elevated Taxiway Edge Light with New L867B Base Can in Existing Pavement, per Each
Item L-125-5.5	Install New L-861(L) Elevated Runway Edge Light with New L867B Base Can in Earth, per Each
Item L-125-5.6	Install New L-861(L) Elevated Runway Edge Light in Existing L867B Base Can, Per Each
~~Item L-125-5.7~~	~~Install New L-861(L) Elevated Runway Edge Light with New L867B Base Can in Existing Pavement, per Each~~
~~Item L-125-5.8~~	~~Install New L-850C(L) Inpavement Runway Edge Light with New L867B Base Can in Existing Pavement, per Each~~
Item L-125-5.9	Install New L-861E(L) Elevated Runway Threshold Light with New L-867B Base Can in Earth, per Each
Item L-125-5.10	Install New L-861E(L) Elevated Runway Threshold Light in Existing Base Can, per Each
Item L-125-5.11	Install New Guidance Sign on New Sign Foundation, 1 Module, per Each
Item L-125-5.12	Install New Guidance Sign on New Sign Foundation, 2 Module, perEach
Item L-125-5.12	Install New Guidance Sign on New Sign Foundation, 3 Module, per Each
Item L-125-5.13	Install New Guidance Sign on New Sign Foundation, 4 Module, per Each
Item L-125-5.14	Install New Guidance Sign on Existing Foundation, 1 Module, per Each
Item L-125-5.15	Install New Guidance Sign on Existing Foundation, 2 Module, per Each
Item L-125-5.16	Install New Guidance Sign on Existing Pavement VIA Coring, 2 Module, per Each

~~Item L-125-5.17 Install New Isolation Transformer and Connector Kit in Existing Sign/ Fixture, per Each~~

Item L-125-5.18 Install New REIL Unit, per Each

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 150/5340-18	Standards for Airport Sign Systems
AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-5	Circuit Selector Switch
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-28	Precision Approach Path Indicator (PAPI) Systems
AC 150/5345-39	Specification for L-853, Runway and Taxiway Retroreflective Markers
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5345-44	Specification for Runway and Taxiway Signs
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Specification for Series to Series Isolation Transformers for Airport Lighting Systems
AC 150/5345-51	Specification for Discharge-Type Flashing Light Equipment
AC 150/5345-53	Airport Lighting Equipment Certification Program

Engineering Brief (EB)

EB No. 67	Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures

END OF ITEM L-125

Ferguson Consulting
Aviation Specialists for Electrical, Telecommunications and Security Systems
10200 Grogan's Mill Rd | Suite 420 | The Woodlands, TX 77380
OFFICE 281.252.9232 WEB www.fci-engr.com

Lochner
12750 Merit Dr | Suite 570 | Dallas, TX 75251
OFFICE 214.373.7873 WEB hwlochner.com

TXDOT AVIATION STATEWIDE AIRFIELD ELECTRICAL CONSTRUCTION PROJECT
GROUP ALPHA

TXDOT CSJ NO.: 4222AVSAEA RE-BID
LOCHNER PROJECT NO.: 20616

26R Jackson County Airport (Edna)	**CSJ No. 2413EDDNA**
T20 Roger M. Dreyer Memorial Airport (Gonzales)	**CSJ No. 2416GONZA**
RKP Aransas County Airport (Rockport)	**CSJ No. 2416ROCKP**
84R Smithville Crawford Municipal Airport	**CSJ No. 2414SMITH**
TRL Terrell Municipal Airport	**CSJ No. 2418TEREL**

PRE-BID MEETING *MINUTES*
Wednesday, September 10, 2025 | 11:00 a.m.

I. Sign In Sheet:

A. See attached attendees list at the end of Meeting Minutes.

II. Identify Key Personnel:

A. Ed Mayle, Project Manager, TxDOT
B. Dawn Denson, Contract Administrator Manager, TxDOT
C. Eli Lopez, DBE/HUB Coordinator, TxDOT
D. Rick McClure, Airport Manager, Jackson County Airport (Edna)
E. Ralph Camarillo, Airport Manager, Roger M. Dreyer Memorial Airport (Gonzales)
F. Mike Geer, Airport Manager, Aransas County Airport (Rockport)
G. Robert Tamble, City / Airport Manager, Smithville Crawford Municipal Airport
H. Sandy Meyerson, Operations Manager, Smithville Crawford Municipal Airport
I. Chris Snapp, City Engineer & Director Municipal Development, Terrell Municipal Airport
J. Jeremy Mungin, City Engineer, Terrell Municipal Airport
K. Austin Cote, FCI, Airfield Electrical Engineer
L. Stephen Schwieterman, Lochner, Project Manager

III. Bidding Process

A. Receipt and Opening of Bids:
   i. Proposals will be received until **1:00 pm CT on Wednesday, September 24th, 2025**:

   Sealed Bids needs to be addressed and delivered to
   Dawn Denson, TxDOT – Aviation, 6230 E. Stassney Lane,
   2nd Floor, Austin, Texas 78744

Then publicly opened and read. Any bid received after closing time will be returned unopened.

ii. Bidding documents may be examined at:
- **TxDOT – Aviation, 6230 E. Stassney Lane, 2nd Floor, Austin, Texas 78744**
- **H.W. Lochner, Inc., 12750 Merit Drive, Suite 570, Dallas, Texas 75251**

iii. Envelopes containing bids must be clearly marked "Bid Proposal" and be sealed and addressed as shown in the Instructions To Bidders of the Contract Documents / Specifications.

iv. See Notice to Bidders and Instructions to Bidders section in the Contract Documents for bidding information.

v. Technical questions will be received until 5:00 pm CT on Friday, September 12th, 2025, and shall be emailed to Stephen Schwieterman at SSchwieterman@HWLochner.com, also reachable at 214.492.3621.

