

CONSTRUCTION PLANS - ISSUED NOVEMBER 10, 2017

PHASE 1- REPLACE MEDIUM INTENSITY TAXIWAY LIGHTS (MITL) ON TAXIWAYS SERVING RUNWAY 11-29

**COLES COUNTY MEMORIAL AIRPORT (MTO)
MATTOON-CHARLESTON, COLES COUNTY, ILLINOIS**

**IDA PROJECT NO. MTO-4554
SBG PROJECT NO. 3-17-SBGP-139**

SCOPE OF WORK:

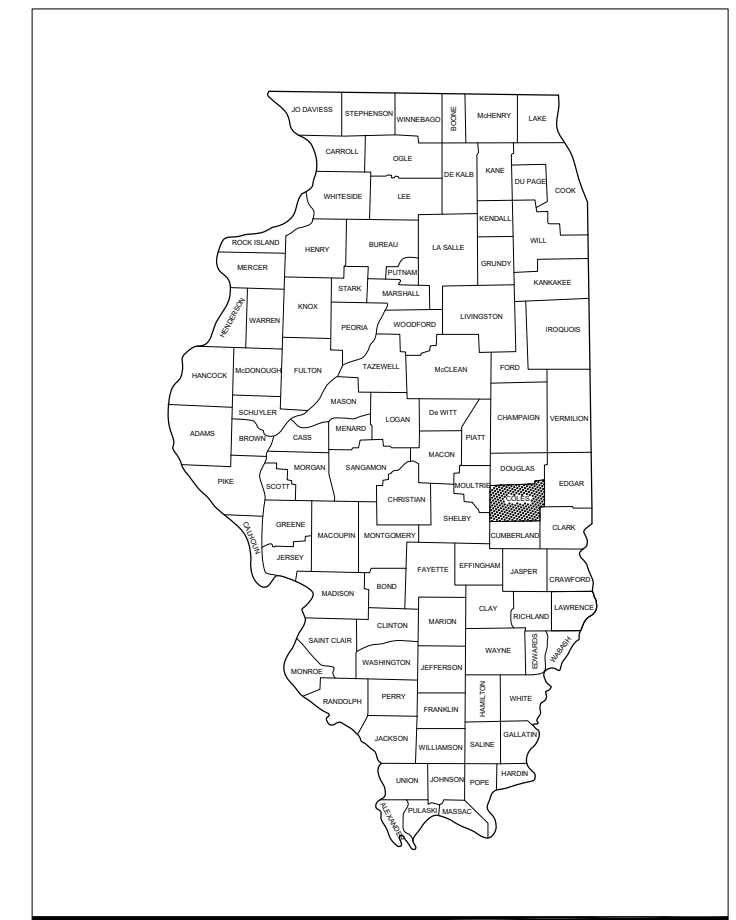
THIS PROJECT CONSIST OF REMOVING AND REPLACING THE MEDIUM INTENSITY TAXIWAY LIGHTING SYSTEMS ON TAXIWAY A, TAXIWAY B AND THE CONNECTING TAXIWAYS WITH THE ASSOCIATED CABLING, DUCT WORK, HANDHOLES, MANHOLES, AND VAULT WORK. THIS PROJECT WILL ALSO INCLUDE A NEW L-807(L) PRIMARY LIGHTED WIND CONE WITH THE ASSOCIATED CABLING AND DUCT WORK.

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.



VICINITY MAP



LOCATION MAP

No.	Issue/Description	Sheets Changed	Date	By



Kevin N. Lightfoot
Kevin N. Lightfoot, P.E. Lic. Exp. 11/30/2019
Electrical Engineer Date 11-7-2017



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Andrew J. Fearn
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Airport Manager Date 11-7-17

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PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: G-002-FLP.DWG

DESIGN BY: KNL 10/12/2017

DRAWN BY: CWS 10/12/2017

REVIEWED BY: BSS 10/17/2017

SHEET TITLE

SUMMARY OF
QUANTITIES AND
INDEX OF SHEETS

SUMMARY OF QUANTITIES - BASE BID				
ITEM NO.	DESCRIPTION	"TOTAL QUANTITY"	UNIT	"AS-BUILT QUANTITY"
AR107808	L-807 WC-8" INTERNALLY LIT	1	EACH	
AR108084	1/C #4 XLP-USE	1,250	LF	
AR108088	1/C #8 XLP-USE	5,507	LF	
AR108108	1/C #8 5KV UG CABLE	7,100	L.F.	
AR108158	1/C #8 5KV UG CABLE IN UD	28,760	L.F.	
AR109200	INSTALL ELECTRICAL EQUIPMENT	1	L. S.	
AR109440	TEMPORARY WIRING	1	L. S.	
AR110012	2" DIRECTIONAL BORE	556	L.F.	
AR110013	3" DIRECTIONAL BORE	2,030	L.F.	
AR110202	2" PVC DUCT, DIRECT BURY	1,183	L.F.	
AR110506	6-WAY CONCRETE ENCASED DUCT	145	L.F.	
AR110901	CONCRETE DUCT REMOVAL	160	L.F.	
AR115610	ELECTRICAL HANDHOLE	11	EACH	
AR115710	ELECTRICAL MANHOLE	3	EACH	
AR115715	ELECTRICAL MANHOLE - SPECIAL	2	EACH	
AR125410	MITL-STAKE MOUNTED	159	EACH	
AR125415	MITL-BASE MOUNTED	47	EACH	
AR125565	SPLICE CAN	9	EACH	
AR150510	ENGINEER'S FIELD OFFICE	1	L.S.	
AR150520	MOBILIZATION	1	L.S.	
AR800476	REMOVE AIRFIELD LIGHTING	1	L. S.	
AR800545	MITL-BASE MOUNTED SIZE D	9	EACH	

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4	CONSTRUCTION SAFETY PLAN WORK AREA 2
5	CONSTRUCTION SAFETY PLAN WORK AREA 3
6	CONSTRUCTION SAFETY DETAILS AND NOTES
7	KEY PLAN
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9	EXISTING AIRFIELD LIGHTING PLAN SHEET 2
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11	EXISTING AIRFIELD LIGHTING PLAN SHEET 4
12	EXISTING AIRFIELD LIGHTING PLAN SHEET 5
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15	EXISTING AIRFIELD LIGHTING PLAN SHEET 8
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24	PROPOSED AIRFIELD LIGHTING PLAN SHEET 8
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51	PROPOSED ELECTRICAL ONE LINE FOR PANEL B AND AIRFIELD
52	VAULT PANELBOARD B SCHEDULES
53	LIGHTING CONTACTOR SCHEMATIC
54	LIGHTING CONTACTOR PANEL DETAIL
55	AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC FOR RUNWAYS
56	AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC FOR TAXIWAYS



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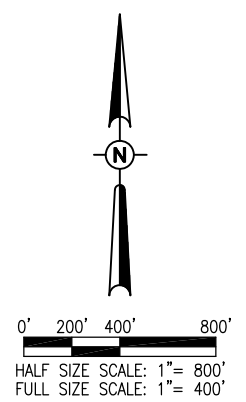
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CAD FILE: C-004-SFY.DWG
DESIGN BY: BSS 09/25/2017
DRAWN BY: CWS 09/26/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

**CONSTRUCTION
SAFETY PLAN
WORK AREA 1**

AIRPORT CTAF/UNICOM FREQUENCY = 122.70

CRITICAL POINTS					
CRITICAL POINT #	LATITUDE	LONGITUDE	GROUND ELEVATION	EQUIPMENT HEIGHT	EQUIPMENT ELEVATION
1	039° 28' 52.48"	-088° 16' 39.74"	706'	15'	721'
2	039° 28' 54.75"	-088° 17' 21.34"	715'	15'	730'
3	039° 28' 47.91"	-088° 17' 00.47"	717'	2'	719'
4	039° 28' 46.73"	-088° 16' 48.15"	713'	15'	728'

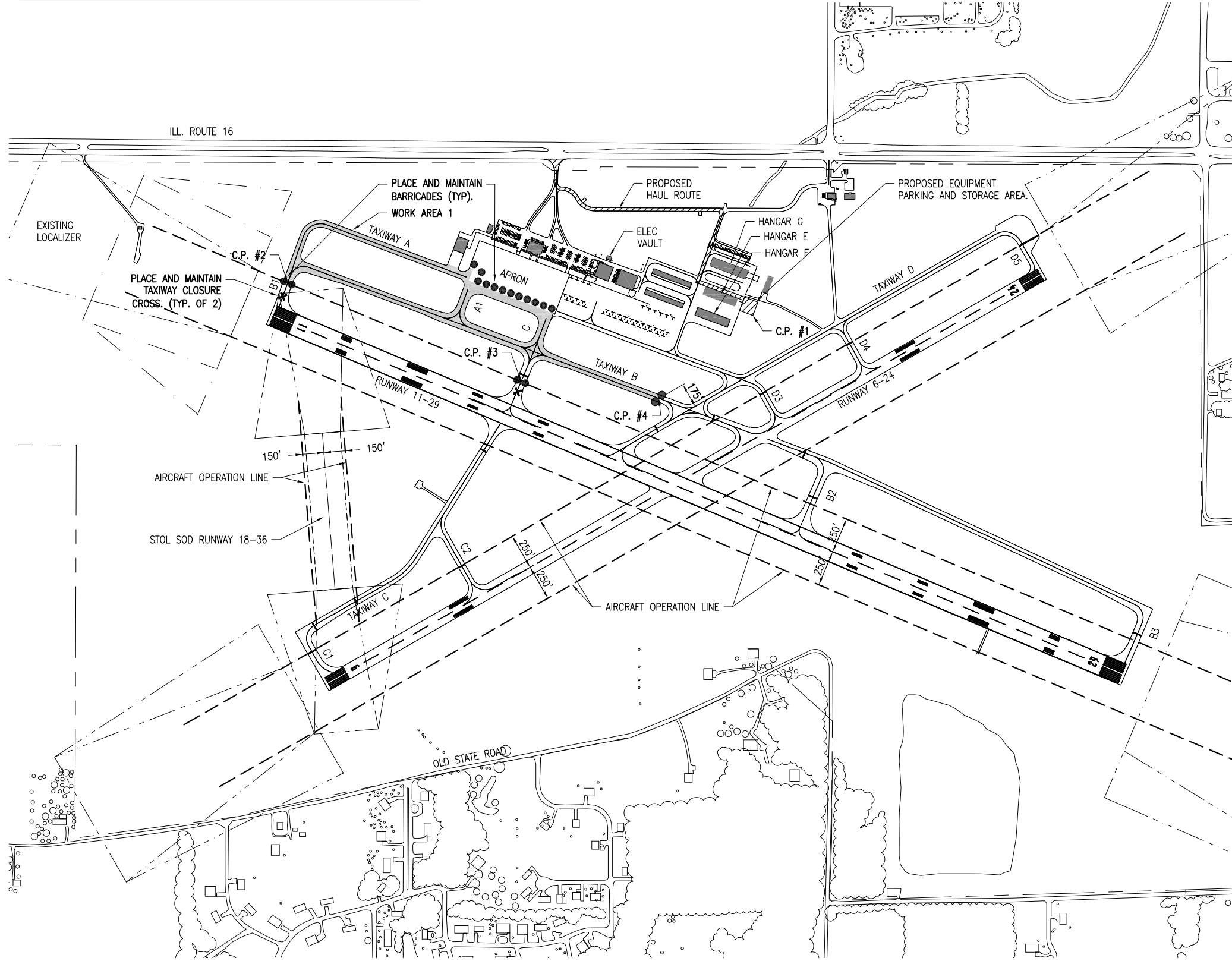


LEGEND

- EXISTING PAVEMENTS
- PROPOSED WORK AREA
- EXISTING BUILDINGS
- PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
- AIRCRAFT OPERATION LINE
- PROPOSED BARRICADES

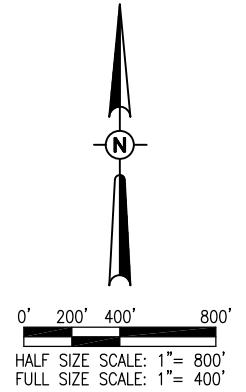
WORK AREA 1 NOTES

1. WORK AREA 1 INCLUDES REMOVAL AND INSTALLATION OF AIRFIELD LIGHTING AND CABLES ALONG TAXIWAYS A AND B WEST OF TAXIWAY D, ALONG TAXIWAY A-1, AND PORTIONS OF TAXIWAY B1 & C. ALL RUNWAYS WILL REMAIN OPEN WHILE WORKING IN THIS AREA.
2. DURING THE TIME OF THE RUNWAY CLOSURES CONDUIT BORING INSTALLATION MAY BE DONE ON TAXIWAYS B1, B2, B3, C, C1, C2, D, D3, D4, AND D5 SIMULTANEOUSLY WITH THE WORK AT THE INTERSECTION OF RUNWAY 11-29 AND RUNWAY 6-24, AND THE INTERSECTION OF TAXIWAY B AND RUNWAY 6-24. TAXIWAYS WILL BE CLOSED ANY TIME WORK IS BEING PERFORMED WITHIN 93' OF A TAXIWAY CENTERLINE. PROVIDE BARRICADES FOR CLOSED TAXIWAYS.
3. IT IS ANTICIPATED THAT WORK IN AND NEAR THE ELECTRICAL VAULT WILL OCCUR CONCURRENTLY WITH WORK ON THE AIRFIELD. THEREFORE THE VAULT WORK SHALL BE COMPLETED WITHIN THE OVERALL PROJECT CONTRACT TIME.
4. CLOSURE CROSSES AND BARRICADES SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
5. AT ALL TIMES THE CONTRACTOR'S OPERATIONS SHALL BE SUCH AS TO MINIMIZE CLOSURES.
6. THE AIRPORT WILL REMAIN OPEN DURING ALL CONSTRUCTION PHASES TO ACCOMMODATE AGRICULTURAL AIR OPERATIONS AND HELICOPTER OPERATIONS. THE AIRPORT MANAGER WILL RETAIN THE RIGHT TO OPEN TAXIWAY A OR TAXIWAY D WHERE NECESSARY TO ACCOMMODATE AGRICULTURAL AIR OPERATIONS.
7. MAINTAIN ARFF (AIRCRAFT RESCUE AND FIRE FIGHTING) FACILITY ACCESS TO THE AIRFIELD FOR ALL PHASES OF WORK. CONTRACTOR SHALL COORDINATE LOCATIONS AND SPACING OF BARRICADES WITH THE AIRPORT MANAGER TO MAINTAIN ARFF EMERGENCY ACCESS ROUTES TO THE AIRFIELD. THE MATTOON FIRE DEPARTMENT ARFF FACILITY PERSONNEL WILL COORDINATE WITH THE AIRPORT MANAGER THROUGHOUT THE PROJECT.



AIRPORT CTAF/UNICOM FREQUENCY = 122.70

CRITICAL POINTS					
CRITICAL POINT #	LATITUDE	LONGITUDE	GROUND ELEVATION	EQUIPMENT HEIGHT	EQUIPMENT ELEVATION
5	039° 28' 44.24"	-088° 16' 49.25"	715'	2'	717'
6	039° 28' 42.37"	-088° 16' 43.29"	722'	2'	724'
7	039° 28' 39.45"	-088° 16' 34.63"	717'	15'	732'
8	039° 28' 29.95"	-088° 16' 05.64"	718'	15'	733'
9	039° 28' 43.51"	-088° 17' 03.53"	720'	2'	722'
10	039° 28' 39.13"	-088° 16' 50.43"	721'	2'	723'



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Illinois Licensed
Professional Service Corporation
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PHASE 1 - REPLACE MITL ON TAXIWAYS SERVING RUNWAY 11-29

IDA No: MTO-4554
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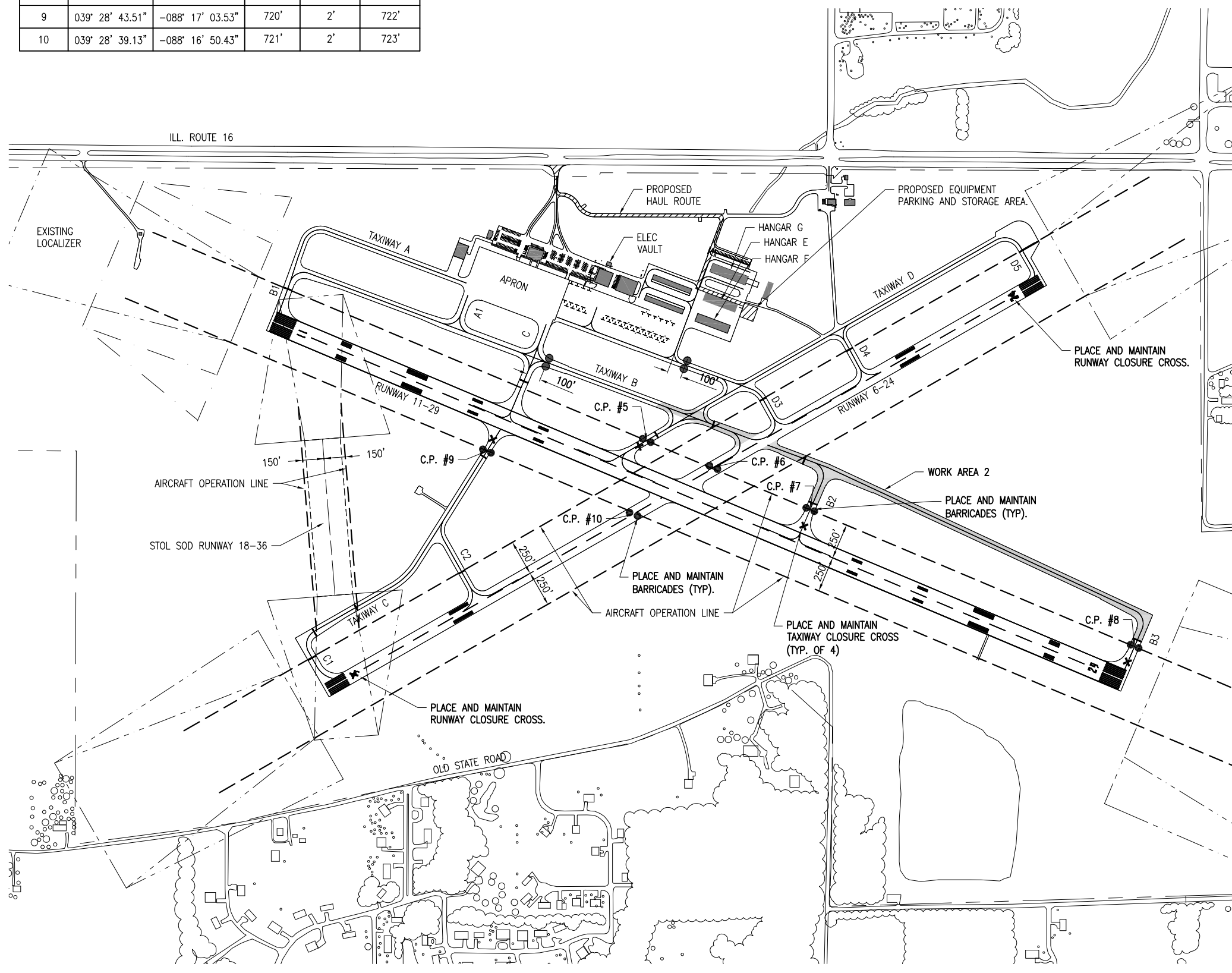
CONSTRUCTION SAFETY PLAN WORK AREA 2

