

BIDDING AND CONTRACT DOCUMENTS
ADDENDUM NUMBER ONE
STATE PROJECT NO. 19-051A-1

DATE: JANUARY 22, 2020

BOWLING GREEN MUNICIPAL AIRPORT

CRAWFORD, MURPHY, TILLY, INC.
ONE MEMORIAL DRIVE, SUITE 500
SAINT LOUIS, MISSOURI 63102

TO: ALL PLANHOLDERS AND POTENTIAL BIDDERS

SUBJECT: ADDENDUM NUMBER ONE TO THE BIDDING DOCUMENTS FOR:
RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY



This addendum forms a part of the bidding and contract documents, and modifies the original bidding documents dated December 16, 2019. This addendum must be signed on the last page and included with the submitted Bid Package. An acknowledgement sheet is also attached. This must be signed and returned to Crawford, Murphy, & Tilly, Inc via fax or e-mail by January 24, 2020. FAILURE TO NOT RECOGNIZE THE ADDENDUM ON THE BID FORM MAY SUBJECT THE BIDDER TO DISQUALIFICATION.

The Contract Documents are revised as follows:

CONTRACT PROPOSAL

Page 160

ADD to the end of section 101-4.1 the following:

For the runway and taxiway pavement, this item includes removal of both the bituminous pavement and underlying aggregate. For the apron removal, this item includes removal of both the bituminous pavement and underlying aggregate as well as all excavation necessary to construct the new pavement to the thickness and grades shown.

Page 185

ADD to the end of section 155-8.1 the following:

Areas receiving lime treatment outside of the areas shown on the cross sections will be measured for payment if processed in accordance with section 155-6.3. Areas receiving lime treatment outside of the areas shown on the cross sections that are processed not using a mixing machine or without monitoring the moisture content, will not be measured for treated subgrade payment but the tonnage of lime used will still be measured for payment subject to the maximum application rate specified in 155-3.1.

Page 198

REVISE the last sentence on Page 198 to read as follows:

Concrete shall be proportioned to achieve a 28-day compressive strength that meets or exceeds the acceptance criteria contained in paragraph 501-6.6 for a compressive strength of 4,400 psi per ASTM C39.

Page 199

REVISE the first sentence of the second paragraph to read as follows:

Compressive strength test specimens shall be prepared in accordance with ASTM C192 and tested in accordance with ASTM C39.

Page 199

REPLACE in section 501-3.4 the first reference to “flexural” with the word “compressive”.

Page 204

REVISE the first full sentence on Page 204 to read as follows:

Hauling equipment or other mechanical equipment can be permitted on adjoining previously constructed pavement when the concrete strength reaches a compressive strength of 3,100 psi (21.4 MPa), based on the average of four field cured specimens per 2,000 cubic yards (1,530 cubic meters) of concrete placed.

Page 207

REVISE the second sentence of section 501-4.10.d.(3)(c) to read as follows:

The concrete shall have cured for seven (7) days or reached a minimum compressive strength of 3,100 psi (21.4 MPa) before drilling begins.

Page 211

REPLACE in the third paragraph of section 501-4.17 the words “flexural strength of 450 psi (3100 kPa)” with the words “compressive strength of 3,100 psi (21.4 MPa)”.

Page 211

REVISE the first sentence of section 501-4.18 to read as follows:

The pavement shall not be opened to traffic until test specimens molded and cured in accordance with ASTM C31 have attained a compressive strength of 3,100 psi (21.4 MPa) when tested in accordance with ASTM C39.

Page 218

REPLACE in section 501-6.5.a.(2) the words “ASTM C78” with “ASTM C39”.

Page 278

ADD after the first sentence of section 905-3.4 the following:

If there is not a sufficient amount of topsoil onsite to spread over the entire disturbed area to be restored, the 6H:1V slopes shall be covered first and then the areas next to pavements until all stockpiled topsoil has been placed. No offsite topsoil shall be required.

Page 302

ADD after section 108-2.12, the following:

108-2.13 UNIT DUCT. Unit duct shall be schedule 40 HDPE and shall comply with UL 651 B, NEMA TC-7, ASTM D 3485, ASTM F 2160 and ASTM D 3035. The duct shall be annealed during the extrusion process. The duct shall be manufactured from black, virgin, high density polyethylene resin designated as Type III, Grade 3, Class C, Category 5 material in accordance with ASTM D 1248. The resin used in extruding the duct shall conform, as a minimum, to the ASTM Standards (latest edition) specified below, certified by the resin supplier on each lot of resin:

Property	Value	ASTM Test
Tensile Strength @ yield, psi	3000	D638
Ultimate Elongation, %	400	D638
Melt Index, gms/10min.	0.5 max.	D1238
Density of Base Resin, gms/cc	0.941-0.955	D1505
Brittleness Temperature, F ₂₀ , C Environmental Stress Crack	-75°C max.	D746
Resistance, F ₂₀	96 hrs.	D1693 Cond. B, F ₁₀

Standard sizes of smooth wall polyethylene duct shall conform to the dimensional requirements specified below:

Duct Size	Nominal Inside Diameter	Nominal Wall thickness	Nominal Outside Diameter
1"	1.049"	0.133"	1.315
1-1/4"	1.380"	0.140"	1.660
1-1/2"	1.610"	0.145"	1.900
2"	2.067"	0.154"	2.375
2-1/2"	2.469"	0.203"	2.875
3"	3.040"	0.216"	3.500

Dimensional measurements shall be performed on samples removed from each length of finished duct. The manufacturer shall have the capability to manufacture a composite wire/cable-in-duct system wherein the wire and cables are placed in polyethylene duct without sticking during the extrusion process. The open ends of each length of reeled flexible duct shall be sealed by plastic caps to prevent the entrance of dirt and water. The duct shall have a durable identification, which shows the manufacturer's name and/or trademark, all at intervals not to exceed ten (10) feet.

The manufacturer shall furnish copies of certified test reports on unit duct. The "unit duct" shall be as manufactured by Carlon Corporation or approved equivalent.

Page 310

ADD the following section:

108-4.4 Unit duct shall not be measured separately for payment but shall be considered incidental to the respective cable pay item.

Page 310

REPLACE the pay item descriptions in section 108-5.1 with the following:

Item L-108-5.1	1/C #8, L-824, Type C, 5KV Cable - Per Linear Foot
Item L-108-5.2	PAPI 31 Circuit, 3#8 Type Use, 1-#8 Gnd., In 1" Unit Duct - Per Linear Foot
Item L-108-5.3	PAPI 13 Circuit, 3#6 Type Use, 1-#8 Gnd., In 1-1/2" Unit Duct - Per Linear Foot
Item L-108-5.4	1/C #6 Bare Copper Counterpoise Cable - Per Linear Foot
Item L-108-5.5	Wind Cone Circuit, 2#8 Type Use, 1#8 Gnd., In 1" Unit Duct - Per Linear Foot

Item L-108-5.6 Beacon Circuit, 2-#10 Type Use, 1-#10 Gnd., In 1" Unit Duct - Per
Linear Foot

Page 318

REPLACE in the first sentence of section 109-3.20 the words "Type L-829" with "Type L-828".

Page 335

ADD to the end of section 125-1.1 the following:

This item also includes attending a flight check of the PAPI and REIL installations to be conducted by the FAA and any costs charged by the FAA if a second or more flight check(s) is needed due to improper installation. The flight check for the PAPI and the flight check for the REIL may be conducted at the same time or on different days, as determined by the FAA.

Page 336

REPLACE in the first sentence of section 125-2.10 the words "Type L-881 Style A, Class I" with "Type L-881 or Type L-881(L), Style A, Class I". Both L-881 and L-881(L) are acceptable provided they are listed in FAA AC 150/5345-53D, current addendum.

Page 337

ADD to the end of section 125-3.5 the following:

The exception to this is the edge light fixtures and the beacon light. The edge light fixtures less the angle iron stake and the beacon light less the tower get turned over to the City of Bowling Green.

Page 339

REVISE L-125-5.1 under Basis of Payment to read "PAPI, 2 Box System - per each".

Page 343

ADD to the end of section 2-2.1 the following:

Another suitable substitute is Advance Building Technologies, Inc. series TR12A-12.502F.GB-G22G; Sales Rep: Doug Pierce – Imrie-Gielow, Inc., (314) 560-9725, dpierce@imriegielow.com.

Page 344

ADD after page 344 pages 344A - 344B. A traffic control pay item has been added.

Page 367-378

REPLACE these pages with revised pages 367A-378A and 378B. A new bid form is being issued.

PLANS**Sheet 2 of 99**

REPLACE Sheet 2 of 99 with REVISION 1.

Sheet 6 of 99

REPLACE Sheet 6 of 99 with REVISION 1.

Sheet 8 of 99

REPLACE Sheet 8 of 99 with REVISION 1.

Sheet 9 of 99

REPLACE Sheet 9 of 99 with REVISION 1.

Sheet 10 of 99

REPLACE Sheet 10 of 99 with REVISION 1.

Sheet 47 of 99

REPLACE Sheet 47 of 99 with REVISION 1.

Sheet 49 of 99

REPLACE Sheet 49 of 99 with REVISION 1.

Sheet 53 of 99

REPLACE Sheet 53 of 99 with REVISION 1.

Sheet 56 of 99

REPLACE Sheet 56 of 99 with REVISION 1.

Sheet 57 of 99

REPLACE Sheet 57 of 99 with REVISION 1.

Sheet 59 of 99

REPLACE Sheet 59 of 99 with REVISION 1.

Sheet 60 of 99

REPLACE Sheet 60 of 99 with REVISION 1.

CLARIFICATION:

For Item L-107, the primary wind cone located near the proposed electrical vault is powered by its own circuit and is voltage powered. The supplemental wind cone located at 510' from the proposed end of Runway 13 is powered from the runway edge light circuit and is current powered. The supplemental wind cone will require an L-830 isolation transformer which is incidental to the wind cone pay item.

CRAWFORD, MURPHY & TILLY, INC.

This Addendum consists of 5 pages plus 12 revised plan sheets, a revised Proposal Form, new specification SP-3 and a transmittal sheet.

Signed
(Contractor)

Date

Contractor to sign and date this Addendum #1 to acknowledge receipt. This signed Addendum must be included with the submitted Bid Package.

TRANSMITTAL

To: Crawford, Murphy & Tilly, Inc

Attention: **Brian Garkie**

Re: Addendum #1

Fax 314.436.0723

E-mail: bgarkie@cmtengr.com

From:

(name) _____

(company) _____

Date:

To verify that all contractors are in receipt of this addendum, Contractors are asked to sign and date this acknowledgement sheet. The Contractor should fax or e-mail to Crawford, Murphy, & Tilly, Inc. at the number listed below by **January 24, 2020**.

Fax: (314) 436-0723

Phone: (314) 436-5500

E-mail : bgarkie@cmtengr.com

BY: CRAWFORD, MURPHY, & TILLY, INC.



Bowling Green Municipal Airport
Reconstruct and Widen Runway 13-31; Reconstruct Connecting Taxiway
State Project No. 19-051A-1

Item SP-3 Traffic Control

Description

SP-3-1 This item shall consist of furnishing, installing, maintenance, use of flaggers, use of lighted runway closure markers, and removal of barricades, traffic control signs, and other items as shown in the plans or as required during construction. The barricades, warning signs, etc. for any airfield portions of the project is incidental to the contract and will not be measured for payment.

Material

SP-3-2 Lighted runway closure markers shall be as detailed on the plans and in accordance with FAA AC 150/5345-55A.

Low profile barricades shall be as detailed on the plans.

Construction Requirements

SP-3-3 The Contractor shall install the signs, barricades, and other essentials as shown in the plans. The Contractor shall follow the requirements of Section 616, Traffic Control Plan in the latest version of the Missouri Standard Specifications for Highway Construction and follow the requirements of Section 40-05 of the General Provisions.

The Contractor shall provide and maintain the lighted runway closure markers when the runway is required to be closed and remove the lighted runway markers from the project site upon completion of the work requiring runway closures.

Method of Measurement

SP-3-4 The Traffic Control will be measured as a lump sum. This shall include all the furnishing, installing, maintenance, use of flaggers, and removal of barricades, traffic control signs, and other items as shown in the plans for roadway traffic control.

Basis of Payment

SP-3-5 Based on the contract lump sum price for "Traffic Control", partial payments will be allowed on the next pay estimate as follows:

- A.** The total number of calendars used divided by the total number of calendars originally awarded less payments already made, subject to a 90% maximum payment.
- B.** After removal of all low profile barricades and lighted runway closure markers from the project site, 10 percent.

Payment will be made under:

Item SP-3-5.1 Traffic Control - per lump sum.

