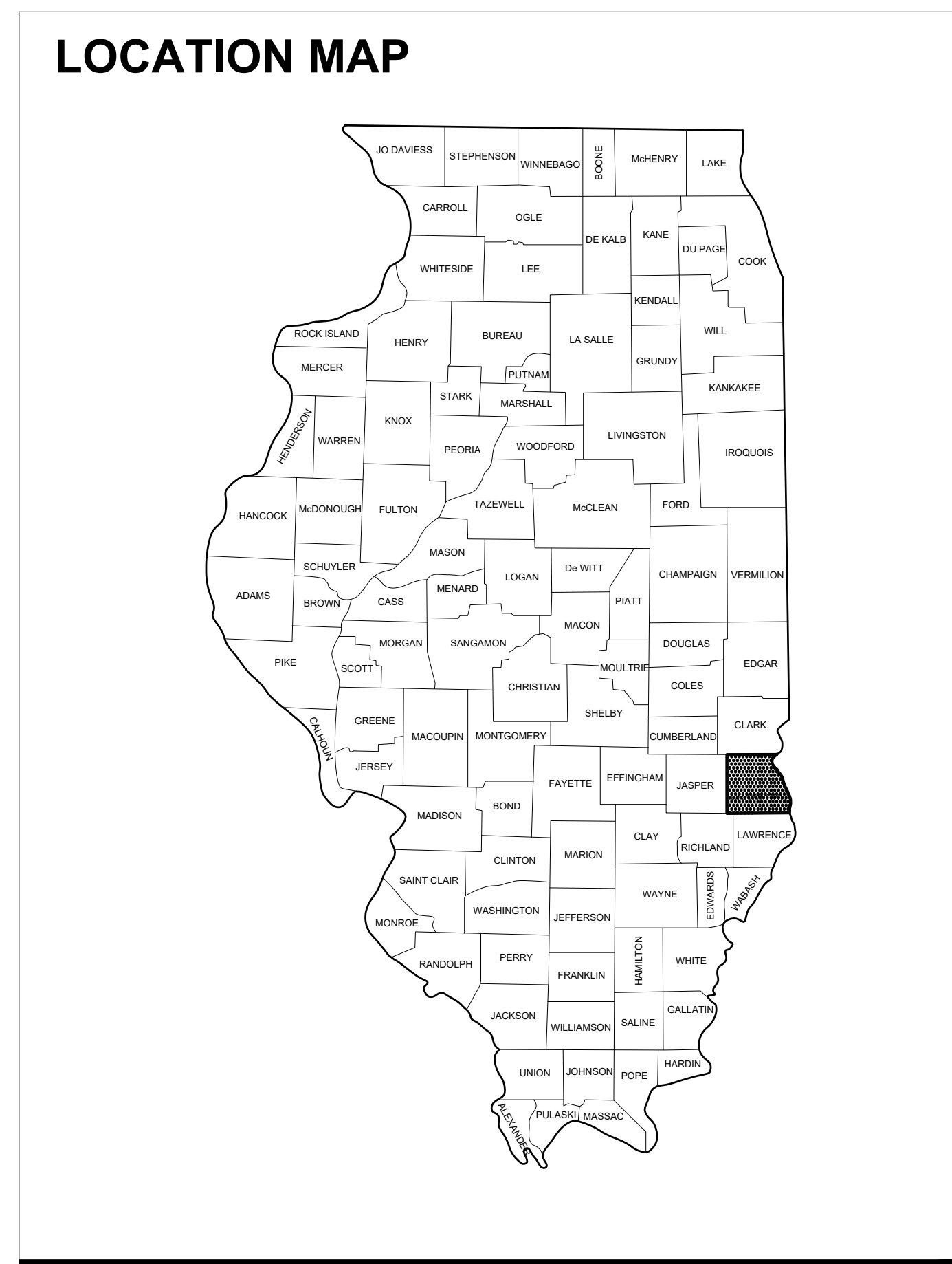
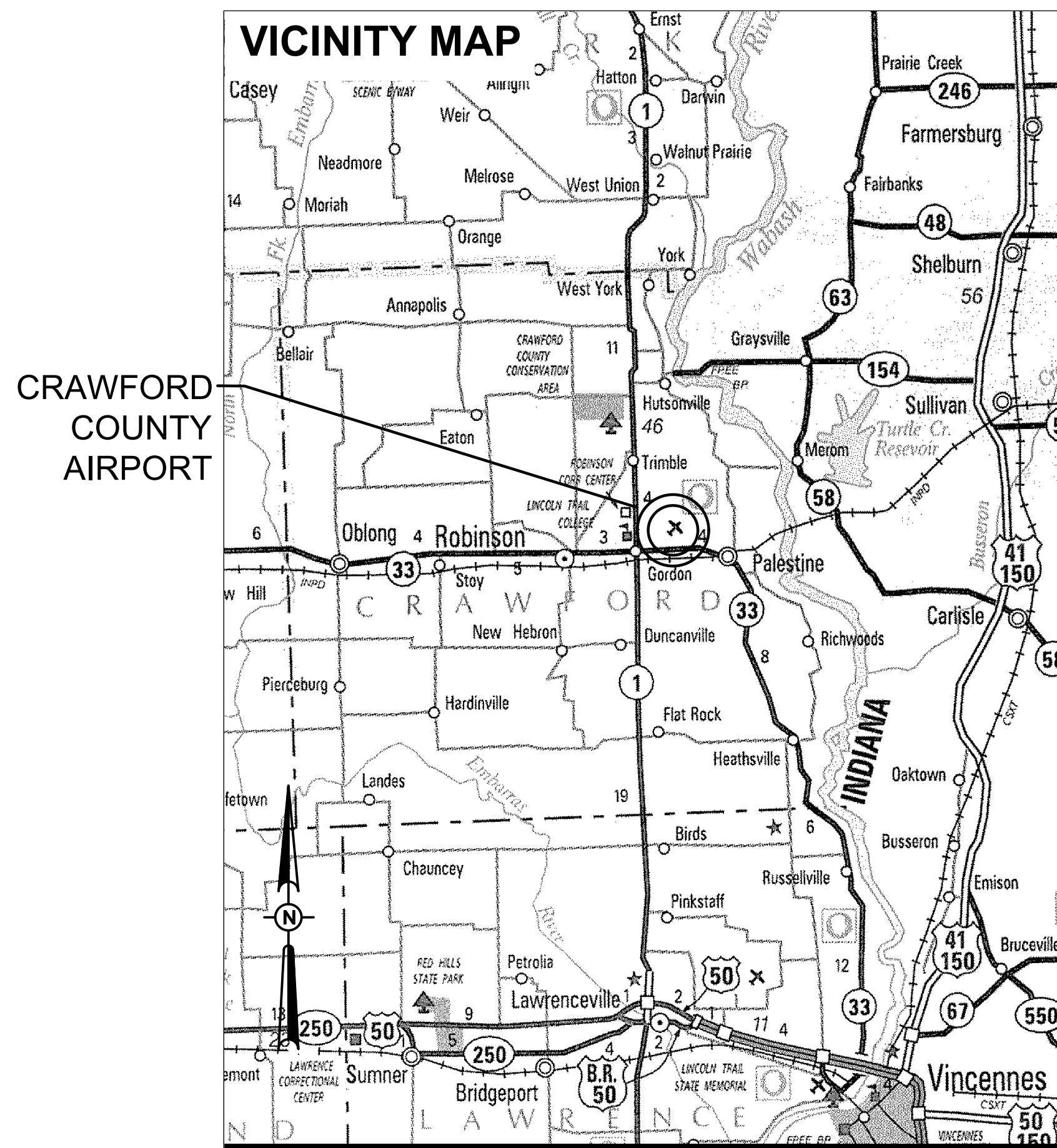


CONSTRUCTION PLANS - ISSUED SEPTEMBER 22, 2023

INSTALL LED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM AND ASSOCIATED ELECTRICAL IMPROVEMENTS OF DUCT, STRUCTURES, CABLING, AND VAULT WORK

CRAWFORD COUNTY AIRPORT AUTHORITY
CRAWFORD COUNTY AIRPORT (RSV)
ROBINSON, CRAWFORD COUNTY, ILLINOIS

IDA PROJECT NO.: RSV-5062
AIP PROJECT NO.: 3-17-SBGP-TBD
FOR BID



NOTICE TO CONTRACTORS AND BIDDERS

THESE CONSTRUCTION PLANS RELY UPON THE SPECIAL PROVISIONS AND THE SPECIFICATIONS TO PROVIDE FOR A COMPLETE DESCRIPTION OF THE WORK AND CONSTRUCTION REQUIREMENTS. THE PLANS SHALL ONLY BE USED IN COMBINATION WITH ALL CONTRACT DOCUMENTS.

I:\23\JOBS\23A0038D\CAD\AIRPORT\SHSHEET\G-001-CV.R.DWG

No.	Issue/Description	Sheets Changed	Date	By

COVERING ELECTRICAL DESIGN

Kevin N. Lightfoot

Kevin N. Lightfoot, P.E.
Electrical Engineer

September 15, 2023

HANSON PROFESSIONAL SERVICES INC.
1525 South Sixth Street
Springfield, Illinois 62703-2886
Telephone: 217.788.2450
Fax: 217.788.2503

Jeff Olson

Jeff Olson, P.E.
Project Engineer

September 15, 2023

CRAWFORD COUNTY AIRPORT AUTHORITY
CRAWFORD COUNTY AIRPORT
10748 North 1650th Street
Palestine, Illinois 62451
Telephone: 618.586.2121

David Shaw
Authority Chairman

September 21, 2023



**INSTALL PAPI SYSTEM
& ASSOCIATED
ELECTRICAL
IMPROVEMENTS**

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: G-002-FLP.DWG
DESIGN BY: KNL 7/26/2023
DRAWN BY: HLE 7/26/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

**SUMMARY OF
QUANTITIES AND
INDEX OF SHEETS**

SUMMARY OF QUANTITIES				
ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITY	AS-BUILT QUANTITY
AR108658	3/C #8 600 V UG CABLE IN UD	FOOT	8,500	
AR110012	2" DIRECTIONAL BORE	FOOT	260	
AR125565	SPLICE CAN	FOOT	4	
AR125615	PAPI (L-880 SYSTEM)	EACH	2	
AR125910	REMOVE PLASI	EACH	2	
AR150520	MOBILIZATION	L SUM	1	

INDEX OF SHEETS	
SHEET NO.	SHEET TITLE
1	COVER SHEET
2	SUMMARY OF QUANTITIES AND INDEX OF SHEETS
3	SCOPE OF WORK
4	CONSTRUCTION SAFETY NOTES & DETAILS SHEET 1
5	CONSTRUCTION SAFETY NOTES & DETAILS SHEET 2
6	CONSTRUCTION SAFETY AND PHASING PLAN
7	EXISTING ELECTRICAL PLAN (STA. 0+00 TO 7+50)
8	EXISTING ELECTRICAL PLAN (STA. 7+50 TO 18+00)
9	EXISTING ELECTRICAL PLAN (STA. 18+00 TO 28+50)
10	EXISTING ELECTRICAL PLAN (STA. 28+50 TO 39+00)
11	EXISTING ELECTRICAL PLAN (STA. 39+00 TO 49+50)
12	EXISTING ELECTRICAL PLAN (STA. 49+50 TO 51+08)
13	PROPOSED ELECTRICAL PLAN (STA. 0+00 TO 7+50)
14	PROPOSED ELECTRICAL PLAN (STA. 7+50 TO 18+00)
15	PROPOSED ELECTRICAL PLAN (STA. 18+00 TO 28+50)
16	PROPOSED ELECTRICAL PLAN (STA. 28+50 TO 39+00)
17	PROPOSED ELECTRICAL PLAN (STA. 39+00 TO 49+50)
18	PROPOSED ELECTRICAL PLAN (STA. 49+50 TO 51+08)
19	PAPI SITING DETAILS AND NOTES RUNWAY END 9
20	PAPI SITING DETAILS AND NOTES RUNWAY END 27
21	PAPI FOUNDATION DETAILS
22	AIRFIELD LIGHTING CABLE SPLICE DETAILS
23	CONDUIT TRENCH DETAIL
24	CABLE AND DUCT MARKER DETAILS
25	SPLICE CAN DETAILS
26	ELECTRICAL NOTES SHEET 1
27	ELECTRICAL NOTES SHEET 2
28	GROUNDING DETAILS
29	GROUND RESISTANCE TESTING DETAILS
30	GROUNDING NOTES
31	ELECTRICAL LEGEND AND ABBREVIATIONS
32	EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD
33	PROPOSED ELECTRICAL ONE-LINE FOR RUNWAY 9-27 PAPI'S
34	EXISTING HIGH VOLTAGE WIRING SCHEMATICS
35	SERIES CIRCUIT CABLE TESTING DETAILS
36	LEGEND PLATE SCHEDULES

GENERAL NOTES:

QUANTITIES
PAYMENT WILL BE MADE UNDER THE ITEM NUMBERS, DESCRIPTIONS AND UNITS NOTED IN THE ABOVE TABLE IN ACCORDANCE WITH THE BASIS OF PAYMENT FOR EACH RESPECTIVE WORK ITEM COMPLETED AND ACCEPTED BY THE ENGINEER.

CERTIFIED PAYROLLS
THE RESIDENT ENGINEER/TECHNICIAN CANNOT FORWARD CONSTRUCTION REPORTS TO THE ILLINOIS DIVISION OF AERONAUTICS FOR PROCESSING UNTIL ALL CERTIFIED PAYROLLS FOR THE PERIOD HAVE BEEN RECEIVED.

MATERIAL CERTIFICATIONS
MATERIALS TO BE INCORPORATED INTO THE PROJECT CANNOT BE USED WITHOUT PRIOR APPROVAL. ALL MATERIALS TO BE USED IN THE PROJECT MUST BE SUBMITTED TO THE RESIDENT ENGINEER/TECHNICIAN FOR APPROVAL. USE OF MATERIALS WITHOUT PRIOR APPROVAL AND ULTIMATELY DETERMINED TO BE UNACCEPTABLE BY THE ILLINOIS DIVISION OF AERONAUTICS ARE SUBJECT TO REMOVAL AND/OR NON-PAYMENT.

FOR BID

UTILITY NOTE

THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE, EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF THEIR OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. **CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123.** CONTACT THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. LOCATION OF FAA POWER, CONTROL, AND COMMUNICATION CABLES SHALL BE COORDINATED WITH AND/OR LOCATED BY THE FAA. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVEGROUND UTILITIES.

J.U.L.I.E. INFORMATION

COUNTY.....CRAWFORD
 CITY.....ROBINSON
 TOWNSHIP.....LAMOTTE
 SECTION NO.....28, 29 & 33
 ADDRESS.....CRAWFORD COUNTY AIRPORT
 P.O. BOX 6
 ROBINSON, ILLINOIS 62454



RSV CTAF/UNICOM FREQUENCY = 123.00 MHz

GENERAL NOTES

1. THE SCOPE OF WORK SHEET IS INTENDED ONLY AS A GENERAL DESCRIPTION OF WORK ITEMS AND THEIR APPROXIMATE LOCATIONS AND LIMITS, FOR THE PURPOSE OF UNDERSTANDING THE SCOPE OF THE PROJECT. THIS SHEET SHALL NOT BE USED AS A CONSTRUCTION PLAN. REFER TO THE FOLLOWING PLAN SHEETS FOR DETAILED CONSTRUCTION REQUIREMENTS, LOCATIONS, AND ITEMS OF WORK.
2. WORK FOR THIS PROJECT SHALL CONSIST OF, BUT IS NOT LIMITED TO, REMOVAL AND REPLACEMENT OF THE EXISTING PULSE LIGHT APPROACH SLOPE INDICATORS (PLASI'S) ON RUNWAY 9-27 WITH PRECISION APPROACH PATH INDICATORS (PAPI'S) WITH ASSOCIATED CABLING, DUCT WORK, VAULT WORK AND OTHER ASSOCIATED ITEMS.
3. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, AND TRANSPORTATION NECESSARY TO CONSTRUCT ALL ELEMENTS OF THE PROJECT AS DESCRIBED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS. THE PROJECT PAY ITEMS ARE INTENDED TO BE INCLUSIVE OF ALL WORK TO BE PERFORMED AS SHOWN IN THESE PLANS. ALL INCIDENTAL WORK REQUIRED TO COMPLETE THE PROJECT TO THE SATISFACTION OF THE RESIDENT ENGINEER/TECHNICIAN IS TO BE INCLUDED IN THE COSTS OF PERFORMING THESE ITEMS.
4. THE RULES, REGULATIONS, AND SPECIFICATIONS ENUMERATED HEREIN SHALL BE CONSIDERED AS MINIMUM REQUIREMENTS. THEY SHALL NOT PROHIBIT THE CONTRACTOR FROM FURNISHING AND INSTALLING HIGHER GRADES OF MATERIAL THAN ARE SPECIFIED HEREIN.
5. THE CONSTRUCTION ENTRANCE AS SHOWN ON THE SCOPE OF WORK AND/OR SAFETY PHASING PLAN ARE ONLY TO BE USED FOR THE PROJECT. ACCESS TO THE PROJECT FOR ALL HAULING OF MATERIALS AND EQUIPMENT SHALL BE RESTRICTED TO THE DESIGNATED CONSTRUCTION ENTRANCE.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT, PRESERVE AND REPAIR THE EXISTING AIRFIELD AND ROADWAY PAVEMENTS AT ALL TIMES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING ELECTRICAL, DRAINAGE, AND PAVEMENT STRUCTURES AT NO ADDITIONAL COST TO THE CONTRACT.
7. NO EQUIPMENT SHALL BE PERMITTED TO CROSS OR USE ANY EXISTING PAVEMENT OUTSIDE THE CONSTRUCTION LIMITS, GENERAL PROJECT AREA OR HAUL ROUTE.
8. CONTRACTOR IS REQUIRED TO PROVIDE THEIR OWN RESTROOM FACILITIES.
9. UNLESS OTHERWISE NOTED, ALL DISTURBED AREAS OUTSIDE OF THE PROPOSED CONSTRUCTION LIMITS SHALL BE GRADED, SEEDED AND MULCHED, OR HYDROMULCH SEEDED, AT NO ADDITIONAL COST TO THE CONTRACT.

10. EXCESS EXCAVATION MATERIAL SHALL BE PLACED AT A LOCATION ON AIRPORT PROPERTY TO BE DETERMINED BY THE AIRPORT MANAGER. ALL OTHER WASTE MATERIAL SHALL BE HAULED FROM THE AIRPORT AND PROPERLY DISPOSED OF UNLESS OTHERWISE SPECIFIED HEREIN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMITS FOR HAULING ON PUBLIC ROADS, AS APPLICABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY DAMAGES TO ANY PAVEMENTS (PUBLIC OR PRIVATE) CAUSED BY THEIR CONSTRUCTION EQUIPMENT OR PERSONNEL.
12. THE OWNER SHALL HAVE THE RIGHT OF FIRST REFUSAL FOR ALL SALVAGEABLE MATERIAL REMOVED ON THE PROJECT.
13. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER/TECHNICIAN SO THEY MAY DEVELOP ONE SET OF RELINED AS-BUILT DRAWINGS AT THE COMPLETION OF THE PROJECT.
14. CONTRACTOR SHALL NOTE THAT ALL AREAS WITHIN THE AIRPORT PROPERTY LINE AND OUTSIDE THE CONSTRUCTION LIMITS MAY BE USED FOR AGRICULTURAL PURPOSES. THE CONSTRUCTION LIMITS SHALL BE RESTRICTED TO AREAS THAT ARE ABSOLUTELY NECESSARY TO DISTURB TO COMPLETE THE REQUIRED WORK ITEMS. LIMITS SHALL BE COORDINATED WITH THE RESIDENT ENGINEER PRIOR TO BEGINNING ANY WORK. ALL AREAS WHICH HAVE BEEN FARMED AND/OR DESIGNATED TO BE FARMED AFTER THE PROJECT COMPLETION, AND HAVE BEEN DISTURBED BY CONSTRUCTION ACTIVITY, SHALL BE CHISEL PLOWED (36" MAX.) OR OTHERWISE SCARIFIED TO RETURN THE AREA TO A REASONABLE TILLABLE CONDITION (IF SO PERMITTED BY THE AIRPORT MANAGER.)
15. CONTRACTOR SHALL RESTORE TO ORIGINAL CONDITION ALL GRASS, STONE, OR PAVEMENT DISTURBED BY CONTRACTOR'S CONSTRUCTION OPERATIONS, STAGING, AND CONSTRUCTION ACCESS ROUTES. DISTURBED AREAS TO BE REPAIRED, GRADED, AND MULCHED SEEDED UNLESS OTHERWISE NOTED. STAGING AREA AND SITE ACCESS RESTORATION SHALL BE INCLUDED IN THE COST OF THE HAUL ROUTE.
16. APPROXIMATE LOCATIONS OF UNDERGROUND UTILITIES ARE SHOWN THROUGHOUT THESE PLANS. THE CONTRACTOR SHALL DETERMINE EXACT LOCATIONS AND PROTECT THESE UTILITIES DURING CONSTRUCTION. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE PROPER PERSONS FOR THE PURPOSE OF LOCATING AND PROTECTING EXISTING UNDERGROUND UTILITIES.
17. THE CONTRACTOR MUST AT ALL TIMES MAINTAIN PROPER DRAINAGE FOR ALL AREAS AFFECTED BY THEIR WORK.



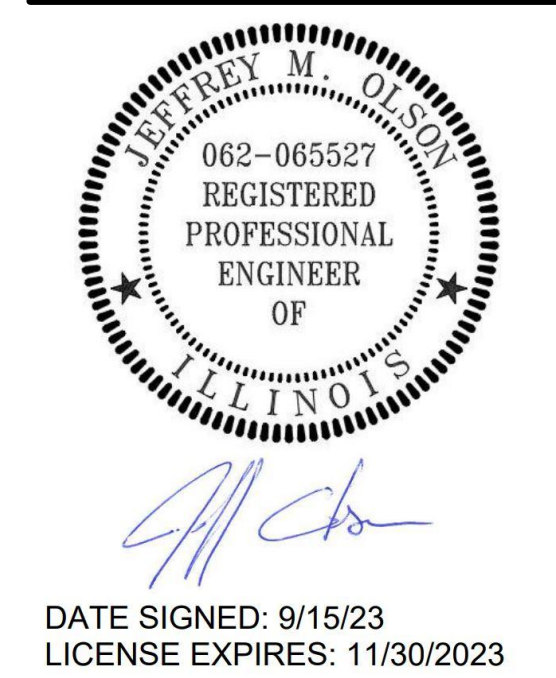
Offices Nationwide
 www.hanson-inc.com

Hanson Professional Services Inc.
 1525 S. 6th Street
 Springfield, IL 62568
 phone: 217-788-2450
 fax: 217-788-2503

Illinois Licensed
 Professional Service Corporation
 #184-001084

Crawford County Airport

10748 North 1650th St.
 Palestine, Illinois 62451



INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
 AIP No: 3-17-SBGP-TBD

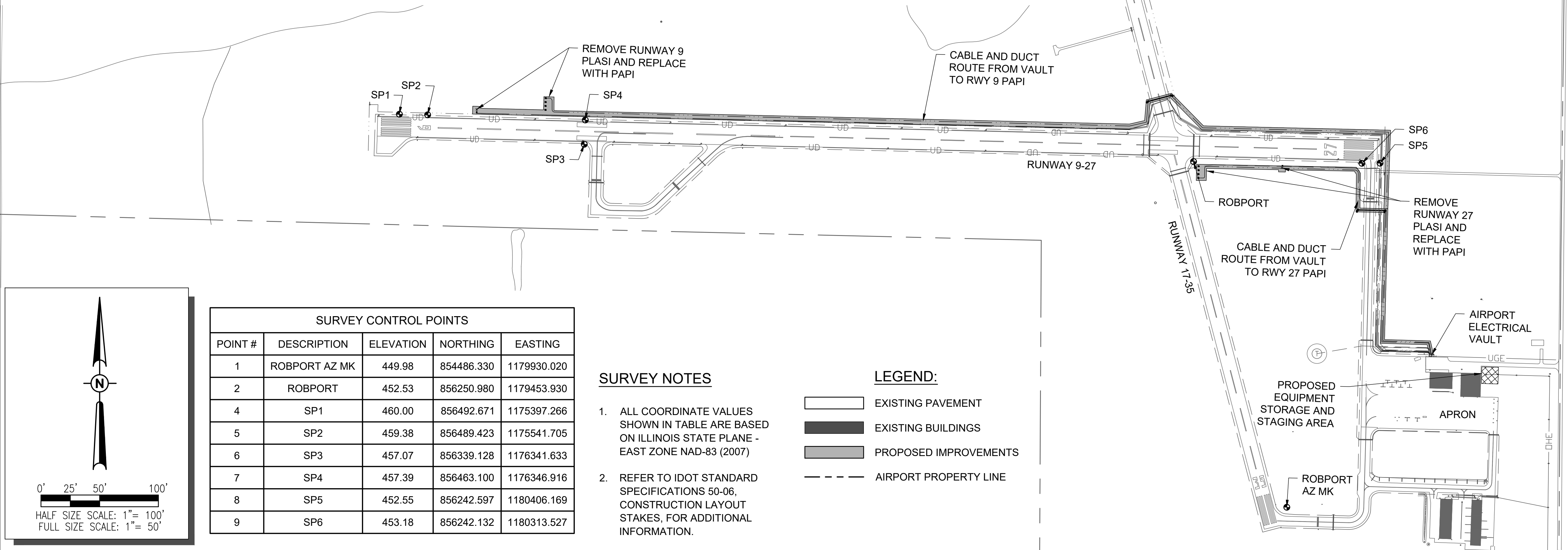
Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023
 PROJECT NO: 23A0038D
 CAD FILE: C-101-SOW.DWG
 DESIGN BY: HLE 8/18/2023
 DRAWN BY: HLE 8/18/2023
 REVIEWED BY: JMO 9/15/2023

SCOPE OF WORK

FOR BID



SURVEY CONTROL POINTS

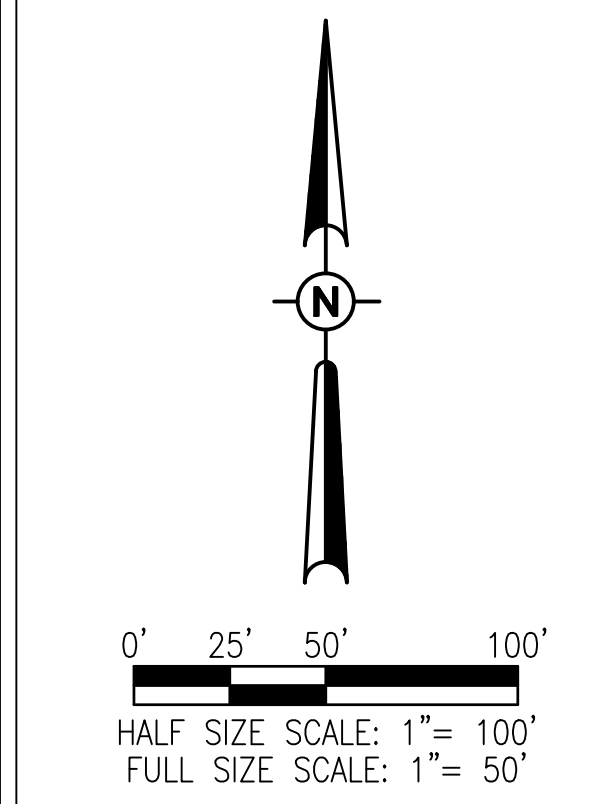
POINT #	DESCRIPTION	ELEVATION	NORTHING	EASTING
1	ROBPORT AZ MK	449.98	854486.330	1179930.020
2	ROBPORT	452.53	856250.980	1179453.930
4	SP1	460.00	856492.671	1175397.266
5	SP2	459.38	856489.423	1175541.705
6	SP3	457.07	856339.128	1176341.633
7	SP4	457.39	856463.100	1176346.916
8	SP5	452.55	856242.597	1180406.169
9	SP6	453.18	856242.132	1180313.527

SURVEY NOTES

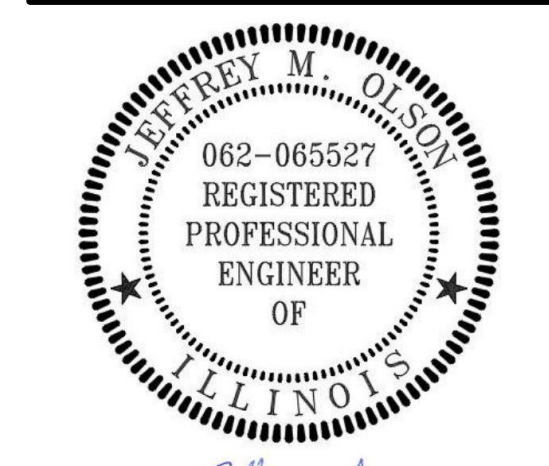
1. ALL COORDINATE VALUES SHOWN IN TABLE ARE BASED ON ILLINOIS STATE PLANE - EAST ZONE NAD-83 (2007)
2. REFER TO IDOT STANDARD SPECIFICATIONS 50-06, CONSTRUCTION LAYOUT STAKES, FOR ADDITIONAL INFORMATION.

LEGEND:

- EXISTING PAVEMENT
- EXISTING BUILDINGS
- PROPOSED IMPROVEMENTS
- AIRPORT PROPERTY LINE



SEP 22, 2023 9:22 AM ENGEL01090
 I:\23\JOBS\23A0038D\CAD\AIRPORT\TSHEETC-101-SOW.DWG



J. Olson
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2023

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

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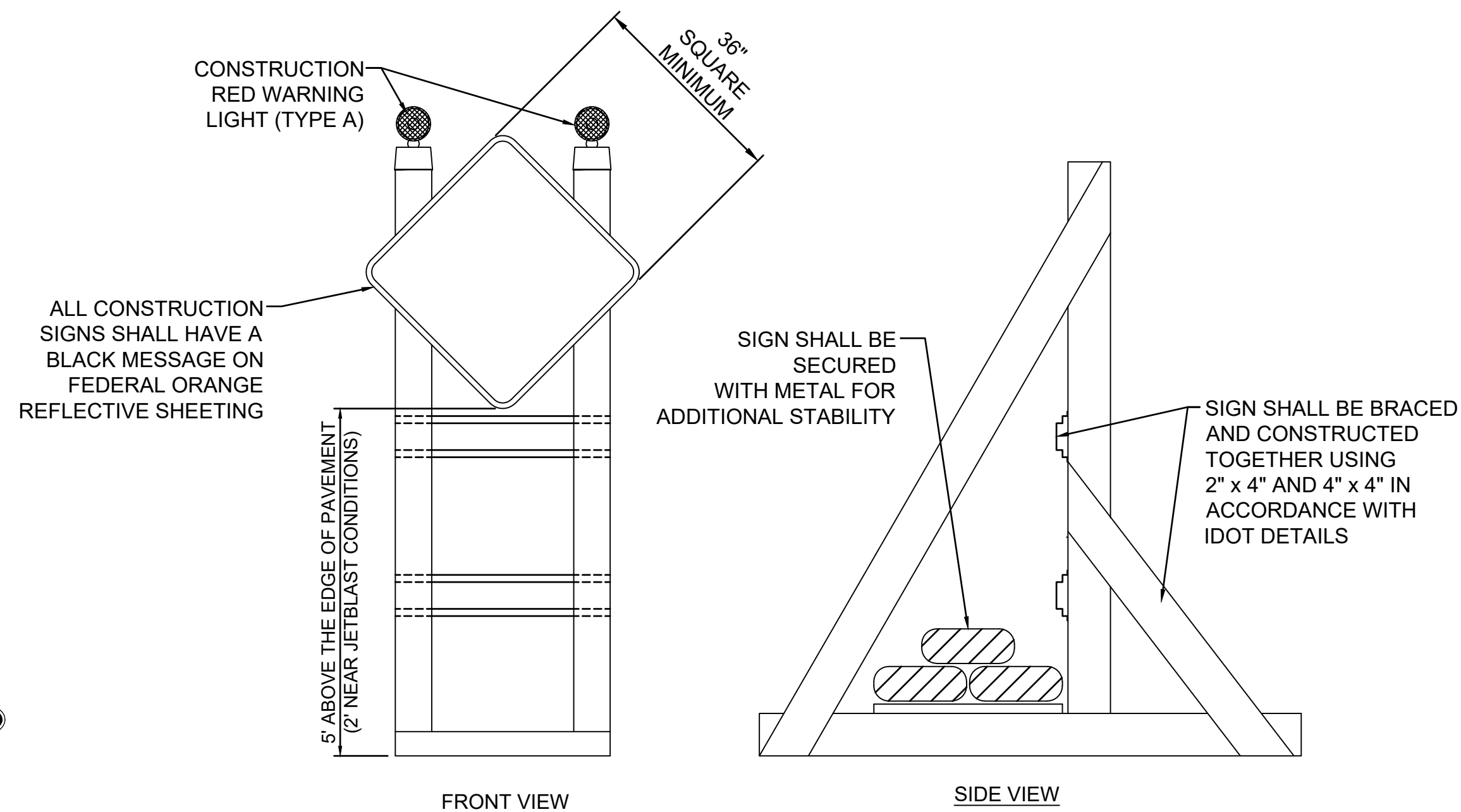
ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: C-102-CSPP.DWG
DESIGN BY: HLE 8/18/2023
DRAWN BY: HLE 8/18/2023
REVIEWED BY: JMO 9/15/2023

SHEET TITLE

CONSTRUCTION SAFETY NOTES & DETAILS SHEET 1

SAFETY NOTES

- THE FOLLOWING NOTES ARE THE CONSTRUCTION SAFETY PROCEDURES THAT THE CONTRACTOR SHALL FOLLOW THROUGHOUT THIS PROJECT. ADDITIONAL REQUIREMENTS ARE SHOWN ON THE CONSTRUCTION SAFETY AND PHASING PLAN SHEET AND THIS SHEET.
- ALL PROVISIONS OF THE LATEST EDITION OF FAA ADVISORY CIRCULAR AC 150/5370-2G (CURRENT EDITION), "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION", APPLY TO THIS CONTRACT, EXCEPT AS MODIFIED BY THIS SAFETY PLAN.
- THE CONTRACTORS SHALL MINIMIZE DISRUPTION OF STANDARD OPERATING PROCEDURES FOR AERONAUTICAL ACTIVITY BY REMAINING WITHIN THE PRESCRIBED STAGING, CONSTRUCTION, AND PHASING AREAS PRESENTED ON THE CONSTRUCTION SAFETY AND PHASING PLAN SHEETS.
- NO UNAUTHORIZED PERSONNEL SHALL ENTER ANY AREA OF THE AIRPORT THAT COULD POTENTIALLY BE HAZARDOUS. THE AIRPORT MANAGER RESERVES THE RIGHT TO SUSPEND OPERATIONS IN ORDER TO MAINTAIN SAFETY AT THE AIRPORT.
- CONTRACTOR EQUIPMENT, VEHICLES, AND PROJECT MATERIALS SHALL BE STORED AT THE STAGING AREA SHOWN ON THE PLAN VIEW.
- ALL CONSTRUCTION EQUIPMENT OPERATING IN THE PRESCRIBED CONSTRUCTION AREA IS REQUIRED TO DISPLAY A CHECKERBOARD FLAG PROPERLY LOCATED OR A ROTATING BEACON (STROBE) AS SPECIFIED IN AC 150/5210-5D, "PAINTING, MARKING, AND LIGHTING OF VEHICLES USED ON AN AIRPORT" LATEST EDITION.
- NO CONSTRUCTION MATERIAL STOCKPILES SHALL BE LOCATED WITHIN 250' OF ACTIVE RUNWAY 9-27 CENTERLINE AND 250' OF ACTIVE RUNWAY 17-35 CENTERLINE, OR WITHIN 65.5' OF ANY OTHER ACTIVE AIRPORT OPERATIONS AREA (EX. TAXIWAY), OR PENETRATE A PART 77 IMAGINARY SURFACE (PROVIDED BY THE RESIDENT ENGINEER/TECHNICIAN) EXTENDING OUT AND UPWARDS FROM ALL SIDES OF AN ACTIVE RUNWAY.
- CLOSED AIRFIELD PHASING AREAS, OPEN TRENCHES, AND STOCKPILED MATERIALS AT THE CONSTRUCTION SITE SHALL BE PROMINENTLY MARKED WITH LIGHTED BARRICADES WITH STEADY BURNING OR FLASHING RED LIGHTS AS SPECIFIED IN 150/5370-2G. "OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION, LATEST EDITION. LIGHTED BARRICADES MUST BE NO TALLER THAN 18" (EXCLUSIVE OF SUPPLEMENTARY LIGHTS AND FLAGS) ON THE TAXIWAYS AND COMPLY WITH ADVISORY CIRCULAR 150/5370-2G, LATEST EDITION. CONTRACTOR SHALL NIGHT CHECK BARRICADES DAILY FOR PROPER OPERATION.
- NO OPEN TRENCHES 250' OF ACTIVE RUNWAY 9-27 CENTERLINE AND 250' OF ACTIVE RUNWAY 17-35 CENTERLINE, OR WITHIN 65.5' OF ANY TAXIWAY CENTERLINE WILL BE PERMITTED UNLESS APPROPRIATELY BACKFILLED OR COVERED. COVERING FOR OPEN TRENCHES MUST BE DESIGNED TO ALLOW SAFE OPERATIONS OF THE HEAVIEST AIRCRAFT OPERATING ON THE RUNWAY/TAXIWAY ACROSS THE TRENCH WITHOUT DAMAGING THE AIRCRAFT. OTHER TRENCHES SHALL BE MAINTAINED SAFE, I.E., BARRICADED OR COVERED WITH STEEL PLATES IN ALL OTHER AREAS.
- OPEN TRENCHES, EXCAVATIONS, AND STOCKPILED MATERIALS AT THE CONSTRUCTION SITE SHOULD BE PROMINENTLY MARKED WITH ORANGE FLAGS AND LIGHTED WITH FLASHING RED LIGHTS DURING HOURS OF RESTRICTED VISIBILITY AND/OR DARKNESS.
- NO CONSTRUCTION EQUIPMENT GREATER THAN 25' TALL WILL BE PERMITTED ON THE AIRPORT UNLESS PERMITTED WITH THE APPROVAL OF THE AIRPORT MANAGER AND AIRSPACE APPROVAL BY THE FAA.
- NO OPEN FLAME WELDING OR TORCH CUTTING OPERATION IS PERMITTED UNLESS ADEQUATE FIRE AND SAFETY PRECAUTIONS ARE PROVIDED AND HAVE BEEN APPROVED BY THE AIRPORT MANAGER NO FLARE POTS ARE ALLOWED ON THE PROJECT.
- SOIL, DEBRIS, AND LOOSE MATERIAL DROPPED OR TRACKED ONTO AIRPORT ROADS, TAXIWAYS, AND SOD SURFACES, OR WHICH CAN BE BLOWN ONTO SUCH SURFACES, SHALL BE IMMEDIATELY SWEEPED, PICKED UP AND REMOVED, OR PLACED INTO CLOSED CONTAINERS. ANY DAMAGE TO AIRPORT PROPERTY SHALL BE REPAIRED IMMEDIATELY AT NO COST TO THE OWNER.
- EACH CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAINTAINING AIRPORT LIGHTING AND NAVIGATIONAL ELECTRICAL SYSTEMS DURING CONSTRUCTION. A CONTACT PERSON AND TELEPHONE NUMBER FOR 24 HOUR EMERGENCY IMMEDIATE REPAIR SHALL BE SUBMITTED TO THE AIRPORT MANAGER AND RESIDENT ENGINEER/TECHNICIAN. HAUL ROUTES CROSSING PAVEMENT, DRAINAGE, MISCELLANEOUS. STRUCTURES AND/OR AIRFIELD CABLES SHALL BE PROTECTED FROM DAMAGE.
- ALL AIRCRAFT AND AIRPORT OPERATIONS HAVE THE RIGHT-OF-WAY. CONTRACTOR TO YIELD TO VEHICLES AND REMAIN CLEAR AT ALL TIMES.
- CONTRACTOR SHALL PLACE, SECURE, AND MAINTAIN LIGHTED BARRICADES AND CLOSURE CROSSES WHEN A RUNWAY/TAXIWAY/APRON IS CLOSED OR AS REQUIRED BY THE PLANS AND DESIGNATED BY THE RESIDENT ENGINEER/TECHNICIAN.
- CONTRACTOR SHALL MARK HAZARDOUS AREA WITH STEADY-BURNING OR FLASHING RED LIGHTS DURING PERIODS OF LOW VISIBILITY AS REQUIRED.
- THE CONTRACTOR SHALL PERIODICALLY PERFORM ONSITE INSPECTIONS THROUGHOUT THE DURATION OF THE PROJECT WITH THE IMMEDIATE REMEDY OF ANY DIFFERENCES, WHETHER CAUSED BY NEGLIGENCE, OVERSIGHT, OR PROJECT SCOPE CHANGE.
- CONTRACTOR SHALL MOVE MAINTENANCE OF TRAFFIC COMPONENTS AT THE WRITTEN DIRECTION OF THE RESIDENT ENGINEER/TECHNICIAN AT NO ADDITIONAL COST.
- CONTRACTOR SHALL NOT REMOVE THE BARRICADES WITHOUT THE APPROVAL BY THE RESIDENT ENGINEER/TECHNICIAN.
- CONTRACTOR SHALL MAINTAIN FLASHERS, SIGNS AND/OR BARRICADES AS REQUIRED BY THE PLANS, CITY OR COUNTY REGULATIONS OR CONTRACTOR ACTIVITIES. CONTRACTOR SHALL OBTAIN ANY AND ALL REQUIRED LOCAL PERMITS UNLESS SPECIFIED OTHERWISE.
- THE CONTRACTOR SHALL UTILIZE WATER AND/OR CHEMICALS APPROVED BY THE RESIDENT ENGINEER/TECHNICIAN AS NECESSARY TO CONTROL DUST.
- NO CONSTRUCTION VEHICLES SHALL BE DRIVEN ACROSS ANY ACTIVE RUNWAY, INCLUDING TURF RUNWAYS. CONSTRUCTION EQUIPMENT OR CONSTRUCTION ACTIVITY WILL NOT BE PERMITTED WITHIN 250' OF ANY ACTIVE RUNWAY CENTERLINE OR WITHIN 65.5' OF ANY OTHER ACTIVE AIRPORT TAXIWAY OR APRON, HOWEVER, CONSTRUCTION MAY BE PERMITTED IN THESE AREAS IF THE CONTRACTOR HAS GAINED APPROVAL FROM THE AIRPORT MANAGER AT LEAST 7 DAYS IN ADVANCE OF THE SCHEDULED CONSTRUCTION PERIOD AND THE OPERATIONAL AREA IS CLOSED TO TRAFFIC AND PROPER NOTAMS ARE ISSUED BY THE AIRPORT MANAGER TO THE APPROPRIATE FLIGHT SERVICE STATION.
- UNLESS SPECIFIED OTHERWISE, COST FOR THE ABOVE IS TO BE CONSIDERED INCIDENTAL TO THE PROJECT. SEPARATE PAYMENT SHALL NOT BE MADE.



SIGNAGE NOTES

- ALL CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE ILLINOIS SUPPLEMENT (LATEST EDITION) AND THE FAA ADVISORY CIRCULARS (LATEST EDITION) UNLESS NOTED OTHERWISE. THE FAA OR MORE STRINGENT SPECIFICATIONS SHALL GOVERN.
- UNLESS OTHERWISE SPECIFIED, CONSTRUCTION SIGNS SHALL BE MOUNTED ON PORTABLE OR NON-PORTABLE SUPPORTS. A PORTABLE SUPPORT IS DEFINED AS A TYPICAL SIGN STANDARD AS SHOWN ON THIS SHEET, OR A SMALL LIGHT WEIGHT TRAILER. A NON-PORTABLE SUPPORT IS DEFINED AS DRIVEN METAL OR WOOD POST. ALL SIGNS, REGARDLESS OF THE TYPE OF SUPPORTS USED, SHALL BE MOUNTED SUCH THAT THE MESSAGE ON THE SIGN IS LEVEL IN THE HORIZONTAL PLANE AFTER PLACEMENT. THE COST OF CONSTRUCTION WARNING LIGHTS SHALL BE INCLUDED IN THE COST OF THE CONSTRUCTION SIGNS.
- CONSTRUCTION RED WARNING LIGHT: THESE ARE PORTABLE, LENS DIRECTED, ENCLOSED LIGHTS. THE COLOR OF THE LIGHT EMITTED SHALL BE RED. THEY ARE TO BE USED IN A LOW INTENSITY FLASHING MODE (TYPE A).
- THE LIGHTING SHALL BE MAINTAINED IN OPERATION DURING THE HOURS OF DARKNESS BETWEEN 1/2 HOUR AFTER SUNSET AND 1/2 HOUR BEFORE SUNRISE AND WHEN CONDITIONS EXIST WHICH TEND TO OBSCURE VISION.
- COST FOR PROVIDING, PLACING, MAINTAINING, AND REMOVING SIGNS SHALL BE INCLUDED IN ITEM AR150540 HAUL ROUTE.