LEGEND

- EXISTING PAVEMENTS
- PROPOSED WORK AREA
- EXISTING BUILDINGS
- PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
- AIRCRAFT OPERATION LINE
- PROPOSED BARRICADES

WORK AREA 2 NOTES

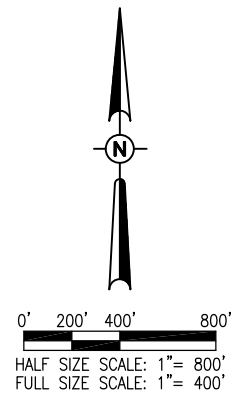
1. WORK AREA 2 INCLUDES REMOVAL AND INSTALLATION OF AIRFIELD LIGHTING AND CABLES ALONG TAXIWAYS B, B2 AND B3, EAST OF TAXIWAY D. RUNWAY 6-24 SHALL BE CLOSED; RUNWAYS 11-29 AND 18-36 WILL REMAIN OPEN WHILE WORKING IN THIS AREA.
2. DURING THE TIME OF THE RUNWAY CLOSURES CONDUIT BORING INSTALLATION MAY BE DONE ON TAXIWAYS B1, B2, B3, C, C1, C2, D, D3, D4, AND D5 SIMULTANEOUSLY WITH THE WORK AT THE INTERSECTION OF TAXIWAY B AND RUNWAY 6-24. TAXIWAYS WILL BE CLOSED ANY TIME WORK IS BEING PERFORMED WITHIN 93' OF A TAXIWAY CENTERLINE. PROVIDE BARRICADES FOR CLOSED TAXIWAYS.
3. IT IS ANTICIPATED THAT WORK IN AND NEAR THE ELECTRICAL VAULT WILL OCCUR CONCURRENTLY WITH WORK ON THE AIRFIELD. THEREFORE THE VAULT WORK SHALL BE COMPLETED WITHIN THE OVERALL PROJECT CONTRACT TIME.
4. CLOSURE CROSSES AND BARRICADES SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
5. RUNWAY 6-24 WILL BE NOTAMED "CLOSED". THE CONTRACTOR SHALL COORDINATE WITH THE AIRPORT AT LEAST 48 HOURS BEFORE BEGINNING THIS PHASE SO THAT NOTAMS MAY BE COORDINATED.
6. AT ALL TIMES THE CONTRACTOR'S OPERATIONS SHALL BE SUCH AS TO MINIMIZE CLOSURES.
7. WHEN A RUNWAY IS CLOSED THE RESPECTIVE RUNWAY LIGHTING AND NAVAIDS FOR THAT RUNWAY SHALL BE SHUT OFF. COORDINATE SHUT OFF OF NAVAIDS WITH THE AIRPORT MANAGER.
8. THE AIRPORT WILL REMAIN OPEN DURING ALL CONSTRUCTION PHASES TO ACCOMMODATE AGRICULTURAL AIR OPERATIONS AND HELICOPTER OPERATIONS. THE AIRPORT MANAGER WILL RETAIN THE RIGHT TO OPEN TAXIWAY A OR TAXIWAY D WHERE NECESSARY TO ACCOMMODATE AGRICULTURAL AIR OPERATIONS.
9. MAINTAIN ARFF (AIRCRAFT RESCUE AND FIRE FIGHTING) FACILITY ACCESS TO THE AIRFIELD FOR ALL PHASES OF WORK. CONTRACTOR SHALL COORDINATE LOCATIONS AND SPACING OF BARRICADES WITH THE AIRPORT MANAGER TO MAINTAIN ARFF EMERGENCY ACCESS ROUTES TO THE AIRFIELD. THE MATTOON FIRE DEPARTMENT ARFF FACILITY PERSONNEL WILL COORDINATE WITH THE AIRPORT MANAGER THROUGHOUT THE PROJECT.



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AIRPORT CTAF/UNICOM FREQUENCY = 122.70

CRITICAL POINTS					
CRITICAL POINT #	LATITUDE	LONGITUDE	GROUND ELEVATION	EQUIPMENT HEIGHT	EQUIPMENT ELEVATION
11	039° 28' 42.00"	-088° 16' 50.67"	718'	2'	720'
12	039° 28' 39.49"	-088° 16' 42.98"	721'	2'	723'
13	039° 28' 42.99"	-088° 16' 35.28"	718'	2'	720'
14	039° 28' 54.75"	-088° 17' 21.34"	715'	15'	730'
15	039° 28' 38.45"	-088° 16' 37.36"	720'	15'	735'
16	039° 28' 28.96"	-088° 16' 08.37"	718'	15'	733'



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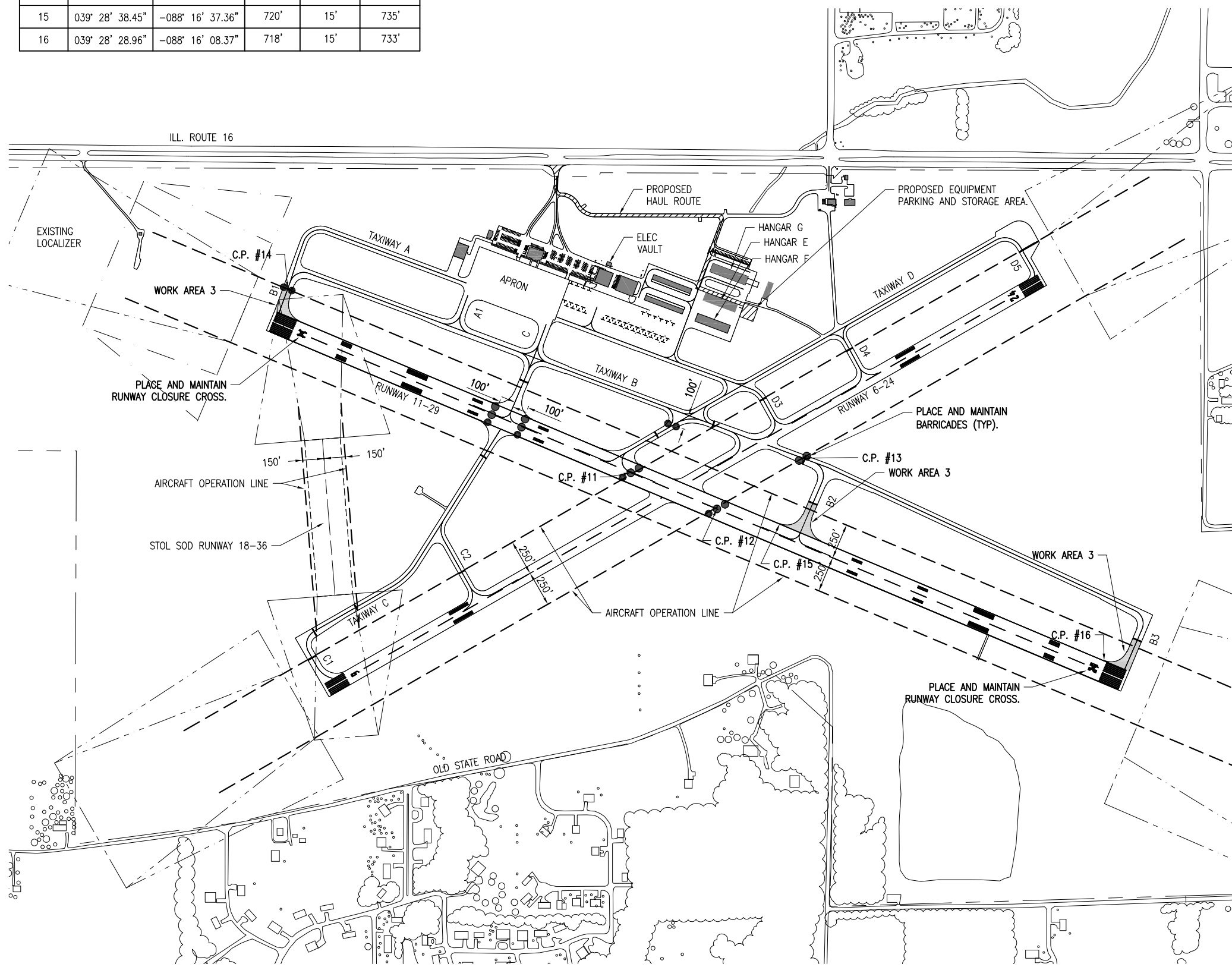
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LEGEND

- EXISTING PAVEMENTS
- PROPOSED WORK AREA
- EXISTING BUILDINGS
- PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
- AIRCRAFT OPERATION LINE
- PROPOSED BARRICADES



WORK AREA 3 NOTES

1. WORK AREA 3 INCLUDES REMOVAL AND INSTALLATION OF AIRFIELD LIGHTING AND CABLES ALONG TAXIWAYS B1, B2 AND B3, WITHIN 250' OF THE RUNWAY 11-29 CENTERLINE. RUNWAY 11-29 SHALL BE CLOSED; RUNWAY 6-24 AND 18-36 WILL REMAIN OPEN WHILE WORKING IN THIS AREA.
2. DURING THE TIME OF THE RUNWAY CLOSURES CONDUIT BORING INSTALLATION MAY BE DONE ON TAXIWAYS B1, B2, B3, C, C1, C2, D, D3, D4, AND D5 SIMULTANEOUSLY WITH THE WORK AT THE INTERSECTION OF TAXIWAY B AND RUNWAY 6-24, AND THE INTERSECTION OF TAXIWAY B AND RUNWAY 6-24. TAXIWAYS WILL BE CLOSED ANY TIME WORK IS BEING PERFORMED WITHIN 93' OF A TAXIWAY CENTERLINE. PROVIDE BARRICADES FOR CLOSED TAXIWAYS.
3. IT IS ANTICIPATED THAT WORK IN AND NEAR THE ELECTRICAL VAULT WILL OCCUR CONCURRENTLY WITH WORK ON THE AIRFIELD. THEREFORE THE VAULT WORK SHALL BE COMPLETED WITHIN THE OVERALL PROJECT CONTRACT TIME.
4. CLOSURE CROSSES AND BARRICADES SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
5. RUNWAY 11-29 WILL BE NOTAMED "CLOSED". THE CONTRACTOR SHALL COORDINATE WITH THE AIRPORT AT LEAST 48 HOURS BEFORE BEGINNING THIS PHASE SO THAT NOTAMS MAY BE COORDINATED.
6. AT ALL TIMES THE CONTRACTOR'S OPERATIONS SHALL BE SUCH AS TO MINIMIZE CLOSURES.
7. WHEN A RUNWAY IS CLOSED THE RESPECTIVE RUNWAY LIGHTING AND NAVAIDS FOR THAT RUNWAY SHALL BE SHUT OFF. COORDINATE SHUT OFF OF NAVAIDS WITH THE AIRPORT MANAGER.
8. THE AIRPORT WILL REMAIN OPEN DURING ALL CONSTRUCTION PHASES TO ACCOMMODATE AGRICULTURAL AIR OPERATIONS AND HELICOPTER OPERATIONS. THE AIRPORT MANAGER WILL RETAIN THE RIGHT TO OPEN TAXIWAY A OR TAXIWAY D WHERE NECESSARY TO ACCOMMODATE AGRICULTURAL AIR OPERATIONS.
9. MAINTAIN ARFF (AIRCRAFT RESCUE AND FIRE FIGHTING) FACILITY ACCESS TO THE AIRFIELD FOR ALL PHASES OF WORK. CONTRACTOR SHALL COORDINATE LOCATIONS AND SPACING OF BARRICADES WITH THE AIRPORT MANAGER TO MAINTAIN ARFF EMERGENCY ACCESS ROUTES TO THE AIRFIELD. THE MATTOON FIRE DEPARTMENT ARFF FACILITY PERSONNEL WILL COORDINATE WITH THE AIRPORT MANAGER THROUGHOUT THE PROJECT.



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SHEET TITLE

CONSTRUCTION SAFETY PLAN WORK AREA 3

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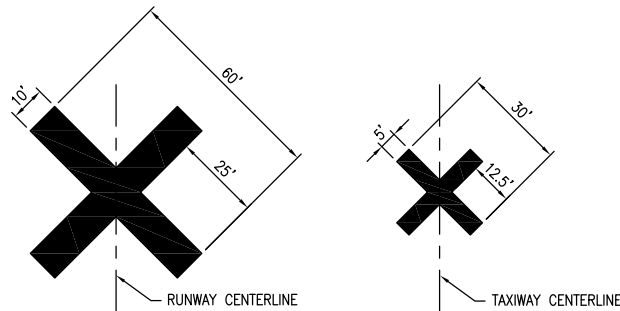
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SHEET TITLE

**CONSTRUCTION
SAFETY DETAILS
AND NOTES**

SAFETY NOTES

- FOLLOWING 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 150/5370-2 (CURRENT EDITION), "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION", APPLY TO THIS CONTRACT, EXCEPT AS MODIFIED BY THIS SAFETY PLAN, OR AS MODIFIED BY THE OWNER THROUGH THE RESIDENT ENGINEER/TECHNICIAN AT THE PRECONSTRUCTION CONFERENCE, OR DURING THE COURSE OF THE CONTRACT.
- 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, EXCEPT AS OTHERWISE PROVIDED FOR AT THE PRECONSTRUCTION CONFERENCE.
- 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 150/5210-5, "PAINTING, MARKING, AND LIGHTING OF VEHICLES USED ON AN AIRPORT" LATEST EDITION.
- NO CONSTRUCTION MATERIAL STOCKPILES SHALL BE LOCATED WITHIN 250' OF ANY ACTIVE RUNWAY, WITHIN 93' OF ANY OTHER ACTIVE AIRPORT OPERATIONS AREA, 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 150/5370-2, "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 150/5370-2, LATEST EDITION. CONTRACTOR SHALL NIGHT CHECK BARRICADES DAILY FOR PROPER OPERATION.
- NO OPEN TRENCHES WITHIN 250' OF AN ACTIVE RUNWAY CENTERLINE OR WITHIN 93' OF ANY AIRPORT OPERATIONS AREA WILL BE PERMITTED UNLESS PROPERLY MARKED. 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. HOWEVER OTHER EQUIPMENT TALLER THAN 25' MAY BE 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 TRUCKED ONTO AIRPORT ROADS, TAXIWAYS, AND SOD SURFACES, OR WHICH CAN BE BLOWN ONTO SUCH SURFACES, SHALL BE IMMEDIATELY SWEEP, 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 93' 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.

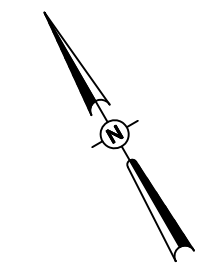


- TEMPORARY "CLOSED RUNWAY" AND "CLOSED TAXIWAY" MARKINGS SHALL BE "AVIATION YELLOW"
- TEMPORARY "CLOSED RUNWAY" AND "CLOSED TAXIWAY" MARKINGS SHALL BE CONSTRUCTED OF PLYWOOD, DOUBLE-LAYERED SNOW FENCE OR APPROVED FABRIC AND SHALL BE SECURED TO PAVEMENT BY SANDBAGS OR OTHER APPROVED METHOD.
- TEMPORARY "CLOSED RUNWAY" MARKINGS SHALL BE PLACED OVER THE RUNWAY DESIGNATION NUMBERS UNLESS OTHERWISE DIRECTED BY THE RESIDENT ENGINEER/TECHNICIAN.
- "CLOSED RUNWAY" AND "CLOSED TAXIWAY" MARKINGS SHALL NOT BE A PAY ITEM AND SHALL BE INCIDENTAL TO OTHER CONTRACT BID ITEMS.

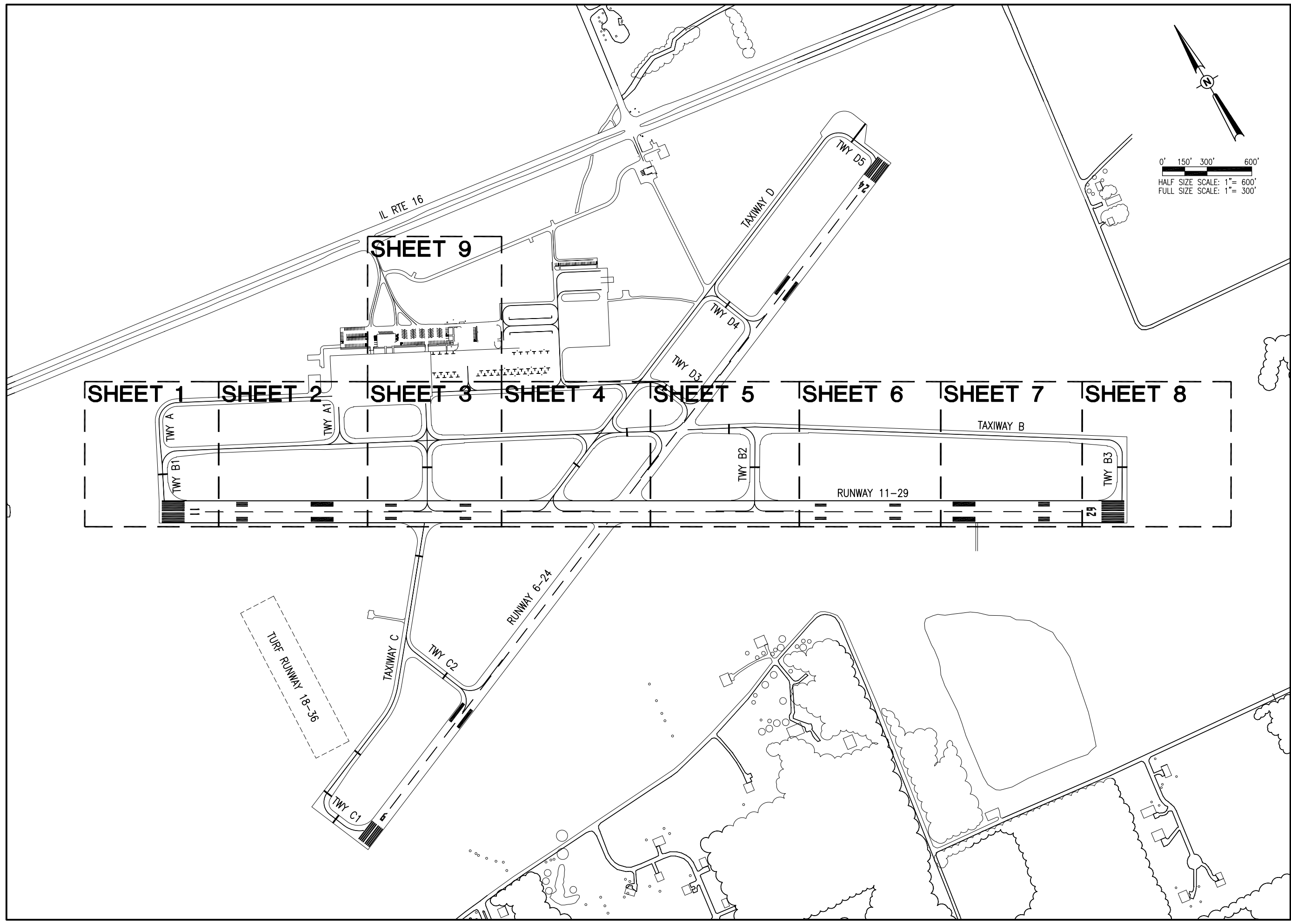
TEMPORARY CLOSURE CROSS DETAIL
NOT TO SCALE

BARRICADE 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.
- BARRICADES SHALL BE SPACED END TO END THE WIDTH OF THE PAVEMENT IN 10' INCREMENTS. BARRICADES ARE TO BE SET BACK 93' FROM THE ACTIVE TAXIWAY CENTERLINE OR AS SHOWN ON THE PLANS.
- 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.
- 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.
- BARRICADES SHALL BE SECURED TO THE GROUND BY APPROVED METHODS TO PREVENT MOVEMENT BY PROP WASH, JET BLAST OR OTHER WIND CURRENTS.
- 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.
- COST FOR PROVIDING, PLACING, MAINTAINING, AND REMOVING BARRICADES SHALL BE INCLUDED IN THE COST OF THE OTHER CONTRACT ITEMS.