B. **Contract Provisions and Proposal Form:**

i. Proposers shall provide a statement of qualifications with their proposal of past similar work, a financial statement, and a statement of plant and equipment proposed for use on the project. In lieu of the financial statement, Contractors may provide evidence that they are pre-qualified with TXDOT for similar work and are on the current TXDOT bidders list.

ii. The Contractor and his/her Subcontractors will be required to provide certificates of insurance for at least the minimum amounts specified in the Special Provisions.

iii. **The DBE goal for this project is 2% and the bidders shall electronically submit the DBE participation plan and appropriate commitment agreement forms to TxDOT Aviation eGrants electronic grant management system**. Any questions regarding DBE please contact Dawn Denson, TxDOT Aviation, at Dawn.Denson@TxDOT.gov, or at 512.416.4526. In accordance with 49 CFR Part 26.53 the bidder must submit an acceptable DBE plan **no later than 5 calendar** days after bid opening.

iv. Bidder shall reference the Aviation Division General Construction Contract Provisions. http://txdot.gov/inside-txdot/division/aviation/general-provisions.html

v. The bidder shall submit the completed bid either on the form furnished by TxDOT or by submitting an electronically printed version. All blank spaces in the TxDOT bid form must be correctly filled in where indicated for each and every item for which quantity is given. The bidder shall state the price both in words and numerals for each pay item furnished in the bid. Bid form shall be completed electronically using Adobe Acrobat.

vi. A Bid Bond guarantee will be required with each bid as a certified check or a bid bond in the amount of two (2) percent of the total amount of the bid, made payable to the TxDOT Aviation.

IV. Safety and Phasing Plan:

A. Contractor will be required to be in compliance with FAA Advisory Circular 150/5370-2G, Operational Safety on Airports during Construction (or latest edition).

B. B. TxDOT will provide Construction Observation throughout the project. The Contractor shall provide all testing as outlined in the Contract Documents / Specifications.

C. **Scope of Work:**

i. The project consists of:

✈ Jackson County Airport – Edna (26R) – 35 Calendar Days

- Medium Intensity Runway Edge Light Replacement
- Runway Threshold End Identifier Light Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation
- Electrical Vault Equipment Replacement and Vault Clean Up
- New PAPI 2-Box System (Runway 15 & 33 Approaches)
- Install New Wind Cone and Tip Down Pole, Repaint Wind Cone Segmented Circle
- Existing Beacon and Beacon Pole Replacement

✈ Roger M. Dreyer Memorial Airport – Gonzales (T20) – 42 Calendar Days

- Runway Threshold End Identifier Light Replacement
- Medium Intensity Runway Light Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation

- Electrical Vault and Electrical Vault Equipment Replacement
- New Runway 15 & 33 PAPI 2-Box System
- Wind Cone Replacement and Repaint Wind Cone Segmented Circle
- Existing Beacon Pole Replacement
- New Runway 15 REIL System

✈ Aransas County Airport - Rockport (RKP) – 61 Calendar Days

- Medium Intensity Runway 14-32 & 18-36 Edge Light and Threshold Replacement
- Taxiway Edge Lights Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation
- Electrical Vault Equipment Replacement and Vault Clean Up
- New Runway 14-32 & 18-36 PAPI 4-Box System
- Wind Cone Replacement and Repaint Wind Cone Segmented Circle
- Existing Beacon and Beacon Pole Replacement
- New Runway 14 REIL System

✈ Smithville Crawford Municipal Airport (84R) – 35 Calendar Days

- Medium Intensity Runway Edge Light Replacement
- Runway Threshold End Identifier Light Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation
- Electrical Vault Equipment Replacement and Vault Clean Up
- Wind Cone Replacement and Repaint Wind Cone Segmented Circle
- Existing Beacon Replacement
- New Runway 17 & 35 2-Box PAPI System
- New REIL System at Runway 17 & 35 Approaches

✈ Terrell Municipal Airport (TRL) – 42 Calendar Days

- Medium Intensity Runway Light Replacement
- Runway Threshold End Identifier Light Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation
- Electrical Vault and Electrical Vault Equipment Replacement
- Wind Cone Replacement and Repaint Wind Cone Segmented Circle
- New Runway 36 4-Box PAPI System
- New Runway 36 REIL System

ii. The construction time for this project is 305 calendar days.