W20-3
48" x 48" A



W20-3
48" x 48" B

CONSTRUCTION SIGNS

NOT TO SCALE



J. Olson
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2023

**INSTALL PAPI SYSTEM
& ASSOCIATED
ELECTRICAL
IMPROVEMENTS**

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

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ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: C-102-CSPP.DWG
DESIGN BY: HLE 8/18/2023
DRAWN BY: HLE 8/18/2023
REVIEWED BY: JMO 9/15/2023

SHEET TITLE

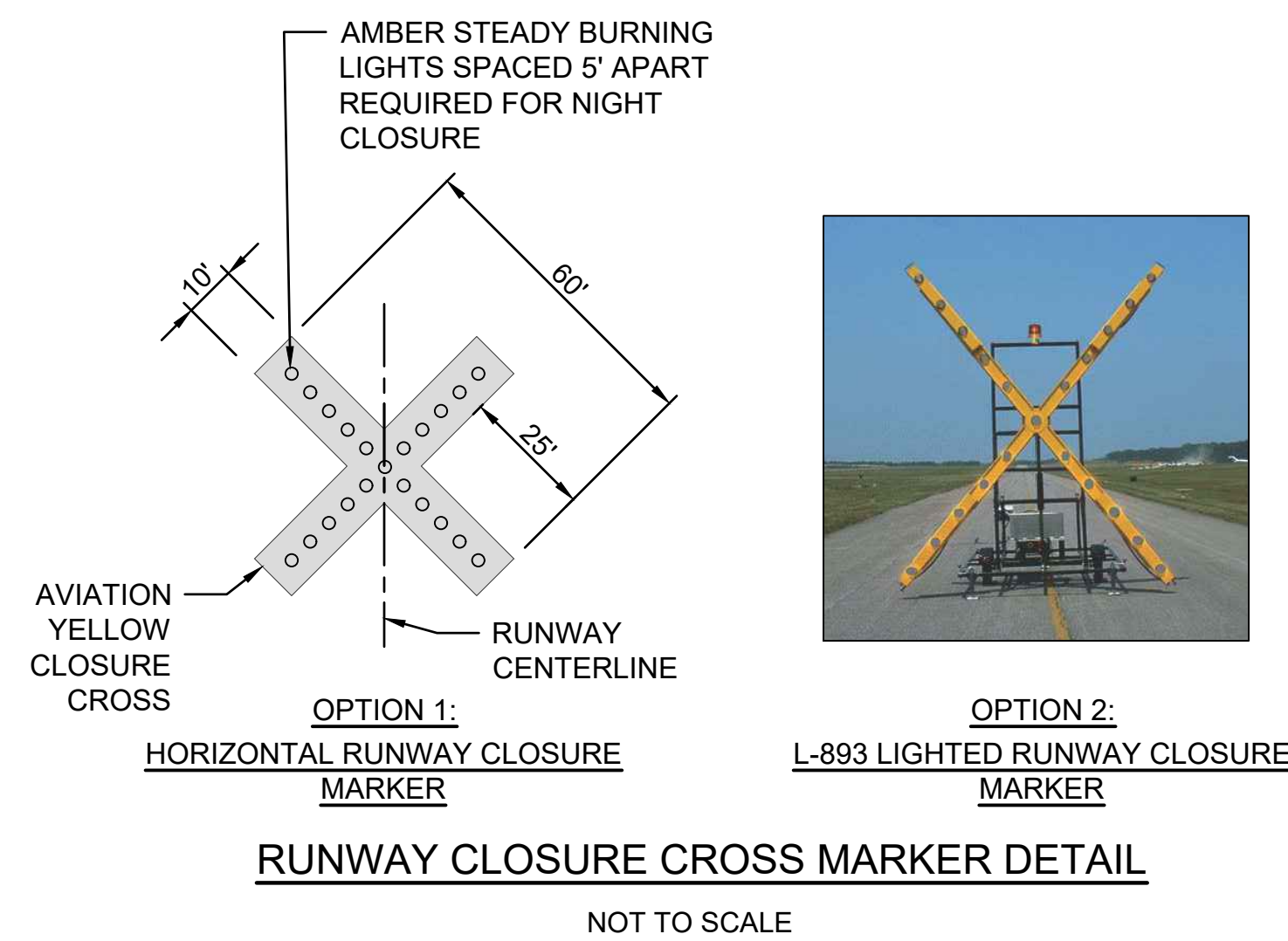
**CONSTRUCTION
SAFETY NOTES &
DETAILS SHEET 2**

CLOSURE CROSS NOTES

1. RUNWAY CLOSURE CROSS MARKINGS SHALL BE LIGHTED DURING DARKNESS AND PERIODS OF REDUCED VISIBILITY. THE LIGHTED MARKERS SHALL BE PLACED OVER THE RUNWAY NUMERALS OR IMMEDIATELY OFF THE END OF THE RUNWAY ON THE EXTENDED CENTERLINE, AS DIRECTED BY THE RESIDENT ENGINEER/TECHNICIAN.
2. THE CONTRACTOR SHALL PROVIDE THE RUNWAY CLOSURE CROSSES BY ONE OF TWO OPTIONS:

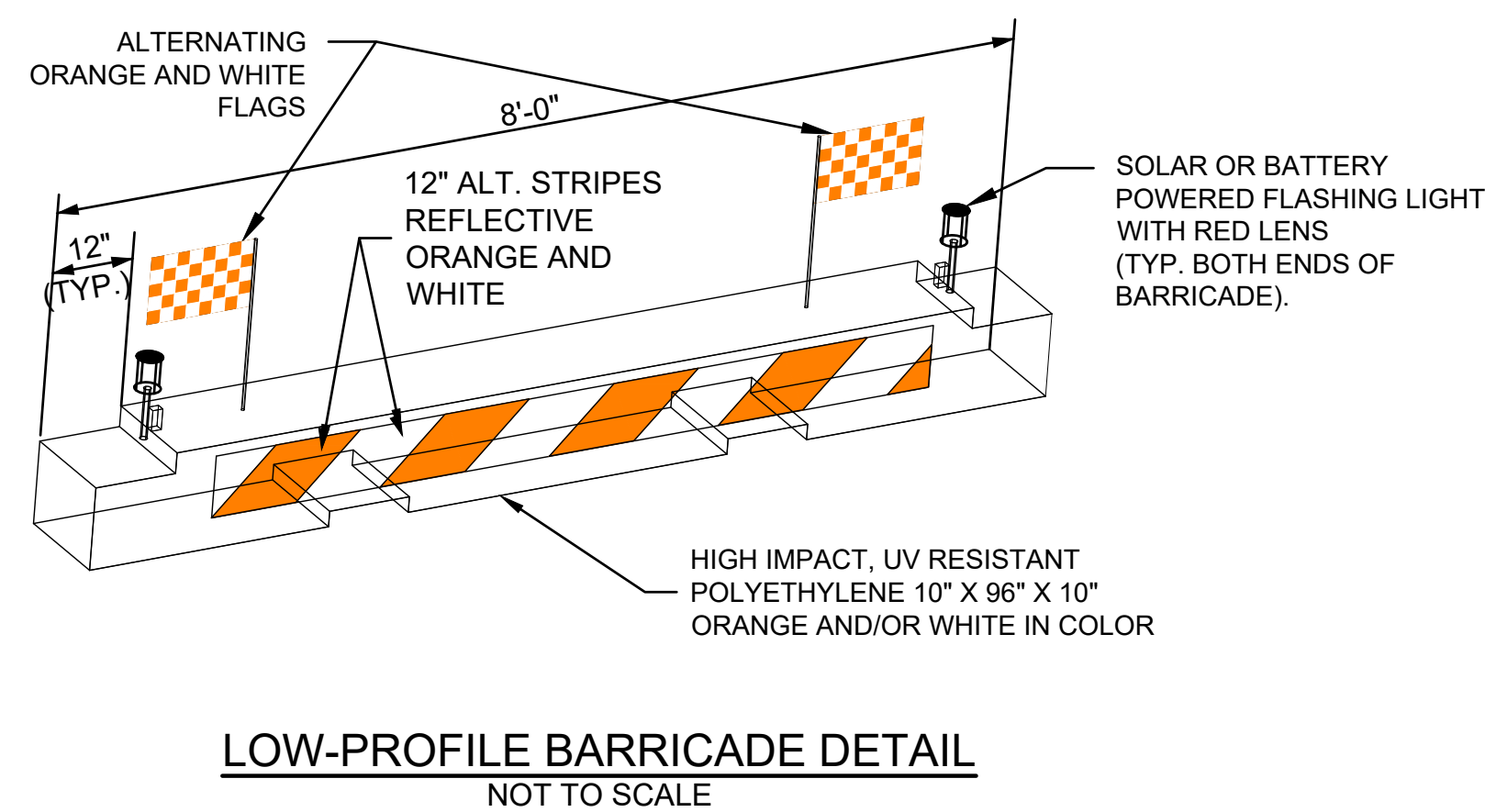
OPTION 1: TEMPORARY CLOSURE CROSS MARKINGS SHALL BE CONSTRUCTED OF PLYWOOD, SNOW FENCE OR APPROVED FABRIC AND SHALL BE SECURED TO PAVEMENT BY SANDBAGS OR OTHER APPROVED METHOD.

OPTION 2: THE CONTRACTOR SHALL PROVIDE TWO (2) L-893 LIGHTED RUNWAY CLOSURE MARKERS, MEETING THE REQUIREMENTS IN FAA ADVISORY CIRCULAR 150/5345-55 AND SHALL BE IN PLACE AND OPERATING WHENEVER THE RUNWAY IS CLOSED AND REMOVED WHEN THE RUNWAY IS RE-OPENED.
3. TAXIWAY CLOSURE CROSSES SHALL MEET OPTION 1 IN THE ABOVE NOTE.
4. THE CONTRACTOR SHALL MAKE FREQUENT INSPECTION OF THE LIGHTED CROSSES AND MAKE PROMPT REPAIRS AS NECESSARY.
5. THE CONTRACTOR SHALL BE ON-CALL FOR 24-HOUR EMERGENCY MAINTENANCE WHEN LIGHTED CROSSES ARE BEING USED.
6. LIGHTED MARKERS SHALL BE SECURED FROM WIND EFFECTS BY THE CONTRACTOR AS RECOMMENDED BY THE MANUFACTURER.
7. COST FOR PROVIDING, PLACING, OPERATING, MAINTAINING, RELOCATING AND REMOVING CLOSURE CROSSES WILL BE CONSIDERED INCIDENTAL TO ITEM AR150520 AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.



BARRICADE NOTES

1. ALL CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE ILLINOIS SUPPLEMENT (LATEST EDITION) AND THE FAA ADVISORY CIRCULARS (LATEST EDITION) UNLESS NOTED OTHERWISE. THE FAA OR MORE STRINGENT SPECIFICATIONS SHALL GOVERN.
2. BARRICADES SHALL BE "LOW-PROFILE" WITH A MAXIMUM HEIGHT OF 18" ABOVE GROUND, EXCLUSIVE OF ASSOCIATED WARNING LIGHTS AND FLAGS.
3. BARRICADES SHALL BE SPACED END TO END THE WIDTH OF THE PAVEMENT, WITH GAPS BETWEEN BARRICADES NOT TO EXCEED 4' WIDE. BARRICADES ARE TO BE SET BACK 66' FROM THE ACTIVE TAXIWAY CENTERLINE OR AS SHOWN ON THE PLANS.
4. CONSTRUCTION RED WARNING LIGHT: THESE ARE PORTABLE, LENS DIRECTED, ENCLOSED LIGHTS. THE COLOR OF THE LIGHT EMITTED SHALL BE RED. THEY MAY BE USED IN EITHER A STEADY BURN (TYPE C) OR LOW INTENSITY FLASHING MODE (TYPE A) UNLESS NOTED OTHERWISE.
5. THE LIGHTING SHALL BE MAINTAINED IN OPERATION DURING THE HOURS OF DARKNESS BETWEEN 1/2 HOUR BEFORE SUNSET AND 1/2 HOUR AFTER SUNRISE AND WHEN CONDITIONS EXIST WHICH TEND TO OBSCURE VISION.
6. BARRICADES SHALL BE SECURED TO THE GROUND BY APPROVED METHODS TO PREVENT MOVEMENT BY PROP WASH, JET BLAST OR OTHER WIND CURRENTS.
7. THE ONLY COLOR COMBINATION ON BARRICADES IS ORANGE AND WHITE. THE ORANGE STRIPES SHALL BE ENCAPSULATED LENS REFLECTIVE SHEETING. THE WHITE STRIPES SHALL BE EITHER ENCAPSULATED OR ENCLOSED LENS REFLECTIVE SHEETING AND MUST BE IN ACCEPTABLE CONDITION.
8. COST FOR PROVIDING, PLACING, MAINTAINING, AND REMOVING BARRICADES SHALL BE PAID FOR UNDER ITEM AR150520 - MOBILIZATION.



DETAIL ABOVE REPRESENTS ONE OPTION FOR LOW-PROFILE BARRICADES. OTHER OPTIONS MAY BE UTILIZED AS LONG AS THEY MEET THE REQUIREMENTS OF THE PROJECT, INCLUDING BARRICADE NOTE 1.

NO.	DATE	DESCRIPTION		
		DES	DWN	REV
ISSUE: AUGUST 25, 2023				
PROJECT NO: 23A0038D				
CAD FILE: C-102-CSPD.DWG				
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DRAWN BY: HLE 8/18/2023				
REVIEWED BY: JMO 9/15/2023				

SHEET TITLE

CONSTRUCTION SAFETY AND PHASING PLAN

PROPOSED SAFETY PLAN

GENERAL - THE CRAWFORD COUNTY AIRPORT IS COMPRISED OF TWO RUNWAYS. THE PROPOSED CONSTRUCTION WILL NECESSITATE CLOSING THE RUNWAYS. ANY TIME THE CONTRACTOR IS WORKING WITHIN 200' OF RUNWAY 9-27 CENTERLINE THE RUNWAY WILL BE CLOSED. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO TURN OFF AND TAG THE RESPECTIVE AIRFIELD LIGHTING CIRCUITS. THE CONTRACTOR SHALL PROVIDE AND INSTALL CLOSURE CROSSES PRIOR TO THE START OF CONSTRUCTION WITHIN 200' OF THE RUNWAY CENTERLINE.

IDENTIFICATION - WHEN THE CONTRACTORS VEHICLES AND EQUIPMENT ARE ON THE AIRPORT THEY SHALL BE PROPERLY MARKED WITH THREE (3') FOOT SQUARE CHECKERED FLAGS (INTERNATIONAL ORANGE AND WHITE). THE CRANE SHALL BE MARKED WITH A FLAG AS DESCRIBED ABOVE. THE CONTRACTOR WILL ALSO PROVIDE WORKERS WITH SOME TYPE OF TAG OR GARMENT TO IDENTIFY THE PERSON AS BEING PART OF THE CONSTRUCTION CREW.

RADIO CONTROL - THE CONTRACTOR WILL BE REQUIRED TO BE IN TWO-WAY RADIO CONTACT (123.00 MHz) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE EDGAR COUNTY AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTICAL EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR THEIR PERSONNEL.

SAFETY PLAN COMPLIANCE DOCUMENT

PRIOR TO THE ISSUANCE OF A CONSTRUCTION NOTICE-TO-PROCEED (NTP), THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING AND SUBMITTING A SAFETY PLAN COMPLIANCE DOCUMENT IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5370-2G, PARAGRAPH 2.4.2, OR EQUIVALENT SECTION IN SUBSEQUENT/CURRENT ISSUE. THE AIRPORT DIRECTOR SHALL APPROVE THIS DOCUMENT AND SUBMIT TO THE AIRPORT AUTHORITY FOR APPROVAL PRIOR TO THE NTP ISSUANCE.

AIRPORT SECURITY NOTE

AIRPORT SECURITY WILL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR WILL CLOSE THE EXISTING GATE AT THE END OF EACH WORKING DAY. THE CONTRACTOR WILL PROVIDE A CABLE AND 2 POSTS OR OTHER APPROVED METHOD TO PREVENT READY ACCESS TO THE HAUL ROUTE AND AIRFIELD PAVEMENTS.

HEIGHT OF CONSTRUCTION EQUIPMENT

THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 25 FEET, WHICH IS EXPECTED TO BE A TRACTOR AND TRAILER FULLY EXTENDED, A DUMP TRUCK, A CONCRETE TRUCK, OR A LINE TRUCK.

EROSION CONTROL

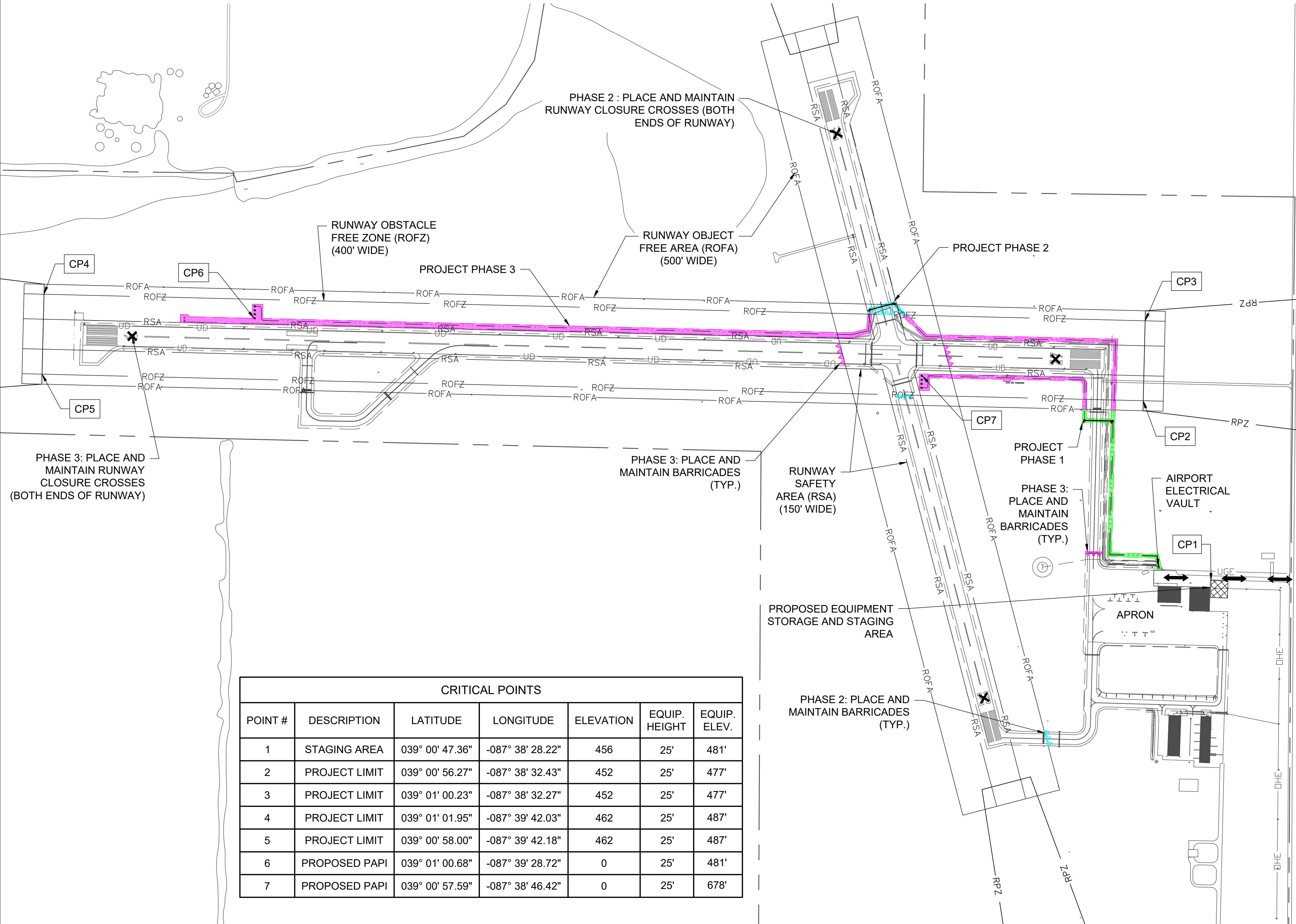
THIS PROJECT WILL NOT DISTURB MORE THAN 1 ACRE OF LAND, THEREFORE, A N.P.D.E.S. PERMIT WILL NOT BE REQUIRED.

LEGEND:

- EXISTING PAVEMENT
- EXISTING BUILDINGS
- PROPOSED IMPROVEMENTS
- PROPOSED HAUL ROUTE
- PROPOSED BARRICADES
- CONSTRUCTION SIGN

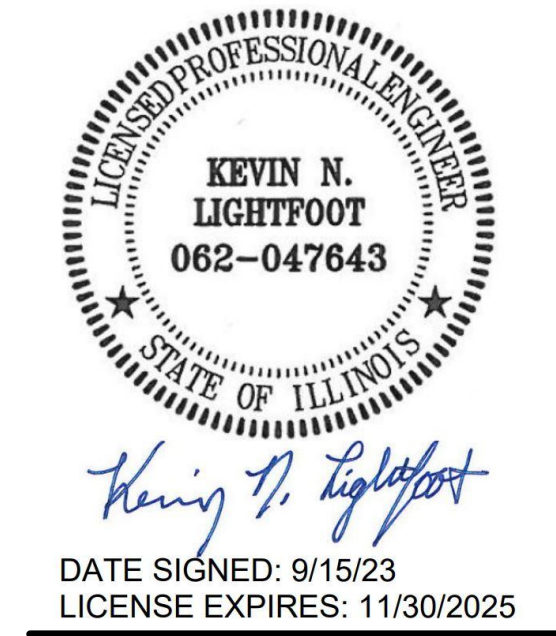
PHASING NOTES

1. THE PROPOSED PROJECT WILL REQUIRE TEMPORARY CLOSURES OF RUNWAY 9/27 AND RUNWAY 18/36 AND TAXIWAYS. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING, PLACING, MAINTAINING, AND REMOVING THE CLOSURE CROSSES REQUIRED TO DELINEATE RUNWAY CLOSURES AS DETAILED ON THE SAFETY PLAN AND DETAIL SHEETS, AND BARRICADES FOR TAXIWAY CLOSURES.
2. **PHASE 1:**
 - 2.1. PHASE 1 INCLUDES REMOVAL OF EXISTING CABLES AND INSTALLATION OF CABLE IN UNIT DUCT, AND DUCTS FROM THE AIRPORT ELECTRICAL VAULT UP TO THE RESPECTIVE RUNWAY OBJECT FREE AREAS.
 - 2.2. TAXIWAYS SHALL BE CLOSED WHEN WORKING WITHIN THE TAXIWAY OBJECT FREE AREA 65.5 FT FROM THE TAXIWAY CENTER LINE).
3. **PHASE 2:**
 - 3.1. PHASE 2 INCLUDES INSTALLATION OF CABLE IN UNIT DUCT AND DUCTS WITHIN THE RUNWAY OBJECT FREE AREA AND RUNWAY SAFETY AREA OF RUNWAY 17-35.
 - 3.2. CONTRACTOR SHALL HAVE A TOTAL OF 2 CONSECUTIVE CALENDAR DAYS TO COMPLETE THE WORK IN THIS PHASE.
 - 3.3. RUNWAY 17-35 SHALL BE CLOSED DURING THIS PHASE.
 - 3.4. ALL EQUIPMENT MUST BE LOWERED WHEN NOT IN USE OR IN TRANSIT AND MAY NOT BE LEFT WITHIN THE RUNWAY OBJECT FREE AREA (250 FEET OF THE RUNWAY CENTERLINE, EXTENDED).
4. **PHASE 3:**
 - 4.1. PHASE 3 INCLUDES REMOVAL OF EXISTING PAPI'S, INSTALLATION OF NEW PAPI'S, AND INSTALLATION OF CABLES, CABLE IN UNIT DUCT, AND ASSOCIATED MATERIALS WITHIN THE RUNWAY OBJECT FREE AREA AND/OR RUNWAY SAFETY AREA OF RUNWAY 9-27.
 - 4.2. RUNWAY 9-27 SHALL BE CLOSED DURING THIS PHASE.
 - 4.3. ALL EQUIPMENT MUST BE LOWERED WHEN NOT IN USE OR IN TRANSIT AND MAY NOT BE LEFT WITHIN THE RUNWAY OBJECT FREE AREA (250 FEET OF THE RUNWAY CENTERLINE, EXTENDED).
5. CLOSURE CROSSES AND BARRICADES SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION IN EACH PHASE AND SHALL BE REMOVED AT THE COMPLETION OF EACH PHASE.
6. WHENEVER CONSTRUCTION ACTIVITY NECESSITATES CLOSURE OF A RUNWAY OR TAXIWAY, THE AIRFIELD LIGHTING ASSOCIATED WITH THE CLOSED PAVEMENT SHALL BE TURNED OFF OR COMPLETELY COVERED, INCLUDING THE EDGE LIGHTS, SIGNAGE AND RUNWAY NAVAIDS. IF NECESSARY, CONTRACTOR SHALL PROVIDE TEMPORARY AIRFIELD LIGHTING CIRCUIT JUMPER CABLES, CONDUIT ENCASED ABOVE GROUND, DURING CONSTRUCTION TO MAINTAIN EXISTING LIGHTING CIRCUITS, UNLESS OTHERWISE APPROVED BY THE AIRPORT MANAGER. CONTRACTOR SHALL COORDINATE CLOSURES WITH THE AIRPORT MANAGER AT LEAST 7 DAYS IN ADVANCE SO NOTAMS CAN BE COORDINATED. IT IS THE RESPONSIBILITY OF THE AIRPORT MANAGER TO ISSUE ALL REQUIRED NOTAMS.
7. AT ALL TIMES, THE CONTRACTOR'S OPERATIONS SHALL BE SUCH AS TO MINIMIZE DISRUPTION TO AIRCRAFT OPERATIONS.
8. ALL AIRCRAFT AND AIRPORT OPERATIONS HAVE THE RIGHT-OF-WAY. CONTRACTOR TO YIELD TO AIRPORT VEHICLES AND REMAIN CLEAR AT ALL TIMES.
9. ALL ACTIVE AIRFIELD PAVEMENTS SHALL BE KEPT CLEAN AND FREE OF DEBRIS AT ALL TIMES DURING CONSTRUCTION.
10. AT THE COMPLETION OF ALL WORK AREA CONSTRUCTION, THE HAUL ROUTE AND CONSTRUCTION EQUIPMENT PARKING AREA SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS PER THE SPECIFICATIONS.
11. THE COSTS FOR PROVISION, PLACEMENT, MAINTENANCE AND REMOVAL OF BARRICADES/CLOSURE CROSSES ON THE AIRFIELD, CONSTRUCTION/MAINTENANCE OF THE EQUIPMENT STAGING AREA AND HAUL ROUTE, AND ALL ASSOCIATED INCIDENTALS SHALL BE PAID FOR UNDER ITEM AR150520 MOBILIZATION.



CRITICAL POINTS						
POINT #	DESCRIPTION	LATITUDE	LONGITUDE	ELEVATION	EQUIP. HEIGHT	EQUIP. ELEV.
1	STAGING AREA	039° 00' 47.36"	-087° 38' 28.22"	456	25'	481'
2	PROJECT LIMIT	039° 00' 56.27"	-087° 38' 32.43"	452	25'	477'
3	PROJECT LIMIT	039° 01' 00.23"	-087° 38' 32.27"	452	25'	477'
4	PROJECT LIMIT	039° 01' 01.95"	-087° 39' 42.03"	462	25'	487'
5	PROJECT LIMIT	039° 00' 58.00"	-087° 39' 42.18"	462	25'	487'
6	PROPOSED PAPI	039° 01' 00.68"	-087° 39' 28.72"	0	25'	481'
7	PROPOSED PAPI	039° 00' 57.59"	-087° 38' 46.42"	0	25'	678'

FOR BID



INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

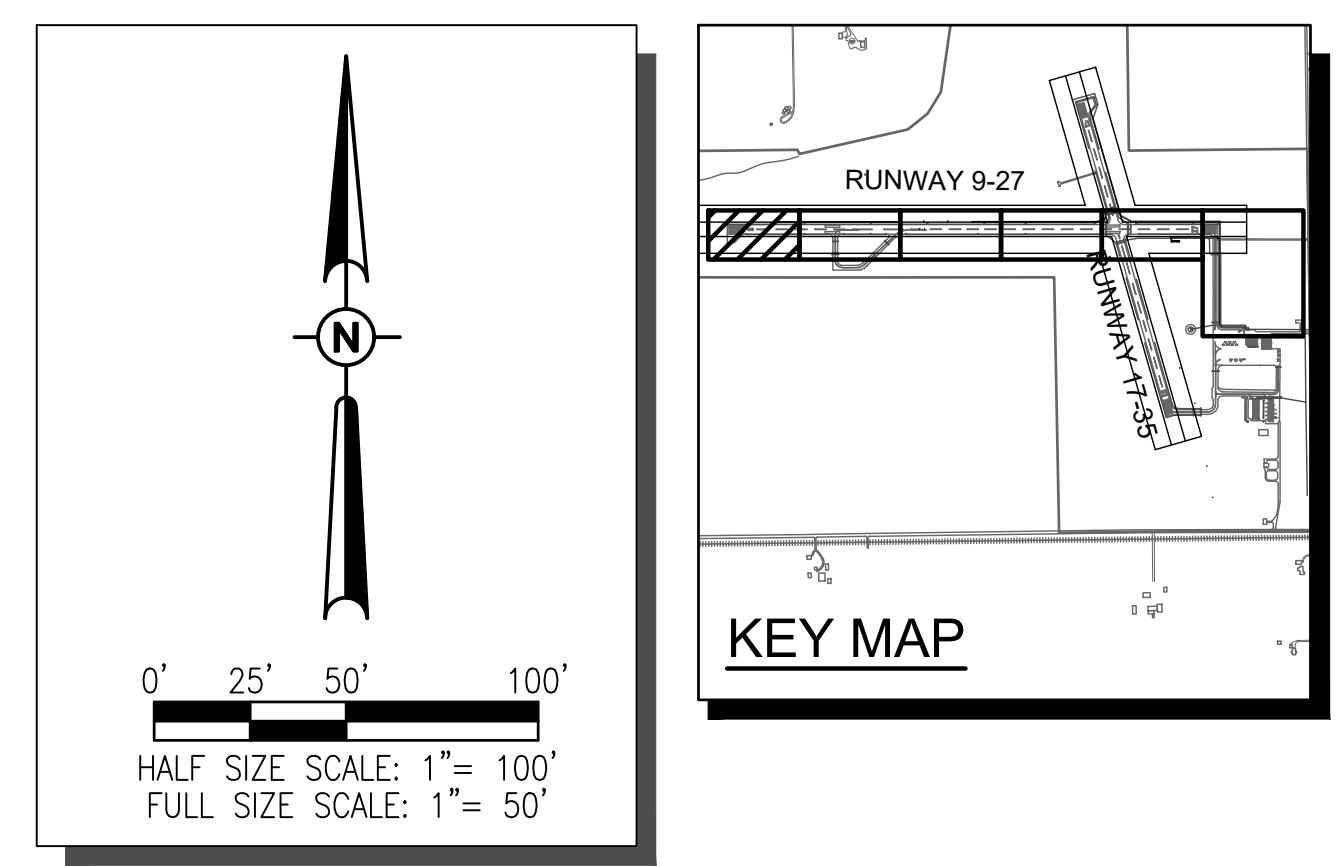
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ISSUE: AUGUST 25, 2023

PROJECT NO: 23A0038D
CAD FILE: E-141-ELE.DWG
DESIGN BY: KNL 7/26/2023
DRAWN BY: HLE 7/26/2023
REVIEWED BY: KNL 9/15/2023

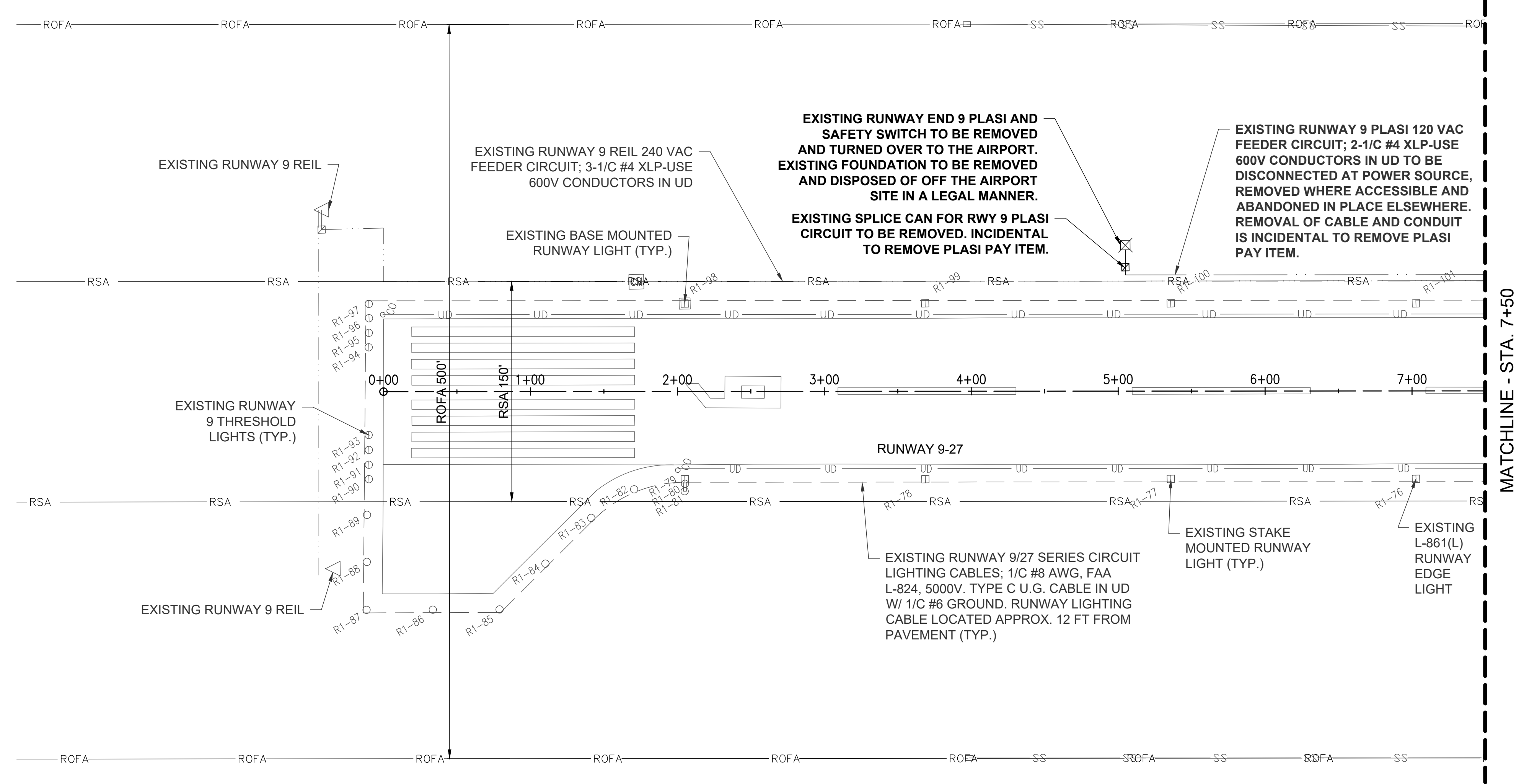
SHEET TITLE

EXISTING ELECTRICAL PLAN (STA. 0+00 TO 7+50)



LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE/AIRFIELD LIGHTING CABLE
- EXISTING REIL CIRCUIT
- EXISTING PLASI CIRCUIT
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING REIL
- EXISTING PLASI TO BE REMOVED
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SPLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING ELECTRICAL HANDHOLE
- EXISTING ELECTRICAL MANHOLE
- EXISTING CABLE MARKER
- EXISTING DUCT MARKER
- EXISTING CLEAN-OUT
- EXISTING INLET



PLASI REMOVAL NOTES

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE THE EXTENT OF THE WORK. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING, RELOCATING, DISCONNECTING, CONNECTING, OR WORKING ON THE RESPECTIVE AIRFIELD LIGHTING, PLASI UNITS, VAULT EQUIPMENT, OR OTHER DEVICE.
- CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2G (OR MOST CURRENT ISSUE) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
- CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.
- EXISTING PLASI UNITS SHOWN TO BE REMOVED ARE TO BE REMOVED AND TURNED OVER TO THE AIRPORT. IN THE EVENT THE AIRPORT DOES NOT WANT THE PLASI UNITS THEY SHALL BE DISPOSED OF OFF THE AIRPORT SITE IN A LEGAL MANNER. THE EXISTING PLASI CONCRETE BASES ARE TO BE REMOVED TO THEIR FULL DEPTH AND DISPOSED OF OFF THE AIRPORT SITE IN A LEGAL MANNER. THE HOLES LEFT FROM THE REMOVAL OF PLASI BASES SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT, SEEDED AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908, RESPECTIVELY. REMOVAL OF THE EXISTING PLASI UNITS WILL BE PAID FOR UNDER ITEM AR125910 REMOVE PLASI PER EACH.
- THE EXISTING AIRFIELD LIGHTING/NAVAID CABLES ASSOCIATED WITH AIRFIELD LIGHTING/NAVAID REMOVALS SHALL BE REMOVED WHERE ACCESSIBLE AND ABANDONED IN PLACE ELSEWHERE UNLESS IT CONFLICTS WITH THE INSTALLATION OF A PROPOSED LIGHT, NAVAID, SIGN, CABLE, DUCT, PAVEMENT, OR OTHER WORK. THEN IT SHALL BE REMOVED AND DISPOSED OF OFF SITE AT NO ADDITIONAL COST TO THE CONTRACT. CONTRACTOR MAY REMOVE ABANDONED CABLES AT NO ADDITIONAL COST TO THE CONTRACT AND SHALL HAVE THE SALVAGE RIGHTS TO ABANDONED CABLES. EXPOSED CABLES AND CONDUITS ASSOCIATED WITH PLASI'S TO BE REMOVED, SHALL BE REMOVED.
- WHEN A RUNWAY IS CLOSED, THE NAVAIDS AND LIGHTING FOR THAT RUNWAY SHALL BE SHUT OFF.
- NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH THE ABOVE NOTE 1.

THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE, EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT.

ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVEGROUND UTILITIES.



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

**INSTALL PAPI SYSTEM
& ASSOCIATED
ELECTRICAL
IMPROVEMENTS**

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

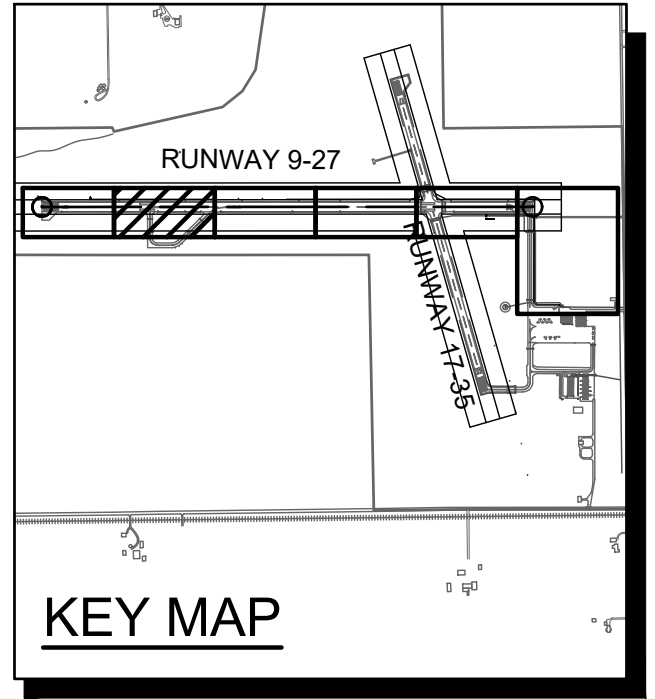
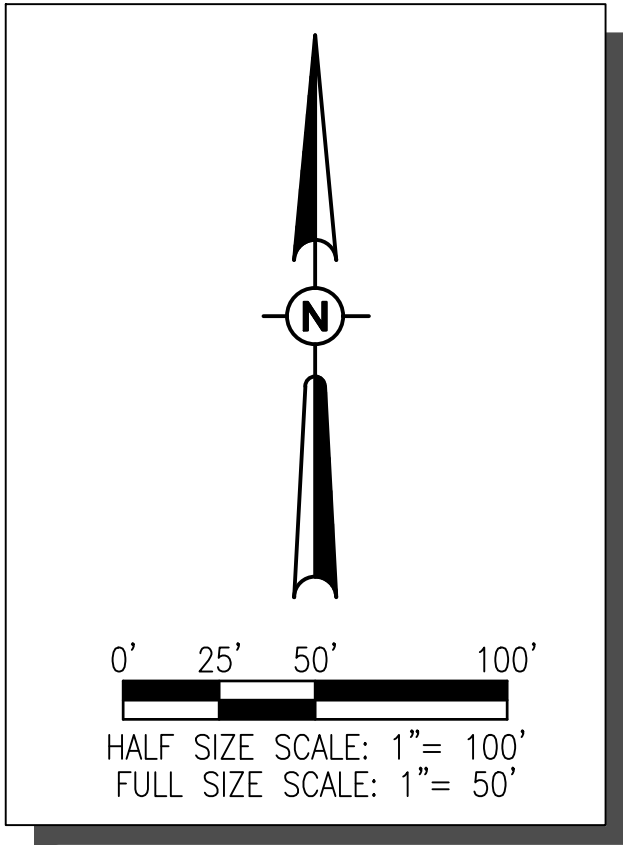
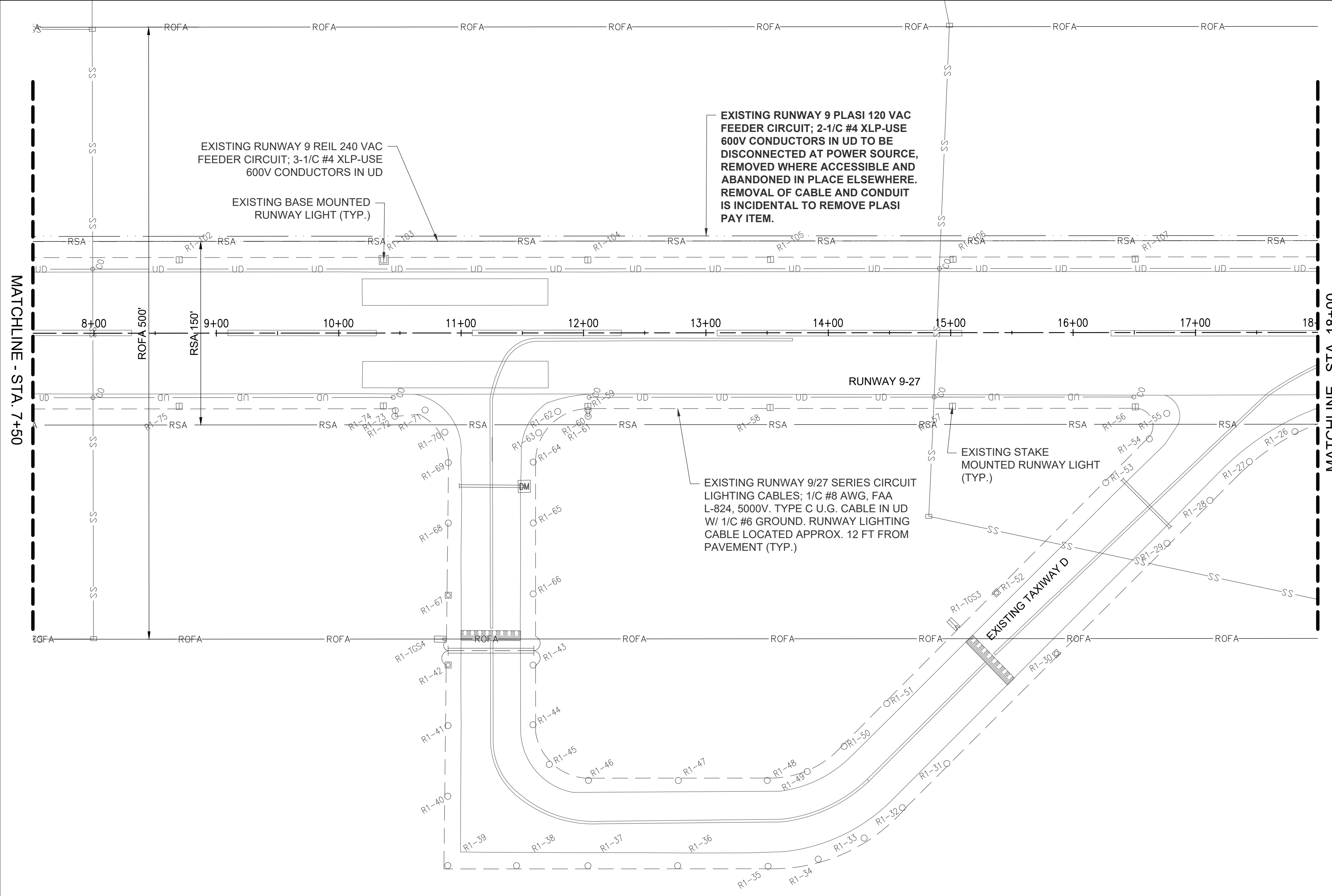
Contract No. RB022

NO.	DATE	DESCRIPTION		
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ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-141-ELE.DWG
DESIGN BY: KNL 7/26/2023
DRAWN BY: HLE 7/26/2023
REVIEWED BY: KNL 9/15/2023

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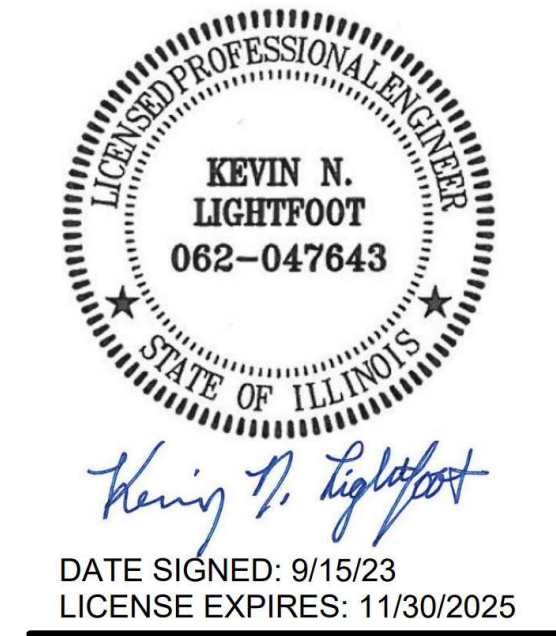
**EXISTING
ELECTRICAL PLAN
(STA. 7+50 TO 18+00)**



- LEGEND**
- EXISTING PAVEMENT
 - EXISTING BUILDING
 - EXISTING ELECTRICAL DUCT
 - EXISTING ELECTRICAL CABLE/AIRFIELD LIGHTING CABLE
 - EXISTING REIL CIRCUIT
 - EXISTING PLASI CIRCUIT
 - EXISTING UNDERDRAIN
 - EXISTING STORM SEWER
 - EXISTING REIL
 - EXISTING PLASI TO BE REMOVED
 - EXISTING TAXI GUIDANCE SIGN
 - EXISTING SPLICE CAN
 - EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - EXISTING BASE MOUNTED TAXIWAY LIGHT
 - EXISTING STAKE MOUNTED RUNWAY LIGHT
 - EXISTING BASE MOUNTED RUNWAY LIGHT
 - EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - EXISTING BASE MOUNTED THRESHOLD LIGHT
 - EXISTING ELECTRICAL HANDHOLE
 - EXISTING ELECTRICAL MANHOLE
 - EXISTING CABLE MARKER
 - EXISTING DUCT MARKER
 - EXISTING CLEAN-OUT
 - EXISTING INLET