0' 150' 300' 600'
HALF SIZE SCALE: 1" = 600'
FULL SIZE SCALE: 1" = 300'



11-7-2017
LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
Kevin N. Lightfoot
EXPIRES: 11/30/2019

PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554
SBG Project No:
3-17-SBGP-139
Contract No. CO063

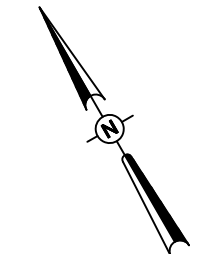
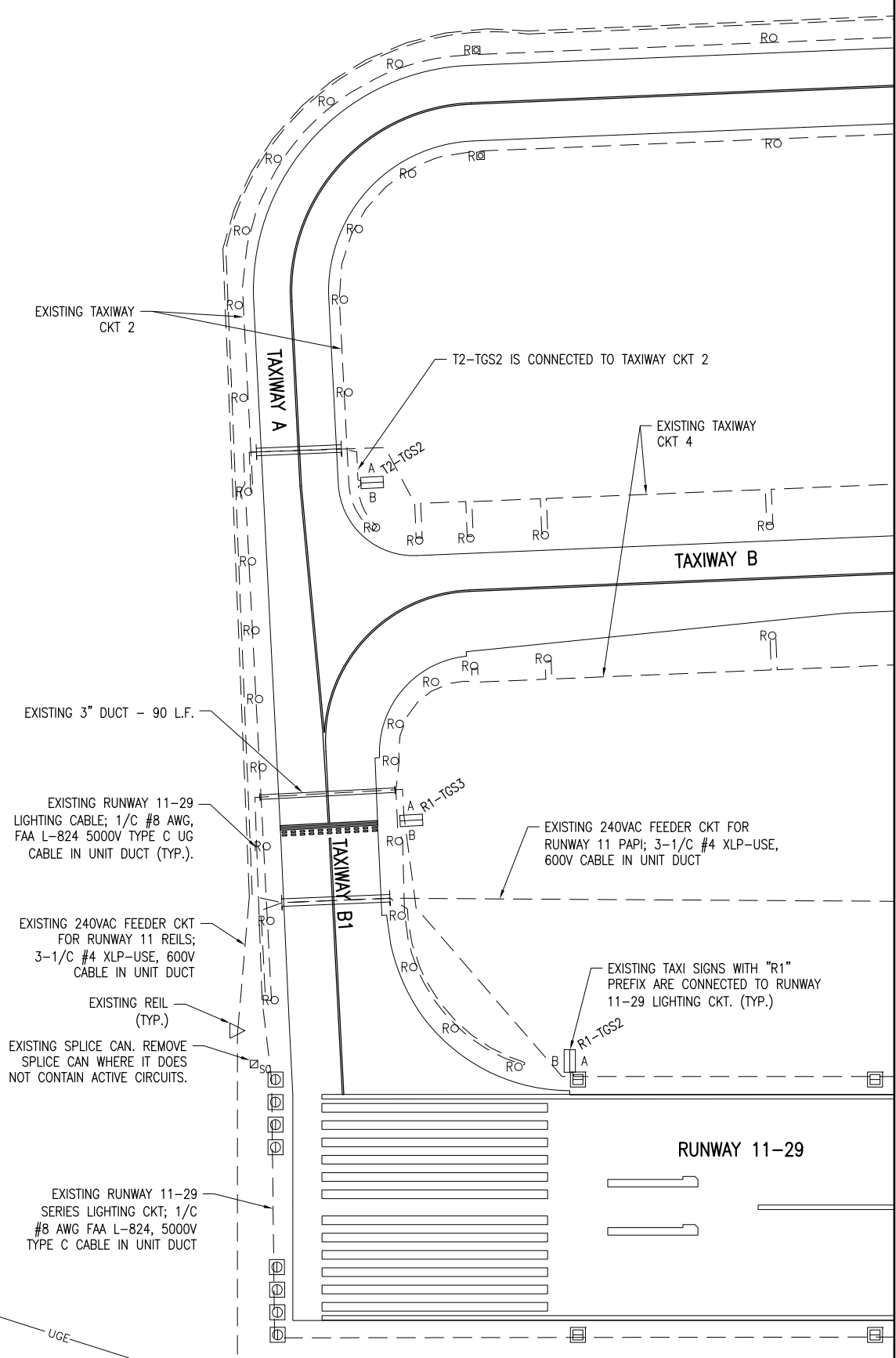
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DESIGN BY: KNL 09/02/2017				
DRAWN BY: CWS 09/05/2017				
REVIEWED BY: BSS 10/17/2017				

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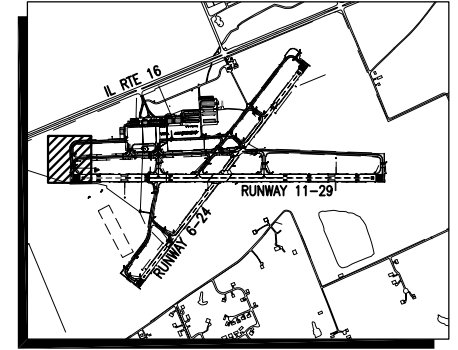
KEY PLAN

AIRFIELD LIGHTING REMOVAL NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/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).
2. CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE THE EXTENT OF THE WORK. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. BASED ON RECORD DRAWINGS EXISTING TAXIWAY LIGHT FIXTURES ON TAXIWAY B APPEAR TO HAVE BEEN INSTALLED IN 1974 AND EXISTING TAXIWAY LIGHT FIXTURES ON TAXIWAY A WEST OF THE APRON APPEAR TO HAVE BEEN INSTALLED IN 1982. SOME FIXTURES ARE MISSING AND MIGHT HAVE A STAKE, BASE, AND/OR TRANSFORMER REMAINING. EXISTING STAKE MOUNT FIXTURES HAVE CONCRETE BASES. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING THE RESPECTIVE AIRFIELD LIGHTING, TAXI SIGN, NAVAID, OR OTHER DEVICE.
3. THE EXISTING TAXIWAY EDGE LIGHTS LOCATED ON THE TAXIWAY C AND TAXIWAY D SHALL REMAIN IN PLACE.
4. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2F (OR MOST CURRENT ISSUE) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
5. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E -- STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.
6. THE EXISTING AIRFIELD LIGHTS, THEIR ISOLATION TRANSFORMERS, MOUNTING STAKES, CONCRETE BASES, AND LIGHT BASES DESIGNATED FOR REMOVAL SHALL BE REMOVED AND DISPOSED OF, OFF THE AIRPORT SITE IN A LEGAL MANNER. REMOVAL OF THE EXISTING AIRFIELD LIGHTS WILL BE PAID FOR UNDER ITEM AR800476 REMOVE AIRFIELD LIGHTING PER LUMP SUM.
7. EXISTING SPLICE CANS, HANDHOLES AND/OR MANHOLES DESIGNATED FOR REMOVAL SHALL BE REMOVED AND DISPOSED OF OFF THE AIRPORT SITE IN A LEGAL MANNER. REMOVAL OF SPLICE CANS, HANDHOLES AND/OR MANHOLES WILL BE PAID FOR UNDER ITEM AR800476 REMOVE AIRFIELD LIGHTING PER LUMP SUM.
8. THE EXISTING PRIMARY WIND CONE DESIGNATED FOR REMOVAL SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. THE CONCRETE FOUNDATION AND CONCRETE PADS SHALL BE REMOVED AND DISPOSED OF OFF THE AIRPORT SITE IN A LEGAL MANNER. REMOVAL OF THE EXISTING WIND CONE WILL BE PAID FOR UNDER ITEM AR800476 REMOVE AIRFIELD LIGHTING PER LUMP SUM.
9. THE EXISTING TAXI GUIDANCE SIGNS, SHALL REMAIN IN PLACE. TAXI GUIDANCE SIGNS ON CIRCUITS SCHEDULED FOR REMOVAL AND/OR REPLACEMENT SHALL BE RECONNECTED TO THE RESPECTIVE NEW CIRCUIT.
10. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH AIRFIELD LIGHTING REMOVALS SHALL BE ABANDONED IN PLACE UNLESS IT CONFLICTS WITH THE INSTALLATION OF A PROPOSED LIGHT OR CABLE, 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.
11. ALL ABOVEGROUND JUMPERS SHALL BE IN A DUCT WITH ALL CONNECTIONS SEALED. 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 150/5370-2F, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, SECTION 218, c.
12. THE CONTRACTOR IS REQUIRED TO FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE LIGHT, AND/OR BASE REMOVAL 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.
13. WHEN A RESPECTIVE RUNWAY IS CLOSED THE NAVAIDS FOR THAT RUNWAY SHALL BE SHUT OFF.
14. CONTRACTOR SHALL CONFIRM RESPECTIVE LIGHTS TO BE REMOVED WITH RESIDENT ENGINEER/RESIDENT TECHNICIAN PRIOR TO REMOVAL.
15. NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH THE ABOVE NOTE 1.



0' 25' 50' 100'
 HALF SIZE SCALE: 1" = 100'
 FULL SIZE SCALE: 1" = 50'



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. 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.

MATCHLINE - SEE NEXT SHEET

LEGEND

- [Symbol] EXISTING PAVEMENT
- [Symbol] EXISTING BUILDING
- [Symbol] EXISTING ELECTRICAL DUCT
- [Symbol] EXISTING ELECTRICAL CABLE
- [Symbol] W EXISTING WATER
- [Symbol] T EXISTING TELEPHONE
- [Symbol] UD EXISTING UNDERDRAIN
- [Symbol] SS EXISTING STORM SEWER
- [Symbol] SAN EXISTING SANITARY
- [Symbol] UGE EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- [Symbol] ▷ EXISTING REIL
- [Symbol] ≡ EXISTING TAXI GUIDANCE SIGN
- [Symbol] □_{SC} EXISTING SLICE CAN
- [Symbol] ○ EXISTING STAKE MOUNTED TAXIWAY LIGHT
- [Symbol] RO EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
- [Symbol] □ EXISTING BASE MOUNTED TAXIWAY LIGHT
- [Symbol] R □ EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
- [Symbol] □ EXISTING STAKE MOUNTED RUNWAY LIGHT
- [Symbol] □ EXISTING BASE MOUNTED RUNWAY LIGHT
- [Symbol] ⊙ EXISTING STAKE MOUNTED THRESHOLD LIGHT
- [Symbol] ⊕ EXISTING BASE MOUNTED THRESHOLD LIGHT
- [Symbol] ⊕ EXISTING AIRPORT ROTATING BEACON
- [Symbol] □_{ET} EXISTING UTILITY TRANSFORMER

NOTE: TAXIWAY B WEST OF RUNWAY 6-24 HAS 6" ASPHALT PAVEMENT BURIED APPROXIMATELY 18" BELOW GRADE EXTENDING APPROXIMATELY 15' TO 17' FROM THE PAVEMENT EDGE. THIS IS AN OLD RUNWAY PAVEMENT, 100' IN WIDTH.

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 #184-001084



PHASE 1 - REPLACE MITL ON TAXIWAYS SERVING RUNWAY 11-29

IDA No: MTO-4554
 SBG Project No: 3-17-SBGP-139
 Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

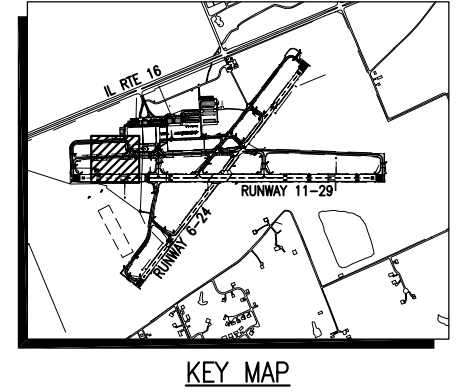
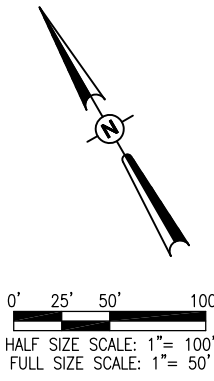
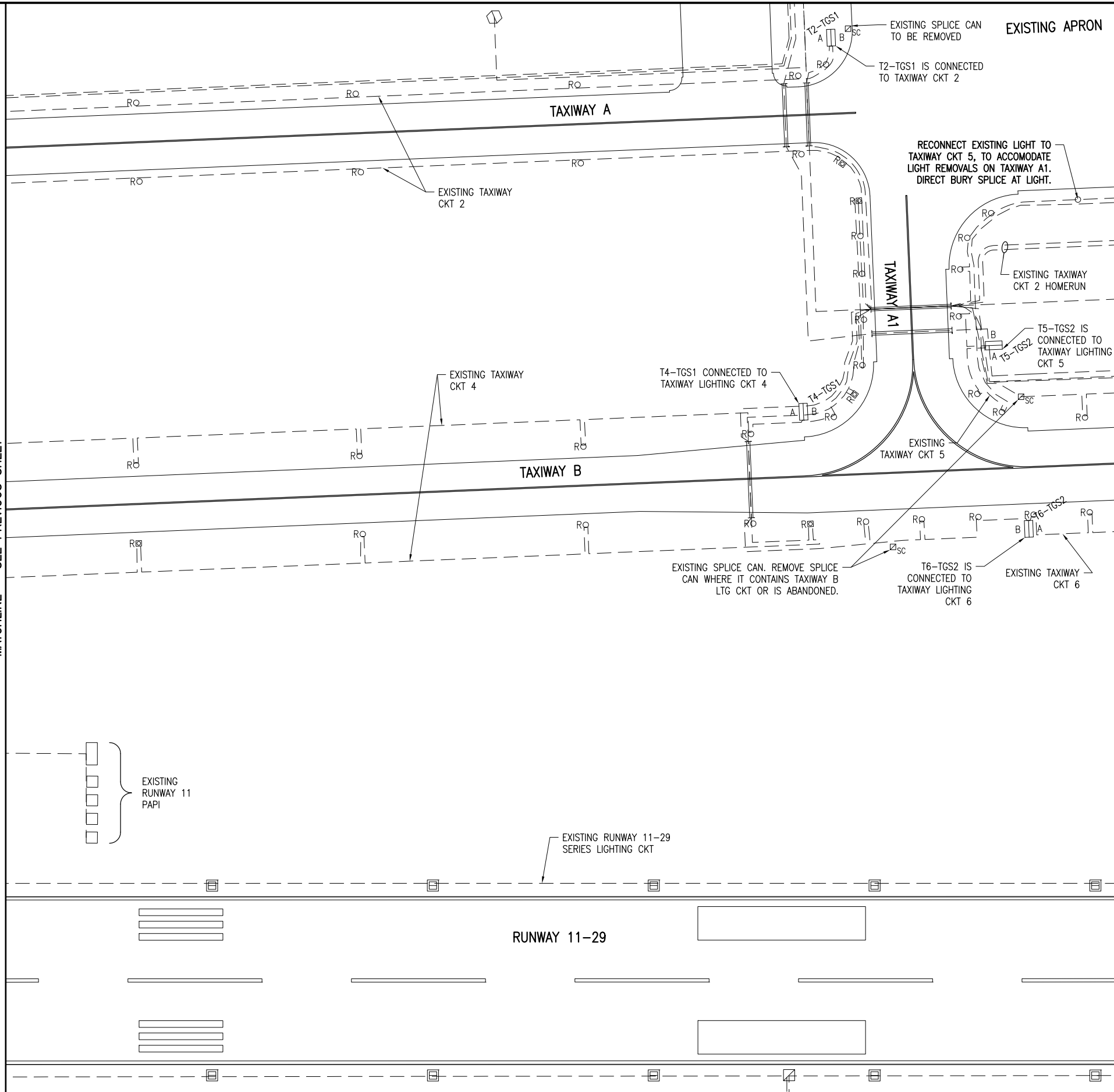
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EXISTING AIRFIELD LIGHTING PLAN SHEET 1

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MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET



NOTE: TAXIWAY B WEST OF RUNWAY 6-24 HAS 6" ASPHALT PAVEMENT BURIED APPROXIMATELY 18" BELOW GRADE EXTENDING APPROXIMATELY 15' TO 17' FROM THE PAVEMENT EDGE. THIS IS AN OLD RUNWAY PAVEMENT, 100' IN WIDTH.