V. Site Access / Staging Area:

A. Contractor's access roads, haul roads, and staging areas are shown:

i. Jackson County Airport (26R) ..... Sheet No.s CE1.2 – CE1.3
ii. Roger M. Dreyer Memorial Airport (T20) ..... Sheet No.s CG2.2 – CG2.3
iii. Aransas County Airport (RKP) ..... Sheet No.s CR3.2 – CR3.5
iv. Smithville Crawford Municipal Airport (84R) ..... Sheet No.s CS4.2 – CS4.3
v. Terrell Municipal Airport (TRL) ..... Sheet No.s CT5.2 – CT5.3

B. Individual site visits can be set up by contacting the airports individually.

Name	Point of Contact to	Email	Phone
Rick McClure	Jackson County **Airport** / Edna Airport Manager	RAMcClure@AEP.com	361-652-4163
Ralph Camarillo	Roger M. Dreyer Memorial Airport / **Gonzales**	RCamarillo@Gonzales.Texas.Gov	830-263-2145
Mike Geer	Aransas County Airport / **Rockport** Airport Manager	MGeer@AransasCounty.org	817-480-8861
Robert Tamble	**Smithville** Crawford Municipal Airport	CityManager@ci.Smithville.tx.us	512-237-3282
Sandy Meyerson	**Smithville** Crawford Municipal Airport	Sandy.Airport84R@gmail.com	979-224-6304
Chris Snapp	**Terrell** Municipal Airport / City Engineer & Director Municipal Development	CSnapp@CityofTerrell.org	972-551-6600 Ext. 2137

C. Airport photos are electronically available at: https://fciengr.egnyte.com/fl/kO3wwuNg2M

D. These minutes will be included in Addendum 1, or by email request to Stephen.

VI. Questions:

Q1.: For Smithville Airport (84R), CSJ No. 2414SMITH - Would it be possible to change the lights from their current frequency from 123.3 to the airport common frequency of 122.9 during this project?

A1.: No objections were made. This change will be considered and coordinated during construction.

END MEETING MINUTES

Ferguson Consulting
Aviation Specialists for Electrical, Telecommunications and Security Systems
10200 Grogan's Mill Rd | Suite 420 | The Woodlands, TX 77380
OFFICE 281.252.9232 WEB www.fci-engr.com

Lochner
12750 Merit Dr | Suite 570 | Dallas, TX 75251
OFFICE 214.373.7873 WEB hwlochner.com

Date: Wednesday, September 10, 2025 | 11:00 AM

Location: Virtual Teams Meeting

Re: TxDOT Aviation Statewide Airport Electrical Construction Project
Pre-Bid Meeting
TxDOT CSJ No: 4222AVSAEA – **Re-Bid**

CSJ No. 2413EDDNA	26R	Jackson County Airport
CSJ No. 2416GONZA	T20	Roger M. Dreyer Memorial Airport
CSJ No. 2416ROCKP	RKP	Aransas County Airport
CSJ No. 2414SMITH	84R	Smithville Crawford Municipal Airport
CSJ No. 2418TEREL	TRL	Terrell Municipal Airport

List of Meeting Attendees:

Name	Company	Email
Ed Mayle	TxDOT	ed.mayle@txdot.gov
Eli Lopez	TxDOT	eli.lopez@txdot.gov
Cole Ferguson	Ferguson Consulting, Inc.	cferguson@fci-engr.com
Stephen Schwieterman	H. W. Lochner, Inc.	sschwieterman@hwlochner.com
Ana Miranda	H. W. Lochner, Inc.	amiranda@hwlochner.com
Mike Geer	Aransas County Airport	mgeer@aransascounty.org
Sandy Meyerson	Smithville Crawford Municipal Airport	sandy.airport84r@gmail.com
Briana Santa Ana	City of Terrell	bsantaana@cityofterrell.org
Mike Olguin	F&W Electrical Contractors, Inc.	mike@fandwelectrical.com
Mandy Kelley	F&W Electrical Contractors, Inc.	
Emily Lehman	Vellutini Corporation DBA Royal Electric Company	emilyl@royalelect.com
Jackie Lerma	Vellutini Corporation DBA Royal Electric Company	jacquelinele@royalelect.com
Rebecca Fletcher	Vellutini Corporation DBA Royal Electric Company	rebeccaf@royalelect.com
Nate Maas	Vellutini Corporation DBA Royal Electric Company	natem@royalelect.com

AVIATION STATEWIDE AIRPORT ELECTRICAL CONTRACT (AVSAE)

GROUP ALPHA
RE-BID

Ferguson Consulting

Lochner

SEPTEMBER 10, 2025
11:00 a.m.

AGENDA




01. Key Personnel

02. Bidding Process

03. Airport Project Information

26R Jackson County Airport (Edna)
T20 Roger M. Dreyer Memorial Airport (Gonzales)
RKP Aransas County Airport (Rockport)
84R Smithville Crawford Municipal Airport
TRL Terrell Municipal Airport

04. Questions

Ferguson Consulting Lochner

IDENTIFY KEY PERSONNEL

26R Jackson County (Edna)	Rick McClure	Airport Manager
T20 Roger M. Dreyer (Gonzales)	Ralph Camarillo	Airport Manager
RKP Aransas County (Rockport)	Mike Geer	Airport Manager
84R Smithville Crawford	Robert Tamble	City / Airport Manager
84R Smithville Crawford	Sandy Meyerson	Operations Manager
TRL Terrell Municipal	Chris Snapp	City Engineer & Director Municipal Development
TRL Terrell Municipal	Jeremy Mungin	City Engineer

Ferguson Consulting Lochner

IDENTIFY KEY PERSONNEL

TXDOT	Ed Mayle	Project Manager
TXDOT	Dawn Denson	Contract Administration Manager
TXDOT	Eli Lopez	DBE/HUB Coordinator
FCI	Cole Ferguson	Airfield Electrical Engineer
LOCHNER	Stephen Schwieterman	Project Manager

Ferguson Consulting

Lochner

BIDDING PROCESS

A. Receipt and Opening of Bids:

- Proposals will be received until
  1:00 pm CT on Wednesday, September 24th, 2025:

- **Sealed Bids needs to be addressed and delivered to**
  Dawn Denson, TxDOT – Aviation, 6230 E. Stassney Lane,
  2nd Floor, Austin, Texas 78744.