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FOR BID



INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
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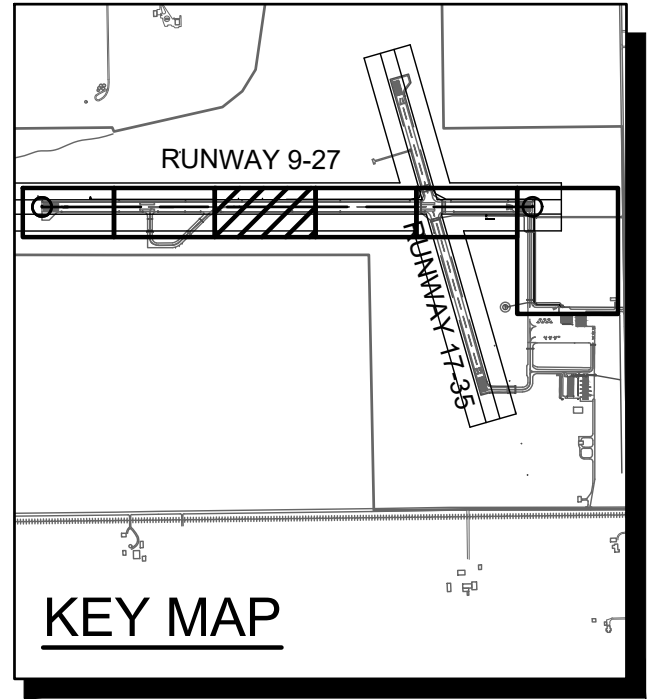
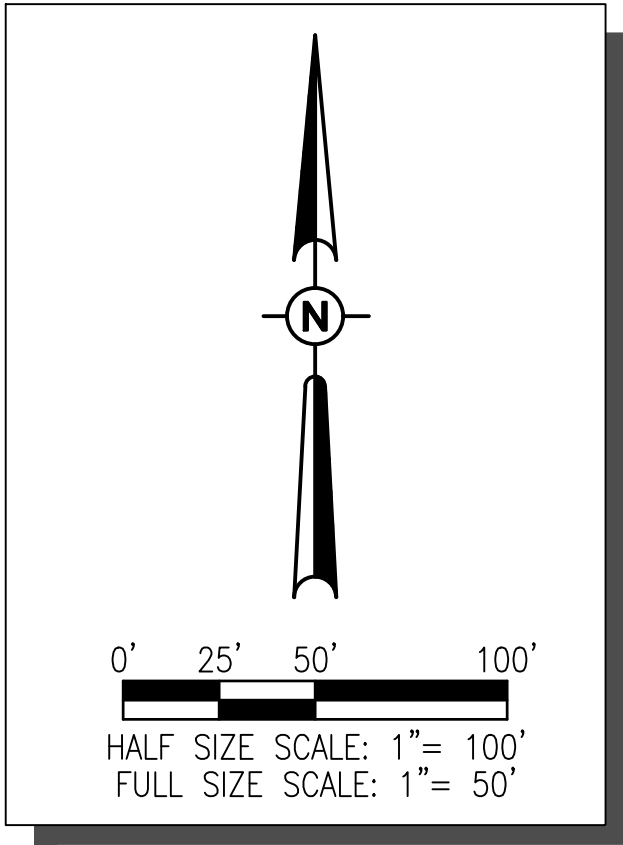
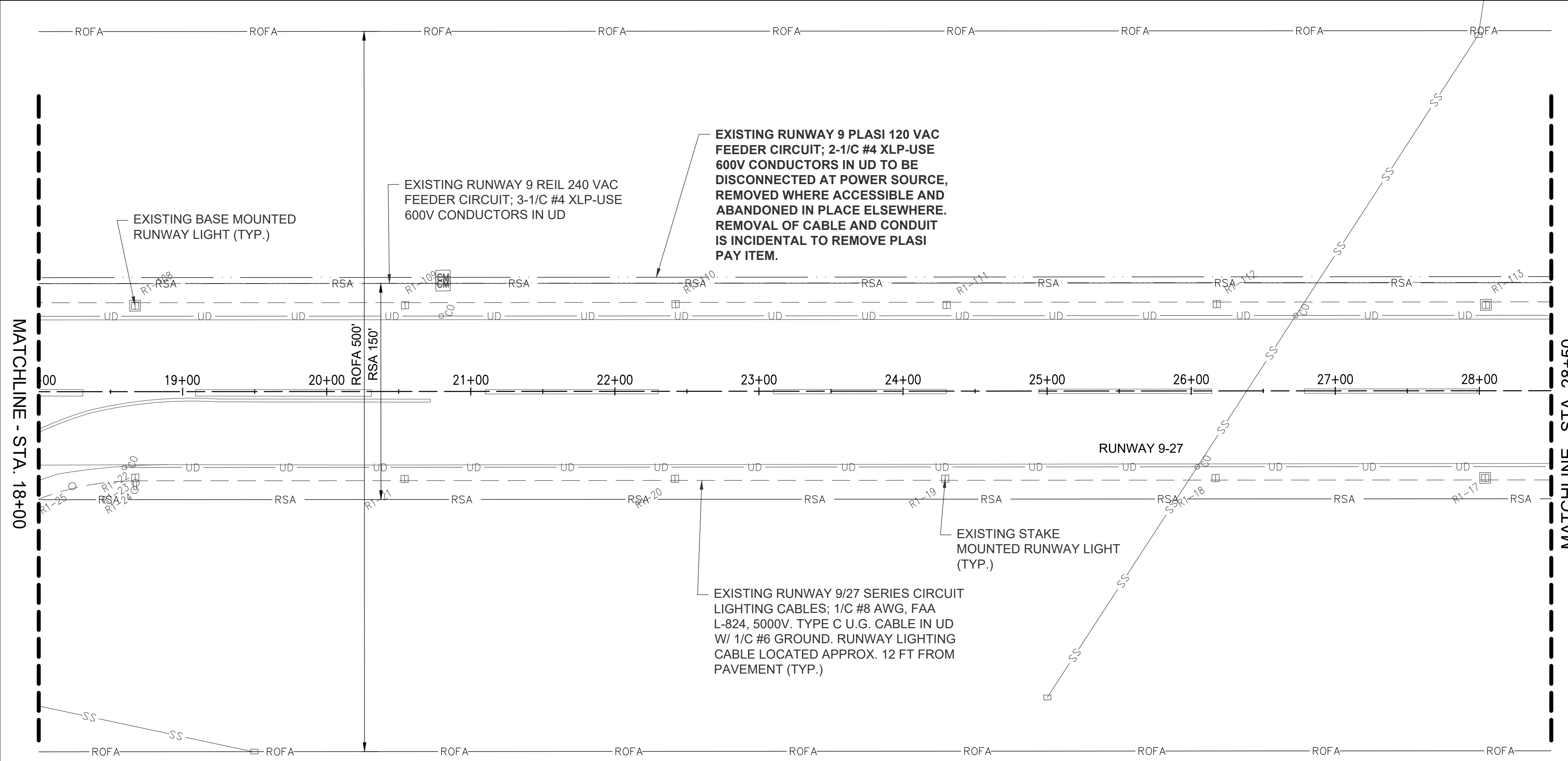
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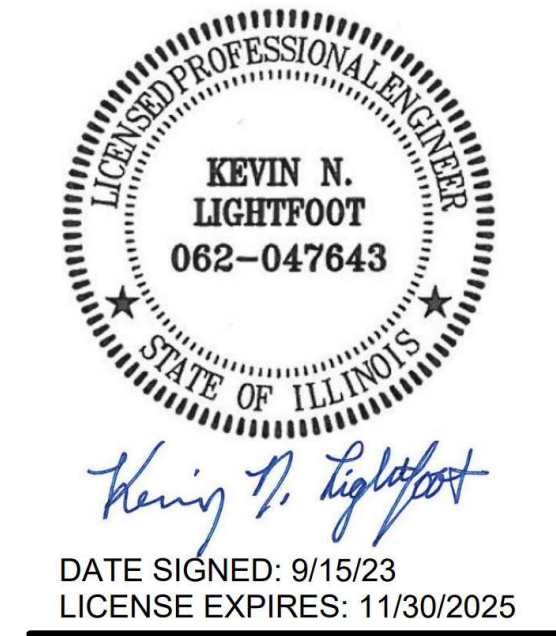
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REVIEWED BY: KNL 9/15/2023

SHEET TITLE

EXISTING ELECTRICAL PLAN (STA. 18+00 TO 28+50)



- LEGEND**
- [Solid Line] EXISTING PAVEMENT
 - [Hatched Area] EXISTING BUILDING
 - [Dashed Line] EXISTING ELECTRICAL DUCT
 - [Dotted Line] EXISTING ELECTRICAL CABLE/AIRFIELD LIGHTING CABLE
 - [Dashed Line with Center Dot] EXISTING REIL CIRCUIT
 - [Dashed Line with Dash-Dash] EXISTING PLASI CIRCUIT
 - [Line with 'UD'] EXISTING UNDERDRAIN
 - [Line with 'SS'] EXISTING STORM SEWER
 - [Triangle] EXISTING REIL
 - [Square with X] EXISTING PLASI TO BE REMOVED
 - [Square with Horizontal Lines] EXISTING TAXI GUIDANCE SIGN
 - [Square with Diagonal Lines] EXISTING SPLICE CAN
 - [Circle] EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - [Square with X] EXISTING BASE MOUNTED TAXIWAY LIGHT
 - [Square with Horizontal Lines] EXISTING STAKE MOUNTED RUNWAY LIGHT
 - [Square with Diagonal Lines] EXISTING BASE MOUNTED RUNWAY LIGHT
 - [Circle with Center Dot] EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - [Square with X] EXISTING BASE MOUNTED THRESHOLD LIGHT
 - [Square with 'HH'] EXISTING ELECTRICAL HANDHOLE
 - [Square with 'MH'] EXISTING ELECTRICAL MANHOLE
 - [Square with 'CM'] EXISTING CABLE MARKER
 - [Square with 'DM'] EXISTING DUCT MARKER
 - [Circle with 'CO'] EXISTING CLEAN-OUT
 - [Square] EXISTING INLET



INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
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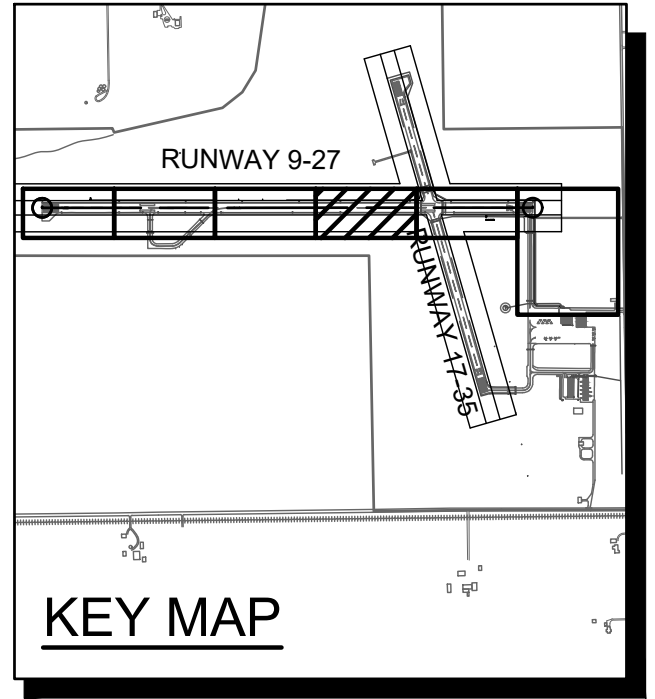
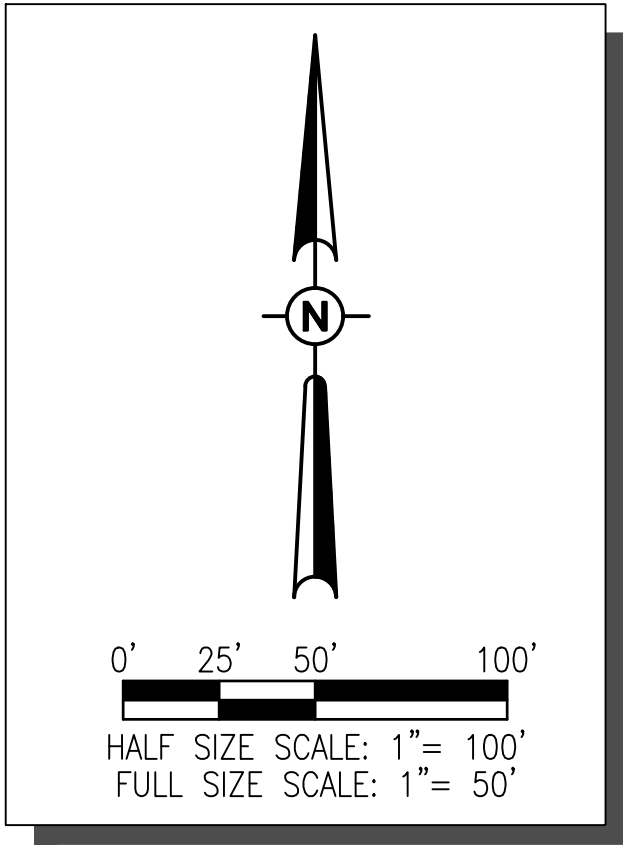
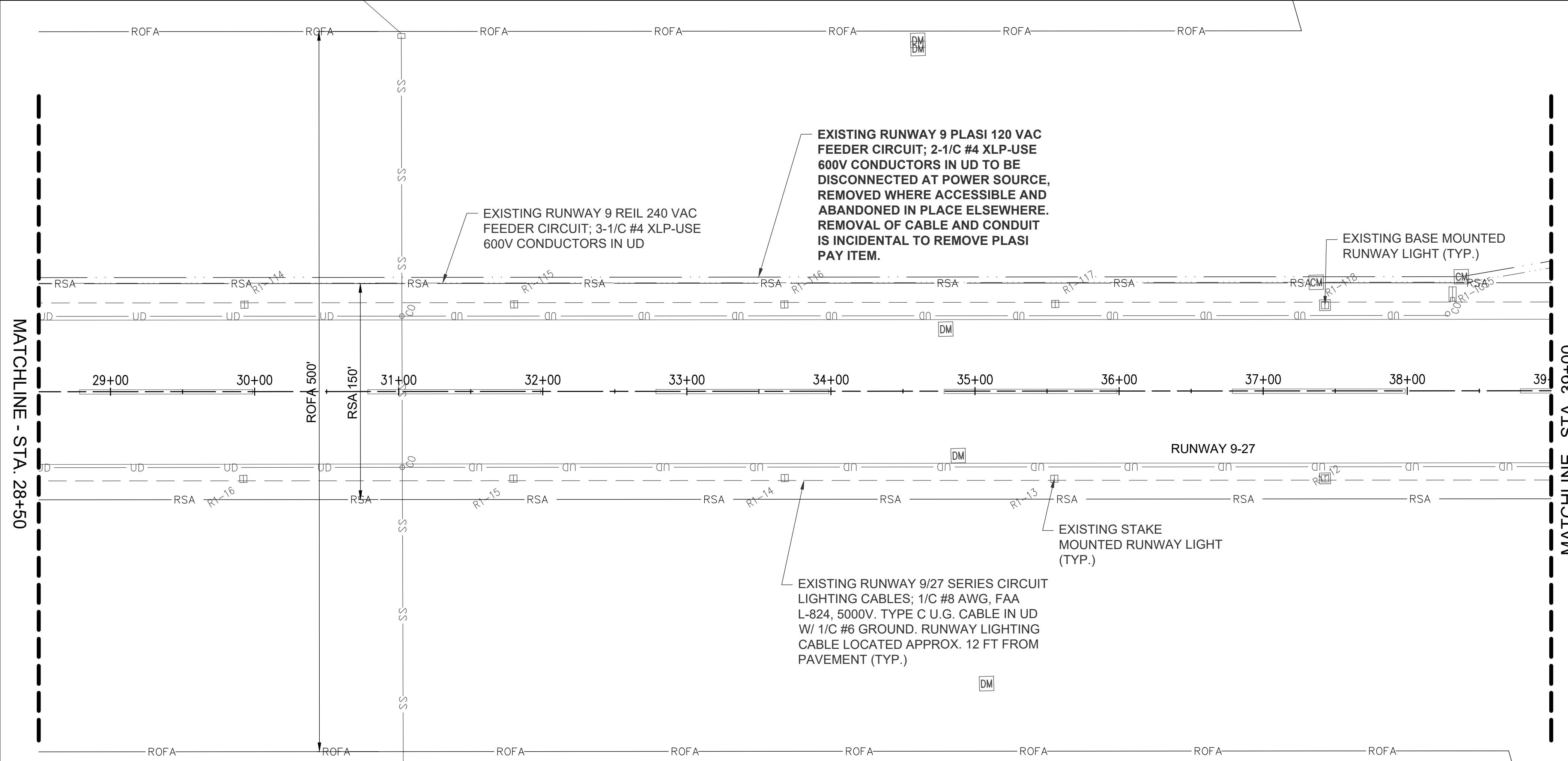
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ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-141-ELE.DWG
DESIGN BY: KNL 7/26/2023
DRAWN BY: HLE 7/26/2023
REVIEWED BY: KNL 9/15/2023

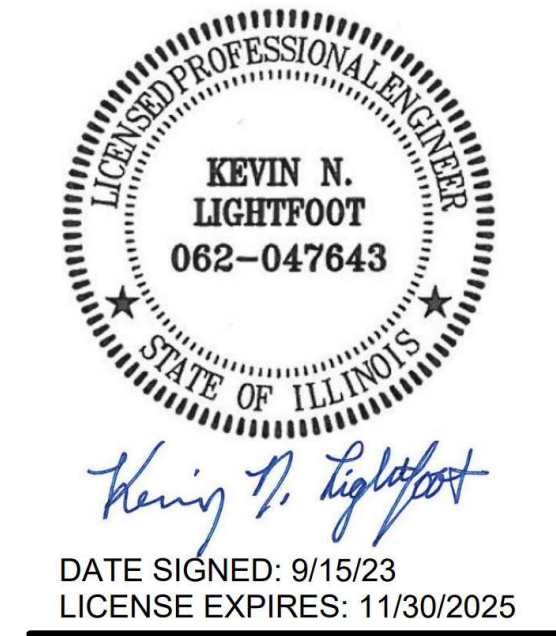
SHEET TITLE

EXISTING ELECTRICAL PLAN (STA. 28+50 TO 39+00)

FOR BID



- LEGEND**
- EXISTING PAVEMENT
 - EXISTING BUILDING
 - EXISTING ELECTRICAL DUCT
 - EXISTING ELECTRICAL CABLE/AIRFIELD LIGHTING CABLE
 - EXISTING REIL CIRCUIT
 - EXISTING PLASI CIRCUIT
 - EXISTING UNDERDRAIN
 - EXISTING STORM SEWER
 - EXISTING REIL
 - EXISTING PLASI TO BE REMOVED
 - EXISTING TAXI GUIDANCE SIGN
 - EXISTING SPLICE CAN
 - EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - EXISTING BASE MOUNTED TAXIWAY LIGHT
 - EXISTING STAKE MOUNTED RUNWAY LIGHT
 - EXISTING BASE MOUNTED RUNWAY LIGHT
 - EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - EXISTING BASE MOUNTED THRESHOLD LIGHT
 - EXISTING ELECTRICAL HANDHOLE
 - EXISTING ELECTRICAL MANHOLE
 - EXISTING CABLE MARKER
 - EXISTING DUCT MARKER
 - EXISTING CLEAN-OUT
 - EXISTING INLET



INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

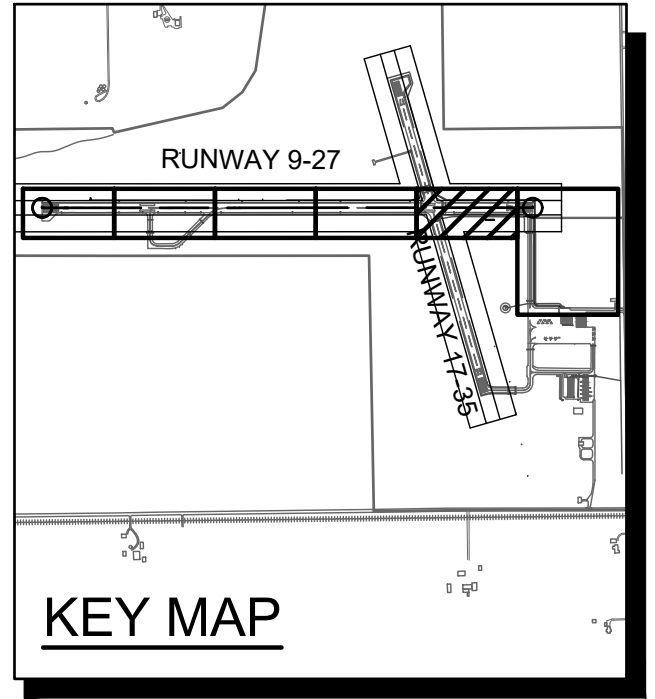
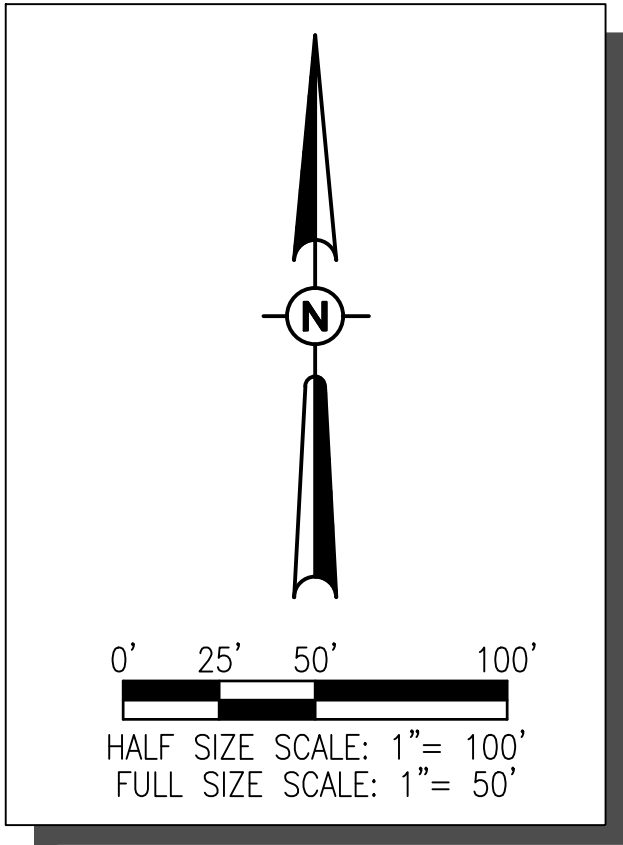
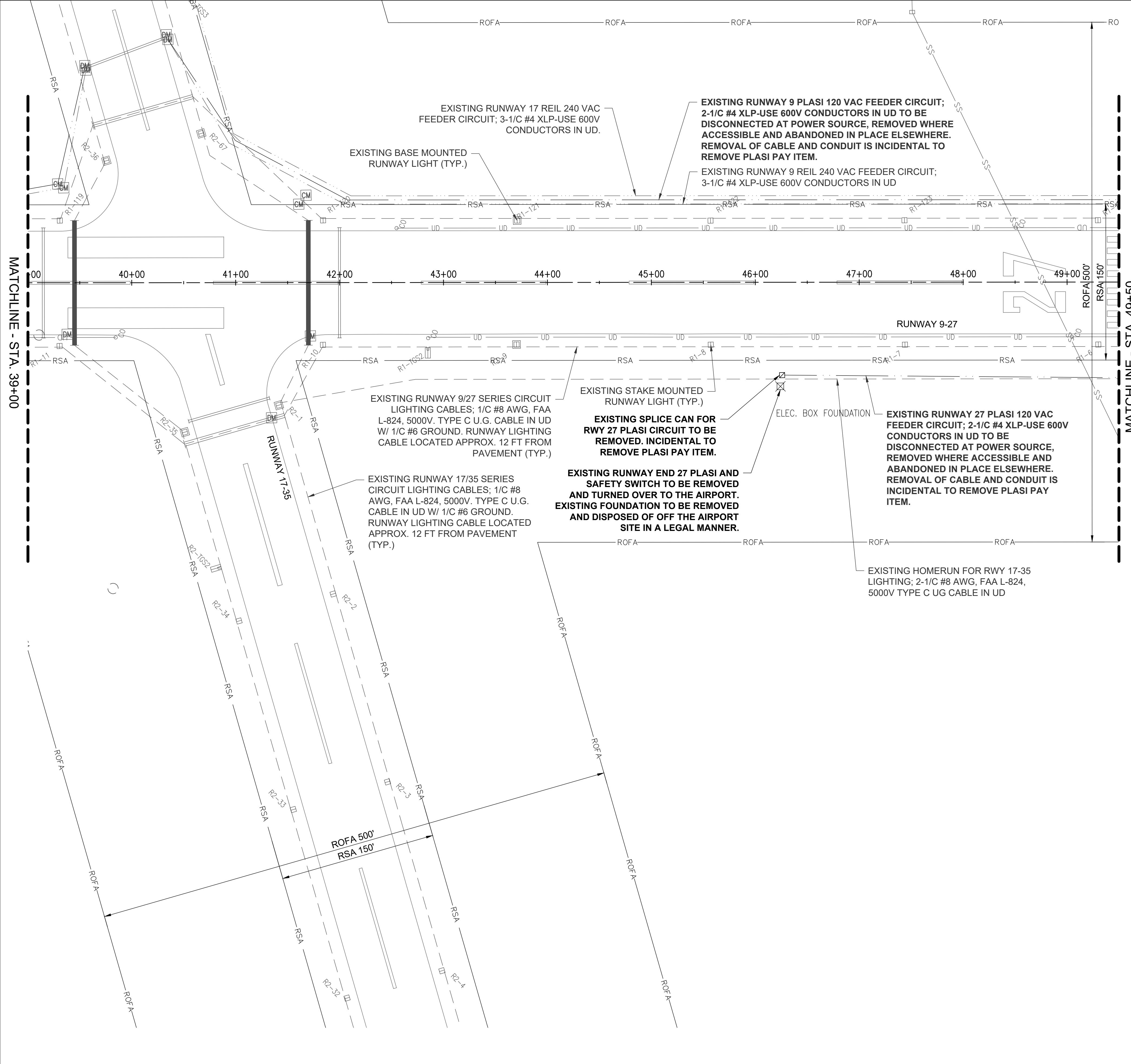
Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-141-ELE.DWG
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DRAWN BY: HLE 7/26/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

EXISTING ELECTRICAL PLAN (STA. 39+00 TO 49+50)



- LEGEND**
- [Solid Line] EXISTING PAVEMENT
 - [Thick Solid Line] EXISTING BUILDING
 - [Dashed Line] EXISTING ELECTRICAL DUCT
 - [Dotted Line] EXISTING ELECTRICAL CABLE/AIRFIELD LIGHTING CABLE
 - [Line with 'R'] EXISTING REIL CIRCUIT
 - [Line with 'P'] EXISTING PLASI CIRCUIT
 - [Line with 'UD'] EXISTING UNDERDRAIN
 - [Line with 'SS'] EXISTING STORM SEWER
 - [Triangle] EXISTING REIL
 - [Square with 'X'] EXISTING PLASI TO BE REMOVED
 - [Square with 'T'] EXISTING TAXI GUIDANCE SIGN
 - [Square with 'S'] EXISTING SPLICE CAN
 - [Circle] EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - [Square with 'B'] EXISTING BASE MOUNTED TAXIWAY LIGHT
 - [Square with 'R'] EXISTING STAKE MOUNTED RUNWAY LIGHT
 - [Square with 'B'] EXISTING BASE MOUNTED RUNWAY LIGHT
 - [Circle with 'T'] EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - [Square with 'B'] EXISTING BASE MOUNTED THRESHOLD LIGHT
 - [Square with 'H'] EXISTING ELECTRICAL HANDHOLE
 - [Square with 'M'] EXISTING ELECTRICAL MANHOLE
 - [Square with 'C'] EXISTING CABLE MARKER
 - [Square with 'D'] EXISTING DUCT MARKER
 - [Circle with 'C'] EXISTING CLEAN-OUT
 - [Square] EXISTING INLET



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

**INSTALL PAPI SYSTEM
& ASSOCIATED
ELECTRICAL
IMPROVEMENTS**

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

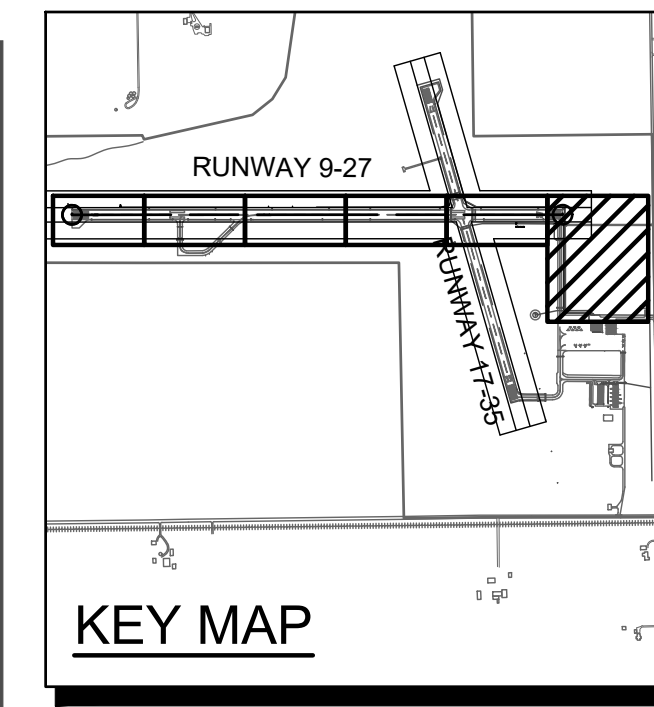
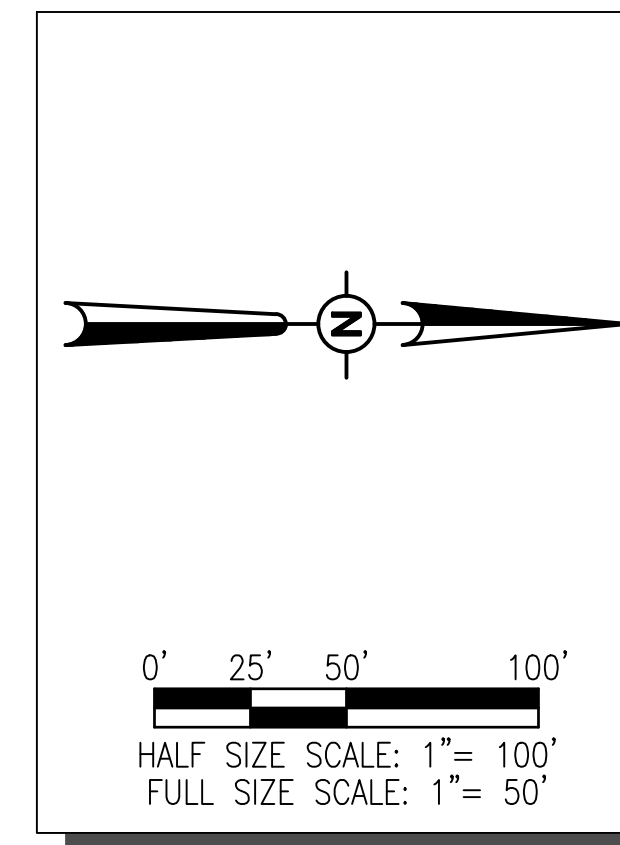
Contract No. RB022

NO.	DATE	DESCRIPTION		
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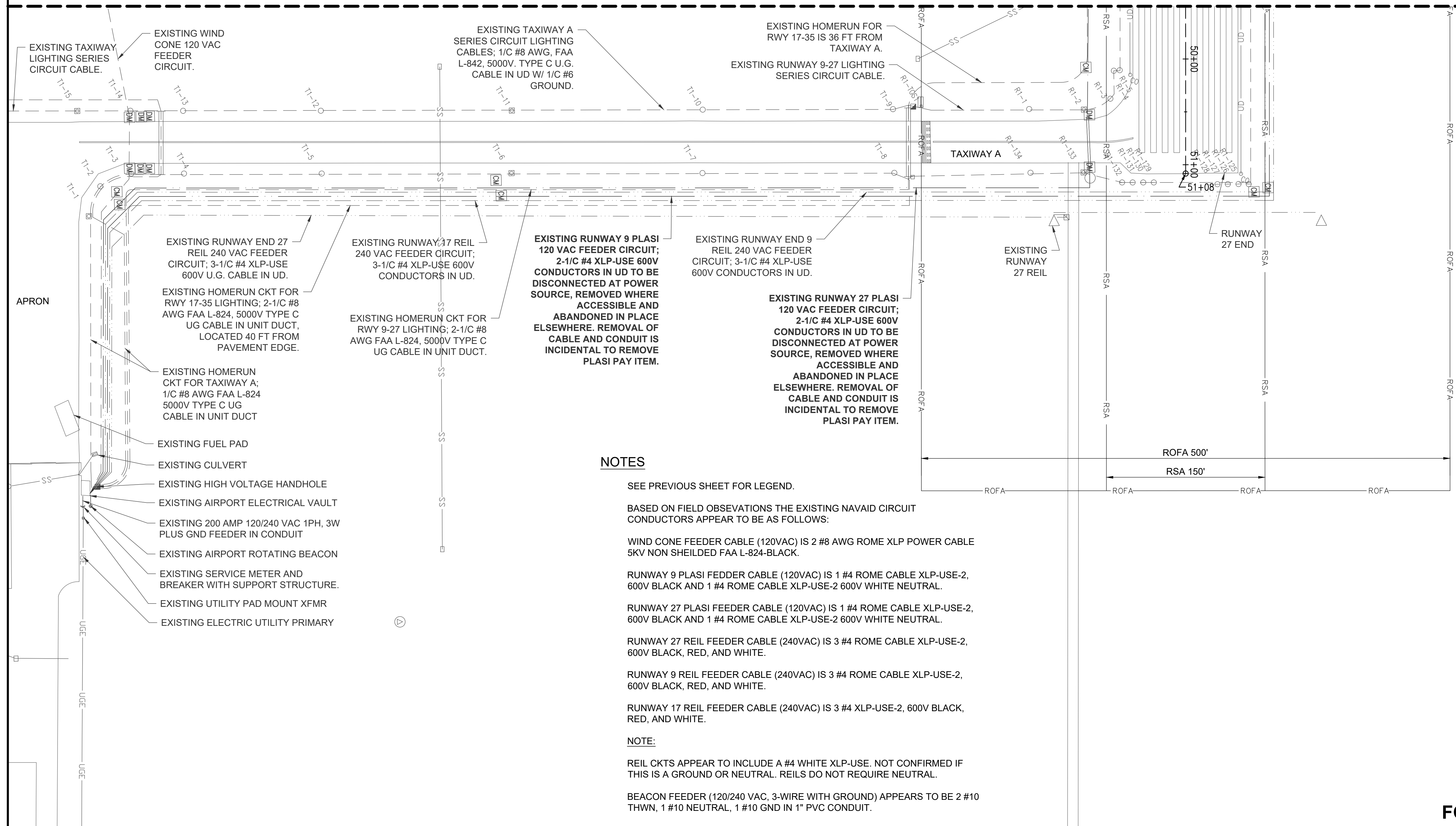
ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-141-ELE.DWG
DESIGN BY: KNL 7/26/2023
DRAWN BY: HLE 7/26/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

EXISTING
ELECTRICAL PLAN
(STA. 49+50 TO 51+08)



MATCHLINE - STA. 49+50

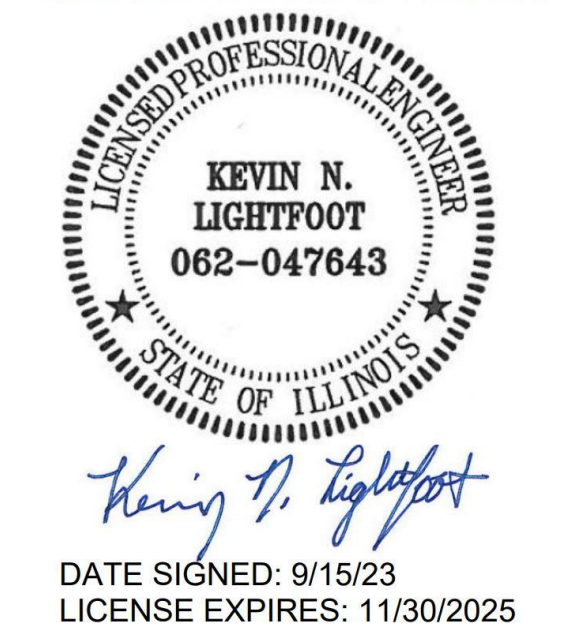


NOTES

- SEE PREVIOUS SHEET FOR LEGEND.
- BASED ON FIELD OBSERVATIONS THE EXISTING NAVAID CIRCUIT CONDUCTORS APPEAR TO BE AS FOLLOWS:
- WIND CONE FEEDER CABLE (120VAC) IS 2 #8 AWG ROME XLP POWER CABLE 5KV NON SHEILDLED FAA L-824-BLACK.
- RUNWAY 9 PLASI FEEDER CABLE (120VAC) IS 1 #4 ROME CABLE XLP-USE-2, 600V BLACK AND 1 #4 ROME CABLE XLP-USE-2 600V WHITE NEUTRAL.
- RUNWAY 27 PLASI FEEDER CABLE (120VAC) IS 1 #4 ROME CABLE XLP-USE-2, 600V BLACK AND 1 #4 ROME CABLE XLP-USE-2 600V WHITE NEUTRAL.
- RUNWAY 27 REIL FEEDER CABLE (240VAC) IS 3 #4 ROME CABLE XLP-USE-2, 600V BLACK, RED, AND WHITE.
- RUNWAY 9 REIL FEEDER CABLE (240VAC) IS 3 #4 ROME CABLE XLP-USE-2, 600V BLACK, RED, AND WHITE.
- RUNWAY 17 REIL FEEDER CABLE (240VAC) IS 3 #4 XLP-USE-2, 600V BLACK, RED, AND WHITE.
- NOTE:**
- REIL CKTS APPEAR TO INCLUDE A #4 WHITE XLP-USE. NOT CONFIRMED IF THIS IS A GROUND OR NEUTRAL. REILS DO NOT REQUIRE NEUTRAL.
- BEACON FEEDER (120/240 VAC, 3-WIRE WITH GROUND) APPEARS TO BE 2 #10 THWN, 1 #10 NEUTRAL, 1 #10 GND IN 1" PVC CONDUIT.

SEP 22, 2023 9:23 AM ENG010909 1:23:08S23A0038D\CAD\AIRPORT\141-ELE.DWG

FOR BID



**INSTALL PAPI SYSTEM
& ASSOCIATED
ELECTRICAL
IMPROVEMENTS**

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023

PROJECT NO: 23A0038D

CAD FILE: E-142-ELE.DWG

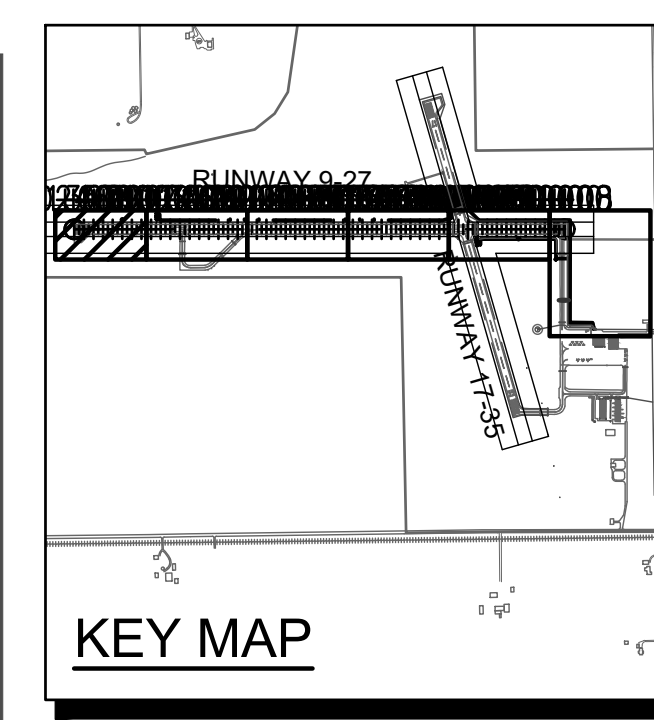
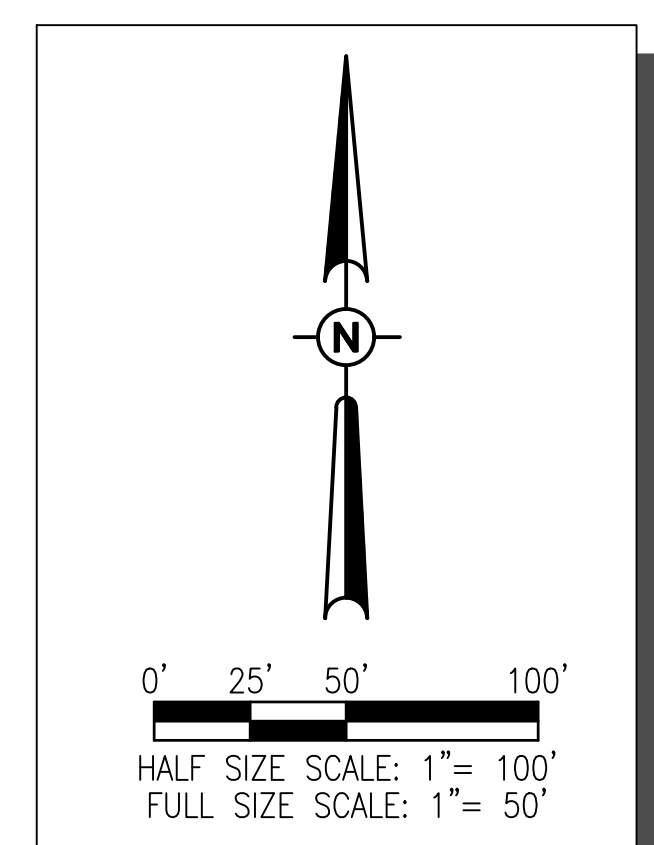
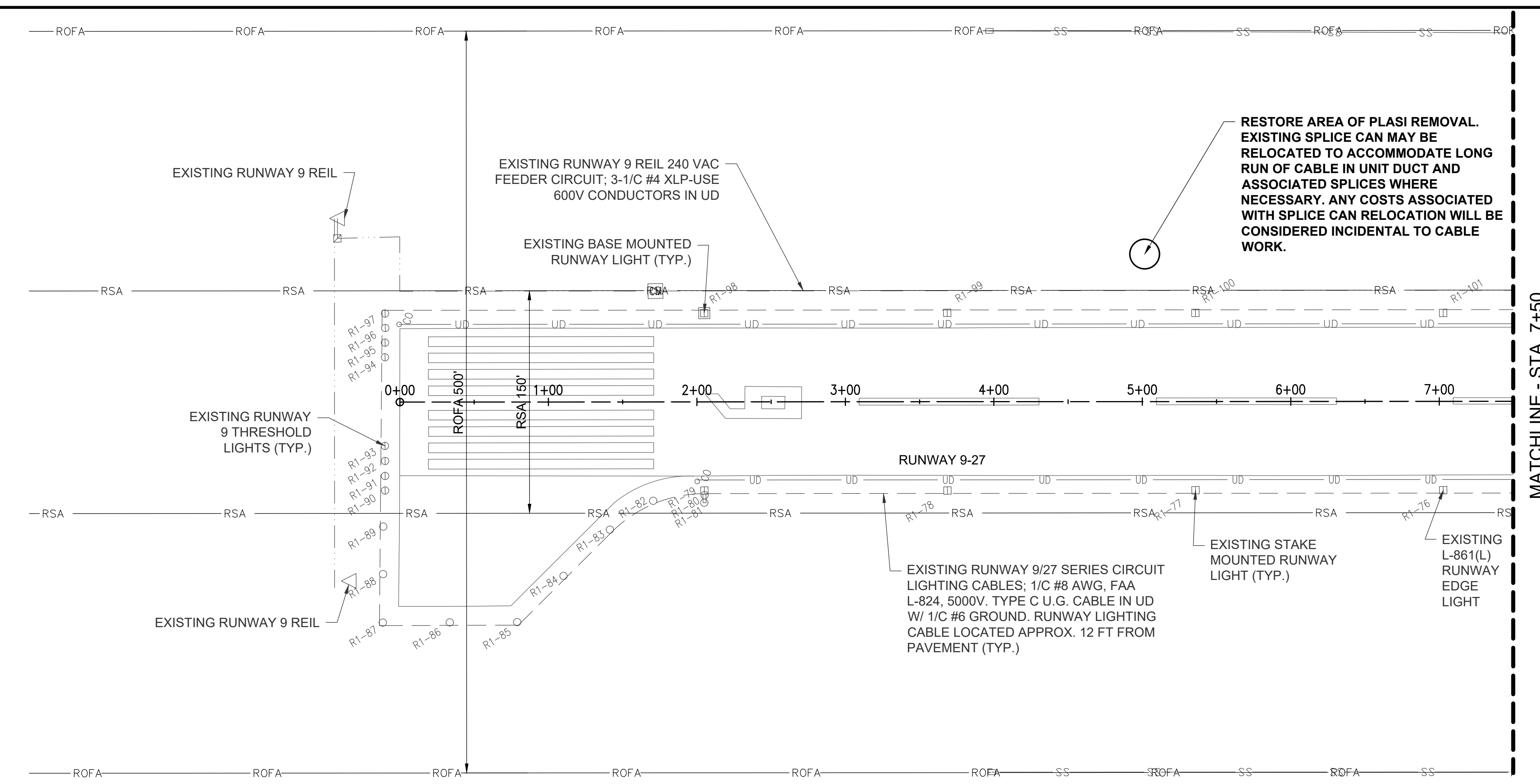
DESIGN BY: KNL 7/26/2023

DRAWN BY: HLE 7/26/2023

REVIEWED BY: KNL 9/15/2023

SHEET TITLE

**PROPOSED
ELECTRICAL PLAN
(STA. 0+00 TO 7+50)**



RESTORE AREA OF PLASI REMOVAL. EXISTING SPLICE CAN MAY BE RELOCATED TO ACCOMMODATE LONG RUN OF CABLE IN UNIT DUCT AND ASSOCIATED SPLICES WHERE NECESSARY. ANY COSTS ASSOCIATED WITH SPLICE CAN RELOCATION WILL BE CONSIDERED INCIDENTAL TO CABLE WORK.