- LEGEND**
- [Solid Line] EXISTING PAVEMENT
 - [Hatched Area] EXISTING BUILDING
 - [Dashed Line] EXISTING ELECTRICAL DUCT
 - [Dotted Line] EXISTING ELECTRICAL CABLE
 - [Line with W] EXISTING WATER
 - [Line with T] EXISTING TELEPHONE
 - [Line with UD] EXISTING UNDERDRAIN
 - [Line with SS] EXISTING STORM SEWER
 - [Line with SAN] EXISTING SANITARY
 - [Line with UGE] EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
 - [Triangle] EXISTING REIL
 - [Square with H] EXISTING TAXI GUIDANCE SIGN
 - [Square with SC] EXISTING SLICE CAN
 - [Circle] EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - [Circle with RO] EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - [Square with B] EXISTING BASE MOUNTED TAXIWAY LIGHT
 - [Square with RB] EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - [Square with R] EXISTING STAKE MOUNTED RUNWAY LIGHT
 - [Square with RB] EXISTING BASE MOUNTED RUNWAY LIGHT
 - [Circle with O] EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - [Circle with B] EXISTING BASE MOUNTED THRESHOLD LIGHT
 - [Circle with A] EXISTING AIRPORT ROTATING BEACON
 - [Square with ET] EXISTING UTILITY TRANSFORMER



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PHASE 1 - REPLACE MITL ON TAXIWAYS SERVING RUNWAY 11-29

IDA No: MTO-4554
 SBG Project No:
 3-17-SBGP-139
 Contract No. CO063

NO.	DATE	DESCRIPTION		
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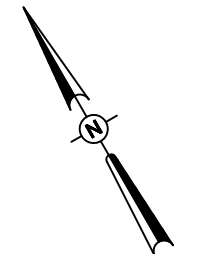
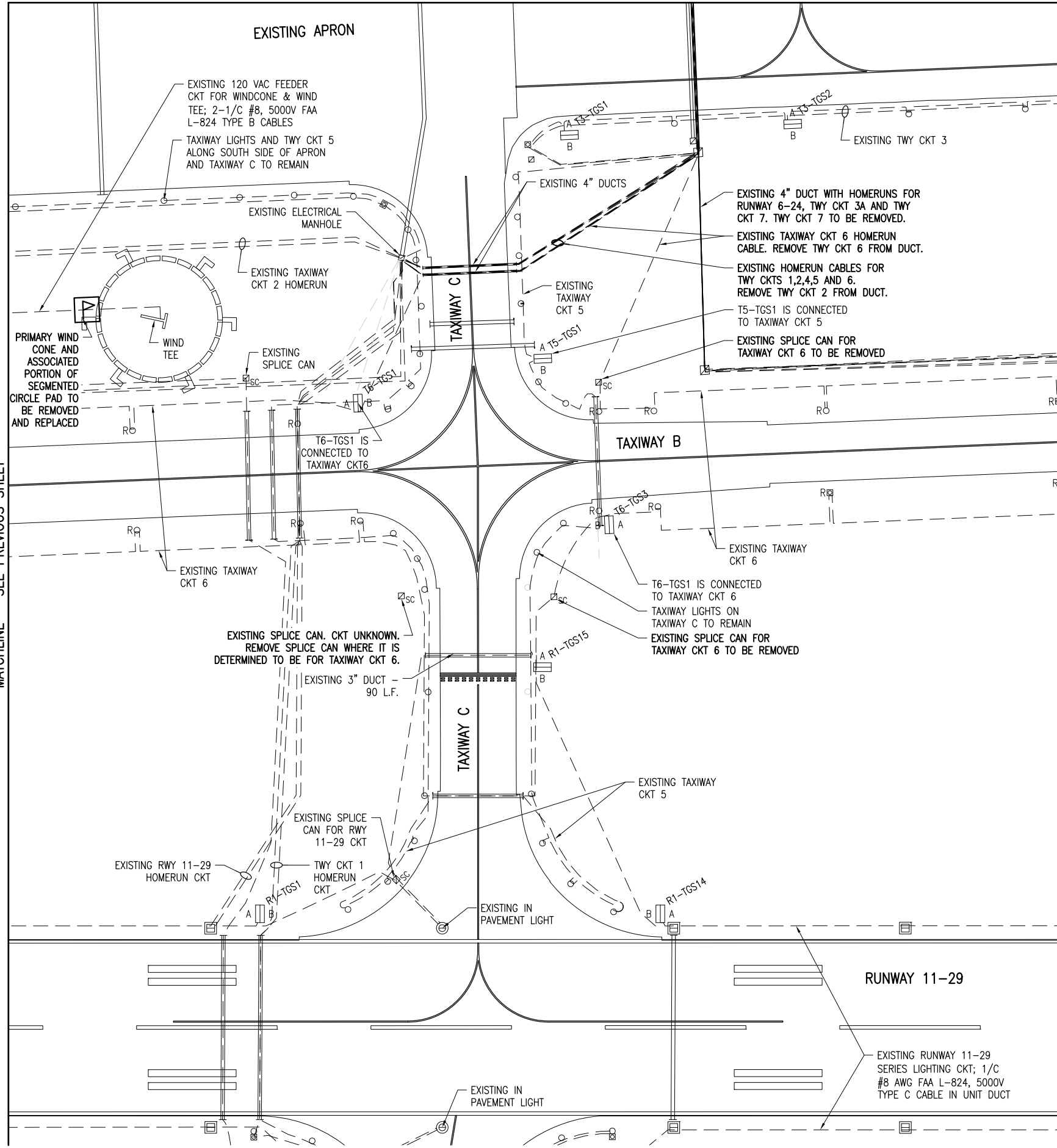
ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D
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 REVIEWED BY: BSS 10/17/2017

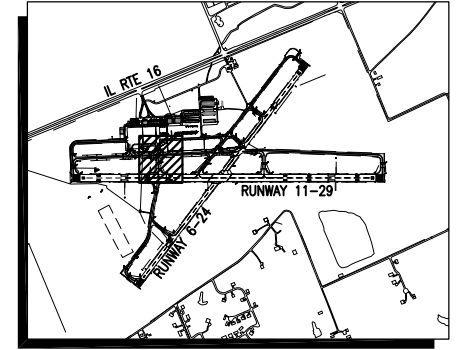
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EXISTING AIRFIELD LIGHTING PLAN SHEET 2

MATCHLINE - SEE EXISTING AIRFIELD LIGHTING PLAN SHEET 9



0' 25' 50' 100'
HALF SIZE SCALE: 1" = 100'
FULL SIZE SCALE: 1" = 50'



KEY MAP

NOTE: TAXIWAY B WEST OF RUNWAY 6-24 HAS 6" ASPHALT PAVEMENT BURIED APPROXIMATELY 18" BELOW GRADE EXTENDING APPROXIMATELY 15' TO 17' FROM THE PAVEMENT EDGE. THIS IS AN OLD RUNWAY PAVEMENT, 100' IN WIDTH.

LEGEND

- EXISTING PAVEMENT
EXISTING BUILDING
EXISTING ELECTRICAL DUCT
EXISTING ELECTRICAL CABLE
EXISTING WATER
EXISTING TELEPHONE
EXISTING UNDERDRAIN
EXISTING STORM SEWER
EXISTING SANITARY
EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
EXISTING REIL
EXISTING TAXI GUIDANCE SIGN
EXISTING SLICE CAN
EXISTING STAKE MOUNTED TAXIWAY LIGHT
EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
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EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
EXISTING STAKE MOUNTED RUNWAY LIGHT
EXISTING BASE MOUNTED RUNWAY LIGHT
EXISTING STAKE MOUNTED THRESHOLD LIGHT
EXISTING BASE MOUNTED THRESHOLD LIGHT
EXISTING AIRPORT ROTATING BEACON
EXISTING UTILITY TRANSFORMER

MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET

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PHASE 1 - REPLACE MITL ON TAXIWAYS SERVING RUNWAY 11-29

IDA No: MTO-4554
SBG Project No: 3-17-SBGP-139
Contract No. CO063

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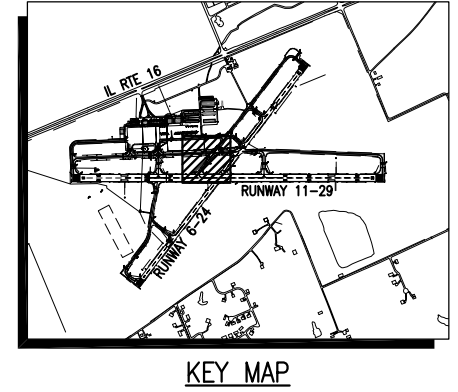
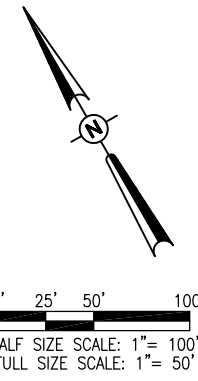
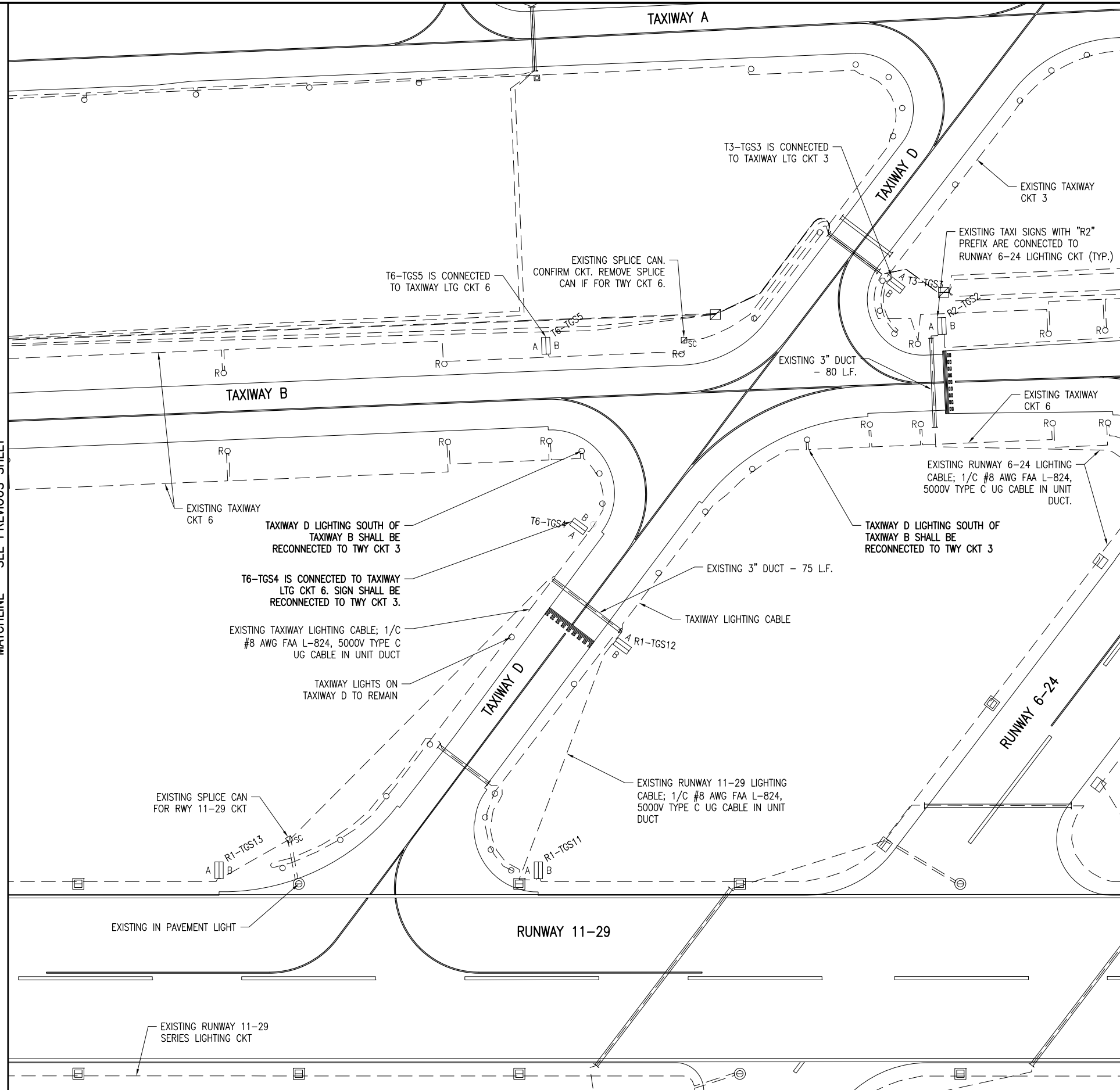
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EXISTING AIRFIELD LIGHTING PLAN SHEET 3

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MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET



NOTE: TAXIWAY B WEST OF RUNWAY 6-24 HAS 6" ASPHALT PAVEMENT BURIED APPROXIMATELY 18" BELOW GRADE EXTENDING APPROXIMATELY 15' TO 17' FROM THE PAVEMENT EDGE. THIS IS AN OLD RUNWAY PAVEMENT, 100' IN WIDTH.

- LEGEND**
- EXISTING PAVEMENT
 - EXISTING BUILDING
 - EXISTING ELECTRICAL DUCT
 - EXISTING ELECTRICAL CABLE
 - EXISTING WATER
 - EXISTING TELEPHONE
 - EXISTING UNDERDRAIN
 - EXISTING STORM SEWER
 - EXISTING SANITARY
 - EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
 - EXISTING REIL
 - EXISTING TAXI GUIDANCE SIGN
 - EXISTING SLICE CAN
 - EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - EXISTING BASE MOUNTED TAXIWAY LIGHT
 - EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - EXISTING STAKE MOUNTED RUNWAY LIGHT
 - EXISTING BASE MOUNTED RUNWAY LIGHT
 - EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - EXISTING BASE MOUNTED THRESHOLD LIGHT
 - EXISTING AIRPORT ROTATING BEACON
 - EXISTING UTILITY TRANSFORMER

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COLES COUNTY AIRPORT AUTHORITY
 COLES COUNTY MEMORIAL AIRPORT

11-7-2017

LICENSED PROFESSIONAL ENGINEER
 KEVIN N. LIGHTFOOT
 062-047643
 STATE OF ILLINOIS

Kevin N. Lightfoot
 EXPIRES: 11/30/2019

PHASE 1 - REPLACE MITL ON TAXIWAYS SERVING RUNWAY 11-29

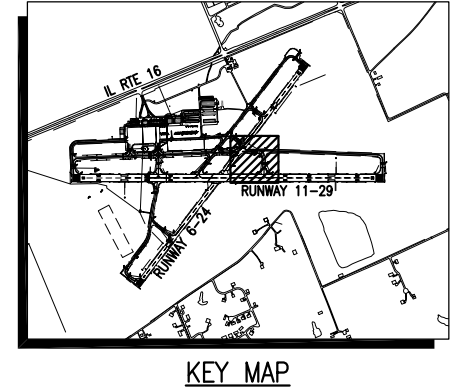
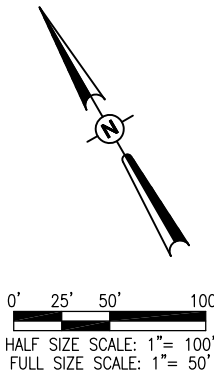
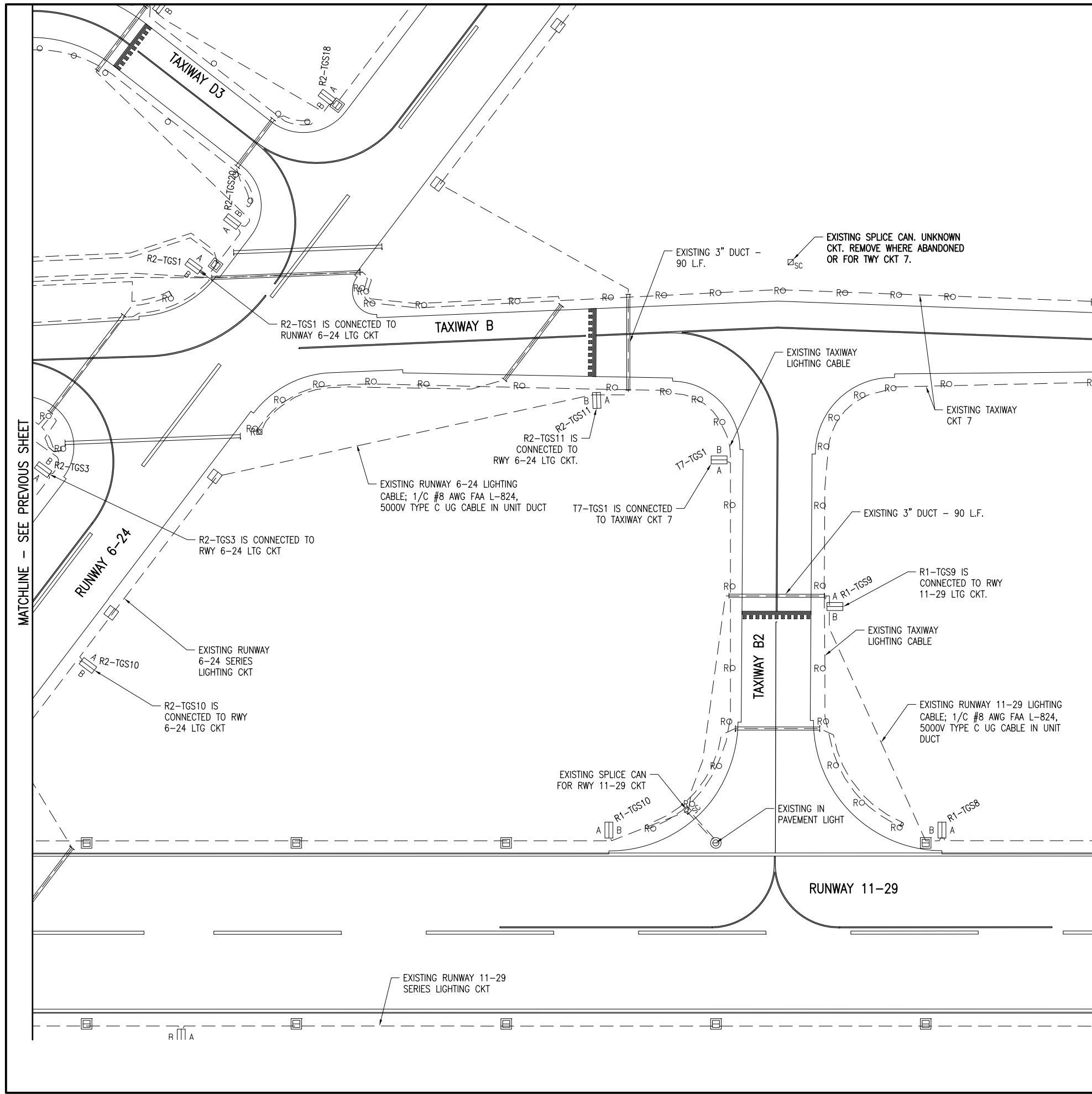
IDA No: MTO-4554
 SBG Project No: 3-17-SBGP-139
 Contract No. CO063

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ISSUE: NOVEMBER 10, 2017				
PROJECT NO: 17A0004D				
CAD FILE: E-141-ELE.DWG				
DESIGN BY: KNL 09/02/2017				
DRAWN BY: CWS 09/05/2017				
REVIEWED BY: BSS 10/17/2017				

SHEET TITLE

EXISTING AIRFIELD LIGHTING PLAN SHEET 4

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MATCHLINE - SEE NEXT SHEET

MATCHLINE - SEE PREVIOUS SHEET

- LEGEND**
- EXISTING PAVEMENT
 - EXISTING BUILDING
 - EXISTING ELECTRICAL DUCT
 - EXISTING ELECTRICAL CABLE
 - W EXISTING WATER
 - T EXISTING TELEPHONE
 - UD EXISTING UNDERDRAIN
 - SS EXISTING STORM SEWER
 - SAN EXISTING SANITARY
 - UGE EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
 - EXISTING REIL
 - EXISTING TAXI GUIDANCE SIGN
 - SC EXISTING SLICE CAN
 - EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - RO EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - EXISTING BASE MOUNTED TAXIWAY LIGHT
 - R EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - EXISTING STAKE MOUNTED RUNWAY LIGHT
 - EXISTING BASE MOUNTED RUNWAY LIGHT
 - EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - EXISTING BASE MOUNTED THRESHOLD LIGHT
 - EXISTING AIRPORT ROTATING BEACON
 - ET EXISTING UTILITY TRANSFORMER