END OF ITEM SP-3

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RETURN WITH BID

Bowling Green Municipal Airport
Reconstruct and Widen Runway 13-31; Reconstruct Connecting Taxiway
State Project No. 19-051A-1

BASE BID						
BID ITEM	SPEC. NO.	ITEM DESCRIPTION	APPROX. QTY AND UNITS		UNIT PRICE	EXTENSION
X	XXXXX	Sample	109 Each	Words	<i>Twenty one and 55/100</i>	<i>Two thousand three hundred forty eight and 95/100</i>
				Numerals	<i>21.55</i>	<i>2,348.95</i>
1	C-100-14.1	Contractor Quality Control Program (CQCP)	1 Lump Sum	Words		
				Numerals		
2	C-102-5.1	Installation and Removal of Silt Fence	5,400 Linear Foot	Words		
				Numerals		
3	C-102-5.2	Installation and Removal of Silt Dike Ditch Check	40 Each	Words		
				Numerals		
4	C-102-5.3	Erosion Control Blanket	30,000 Square Yard	Words		
				Numerals		
5	C-102-5.4	Rip Rap	250 Square Yard	Words		
				Numerals		

RETURN WITH BID

Bowling Green Municipal Airport
Reconstruct and Widen Runway 13-31; Reconstruct Connecting Taxiway
State Project No. 19-051A-1

6	C-102-5.5	Inlet Protection	9 Each	Words		
				Numerals		
7	C-105-6.1	Mobilization (10% Limit)	1 Lump Sum	Words		
				Numerals		
8	C-105-6.2	Engineer's Field Office	1 Lump Sum	Words		
				Numerals		
9	P-101-5.1	Pavement Removal	24,000 Square Yard	Words		
				Numerals		
10	P-151-5.2	Removal of Pipe	500 Linear Foot	Words		
				Numerals		
11	P-151-4.1	Tree Removal	1 Each	Words		
				Numerals		
12	P-152-4.1	Embankment in Place	33,247 Cubic Yard	Words		
				Numerals		

13	P-152-4.2	Unsuitable Substrate	1,000 Cubic Yard	Words		
				Numerals		
14	P-155-8.1	12" Lime-Treated Subgrade	64,000 Square Yard	Words		
				Numerals		
15	P-155-8.2	Lime	1,700 Ton	Words		
				Numerals		
16	P-208-5.1	6" Aggregate Base Course	30,560 Square Yard	Words		
				Numerals		
17	P-501-8.1	6" Concrete Pavement	28,500 Square Yard	Words		
				Numerals		
18	P-620-5.1	White Runway Markings, With Reflective Media	14,750 Square Foot	Words		
				Numerals		
19	P-620-5.2	Yellow Runway Markings, With Reflective Media	400 Square Foot	Words		
				Numerals		

20	P-620-5.3	Black Markings	4,900 Square Foot	Words		
				Numerals		
21	D-701-5.1	15" RCP	1,320 Linear Foot	Words		
				Numerals		
22	D-701-5.2	24" RCP	400 Linear Foot	Words		
				Numerals		
23	D-701-5.3	36" RCP	200 Linear Foot	Words		
				Numerals		
24	D-701-5.4	24" RCP FES	2 Each	Words		
				Numerals		
25	D-701-5.5	36" RCP FES	1 Each	Words		
				Numerals		
26	D-705-5.1	4" Perforated Underdrain Pipe	7,000 Linear Foot	Words		
				Numerals		

27	D-705-5.2	4" Non-Perforated Underdrain Pipe	300 Linear Foot	Words		
				Numerals		
28	D-705-5.3	Underdrain Cleanout	18 Each	Words		
				Numerals		
29	D-705-5.4	Underdrain Collection Structure	4 Each	Words		
				Numerals		
30	D-705-5.5	Underdrain End Section	2 Each	Words		
				Numerals		
31	D-705-5.6	Direct Connection	2 Each	Words		
				Numerals		
32	D-751-5.1	5'x3' Inlet (S-1 Top)	9 Each	Words		
				Numerals		
33	T-901-5.1	Seeding	22.0 Acre	Words		
				Numerals		

34	T-905-5.1	Topsoil	1 Lump Sum	Words		
				Numerals		
35	T-908-5.1	Hydraulically Applied Mulching	16.0 Acre	Words		
				Numerals		
36	L-101-5.1	Remove Existing Rotating Beacon, Tower and Foundation	1 Lump Sum	Words		
				Numerals		
37	L-101-5.2	L-801A Airport Rotating Beacon on New Tip-Down Tower	1 Lump Sum	Words		
				Numerals		
38	L-107-5.1	Remove Existing Wind Cone	2 Each	Words		
				Numerals		
39	L-107-5.2	L-807 Wind Cone, Internally LED Lighted, 12-Foot (In- Place)	1 Each	Words		
				Numerals		
40	L-107-5.3	L-806 Wind Cone, Internally LED Lighted, 8-Foot (In- Place)	1 Each	Words		
				Numerals		

41	L-108-5.1	1/C #8, L-824, Type C, 5 KV Cable	9,100 Linear Foot	Words		
				Numerals		
42	L-108-5.2	PAPI 31 Circuit, 3#8 Type USE, 1-#8 Gnd., In 1" Unit Duct	900 Linear Foot	Words		
				Numerals		
43	L-108-5.3	PAPI 13 Circuit, 3#6 Type USE, 1-#8 Gnd., In 1-1/2" Unit Duct	3,000 Linear Foot	Words		
				Numerals		
44	L-108-5.4	1/C #6 Bare Copper Counterpoise Cable	8,300 Linear Foot	Words		
				Numerals		
45	L-108-5.5	Wind Cone Circuit, 2#8 Type Use, 1-#8 Gnd., in 1" Unit Duct	250 Linear Foot	Words		
				Numerals		
46	L-108-5.6	Beacon Circuit, 2#10 Type Use, 1-#10 Gnd., in 1" Unit Duct	100 Linear Foot	Words		
				Numerals		
47	L-109-7.1	14' x 12' Prefabricated Electrical Vault Shelter	1 Lump Sum	Words		
				Numerals		

RETURN WITH BID

Bowling Green Municipal Airport
Reconstruct and Widen Runway 13-31; Reconstruct Connecting Taxiway
State Project No. 19-051A-1

48	L-109-7.2	Vault Foundation	1 Lump Sum	Words		
				Numerals		
49	L-109-7.3	L-854 Radio Controller	1 Lump Sum	Words		
				Numerals		
50	L-107-7.4	7.5 KW Ferroresonant Regulator	1 Each	Words		
				Numerals		
51	L-109-7.5	Electrical Service Entrance	1 Lump Sum	Words		
				Numerals		
52	L-110-5.1	4-4" PVC Concrete Encased Duct	125 Linear Foot	Words		
				Numerals		
53	L-110-5.2	2" PVC Conduit Direct Buried	8,800 Linear Foot	Words		
				Numerals		
54	L-125-5.1	PAPI, 2 Box System	2 Each	Words		
				Numerals		

RETURN WITH BID

Bowling Green Municipal Airport
Reconstruct and Widen Runway 13-31; Reconstruct Connecting Taxiway
State Project No. 19-051A-1

55	L-125-5.2	MIRL LED Base Mounted	32 Each	Words		
				Numerals		
56	L-125-5.3	MITL LED Base Mounted	21 Each	Words		
				Numerals		
57	L-125-5.4	Bi-Directional Threshold Light	16 Each	Words		
				Numerals		
58	L-125-5.5	L-849(L) REIL(S)	2 Pair	Words		
				Numerals		
59	L-125-5.6	Taxiway Guidance Signs, Unlighted	1 Each	Words		
				Numerals		
60	L-125-5.7	Remove Existing Electrical System	1 Lump Sum	Words		
				Numerals		
61	L-125-5.8	Spare MIRL LED	4 Each	Words		
				Numerals		

RETURN WITH BID

Bowling Green Municipal Airport
Reconstruct and Widen Runway 13-31; Reconstruct Connecting Taxiway
State Project No. 19-051A-1

62	L-125-5.9	Spare MITL LED	2 Each	Words		
				Numerals		
63	L-125-5.10	Spare Bi-Directional Threshold Light	2 Each	Words		
				Numerals		
64	SP-3-5.1	Traffic Control	1 Lump Sum	Words		
				Numerals		
TOTAL BASE BID				Words		
				Numerals		

ADDITIVE ALTERNATE NO. 1						
BID ITEM	SPEC. NO.	ITEM DESCRIPTION	APPROX. QTY AND UNITS		UNIT PRICE	EXTENSION
65	C-102-5.4	Rip Rap	35 Square Yard	Words		
				Numerals		

66	P-101-5.1	Pavement Removal	3,350 Square Yard	Words		
				Numerals		
67	P-155-5.1	12" Lime-Treated Subgrade	3,910 Square Yard	Words		
				Numerals		
68	P-155-5.2	Lime	100 Ton	Words		
				Numerals		
69	P-208-5.1	6" Aggregate Base Course	3,910 Square Yard	Words		
				Numerals		
70	P-501-8.1	6" Concrete Pavement	3,910 Square Yard	Words		
				Numerals		
71	P-620-5.2	Yellow Taxiway Markings, with Reflective Media	265 Square Foot	Words		
				Numerals		
72	P-620-5.3	Black Markings	545 Square Foot	Words		
				Numerals		

RETURN WITH BID

Bowling Green Municipal Airport
Reconstruct and Widen Runway 13-31; Reconstruct Connecting Taxiway
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73	D-701-5.6	12" RCP	252 Linear Foot	Words		
				Numerals		
74	D-701-5.7	12" RCP FES	1 Each	Words		
				Numerals		
75	D-751-5.2	3'x3' Inlet (S-1 Top)	1 Each	Words		
				Numerals		
76	T-901-5.1	Seeding	0.2 Acres	Words		
				Numerals		
77	T-908-5.1	Hydraulically Applied Mulch	0.2 Acres	Words		
				Numerals		
78	SP-1-5.1	Mooring Eye	21 Each	Words		
				Numerals		
79	SP-2-5.1	Trench Drain	127 Linear Foot	Words		
				Numerals		

RETURN WITH BID

Bowling Green Municipal Airport
Reconstruct and Widen Runway 13-31; Reconstruct Connecting Taxiway
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TOTAL ADDITIVE ALTERNATE NO. 1	Words	
	Numerals	

TOTAL BASE BID + ADDITIVE ALTERNATE NO. 1	Words	
	Numerals	

BASE BID

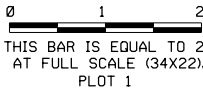
ITEM	DESCRIPTION	UNIT	QUANTITY
C-100-14.1	CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)	LS	1
C-102-5.1	INSTALLATION AND REMOVAL OF SILT FENCE	LF	5,400
C-102-5.2	INSTALLATION AND REMOVAL OF SILT DIKE DITCH CHECK	EA	40
C-102-5.3	EROSION CONTROL BLANKET	SY	30,000
C-102-5.4	RIP RAP	SY	250
C-102-5.5	INLET PROTECTION	EA	9
C-105-6.1	MOBILIZATION (10% LIMIT)	LS	1
C-105-6.2	ENGINEER'S FIELD OFFICE	LS	1
P-101-5.1	PAVEMENT REMOVAL	SY	24,000
P-101-5.2	REMOVAL OF PIPE	LF	500
P-151-4.1	TREE REMOVAL	EA	1
P-152-4.1	EMBANKMENT IN PLACE	CY	33,247
P-152-4.2	UNSUITABLE SUBSTRATE	CY	1,000
P-155-8.1	12" LIME-TREATED SUBGRADE	SY	64,000
P-155-8.2	LIME	TON	1,700
P-208-5.1	6" AGGREGATE BASE COURSE	SY	30,560
P-501-8.1	6" CONCRETE PAVEMENT	SY	28,500
P-620-5.1	WHITE RUNWAY MARKINGS, WITH REFLECTIVE MEDIA	SF	14,750
P-620-5.2	YELLOW TAXIWAY MARKINGS, WITH REFLECTIVE MEDIA	SF	400
P-620-5.3	BLACK MARKINGS	SF	4,900
D-701-5.1	15" RCP	LF	1,320
D-701-5.2	24" RCP	LF	400
D-701-5.3	36" RCP	LF	200
D-701-5.4	24" RCP FES	EA	2
D-701-5.5	36" RCP FES	EA	1
D-705-5.1	4" PERFORATED UNDERDRAIN PIPE	LF	7,000
D-705-5.2	4" NON-PERFORATED UNDERDRAIN PIPE	LF	300
D-705-5.3	UNDERDRAIN CLEANOUT	EA	18
D-705-5.4	UNDERDRAIN COLLECTION STRUCTURE	EA	4
D-705-5.5	UNDERDRAIN END SECTION	EA	2
D-705-5.6	DIRECT CONNECTION	EA	2
D-751-5.1	5'X3' INLET (S-1 TOP)	EA	9
T-901-5.1	SEEDING	AC	22.0
T-905-5.1	TOPSOIL	LS	1
T-908-5.1	HYDRAULICALLY APPLIED MULCHING	AC	16.0
L-101-5.1	REMOVE EXISTING BEACON, TOWER AND FOUNDATION	LS	1
L-101-5.2	L-801A AIRPORT ROTATING BEACON ON NEW TIP-DOWN TOWER	LS	1
L-107-5.1	REMOVE EXISTING WIND CONE	EA	2
L-107-5.2	L-807 WIND CONE, INTERNALLY LED LIGHTED, 12- FEET (IN-PLACE)	EA	1
L-107-5.3	L-806 WIND CONE, INTERNALLY LED LIGHTED, 8- FEET (IN-PLACE)	EA	1
L-108-5.1	1/C *8, L-824, TYPE C, 5KV CABLE	LF	9,100
L-108-5.2	PAPI 31 CIRCUIT, 3*8 TYPE USE, 1-*8 GND., IN 1" UNIT DUCT	LF	900
L-108-5.3	PAPI 13 CIRCUIT, 3*6 TYPE USE, 1-*8 GND., IN 1-1/2" UNIT DUCT	LF	3,000
L-108-5.4	1/C *6 BARE COPPER COUNTERPOISE CABLE	LF	8,300
L-108-5.5	WIND CONE CIRCUIT, 2*8 TYPE USE, 1*8 GND., IN 1" UNIT DUCT	LF	250
L-108-5.6	BEACON CIRCUIT, 2-*10 TYPE USE, 1-*10 GND., IN 1" UNIT DUCT	LF	100
L-109-7.1	14' X 12' PREFABRICATED ELECTRICAL VAULT SHELTER	LS	1
L-109-7.2	VAULT FOUNDATION	LS	1
L-109-7.3	L-854 RADIO CONTROLLER	LS	1
L-109-7.4	7.5 KW FERRORESONANT REGULATOR	EA	1
L-109-7.5	ELECTRICAL SERVICE ENTRANCE	LS	1
L-110-5.1	4-4" PVC CONCRETE ENCASED DUCT	LF	125
L-110-5.2	2" PVC CONDUIT DIRECT BURIED	LF	8,800
L-125-5.1	PAPI, 2 BOX SYSTEM	EA	2
L-125-5.2	MIRL LED BASE MOUNTED	EA	32
L-125-5.3	MITL LED BASE MOUNTED	EA	21
L-125-5.4	BI-DIRECTIONAL THRESHOLD LIGHT	EA	16
L-125-5.5	L-849(L) REIL(S)	PAIR	2
L-125-5.6	TAXIWAY GUIDANCE SIGNS, UNLIGHTED	EA	1
L-125-5.7	REMOVE EXISTING ELECTRICAL SYSTEM	LS	1
L-125-5.8	SPARE MIRL LED	EA	4
L-125-5.9	SPARE MITL LED	EA	2
L-125-5.10	SPARE BI-DIRECTIONAL THRESHOLD LIGHT	EA	2
SP-3-5.1	TRAFFIC CONTROL	LS	1