MATCHLINE - STA. 7+50

LEGEND

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING PROPERTY LINE
- EXISTING ELECTRICAL CABLE
- EXISTING REIL CIRCUIT
- EXISTING PLASI CIRCUIT
- PROPOSED 3-1/C #8 XLP-USE, 600V UG CABLE IN UNIT DUCT
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING REIL
- EXISTING PLASI
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SPLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED PAPI LIGHT HOUSING UNIT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- PROPOSED STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING ELECTRICAL HANDHOLE
- EXISTING CABLE MARKER
- EXISTING DUCT MARKER
- EXISTING CLEAN-OUT
- EXISTING INLET
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL HANDHOLE

PAPI AND AIRFIELD WORK INSTALLATION NOTES

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- ALL ELECTRICAL EQUIPMENT (INCLUDING AIRFIELD LIGHTING AND NAVAIDS) AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 NATIONAL ELECTRIC CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS, AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE UL LISTING, INTERTEK TESTING SERVICES VERIFICATION/ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- PER FAA 150/5340-30J, 7.5.4 PAPI, 7.5.4.11.2 LOCATION OF THE PCU, IT NOTES TO LOCATE THE PCU AS FAR FROM THE RUNWAY AS POSSIBLE FOR A MINIMUM OBSTRUCTION TO AIRCRAFT. IF THE PCU IS ESSENTIAL (INTERNAL) WITH A LIGHT UNIT, PLACE IT FARTHEST FROM THE RUNWAY. PER FAA ORDER 6850.2C, 507 PAPI ASSEMBLIES, 507.A POWER AND CONTROL ASSEMBLY, AN EXTERNAL PCA/PCU SERVING A LED PAPI MUST BE LOCATED OUTSIDE OF THE RUNWAY OBJECT FREE AREA (ROFA).
- IN AREAS WHERE THERE IS A CONGESTION OF CABLES OR WHERE THE PROPOSED CABLE CROSSES AN EXISTING CABLE, THE CONTRACTOR IS REQUIRED TO HAND DIG THE TRENCH NECESSARY FOR THE PROPOSED CABLE. AT OTHER LOCATIONS, THE PROPOSED CABLE MAY BE TRENCHED OR PLOWED INTO PLACE. HAND DIGGING, TRENCHING AND/OR PLOWING WILL BE CONSIDERED INCIDENTAL TO THE PROPOSED CABLES AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED
- THE CONTRACTOR SHALL SECURE, IDENTIFY AND PLACE ALL TEMPORARY EXPOSED WIRING IN CONDUIT, DUCT OR UNIT DUCT TO PREVENT ELECTROCUTION AND FIRE IGNITION SOURCES AS PER THE REQUIREMENTS OF FAA AC 150/5370-2G, SECTION 218.3. ALL LABOR, MATERIALS, AND TIME NECESSARY TO COMPLY WITH THIS REQUIREMENT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- HOMERUN CABLES FOR A RESPECTIVE CIRCUIT THAT ARE INSTALLED IN CONDUIT OR DUCT SHALL BE RUN TOGETHER IN THE SAME RACEWAY OR DUCT.
- THE CONTRACTOR IS REQUIRED TO FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE NEW WORK, WITH EARTH MATERIAL. THE AREAS SHALL BE COMPACTED TO PREVENT FUTURE SETTLEMENT AND FERTILIZED, SEEDED, AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908 RESPECTIVELY. THIS WORK WILL BE CONSIDERED AS AN INCIDENTAL ITEM AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
- NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE, EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT.

ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVEGROUND UTILITIES.

SEP 22, 2023 9:24 AM ENGELO1090 1:23:08S23A0038D\CAD\AIRPORT\TSHEETE-142-ELE.DWG

FOR BID



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

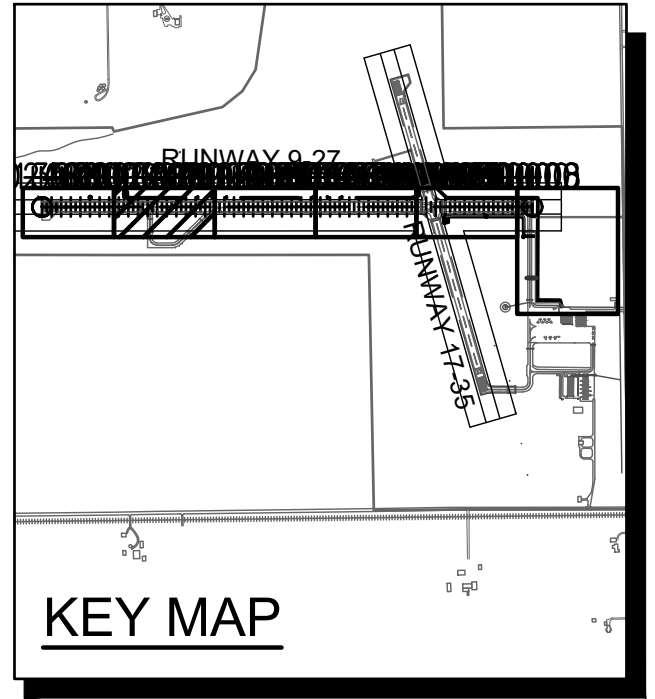
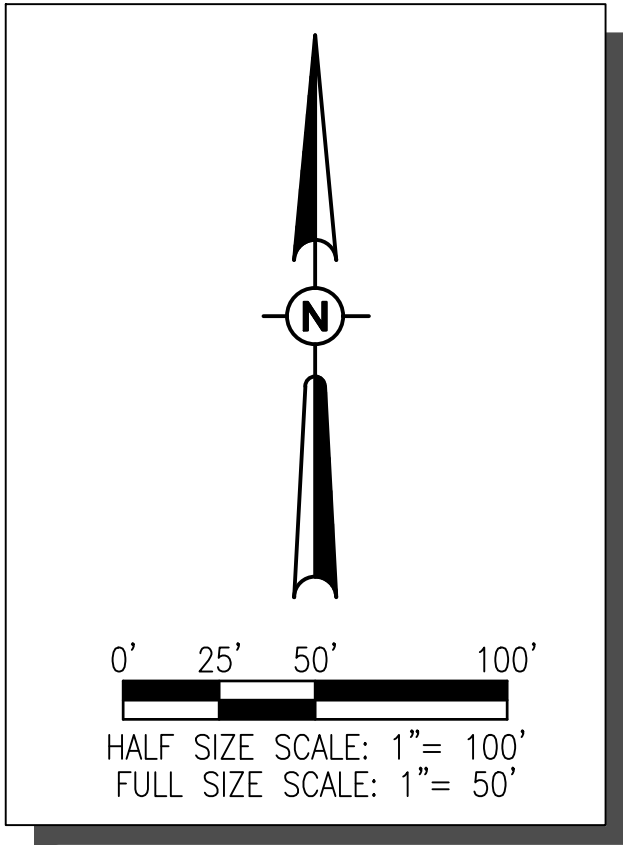
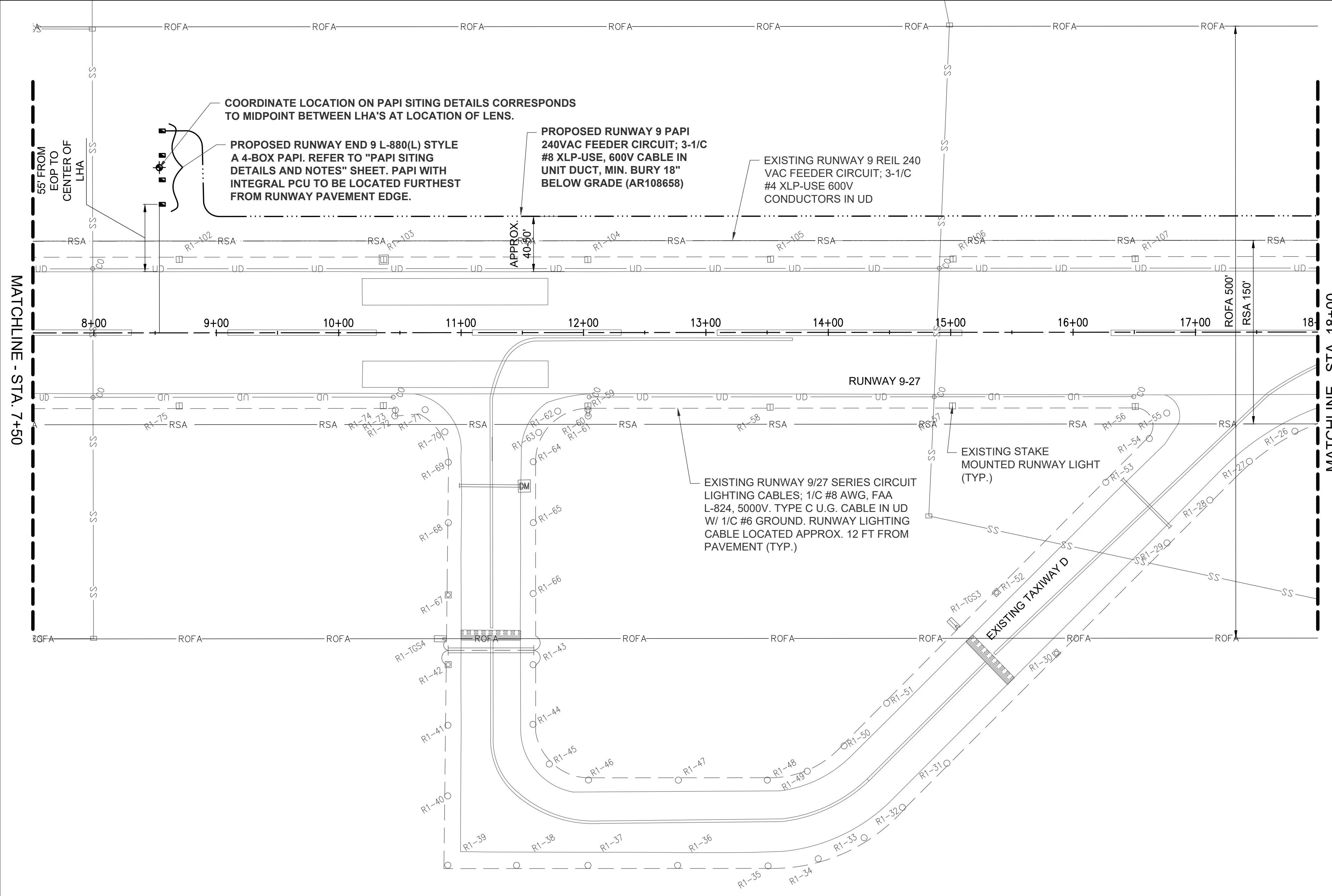
Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-142-ELE.DWG
DESIGN BY: KNL 7/26/2023
DRAWN BY: HLE 7/26/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

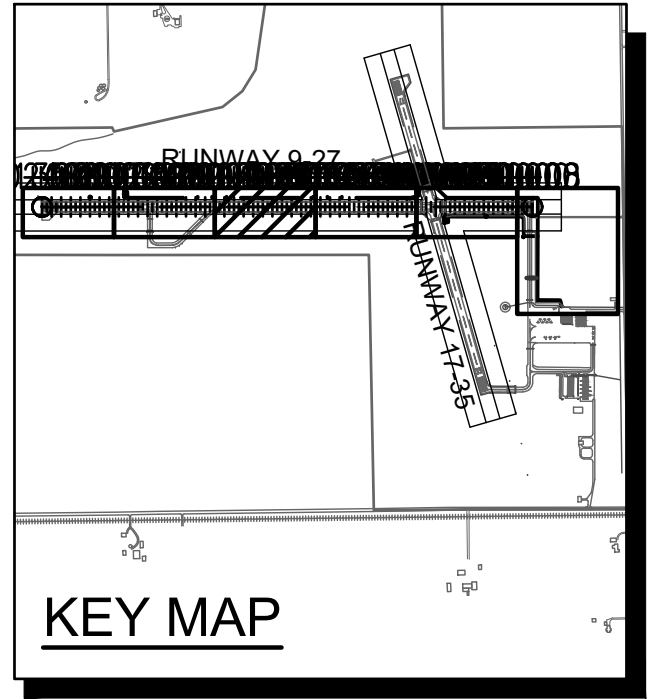
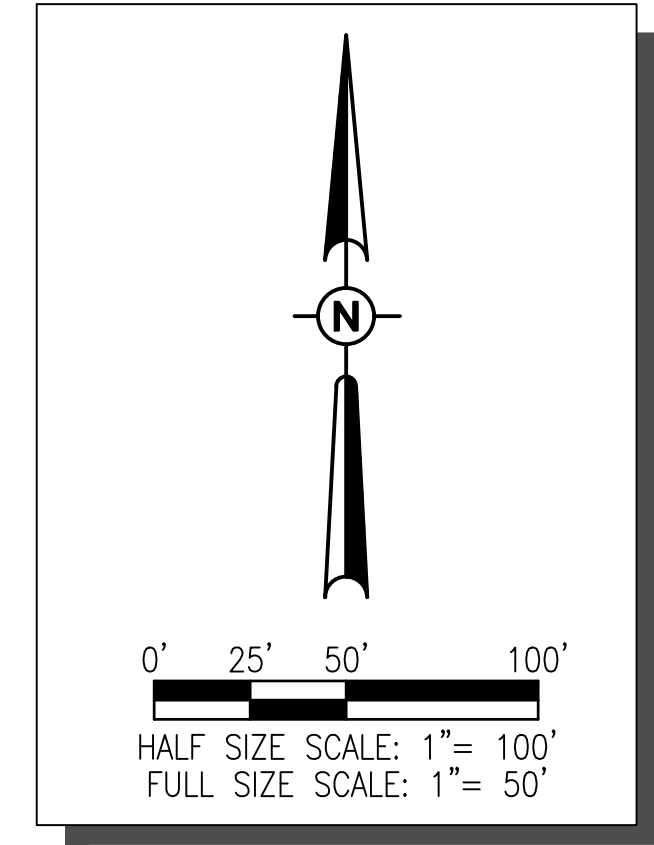
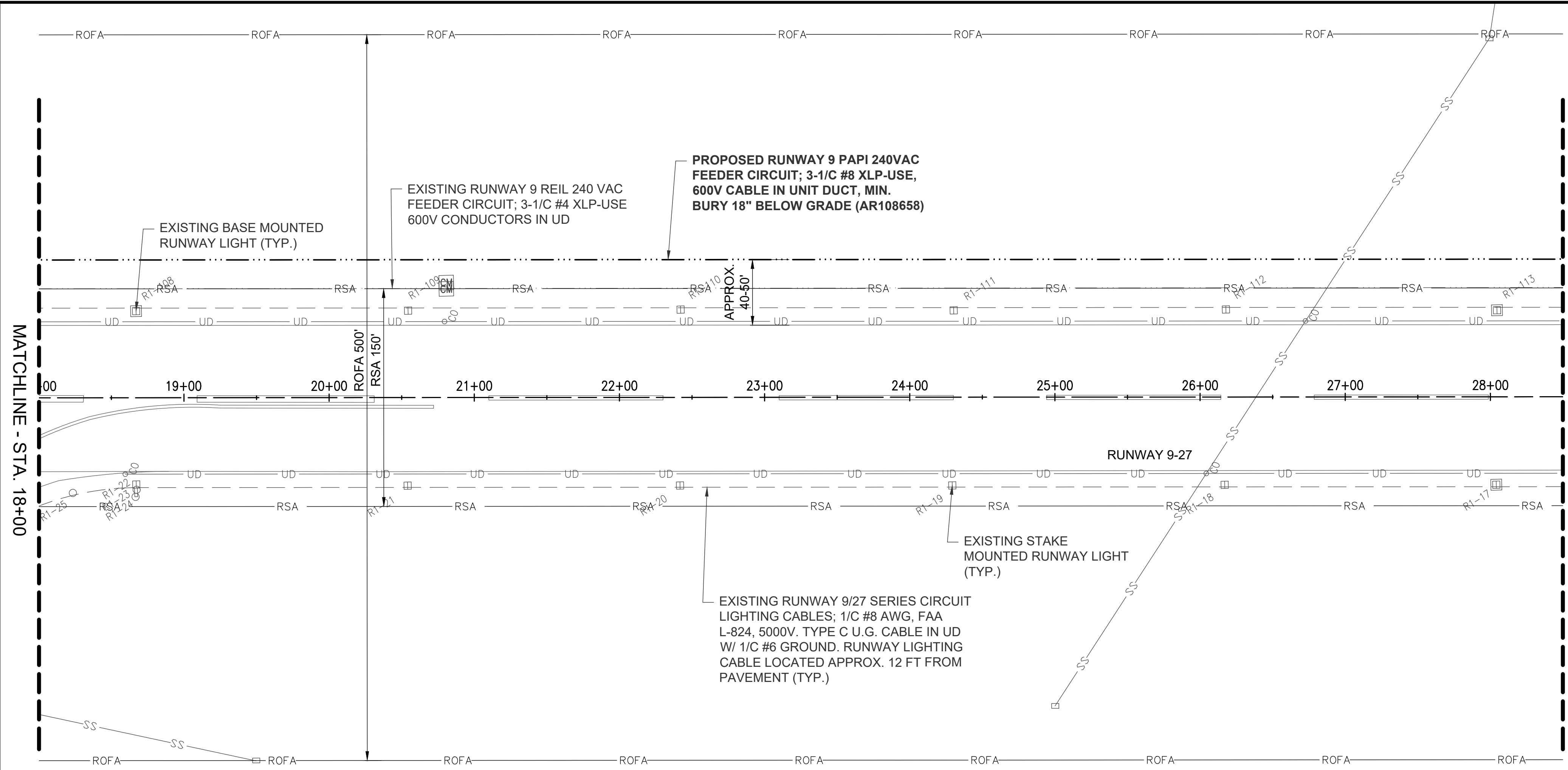
PROPOSED ELECTRICAL PLAN (STA. 7+50 TO 18+00)



LEGEND

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING PROPERTY LINE
- EXISTING ELECTRICAL CABLE
- EXISTING REIL CIRCUIT
- EXISTING PLASI CIRCUIT
- PROPOSED 3-1/C #8 XLP-USE, 600V UG CABLE IN UNIT DUCT
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING REIL
- EXISTING PLASI
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SPLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED PAPI LIGHT HOUSING UNIT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- PROPOSED STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING ELECTRICAL HANDHOLE
- EXISTING CABLE MARKER
- EXISTING DUCT MARKER
- EXISTING CLEAN-OUT
- EXISTING INLET
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL HANDHOLE

SEP 22, 2023 9:24 AM ENGELO1009
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LEGEND

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING PROPERTY LINE
- EXISTING ELECTRICAL CABLE
- EXISTING REIL CIRCUIT
- EXISTING PLASI CIRCUIT
- PROPOSED 3-1/C #8 XLP-USE, 600V UG CABLE IN UNIT DUCT
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- EXISTING STAKE MOUNTED TAXIWAY LIGHT
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- PROPOSED ELECTRICAL HANDHOLE



Offices Nationwide
 www.hanson-inc.com

Hanson Professional Services Inc.
 1525 S. 6th Street
 Springfield, IL 62568
 phone: 217-788-2450
 fax: 217-788-2503

Illinois Licensed
 Professional Service Corporation
 #184-001084

Crawford County Airport
 10748 North 1650th St.
 Palestine, Illinois 62451

COVERING ELECTRICAL DESIGN

DATE SIGNED: 9/15/23
 LICENSE EXPIRES: 11/30/2025

Kevin N. Lightfoot

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
 AIP No: 3-17-SBGP-TBD

Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023

PROJECT NO: 23A0038D
 CAD FILE: E-142-ELE.DWG

DESIGN BY: KNL 7/26/2023
 DRAWN BY: HLE 7/26/2023

REVIEWED BY: KNL 9/15/2023

SHEET TITLE

PROPOSED ELECTRICAL PLAN (STA. 18+00 TO 28+50)

FOR BID



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

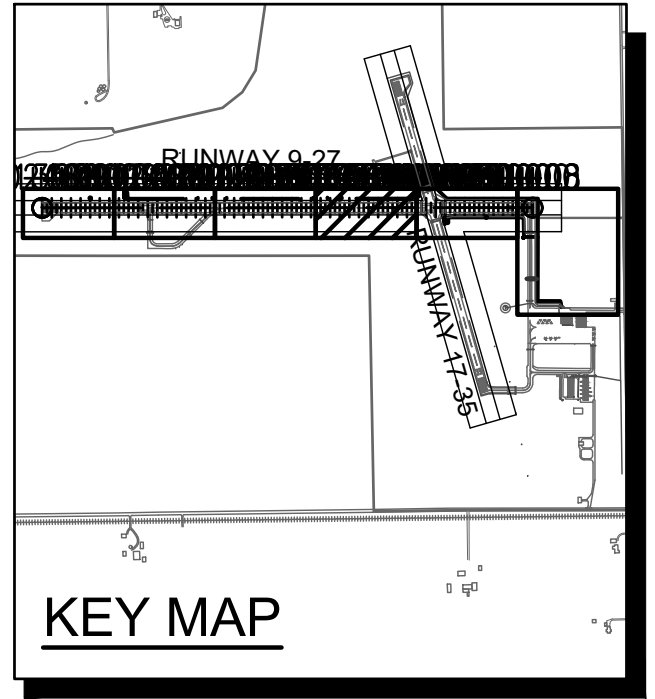
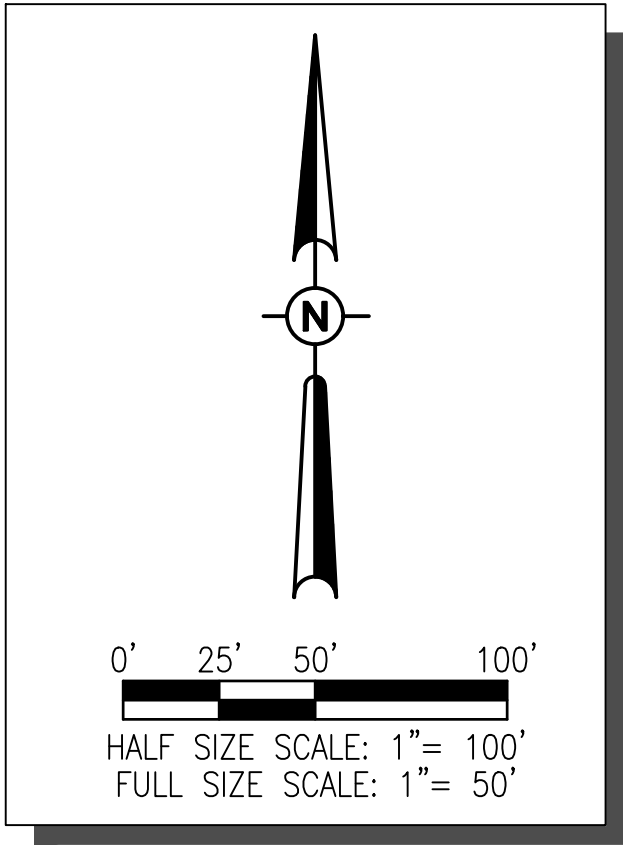
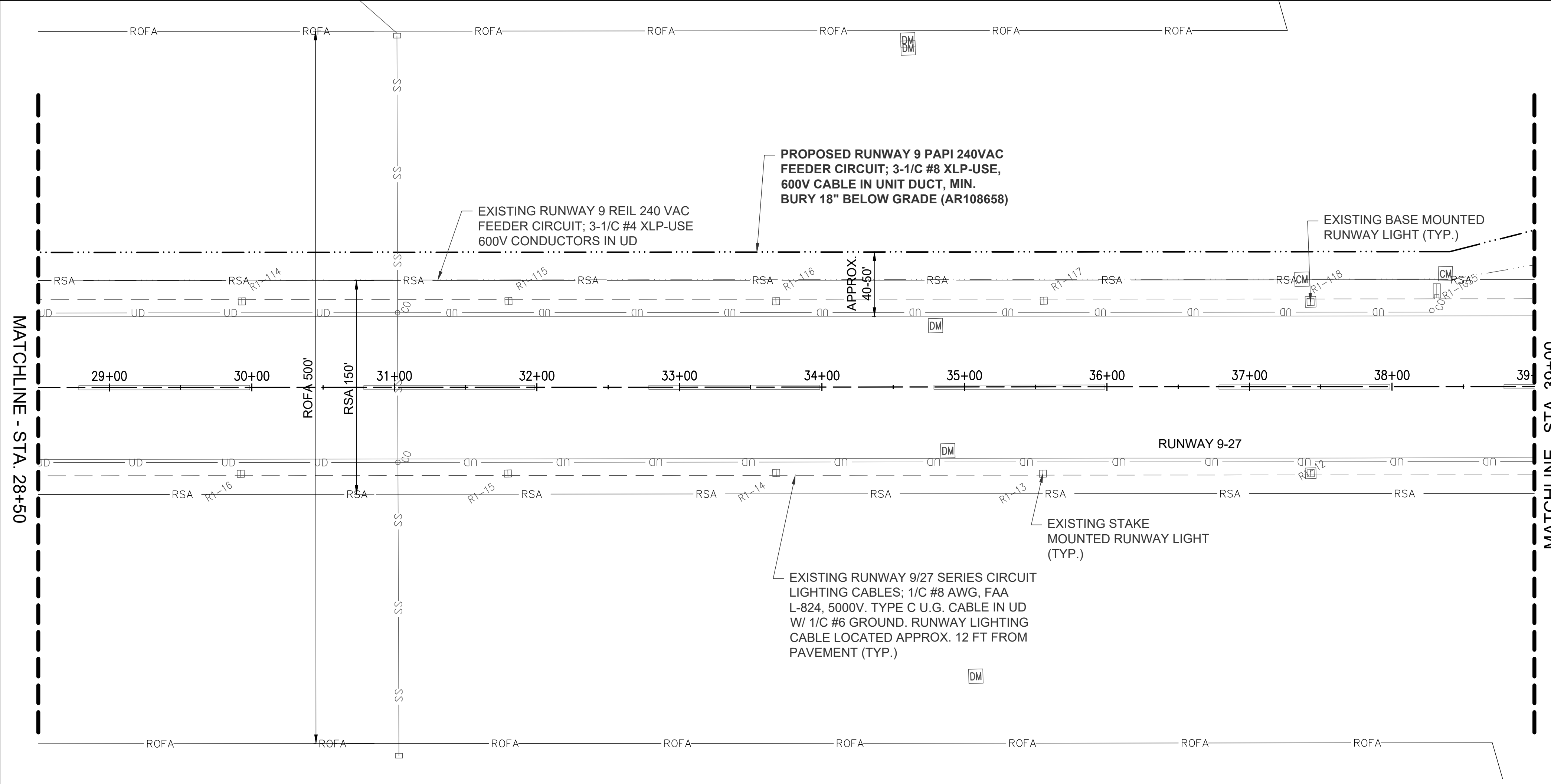
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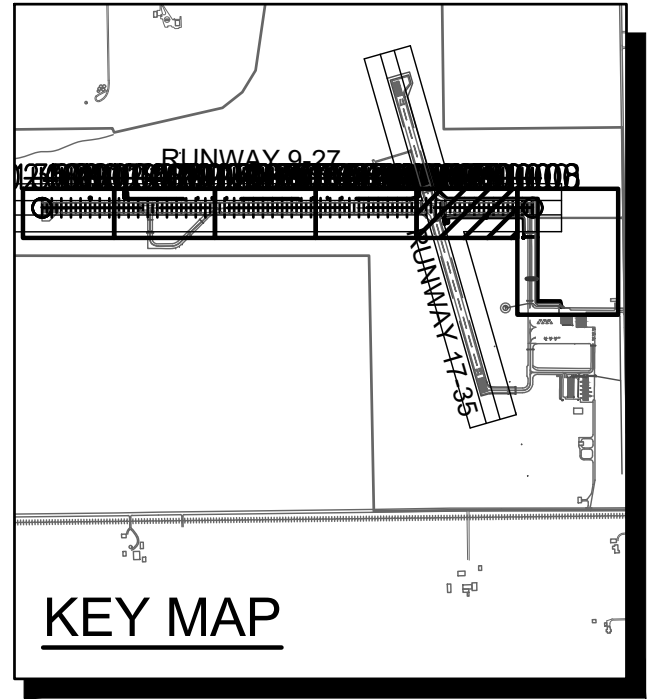
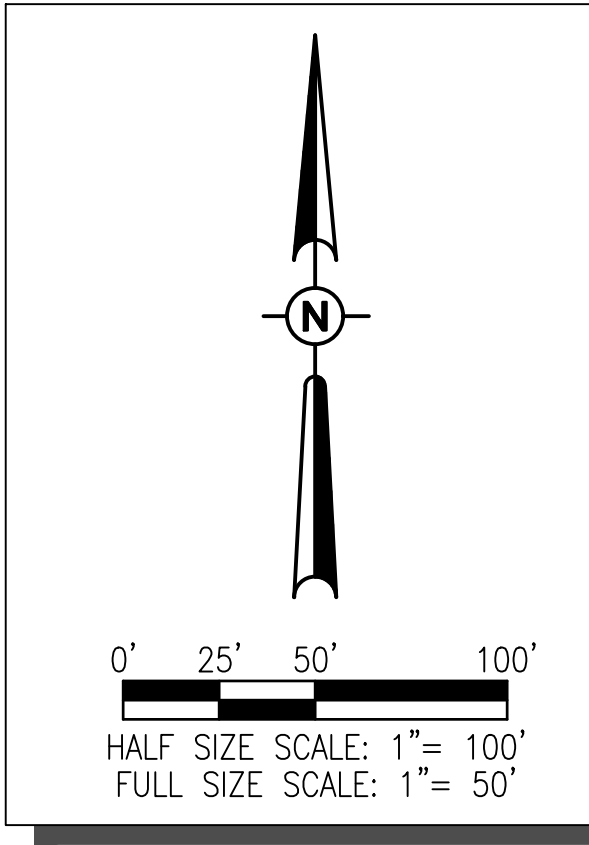
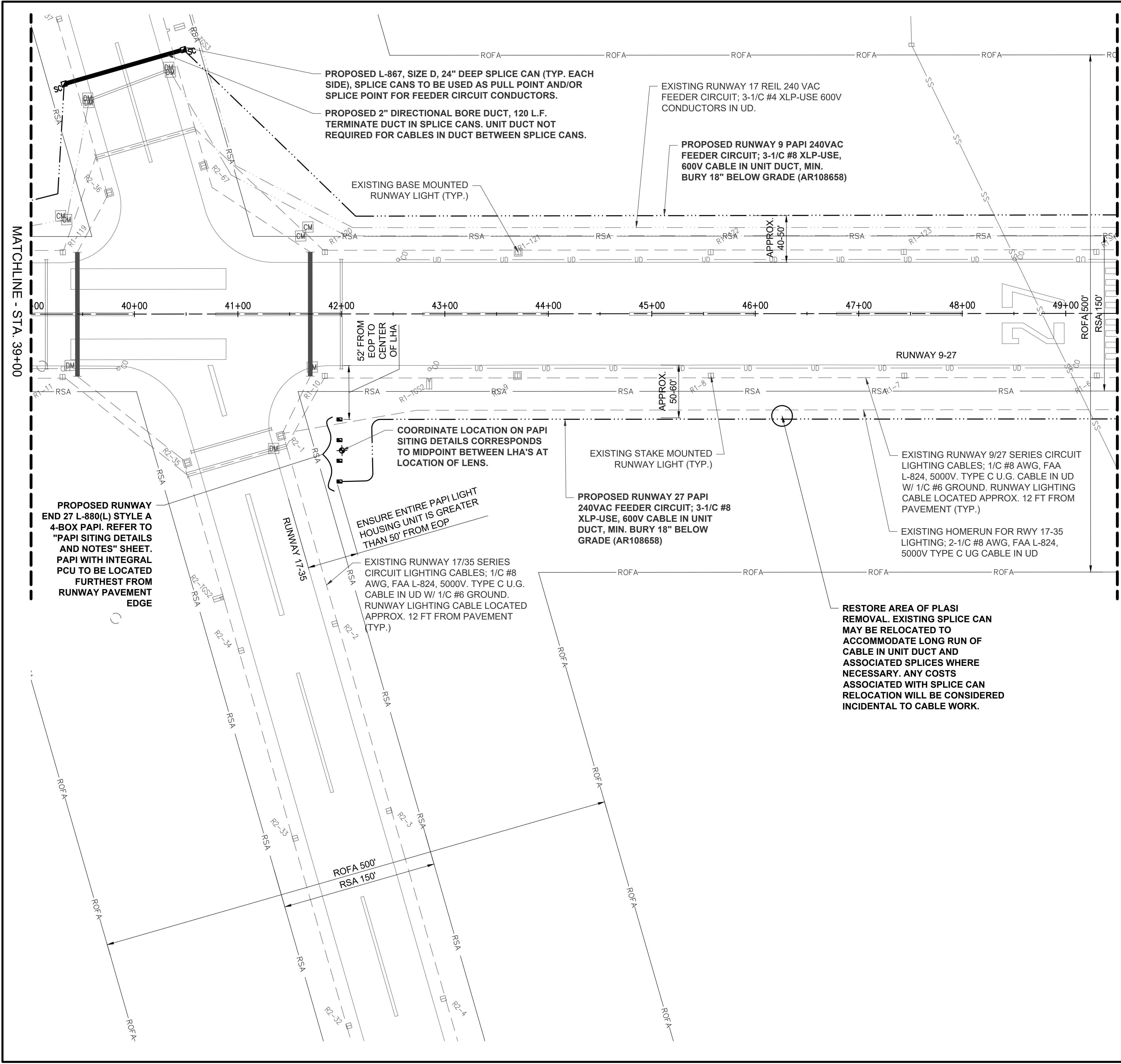
PROPOSED ELECTRICAL PLAN (STA. 28+50 TO 39+00)

FOR BID



LEGEND

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING PROPERTY LINE
- EXISTING ELECTRICAL CABLE
- EXISTING REIL CIRCUIT
- EXISTING PLASI CIRCUIT
- PROPOSED 3-1/C #8 XLP-USE, 600V UG CABLE IN UNIT DUCT
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING REIL
- EXISTING PLASI
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SPLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED PAPI LIGHT HOUSING UNIT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- PROPOSED STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING ELECTRICAL HANDHOLE
- EXISTING CABLE MARKER
- EXISTING DUCT MARKER
- EXISTING CLEAN-OUT
- EXISTING INLET
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL HANDHOLE



LEGEND

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING PROPERTY LINE
- EXISTING ELECTRICAL CABLE
- EXISTING REIL CIRCUIT
- EXISTING PLASI CIRCUIT
- PROPOSED 3-1/C #8 XLP-USE, 600V UG CABLE IN UNIT DUCT
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING REIL
- EXISTING PLASI
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SPLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED PAPI LIGHT HOUSING UNIT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY LIGHT
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- EXISTING CLEAN-OUT
- EXISTING INLET
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL HANDHOLE



Kevin N. Lightfoot
 DATE SIGNED: 9/15/23
 LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
 AIP No: 3-17-SBGP-TBD

Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023
 PROJECT NO: 23A0038D
 CAD FILE: E-142-ELE.DWG
 DESIGN BY: KNL 7/26/2023
 DRAWN BY: HLE 7/26/2023
 REVIEWED BY: KNL 9/15/2023

SHEET TITLE

PROPOSED ELECTRICAL PLAN (STA. 39+00 TO 49+50)

FOR BID



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

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AIP No: 3-17-SBGP-TBD

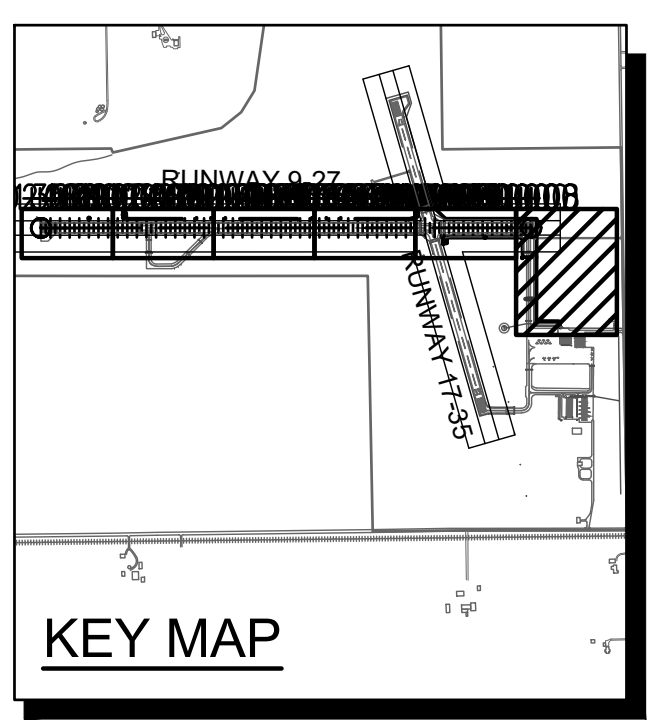
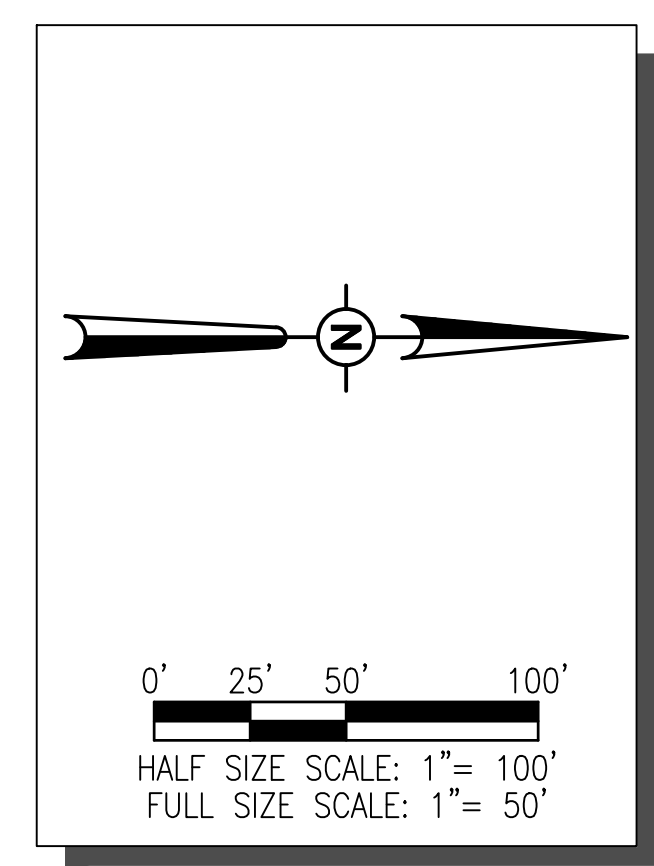
Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

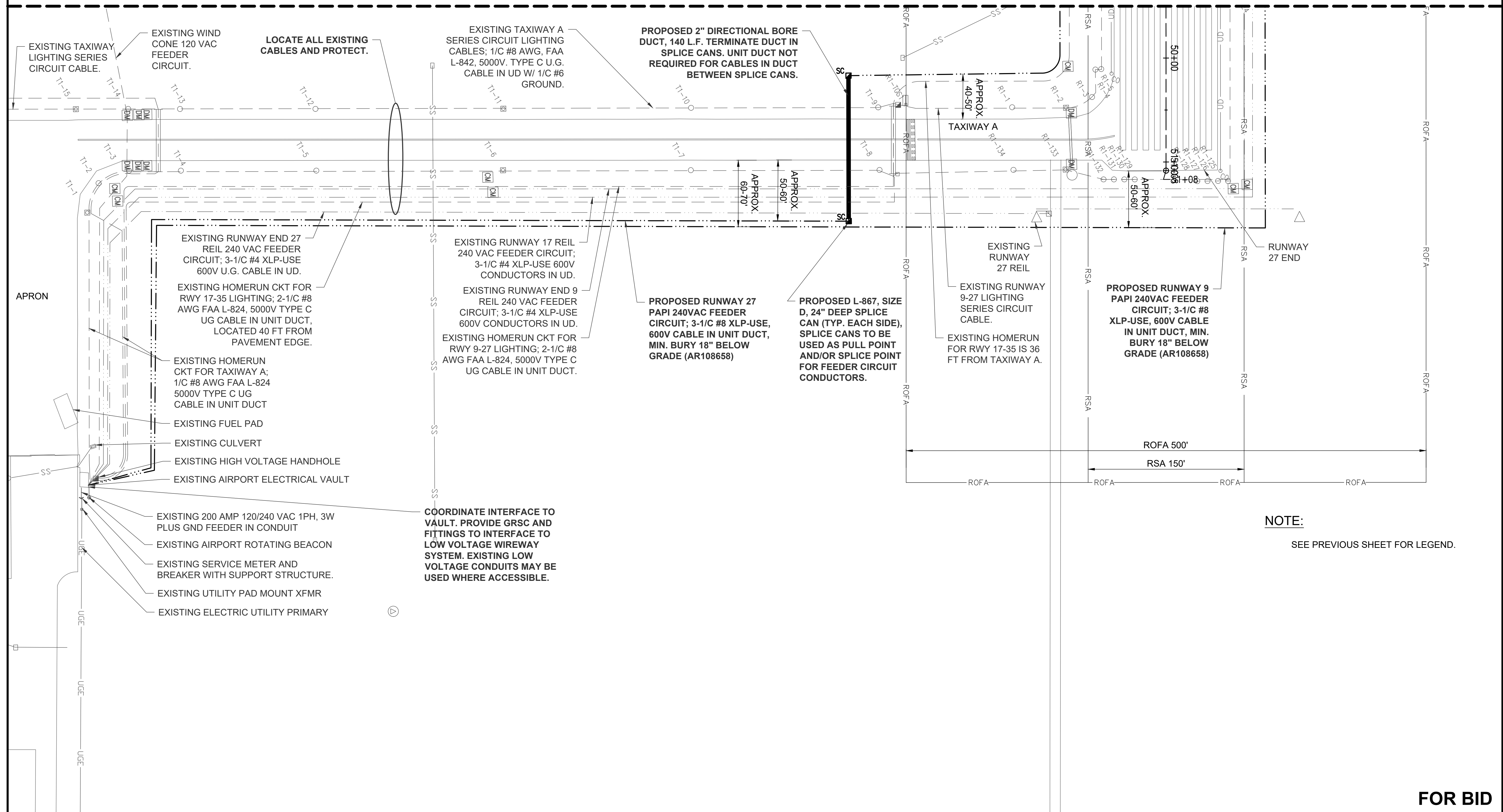
ISSUE: AUGUST 25, 2023
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CAD FILE: E-142-ELE.DWG
DESIGN BY: KNL 7/26/2023
DRAWN BY: HLE 7/26/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

PROPOSED ELECTRICAL PLAN (STA. 49+50 TO 51+08)



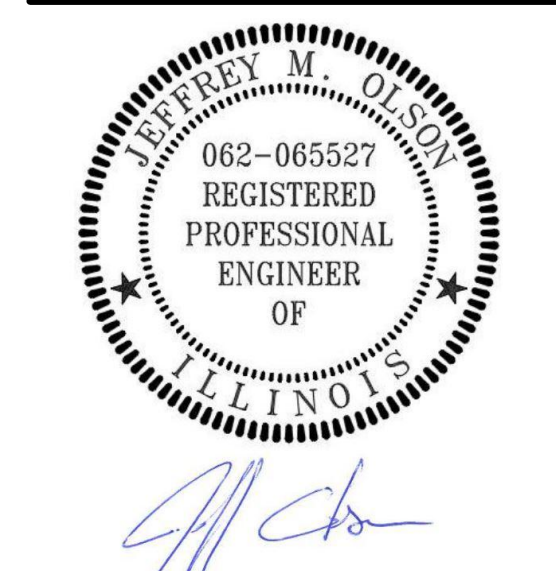
MATCHLINE - STA. 49+50



NOTE:
SEE PREVIOUS SHEET FOR LEGEND.