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**PHASE 1 - REPLACE
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 SERVING RUNWAY
 11-29**
 IDA No: MTO-4554
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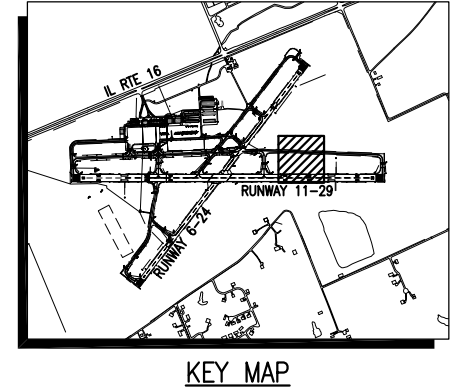
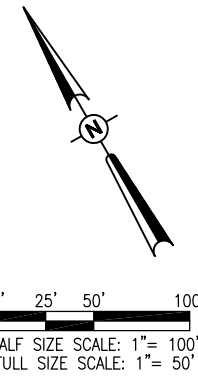
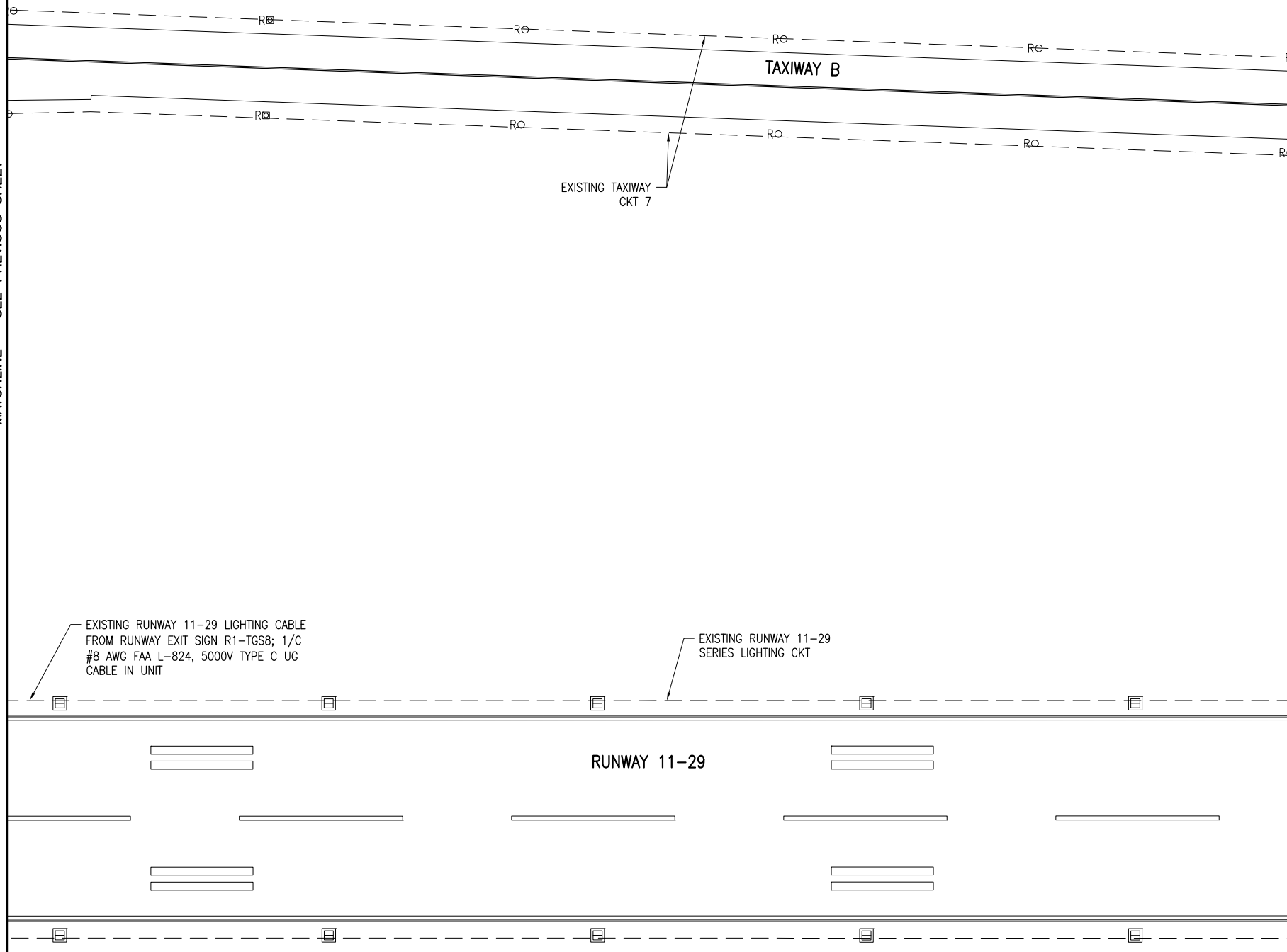
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**EXISTING AIRFIELD
 LIGHTING PLAN
 SHEET 5**

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MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET



- LEGEND**
- EXISTING PAVEMENT
 - EXISTING BUILDING
 - EXISTING ELECTRICAL DUCT
 - EXISTING ELECTRICAL CABLE
 - EXISTING WATER
 - EXISTING TELEPHONE
 - EXISTING UNDERDRAIN
 - EXISTING STORM SEWER
 - EXISTING SANITARY
 - EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
 - EXISTING REIL
 - EXISTING TAXI GUIDANCE SIGN
 - EXISTING SLICE CAN
 - EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - EXISTING BASE MOUNTED TAXIWAY LIGHT
 - EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - EXISTING STAKE MOUNTED RUNWAY LIGHT
 - EXISTING BASE MOUNTED RUNWAY LIGHT
 - EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - EXISTING BASE MOUNTED THRESHOLD LIGHT
 - EXISTING AIRPORT ROTATING BEACON
 - EXISTING UTILITY TRANSFORMER



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PHASE 1 - REPLACE
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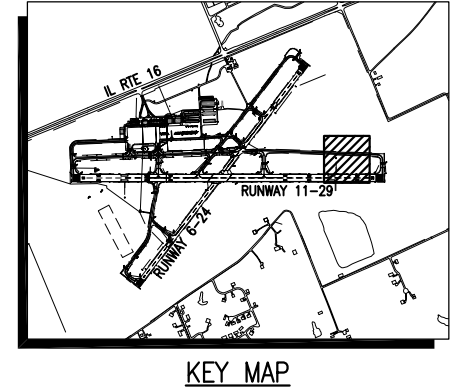
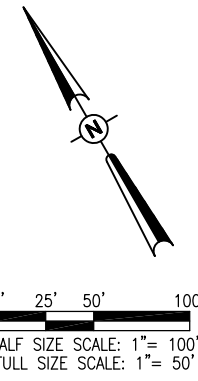
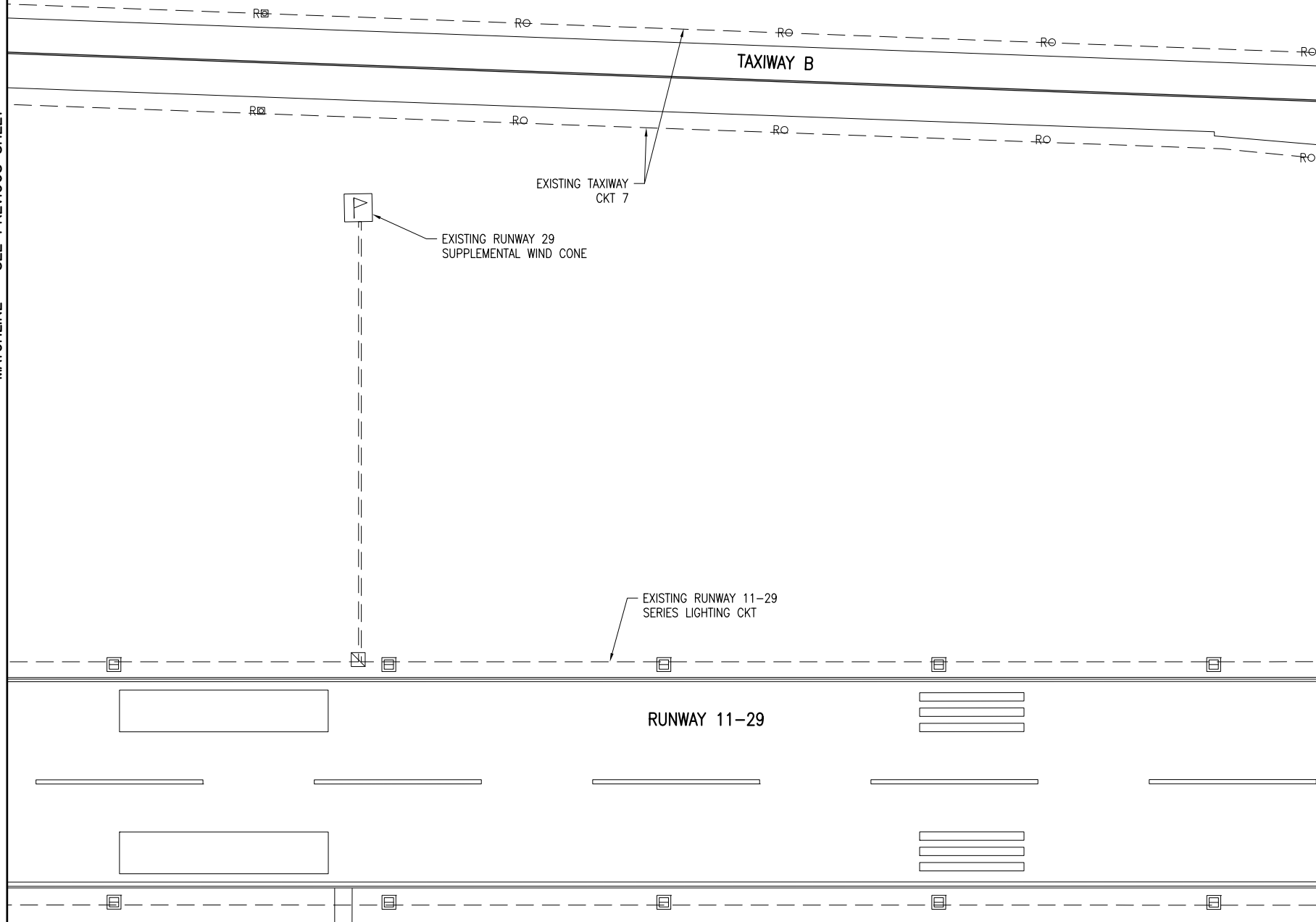
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EXISTING AIRFIELD
 LIGHTING PLAN
 SHEET 6

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MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET



- LEGEND**
- [White Box] EXISTING PAVEMENT
 - [Grey Box] EXISTING BUILDING
 - [Double Line] EXISTING ELECTRICAL DUCT
 - [Dashed Line] EXISTING ELECTRICAL CABLE
 - [Line with W] EXISTING WATER
 - [Line with T] EXISTING TELEPHONE
 - [Line with UD] EXISTING UNDERDRAIN
 - [Line with SS] EXISTING STORM SEWER
 - [Line with SAN] EXISTING SANITARY
 - [Line with UGE] EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
 - [Triangle] EXISTING REIL
 - [Hatched Box] EXISTING TAXI GUIDANCE SIGN
 - [Box with SC] EXISTING SLICE CAN
 - [Circle] EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - [Circle with RO] EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - [Square with X] EXISTING BASE MOUNTED TAXIWAY LIGHT
 - [Square with X and RO] EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - [Square] EXISTING STAKE MOUNTED RUNWAY LIGHT
 - [Square with X] EXISTING BASE MOUNTED RUNWAY LIGHT
 - [Circle with O] EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - [Circle with X] EXISTING BASE MOUNTED THRESHOLD LIGHT
 - [Circle with Plus] EXISTING AIRPORT ROTATING BEACON
 - [Square with ET] EXISTING UTILITY TRANSFORMER



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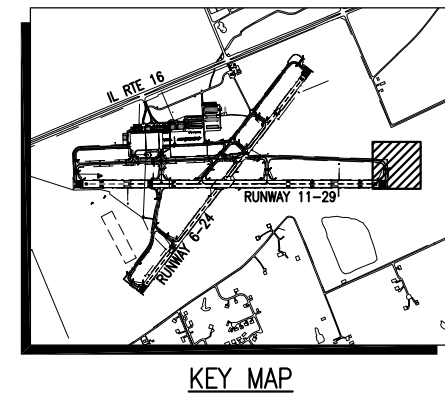
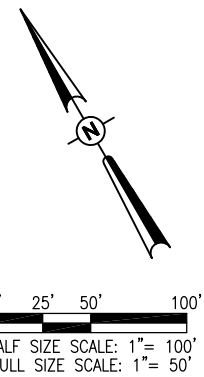
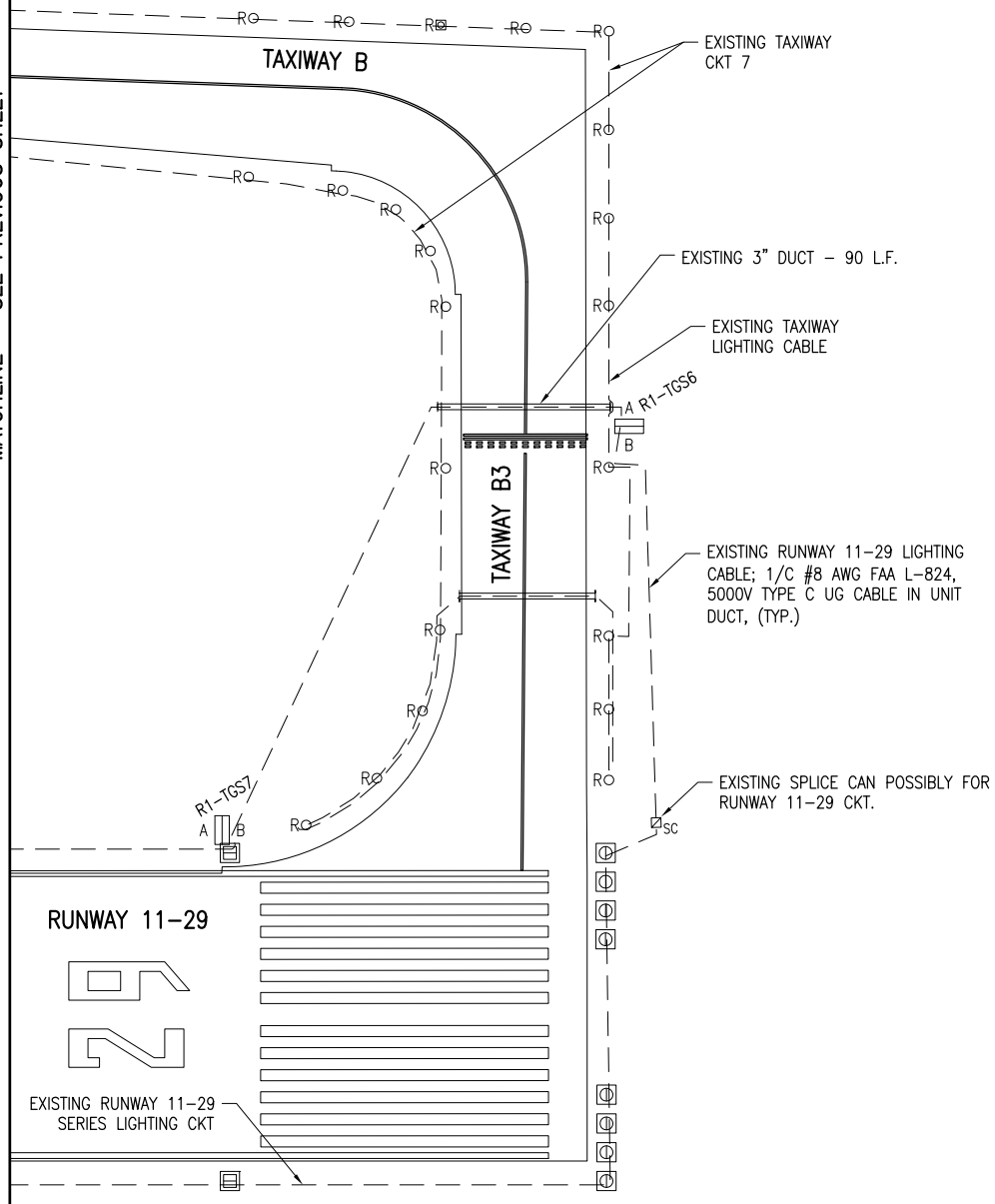
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SHEET TITLE

EXISTING AIRFIELD
 LIGHTING PLAN
 SHEET 7

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MATCHLINE - SEE PREVIOUS SHEET



- LEGEND**
- EXISTING PAVEMENT
 - EXISTING BUILDING
 - EXISTING ELECTRICAL DUCT
 - EXISTING ELECTRICAL CABLE
 - W EXISTING WATER
 - T EXISTING TELEPHONE
 - UD EXISTING UNDERDRAIN
 - SS EXISTING STORM SEWER
 - SAN EXISTING SANITARY
 - UGE EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
 - EXISTING REIL
 - EXISTING TAXI GUIDANCE SIGN
 - SC EXISTING SLICE CAN
 - EXISTING STAKE MOUNTED TAXIWAY LIGHT
 - RO EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - EXISTING BASE MOUNTED TAXIWAY LIGHT
 - R EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
 - EXISTING STAKE MOUNTED RUNWAY LIGHT
 - EXISTING BASE MOUNTED RUNWAY LIGHT
 - EXISTING STAKE MOUNTED THRESHOLD LIGHT
 - EXISTING BASE MOUNTED THRESHOLD LIGHT
 - EXISTING AIRPORT ROTATING BEACON
 - ET EXISTING UTILITY TRANSFORMER



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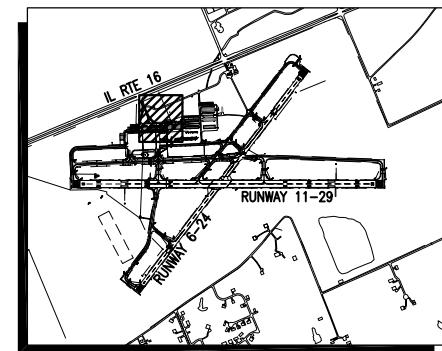
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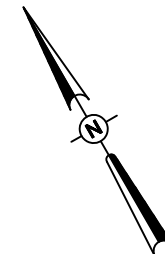
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SHEET TITLE