ADDITIVE ALTERNATE NO.1

ITEM	DESCRIPTION	UNIT	QUANTITY
C-102-5.4	RIP RAP	SY	35
P-101-5.1	PAVEMENT REMOVAL	SY	3,350
P-155-8.1	12" LIME-TREATED SUBGRADE	SY	3,910
P-155-8.2	LIME	TON	100
P-208-5.1	6" AGGREGATE BASE COURSE	SY	3,910
P-501-8.1	6" CONCRETE PAVEMENT	SY	3,910
P-620-5.2	YELLOW TAXIWAY MARKINGS, WITH REFLECTIVE MEDIA	SF	265
P-620-5.3	BLACK MARKINGS	SF	545
D-701-5.6	12" RCP	LF	252
D-701-5.7	12" RCP FES	EA	1
D-751-5.2	3'X3' INLET (S-1 TOP)	EA	1
T-901-5.1	SEEDING	AC	0.2
T-908-5.1	HYDRAULICALLY APPLIED MULCHING	AC	0.2
SP-1-5.1	MOORING EYE	EA	21
SP-2-5.1	TRENCH DRAIN	LF	127

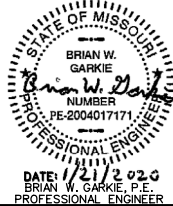
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BOWLING GREEN
MUNICIPAL AIRPORT
BOWLING GREEN, MISSOURI

RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY



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STATE PROJECT NO. 19-051A-1

FILE: 02_SUMMARY OF QUANTITIES.dgn

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CHECKED BY: MRR

APPROVED BY: BWG

DATE: DECEMBER 16, 2019

JOB No: 19000501

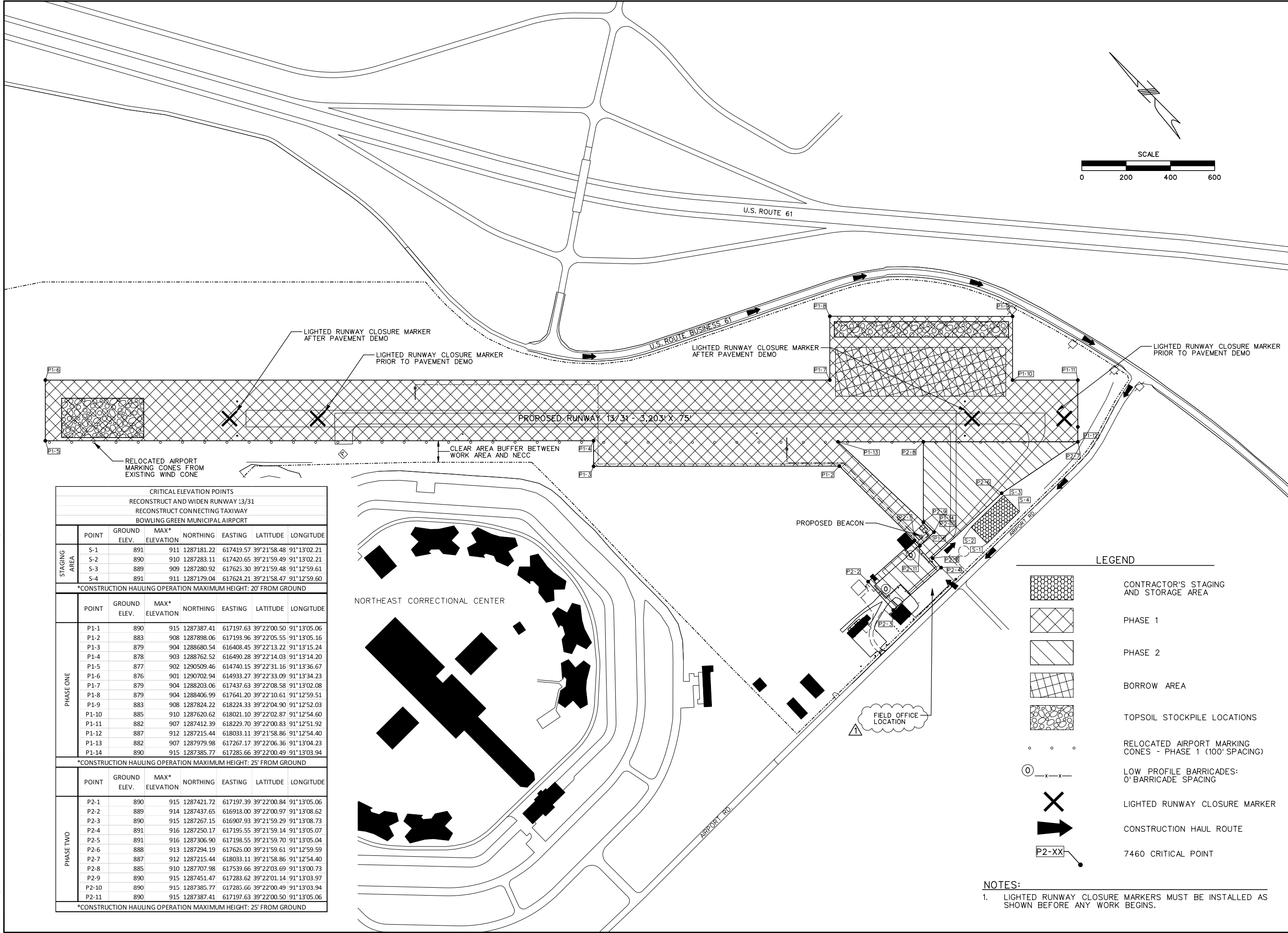
SUMMARY
OF
QUANTITIES

SHEET 2 OF 99 SHEETS

EARTHWORK SUMMARY

BASELINE	CUT (CY)	FILL (CY)
RWY 13-31	17,972	30,999
TXY	688	2,248
TOTAL	18,660	33,247

1/21/2020
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CRITICAL ELEVATION POINTS RECONSTRUCT AND WIDEN RUNWAY 13/31 RECONSTRUCT CONNECTING TAXIWAY BOWLING GREEN MUNICIPAL AIRPORT							
STAGING AREA	POINT	GROUND ELEV.	MAX* ELEVATION	NORTHING	EASTING	LATITUDE	LONGITUDE
	S-1	891	911	1287181.22	617419.57	39°21'58.48	91°13'02.21
	S-2	890	910	1287283.11	617420.65	39°21'59.49	91°13'02.21
	S-3	889	909	1287280.92	617625.30	39°21'59.48	91°12'59.61
	S-4	891	911	1287179.04	617624.21	39°21'58.47	91°12'59.60
*CONSTRUCTION HAULING OPERATION MAXIMUM HEIGHT: 20' FROM GROUND							
	POINT	GROUND ELEV.	MAX* ELEVATION	NORTHING	EASTING	LATITUDE	LONGITUDE
PHASE ONE	P1-1	890	915	1287387.41	617197.63	39°22'00.50	91°13'05.06
	P1-2	883	908	1287898.06	617193.96	39°22'05.55	91°13'05.16
	P1-3	879	904	1288680.54	616408.45	39°22'13.22	91°13'15.24
	P1-4	878	903	1288762.52	616490.28	39°22'14.03	91°13'14.20
	P1-5	877	902	1290509.46	614740.15	39°22'31.16	91°13'36.67
	P1-6	876	901	1290702.94	614933.27	39°22'33.09	91°13'34.23
	P1-7	879	904	1288203.06	617437.63	39°22'08.58	91°13'02.08
	P1-8	879	904	1288406.99	617641.20	39°22'10.61	91°12'59.51
	P1-9	883	908	1287824.22	618224.33	39°22'04.90	91°12'52.03
	P1-10	885	910	1287620.62	618021.10	39°22'02.87	91°12'54.60
	P1-11	882	907	1287412.39	618229.70	39°22'00.83	91°12'51.92
	P1-12	887	912	1287215.44	618033.11	39°21'58.86	91°12'54.40
	P1-13	882	907	1287979.98	617267.17	39°22'06.36	91°13'04.23
	P1-14	890	915	1287385.77	617285.66	39°22'00.49	91°13'03.94
*CONSTRUCTION HAULING OPERATION MAXIMUM HEIGHT: 25' FROM GROUND							
	POINT	GROUND ELEV.	MAX* ELEVATION	NORTHING	EASTING	LATITUDE	LONGITUDE
PHASE TWO	P2-1	890	915	1287421.72	617197.39	39°22'00.84	91°13'05.06
	P2-2	889	914	1287437.65	616918.00	39°22'00.97	91°13'08.62
	P2-3	890	915	1287267.15	616907.93	39°21'59.29	91°13'08.73
	P2-4	891	916	1287250.17	617195.55	39°21'59.14	91°13'05.07
	P2-5	891	916	1287306.90	617198.55	39°21'59.70	91°13'05.04
	P2-6	888	913	1287294.19	617625.00	39°21'59.61	91°12'59.59
	P2-7	887	912	1287215.44	618033.11	39°21'58.86	91°12'54.40
	P2-8	885	910	1287707.98	617539.66	39°22'03.69	91°13'00.73
	P2-9	890	915	1287451.47	617283.62	39°22'01.14	91°13'03.97
	P2-10	890	915	1287385.77	617285.66	39°22'00.49	91°13'03.94
	P2-11	890	915	1287387.41	617197.63	39°22'00.50	91°13'05.06
*CONSTRUCTION HAULING OPERATION MAXIMUM HEIGHT: 25' FROM GROUND							

LEGEND	
	CONTRACTOR'S STAGING AND STORAGE AREA
	PHASE 1
	PHASE 2
	BORROW AREA
	TOPSOIL STOCKPILE LOCATIONS
	RELOCATED AIRPORT MARKING CONES - PHASE 1 (100' SPACING)
	LOW PROFILE BARRICADES: 0' BARRICADE SPACING
	LIGHTED RUNWAY CLOSURE MARKER
	CONSTRUCTION HAUL ROUTE
	7460 CRITICAL POINT

- NOTES:
- LIGHTED RUNWAY CLOSURE MARKERS MUST BE INSTALLED AS SHOWN BEFORE ANY WORK BEGINS.

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BOWLING GREEN MUNICIPAL AIRPORT

BOWLING GREEN, MISSOURI

RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY

STATE OF MISSOURI
BRIAN W. GARKIE
PROFESSIONAL ENGINEER
NUMBER
PE-2004017171
DATE: 1/21/2020
BRIAN W. GARKIE, P.E.
PROFESSIONAL ENGINEER

ONE MEMORIAL DRIVE, SUITE 500
ST. LOUIS, MO 63102
(314) 436-5500

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FILE: 06_CONSTRUCTION PHASING PLAN.dgn

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CHECKED BY: MRR

APPROVED BY: BWG

DATE: DECEMBER 16, 2019

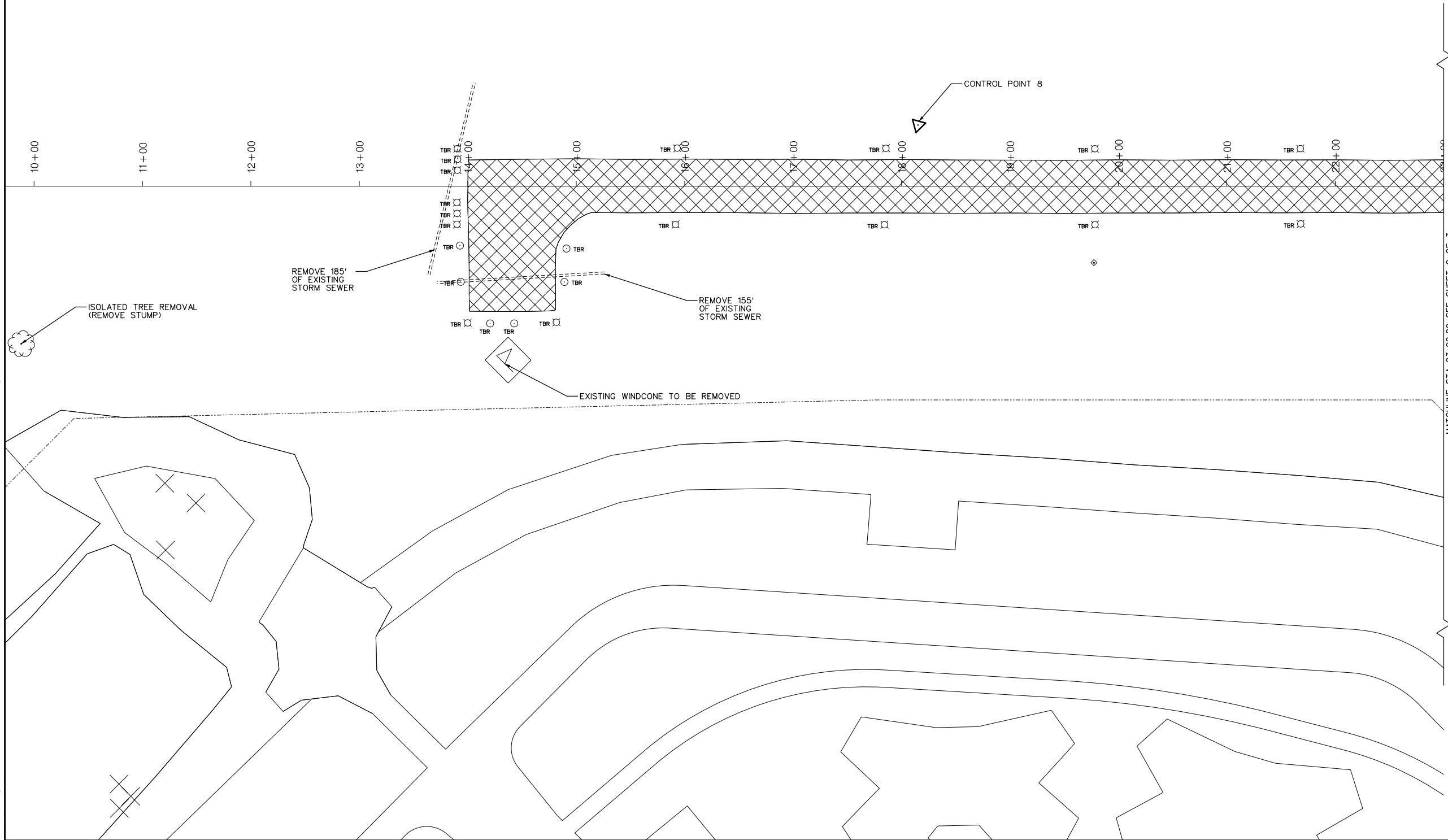
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CONSTRUCTION PHASING PLAN