FOR BID

SEP 22, 2023 9:25 AM ENGEL01009
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DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2023

**INSTALL PAPI SYSTEM
& ASSOCIATED
ELECTRICAL
IMPROVEMENTS**

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

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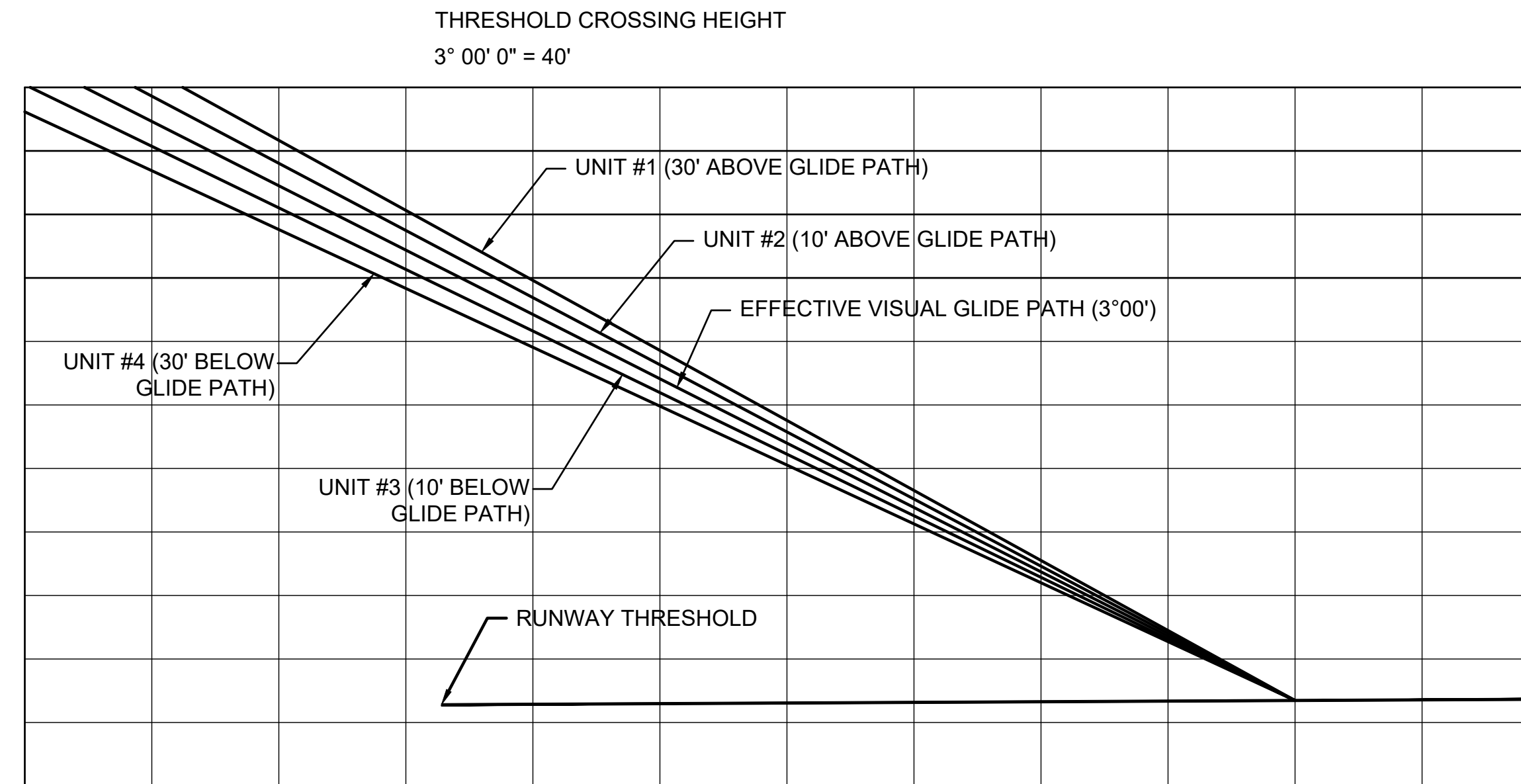
ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: C-501-DETL.DWG
DESIGN BY: HLE 8/18/2023
DRAWN BY: HLE 8/18/2023
REVIEWED BY: JMO 9/15/2023

SHEET TITLE

**PAPI SITING DETAILS
AND NOTES RUNWAY
END 9**

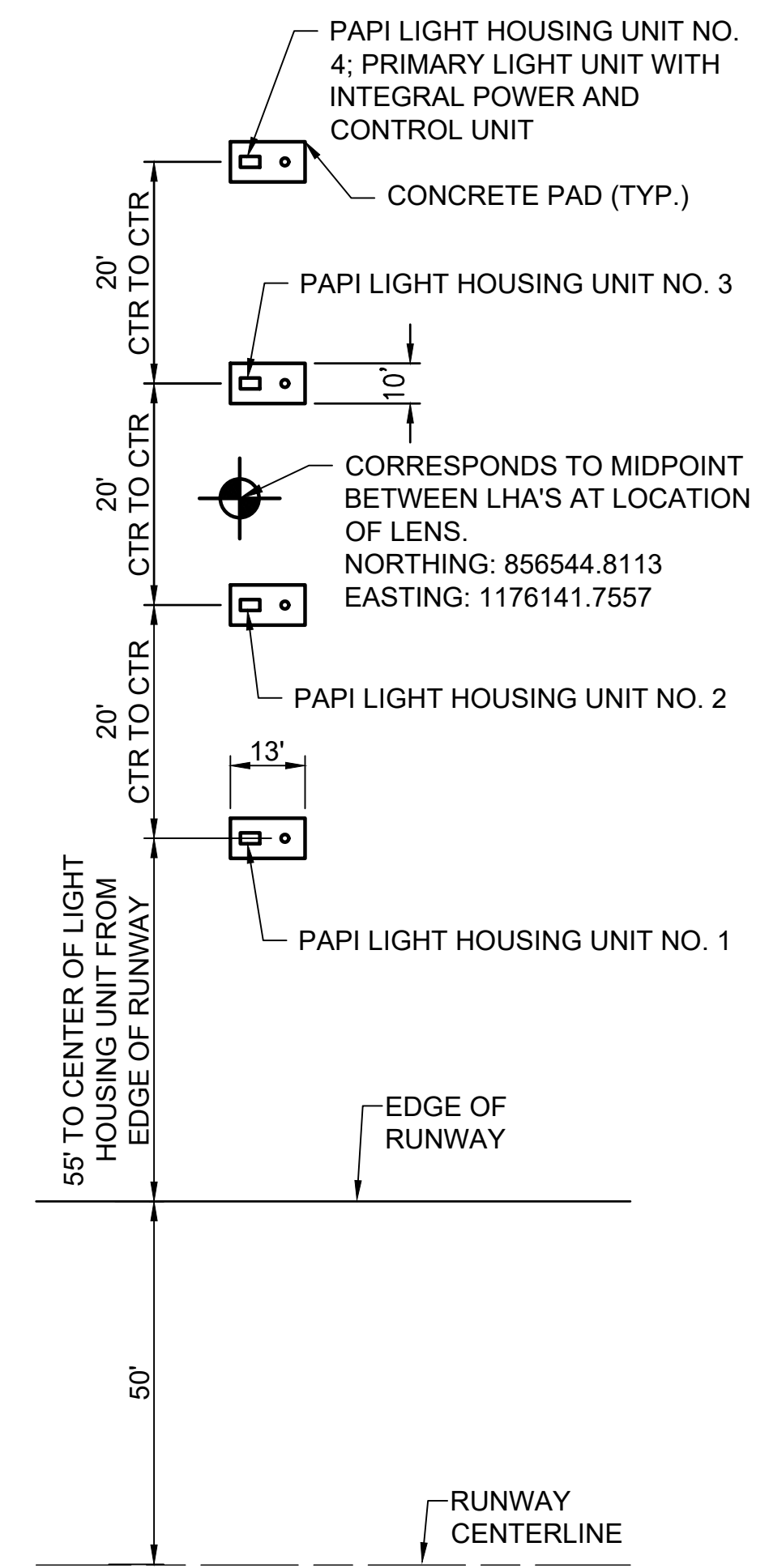
P.A.P.I. NOTES

- EACH PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON RESPECTIVE PROPOSED ELECTRICAL SITE PLAN SHEETS AND/OR AS DETAILED HEREIN ON THIS SHEET. LOCATE THE PAPI WITH THE POWER AND CONTROL UNIT FURTHEST FROM THE RUNWAY PAVEMENT EDGE TO COMPLY WITH FAA REQUIREMENTS.
- ANY REQUIRED ELECTRICAL EQUIPMENT BESIDES THE FOUR PAPI LIGHT UNITS THAT IS NOT CONSIDERED BY THE FAA TO BE FIXED-BY-FUNCTION SHALL BE INSTALLED OUTSIDE OF THE RUNWAY OBJECT FREE AREA, WHICH IS 400' FROM THE RUNWAY CENTERLINE.
- THE PROPOSED CONCRETE FOUNDATION PIERS SHALL BE AS DETAILED ON THE "PAPI FOUNDATION DETAILS" SHEET.
- EACH PAPI UNIT SHALL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF THE RESPECTIVE SPECIFIED ELEVATION.
- THE INBOARD LIGHT UNIT MUST NOT BE LESS THAN 50 FT. FROM THE RUNWAY EDGE (MEASURED TO THE EDGE OF THE LIGHT UNIT) OR TO OTHER RUNWAYS OR TAXIWAYS, AND THE PAPI LIGHT UNITS SHALL HAVE A LATERAL SEPARATION OF 20 FT (MEASURED CENTER TO CENTER), IN ACCORDANCE WITH AC 150/5340-30J PART 7.5.4 PAPI, 7.5.4.7.2 SEPARATION BETWEEN LIGHT UNITS, AND FIGURE A-81. FOR THE L-880 AND L-881, THE DISTANCE BETWEEN LIGHT UNITS MAY NOT VARY BY MORE THAN PLUS OR MINUS 1 FOOT. SEE "RWY 14 PAPI LAYOUT DETAIL" FOR DIMENSIONS BETWEEN UNITS.
- THE PROPOSED PAPI SIGNAL SHALL BE VISIBLE FOR A 10 DEGREE ZONE ON EITHER SIDE OF THE RUNWAY CENTERLINE IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5340-30J, FIGURE A-81 PAPI OBSTACLE CLEARANCE SURFACE, AND FAA ORDER JO 6850.2C FIGURE 5-4 PAPI OBSTACLE CLEARANCE SURFACE. PER FAA AC 150/5345-28H, 3.2.4 LIGHT UNIT ADJUSTMENTS, PART 3.2.4.1.3 HORIZONTAL LIGHT BEAM COVERAGE, THE PAPI SHALL BE DESIGNED TO BE CAPABLE OF MODIFYING THE HORIZONTAL LIGHT BEAM COVERAGE OF THE PAPI FOR OBSTACLE AVOIDANCE IN THE APPROACH AREA AND LIGHT SIGNAL CLEARANCE SURFACE. THIS MAY BE ACCOMPLISHED USING BAFFLES (ALSO REFERRED TO AS BLANKING DEVICES).
- PER FAA 150/5340-30J, 7.5.4 PAPI, 7.5.4.11.2 LOCATION OF THE PCU, IT NOTES TO LOCATE THE PCU AS FAR FROM THE RUNWAY AS POSSIBLE FOR A MINIMUM OBSTRUCTION TO AIRCRAFT. IF THE PCU IS ESSENTIAL (INTERNAL) WITH A LIGHT UNIT, PLACE IT FARTHEST FROM THE RUNWAY. PER FAA ORDER 6850.2C, 507 PAPI ASSEMBLIES, 507.A POWER AND CONTROL ASSEMBLY, AN EXTERNAL PCA/PCU SERVING A LED PAPI MUST BE LOCATED OUTSIDE OF THE RUNWAY OBJECT FREE AREA (ROFA).



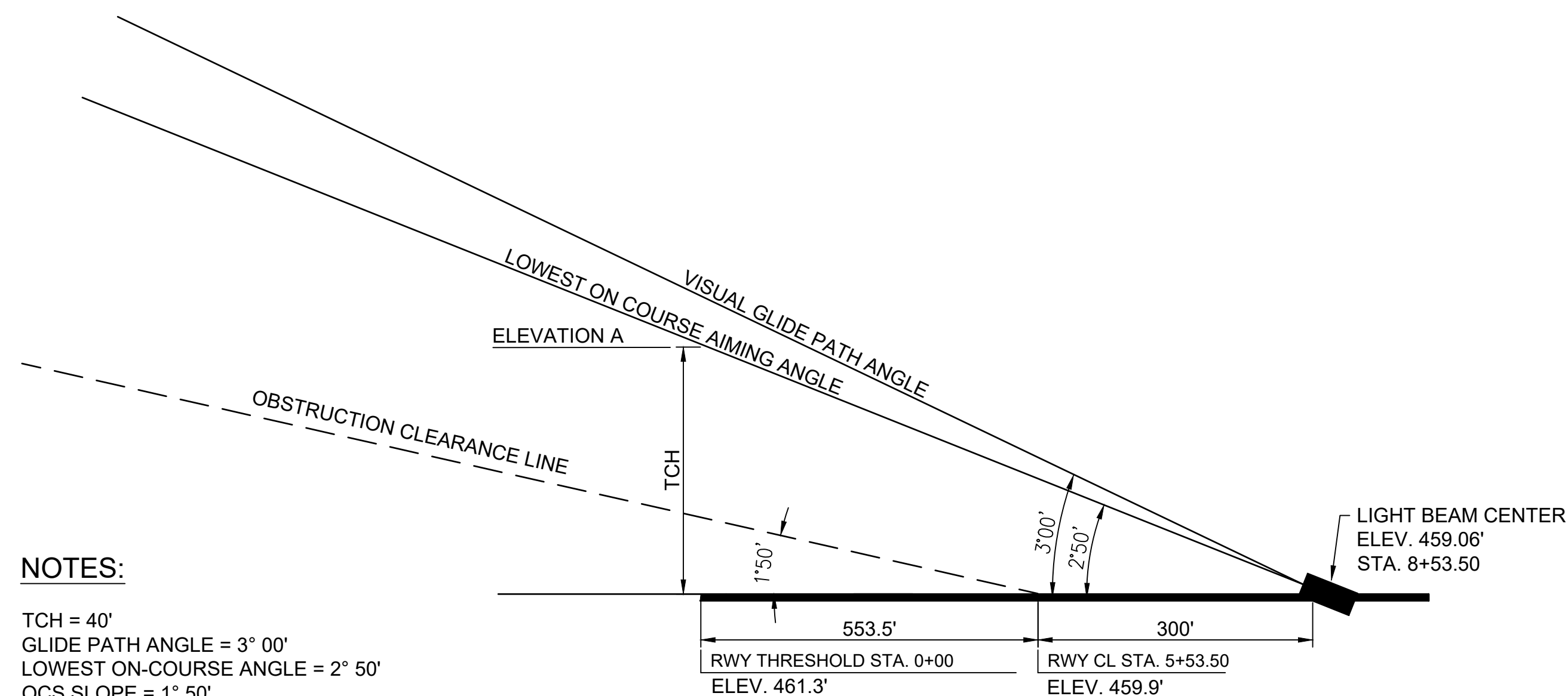
RUNWAY CENTERLINE PROFILE

PAPI DATA-RUNWAY END 9				
	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P.A.P.I. UNIT #3	P.A.P.I. UNIT #4
AIMING ANGLE	3° 30' (3.50°)	3° 10' (3.17°)	2° 50' (2.83°)	2° 30' (2.50°)
APPROXIMATE EXISTING GROUND ELEVATION	456.8'	456.5'	456.2'	455.8'
P.A.P.I. UNIT APERTURE ELEVATION	459.06'	459.06'	459.06'	459.06'



RWY 9 P.A.P.I. LAYOUT DETAIL

"NOT TO SCALE"



NOTES:

- TCH = 40'
- GLIDE PATH ANGLE = 3° 00'
- LOWEST ON-COURSE ANGLE = 2° 50'
- OCS SLOPE = 1° 50'
- ELEVATION A = 477.62'
- ADJUSTED DISTANCE FROM THRESHOLD (d) = 853.5'
- ADJUSTED RUNWAY REFERENCE POINT = 459.06'

P.A.P.I. AIMING DIAGRAM 9 END

"NOT TO SCALE"

FOR BID



DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2023

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

NO.	DATE	DESCRIPTION
		DES DWN REV

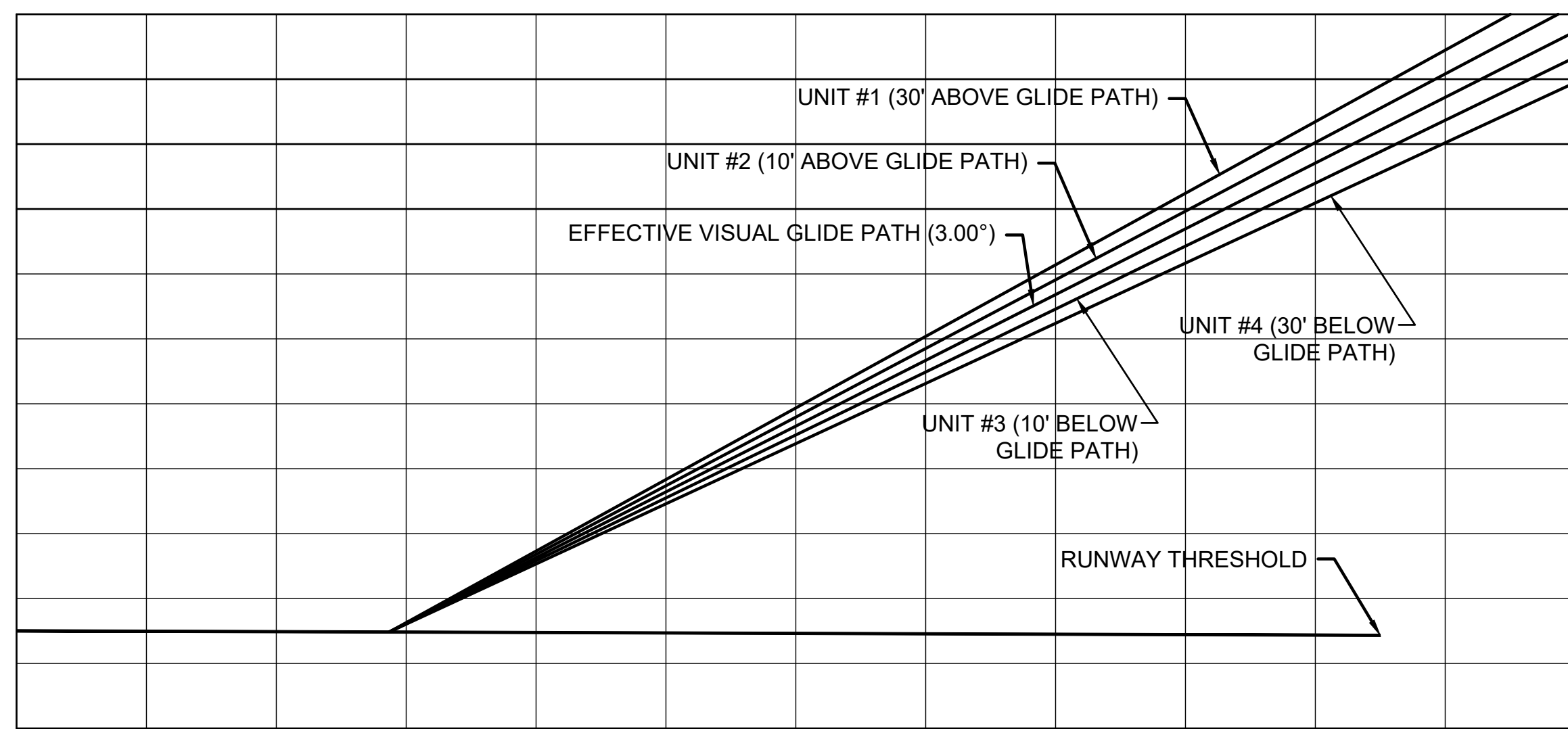
ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: C-501-DETL.DWG
DESIGN BY: HLE 8/18/2023
DRAWN BY: HLE 8/18/2023
REVIEWED BY: JMO 9/15/2023

SHEET TITLE

PAPI SITING DETAILS AND NOTES RUNWAY END 27

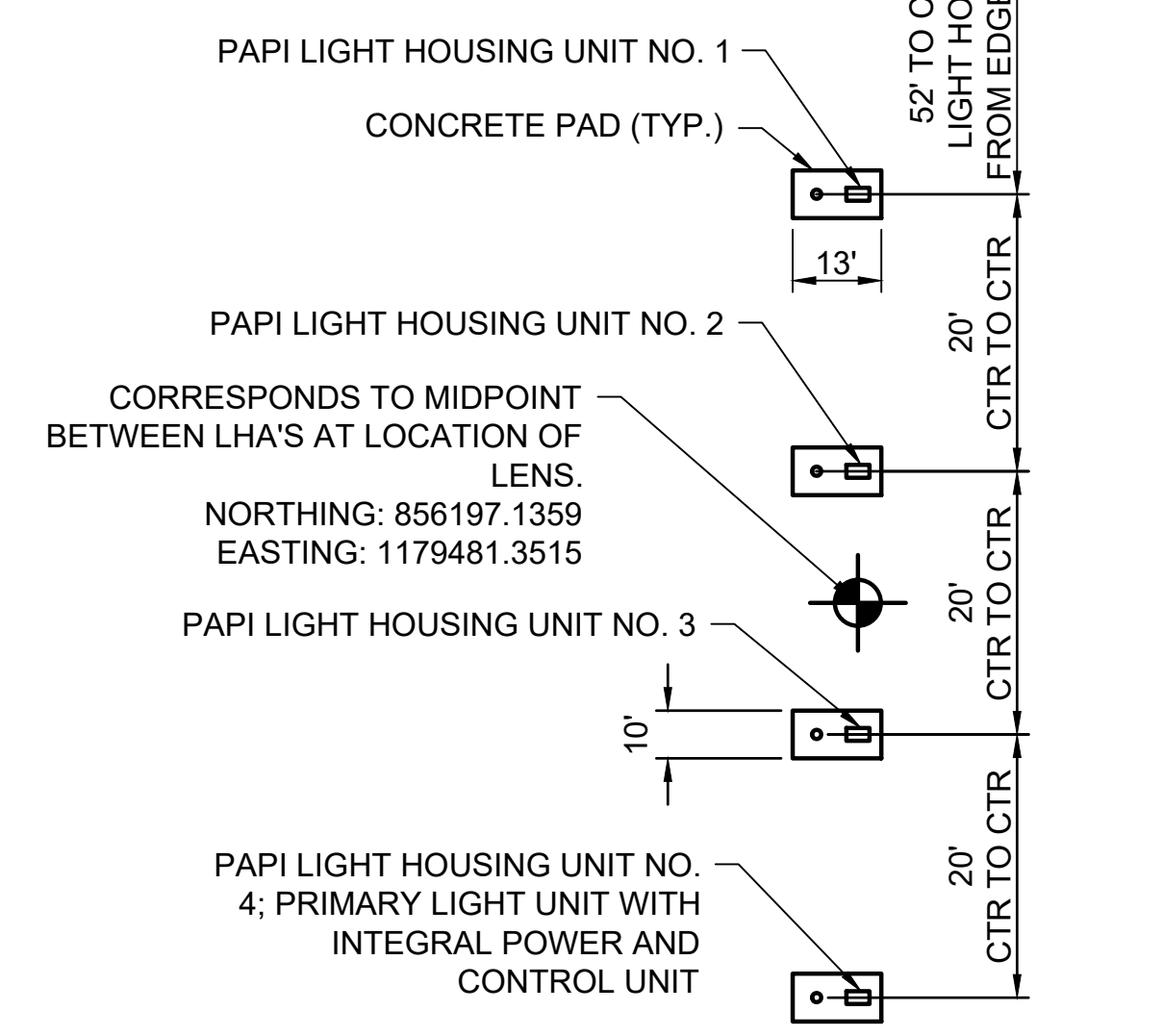
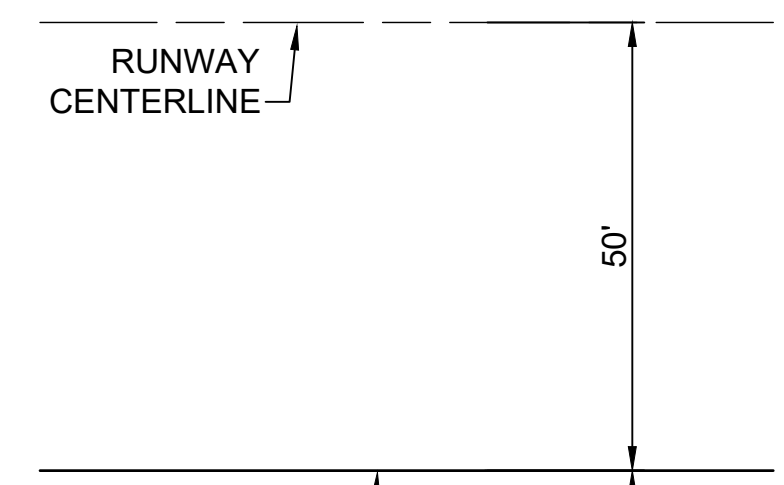
P.A.P.I. NOTES

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- ANY REQUIRED ELECTRICAL EQUIPMENT BESIDES THE FOUR PAPI LIGHT UNITS THAT IS NOT CONSIDERED BY THE FAA TO BE FIXED-BY-FUNCTION SHALL BE INSTALLED OUTSIDE OF THE RUNWAY OBJECT FREE AREA, WHICH IS 400' FROM THE RUNWAY CENTERLINE.
- THE PROPOSED CONCRETE FOUNDATION PIERS SHALL BE AS DETAILED ON THE "PAPI FOUNDATION DETAILS" SHEET.
- EACH PAPI UNIT SHALL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF THE RESPECTIVE SPECIFIED ELEVATION.
- THE INBOARD LIGHT UNIT MUST NOT BE LESS THAN 50 FT. FROM THE RUNWAY EDGE (MEASURED TO THE EDGE OF THE LIGHT UNIT) OR TO OTHER RUNWAYS OR TAXIWAYS, AND THE PAPI LIGHT UNITS SHALL HAVE A LATERAL SEPARATION OF 20 FT (MEASURED CENTER TO CENTER), IN ACCORDANCE WITH AC 150/5340-30J PART 7.5.4 PAPI, 7.5.4.7.2 SEPARATION BETWEEN LIGHT UNITS, AND FIGURE A-81. FOR THE L-880 AND L-881, THE DISTANCE BETWEEN LIGHT UNITS MAY NOT VARY BY MORE THAN PLUS OR MINUS 1 FOOT. SEE "RWY 14 PAPI LAYOUT DETAIL" FOR DIMENSIONS BETWEEN UNITS.
- THE PROPOSED PAPI SIGNAL SHALL BE VISIBLE FOR A 10 DEGREE ZONE ON EITHER SIDE OF THE RUNWAY CENTERLINE IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5340-30J, FIGURE A-81 PAPI OBSTACLE CLEARANCE SURFACE, AND FAA ORDER JO 6850.2C FIGURE 5-4 PAPI OBSTACLE CLEARANCE SURFACE. PER FAA AC 150/5345-28H, 3.2.4 LIGHT UNIT ADJUSTMENTS, PART 3.2.4.1.3 HORIZONTAL LIGHT BEAM COVERAGE, THE PAPI SHALL BE DESIGNED TO BE CAPABLE OF MODIFYING THE HORIZONTAL LIGHT BEAM COVERAGE OF THE PAPI FOR OBSTACLE AVOIDANCE IN THE APPROACH AREA AND LIGHT SIGNAL CLEARANCE SURFACE. THIS MAY BE ACCOMPLISHED USING BAFFLES (ALSO REFERRED TO AS BLANKING DEVICES).
- PER FAA 150/5340-30J, 7.5.4 PAPI, 7.5.4.11.2 LOCATION OF THE PCU, IT NOTES TO LOCATE THE PCU AS FAR FROM THE RUNWAY AS POSSIBLE FOR A MINIMUM OBSTRUCTION TO AIRCRAFT. IF THE PCU IS ESSENTIAL (INTERNAL) WITH A LIGHT UNIT, PLACE IT FARTHEST FROM THE RUNWAY. PER FAA ORDER 6850.2C, 507 PAPI ASSEMBLIES, 507.A POWER AND CONTROL ASSEMBLY, AN EXTERNAL PCA/PCU SERVING A LED PAPI MUST BE LOCATED OUTSIDE OF THE RUNWAY OBJECT FREE AREA (ROFA).



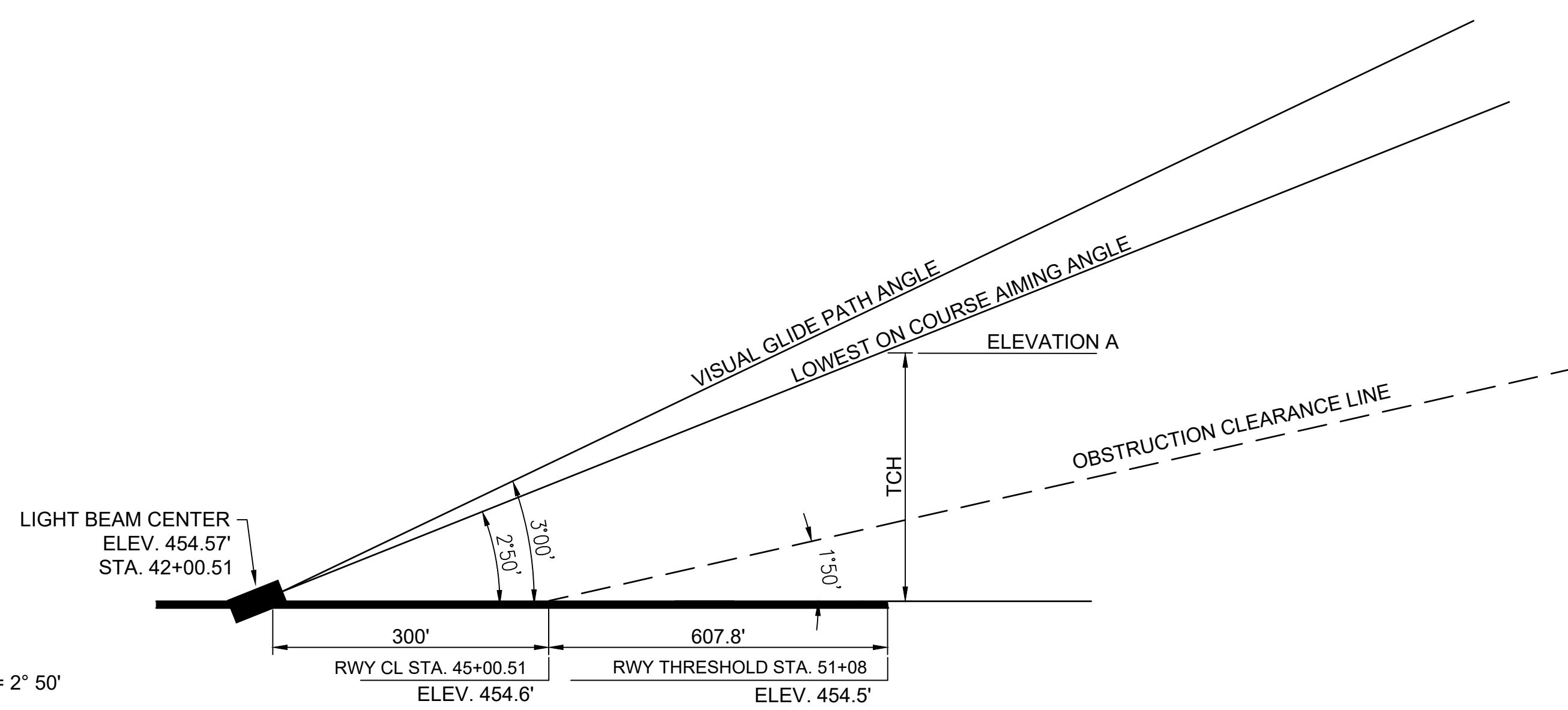
RUNWAY CENTERLINE PROFILE

PAPI DATA-RUNWAY END 27				
	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P.A.P.I. UNIT #3	P.A.P.I. UNIT #4
AIMING ANGLE	3° 30' (3.50°)	3° 10' (3.17°)	2° 50' (2.83°)	2° 30' (2.50°)
APPROXIMATE EXISTING GROUND ELEVATION	452.9'	452.5'	452.3'	452.1'
P.A.P.I. UNIT APERTURE ELEVATION	454.57'	454.57'	454.57'	454.57'



RWY 27 P.A.P.I. LAYOUT DETAIL

"NOT TO SCALE"



P.A.P.I. AIMING DIAGRAM 27 END

"NOT TO SCALE"

- NOTES:**
- TCH = 45'
 - GLIDE PATH ANGLE = 3° 00'
 - LOWEST ON-COURSE ANGLE = 2° 50'
 - OCS SLOPE = 1° 50'
 - ELEVATION A = 474.04'
 - ADJUSTED DISTANCE FROM THRESHOLD (d) = 907.8'
 - ADJUSTED RUNWAY REFERENCE POINT = 454.57'

FOR BID



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

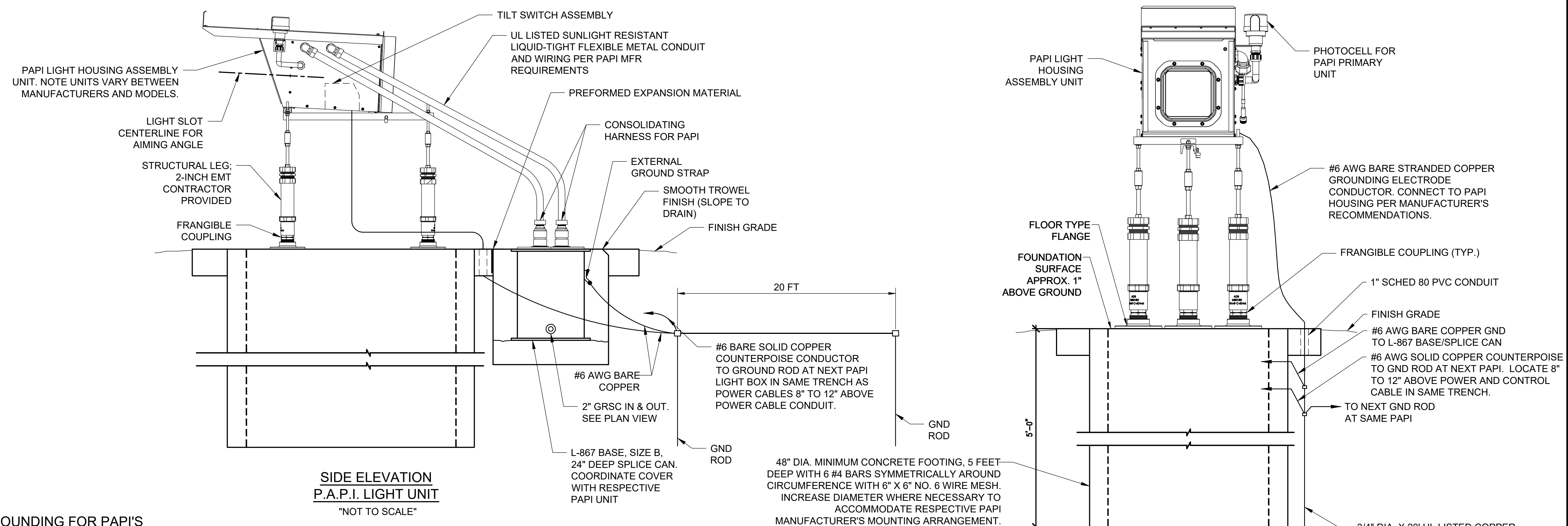
Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-501-DETL.DWG
DESIGN BY: KNL 8/3/2023
DRAWN BY: HLE 8/3/2023
REVIEWED BY: KNL 9/15/2023

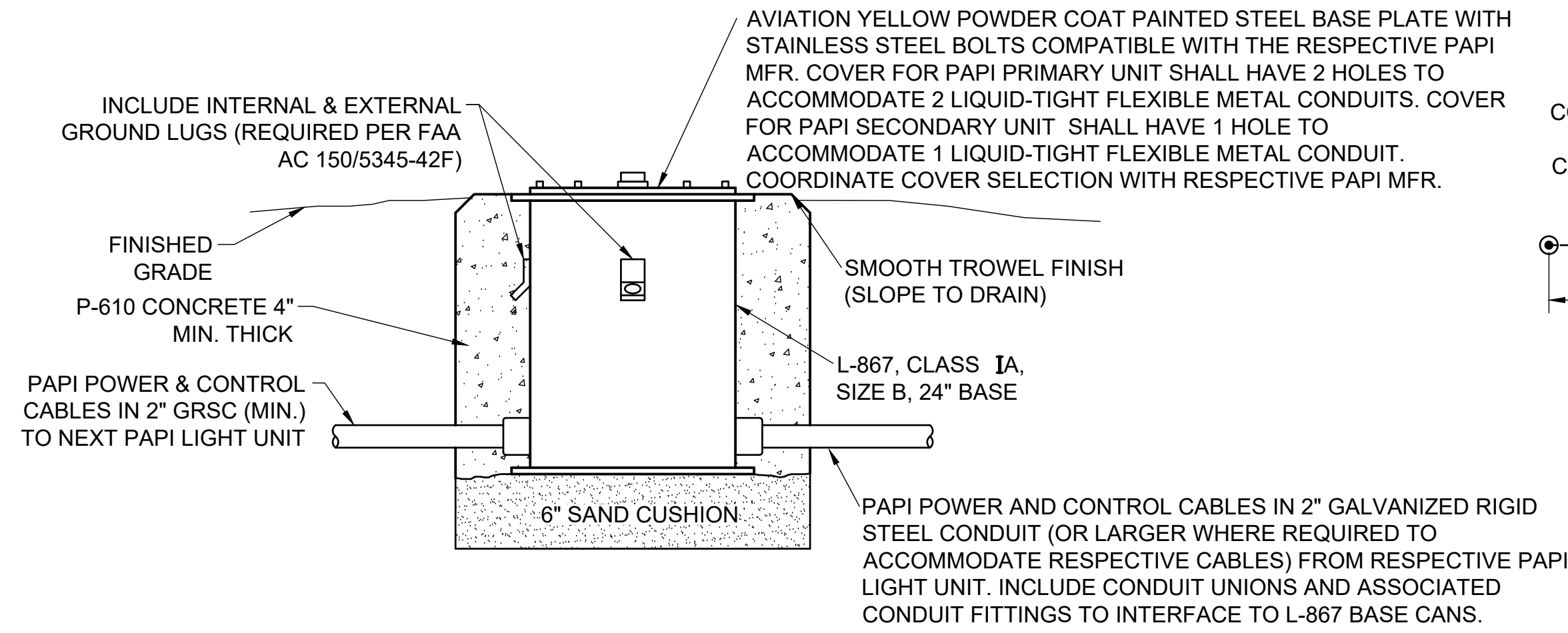
SHEET TITLE

PAPI FOUNDATION DETAILS



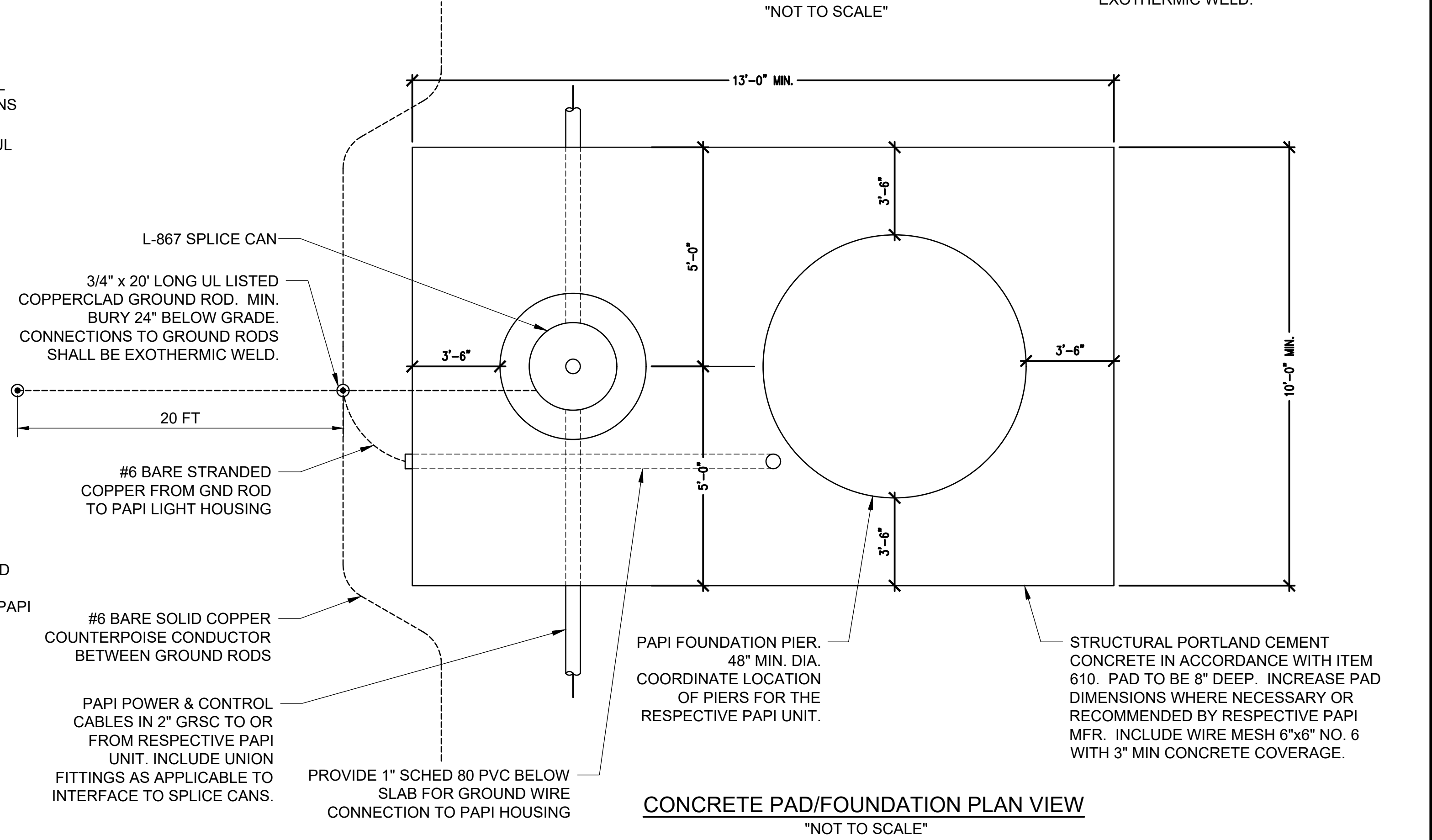
GROUNDING FOR PAPI'S

- GROUNDING FOR PAPI'S SHALL CONFORM TO THE RESPECTIVE PAPI MANUFACTURER'S INSTALLATION INSTRUCTIONS. AS DETAILED ON THE PLANS AND AS SPECIFIED HEREIN. THE POWER CIRCUIT TO EACH PAPI UNIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE OF THE SAME SIZE AND TYPE AS THE PHASE CONDUCTORS. FURNISH AND INSTALL TWO 3/4-INCH DIAMETER BY 20-FOOT LONG COPPER CLAD GROUND RODS AT EACH PAPI LIGHTING UNIT SPACED NOT LESS THAN ONE GND ROD LENGTH APART. BOND EACH PAPI UNIT AND THE RESPECTIVE L-867 SPLICE CAN TO THE RESPECTIVE GROUND ROD WITH A #6 AWG STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR. TOP OF GROUND RODS SHALL BE BURIED APPROXIMATELY 24 INCHES BELOW GRADE. ALL CONNECTIONS TO GROUND RODS SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS; CADWELD BY ERICO PRODUCTS, THERMOWELD BY CONTINENTAL INDUSTRIES, INC., OR ULTRAWELD BY HARGER LIGHTNING PROTECTION GROUNDING EQUIPMENT, OR APPROVED EQUAL. CONNECTIONS TO L-867 SPLICE CANS SHALL BE WITH UL LISTED GROUNDING CONNECTORS SUITABLE FOR USE IN DIRECT BURIAL OR CONCRETE ENCASUREMENT APPLICATIONS. CONNECTIONS TO PAPI UNIT FRAME SHALL BE AS RECOMMENDED BY THE MANUFACTURER OR WITH A UL LISTED GROUNDING CONNECTOR. ALL GROUND RODS ASSOCIATED WITH THE COMPLETE PAPI INSTALLATION SHALL BE BONDED TOGETHER WITH A #6 AWG SOLID COPPER COUNTERPOISE CONDUCTOR. THIS COUNTERPOISE CONDUCTOR SHALL BE INSTALLED IN THE SAME TRENCH LOCATED 10 INCHES ABOVE THE POWER AND CONTROL CONDUCTORS, BETWEEN EACH RESPECTIVE PAPI UNIT.



NOTE:
FOR THE PURPOSE OF ENHANCING SAFETY, EACH BASE MUST HAVE INSTALLED, BY THE MANUFACTURER, AND INTERNAL AND EXTERNAL GROUND STRAP THAT IS AVAILABLE FOR THE PURPOSE OF ATTACHING A GROUND LUG THAT IS CONNECTED TO AN EARTH GROUND OR A SAFETY GROUND CONDUCTOR INSTALLED WITH THE RESPECTIVE CIRCUIT. FOR AIRPORT PROJECTS RECEIVING FEDERAL FUNDS THIS REQUIREMENT IS MANDATORY PER FAA AC 150/5345-42H (AND/OR OTHER CURRENT ISSUES IN EFFECT).