EXISTING AIRFIELD
 LIGHTING PLAN
 SHEET 8



KEY MAP



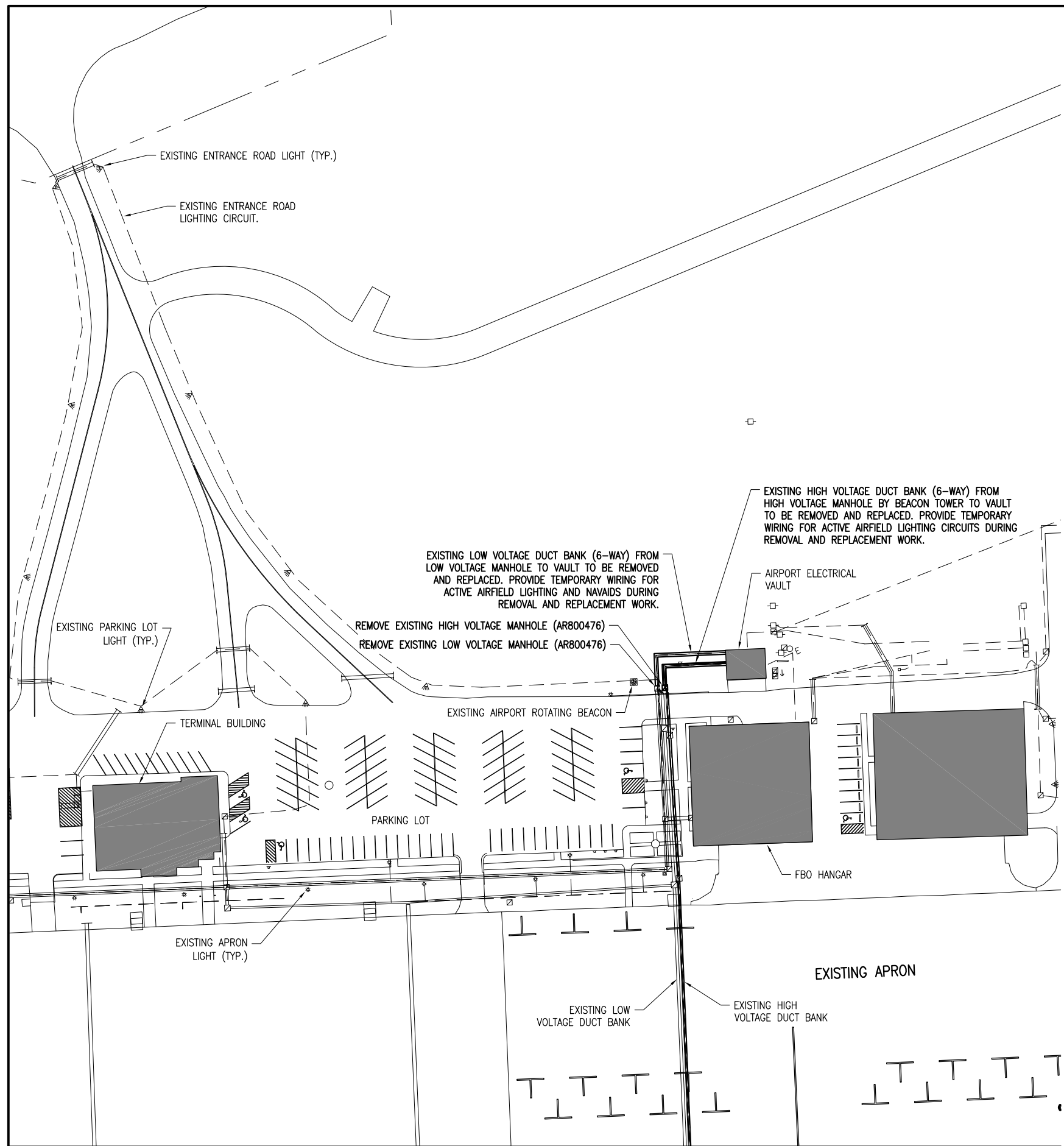
0' 25' 50' 100'
HALF SIZE SCALE: 1" = 100'
FULL SIZE SCALE: 1" = 50'

NOTES

- THE FOLLOWING EXISTING TAXIWAY LIGHTING CIRCUITS SHALL BE REMOVED FROM THE DUCT SYSTEM AND REPLACED WITH NEW CIRCUITS.
-TWY CKT 2 FOR TAXIWAY A-WEST
-TWY CKT 4 FOR TAXIWAY B WEST OF APRON
-TWY CKT 6 FOR TAXIWAY B WEST OF RWY 6-24
-TWY CKT 7 FOR TAXIWAY B-EAST
- THE FOLLOWING 120VAC CKTS SHALL BE REMOVED FROM THE DUCT SYSTEM:
-ABANDONED OBSTRUCTION LIGHTING CIRCUIT
-ABANDONED CEILOMETER CIRCUIT
-2 SPARE CIRCUITS CONNECTED TO 60 AMP LIGHTING CONTACTOR
-ABANDONED FEEDER THAT PREVIOUSLY FED THE BEACON
- REFER TO SPECIAL PROVISION SPEC SECTION 109 FOR A LIST OF RESPECTIVE CIRCUITS REQUIRING TEMPORARY CONNECTIONS TO ACCOMMODATE DUCT BANK REMOVAL AND REPLACEMENT.
- REMOVAL OF CONCRETE DUCT BANK WILL BE PAID FOR UNDER ITEM AR110901 CONCRETE DUCT REMOVAL PER LINEAR FOOT.

LEGEND

- [Solid Line] EXISTING PAVEMENT
- [Hatched Area] EXISTING BUILDING
- [Dashed Line] EXISTING ELECTRICAL DUCT
- [Dotted Line] EXISTING ELECTRICAL CABLE
- [Line with 'W'] EXISTING WATER
- [Line with 'T'] EXISTING TELEPHONE
- [Line with 'UD'] EXISTING UNDERDRAIN
- [Line with 'SS'] EXISTING STORM SEWER
- [Line with 'SAN'] EXISTING SANITARY
- [Line with 'UGE'] EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- [Triangle] EXISTING REIL
- [Hatched Box] EXISTING TAXI GUIDANCE SIGN
- [Box with 'SC'] EXISTING SLICE CAN
- [Circle] EXISTING STAKE MOUNTED TAXIWAY LIGHT
- [Circle with 'R'] EXISTING STAKE MOUNTED TAXIWAY LIGHT TO BE REMOVED
- [Square with 'R'] EXISTING BASE MOUNTED TAXIWAY LIGHT
- [Square with 'R'] EXISTING BASE MOUNTED TAXIWAY LIGHT TO BE REMOVED
- [Square] EXISTING STAKE MOUNTED RUNWAY LIGHT
- [Square with 'R'] EXISTING BASE MOUNTED RUNWAY LIGHT
- [Circle with 'R'] EXISTING STAKE MOUNTED THRESHOLD LIGHT
- [Circle with 'R'] EXISTING BASE MOUNTED THRESHOLD LIGHT
- [Circle with 'R'] EXISTING AIRPORT ROTATING BEACON
- [Square with 'ET'] EXISTING UTILITY TRANSFORMER



MATCHLINE - SEE EXISTING AIRFIELD LIGHTING PLAN SHEET 3

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PHASE 1 - REPLACE
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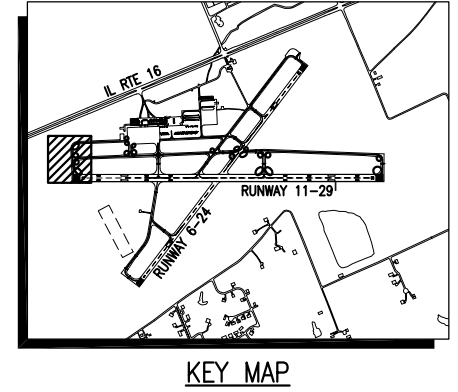
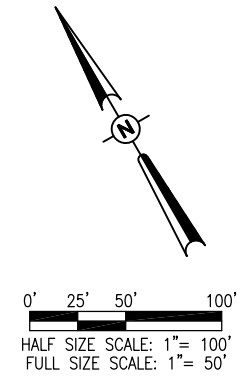
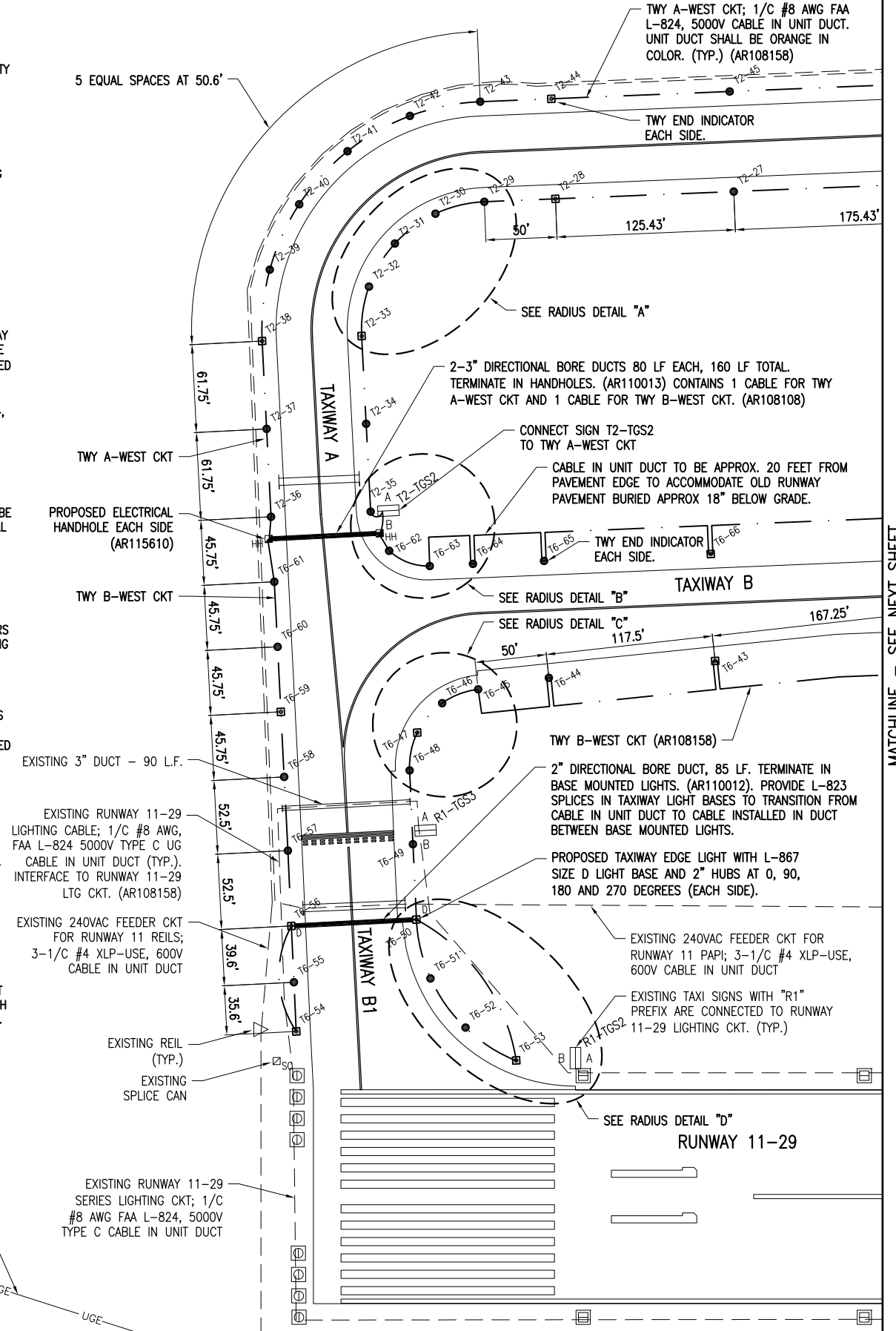
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SHEET TITLE

EXISTING AIRFIELD
LIGHTING PLAN
SHEET 9

AIRFIELD LIGHTING NOTES

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/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 FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING THE RESPECTIVE AIRFIELD LIGHTING, NAVAID, OR OTHER DEVICE.
- PROPOSED AIRFIELD LIGHTS, TAXIWAY LIGHTS, GUIDANCE SIGNS, OTHER AIRFIELD LIGHTING, SPLICE CANS, HANDHOLES, MANHOLES, ELECTRICAL DUCTS, AND CABLE SHALL BE INSTALLED AT THE LOCATIONS SHOWN AND IN COMPLIANCE WITH THE SPECIFICATIONS, SPECIAL PROVISIONS, RESPECTIVE DETAILS, AND MANUFACTURER'S RECOMMENDATIONS.
- PROPOSED CABLE FOR RUNWAY AND TAXIWAY LIGHTING SHALL BE INSTALLED APPROXIMATELY 20' FROM THE PAVEMENT EDGE FOR TAXIWAY B-WEST OF RUNWAY 6-24 TO ACCOMMODATE THE OLD BURIED RUNWAY PAVEMENT THAT IS 100' IN WIDTH. PROPOSED CABLE FOR RUNWAY AND TAXIWAY LIGHTING CABLE IN OTHER AREAS ALONG THE RESPECTIVE PAVEMENT SHALL BE INSTALLED APPROXIMATELY 10' TO 14' FROM THE PAVEMENT EDGE. CABLES SHALL BE PLACED A MINIMUM OF 18" BELOW FINISHED GRADE.
- THE PROPOSED RUNWAY AND TAXIWAY LIGHTING CABLE SHALL BE 1/C, #8 AWG, FAA L-824, 5000 VOLT, TYPE C UNDERGROUND CABLE IN UNIT DUCT, OR DUCT. UNIT DUCT SHALL BE ORANGE IN COLOR.
- 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.
- PROPOSED TAXIWAY EDGE LIGHTS SHALL BE L-861(L) WITH LIGHT EMITTING DIODE (LED) ILLUMINATION, 24" OVERALL HEIGHT.
- ALL PROPOSED AIRFIELD LIGHTS, AND EXISTING TAXI GUIDANCE SIGNS ON NEW TAXIWAY CIRCUITS, SHALL BE TAGGED BY THE CONTRACTOR IN ACCORDANCE WITH THE LIGHT NUMBERS SHOWN ON THESE CONSTRUCTION DRAWINGS. TAGS FOR THE PROPOSED LIGHTS AND EXISTING LIGHTS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT 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 150/5370-2F, PART 218, PARAGRAPH C. 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.
- EXISTING AIRFIELD LIGHTING CABLES (SCHEDULED FOR REPLACEMENT) IN AREAS OF NEW WORK SHALL BE DISCONNECTED & REMOVED WHERE IN CONFLICT WITH NEW CONSTRUCTION. IN OTHER AREAS CABLES MAY BE ABANDONED IN PLACE. CABLES DESIGNATED FOR REMOVAL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. CONTRACTOR SHALL HAVE SALVAGE RIGHTS TO CABLES DESIGNATED FOR REMOVAL AND/OR REPLACEMENT.
- 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.
- IN THE EVENT THAT OTHER CONSTRUCTION PROJECTS ARE IN PROGRESS AT THE AIRPORT AT THE SAME TIME AS THIS PROJECT, THE CONTRACTOR WILL BE REQUIRED TO COOPERATE WITH ALL OTHER CONTRACTORS AND THE AIRPORT MANAGER IN THE COORDINATION OF THE WORK.
- NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.



MATCHLINE - SEE NEXT SHEET

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 1/C #8 AWG, FAA L-824, 5000V CABLE IN 2" DUCT. (SLASHES INDICATE NUMBER OF CABLES).
- 3 - 1/C #8 XLP-USE, 600V CONDUCTORS IN 2" DUCT
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING SANITARY
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING REIL
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SPLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- PROPOSED BASE MOUNTED TAXIWAY LIGHT
- PROPOSED TAXIWAY LIGHT WITH L-867 SIZE D BASE
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING UTILITY TRANSFORMER
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL MANHOLE
- PROPOSED ELECTRICAL HANDHOLE



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PHASE 1 - REPLACE MITL ON TAXIWAYS SERVING RUNWAY 11-29

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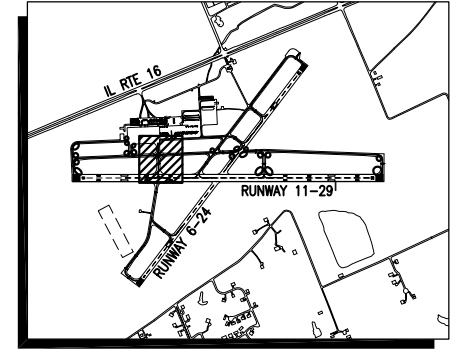
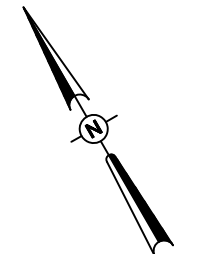
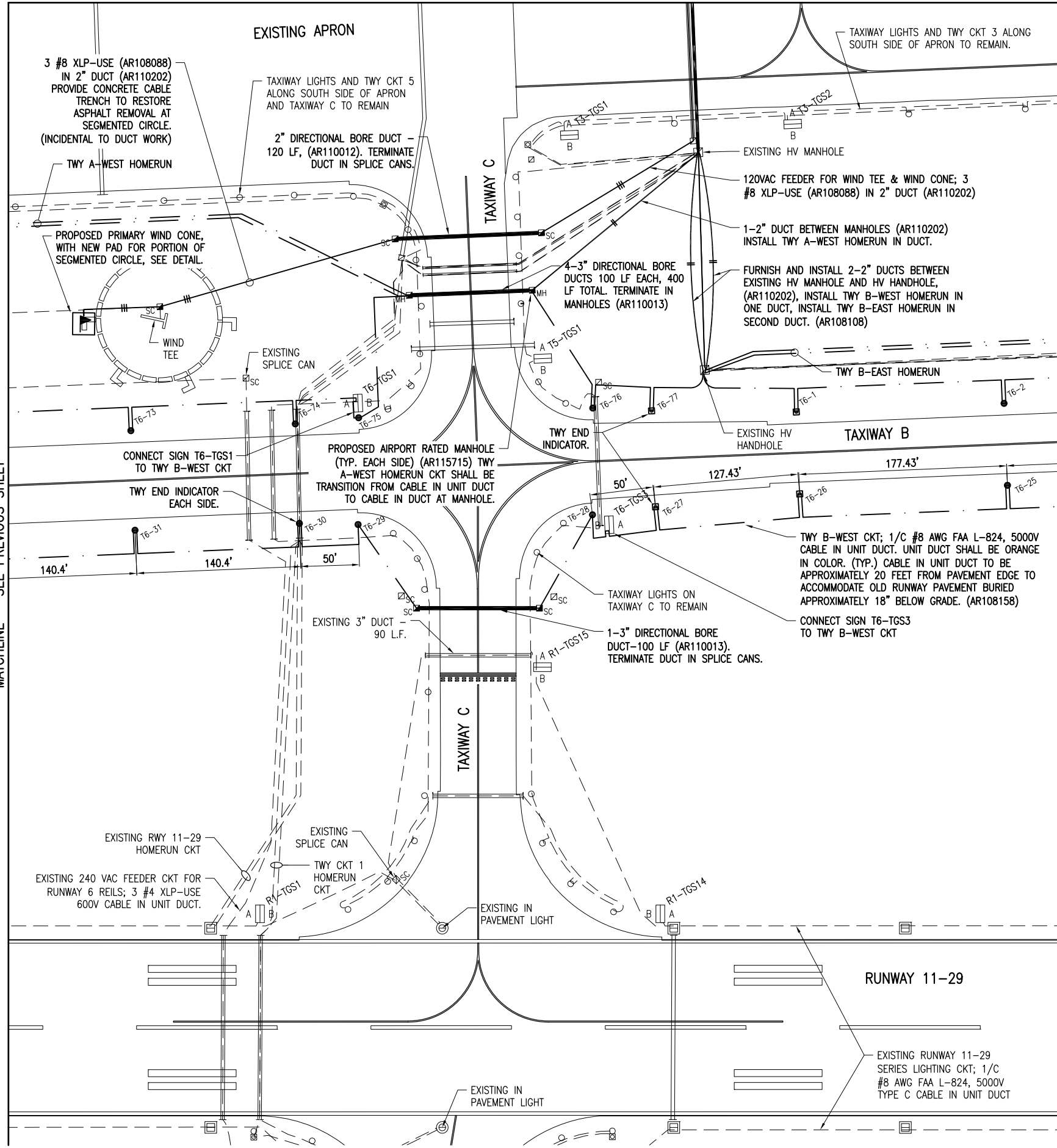
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SHEET TITLE

PROPOSED AIRFIELD LIGHTING PLAN SHEET 1

NOV 09, 2017 11:03 AM HARR01115 1:17 JOBS\17A0004D\CAD\AIRPORTSHEET1E-142-ELE.DWG

MATCHLINE - SEE PROPOSED AIRFIELD LIGHTING PLAN SHEET 9



KEY MAP

NOTE: TAXIWAY B WEST OF RUNWAY 6-24 HAS 6" ASPHALT PAVEMENT BURIED APPROXIMATELY 18" BELOW GRADE EXTENDING APPROXIMATELY 15' TO 17' FROM THE PAVEMENT EDGE. THIS IS AN OLD RUNWAY PAVEMENT, 100' IN WIDTH.