SHEET 6 OF 99 SHEETS

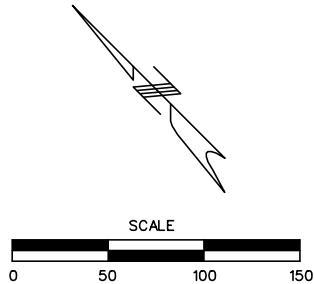
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LEGEND	
	FULL DEPTH PAVEMENT REMOVAL 5.5-6.5" HMA 4" AGGREGATE BASE COURSE
	TBR REMOVE EXISTING EDGE LIGHT
	TBR REMOVE EXISTING REFLECTOR

- NOTES:
- FOUNDATIONS FOR EXISTING LIGHTS TO BE REMOVED SHALL BE CONSIDERED INCIDENTAL TO THE REMOVE ELECTRICAL SYSTEM PAY ITEM.
 - ALL REMOVED BASE CANS AND SIGNS SHALL BE DISPOSED OF OFFSITE AT NO ADDITIONAL COST TO THE CONTRACT. ALL REMOVED EDGE LIGHT FIXTURES SHALL BE TURNED OVER TO THE CITY.
 - COSTS ASSOCIATED WITH REMOVING OR ABANDONING EXISTING CABLE SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.
 - THE DEPTHS OF THE PAVEMENTS PROVIDED ARE ADVISORY ONLY. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE EXISTING PAVEMENTS REGARDLESS OF ACTUAL DEPTHS IN THE FIELD. NO ADDITIONAL PAYMENTS WILL BE MADE FOR A VARIATION IN THE DEPTHS SHOWN ON THE PLANS. RESULTS OF RANDOM LOCATION PAVEMENT CORINGS ARE AVAILABLE UPON REQUEST.
 - A GEOTEXTILE FABRIC IS FUSED NEAR THE BOTTOM OF THE PAVEMENT SECTION AND IS LIKELY NOT READILY MILLABLE OR RIPPABLE.
 - REMOVED PAVEMENTS SHALL BE DISPOSED OF OFFSITE AT NO ADDITIONAL COST TO THE CONTRACT.



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**BOWLING GREEN
MUNICIPAL AIRPORT**
BOWLING GREEN, MISSOURI

**RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY**

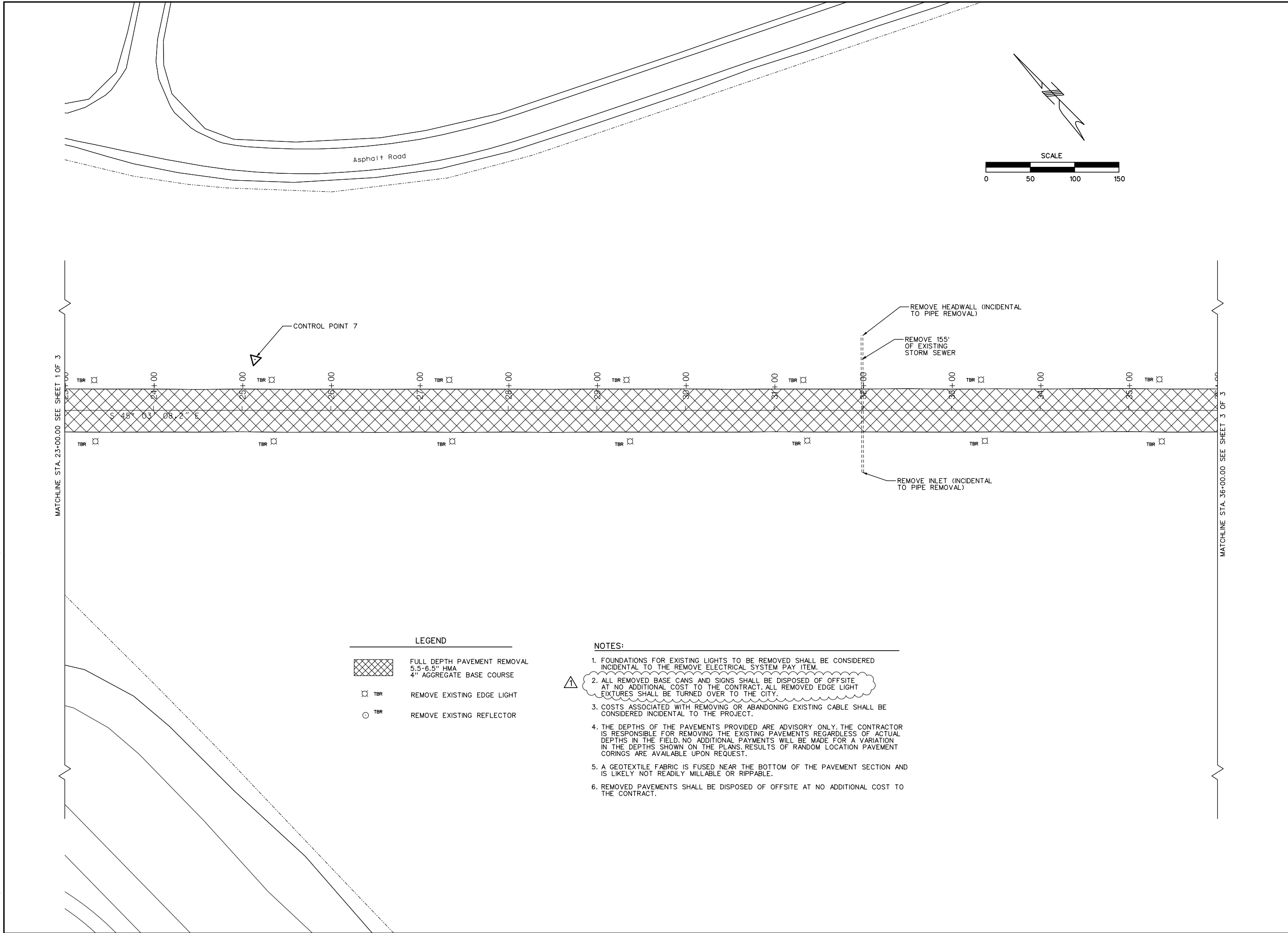
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APPROVED BY: BWG
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JOB No: 19000501
DEMOLITION PLAN SHEET 1 OF 3
SHEET 8 OF 99 SHEETS

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BOWLING GREEN MUNICIPAL AIRPORT

BOWLING GREEN, MISSOURI

RECONSTRUCT AND WIDEN RUNWAY 13-31;

RECONSTRUCT CONNECTING TAXIWAY

STATE OF MISSOURI

BRIAN W. GARKIE

DATE: 1/21/2020

BRIAN W. GARKIE, P.E.

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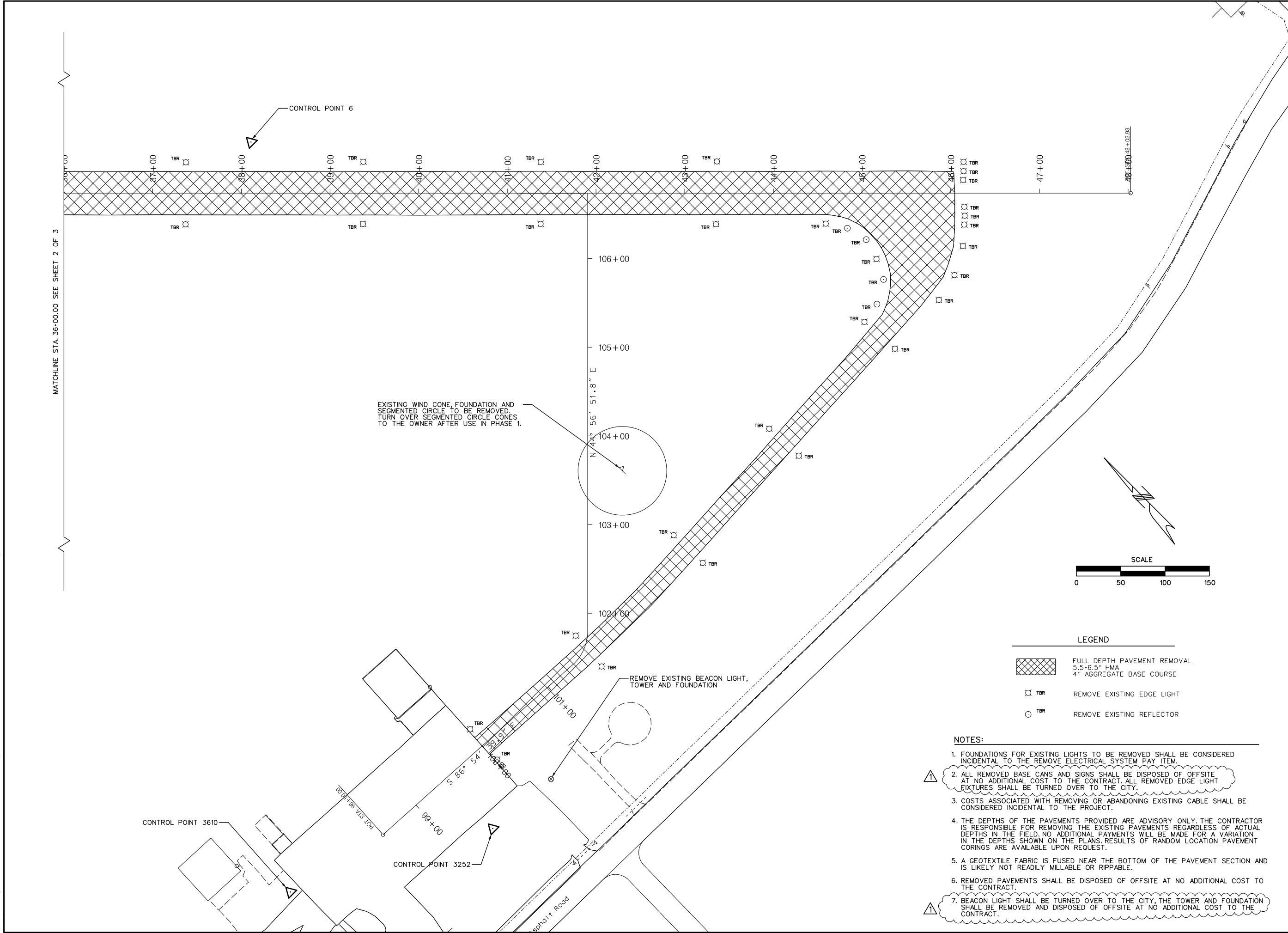
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DEMOLITION PLAN SHEET 2 OF 3

SHEET 9 OF 99 SHEETS

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BOWLING GREEN MUNICIPAL AIRPORT
BOWLING GREEN, MISSOURI

**RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY**

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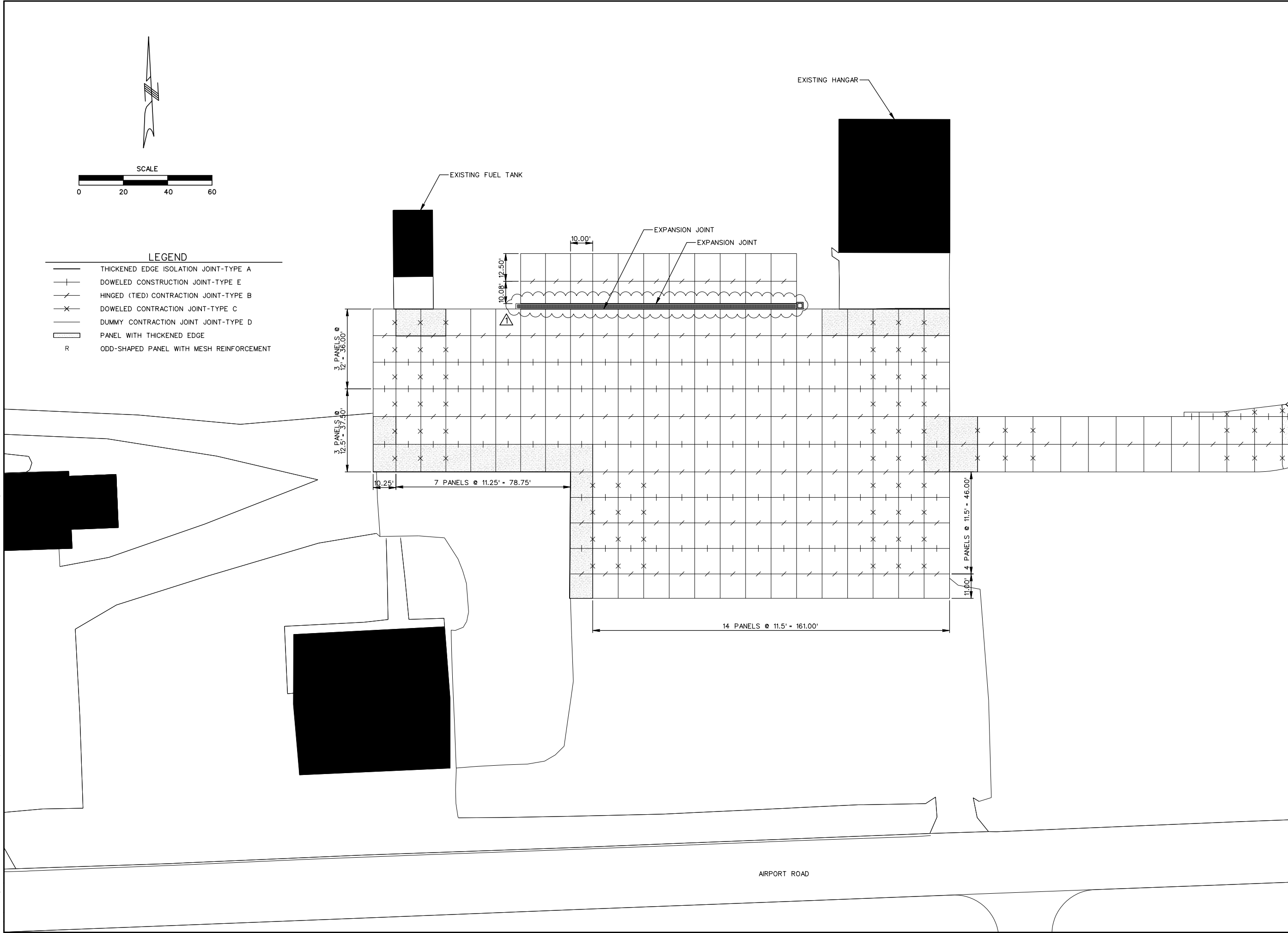
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DEMOLITION PLAN
SHEET 3 OF 3