- Then publicly opened and read. Any bid received after closing time will be returned unopened.

- TxDOT Aviation will send out a meeting invite for the bid opening to contractors on the bidders list.

- Bidding documents may be examined at:
  - **TxDOT – Aviation, 6230 E. Stassney Lane, 2nd Floor, Austin, Texas 78744.**
  - **H.W. Lochner, Inc., 12750 Merit Drive, Suite 570, Dallas, Texas 75251**

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BIDDING PROCESS

A. Receipt and Opening of Bids:

- Envelopes containing bids must be clearly marked “Bid Proposal”, must be sealed and addressed as shown in the Instructions To Bidders of the Contract Documents / Specifications.

- See Notice to Bidders and Instructions to Bidders section in the Contract Documents for bidding information.

Ferguson Consulting

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BIDDING PROCESS

B. Contract Provisions and Proposal Form:

- Qualified Proposers shall provide Statement of Qualifications.
- Provide Certificates of Insurance.
- The DBE goal for this project is **2%** and the bidders shall electronically submit the DBE participation plan and appropriate commitment agreement forms to TxDOT Aviation eGrants electronic grant management system. Any questions regarding DBE please contact Eli Lopez, TxDOT Aviation, at 512.416.4506 or *Eli.Lopez@txdot.gov*.
- In accordance with 49 CFR Part 26.53 the bidder must submit an acceptable DBE plan **no later than 5 calendar days** after bid opening.
- Reference the Aviation Division General Construction Contract Provisions.
- Submit Completed Bid Form.
- Bid Bond.

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SAFETY AND PHASING PLAN

- Contractor will be required to be in compliance with FAA Advisory Circular 150/5370-2G, Operational Safety on Airports during Construction (or latest edition).
- TxDOT will provide Construction Observation throughout the project. The Contractor shall provide all testing as outlined in the Contract Documents / Specifications.

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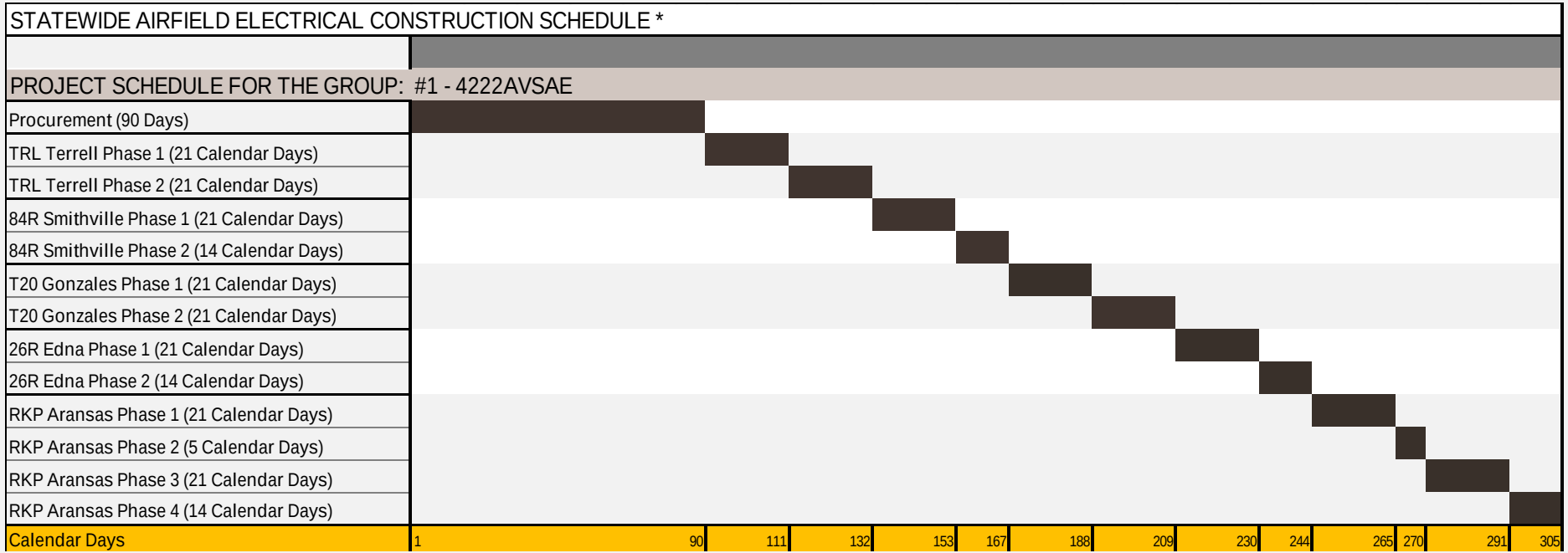
AIRPORT PROJECT INFORMATION

THIS PROJECT CONSISTS OF:

26R Jackson County Airport (Edna)
T20 Roger M. Dreyer Memorial Airport (Gonzales)
RKP Aransas County Airport (Rockport)
84R Smithville Crawford Municipal Airport
TRL Terrell Municipal Airport

PROJECT GENERAL ITEMS:

- Airfield Electrical Circuit
- Runway & Taxiway Edge Lights
- PAPI and REIL Lights
- Vault and Vault Equipment
- Beacon and Tip Down Pole
- Wind Cone and Segmented Circle
- Guidance Signage
- Foundation and Manhole



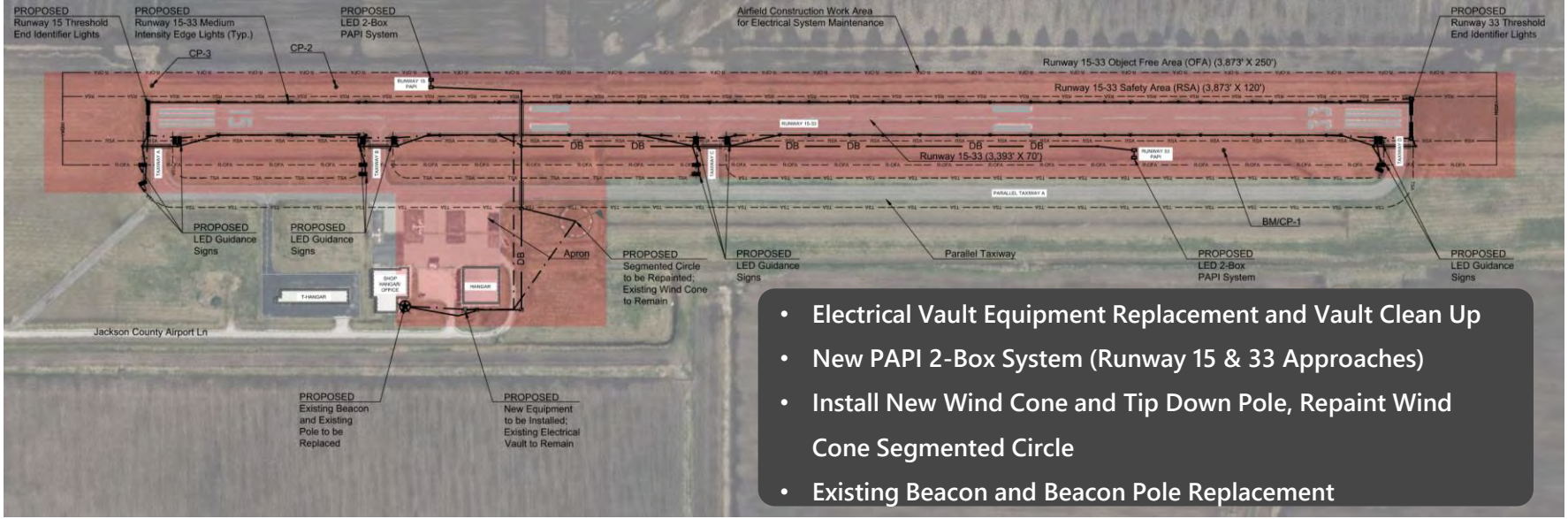
* Engineer to work with selected Contractor to work on a feasible sequence. Construction at TRL Airport shall be completed prior to April 2026. Travel days are not accounted within the construction schedule.

26R EDNA CSJ No. 2413EDDNA

JACKSON COUNTY AIRPORT

The scope of work consists of:

- Medium Intensity Runway Edge Light Replacement
- Runway Threshold End Identifier Light Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation



- Electrical Vault Equipment Replacement and Vault Clean Up
- New PAPI 2-Box System (Runway 15 & 33 Approaches)
- Install New Wind Cone and Tip Down Pole, Repaint Wind Cone Segmented Circle
- Existing Beacon and Beacon Pole Replacement

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26R EDNA CSJ No. 2413EDDNA

JACKSON COUNTY AIRPORT

Ferguson Consulting

Lochner

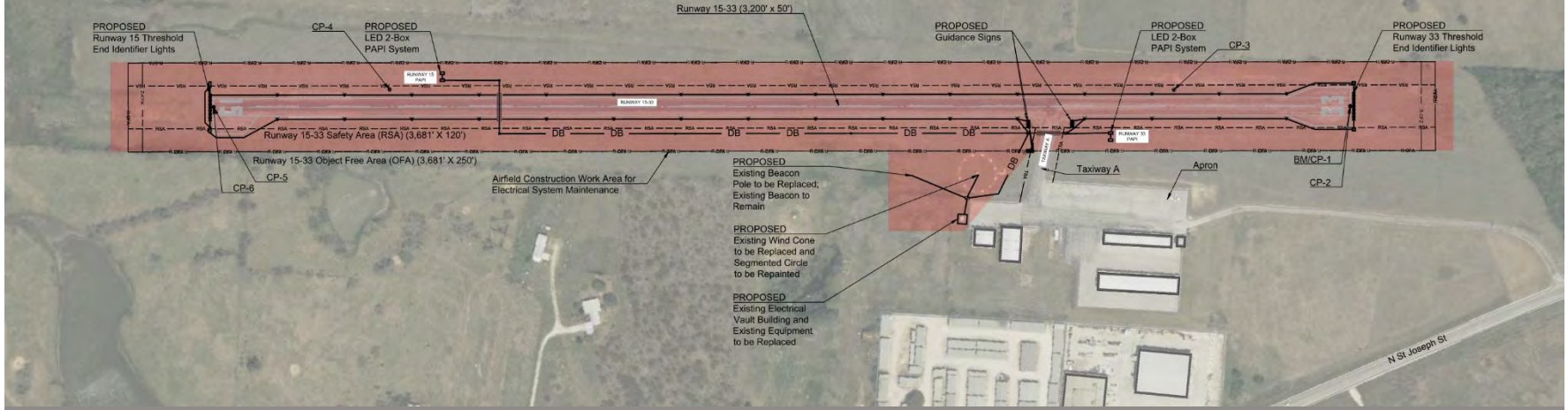
26R EDNA CSJ No. 2413EDDNA

JACKSON COUNTY AIRPORT

Ferguson Consulting

Lochner

T20 GONZALES CSJ No. 2416GONZA
ROGER M. DREYER MEMORIAL AIRPORT



The scope of work consists of:

- Runway Threshold End Identifier Light Replacement
- Medium Intensity Runway Edge Light Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation
- Electrical Vault and Vault Equipment Replacement
- New Runway 15 & 33 PAPI 2-Box System
- Wind Cone Replacement and Repaint Segmented Circle
- Existing Beacon Pole Replacement
- New Runway 15 REIL System

Ferguson Consulting Lochner

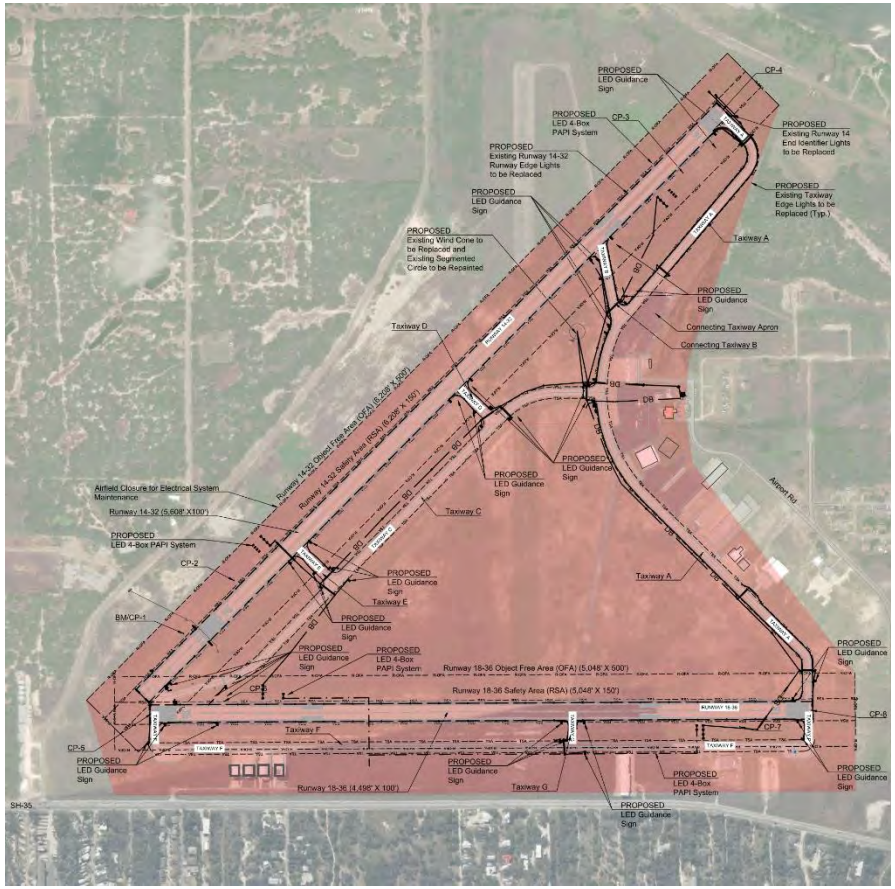
T20 GONZALES CSJ No. 2416GONZA
ROGER M. DREYER MEMORIAL AIRPORT

Ferguson Consulting

Lochner

T20 GONZALES CSJ No. 2416GONZA
ROGER M. DREYER MEMORIAL AIRPORT

Ferguson Consulting Lochner



RKP ROCKPORT
ARANSAS COUNTY AIRPORT

CSJ No. 2416ROCKP

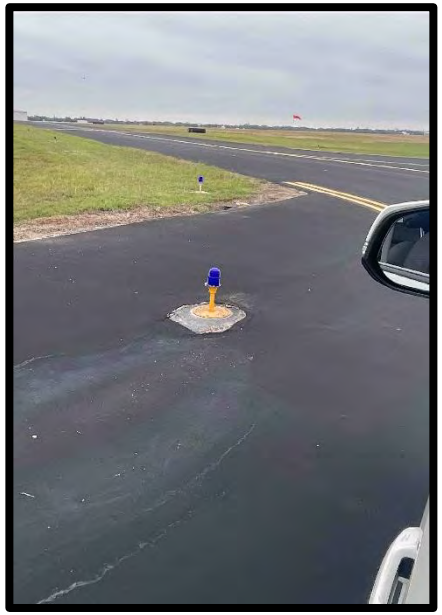
The scope of work consists of:

- Medium Intensity Runway 14-32 & 18-36 Edge Light and Threshold Replacement
- Taxiway Edge Lights Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation
- Electrical Vault Equipment Replacement and Vault Clean Up
- New Runway 14-32 & 18-36 PAPI 4-Box System
- Wind Cone Replacement and Repaint Segmented Circle
- Existing Beacon and Beacon Pole Replacement
- New Runway 14 REIL System