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 1/C #8 AWG, FAA L-824, 5000V CABLE IN 2" DUCT. (SLASHES INDICATE NUMBER OF CABLES).
- 3 - 1/C #8 XLP-USE, 600V CONDUCTORS IN 2" DUCT
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING SANITARY
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING REIL
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- PROPOSED BASE MOUNTED TAXIWAY LIGHT
- PROPOSED TAXIWAY LIGHT WITH L-867 SIZE D BASE
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING UTILITY TRANSFORMER
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL MANHOLE
- PROPOSED ELECTRICAL HANDHOLE

MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET



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PHASE 1 - REPLACE MITL ON TAXIWAYS SERVING RUNWAY 11-29

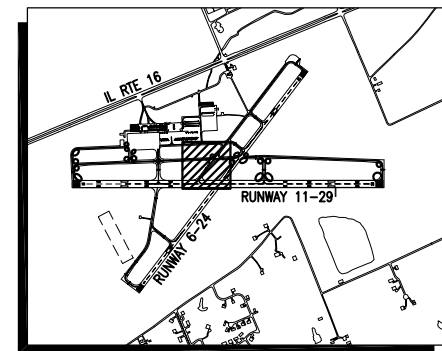
IDA No: MTO-4554
SBG Project No: 3-17-SBGP-139
Contract No. CO063

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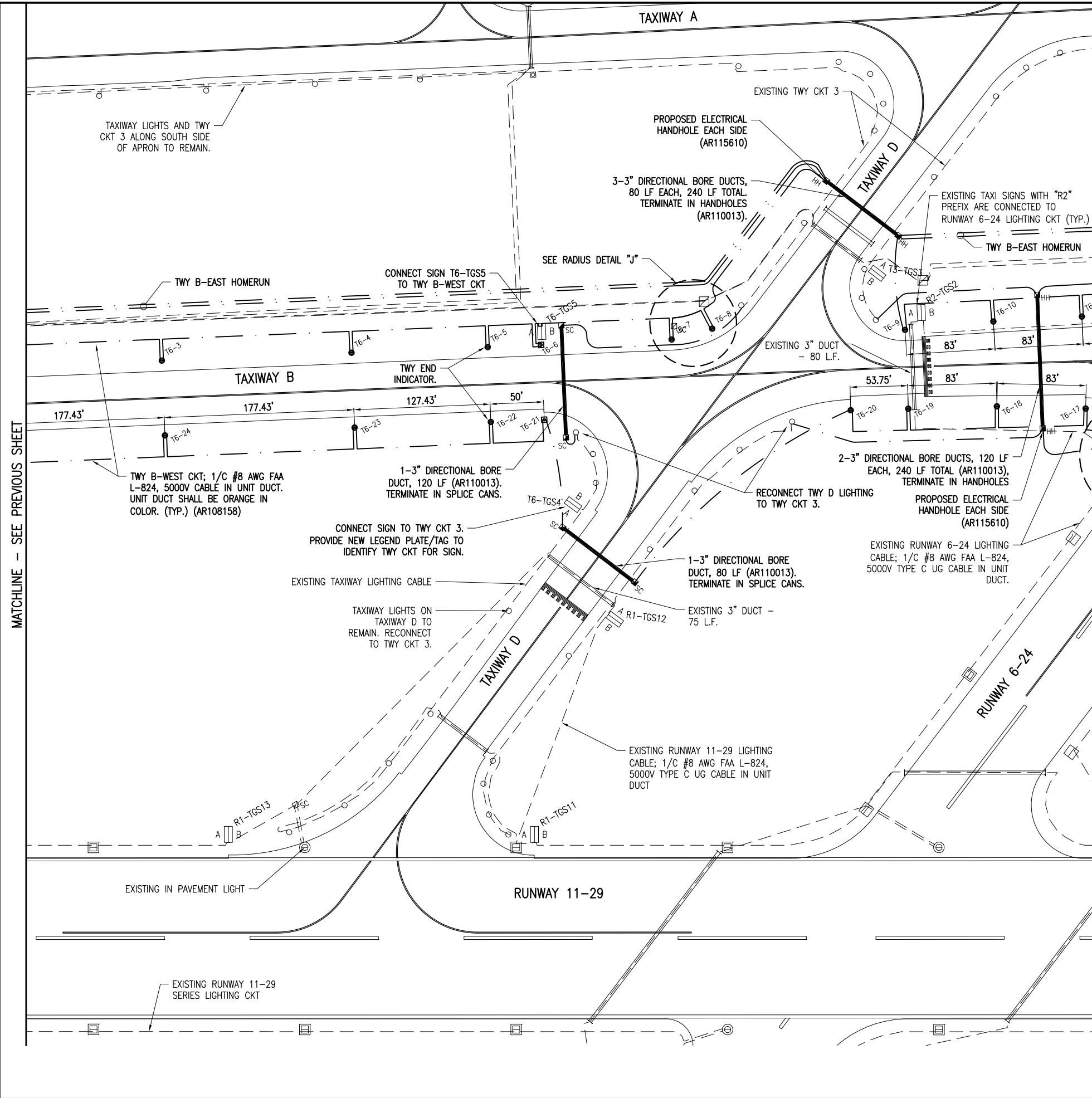
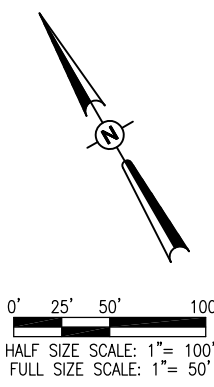
ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-142-ELE.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE
PROPOSED AIRFIELD LIGHTING PLAN SHEET 3

NOV 09, 2017 11:04 AM HARR01115
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KEY MAP



NOTE: TAXIWAY B WEST OF RUNWAY 6-24 HAS 6" ASPHALT PAVEMENT BURIED APPROXIMATELY 18" BELOW GRADE EXTENDING APPROXIMATELY 15' TO 17' FROM THE PAVEMENT EDGE. THIS IS AN OLD RUNWAY PAVEMENT, 100' IN WIDTH.

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
-
-
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING SANITARY
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING REIL
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- PROPOSED BASE MOUNTED TAXIWAY LIGHT
- PROPOSED TAXIWAY LIGHT WITH L-867 SIZE D BASE
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING UTILITY TRANSFORMER
-
- PROPOSED ELECTRICAL MANHOLE
- PROPOSED ELECTRICAL HANDHOLE

MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET



PHASE 1 - REPLACE MITL ON TAXIWAYS SERVING RUNWAY 11-29

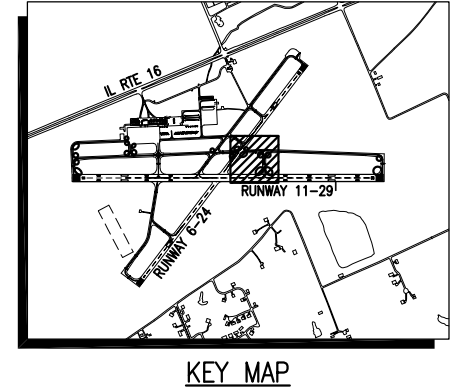
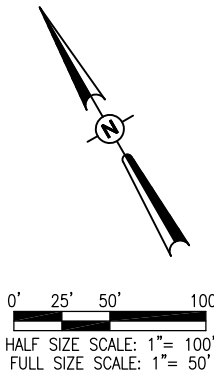
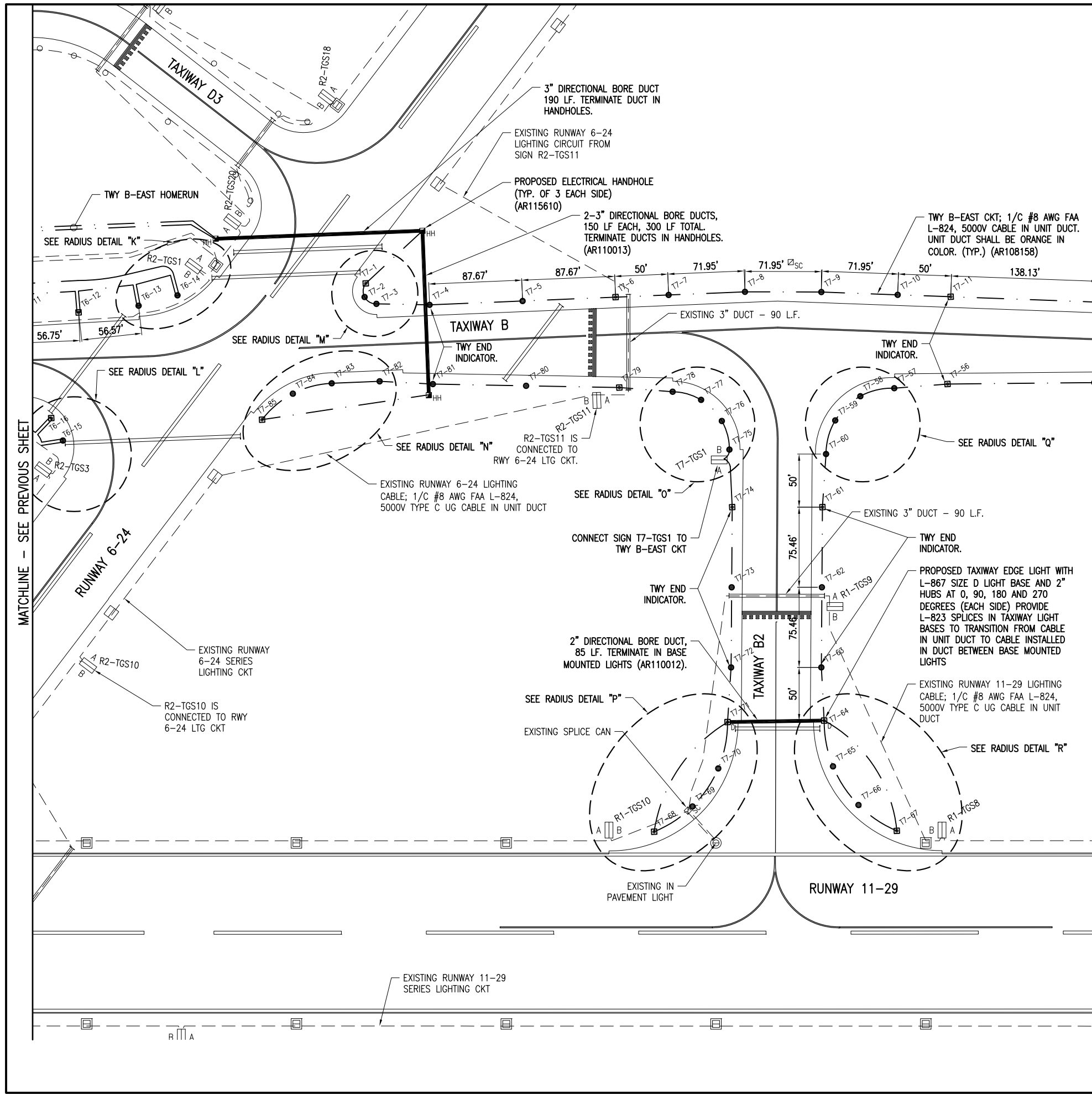
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SBG Project No: 3-17-SBGP-139
Contract No. CO063

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		DES	DWN	REV

SHEET TITLE

PROPOSED AIRFIELD LIGHTING PLAN
SHEET 4

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MATCHLINE - SEE NEXT SHEET

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 1/C #8 AWG, FAA L-824, 5000V CABLE IN 2" DUCT. (SLASHES INDICATE NUMBER OF CABLES).
- 3 - 1/C #8 XLP-USE, 600V CONDUCTORS IN 2" DUCT
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING SANITARY
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING REIL
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- PROPOSED BASE MOUNTED TAXIWAY LIGHT
- PROPOSED TAXIWAY LIGHT WITH L-867 SIZE D BASE
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING UTILITY TRANSFORMER
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL MANHOLE
- PROPOSED ELECTRICAL HANDHOLE



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COLES COUNTY AIRPORT
 AUTHORITY
 COLES COUNTY MEMORIAL AIRPORT



PHASE 1 - REPLACE
 MITL ON TAXIWAYS
 SERVING RUNWAY
 11-29

IDA No: MTO-4554
 SBG Project No:
 3-17-SBGP-139
 Contract No. CO063

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ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D
 CAD FILE: E-142-ELE.DWG

DESIGN BY: KNL 09/02/2017
 DRAWN BY: CWS 09/05/2017

REVIEWED BY: BSS 10/17/2017

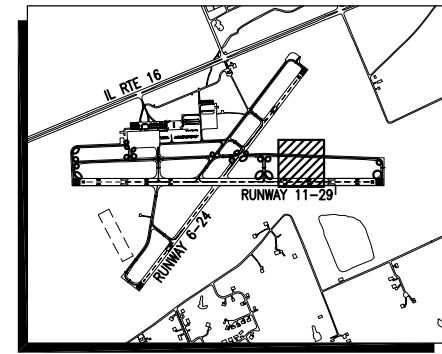
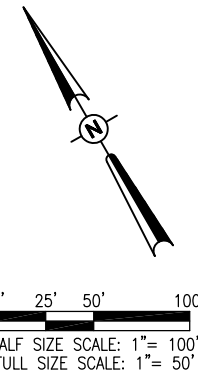
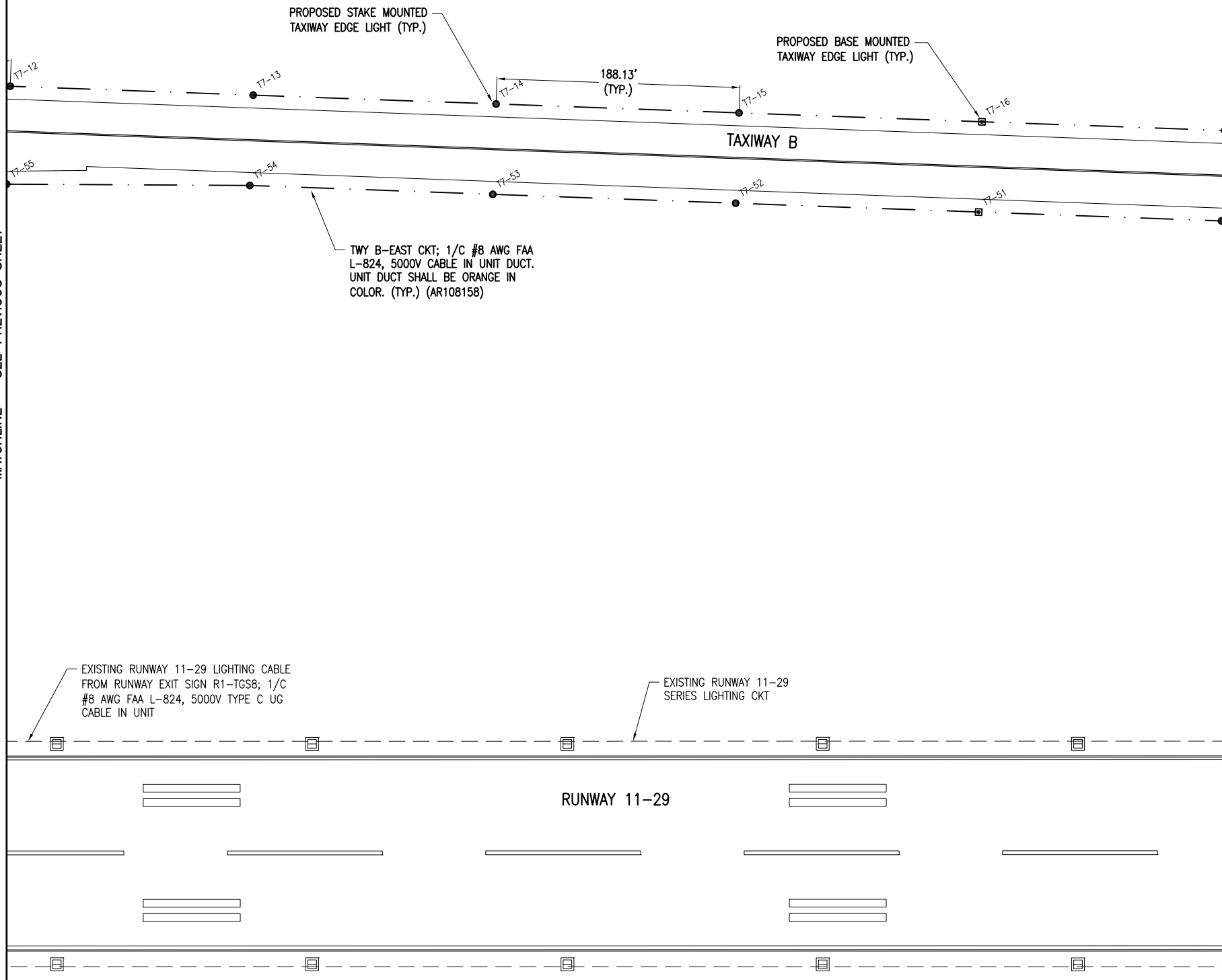
SHEET TITLE

PROPOSED AIRFIELD
 LIGHTING PLAN
 SHEET 5

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MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET



KEY MAP

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 1/C #8 AWG, FAA L-824, 5000V CABLE IN 2" DUCT. (SLASHES INDICATE NUMBER OF CABLES).
- 3 - 1/C #8 XLP-USE, 600V CONDUCTORS IN 2" DUCT
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING SANITARY
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING REIL
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- PROPOSED BASE MOUNTED TAXIWAY LIGHT
- PROPOSED TAXIWAY LIGHT WITH L-867 SIZE D BASE
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING UTILITY TRANSFORMER
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL MANHOLE
- PROPOSED ELECTRICAL HANDHOLE



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PHASE 1 - REPLACE
 MITL ON TAXIWAYS
 SERVING RUNWAY
 11-29

IDA No: MTO-4554
 SBG Project No:
 3-17-SBGP-139
 Contract No. CO063

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 PROJECT NO: 17A0004D
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 DESIGN BY: KNL 09/02/2017
 DRAWN BY: CWS 09/05/2017
 REVIEWED BY: BSS 10/17/2017