SHEET 10 OF 99 SHEETS

1/21/2020
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LEGEND

- THICKENED EDGE ISOLATION JOINT-TYPE A
- DOWELED CONSTRUCTION JOINT-TYPE E
- HINGED (TIED) CONTRACTION JOINT-TYPE B
- DOWELED CONTRACTION JOINT-TYPE C
- DUMMY CONTRACTION JOINT-TYPE D
- PANEL WITH THICKENED EDGE
- ODD-SHAPED PANEL WITH MESH REINFORCEMENT

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MUNICIPAL AIRPORT
BOWLING GREEN, MISSOURI

RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY

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FILE: 47_ADDITIVE_ALTERNATE_JOINTING PLAN 4.dgn

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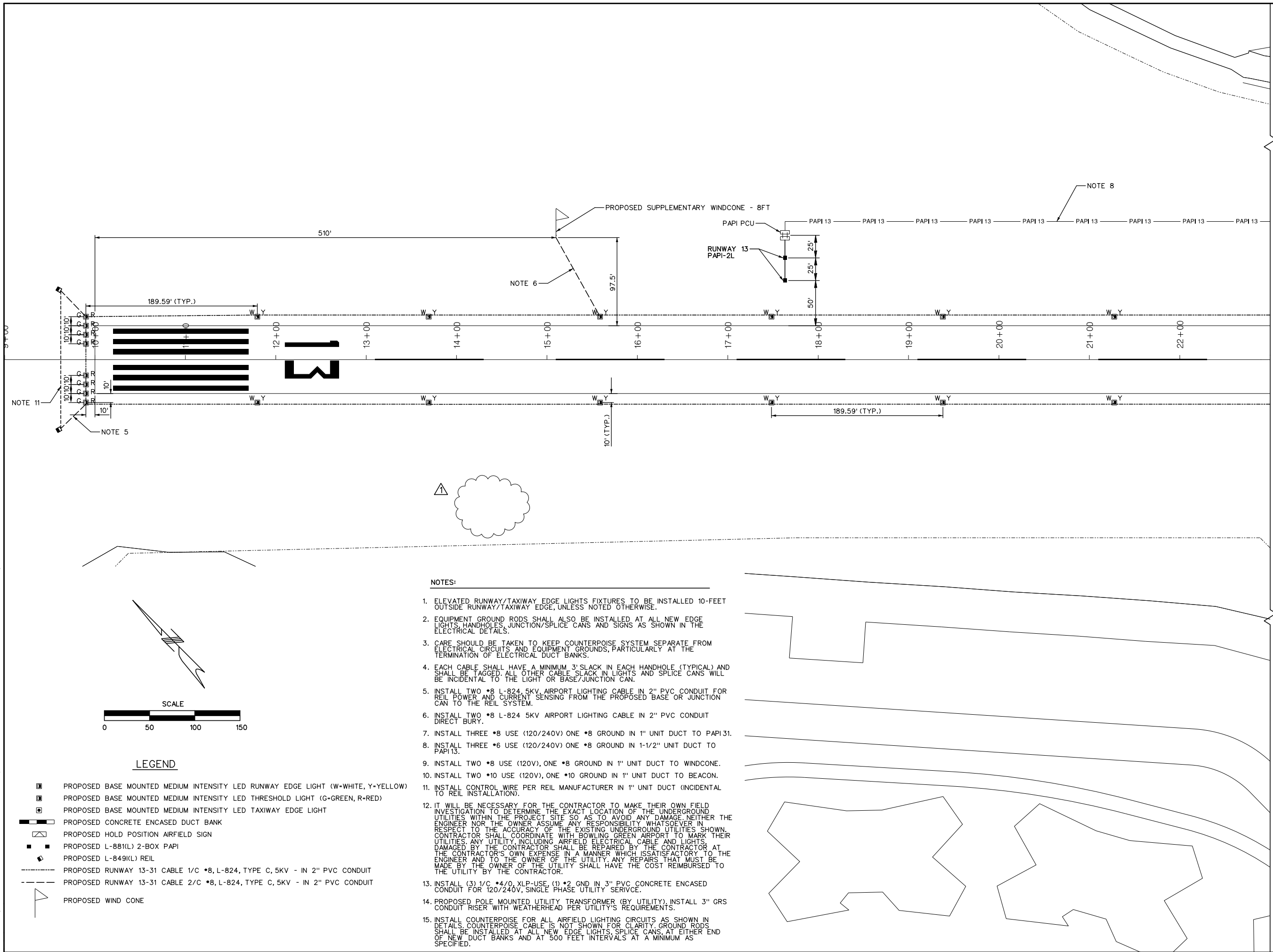
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ADDITIVE ALTERNATE
APRON JOINTING PLAN

SHEET 47 OF 99 SHEETS

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MATCHLINE STA. 23+00.00 SEE SHEET 2 OF 3

REVISIONS		
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BOWLING GREEN
MUNICIPAL AIRPORT
BOWLING GREEN, MISSOURI

RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY

STATE OF MISSOURI
BRIAN W. GARKIE
NUMBER
PE-2004017171
PROFESSIONAL ENGINEER
DATE: 1/21/2020
BRIAN W. GARKIE, P.E.
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FILE: 49_ELECTRICAL PLAN 1 OF 3.dgn

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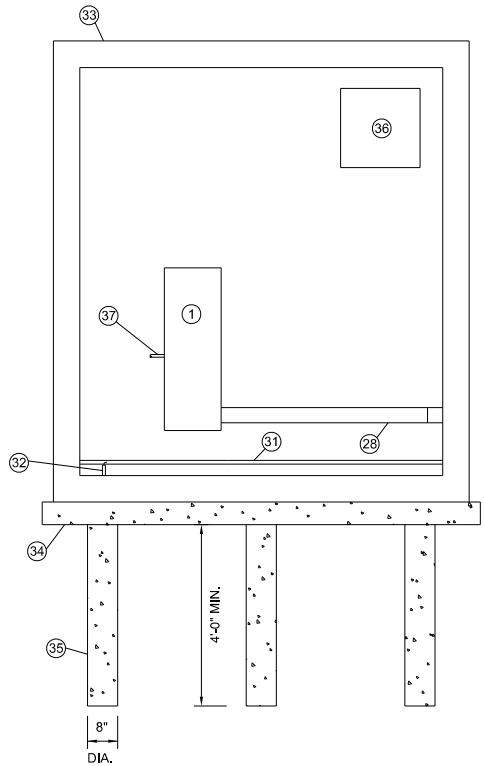
ELECTRICAL PLAN
SHEET 1 OF 3

SHEET 49 OF 99 SHEETS

STATE PROJECT NO. 19-051A-1

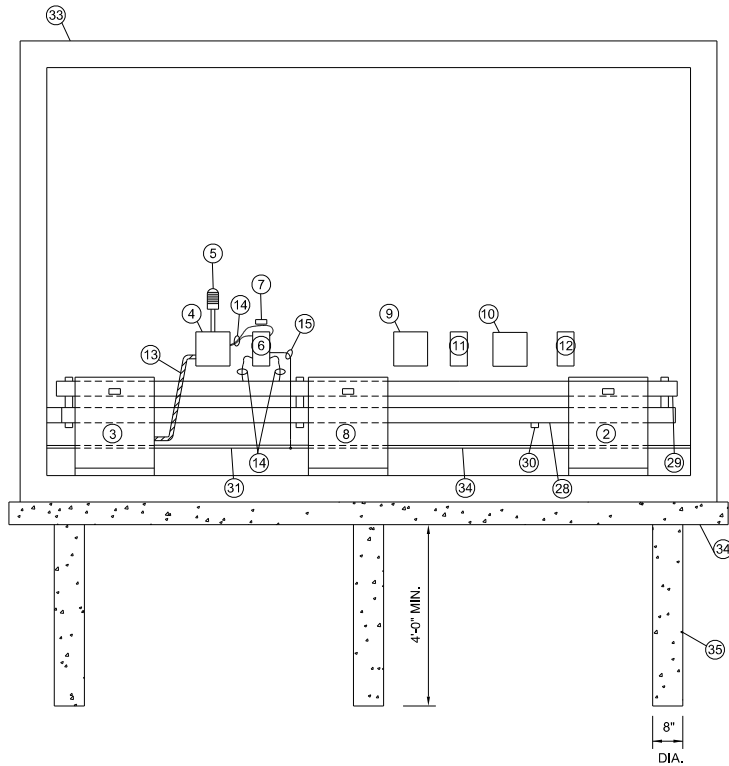
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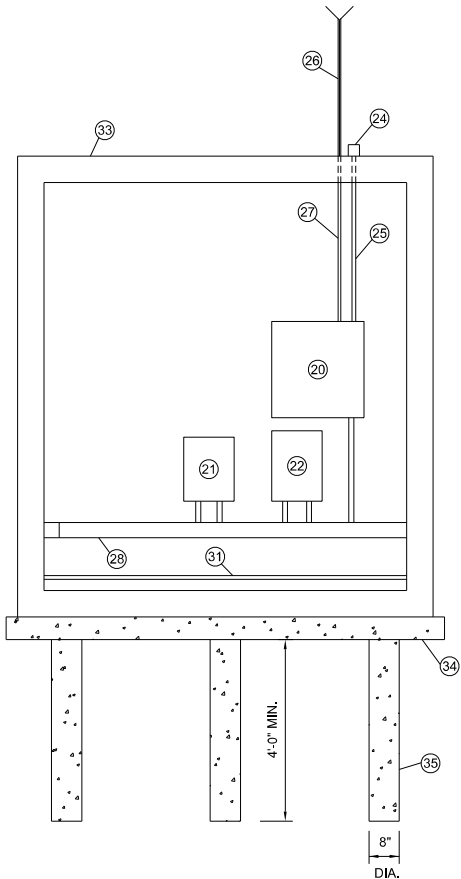
SECTION B

N.T.S.



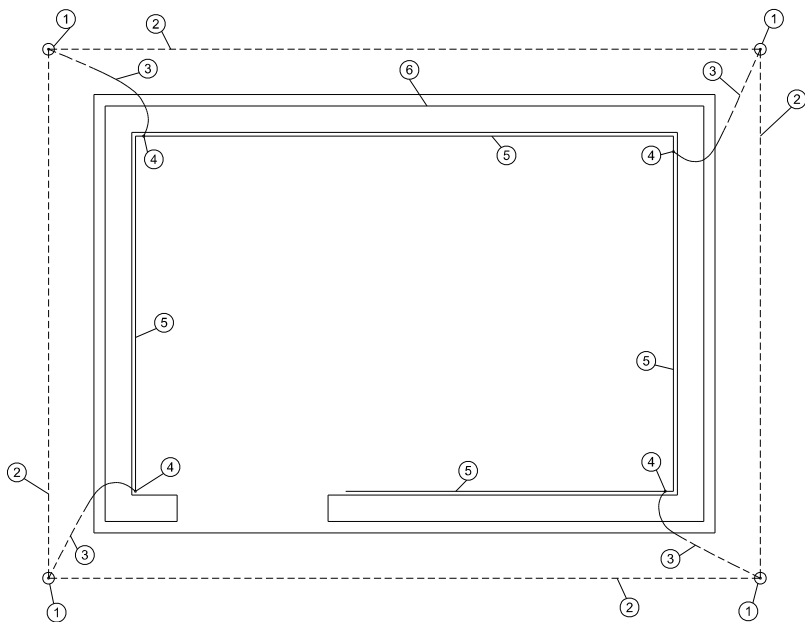
SECTION A

N.T.S.



SECTION C

N.T.S.



VAULT GROUNDING & BONDING PLAN

N.T.S.