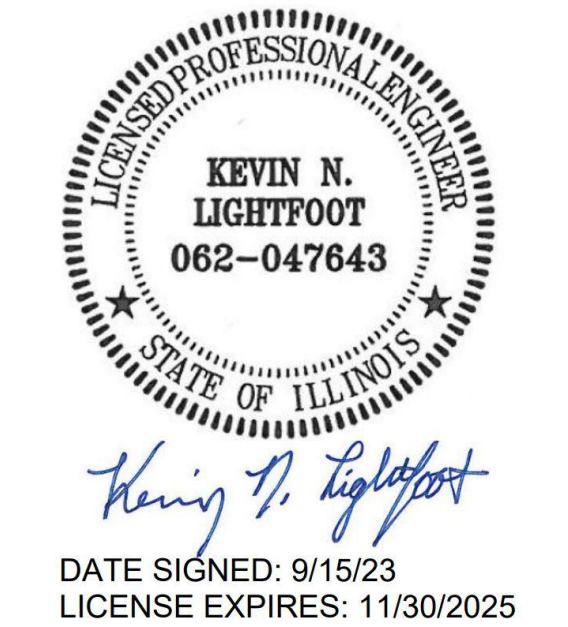
PAPI L-867 SPLICE CAN DETAIL
(NOT TO SCALE)



CONCRETE PAD/FOUNDATION PLAN VIEW
(NOT TO SCALE)

SEP 22, 2023 9:25 AM ENG010909 1:23:08S23A0038D\CRAWFORD\AIRPORT\SHEETE-501-DETL.DWG

FOR BID



DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

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CAD FILE: E-502-DETL.DWG

DESIGN BY: KNL 8/3/2023

DRAWN BY: HLE 8/3/2023

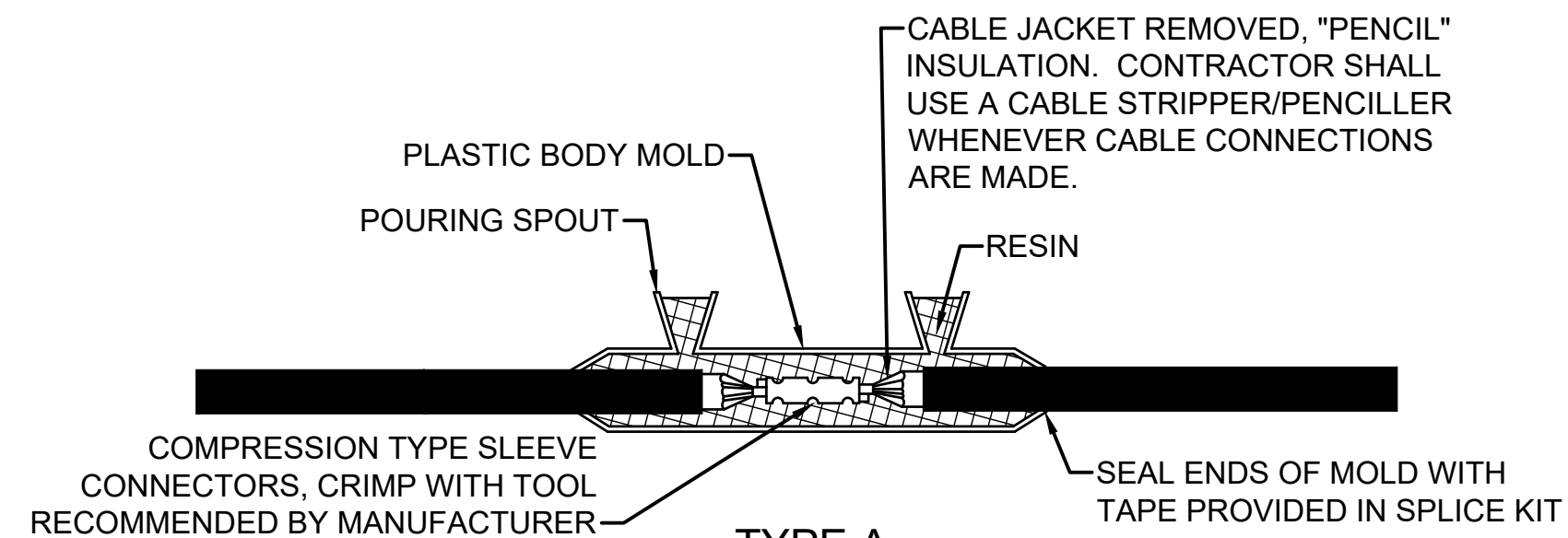
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

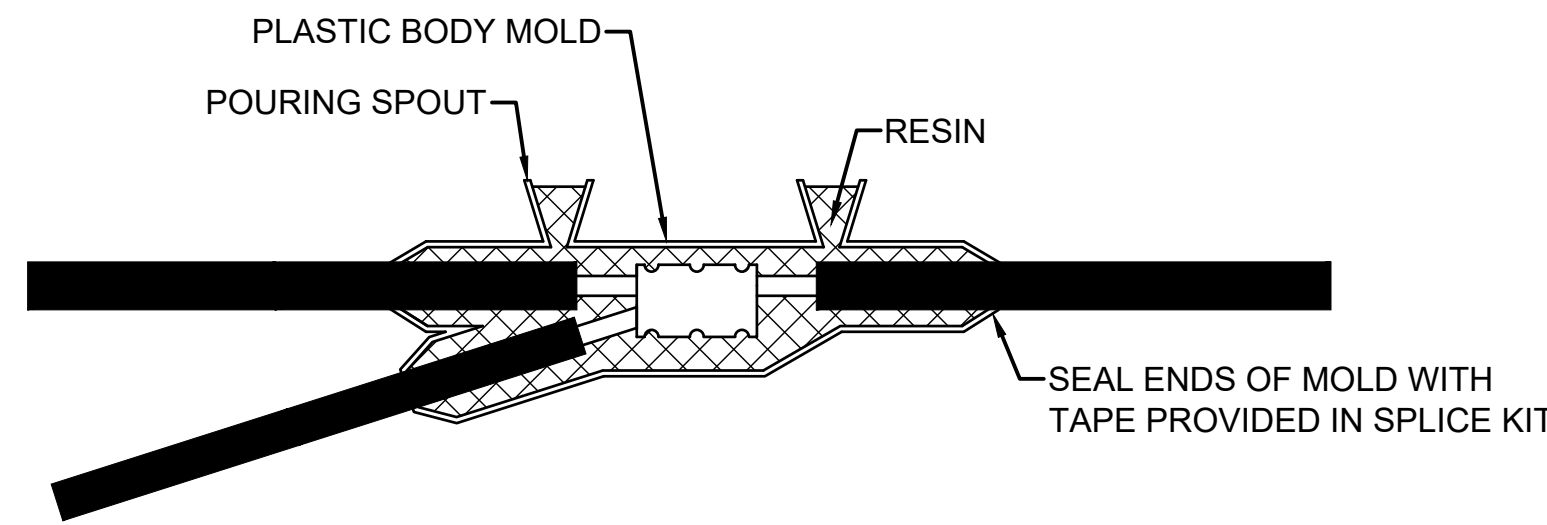
AIRFIELD LIGHTING CABLE SPLICE DETAILS

NOTES:

- SPLICE DETAILS ARE PROVIDED FOR NEW WORK AND TO ASSIST IN REPAIRS OF ACCIDENTAL OR UNEXPECTED INTERRUPTIONS AND/OR CUTS TO AIRFIELD LIGHTING CABLES.
- KEEP ON HAND A MINIMUM OF 10 SETS OF SPLICE KITS FOR L-823 CONNECTORS AND A MINIMUM OF 10 SETS OF TYPE A LOW VOLTAGE SPLICE KITS TO ACCOMMODATE REPAIRS.
- EVERY AIRFIELD LIGHTING CABLE SPLICER SHALL BE QUALIFIED IN MAKING CABLE SPLICES AND TERMINATIONS ON CABLES RATED AT AND/OR ABOVE 5,000 VOLTS AC TO COMPLY WITH THE REQUIREMENTS OF FAA AC 150/5370-10G ITEM L-108.
- INSIDE DIAMETER OF RESPECTIVE CABLE CONNECTOR SHALL PROPERLY MATCH OUTSIDE DIAMETER OF CABLE.
- WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.
- WRAP ALL PRIMARY AND SECONDARY POWER CONNECTIONS WITH SUFFICIENT LAYERS OF HIGH VOLTAGE ELECTRICAL INSULATING TAPE (RUBBER SPLICING TAPE SUITABLE FOR PRIMARY ELECTRICAL INSULATION FOR SPLICING CABLE FROM 600 VOLTS TO 69,000 VOLTS) AND COVER WITH VINYL ELECTRICAL TAPE (ALL-WEATHER VINYL INSULATING TAPE SUITABLE FOR PROTECTIVE JACKETING FOR HIGH-VOLTAGE CABLE SPLICES AND REPAIRS) FOR FULL VALUE OF CABLE INSULATION VOLTAGE. PER ILLINOIS STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS ITEM 108, ITEM 125, AND FAA AC 150/5370-10H ITEM L-108 AND L-125, HIGH VOLTAGE ELECTRICAL INSULATING TAPE SHALL BE 3M SCOTCH 130C LINERLESS RUBBER SPLICING TAPE (2 INCHES WIDE) OR APPROVED EQUIVALENT, AND VINYL ELECTRICAL TAPE SHALL BE 3M SCOTCH 88 (1.5 INCHES WIDE) OR APPROVED EQUIVALENT. TAPES MUST BE RATED SUITABLE FOR THE APPLICATION.
- PROVIDE CABLE TAGS TO IDENTIFY THE RESPECTIVE CIRCUITS ALL POINTS OF ACCESS INCLUDING L-867 BASES, L-868 BASES, HANDHOLES, MANHOLES, JUNCTION BOXES, AND WIREWAYS.
- CONNECTION OF CONDUCTORS MUST BE MADE BY USING CRIMP CONNECTORS AND A CRIMPING TOOL APPROVED BY THE CONNECTOR/LUG MANUFACTURER. THE TOOL MUST PRODUCE A COMPLETE CRIMP BEFORE IT CAN BE REMOVED. FOR THE L-823 CONNECTORS, THE CRIMPING TOOL USED MUST BE LISTED BY THE L-823 KIT MANUFACTURER. MAKE THE NUMBER AND TYPE OF CRIMPS PER THE KIT MANUFACTURER'S INSTRUCTIONS.

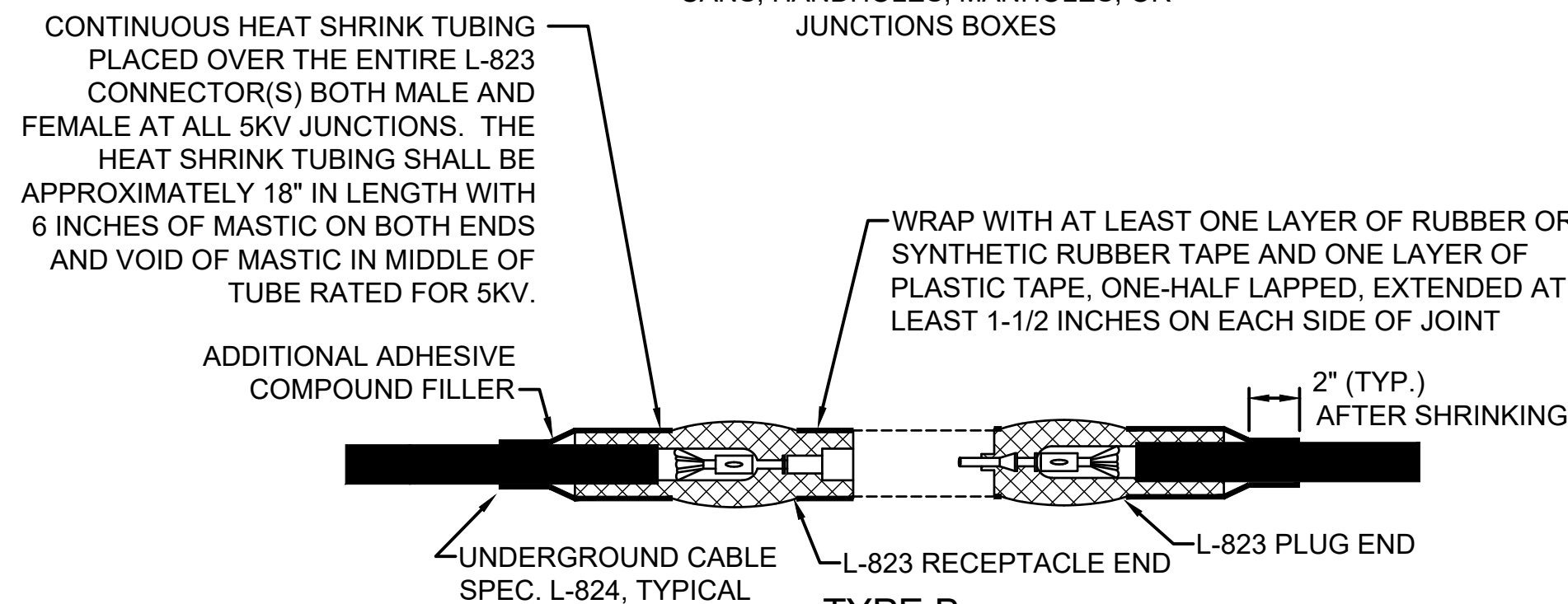


TYPE A
FOR SPLICES IN LOW VOLTAGE CABLE (600V) HOMERUNS FOR EXTENSIONS TO EXISTING LOW VOLTAGE CABLES ONLY. TYPE A SPLICES SHALL BE MADE IN SPLICE CANS, HANDHOLES, MANHOLES, OR JUNCTION BOXES

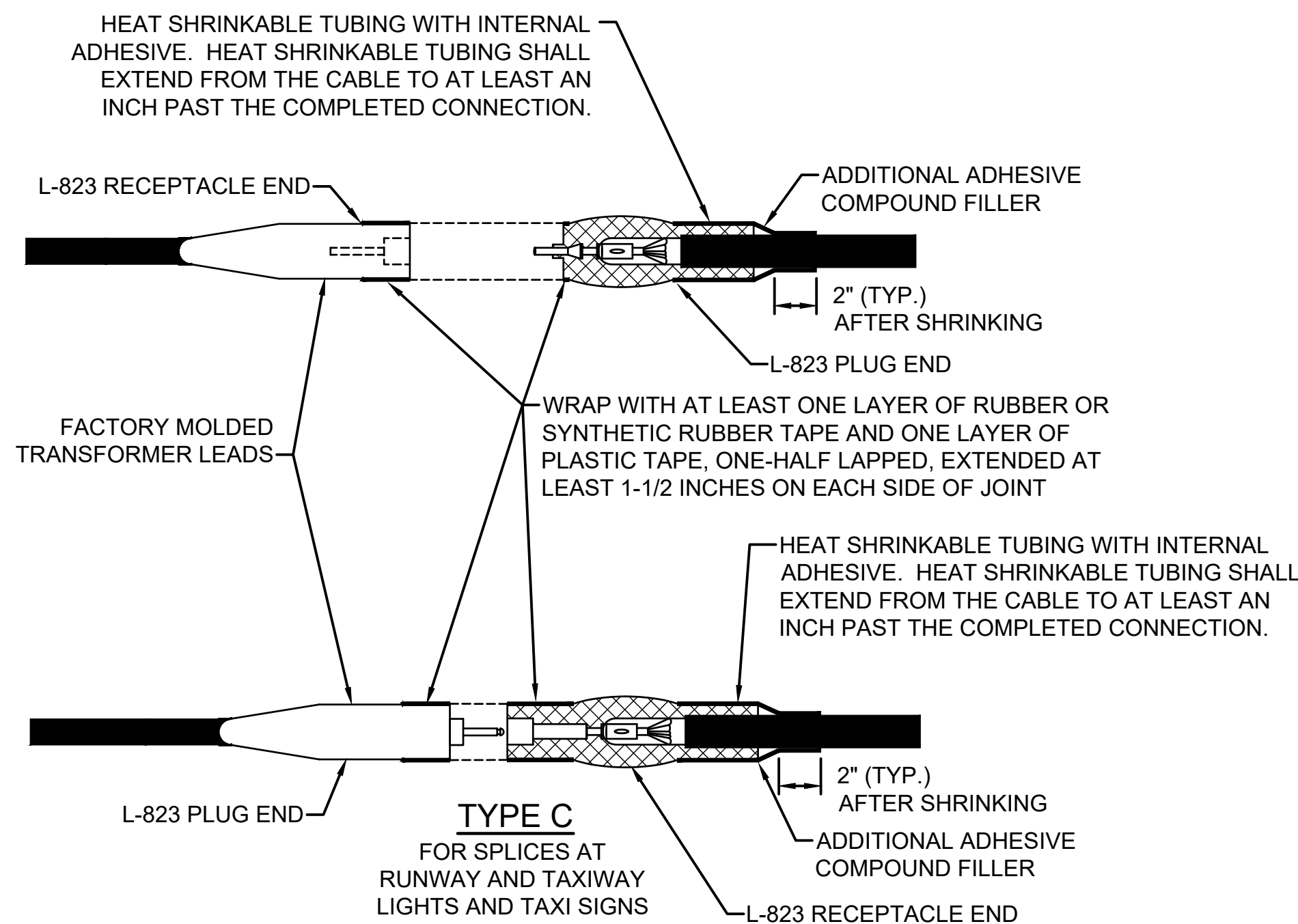


LOW VOLTAGE UNDERGROUND TAP SPLICE

FOR TAP SPLICES IN LOW VOLTAGE (600V) CABLE. SPLICES SHALL BE RATED AND LISTED SUITABLE FOR DIRECT BURIAL LOCATIONS. FOR SPLICES UP TO #2 AWG CONDUCTOR, SPLICES SHALL BE WYE RESIN TYPE POWER CABLE TAP SPLICE KIT SUITABLE FOR THE RESPECTIVE CABLES AND RESPECTIVE APPLICATION.

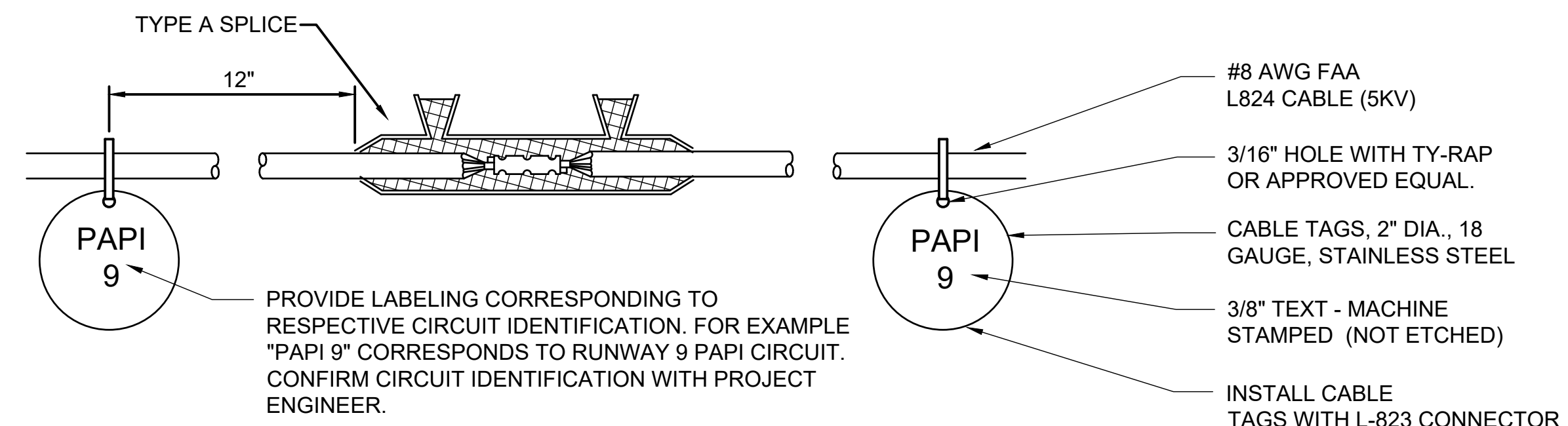


TYPE B
FOR SPLICES AT JUNCTION OF HOMERUN WITH LOOP CIRCUIT AND FOR SPLICES IN HOMERUNS TO EXISTING CABLES



NOTES:
INSIDE DIAMETER OF CONNECTOR SHALL PROPERLY MATCH THE OUTSIDE DIAMETER OF CABLE.

CABLE SPLICES



- CONTRACTOR SHALL PROVIDE CABLE CIRCUIT IDENTIFICATION MARKERS ATTACHED TO BOTH SIDES OF EACH CABLE CONNECTION. PROVIDE TWO CABLE TAGS FOR CABLES IN MANHOLES; ONE AT ENTRY TO MANHOLE AND SECOND ONE AT EXIT FROM MANHOLE.
- CABLE IDENTIFICATION TAGS SHALL BE STAINLESS STEEL OR BRASS.
- THE CABLE SHALL THOROUGHLY BE CLEANED PRIOR TO THE INSTALLATION OF THE L-823 CONNECTOR KIT.
- ATTACH EACH CABLE TIE ENOUGH TO HOLD IN PLACE WITHOUT COMPRESSING EDGE OF CABLE TAG INTO CONDUCTOR. TRIM OFF EXCESS CABLE TIE.
- CABLE TAGS SHALL BE PROVIDED AT ALL POINTS OF ACCESS INCLUDING L-867 BASES, L-868 BASES, HANDHOLES, MANHOLES, JUNCTION BOXES, AND WIREWAYS.
- CABLE TAGS SHALL BE LABELED AS FOLLOWS FOR RESPECTIVE AIRFIELD LIGHTING/NAVAID CIRCUITS.
RUNWAY 9 PAPI CIRCUIT: PAPI 9
RUNWAY 27 PAPI CIRCUIT: PAPI 27

CABLE TAG DETAIL
"NOT TO SCALE"



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

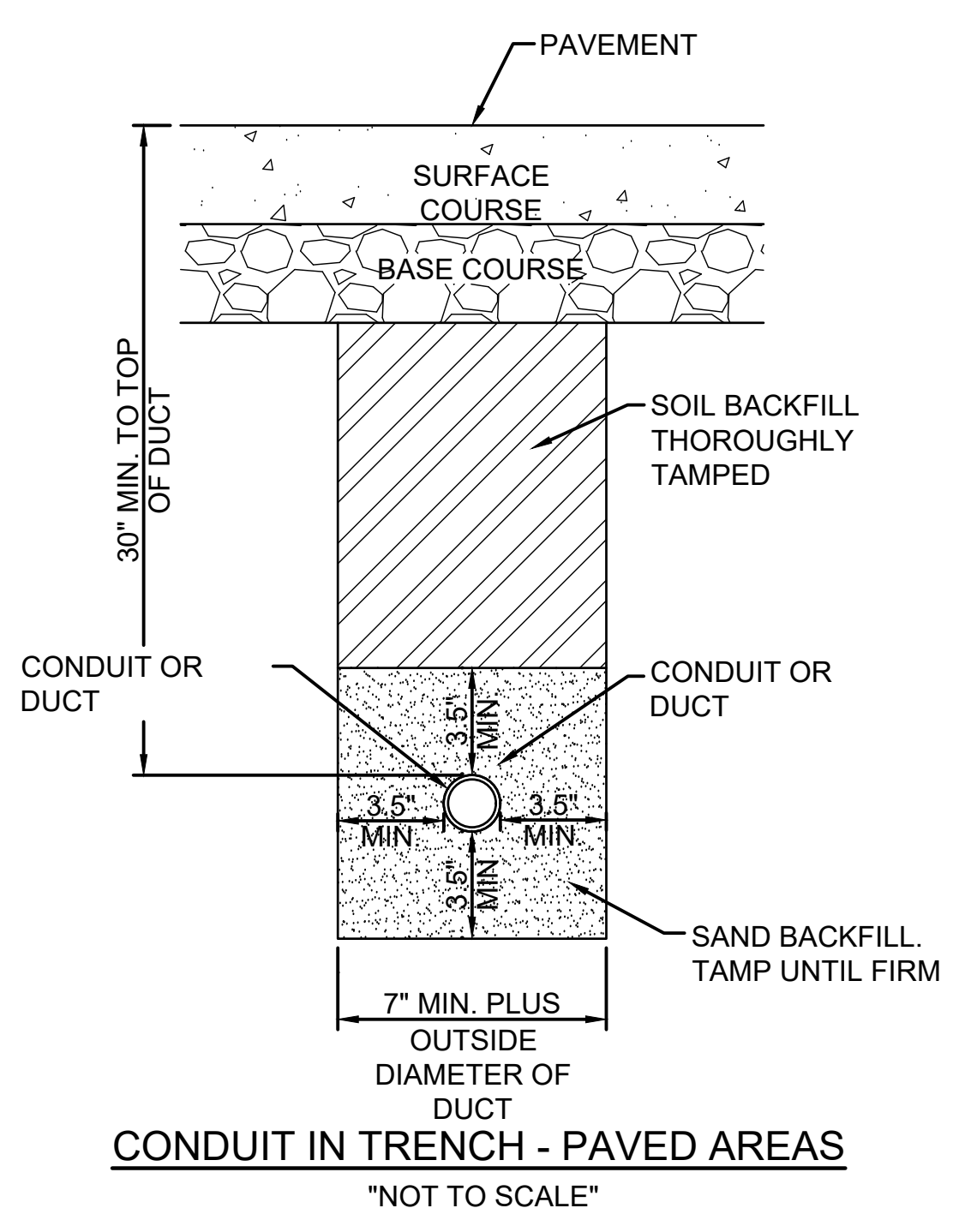
Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

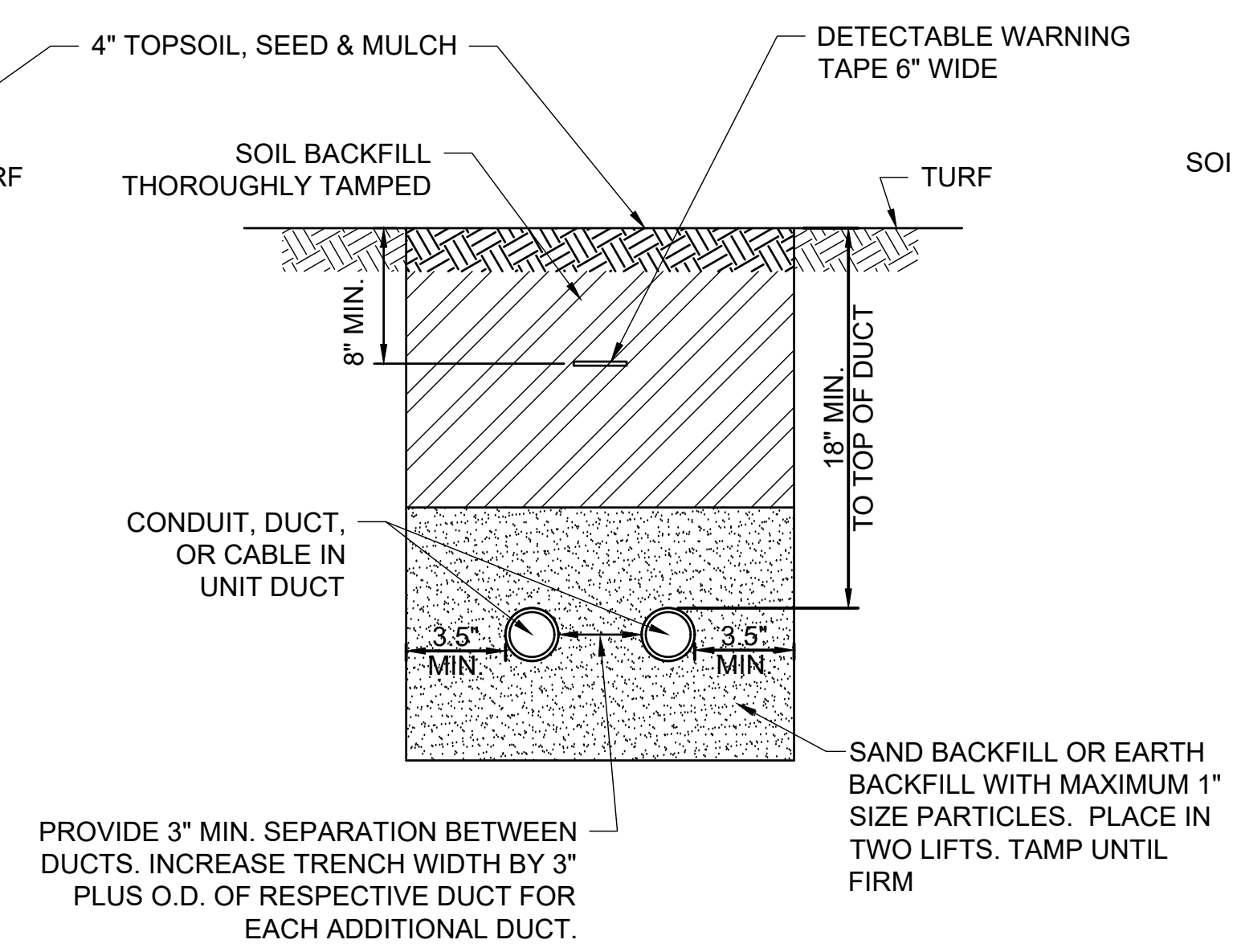
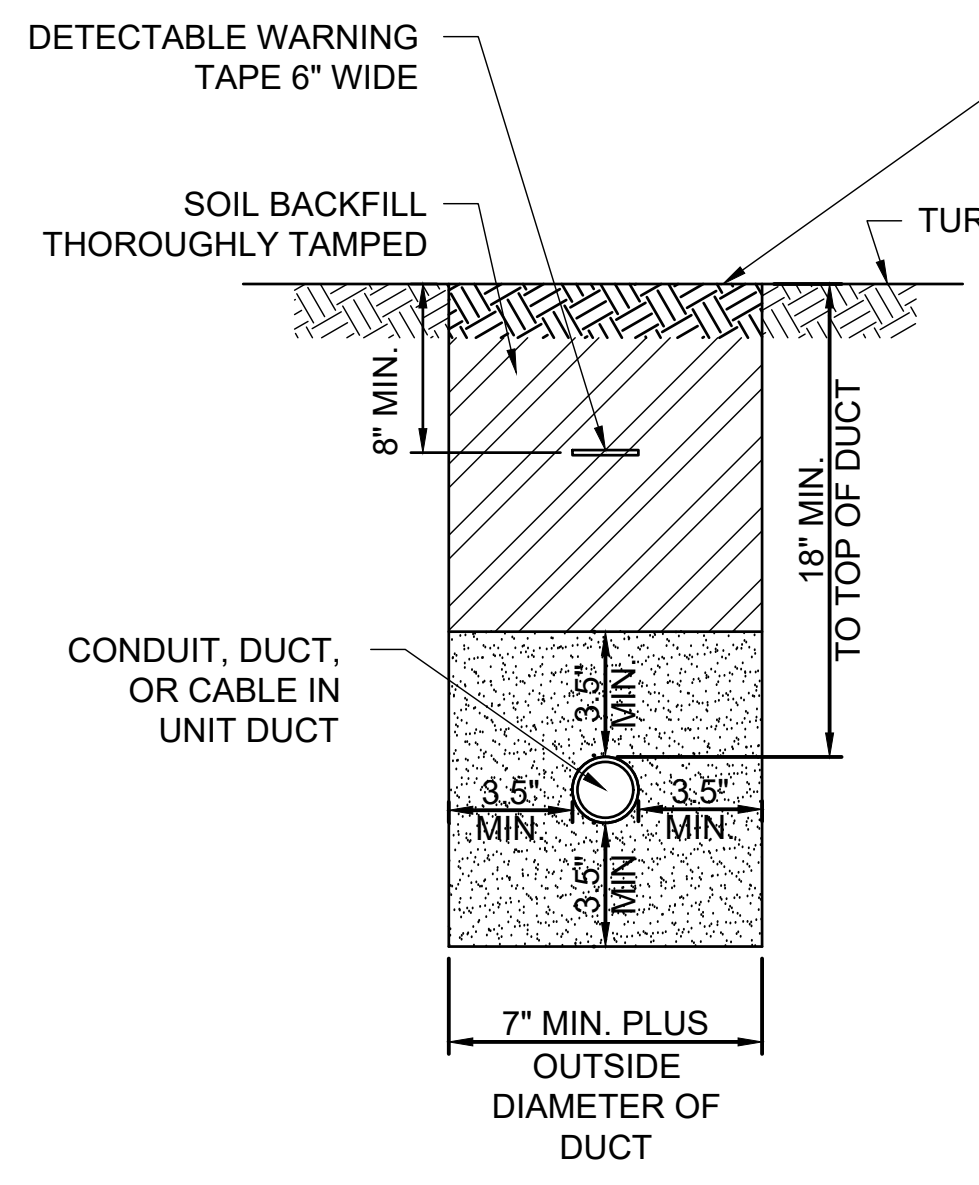
ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-503-DETL.DWG
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DRAWN BY: HLE 8/3/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

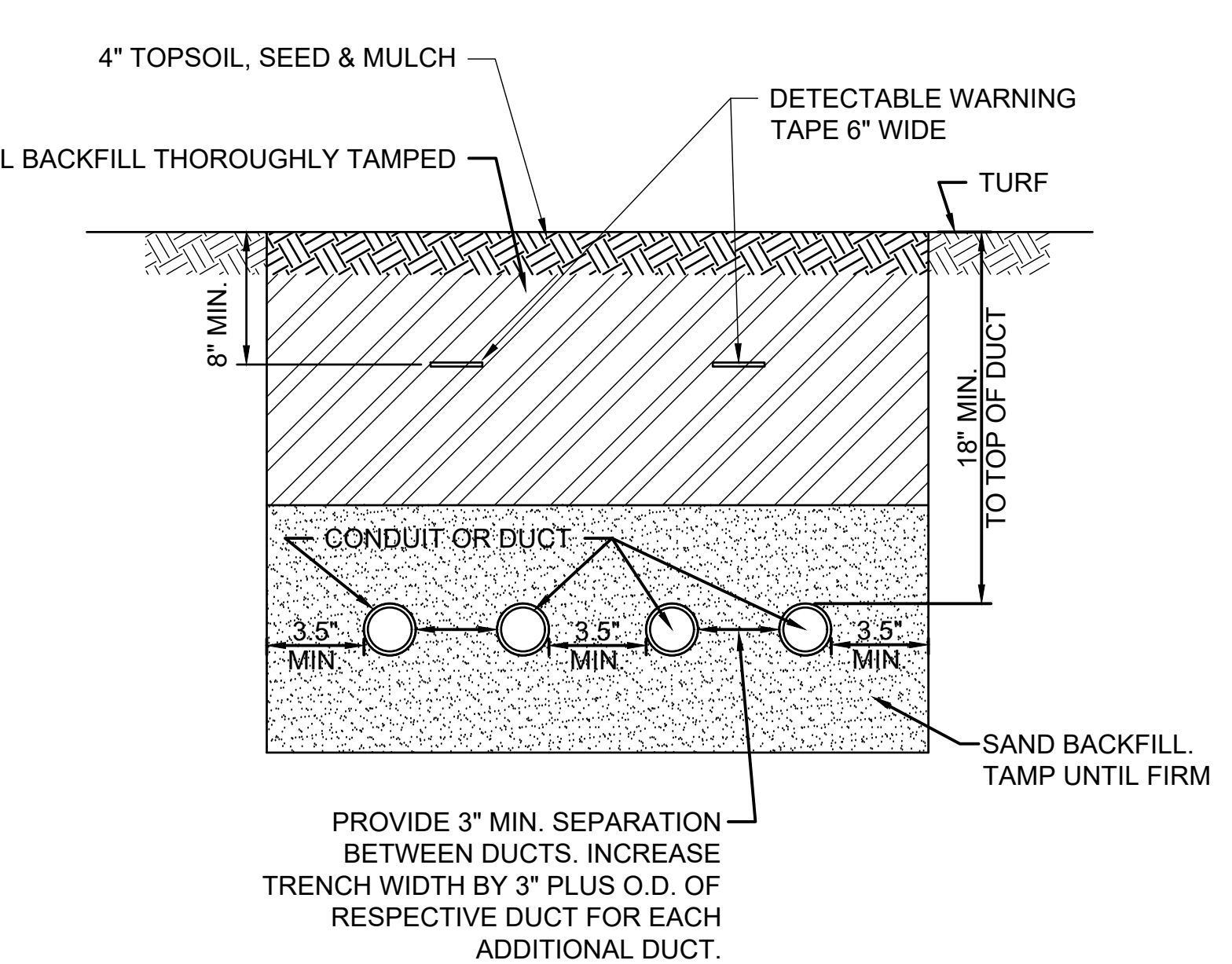
CONDUIT TRENCH DETAIL



CONDUIT IN TRENCH - PAVED AREAS
"NOT TO SCALE"



CONDUIT IN TRENCH - NON-PAVEMENT AREAS
"NOT TO SCALE"



PROVIDE 3" MIN. SEPARATION BETWEEN DUCTS. INCREASE TRENCH WIDTH BY 3" PLUS O.D. OF RESPECTIVE DUCT FOR EACH ADDITIONAL DUCT.

NOTES:

- DIMENSIONS FOR COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
- TRENCHES WITH MORE THAN TWO DUCTS OR CABLE IN UNIT DUCTS SHALL BE INCREASED 3" IN WIDTH PLUS DIAMETER OF RESPECTIVE DUCT FOR EACH ADDITIONAL CONDUIT, DUCT, OR CABLE IN UNIT DUCT; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.
- DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS. MINIMUM COVER REQUIREMENTS FOR CABLES AND DUCTS AT AIRPORT RUNWAYS AND ADJACENT AREAS WHERE TRESPASSING IS PROHIBITED IS 18 INCHES PER NEC 300.5 AND 300.50. MINIMUM COVER REQUIREMENTS FOR DUCTS CONTAINING NAVAID FEEDER CIRCUITS SHALL BE 24". MINIMUM COVER REQUIREMENTS FOR DUCTS LOCATED BELOW PAVEMENT OR ROADWAYS IS 30". MINIMUM COVER REQUIREMENTS FOR DUCTS LOCATED IN AREAS SUBJECT TO FARMING IS 42". MINIMUM COVER FOR DUCTS CONTAINING SECONDARY ELECTRIC SERVICE CONDUCTORS SHALL BE 36" OR AS REQUIRED BY THE SERVING ELECTRIC UTILITY COMPANY. ADJUST/INCREASE BURIAL DEPTHS TO ACCOMMODATE SITE CONDITIONS, DRAINAGE AND/OR OBSTRUCTIONS. COVER IS DEFINED AS THE SHORTEST DISTANCE IN INCHES MEASURED BETWEEN A POINT ON THE TOP SURFACE OF ANY DIRECT-BURIED CONDUCTOR, CABLE, CONDUIT, OR OTHER RACEWAY AND THE TOP SURFACE OF FINISHED GRADE, CONCRETE OR SIMILAR COVER.
- HIGH-VOLTAGE CIRCUIT WIRING (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW-VOLTAGE CIRCUIT WIRING (RATED 600 VOLTS AND BELOW) SHALL MAINTAIN SEPARATION FROM EACH OTHER. HIGH-VOLTAGE WIRING AND LOW-VOLTAGE WIRING SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, RACEWAY, HANDHOLE, OR JUNCTION BOX. CORRECTIVE WORK WILL BE REQUIRED TO SEPARATE HIGH VOLTAGE SERIES CIRCUIT CONDUCTORS FROM LOW VOLTAGE CONDUCTORS WHERE THEY ARE INSTALLED IN THE SAME RACEWAY.
- SERVICE CONDUCTORS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, OR HANDHOLE WITH FEEDER CIRCUITS, BRANCH CIRCUITS OR CONTROL CIRCUITS.
- COMMUNICATION CIRCUITS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, OR HANDHOLE WITH POWER CIRCUITS.
- HOME RUN CABLES FOR A RESPECTIVE CIRCUIT SHALL BE INSTALLED IN THE SAME RACEWAY OR DUCT.
- COORDINATE DUCT INTERFACE TO MANHOLES AND HANDHOLES. FIELD CUT OPENINGS FOR CONDUITS AND DUCTS TO INTERFACE TO MANHOLES AND/OR HANDHOLES. CUT WALL OF RESPECTIVE HANDHOLE OR MANHOLE WITH A TOOL DESIGNED FOR MATERIAL TO BE CUT. SIZE HOLES FOR RESPECTIVE DUCTS, CONDUITS, AND TERMINATION FITTINGS AND SEAL AROUND PENETRATIONS. ALL CORING, INTERFACE, CUTTING, AND SEALING WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT INSTALLATION AND/OR RESPECTIVE HANDHOLE/MANHOLE INSTALLATION. PROVIDE BUSHINGS OR BELLS AT CONDUIT TERMINATIONS IN ELECTRICAL HANDHOLES OR MANHOLES.
- ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.
- ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, INTERTEK TESTING SERVICES VERIFICATION/ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.

- CONTRACTOR SHALL COORDINATE WORK AND ANY POWER OUTAGES AND/OR SHUT DOWN OF SYSTEMS WITH THE RESPECTIVE FACILITY OWNER PERSONNEL AND THE AIRPORT MANAGER/DIRECTOR. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- THE LOCATION, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS IS NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION PHONE: 1-800-892-0123. CONTACT THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVEGROUND UTILITIES.
- ADJUSTMENTS TO DUCT BANK ROUTES MIGHT BE REQUIRED TO ACCOMMODATE EXISTING SITE CONDITIONS AND UNDERGROUND LINES AND UTILITIES. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL COORDINATE DUCT ROUTE ADJUSTMENTS WITH THE RESIDENT PROJECT REPRESENTATIVE AND THE AIRPORT MANAGER.
- CONTRACTOR SHALL LOCATE AND MARK ALL EXISTING CABLES, LINES, OR UTILITIES WITHIN 10 FT OF PROPOSED EXCAVATING/TRENCHING AREA. ANY CABLES, LINES, AND UTILITIES FOUND INTERFERING WITH PROPOSED EXCAVATION OR CABLE/TRENCHING SHALL BE HAND DUG AND EXPOSED. ANY DAMAGED CABLES OR OTHER UTILITIES SHALL BE IMMEDIATELY REPAIRED TO THE SATISFACTION OF THE RESPECTIVE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE. THE RESIDENT ENGINEER/RESIDENT TECHNICIAN AND OWNER SHALL BE NOTIFIED IMMEDIATELY IF ANY CABLES OR OTHER UTILITIES ARE DAMAGED.

- PAYMENT FOR LOCATING AND MARKING UNDERGROUND UTILITIES AND CABLES WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT INSTALLATION.
- THE CONTRACTOR WILL DETERMINE IF THERE IS A CONFLICT BETWEEN THE INSTALLATION OF THE PROPOSED ELECTRICAL DUCTS AND ANY EXISTING UTILITIES. THE CONTRACTOR WILL MAKE ALL NECESSARY ADJUSTMENTS IN DEPTH OF INSTALLATION TO AVOID ANY AND ALL PROPOSED UNDERGROUND IMPROVEMENTS
- CONDUITS FOR DIRECT BURIAL OR CONCRETE ENCASED DUCT BANK SHALL BE SCHEDULE 40 (MINIMUM) PVC CONDUIT, UL-LISTED, RATED FOR 90°C CABLE-CONFORMING TO NEMA STANDARD TC-2 AND UL 651, LISTED SUITABLE FOR UNDERGROUND USE EITHER DIRECT-BURIED OR ENCASED IN CONCRETE, OR SCHEDULE 40 (MINIMUM) HDPE CONDUIT, UL LISTED, CONFORMING TO NEMA STANDARD TC-7 AND UL 651B AND LISTED SUITABLE FOR UNDERGROUND USE; EITHER DIRECT BURY OR ENCASED IN CONCRETE. HEAVIER WALL CONDUITS SHALL BE FURNISHED FOR RESPECTIVE APPLICATIONS WHERE DETAILED HEREIN.
- CONDUITS FOR DIRECTIONAL BORING SHALL BE SCHEDULE 40 PVC CONDUIT OR SCHEDULE 80 PVC CONDUIT, UL-LISTED, RATED FOR 90°C CABLE-CONFORMING TO NEMA STANDARD TC-2 AND UL 651 AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION. SCHEDULE 80 HDPE CONDUIT, UL-LISTED, CONFORMING TO NEMA STANDARD TC-7 AND UL 651B AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION, OR WALL TYPE MINIMUM SDR 11 HDPE CONDUIT MANUFACTURED IN ACCORDANCE WITH ASTM D-3350 (SPECIFICATION OF POLYETHYLENE PLASTICS PIPE AND FITTINGS MATERIALS) AND ASTM F2160 (STANDARD SPECIFICATION FOR SOLID WALL, HIGH-DENSITY POLYETHYLENE CONDUIT BASED ON CONTROLLED OUTSIDE DIAMETER), AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION. PER NEC 300.5 (K), RACEWAYS INSTALLED USING DIRECTIONAL BORING EQUIPMENT SHALL BE APPROVED FOR THE PURPOSE.
- UNDERGROUND DUCTS INSTALLED BY DIRECTIONAL-BORING METHOD SHALL BE INSTALLED IN A MANNER THAT WILL NOT DAMAGE ANY EXISTING UNDERGROUND UTILITIES, AND SHALL NOT DISTURB OR DAMAGE THE RESPECTIVE PAVEMENT OR ROADWAY SURFACE. DUCTS SHALL BE DIRECTIONAL-BORED AT THE LOCATIONS SHOWN ON THE CONSTRUCTION PLANS. THE DUCTS WILL BE BORED AT A MINIMUM DEPTH OF 42 IN. BELOW THE RESPECTIVE PAVEMENT IT IS BEING BORED UNDER.
- A PULL WIRE SHALL BE INSTALLED IN EACH CONDUIT OR DUCT TO BE LEFT VACANT.
- CONTRACTOR SHALL COORDINATE DUCT MARKING WITH AIRPORT.
- ALL POWER AND CONTROL CABLES IN HANDHOLES, MANHOLES, AND JUNCTION BOXES SHALL BE TAGGED TO IDENTIFY THE RESPECTIVE CABLE. A MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A MANHOLE; ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT. CABLE TAGS SHALL BE STAMPED BRASS TAGS OR OTHER WEATHERPROOF/WATERPROOF CORROSION RESISTANT MATERIAL.