Ferguson Consulting Lochner

RKP ROCKPORT
ARANSAS COUNTY AIRPORT

CSJ No. 2416ROCKP



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RKP ROCKPORT
ARANSAS COUNTY AIRPORT

CSJ No. 2416ROCKP

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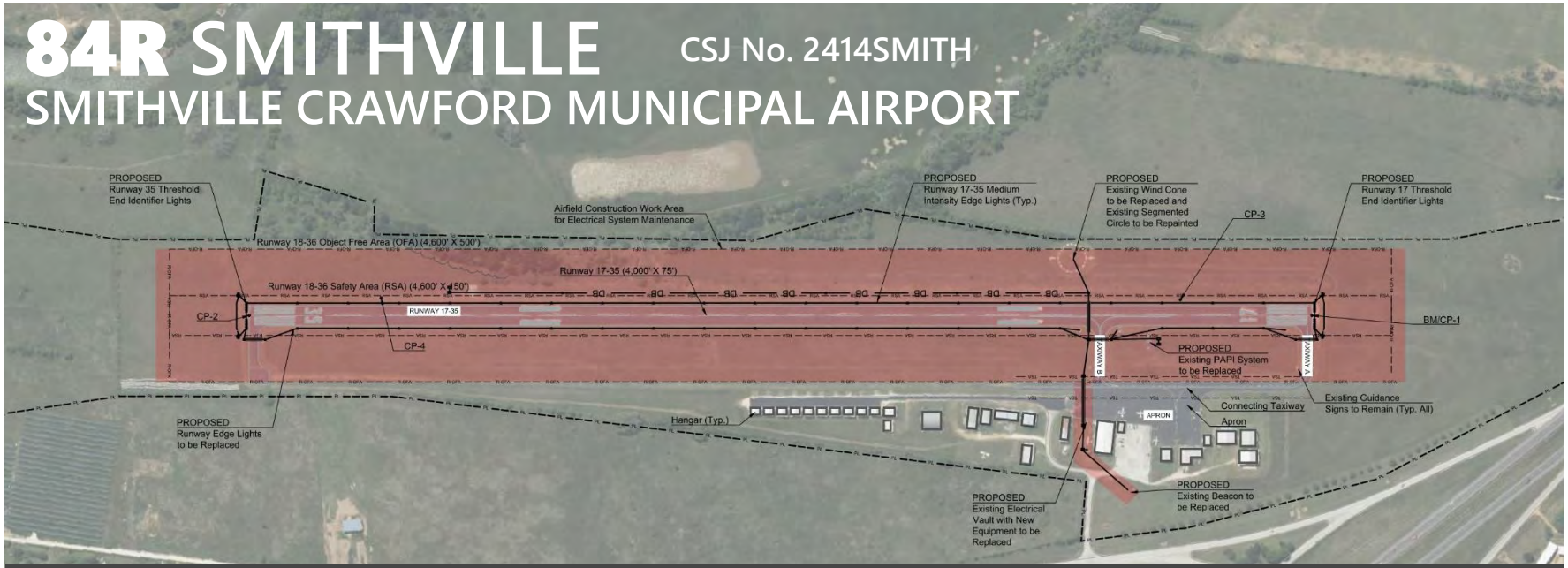
84R SMITHVILLE

CSJ No. 2414SMITH

SMITHVILLE CRAWFORD MUNICIPAL AIRPORT



The scope of work consists of:

- Medium Intensity Runway Edge Light Replacement
- Runway Threshold End Identifier Light Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation
- Electrical Vault Equipment Replacement and Vault Clean Up
- Existing Wind Cone Replacement and Repaint Segmented Circle
- Existing Beacon Replacement
- New Runway 17 & 35 2-Box PAPI System
- New REIL System at Runway 17 & 35 Approaches

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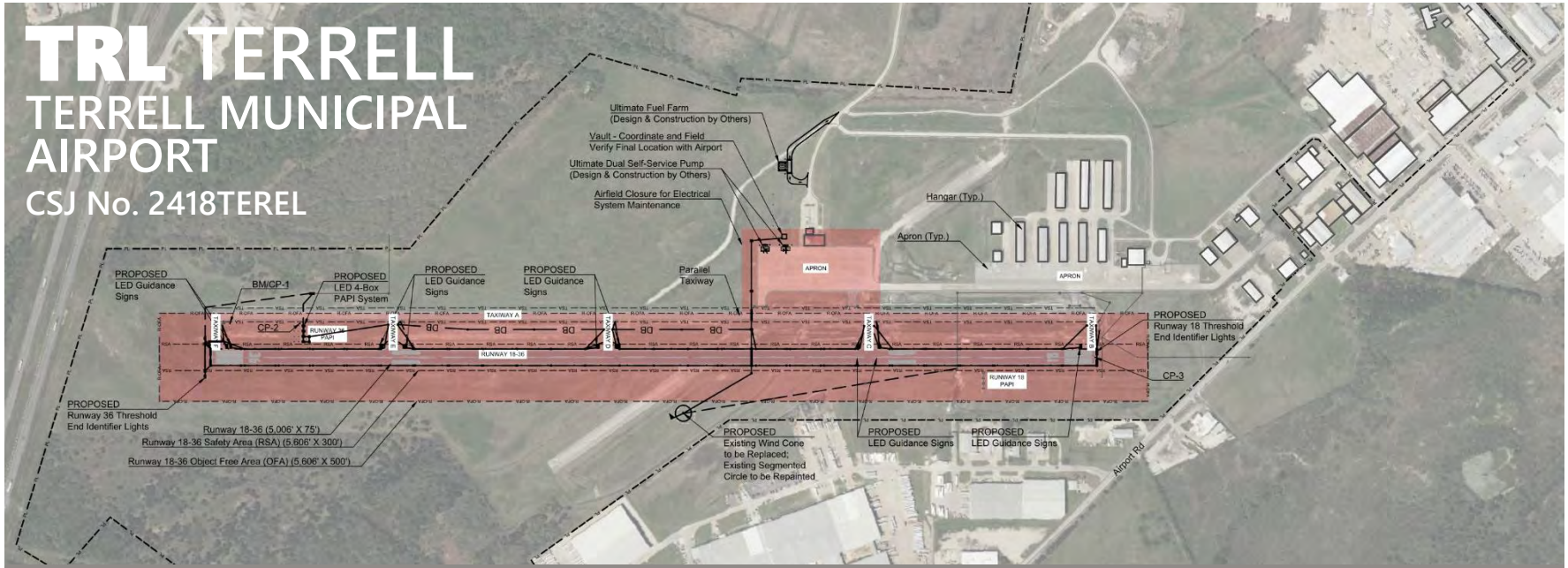
TRL TERRELL