VAULT ELEVATION LEGEND

- MAIN POWER PANEL, "PP-1", 42 POLE, 200A 120/240V, 1PHASE, 3WIRE WITH 200A, 2 POLE MAIN CIRCUIT BREAKER, SERVICE ENTRANCE RATED. SQUARE D OR EQUIVALENT. PROVIDE ENGRAVED NAMEPLATE READING "120/240V MAIN POWER PANEL".
- "SPACE" FOR FUTURE SPARE REGULATOR.
- NEW REGULATOR, 7.5KW, 240V INPUT, 6.6A OUTPUT FOR RUNWAY 13/31.
- "NEW" HINGED NEMA 1 ENCLOSURE SIZED AS REQUIRED TO HOUSE RUNWAY 13/31 LIGHT, TRANSFORMER AND L-823 CONNECTORS. PROVIDE ENGRAVED NAMEPLATE READING: "RUNWAY 13/31 TRANSFORMER".
- RUNWAY EDGE LIGHT, MOUNTED TO TOP OF NEMA 1 ENCLOSURE.
- "NEW" ADB SCO SERIES CUTOUT, CAT #14T5.92.030 OR CROUSE-HINDS, FOR RUNWAY 13/31.
- ENGRAVED NAME PLATE READING: "RUNWAY 13/31 PLUG CUTOUT".
- "SPACE" FOR FUTURE REGULATOR.
- "NEW" HINGED NEMA 1 ENCLOSURE SIZED AS REQUIRED TO HOUSE TAXIWAY LIGHT, TRANSFORMER AND L-823 CONNECTORS. PROVIDE ENGRAVED NAMEPLATE READING: " FUTURE TAXIWAY TRANSFORMER".
- "NEW" HINGED NEMA 1 ENCLOSURE SIZED AS REQUIRED TO HOUSE SPARE REGULATOR'S LIGHT, TRANSFORMER AND L-823 CONNECTORS. PROVIDE ENGRAVED NAMEPLATE READING: "SPARE TRANSFORMER".
- "NEW" ADB SCO SERIES CUTOUT, CAT #14T5.92.030 OR CROUSE-HINDS, FOR FUTURE TAXIWAY.
- "NEW" ADB SCO SERIES CUTOUT, CAT #14T5.92.030 OR CROUSE-HINDS, FOR SPARE.
- 2-1/C, #8, L-824, TYPE C, 5 KV IN 1-1/2" LIQUIDTIGHT FLEXIBLE CONDUIT.
- 2-1/C, #8, L-824, TYPE C, 5 KV CABLES. WHERE CABLES ENTER TOP OF HIGH VOLTAGE WIREWAY, CONTRACTOR SHALL INSTALL GROMMETS TO SEAL AROUND CABLES.
- 1-1/C, #8, L-824, TYPE C, 5 KV CABLE. ROUTE BEHIND BOTH WIREWAYS AND CLAMP TO VAULT GROUND BUS.
- NOT USED.
- NOT USED.
- NOT USED.
- NOT USED.
- NEW L-854 RADIO CONTROLLER (PCAL) AND RELAY ENCLOSURE. (SEE WIRING DIAGRAM)
- NEW RADIO INTERFACE UNIT (RIU) FOR RUNWAY REGULATOR.
- NEW RADIO INTERFACE UNIT (RIU) FOR SPARE REGULATOR.
- NOT USED.
- "NEW" PHOTOCELL.
- "NEW" TWO #12 THWN (PHOTOCELL CONTROL), ONE #12 GROUND IN 3/4" GRS CONDUIT.
- NEW RADIO CONTROLLER ANTENNA.
- ANTENNA CABLE IN 3/4" GRS CONDUIT.
- "NEW" 4"x4" NEMA 1 LOW VOLTAGE WIREWAY.
- "NEW" 4"x4" NEMA 3R HIGH VOLTAGE WIREWAY. INSTALL AN ADHESIVE WARNING LABEL ON HINGED DOOR READING: "CAUTION: HIGH VOLTAGE".
- STAND-OFF MOUNT BOTH HIGH VOLTAGE WIREWAY AND LOW VOLTAGE WIREWAY ON THIS WALL ONLY USING STRUT-TYPE SUPPORTS. MAXIMUM SPACING BETWEEN SUPPORTS SHALL BE 5'-0".
- "NEW" 1/8"x3/4" COPPER GROUND BUS, ALL AROUND INSIDE OF VAULT. STAND-OFF MOUNT, 1/4" FROM WALL.
- "NEW" #2 INSULATED COPPER GROUND WIRE IN 1/2" PVC CONDUIT TO EXTERIOR VAULT GROUND RING. CLAMP GROUND WIRE TO INTERIOR VAULT GROUND BUS.
- "NEW" PRE-FABRICATED STEEL FRAME EQUIPMENT SHELTER, 14'Wx12'Dx9'H. SEE SPECIFICATIONS.
- "NEW" 6" REINFORCED WITH #4 REBARS 12" CENTER EACH WAY CONCRETE PAD ON A 6" CRUSHED AGG. BASE PAD COMPACTED TO 95% STD PROCTOR.
- "NEW" REINFORCED WITH #4 REBAR CAGE CONCRETE PAD FOOTINGS, TYPICAL OF 8.
- "NEW" EXHAUST FAN, 120V, 1/4HP, 1,017CFM.
- "NEW" TWO #12 THWN, ONE #12 GROUND IN 3/4" GRS CONDUIT FOR LIGHTING AND RECEPTACLE CIRCUITS.

VAULT GROUNDING & BONDING NOTES

- 3/4" DIAMETER x 10' LONG COPPERCLAD GROUND ROD. BOND GROUND WIRES TO GROUND ROD USING EXOTHERMIC WELD. CLAMPED CONNECTIONS SHALL NOT BE ACCEPTABLE.
- #2/0 BARE COPPER GROUND WIRE.
- #2 INSULATED GROUND WIRE. INSTALL IN 1/2" PVC CONDUIT TO 1'-0" BELOW GRADE.
- CLAMP #2 INSULATED GROUND WIRE TO VAULT GROUND BUS.
- VAULT GROUND BUS, 1/8"x1" COPPER BUS BAR. STAND-OFF MOUNT, 6" MINIMUM ABOVE VAULT FLOOR ON ALL SIDES.
- PRE-FABRICATED EQUIPMENT SHELTER, 14'Wx12'Dx9'H. SEE SPECIFICATIONS.
- 6" THICK REINFORCED CONCRETE VAULT PAD. REINFORCEMENT SHALL BE #4 @12" CENTER EACH WAY.

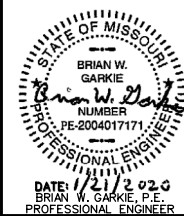
REVISIONS

NUMBER	BY	DATE
1	RAB	1/21/2020

0 1 2
THIS BAR IS EQUAL TO 2'
AT FULL SCALE (34X22).
PLOT 1

BOWLING GREEN
MUNICIPAL AIRPORT
BOWLING GREEN, MISSOURI

RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY



THE PROFESSIONAL ENGINEER'S SEAL, SIGNATURE, AND PERSONAL SEAL SHALL BE PLACED ON ALL DRAWINGS AND SPECIFICATIONS. ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED OR SIGNED BY THE ENGINEER SHALL BE VOID. THE ENGINEER ASSUMES RESPONSIBILITY ONLY FOR THE PROJECT TO WHICH THIS SEAL APPLIES.

STATE PROJECT NO. 19-051A-1

FILE: 53_VAULT DETAILS 2.dgn

DESIGN BY: RAB

DRAWN BY: CAG

CHECKED BY: MRR

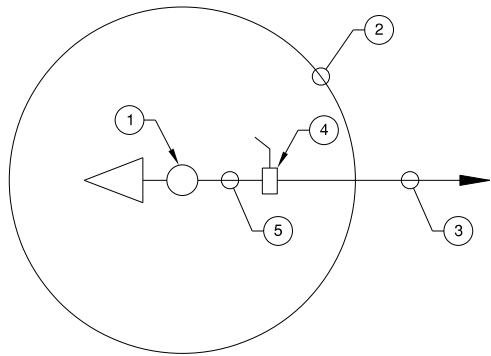
APPROVED BY: BWG

DATE: DECEMBER 16, 2019

JOB No: 19000501

ELECTRICAL
VAULT DETAILS
SHEET 2

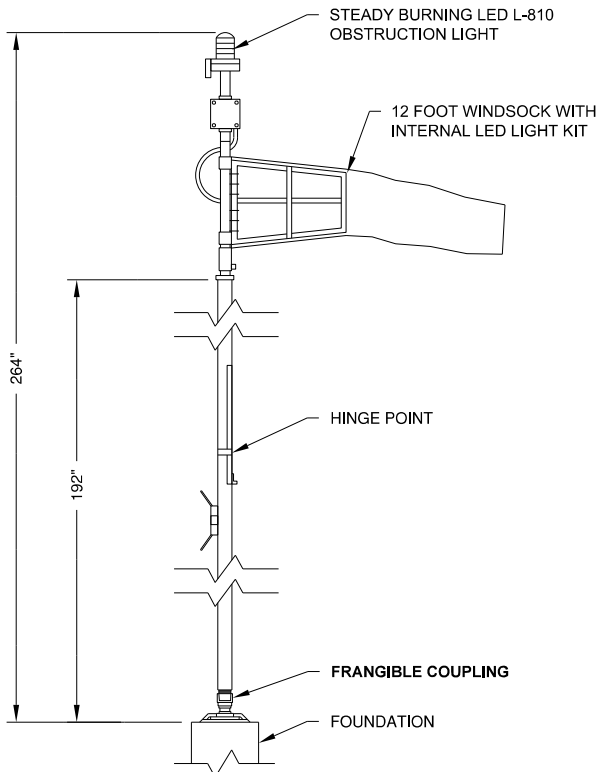
SHEET 53 OF 99 SHEETS



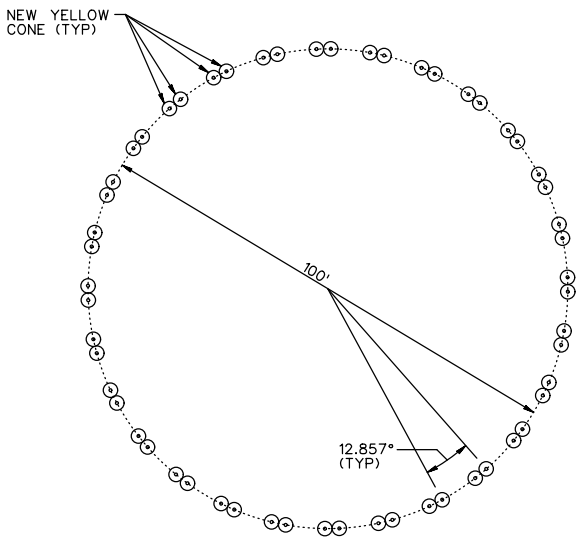
WIND CONE PLAN
N.T.S.

NOTES:

1. L-807 PRIMARY (12-FOOT) WIND CONE.
2. PRIMARY WIND CONE: 12-FOOT DIAMETER 6" AGGREGATE BASE ON SOIL STABILIZATION FABRIC.
3. PRIMARY WIND CONE: TWO #8 USE, ONE #10 GND IN UNIT DUCT TO NEW VAULT.
4. PRIMARY WIND CONE: 30A, 240V UNFUSED DISCONNECT AND PHOTOCELL. SEE DETAIL, THIS SHEET.
5. PRIMARY WIND CONE ONLY: TWO #12 THWN, ONE #12 GND IN 3/4" GRS CONDUIT TO WIND CONE.



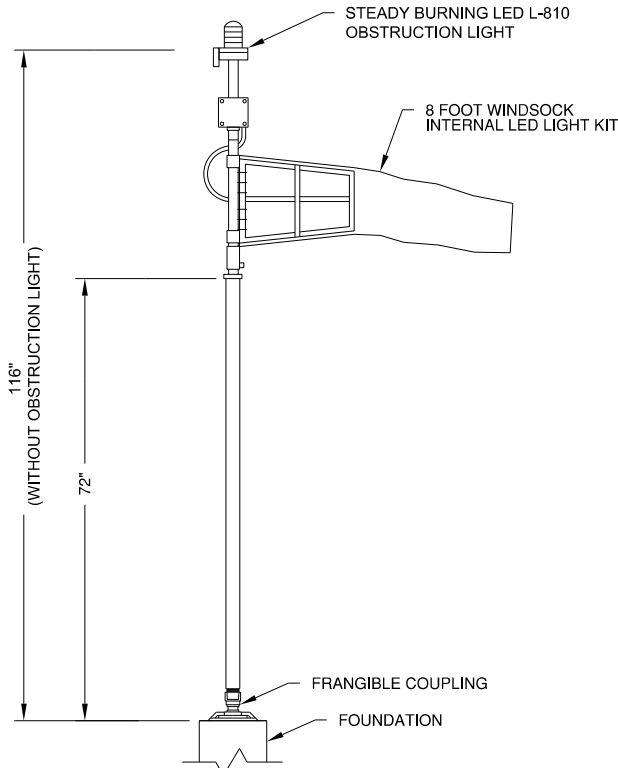
L-807 LED PRIMARY WIND CONE - INTERNALLY LIGHTED
N.T.S.



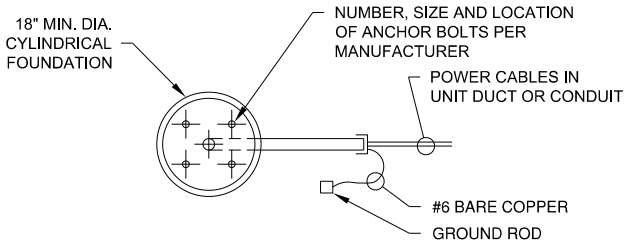
SEGMENTED CIRCLE
LAYOUT DETAIL
N.T.S.

NOTE:

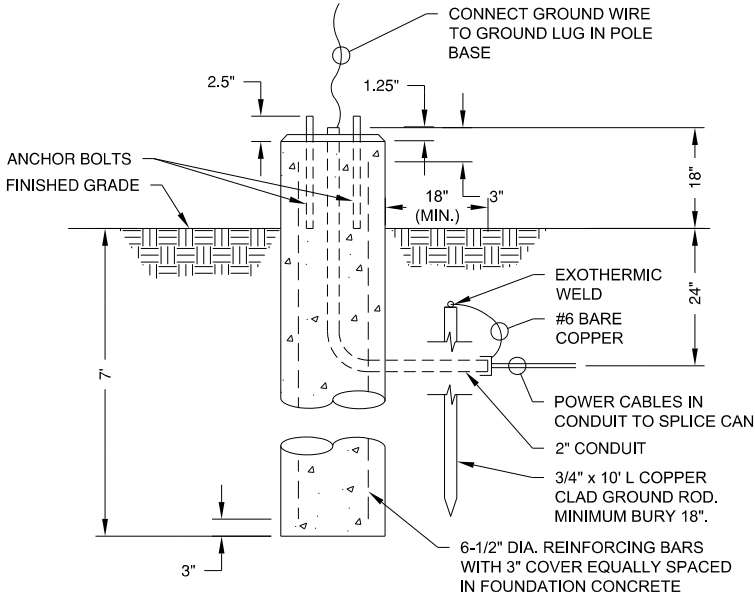
THE INSTALLATION THE SEGMENTED CIRCLE SHALL BE CONSIDERED INCIDENTAL TO THE L-807 WIND CONE INSTALLATION PAY ITEM.