FOR BID

SEP 22, 2023 9:25 AM ENGEL01600
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Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

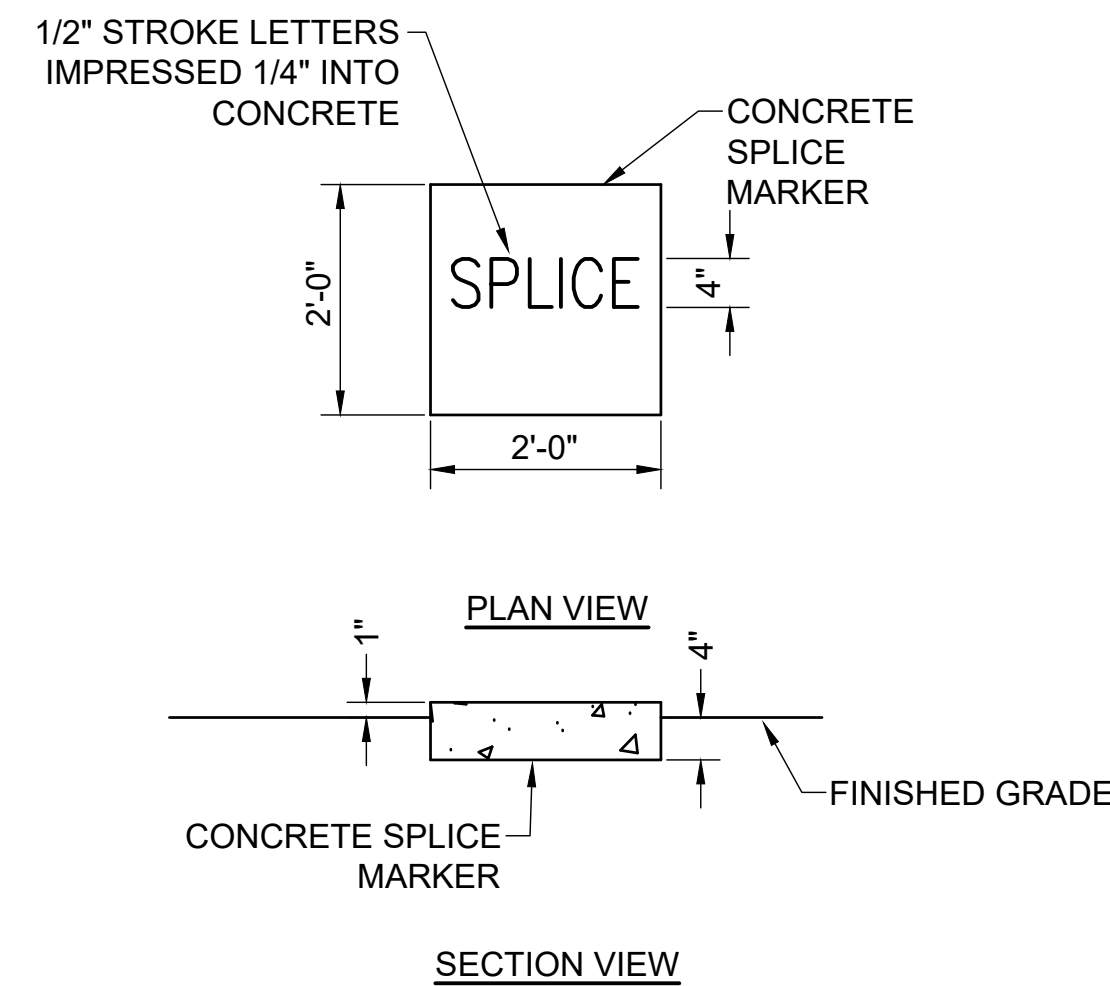
Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

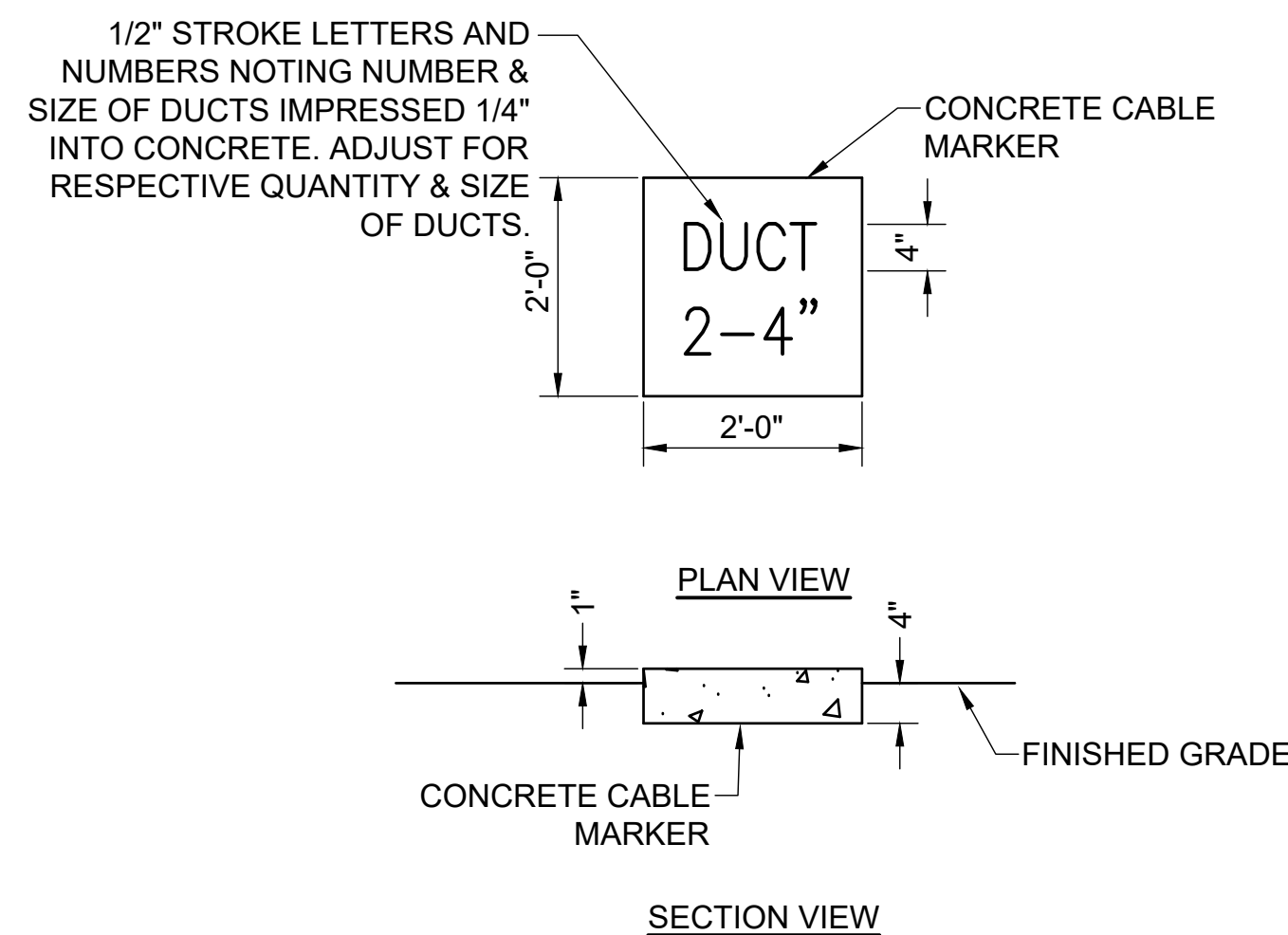
ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-504-DETL.DWG
DESIGN BY: KNL 8/3/2023
DRAWN BY: HLE 8/3/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

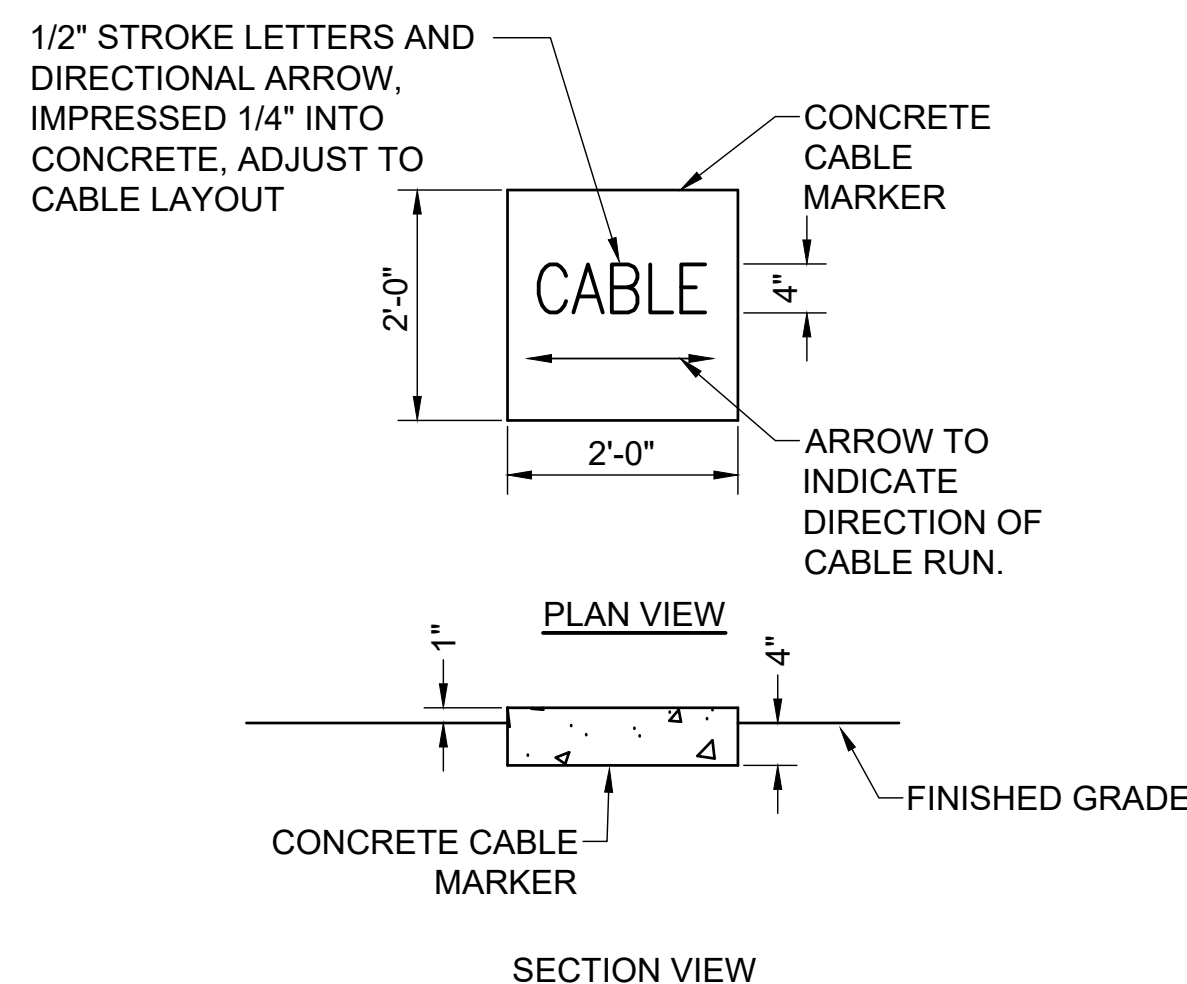
CABLE AND DUCT MARKER DETAILS



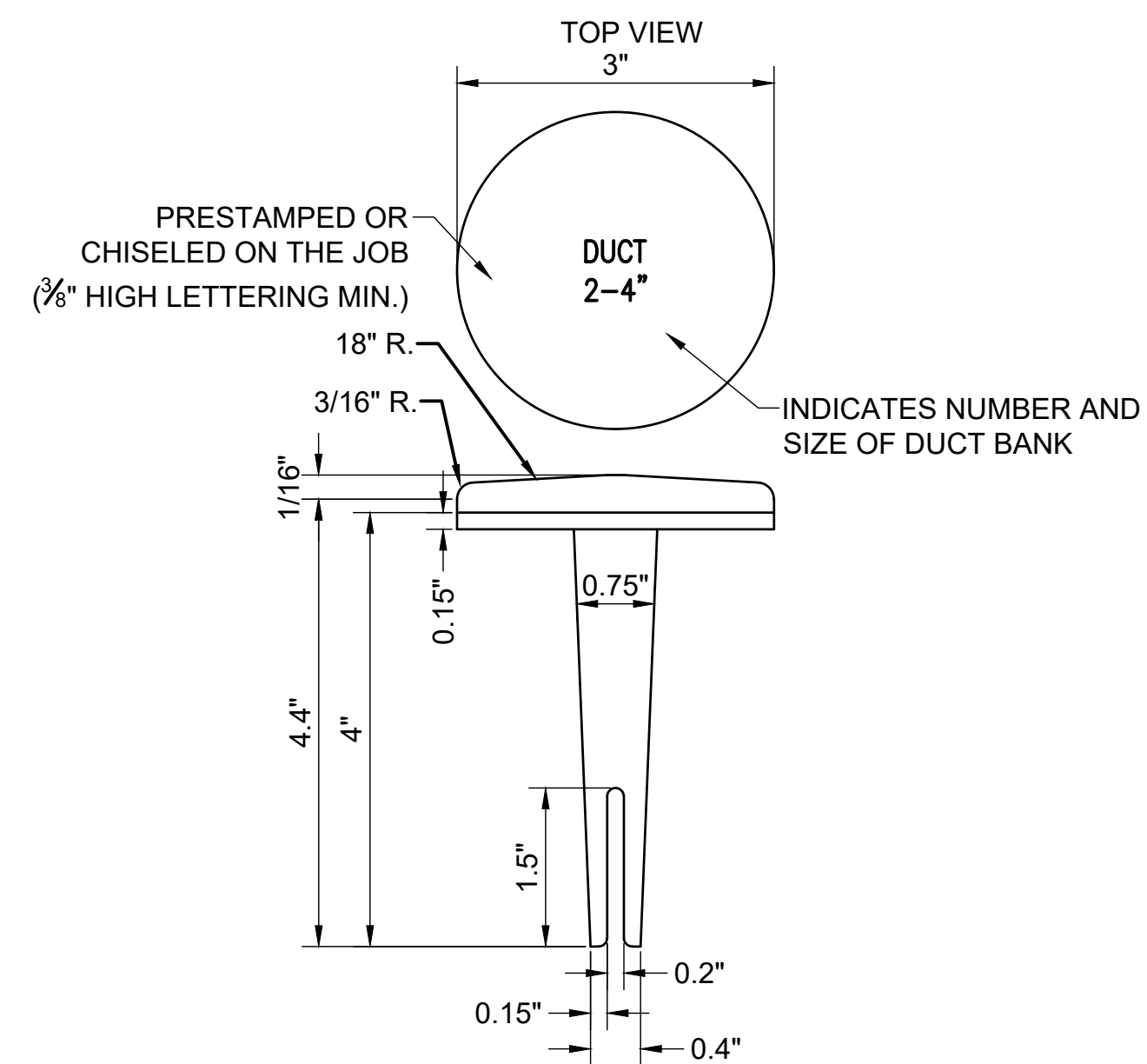
TURF CABLE MARKERS
"NOT TO SCALE"



TURF CABLE MARKERS
"NOT TO SCALE"



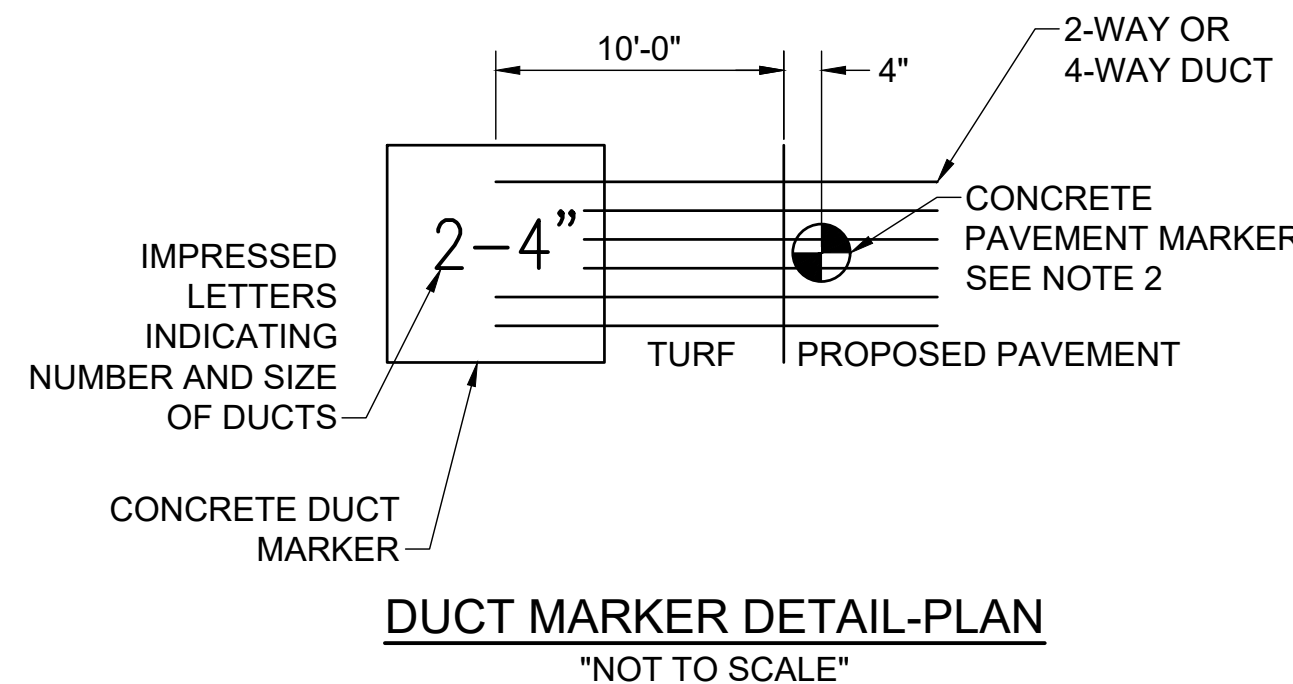
TURF CABLE MARKERS
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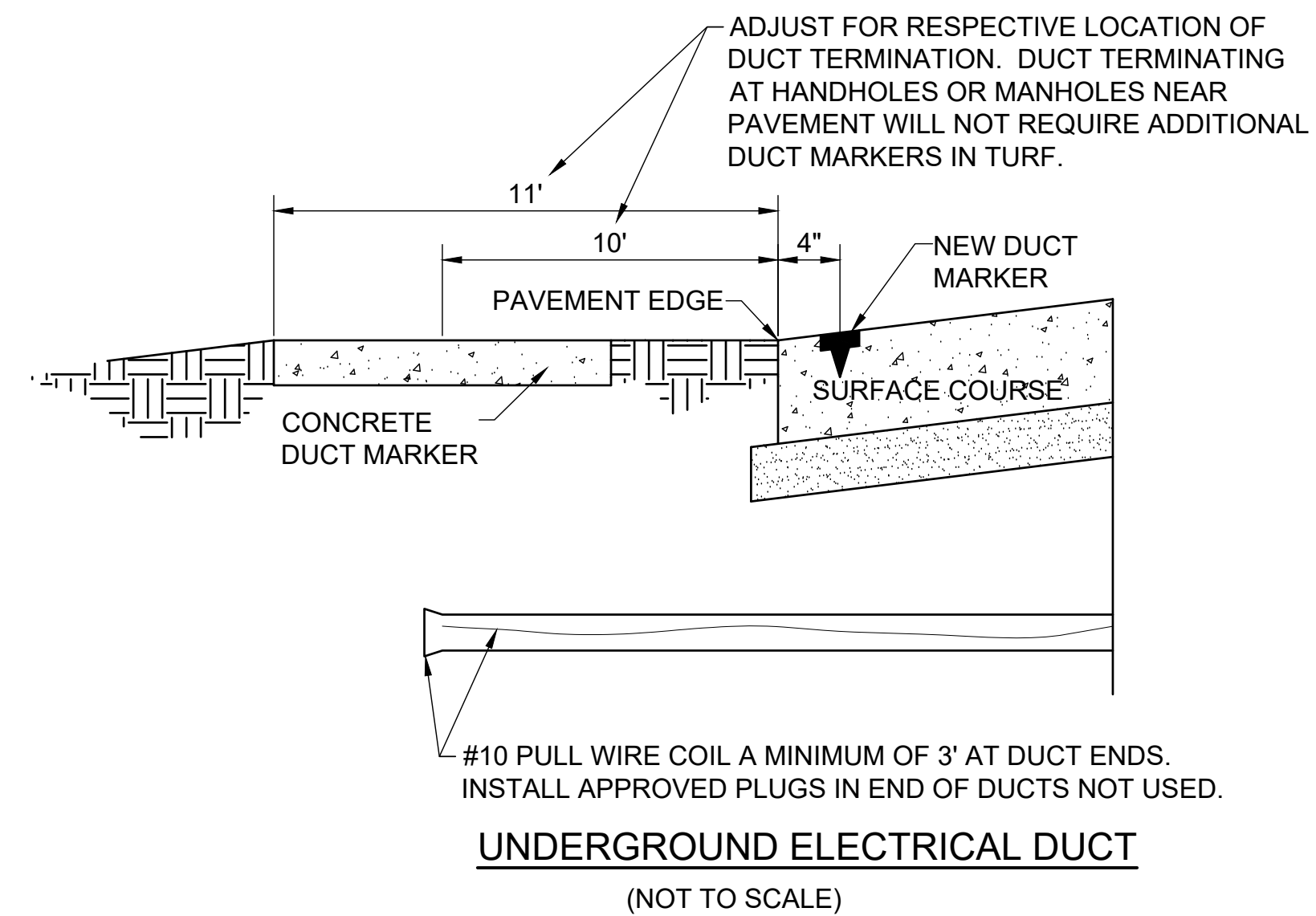
BITUMINOUS PAVEMENT DUCT MARKERS
"NOT TO SCALE"

NOTE:

- TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE
- BRASS DUCT MARKERS ARE AVAILABLE FROM BERNTSEN INTERNATIONAL INC., P.O. BOX 8670, MADISON, WI. 53708-8670, PHONE: 1-877-959-8556, SURV-KAP, 3225 E. 47TH ST., TUCSON, AZ 85713, PHONE: (502)-622-6011, OR OTHER EQUIVALENT MANUFACTURERS.



DUCT MARKER DETAIL-PLAN
"NOT TO SCALE"



UNDERGROUND ELECTRICAL DUCT
"NOT TO SCALE"

CABLE & DUCT MARKER NOTES:

- THE COST OF ALL TURF AND PAVEMENT DUCT MARKERS SHALL BE INCIDENTAL TO THE DUCT. THE COST OF ALL CABLE MARKERS SHALL BE INCIDENTAL TO THE CABLE.
- BITUMINOUS PAVEMENT DUCT MARKER AND CONCRETE DUCT MARKER TO BE PROVIDED AT EACH END OF EACH DUCT AS SHOWN ON THE LOCATION PLAN. FOR CONCRETE PAVEMENT, THE LETTER "D" SHALL BE IMPRESSED IN THE PAVEMENT INSTEAD OF THE MARKER. THE LETTER SHALL BE INFORMED AS DESCRIBED IN NOTE 4.
- UNDERGROUND CABLE RUNS MUST BE IDENTIFIED BY CABLE MARKERS AT 200 FEET (61 M) MAXIMUM SPACING WITH AN ADDITIONAL MARKER AT EACH CHANGE OF DIRECTION OF THE CABLE RUN. CABLE MARKERS MUST BE INSTALLED ABOVE THE CABLE. CABLE MARKERS ARE NOT REQUIRED FOR CABLE RUNS BETWEEN RUNWAY/TAXIWAY EDGE LIGHTS.
- CONCRETE CABLE MARKERS AND DUCT MARKERS SHALL HAVE LETTERS 4" HIGH, 3" WIDE WITH WIDTH OF STROKE 1/2" AND 1/4" DEEP. ALL LETTERS, NUMBERS AND ARROWS TO BE IMPRESSED.
- EMPLOY THE FOLLOWING METHODS WHERE ADDITIONAL SPACE TO FIT THE LEGEND IS REQUIRED:
 - REDUCE LETTER SIZE TO 3" HIGH, 2" WIDE.
 - INCREASE THE MARKER SIZE TO 30" X 30".
 - PROVIDE ADDITIONAL MARKERS PLACED SIDE BY SIDE
- TURF DUCT MARKERS ARE NOT REQUIRED AT PAVEMENT CROSSINGS WHERE DUCTS TERMINATE IN HANDHOLES, OR JUNCTION STRUCTURES.
- LOCATION OF ALL DIRECT EARTH BURIAL UNDERGROUND CABLE SPLICE/CONNECTIONS, EXCEPT THOSE AT ISOLATION TRANSFORMERS, MUST BE IDENTIFIED BY SPLICE MARKERS. SPLICE MARKERS MUST BE PLACED ABOVE THE SPLICE/CONNECTIONS. DIRECT EARTH BURIAL UNDERGROUND CABLE SPLICES SHALL BE AVOIDED WHERE POSSIBLE. CABLE SPLICES SHALL BE LOCATED IN SPLICE CANS, LIGHT BASES, HANDHOLES, MANHOLES, OR OTHER JUNCTION STRUCTURES UNLESS OTHERWISE APPROVED BY THE PROJECT ENGINEER.
- THE CABLE AND SPLICE MARKERS MUST IDENTIFY THE CIRCUITS TO WHICH THE CABLES BELONG. FOR EXAMPLE: RWY 9-27, PAPI-9, PAPI-27.
- LOCATIONS OF ENDS OF ALL UNDERGROUND DUCTS MUST BE IDENTIFIED BY DUCT MARKERS.

FOR BID



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

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IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

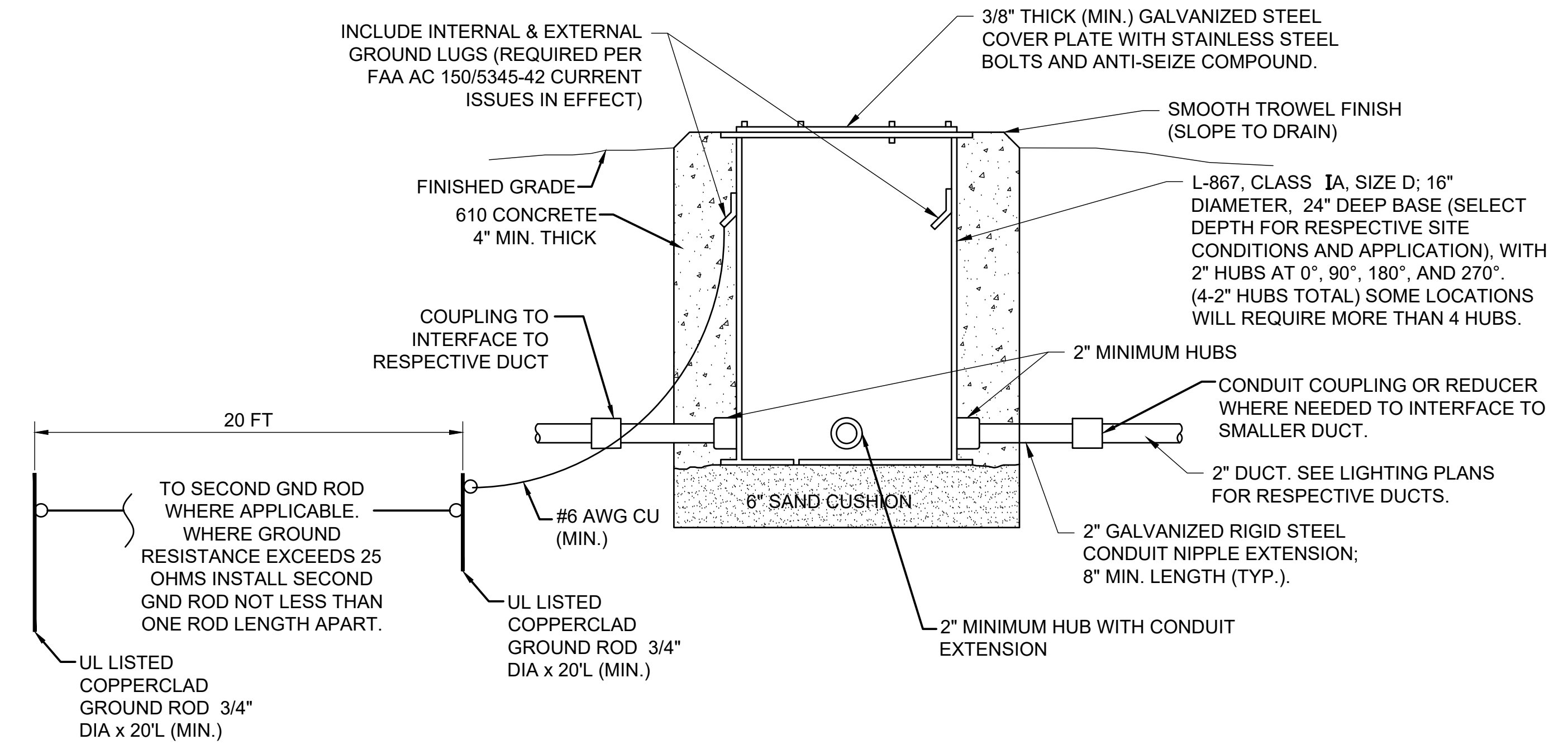
NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023

PROJECT NO: 23A0038D
CAD FILE: E-505-DETL.DWG
DESIGN BY: KNL 8/3/2023
DRAWN BY: HLE 8/3/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

SPLICE CAN DETAILS



SPLICE CAN/JUNCTION CAN DETAIL

"NOT TO SCALE"

NOTES FOR SPLICE CAN/JUNCTION CAN DETAIL:

- SPLICE CANS SHALL CONFORM TO THE REQUIREMENTS OF FAA AC 150/5345-42 (CURRENT ISSUES IN EFFECT), FOR TYPE L-867, CLASS IA, SIZE D, (16 IN. NOMINAL DIAMETER), AND 24 IN. DEEP AND/OR AS DETAILED ON THE PLANS. EACH SPLICE CAN SHALL INCLUDE INTERNAL AND EXTERNAL GROUND LUGS TO ACCOMMODATE THE RESPECTIVE APPLICATIONS. SPLICE CANS AND/OR JUNCTION CANS SHALL HAVE GALVANIZED STEEL COVERS, 3/8-INCH THICK (MINIMUM), WITH STAINLESS STEEL BOLTS.
- FOR THE PURPOSE OF ENHANCING SAFETY, EACH BASE MUST HAVE INSTALLED, BY THE MANUFACTURER, AN INTERNAL AND EXTERNAL GROUND STRAP THAT IS AVAILABLE FOR THE PURPOSE OF ATTACHING A GROUND LUG THAT IS CONNECTED TO AN EARTH GROUND OR A SAFETY GROUND CONDUCTOR INSTALLED WITH THE RESPECTIVE CIRCUIT. FOR AIRPORT PROJECTS RECEIVING FEDERAL FUNDS THIS REQUIREMENT IS MANDATORY PER FAA AC 150/5345-42 (CURRENT ISSUES IN EFFECT).
- APPLY AN OXIDE-INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS, AND ALL PLACES WHERE METAL COMES INTO CONTACT WITH METAL.
- THE CONCRETE USED IN THE CONSTRUCTION OF THE BASES FOR THE AIRFIELD LIGHTING CANS SHALL BE IN ACCORDANCE WITH ITEM 610 STRUCTURAL PORTLAND CEMENT CONCRETE.
- LIDS FOR THE SPLICE CANS CONTAINING HIGH VOLTAGE AIRFIELD LIGHTING CABLES SHALL INCLUDE MINIMUM 1/2-INCH HIGH LETTERING LABELED "DANGER HIGH VOLTAGE KEEP OUT" TO COMPLY WITH NEC ARTICLE 300.45 "WARNING SIGNS" AND NEC ARTICLE 314.71(E) "SUITABLE COVERS". THIS WILL NEED TO BE COORDINATED WITH THE SPLICE CAN MANUFACTURER.
- LIDS FOR THE SPLICE CANS CONTAINING LOW VOLTAGE CABLES (RATED 600 VOLTS AND BELOW) WILL BE ACCEPTABLE TO USE BLANK COVERS.
- PROVIDE NEW GROUND RODS FOR EXISTING SPLICE CANS DESIGNATED FOR RELOCATION.
- PROVIDE ADEQUATE SLACK CABLE AT SPLICE CANS/JUNCTION CANS TO PERFORM SPLICES OUTSIDE OF THE SPLICE CAN.



Kevin N. Lightfoot
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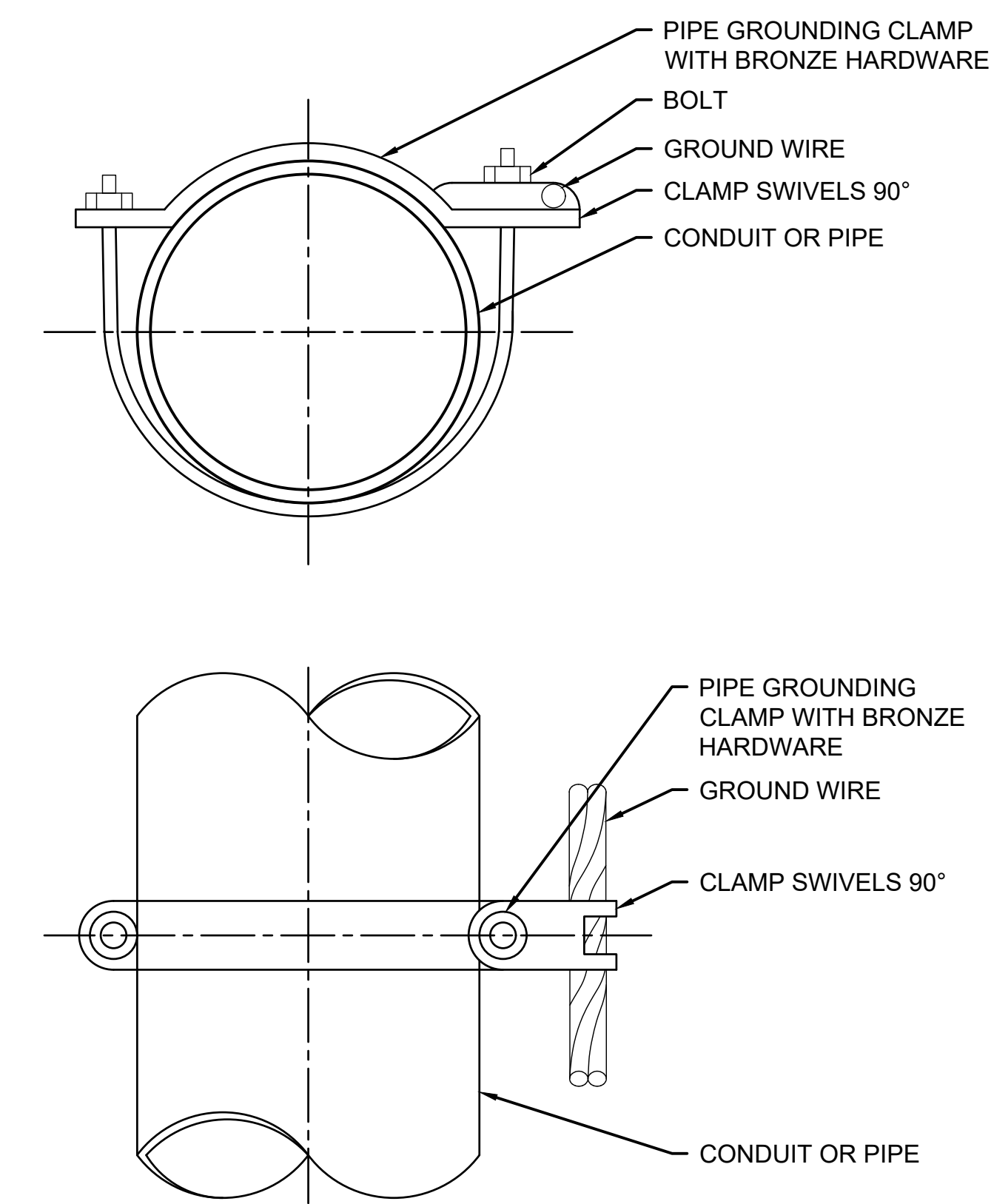
Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023
PROJECT NO: 23A0038D
CAD FILE: E-506-DETL.DWG
DESIGN BY: KNL 8/3/2023
DRAWN BY: HLE 8/3/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

GROUNDING DETAILS

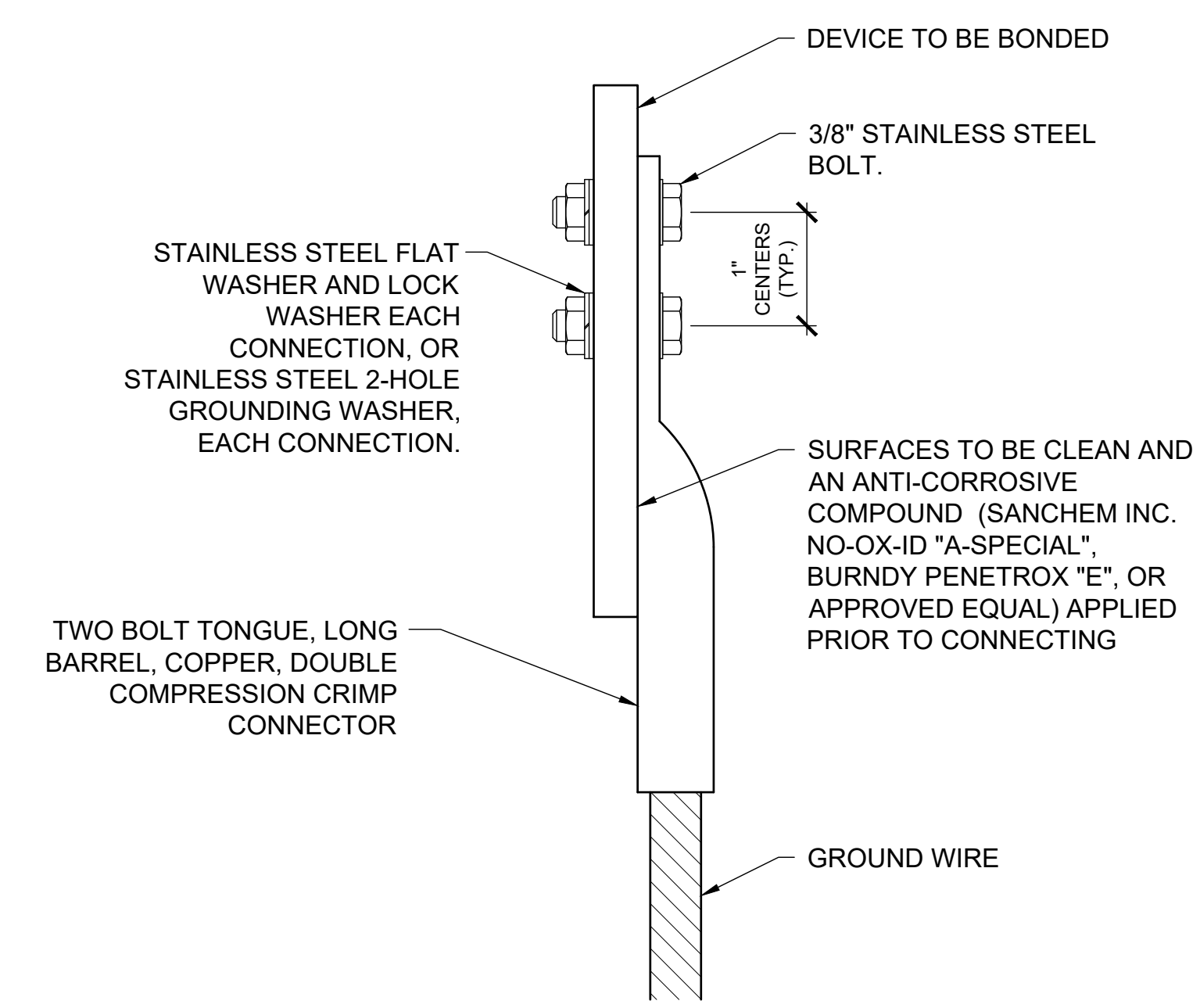


BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PIPE SIZE
GAR3902-BU	3902BU	1/2" - 1"
GAR3903-BU	3903BU	1 1/4" - 2"
GAR3904-BU	3904BU	2 1/2" - 3 1/2"
GAR3905-BU	3905BU	4" - 5"
GAR3906-BU	3906BU	6"

NOTES

- PIPE GROUNDING CLAMPS SHALL HAVE BRONZE HARDWARE, BE CORROSION RESISTANT, SUITABLE FOR DIRECT BURIAL IN EARTH OR CONCRETE, & UL 467 LISTED.
- PENN-UNION TYPE "GPL" SERIES PIPE GROUNDING CLAMPS PROPERLY SIZED FOR THE RESPECTIVE PIPE AND GROUND WIRE ARE ALSO ACCEPTABLE.
- HARGER CPC AND APC SERIES PIPE GROUNDING CLAMPS PROPERLY SIZED FOR THE RESPECTIVE PIPE AND GROUND WIRE ARE ALSO ACCEPTABLE.

PIPE/CONDUIT GROUNDING CLAMP DETAIL

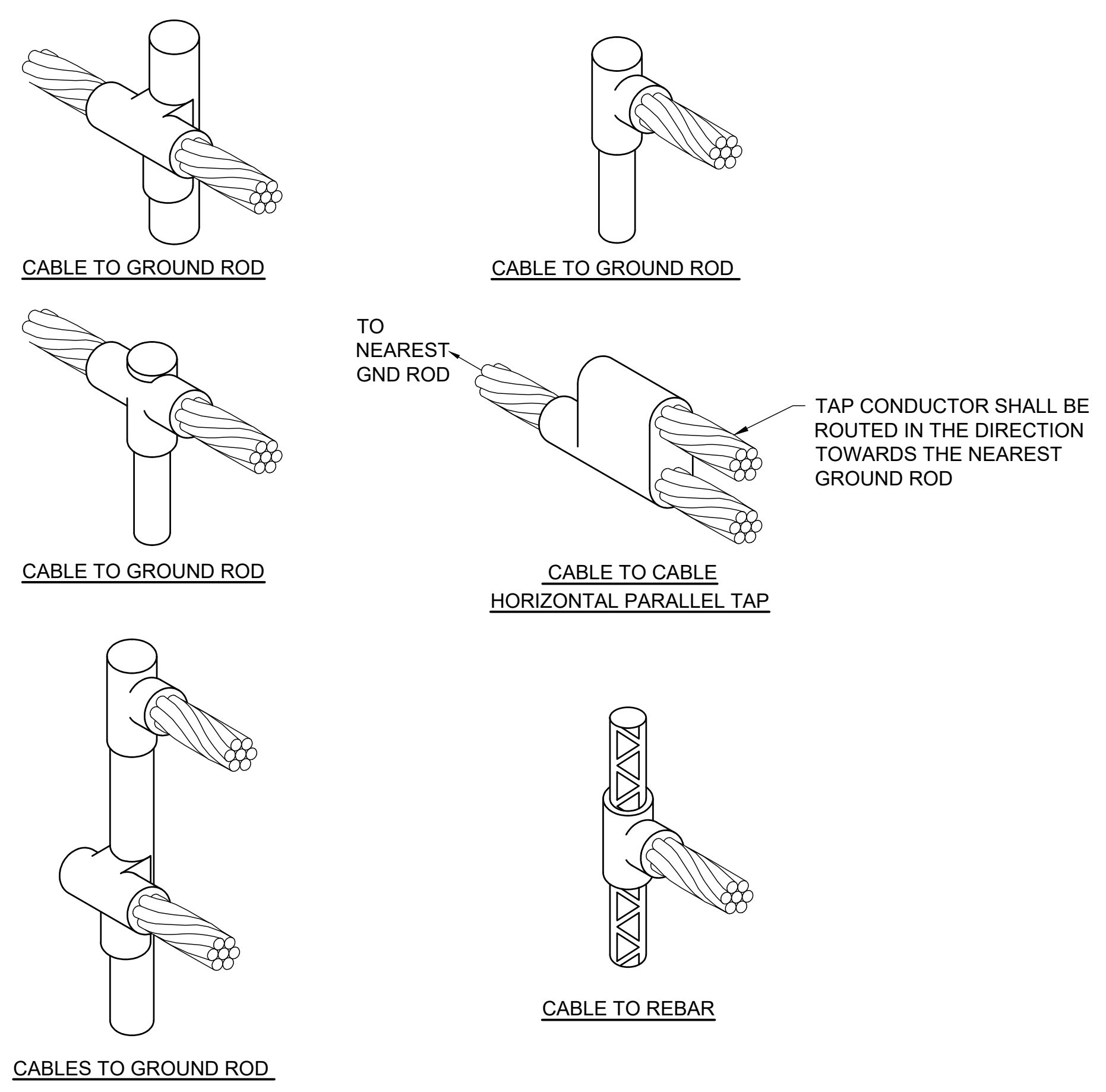


WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1		
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159	BBLU-4D-2TC38
#2 AWG STRANDED	YA2C-2TC38	256-30695-1160	BBLU-2D-2TC38
#2 AWG SOLID	YA3C-2TC38	256-30695-1160	BBLU-3D-2TC38
#1/0 AWG STRANDED	YA25-2TC38	256-30695-1162	BBLU-1/0D-2TC38
#2/0 AWG STRANDED	YA26-2TC38	256-30695-1116	BBLU-2/0D-2TC38
#3/0 AWG STRANDED	YA27-2TC38	54816BE	BBLU-3/0D-2TC38
#4/0 AWG STRANDED	YA28-2TC38	256-30695-1117	BBLU-4/0D-2TC38

NOTES

- ALL CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.
- GROUND WIRE CONNECTIONS TO EQUIPMENT SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE DEVICE OR WITH THE RESPECTIVE EQUIPT MANUFACTURER'S LUG OR TERMINAL WHERE APPLICABLE.
- GROUNDING ELECTRODE CONDUCTORS, BONDING JUMPERS, & INDIVIDUAL GROUND WIRES SHALL NOT BE INSTALLED IN METAL CONDUIT. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENCIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC APTH FROM ENCIRCLING THE CONDUIT.
- ALL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND (SANCHEM INC. NO-OX-ID "A-SPECIAL", BURNDY PENETROX E, OR APPROVED EQUAL) BEFORE JOINING. ALL COPPER BUS BARS SHALL BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION. CLEAN SURFACES, OF RESPECTIVE DEVICES TO BE BONDED, TO BARE METAL, PER NEC 250-12.

GROUNDING LUG CONNECTION DETAIL



DETAIL NOTES

- ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY PENTAIR ERICO PRODUCTS, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, OR THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES OR APPROVED EQUAL. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.
- FOR APPLICATIONS TO GALVANIZED STEEL OR PAINTED STEEL, REMOVE GALVANIZING AND/OR PAINT & CLEAN THE SURFACE TO EXPOSE BARE STEEL BEFORE MAKING EXOTHERMIC WELD CONNECTION.
- INDIVIDUAL GROUNDING ELECTRODE CONDUCTORS SHALL NOT BE INSTALLED IN METAL CONDUIT. INSTALL GROUNDING ELECTRODE CONDUCTORS IN SCHED 80 PVC CONDUIT AS REQUIRED IN FOUNDATIONS, FOR PROTECTION, WHERE ENTERING ENCLOSURES, ETC. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENCIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT.

EXOTHERMIC WELD DETAILS

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FOR BID



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

**INSTALL PAPI SYSTEM
& ASSOCIATED
ELECTRICAL
IMPROVEMENTS**

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

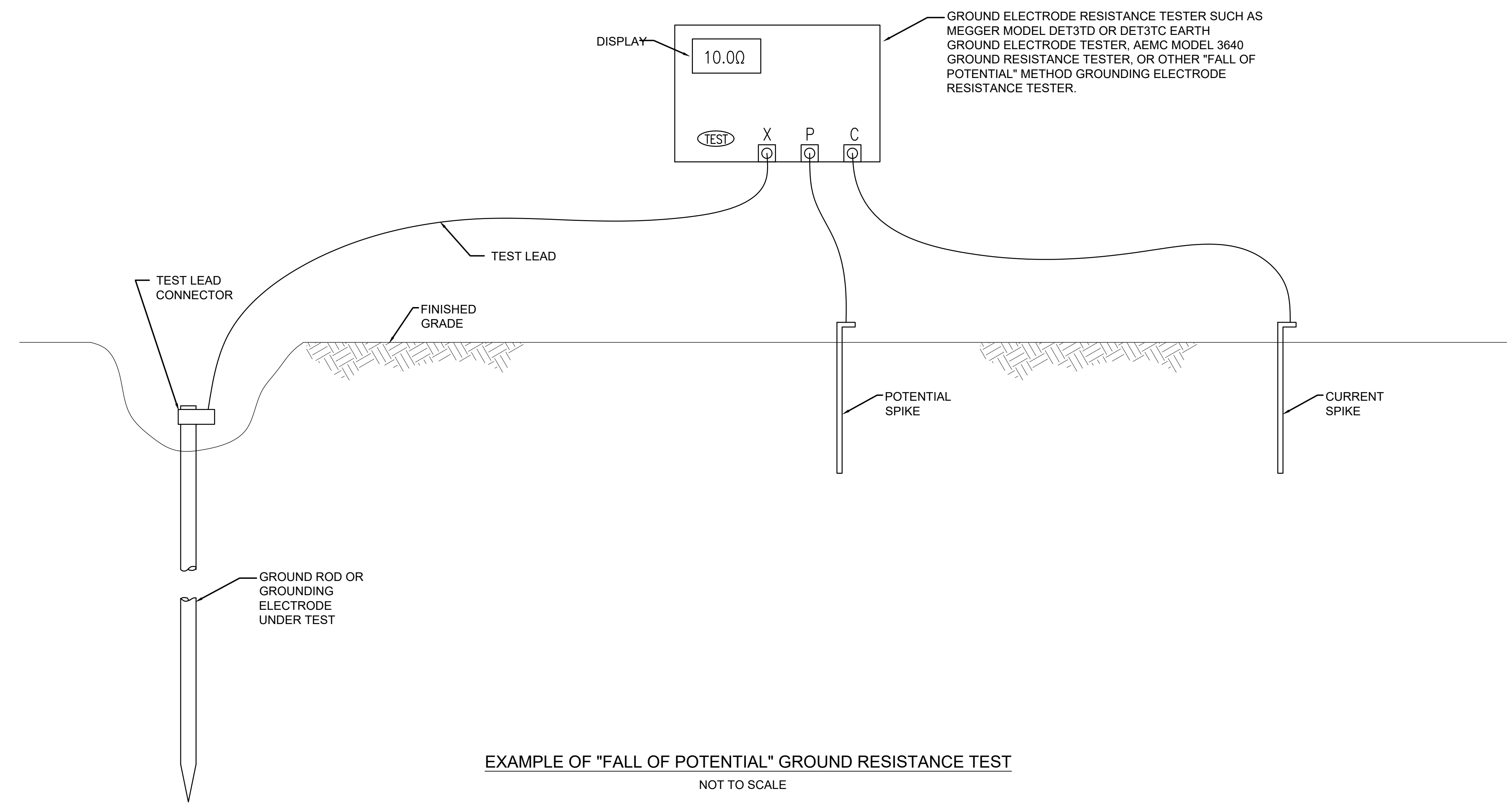
Contract No. RB022

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		DES	DWN	REV

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DESIGN BY: KNL 8/3/2023
DRAWN BY: HLE 8/3/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

**GROUND
RESISTANCE
TESTING DETAILS**



EXAMPLE OF "FALL OF POTENTIAL" GROUND RESISTANCE TEST
NOT TO SCALE

NOTES

- CONTRACTOR SHALL TEST AND RECORD THE RESISTANCE FOR EACH MADE ELECTRODE GROUND ROD/GROUND FIELD/GROUND RING WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUNDING ELECTRODE SYSTEMS. IF GROUND RESISTANCE EXCEEDS 25 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. COPIES OF GROUND ROD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER/RESIDENT TECHNICIAN, AND THE PROJECT ENGINEER.
- FOR EACH AIRFIELD LIGHT FIXTURE, TAXI GUIDANCE SIGN, SPLICE CAN AND NAVAID THE CONTRACTOR SHALL TEST THE MADE ELECTRODE GROUND SYSTEM WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUND SYSTEMS. TEST RESULTS SHALL BE RECORDED FOR EACH AIRFIELD LIGHT FIXTURE, TAXI GUIDANCE SIGN, AND NAVAIDS INSTALLATION. IF GROUND RESISTANCE EXCEEDS 25 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. ALSO REFER TO EOR-47643 FOR ADDITIONAL INFORMATION ON GROUNDING REQUIREMENTS WHERE APPLICABLE. COPIES OF THE GROUND SYSTEM TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER / RESIDENT TECHNICIAN, AND THE PROJECT ENGINEER.
- GROUND RESISTANCE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH THE RESPECTIVE GROUND ELECTRODE RESISTANCE TESTING EQUIPMENT MANUFACTURER'S INSTRUCTIONS.
- RECORD SITE CONDITIONS DURING TESTS.
- "FALL OF POTENTIAL" TYPE GROUND ELECTRODE RESISTANCE TESTER IS RECOMMENDED FOR TESTING INDIVIDUAL STAND ALONE GROUND RODS.