TERRELL MUNICIPAL AIRPORT

CSJ No. 2418TEREL



The scope of work consists of:

- Medium Intensity Runway Edge Light Replacement
- Runway Threshold End Identifier Light Replacement
- Guidance Signage Replacement
- Junction Can Plaza and Duct Bank Installation
- Electrical Vault and Vault Equipment Replacement
- Existing wind cone Replacement and Repaint Segmented Circle
- New Runway 36 4-Box PAPI System
- New Runway 36 REIL System

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TERRELL MUNICIPAL AIRPORT




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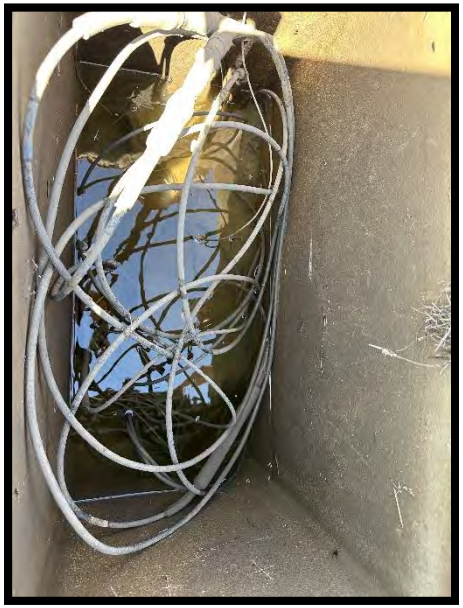
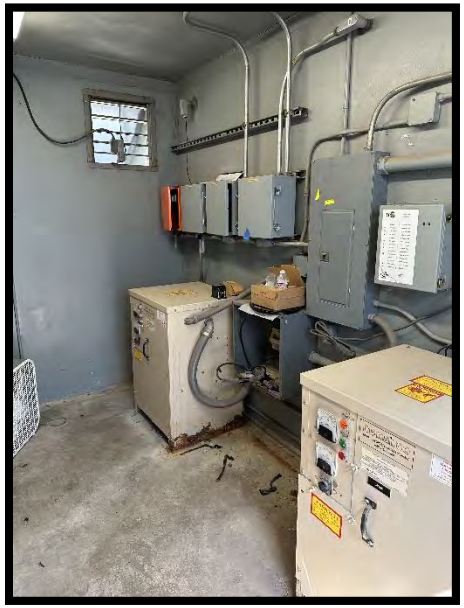
TRL TERRELL CSJ No. 2418TEREL
TERRELL MUNICIPAL AIRPORT





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QUESTIONS

- Cut off for questions is **5:00 p.m. on Friday, 9/12/2025**.
- Technical questions shall be emailed to Stephen Schwieterman SSchwieterman@HWLochner.com or 214.492.3621.
- Questions concerning bid documents shall be directed to Dawn Denson, TxDOT Aviation at 512.416.4526, or at Dawn.Denson@txdot.gov.
- Individual site visits can be set up by contacting the airports individually.
- Airport photos will be included in Addendum 1, or by email request to Stephen.

Name	Point of Contact to	Email	Phone
Rick McClure	Jackson County Airport / **Edna** Airport Manager	RAMcClure@AEP.com	361-652-4163
Ralph Camarillo	Roger M. Dreyer Memorial Airport / **Gonzales**	Rcamarillo@Gonzales.Texas.gov	830-263-2145
Mike Geer	Aransas County Airport / **Rockport** Airport Manager	Mgeer@AransasCounty.org	817-480-8861
Robert Tamble	**Smithville** Crawford Municipal Airport	CityManager@ci.Smithville.tx.us	512-237-3282
Sandy Meyerson	**Smithville** Crawford Municipal Airport	Sandy.Airport84R@gmail.com	979-224-6304
Chris Snapp	**Terrell** Municipal Airport / City Engineer & Director Municipal Development	CSnapp@CityofTerrell.org	972-551-6600 Ext. 2137

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