L-806 LED SUPPLEMENTAL WIND CONE-INTERNALLY LIGHTED
N.T.S.

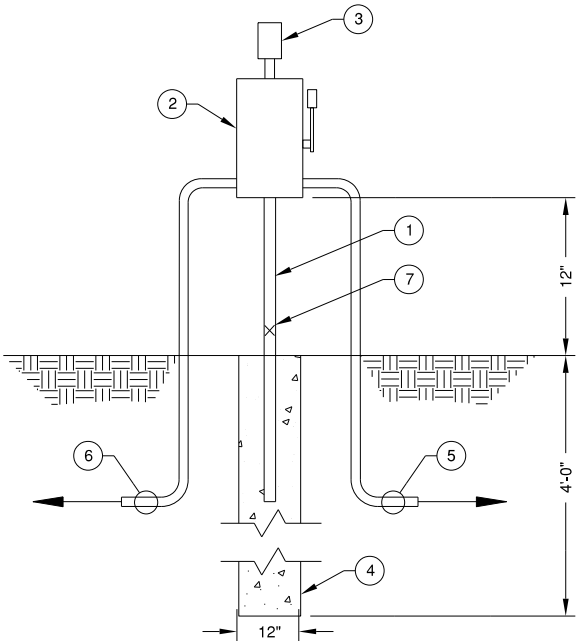


PLAN



SECTION

WIND CONE FOUNDATION DETAIL
N.T.S.



L-807 PRIMARY WIND CONE POWER DETAIL
N.T.S.

NOTES

1. 2" EMT SUPPORT POST. PROVIDE CAP.
2. 30A, 240V UNFUSED DISCONNECT IN NEMA 3R ENCLOSURE, SQUARE D DU221RB, OR EQUIVALENT.
3. WIND CONE PHOTOCELL, TORK MODEL #2101, OR EQUIVALENT.
4. 12" DIAMETER x 4'-0" DEEP (MINIMUM) CONCRETE FOUNDATION.
5. TWO #8 USE, ONE #10 GROUND IN UNIT DUCT. SEAL CONDUIT END TO MAKE WATERTIGHT. DIRECT BURY REMAINING CABLES IN UNIT DUCT TO VAULT.
6. TWO #12 THWN (WIND CONE LIGHTS POWER), ONE #12 GROUND IN 3/4" GRS CONDUIT TO WIND CONE.
7. FRANGIBLE COUPLING.

REVISIONS		
NUMBER	BY	DATE
1	RAB	1/21/2020
0 1 2 THIS BAR IS EQUAL TO 2' AT FULL SCALE (34X22). PLOT 1		

BOWLING GREEN MUNICIPAL AIRPORT BOWLING GREEN, MISSOURI	RECONSTRUCT AND WIDEN RUNWAY 13-31; RECONSTRUCT CONNECTING TAXIWAY	

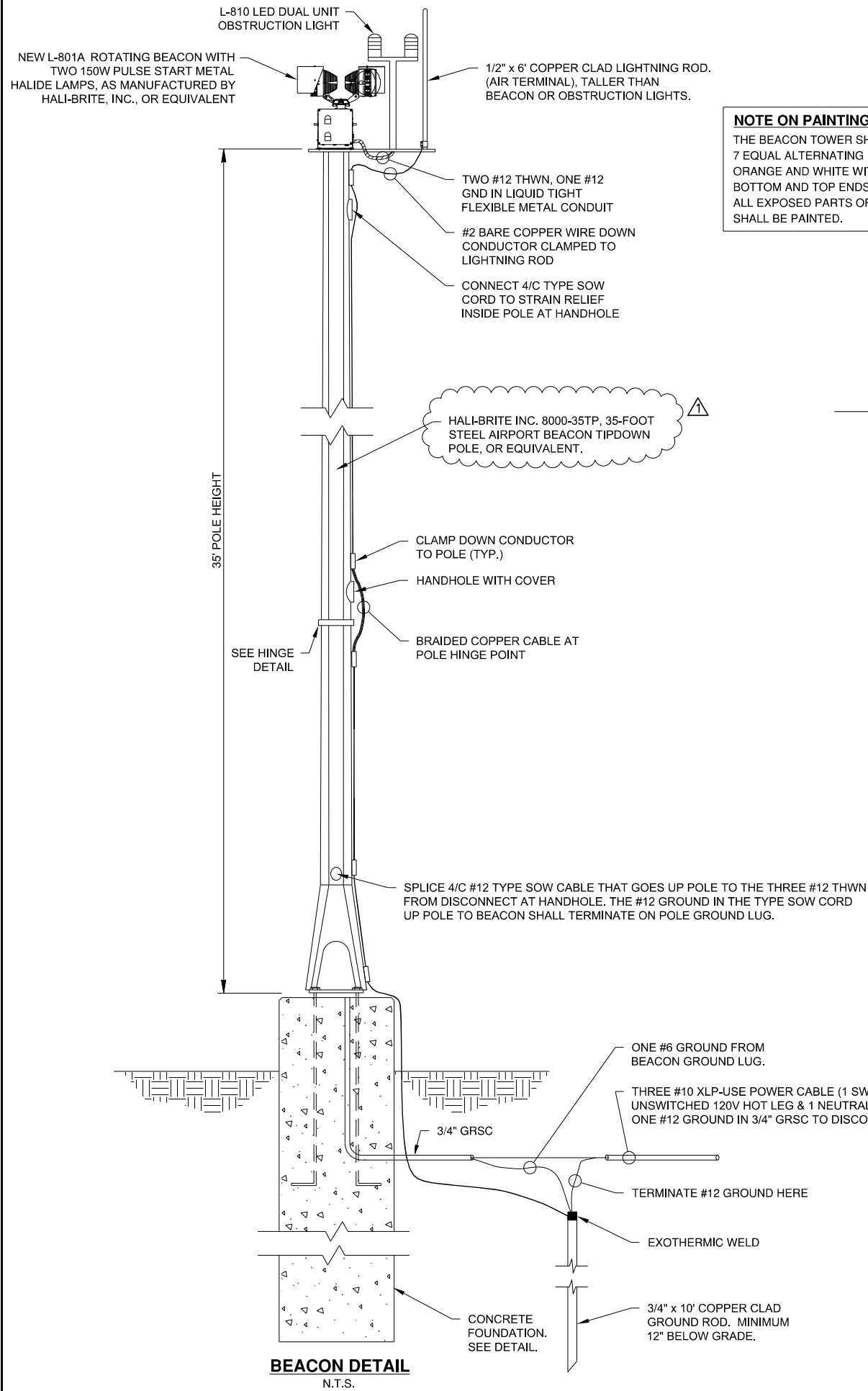


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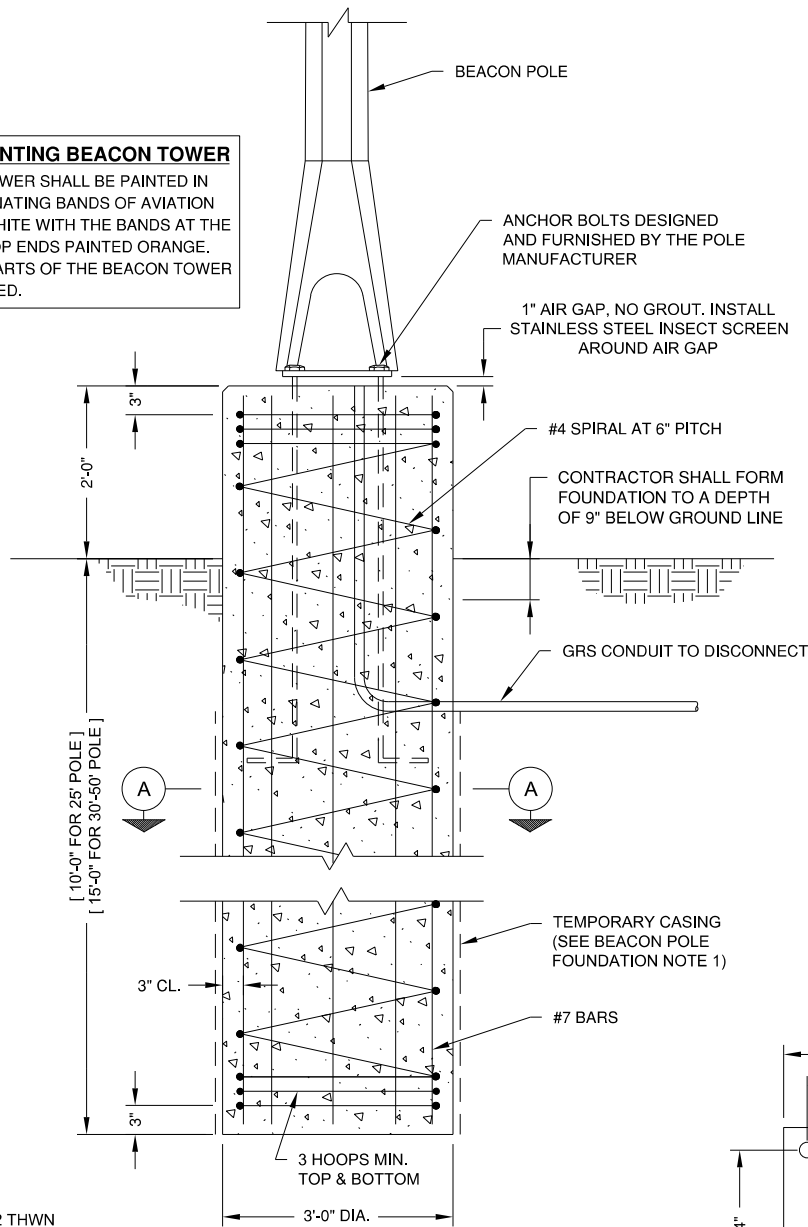
CMT
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PROFESSIONAL ENGINEERING - 000631

FILE: 56_Electrical_Details_03.dgn
DESIGN BY: RAB
DRAWN BY: CAG
CHECKED BY: MRR
APPROVED BY: BWG
DATE: DECEMBER 16, 2019
JOB No: 19000501
ELECTRICAL DETAILS SHEET 3 OF 8
SHEET 56 OF 99 SHEETS

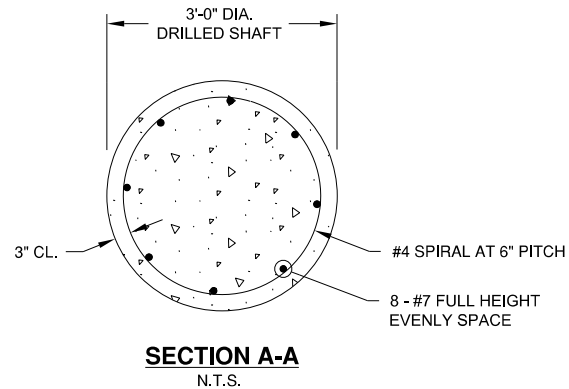
1/21/2020
K:\BowlingGreenMOAp\19000501-00_Runway\Draw\Sheets\57_Electrical_Details_04.dgn



NOTE ON PAINTING BEACON TOWER
THE BEACON TOWER SHALL BE PAINTED IN 7 EQUAL ALTERNATING BANDS OF AVIATION ORANGE AND WHITE WITH THE BANDS AT THE BOTTOM AND TOP ENDS PAINTED ORANGE. ALL EXPOSED PARTS OF THE BEACON TOWER SHALL BE PAINTED.



SECTION THRU BEACON FOUNDATION
N.T.S.



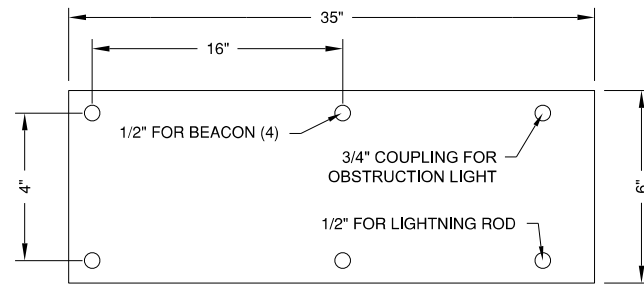
BEACON POLE FOUNDATION NOTES

1. FOUNDATION FOR BEACON SHALL BE BORED/DRILLED. CONSTRUCTION OF DRILLED LIGHT POLE FOUNDATIONS MAY REQUIRE THE USE OF A TEMPORARY CASING, THAT SHALL BE REMOVED DURING THE CONCRETE POURING PROCESS.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 P.S.I. AT 14 DAYS.
3. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60.
4. BEACON FOUNDATION SHALL BE MONOLITHIC. NO CONSTRUCTION JOINTS WILL BE PERMITTED.
5. IF REQUIRED THE CONTRACTOR SHALL PROVIDE AND MAINTAIN IN OPERATION PUMPING EQUIPMENT FOR THE COMPLETE DEWATERING OF FOUNDATION EXCAVATION. NO STRUCTURE SHALL BE PERMITTED TO BE CONSTRUCTED IN WHICH ANY AMOUNT OF WATER FLOWS OR IS POOLED. THE COST OF DEWATERING SHALL BE INCIDENTAL TO THE AIRPORT ROTATING BEACON, IN PLACE PAY ITEM.

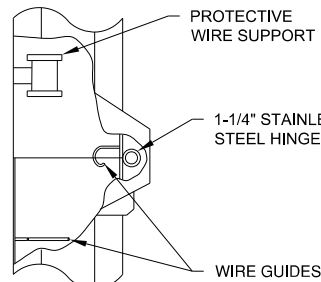
BEACON POLE FOUNDATION DESIGN

DESIGN LOAD: AASHTO-STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 2001.

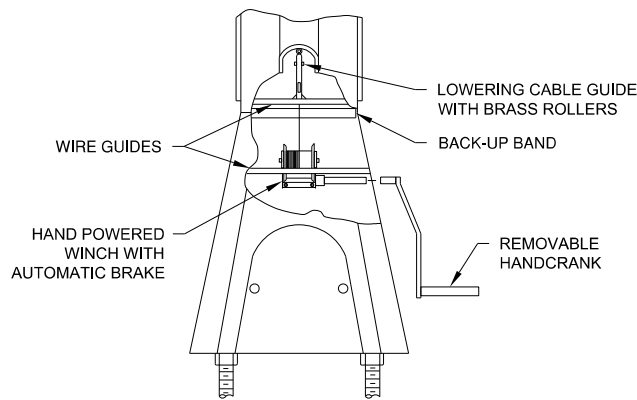
DESIGN WIND SPEED: 100 M.P.H.