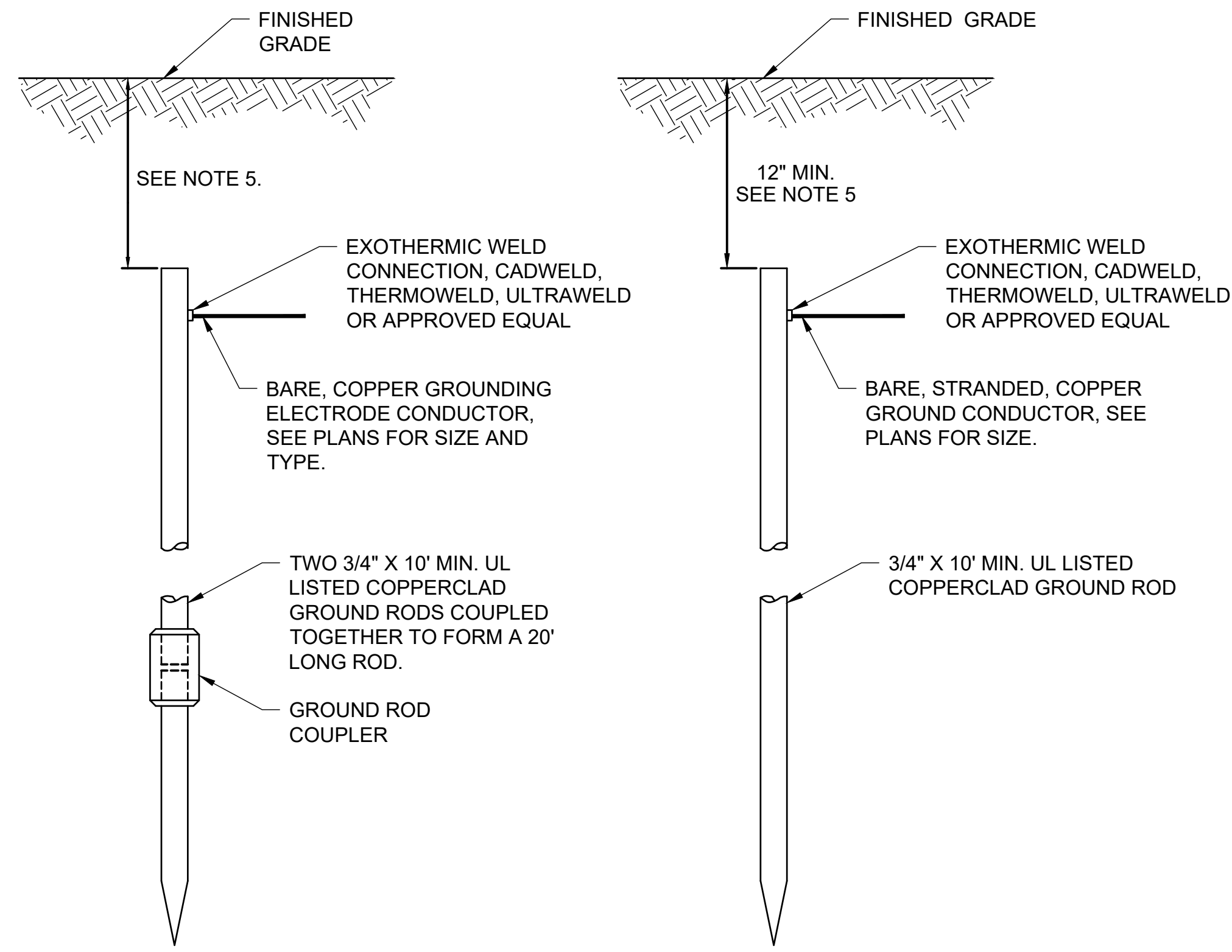
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GROUNDING NOTES

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70) IN FORCE AND FAA-STD-019f (LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING, AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT). THE RELIABILITY OF THE GROUNDING SYSTEM IS DEPENDENT ON CAREFUL, PROPER INSTALLATION AND CHOICE OF MATERIALS. IMPROPER PREPARATION OF SURFACES TO BE JOINED TO MAKE AN ELECTRICAL PATH, LOOSE JOINTS OR CORROSION CAN INTRODUCE IMPEDANCE THAT WILL SERIOUSLY IMPAIR THE ABILITY OF THE GROUND PATH TO PROTECT PERSONNEL AND EQUIPMENT AND TO ABSORB TRANSIENTS THAT CAN CAUSE NOISE IN COMMUNICATIONS CIRCUITS. THE FOLLOWING FUNCTIONS ARE PARTICULARLY IMPORTANT TO ENSURE A RELIABLE GROUND SYSTEM:

- FURNISH AND INSTALL GROUND RODS AS DETAILED HEREIN. GROUND RODS SHALL BE SECTIONAL MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED, COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING (UNLESS DETAILED OTHERWISE HEREIN). LONGER GROUND RODS SHALL BE PROVIDED WHERE DETAILED HEREIN AND/OR WHERE NECESSARY TO MEET GROUND RESISTANCE MEASUREMENTS OF 25 OHMS OR LESS. GROUND RODS SHALL BE SPACED OR AS DETAILED ON THE RESPECTIVE PLANS, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH APART. ALL CONNECTIONS TO GROUND RODS AND THE GROUND RING SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY PENTAIR ERICO PRODUCTS, INC., THERMOWELD BY CONTINENTAL INDUSTRIES, INC., ULTRAWELD BY HARGER, OR APPROVED EQUAL. EXOTHERMIC WELD CONNECTIONS SHALL BE INSTALLED IN CONFORMANCE WITH THE RESPECTIVE MANUFACTURER'S DIRECTIONS USING MOLDS AS REQUIRED FOR EACH RESPECTIVE APPLICATION. BOLTED CONNECTIONS WILL NOT BE PERMITTED AT GROUND RODS OR AT BURIED GROUNDING ELECTRODE CONDUCTORS.
- CONTRACTOR SHALL TEST EACH MADE ELECTRODE GROUND ROD/GROUND FIELD/GROUND RING WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUND FIELD SYSTEMS. IF GROUND RESISTANCE EXCEEDS 25 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. ALSO REFER TO EOR-47643 FOR ADDITIONAL INFORMATION ON GROUNDING REQUIREMENTS WHERE APPLICABLE. COPIES OF GROUND ROD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER/RESIDENT TECHNICIAN AND THE PROJECT ENGINEER.
- ALL PRODUCTS ASSOCIATED WITH THE GROUNDING SYSTEM SHALL BE UL-LISTED AND LABELED.
- ALL BOLTED OR MECHANICAL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND BEFORE JOINING, SANCHEM INC. "NO-OX-ID "A-SPECIAL" COMPOUND, BURNDY PENETROX E, OR APPROVED EQUAL.
- METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2020 NATIONAL ELECTRICAL CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.
- METALLIC RACEWAY FITTINGS SHALL BE MADE UP TIGHT TO PROVIDE A PERMANENT LOW IMPEDANCE PATH FOR ALL CIRCUITS. METAL CONDUIT TERMINATIONS IN ENCLOSURES SHALL BE BONDED TO THE ENCLOSURE WITH UL-LISTED FITTINGS SUITABLE FOR GROUNDING. PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT
- ALL CONNECTIONS, LOCATED ABOVE GRADE, BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS SHALL BE MADE USING UL-LISTED DOUBLE COMPRESSION CRIMP TYPE CONNECTORS OR UL-LISTED BOLTED GROUND CONNECTORS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, DOSSERT CORPORATION, ILSCO CORPORATION, PENN-UNION CORPORATION, THOMAS & BETTS, OR APPROVED EQUAL. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES IN UL STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
- ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
- PROVIDE ALL BOXES FOR PROPOSED OUTLETS, SWITCHES, CIRCUIT BREAKERS, ETC. WITH GROUNDING SCREWS. PROVIDE ALL PANELBOARD, SWITCHGEAR, ETC., ENCLOSURES WITH GROUNDING BARS WITH INDIVIDUAL SCREWS, LUGS, CLAMPS, ETC., FOR EACH OF THE GROUNDING CONDUCTORS THAT ENTER THEIR RESPECTIVE ENCLOSURES.
- EACH NEW FEEDER CIRCUIT AND/OR BRANCH CIRCUIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. METAL RACEWAY OR CONDUIT SHALL NOT MEET THIS REQUIREMENT. THE EQUIPMENT GROUND WIRE FROM EQUIPMENT SHALL NOT BE SMALLER THAN ALLOWED BY 2020 NEC TABLE 250-122 "MINIMUM SIZE CONDUCTORS OR GROUNDING RACEWAY AND EQUIPMENT." WHEN CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT-GROUNDING CONDUCTORS SHALL BE ADJUSTED PROPORTIONATELY ACCORDING TO CIRCULAR MIL AREA. ALL EQUIPMENT GROUND WIRES SHALL BE COPPER, EITHER BARE OR INSULATED GREEN IN COLOR. WHERE THE EQUIPMENT GROUNDING CONDUCTORS ARE INSULATED, THEY SHALL BE IDENTIFIED BY THE COLOR GREEN, AND SHALL BE THE SAME INSULATION TYPE AS THE PHASE CONDUCTORS.

- ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC., SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 2020 NEC 250-102. WHERE METAL CONDUITS TERMINATE IN AN ENCLOSURE (SUCH AS A MOTOR CONTROL CENTER, SWITCHBOARD, ETC) WHERE THERE IS NOT ELECTRICAL CONTINUITY WITH THE CONDUIT AND THE RESPECTIVE ENCLOSURE, PROVIDE A BONDING JUMPER FROM THE RESPECTIVE ENCLOSURE GROUND BUS TO THE CONDUIT SIZED PER 2020 NEC 250-102.
- IT IS THE INTENT OF THIS SPECIFICATION THAT ALL MOTOR FRAMES, PUMP BASES ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.
- PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUNDED NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
- EACH AND ALL GROUNDED CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.
- ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, DOSSERT CORPORATION, ILSCO CORPORATION, PENN-UNION CORPORATION, THOMAS & BETTS, OR APPROVED EQUAL.
- BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
- BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.
- INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY ENCIRCLE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. USE NON-METALLIC REINFORCED FIBERGLASS STRUT SUPPORT. WHERE METAL CONDUIT CLAMPS ARE INSTALLED, USE NYLON BOLTS, NUTS, WASHERS AND SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT. THIS IS REQUIRED TO AVOID GIRDLING OF GROUND CONDUCTORS. GIRDLING OF A GROUND CONDUCTOR IS THE RESULT OF PLACING THE CONDUCTOR IN A RING OF MAGNETIC MATERIAL. THIS RING COULD BE A METALLIC CONDUIT, U-BOLT OR STRUT SUPPORT PIPE CLAMP, OR OTHER SUPPORT HARDWARE. THE RESULT OF GIRDLING GROUND CONDUCTORS SIGNIFICANTLY INCREASES THE INDUCTIVE IMPEDANCE OF THE GROUND CONDUCTOR. INDUCTIVE AND CAPACITIVE IMPEDANCE IS A TYPE OF RESISTANCE THAT OPPOSES THE FLOW OF ALTERNATING CURRENT. ANY INCREASE IN THE IMPEDANCE OF A GROUND CONDUCTOR REDUCES ITS ABILITY TO EFFECTIVELY MITIGATE RADIO FREQUENCY NOISE IN THE GROUND SYSTEM. THE CONDITION WHERE A GROUND CONDUCTOR IS GIRDLED DURING A LIGHTNING STRIKE RESULTS IN PHENOMENA KNOWN AS SURGE IMPEDANCE LOADING. SURGE IMPEDANCE LOADING IS A RESULT OF VOLTAGE AND CURRENT REACHING 500,000 VOLTS AND 10,000 AMPS FOR A SHORT DURATION. GIRDLING FURTHER INCREASES THE IMPEDANCE AT LIGHTNING FREQUENCIES OF 100 KILOHERTZ TO 100 MEGAHERTZ. AT THESE POWER AND FREQUENCY LEVELS ANY INCREASE IN THE IMPEDANCE OF THE GROUND CONDUCTOR MUST BE CONTROLLED. DURING LIGHTNING DISCHARGE CONDITIONS A LOW INDUCTIVE IMPEDANCE PATH IS MORE IMPORTANT THAN A LOW DC RESISTANCE PATH.
- IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2020 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- NEVER REMOVE, ALTER, OR ATTEMPT TO REPAIR CONDUCTORS OR CONDUIT SYSTEMS PROVIDING GROUNDING OR ELECTRICAL BONDING FOR ANY ELECTRICAL EQUIPMENT UNTIL ALL POWER IS REMOVED FROM EQUIPMENT. WARN ALL PERSONNEL OF THE UNGROUNDED CONDITION OF THE EQUIPMENT. DISPLAY APPROPRIATE WARNING SIGNS, SUCH AS DANGER TAGS, TO WARN PERSONNEL OF THE POSSIBLE HAZARDS.
- GROUNDING WORK AND MODIFICATIONS SHALL NOT BE PERFORMED DURING A THUNDERSTORM OR WHEN A THUNDERSTORM IS PREDICTED IN THE AREA
- WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTIONS.



20 FT. GROUND ROD

10 FT. GROUND ROD

NOTES

- TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
- THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.
- COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.
- GROUND RODS SHALL BE SPACED AS DETAILED ON THE PLANS AND SHALL NOT BE SPACED LESS THAN ONE ROD LENGTH APART.
- TOP OF GROUND RODS FOR ELECTRIC SERVICE AND LIGHTNING PROTECTION APPLICATIONS SHALL BE 12" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN.
- GROUND RODS FOR PAPI INSTALLATIONS SHALL BE 3/4-IN DIAMETER BY 20 FEET LONG. EACH PAPI LIGHT HOUSING UNIT SHALL HAVE TWO 3/4-IN BY 20 FEET LONG GROUND RODS SPACED 20 FEET APART. 20 FEET LONG GROUND RODS ARE TO ACCOMMODATE SANDY SOIL CONDITIONS AT CRAWFORD COUNTY AIRPORT SITE.
- GROUND RODS FOR INDIVIDUAL SPLICE CANS/L-867 JUNCTION CANS SHALL BE TWO 3/4-IN DIAMETER BY 20 FEET LONG GROUND RODS SPACED 20 FEET APART.

**GROUND RODS
NOT TO SCALE**

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Crawford County Airport

10748 North 1650th St.
Palestine, Illinois 62451

COVERING ELECTRICAL DESIGN



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

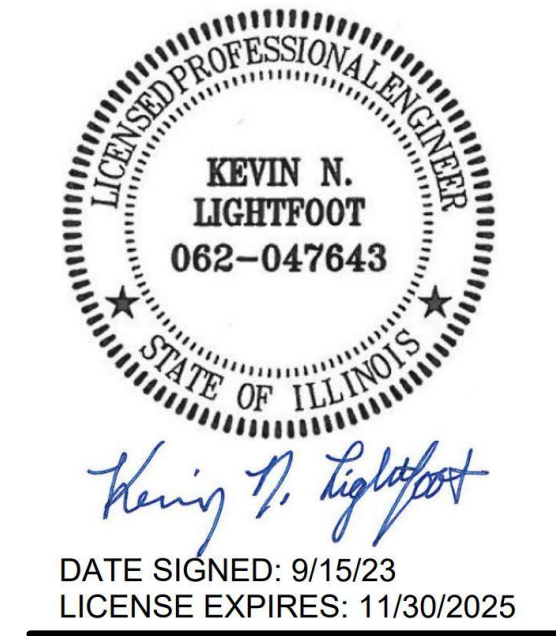
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SHEET TITLE

GROUNDING NOTES

FOR BID



INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

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SHEET TITLE

ELECTRICAL LEGEND AND ABBREVIATIONS

NOTES:

- ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, INTERTEK TESTING SERVICES VERIFICATION/ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING/CONSTRUCTION FOR USE AS A REFERENCE.
- VAULT WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND MAINTENANCE SUPERVISOR. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- IN THE EVENT A CONFLICT IS DETERMINED WITH RESPECT TO MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTIONS.
- COLOR CODE PHASE AND NEUTRAL CONDUCTOR INSULATION FOR NO. 6 AWG OR SMALLER. PROVIDE COLORED INSULATION OR COLORED MARKING TAPE FOR PHASE AND NEUTRAL CONDUCTORS FOR NO. 4 AWG AND LARGER. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR AWG AND/OR KCMIL TO COMPLY WITH NEC 250.119. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION FOR NO. 6 AWG AND SMALLER TO MEET THE REQUIREMENTS OF NEC 200.6. STANDARD COLORS FOR POWER WIRING AND BRANCH CIRCUITS SHALL BE AS FOLLOWS: TO MATCH EXISTING COLOR CODING SYSTEM AT JACKSONVILLE AIRPORT TERMINAL BUILDING.

120/240 VAC, 1 PHASE, 3 WIRE	
PHASE A	BLACK (120V TO N)
PHASE B	RED (120V TO N)
NEUTRAL	WHITE
GROUND	GREEN
- SEE RESPECTIVE SITE PLANS FOR SITE LEGEND INFORMATION.
- LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.
- ALL ENCLOSURES RATED NEMA 4, 4X SHALL HAVE WATERTIGHT HUBS AT CONDUIT ENTRANCES UL LISTED NEMA 4, 4X FOR THE RESPECTIVE ENCLOSURE, TO MAINTAIN THE NEMA 4, 4X RATING.
- CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING, DISCONNECTING, ADJUSTING, CONNECTING, OR WORKING ON THE RESPECTIVE AIRFIELD LIGHTING, TAXI SIGN, NAVAID, VAULT EQUIPMENT, OR OTHER DEVICE.
- HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, RACEWAY, JUNCTION STRUCTURE OR HANDHOLE.

ELECTRICAL ABBREVIATIONS (CONTINUED)	
PB	PULL BOX
PC	PHOTO CELL
PDB	POWER DISTRIBUTION BLOCK
PNL	PANEL
RCPT	RECEPTACLE
R	RELAY
S	STARTER
SPD	SURGE PROTECTION DEVICE
SPST	SINGLE POLE SINGLE THROW
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRIC
UL	UNDERWRITER'S LABORATORIES
V	VOLTS
W/	WITH
W/O	WITHOUT
WP	WEATHER PROOF
XFER	TRANSFER
XFMR	TRANSFORMER

AIRPORT EQUIPMENT/FACILITY ABBREVIATIONS	
ASOS	AUTOMATED SURFACE OBSERVING SYSTEM
ATCT	AIR TRAFFIC CONTROL TOWER
AWOS	AUTOMATED WEATHER OBSERVING SYSTEM
CCR	CONSTANT CURRENT REGULATOR
DME	DISTANCE MEASURING EQUIPMENT
FAR	FEDERAL AVIATION REGULATION
GS	GLIDE SLOPE FACILITY
HIRL	HIGH INTENSITY RUNWAY LIGHT
ILS	INSTRUMENT LANDING SYSTEM
IM	INNER MARKER
LIR	LOW IMPACT-RESISTANT
LOC	LOCALIZER FACILITY
MALS	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM
MALSR	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH RUNWAY ALIGNMENT INDICATING LIGHTS
MIRL	MEDIUM INTENSITY RUNWAY LIGHT
MITL	MEDIUM INTENSITY TAXIWAY LIGHT
NDB	NON-DIRECTIONAL BEACON
PAPI	PRECISION APPROACH PATH INDICATOR
PLASI	PULSE LIGHT APPROACH SLOPE INDICATOR
RAIL	RUNWAY ALIGNMENT INDICATING LIGHTS
REIL	RUNWAY END IDENTIFIER LIGHT
RVR	RUNWAY VISUAL RANGE
VADI	VISUAL APPROACH DESCENT INDICATOR
VASI	VISUAL APPROACH SLOPE INDICATOR
VOR	VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE FACILITY
WC	WIND CONE

ELECTRICAL ABBREVIATIONS	
A.F.F.	ABOVE FINISHED FLOOR
A, AMP	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CR	CONTROL RELAY
CU	COPPER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EOR	ENGINEER OF RECORD
EP	EXPLOSION PROOF
ES	EMERGENCY STOP
ETL	INTERTEK - ELECTRICAL TESTING LABS
ETM	ELAPSE TIME METER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRSC	GALVANIZED RIGID STEEL CONDUIT
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
J	JUNCTION BOX
KVA	KILOVOLT AMPERE(S)
KNL	KEVIN NEIL LIGHTFOOT
KW	KILOWATTS
LC	LIGHTING CONTACTOR
LTFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT (UL LISTED)
LTG	LIGHTING
LP	LIGHTING PANEL
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCM	THOUSAND CIRCULAR MIL
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OHE	OVERHEAD ELECTRIC
OL	OVERLOAD

ELECTRICAL LEGEND - SCHEMATIC	
	NORMALLY OPEN (N.O.) CONTACT
	NORMALLY CLOSED (N.C.) CONTACT
	STARTER COIL, * = STARTER NUMBER
	OVERLOAD RELAY CONTACT
	CONTROL RELAY, * = CONTROL RELAY NUMBER
	RELAY, * = RELAY NUMBER
	TOGGLE SWITCH / 2 POSITION SWITCH
	2-POSITION SELECTOR SWITCH
	3-POSITION SELECTOR SWITCH (H-O-A SHOWN)
	2 POLE DISCONNECT SWITCH
	3 POLE DISCONNECT SWITCH
	PHOTOCELL
	TERMINAL BLOCK, * = TERMINAL NUMBER
	DEVICE TERMINAL, * = DEVICE TERMINAL NUMBER
	INTERNAL PANEL WIRING
	FIELD WIRING
	FUSE
	GROUND BUS OR TERMINAL
	NEUTRAL BUS
	GROUND, GROUND ROD, GROUND BUS
	INDUSTRIAL CONTROL RELAY OR LIGHTING CONTACTOR
	S1 CUTOUT HANDLE REMOVED
	S1 CUTOUT HANDLE INSERTED
	N.O. THERMAL SWITCH
	N.C. THERMAL SWITCH
	L-830 SERIES ISOLATION TRANSFORMER

ELECTRICAL LEGEND - ONE-LINE DIAGRAM	
	CABLE TERMINATOR/LUG
	TRANSFORMER
	DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
	CIRCUIT BREAKER
	THERMAL MAGNETIC CIRCUIT BREAKER
	FUSE
	TRANSIENT VOLTAGE SURGE SUPPRESSOR OR SURGE PROTECTOR DEVICE
	GROUND - GROUND ROD, GROUNDING ELECTRODE, OR AT EARTH POTENTIAL
	INDICATING LIGHT
	MOTOR
	LOAD, MOTOR, # = HORSEPOWER
	ELECTRIC UTILITY METER BASE
	JUNCTION BOX WITH SPLICE
	EQUIPMENT, XXX = DEVICE DESCRIPTION
	GROUND BUS OR TERMINAL
	NEUTRAL BUS
	PANELBOARD WITH MAIN LUGS
	PANELBOARD WITH MAIN BREAKER
	FUSE PANEL WITH MAIN FUSE PULLOUT
	DUPLEX RECEPTACLE 120V SINGLE PHASE GROUNDING TYPE
	CONTROL STATION
	TRANSFER SWITCH
	ENGINE GENERATOR SET



Kevin N. Lightfoot
DATE SIGNED: 9/15/23
LICENSE EXPIRES: 11/30/2025

INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

NO.	DATE	DESCRIPTION
		DES DWN REV

ISSUE: AUGUST 25, 2023

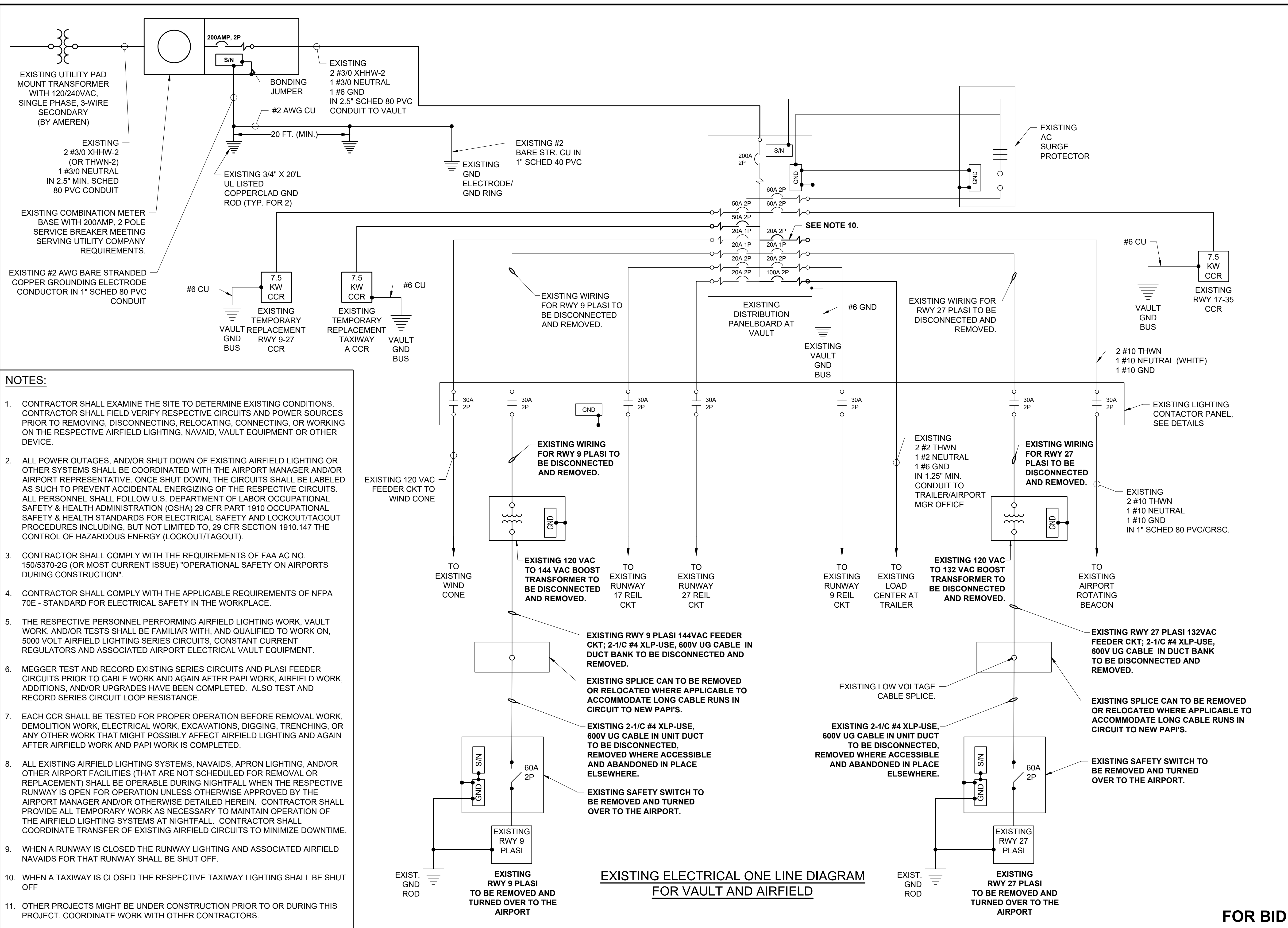
PROJECT NO: 23A0038D
CAD FILE: E-601.DWG

DESIGN BY: KNL 8/3/2023
DRAWN BY: HLE 8/3/2023

REVIEWED BY: KNL 9/15/2023

SHEET TITLE

EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD



- NOTES:**
- CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE EXISTING CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING, DISCONNECTING, RELOCATING, CONNECTING, OR WORKING ON THE RESPECTIVE AIRFIELD LIGHTING, NAVAID, VAULT EQUIPMENT OR OTHER DEVICE.
 - ALL POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING AIRFIELD LIGHTING OR OTHER SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND/OR AIRPORT REPRESENTATIVE. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
 - CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2G (OR MOST CURRENT ISSUE) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
 - CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.
 - THE RESPECTIVE PERSONNEL PERFORMING AIRFIELD LIGHTING WORK, VAULT WORK, AND/OR TESTS SHALL BE FAMILIAR WITH, AND QUALIFIED TO WORK ON, 5000 VOLT AIRFIELD LIGHTING SERIES CIRCUITS, CONSTANT CURRENT REGULATORS AND ASSOCIATED AIRPORT ELECTRICAL VAULT EQUIPMENT.
 - MEGGER TEST AND RECORD EXISTING SERIES CIRCUITS AND PLASI FEEDER CIRCUITS PRIOR TO CABLE WORK AND AGAIN AFTER PAPI WORK, AIRFIELD WORK, ADDITIONS, AND/OR UPGRADES HAVE BEEN COMPLETED. ALSO TEST AND RECORD SERIES CIRCUIT LOOP RESISTANCE.
 - EACH CCR SHALL BE TESTED FOR PROPER OPERATION BEFORE REMOVAL WORK, DEMOLITION WORK, ELECTRICAL WORK, EXCAVATIONS, DIGGING, TRENCHING, OR ANY OTHER WORK THAT MIGHT POSSIBLY AFFECT AIRFIELD LIGHTING AND AGAIN AFTER AIRFIELD WORK AND PAPI WORK IS COMPLETED.
 - ALL EXISTING AIRFIELD LIGHTING SYSTEMS, NAVAIDS, APRON LIGHTING, AND/OR OTHER AIRPORT FACILITIES (THAT ARE NOT SCHEDULED FOR REMOVAL OR REPLACEMENT) SHALL BE OPERABLE DURING NIGHTFALL WHEN THE RESPECTIVE RUNWAY IS OPEN FOR OPERATION UNLESS OTHERWISE APPROVED BY THE AIRPORT MANAGER AND/OR OTHERWISE DETAILED HEREIN. CONTRACTOR SHALL PROVIDE ALL TEMPORARY WORK AS NECESSARY TO MAINTAIN OPERATION OF THE AIRFIELD LIGHTING SYSTEMS AT NIGHTFALL. CONTRACTOR SHALL COORDINATE TRANSFER OF EXISTING AIRFIELD CIRCUITS TO MINIMIZE DOWNTIME.
 - WHEN A RUNWAY IS CLOSED THE RUNWAY LIGHTING AND ASSOCIATED AIRFIELD NAVAIDS FOR THAT RUNWAY SHALL BE SHUT OFF.
 - WHEN A TAXIWAY IS CLOSED THE RESPECTIVE TAXIWAY LIGHTING SHALL BE SHUT OFF
 - OTHER PROJECTS MIGHT BE UNDER CONSTRUCTION PRIOR TO OR DURING THIS PROJECT. COORDINATE WORK WITH OTHER CONTRACTORS.

EXISTING ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD

FOR BID



INSTALL PAPI SYSTEM & ASSOCIATED ELECTRICAL IMPROVEMENTS

IDA No: RSV-5062
AIP No: 3-17-SBGP-TBD

Contract No. RB022

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023

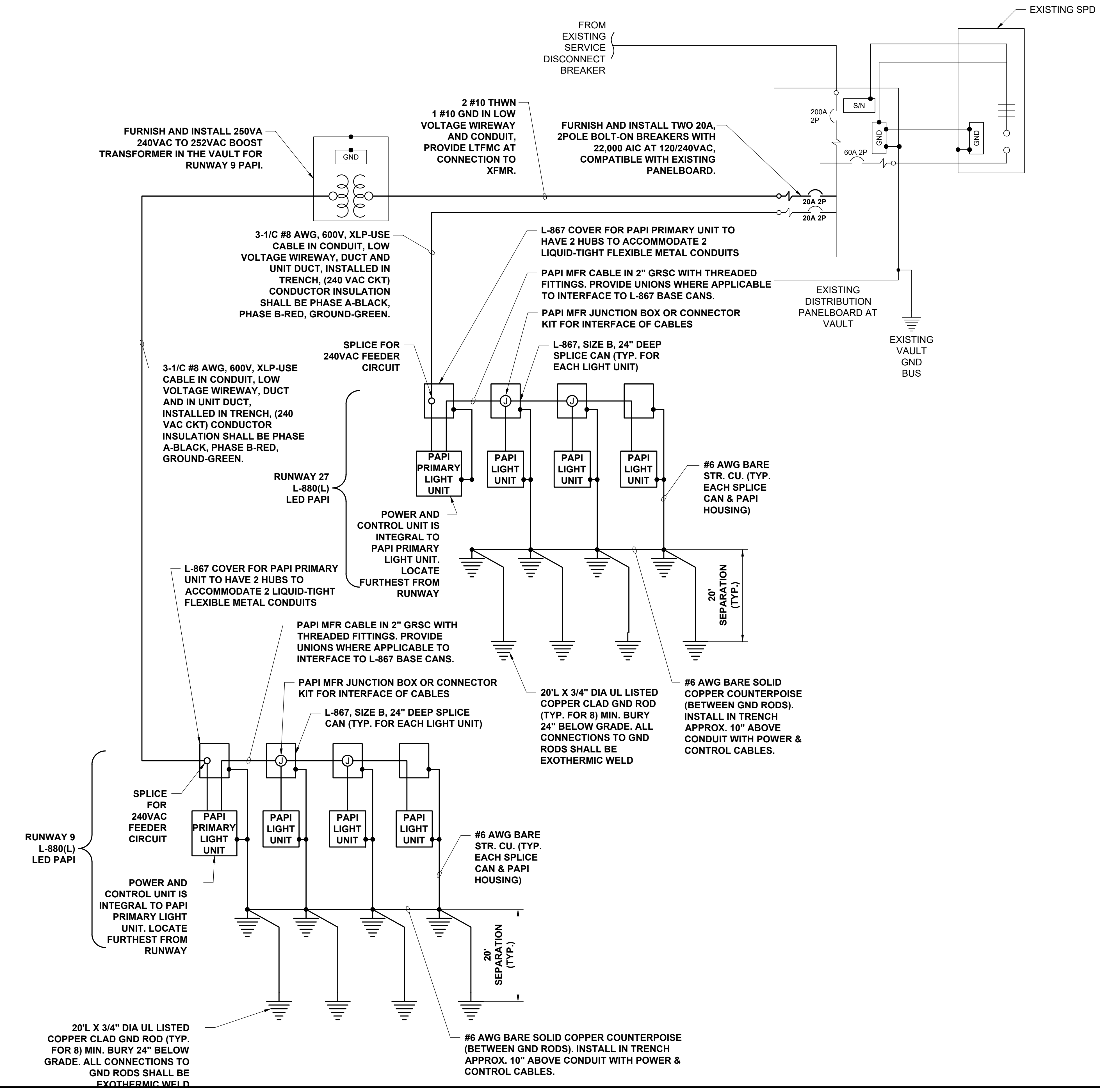
PROJECT NO: 23A0038D
CAD FILE: E-602.DWG
DESIGN BY: KNL 8/3/2023
DRAWN BY: HLE 8/3/2023
REVIEWED BY: KNL 9/15/2023

SHEET TITLE

PROPOSED ELECTRICAL ONE-LINE FOR RUNWAY 9-27 PAPI'S

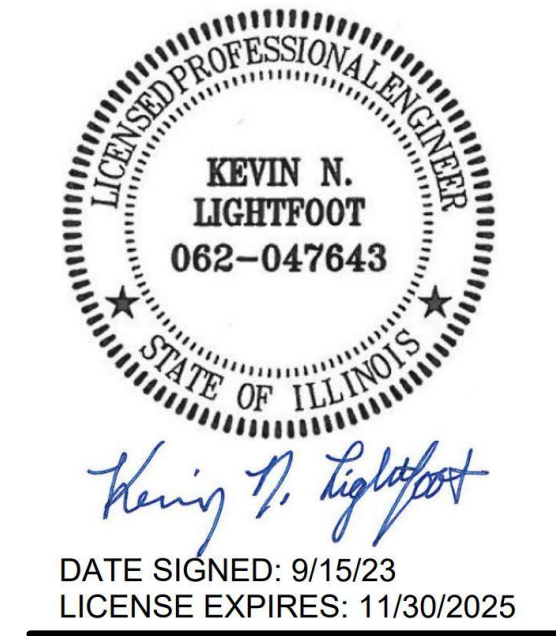
NOTES

- ALL VAULT WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, INTERTEK TESTING SERVICES VERIFICATION/ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- ALL CONDUCTORS/WIRING SHALL BE COPPER.
- CONTRACTOR SHALL CONFIRM POWER REQUIREMENTS WITH THE ACTUAL NAMEPLATE ON EACH PAPI (OR OTHER RESPECTIVE EQUIPMENT) AND ADJUST CIRCUIT BREAKER, FUSES, WIRE SIZES & CONDUIT SIZES TO CONFORM WITH NEC & MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE. WIRE SIZES SHOWN ON THE PLANS ARE MINIMUM.
- HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, JUNCTION BOX, OR RACEWAY.
- LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.
- EQUIPMENT AND MATERIALS NOT LABELED AS "EXISTING" ARE NEW.
- ALL NEW VAULT WORK WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE PAPI WORK PAY ITEM.



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FOR BID



NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: AUGUST 25, 2023

PROJECT NO: 23A0038D

CAD FILE: E-603.DWG

DESIGN BY: KNL 8/3/2023

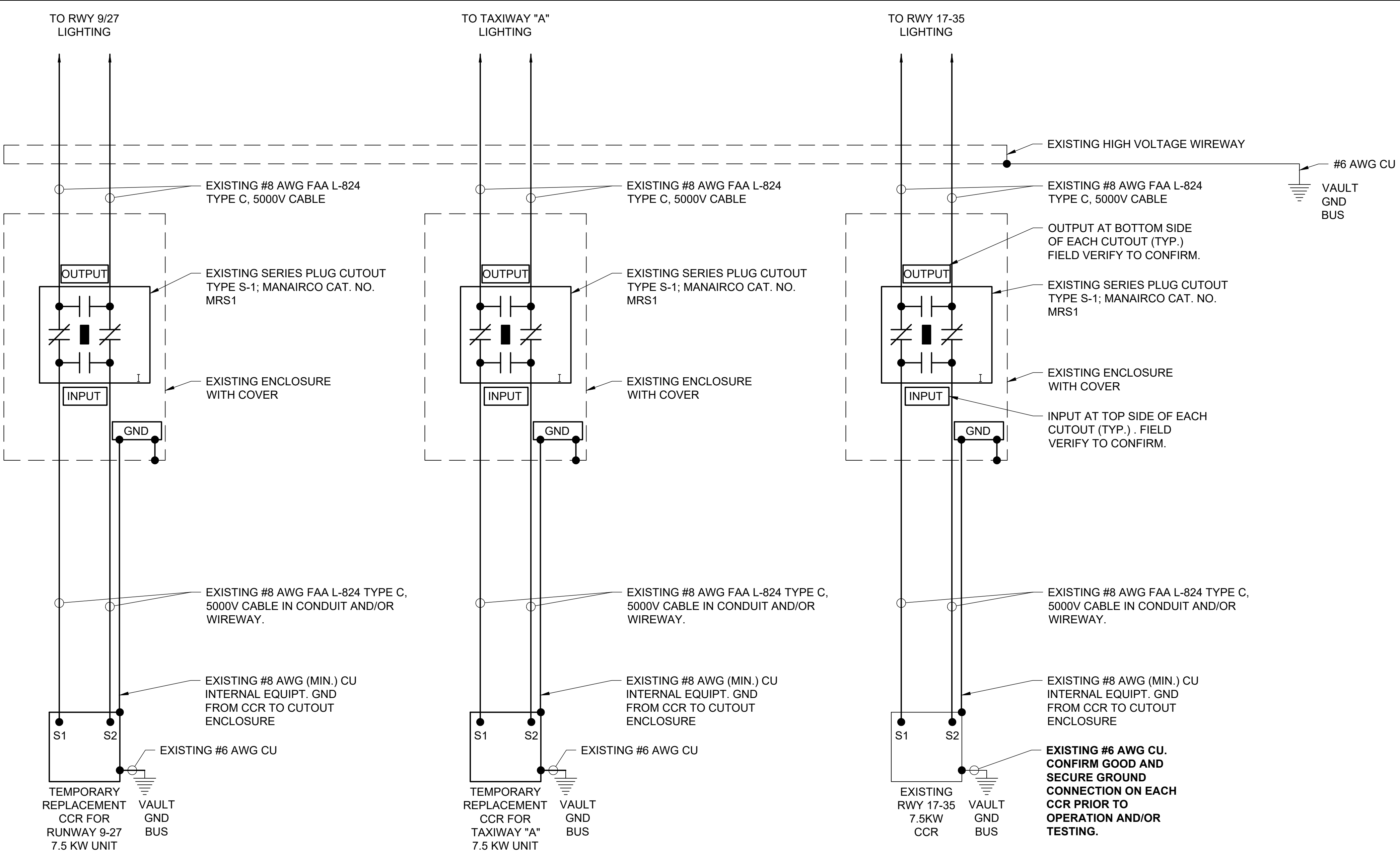
DRAWN BY: HLE 8/3/2023

REVIEWED BY: KNL 9/15/2023

SHEET TITLE

NOTES:

- KEEP ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS COORDINATED WITH THE AIRPORT MANAGER/DIRECTOR AND RESIDENT PROJECT REPRESENTATIVE. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- EXAMINE THE SITE TO CONFIRM AND FIELD VERIFY EXISTING SITE CONDITIONS.
- VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES FOR RESPECTIVE SYSTEMS PRIOR TO REMOVING, DISCONNECTING, WORKING ON, RELOCATING, RECONNECTING, AND/OR INSTALLING THE RESPECTIVE AIRFIELD LIGHTING, TAXI SIGN, NAVAID, OR OTHER DEVICES. THE CONTRACTOR WILL NEED TO EXERCISE CAUTION WHEN WORKING IN THE VAULT AND ON THE AIRFIELD. CONTRACTOR SHALL REPORT ANY VARIATIONS, DEFICIENCIES, AND/OR APPARENT SAFETY CONCERNS TO THE PROJECT ENGINEER AND THE RESIDENT ENGINEER. CONTRACTOR SHALL FOLLOW LOCKOUT/TAGOUT PROCEDURES FOR SAFETY OF PERSONNEL. CONTRACTOR SHALL FURNISH AND INSTALL LOCKOUT/TAGOUT KITS PER SPECIFICATIONS.
- IDENTIFY EACH RESPECTIVE CIRCUIT PRIOR TO PERFORMING WORK ON THAT CIRCUIT.
- NEVER PULL A CUTOUT OR DISCONNECT AN L-823 CABLE CONNECTION WITH THE CIRCUIT ENERGIZED. SHUTOFF CIRCUITS PRIOR TO PULLING A SERIES PLUG CUTOUT OR DISCONNECTING A CABLE.
- THE RESPECTIVE PERSONNEL PERFORMING AIRFIELD LIGHTING WORK, VAULT WORK, AND/OR TESTS SHALL BE FAMILIAR WITH, AND QUALIFIED TO WORK ON, 5000 VOLT AIRFIELD LIGHTING SERIES CIRCUITS, CONSTANT CURRENT REGULATORS, AND ASSOCIATED AIRPORT ELECTRICAL VAULT EQUIPMENT.
- EXERCISE CAUTION, PRACTICE SAFETY, AND DISCONNECT THE SERIES CIRCUITS FROM THE RESPECTIVE CONSTANT CURRENT REGULATORS, AS APPLICABLE WHEN PERFORMING WORK ON THE AIRFIELD LIGHTING OR WORK THAT MIGHT AFFECT THE AIRFIELD LIGHTING. CONTRACTOR SHALL MAKE NECESSARY ARRANGEMENTS TO DISCONNECT POWER AND LOCKOUT CIRCUITS FOR PROTECTION OF PERSONNEL.
- OVERSEE AND CONDUCT TESTS FOR AREAS OF WORK WHERE THE RESPECTIVE CIRCUITS MIGHT BE AFFECTED. MEGGER TEST AND RECORD EXISTING SERIES CIRCUITS (WITH A CABLE INSULATION TESTER) PRIOR TO CABLE WORK OR ANY OTHER WORK THAT MIGHT POSSIBLY AFFECT AIRFIELD LIGHTING SYSTEMS, AND AGAIN AFTER AIRFIELD LIGHTING MODIFICATIONS, ADDITIONS, UPGRADES AND/OR OTHER WORK HAS BEEN COMPLETED. PROVIDE 5KV INSULATION TESTER FOR 5,000 VOLT SERIES CIRCUIT CABLES. ALSO TEST AND RECORD SERIES CIRCUIT LOOP RESISTANCE WITH AN OHMMETER. PROVIDE COPY OF TEST RESULTS TO THE PROJECT ENGINEER OF RECORD (EOR) WITHIN 5 DAYS OF CONDUCTING TESTS.
- RESPECTIVE CCR'S SHALL BE TESTED FOR PROPER OPERATION BEFORE REMOVAL WORK, MODIFICATIONS, ADDITIONS AND/OR ANY AIRFIELD WORK THAT MIGHT AFFECT LIGHTING CIRCUITS AND AGAIN AFTER THE AIRFIELD WORK AND ADDITIONS HAVE BEEN COMPLETED. CONTRACTOR SHALL TEST AND RECORD THE INPUT CURRENT AND OUTPUT CURRENT FOR EACH CONSTANT CURRENT REGULATOR IN THE AUTOMATIC AND MANUAL MODES OF OPERATION. PROVIDE A TRUE RMS AMMETER FOR CURRENT MEASUREMENTS. CONTRACTOR SHALL REPORT CONCERNS AND/OR DEFICIENCIES TO THE RESIDENT PROJECT REPRESENTATIVE AND THE ENGINEER OF RECORD (EOR). WRITTEN TEST RESULTS SHALL BE PROVIDED TO THE RESIDENT ENGINEER AND THE PROJECT ENGINEER OF RECORD (EOR).



EXISTING HIGH VOLTAGE WIRING SCHEMATIC

LEGEND

- "I" DENOTES PLUG CUTOUT WITH PLUG INSERTED
- "P" DENOTES PLUG CUTOUT WITH PLUG PULLED
- "CCR" DENOTES CONSTANT CURRENT REGULATOR

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FOR BID