BEACON PLATFORM DETAIL
N.T.S.



HINGE DETAIL
N.T.S.

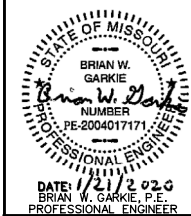


BASE DETAIL
N.T.S.

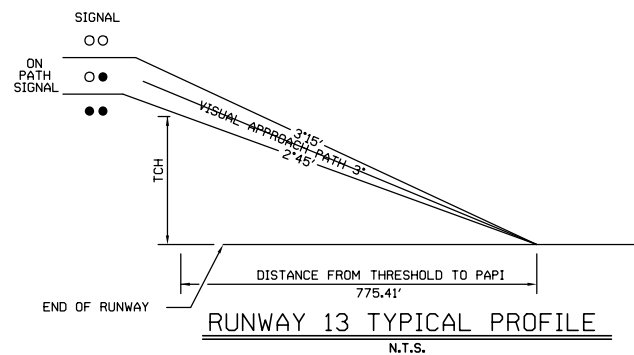
REVISIONS		
NUMBER	BY	DATE
1	RAB	1/21/2020
0 1 2 THIS BAR IS EQUAL TO 2' AT FULL SCALE (34X22). PLOT 1		

BOWLING GREEN MUNICIPAL AIRPORT
BOWLING GREEN, MISSOURI

**RECONSTRUCT AND WIDEN RUNWAY 13-31;
RECONSTRUCT CONNECTING TAXIWAY**



FILE: 57_Electrical_Details_04.dgn
DESIGN BY: RAB
DRAWN BY: CAG
CHECKED BY: MRR
APPROVED BY: BWG
DATE: DECEMBER 16, 2019
JOB No: 19000501
ELECTRICAL DETAILS SHEET 4 OF 8
SHEET 57 OF 99 SHEETS

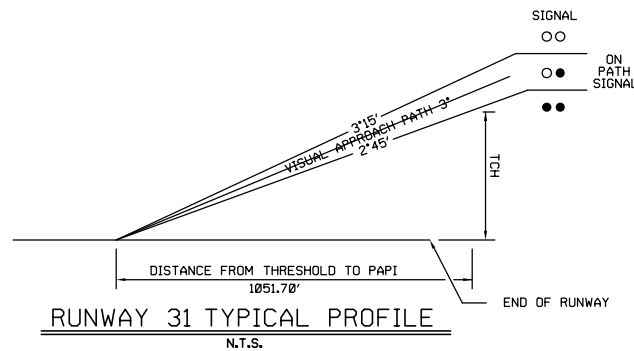


AIMING OF TYPE L-881 (2-BOX) PAPI RELATIVE TO PRESLECTED GLIDE PATH (3°00')	
LIGHT UNIT	AIMING ANGLE (IN MINUTES OF ARC)
	STANDARD INSTALLATION
UNIT NEAREST RUNWAY	15' ABOVE GLIDE PATH
NEXT ADJACENT UNIT	15' BELOW GLIDE PATH

RUNWAY	13	31
HEIGHT GROUP USED FOR SITING	1	1
THRESHOLD STATIONING	10+00.00	42+03.00
THRESHOLD ELEVATION	871.20	891.0
THRESHOLD CROSSING HEIGHT	40'	40'
STATION FOR PAPI	17+75.41	31+51.30
GLIDE PATH ANGLE *	3°	3°
REFERENCE POINT ELEVATION*	873.95	880.63

* THE VISUAL GLIDE PATH ANGLE IS THE CENTER OF THE ON COURSE ZONE AND IS MEASURED FROM THE HORIZONTAL

.. ELEVATION OF CENTER OF PAPI LIGHTS



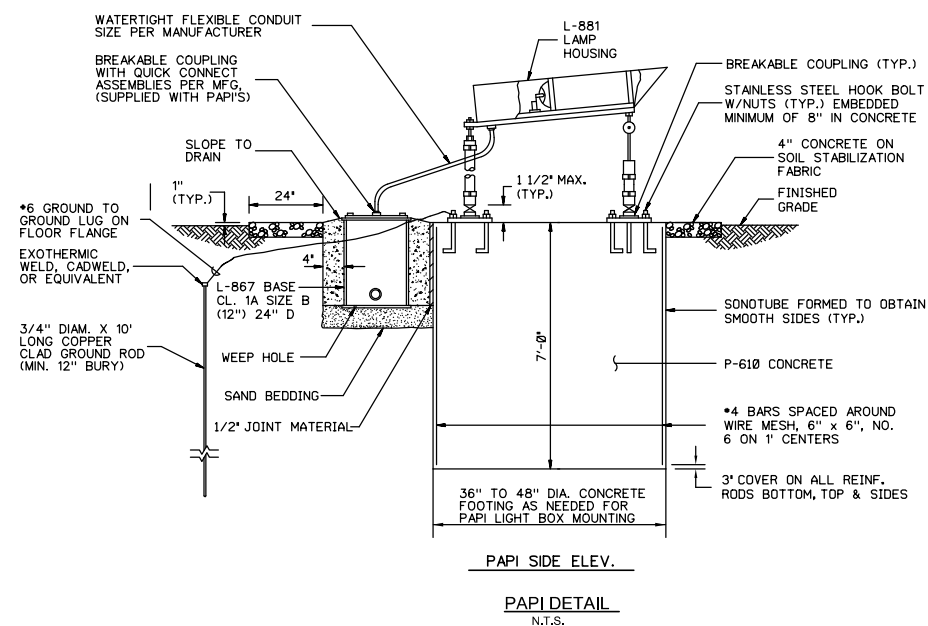
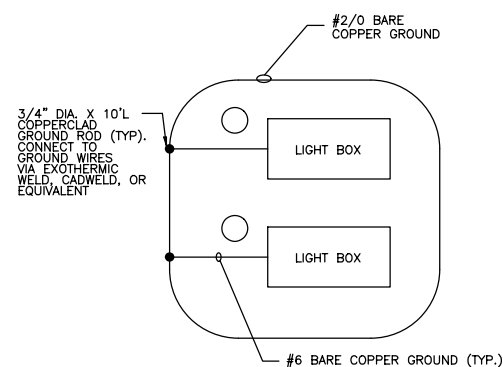
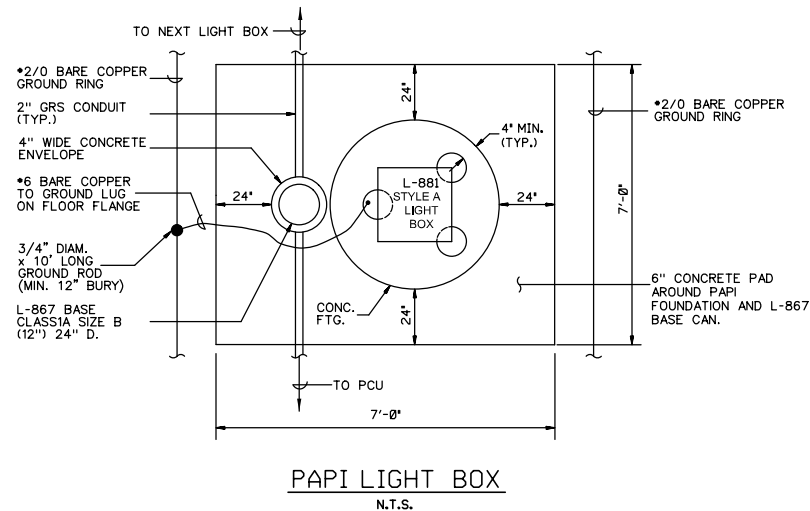
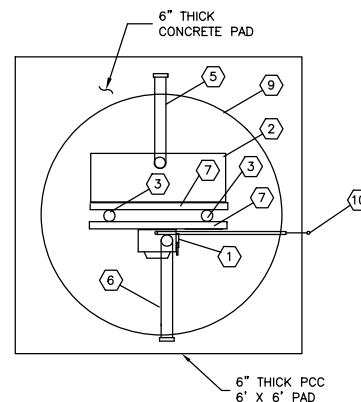
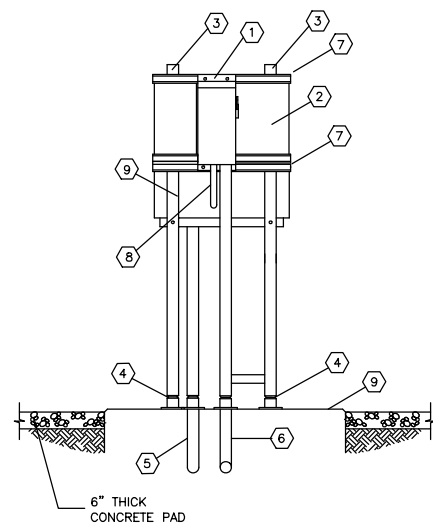
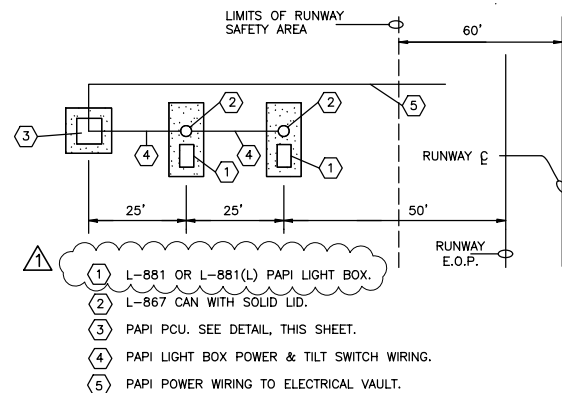
FOUNDATIONS:
FOUNDATIONS FOR MOUNTING LIGHT BOXES SHALL BE MADE OF ITEM 610 CONCRETE.
ALL LIGHT BOXES SHALL BE FRANGIBLY MOUNTED TO THE FOUNDATION.

AZIMUTHAL AIMING:
EACH LIGHT UNIT SHALL BE AIMED OUTWARD INTO THE APPROACH ZONE ON A LINE PARALLEL TO THE RUNWAY CENTERLINE WITHIN A TOLERANCE OF 1/2 DEGREE.

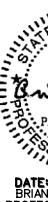
MOUNTING HEIGHT TOLERANCES:
THE BEAM CENTERS OF ALL LIGHT UNITS SHALL BE WITHIN ±1 INCH OF A HORIZONTAL PLANE AT THE REFERENCE ELEVATION GIVEN IN THE TABLE.

TOLERANCE ALONG LINE PERPENDICULAR TO RUNWAY:
THE FRONT FACE OF EACH LIGHT UNIT IN A BAR SHALL BE LOCATED ON A LINE PERPENDICULAR TO THE RUNWAY CENTERLINE WITHIN ±6 INCHES.

LATERAL SPACING
THE DIFFERENCE IN LATERAL SPACING BETWEEN LIGHT UNITS SHALL NOT EXCEED 1'-0".



1	HEAVY DUTY FUSIBLE DISCONNECT, 600VAC, 30A, NEMA 3R, SQUARE D H361AMK OR EQUAL, WITH TWO 15A FUSES.	7	1-5/8" X 1-5/8" GALVANIZED STRUT.
2	120/240V PAPI POWER & CONTROL UNIT, WITH PHOTOCCELL.	8	TWO #12 THWN, ONE #12 NEUTRAL, ONE #12 GND IN 3/4" CONDUIT, TO PAPI POWER & CONTROL UNIT.
3	2" GALVANIZED EMT LEGS WITH TOPS CAPPED.	9	CONCRETE FOOTING, 36" DIAMETER X 48" DEEP (MIN.). SEE PAPI INSTALLATION FOR REBAR AND WIRE MESH INFO.
4	FRANGIBLE COUPLINGS & FLOOR FLANGES. ANCHOR TO CONCRETE FOUNDATION (TYP.).	10	3/4" DIA. BY 10 FT. LONG COPPER CLAD GROUND ROD WITH #6 SOLID BARE COPPER GROUND CABLE ATTACHED BY EXOTHERMIC WELDING. OTHER END OF CABLE TERMINATES ON GROUND LUG IN DISCONNECT. (NOT SHOWN IN ELEVATION VIEW).
5	2" GRS CONDUIT WITH PAPI LIGHT HOUSING POWER & PAPI TILT CONTROL CABLES, PER PAPI MANUFACTURER.		
6	CONDUIT AND WIRING TO VAULT AS FOLLOWS:		
PAPI 13: THREE #6 TYPE USE, ONE #8 GND IN 1-1/2" UNIT DUCT (120/240V POWER) PAPI 31: THREE #8 TYPE USE, ONE #8 GND IN 1" UNIT DUCT (120/240V POWER).			

		
 THIS BAR IS EQUAL TO 2' AT FULL SCALE (34X22). PLOT 1		
BOWLING GREEN MUNICIPAL AIRPORT BOWLING GREEN, MISSOURI RECONSTRUCT AND WIDEN RUNWAY 13-31; RECONSTRUCT CONNECTING TAXIWAY		
 DATE: 1/21/2020 BRIAN W. GARKIE, P.E. PROFESSIONAL ENGINEER THE PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEAR HEREON ASSUMES RESPONSIBILITY ONLY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED PROJECT TO WHICH THIS PAGE REFERS.		
ONE MEMORIAL DRIVE, SUITE 500 ST. LOUIS, MO 63102 (314) 436-5500  © Copyright CMT, Inc. PROFESSIONAL ENGINEERING - 000631 STATE PROJECT NO. 19-051A-1		
FILE: 59_Electrical_Details_06.dgn		
DESIGN BY: RAB		
DRAWN BY: CAG		
CHECKED BY: MRR		
APPROVED BY: BWG		
DATE: DECEMBER 16, 2019		
JOB No: 19000501		
ELECTRICAL DETAILS SHEET 6 OF 8		
SHEET 59 OF 99 SHEETS		