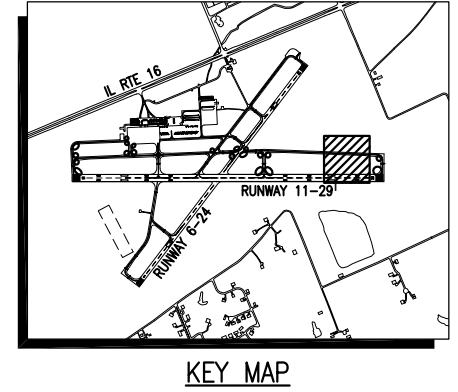
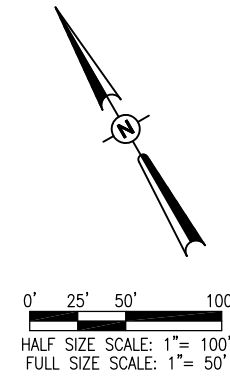
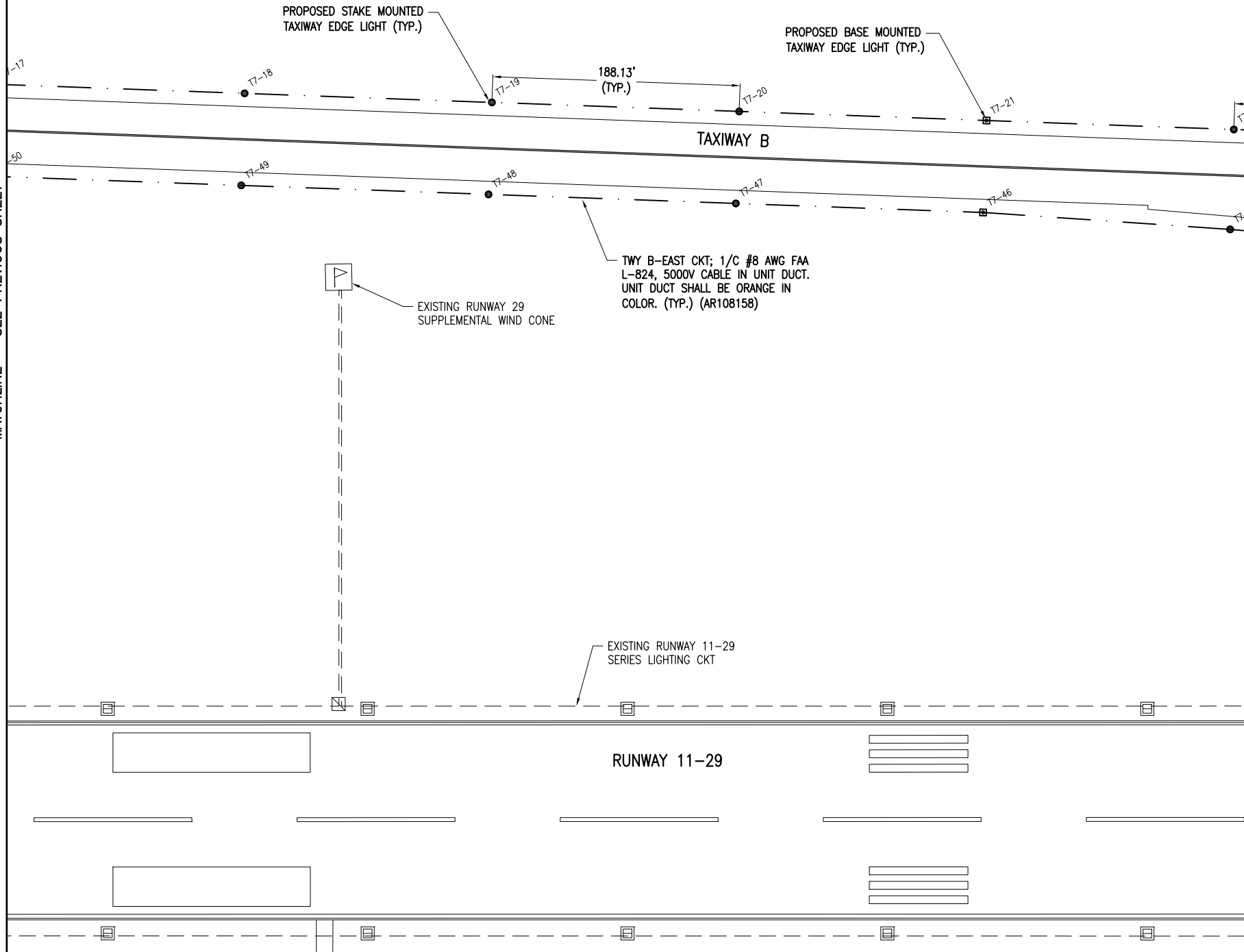
SHEET TITLE

PROPOSED AIRFIELD
 LIGHTING PLAN
 SHEET 6

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MATCHLINE - SEE PREVIOUS SHEET

MATCHLINE - SEE NEXT SHEET



LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
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- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING BASE MOUNTED THRESHOLD LIGHT
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PHASE 1 - REPLACE
 MITL ON TAXIWAYS
 SERVING RUNWAY
 11-29

IDA No: MTO-4554
 SBG Project No:
 3-17-SBGP-139
 Contract No. CO063

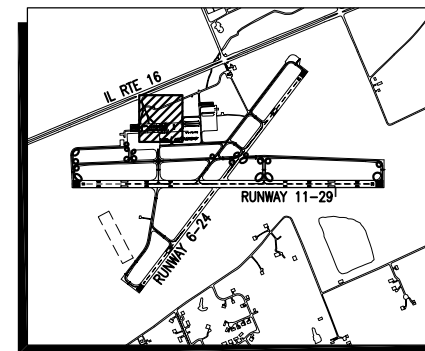
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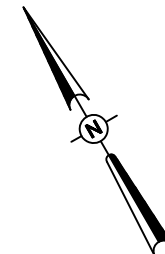
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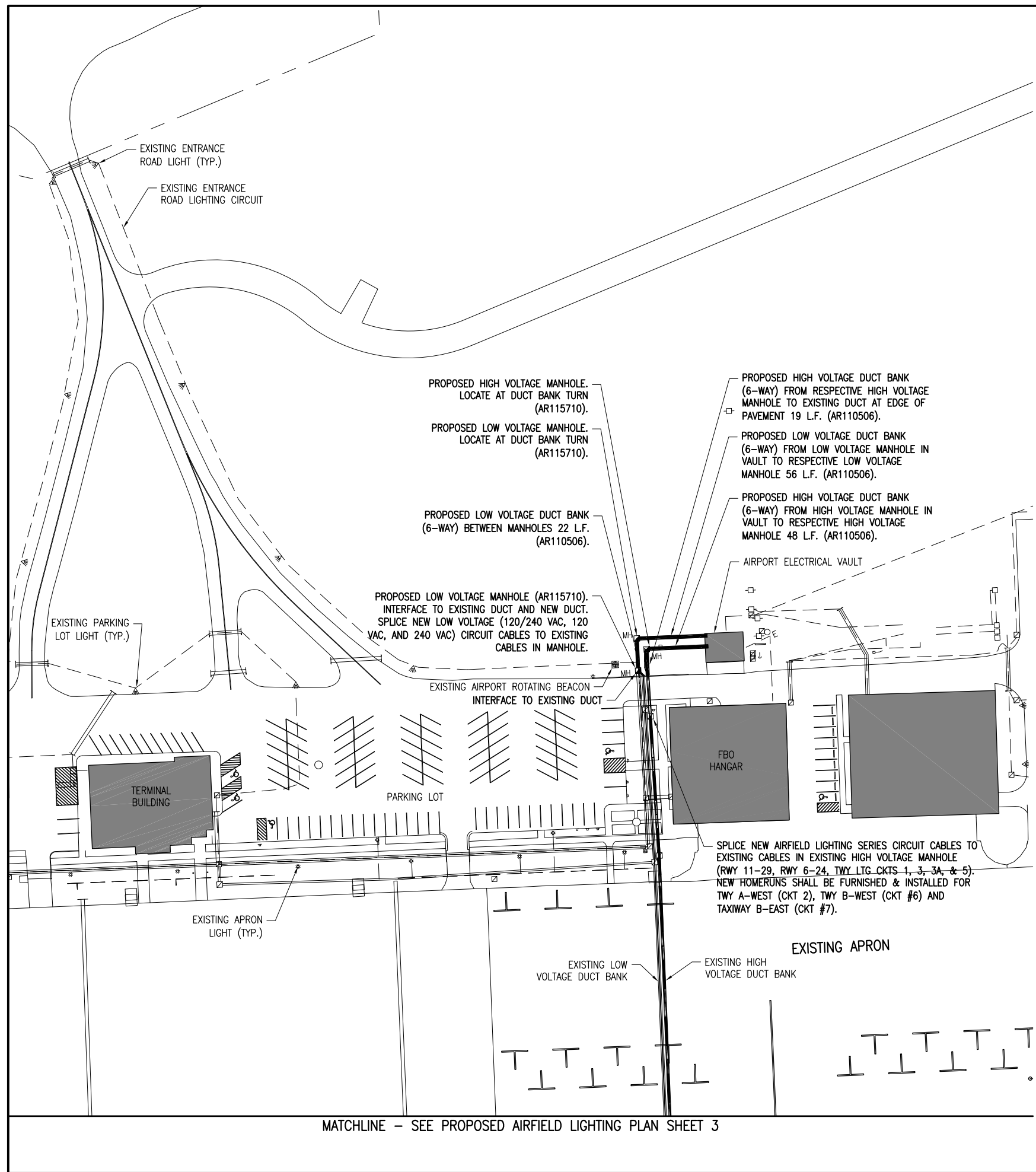
PROPOSED AIRFIELD
 LIGHTING PLAN
 SHEET 7



KEY MAP



0' 25' 50' 100'
HALF SIZE SCALE: 1" = 100'
FULL SIZE SCALE: 1" = 50'



LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 1/C #8 AWG, FAA L-824, 5000V CABLE IN 2" DUCT. (SLASHES INDICATE NUMBER OF CABLES).
- 3 - 1/C #8 XLP-USE, 600V CONDUCTORS IN 2" DUCT
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING SANITARY
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING REIL
- EXISTING TAXI GUIDANCE SIGN
- EXISTING SLICE CAN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED STAKE MOUNTED TAXIWAY LIGHT
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- PROPOSED BASE MOUNTED TAXIWAY LIGHT
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- EXISTING BASE MOUNTED THRESHOLD LIGHT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING UTILITY TRANSFORMER
- PROPOSED L-867, SIZE D, 24" DEEP SPLICE CAN
- PROPOSED ELECTRICAL MANHOLE
- PROPOSED ELECTRICAL HANDHOLE



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554
SBG Project No:
3-17-SBGP-139
Contract No. CO063

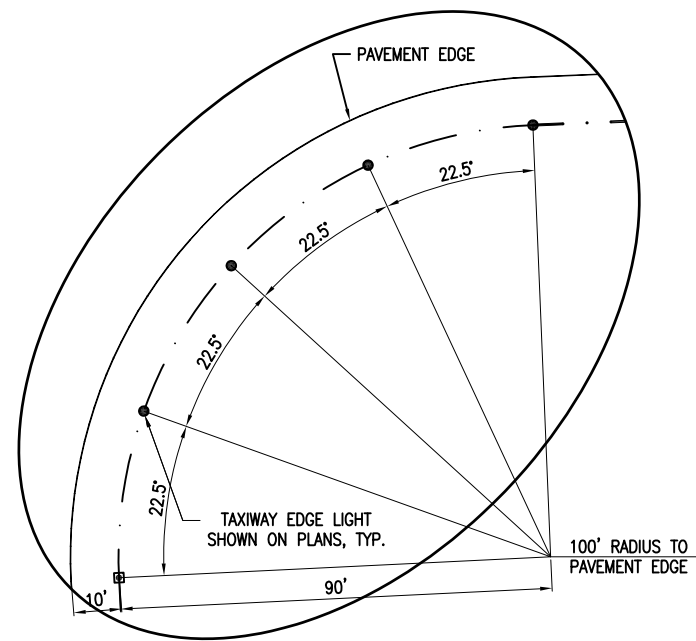
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PROJECT NO: 17A0004D				
CAD FILE: E-142-ELE.DWG				
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DRAWN BY: CWS 09/05/2017				
REVIEWED BY: BSS 10/17/2017				

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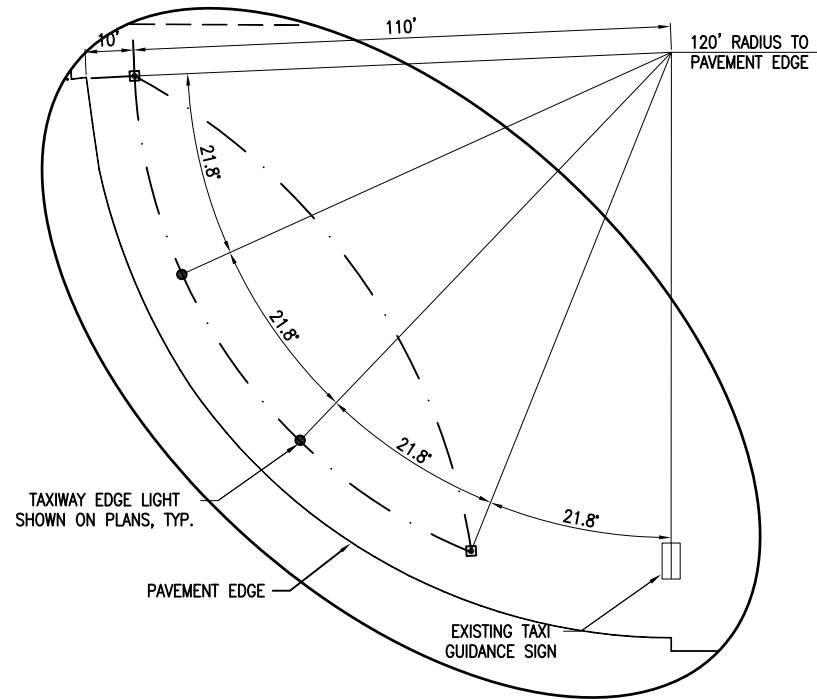
PROPOSED AIRFIELD
LIGHTING PLAN
SHEET 9

MATCHLINE - SEE PROPOSED AIRFIELD LIGHTING PLAN SHEET 3

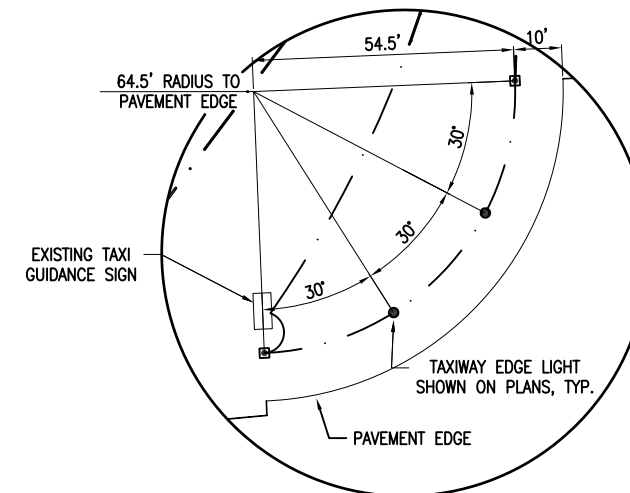
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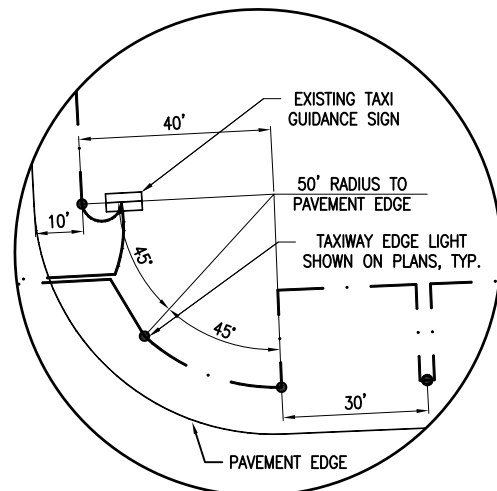
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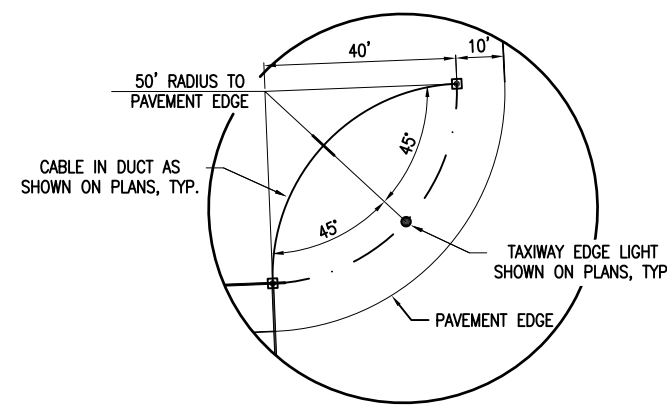
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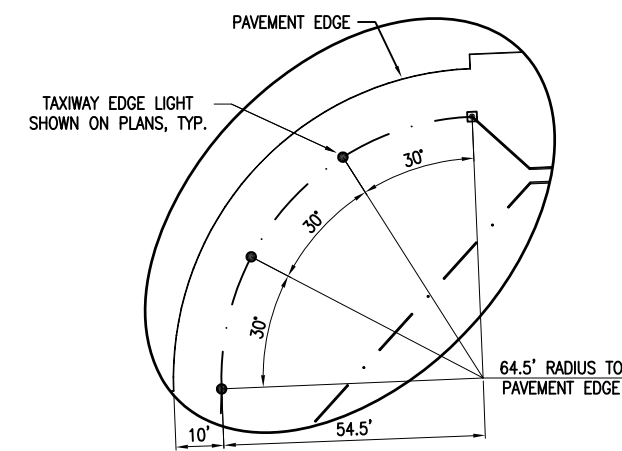
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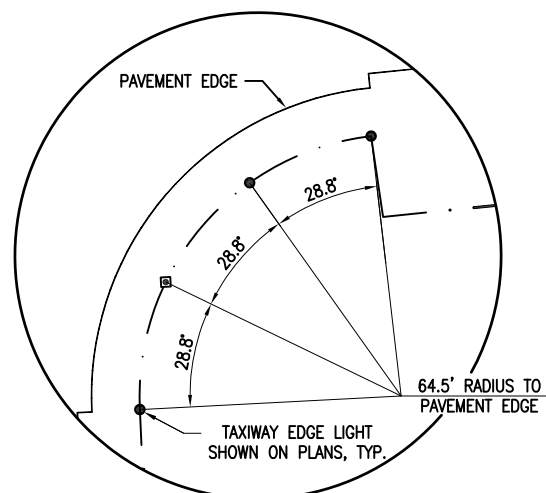
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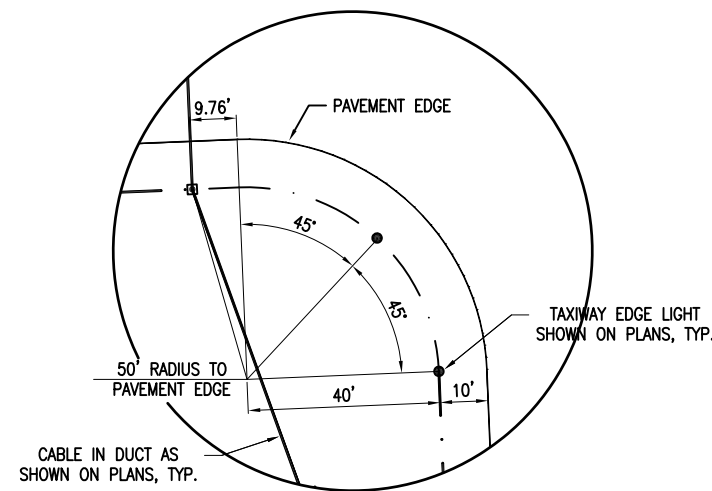
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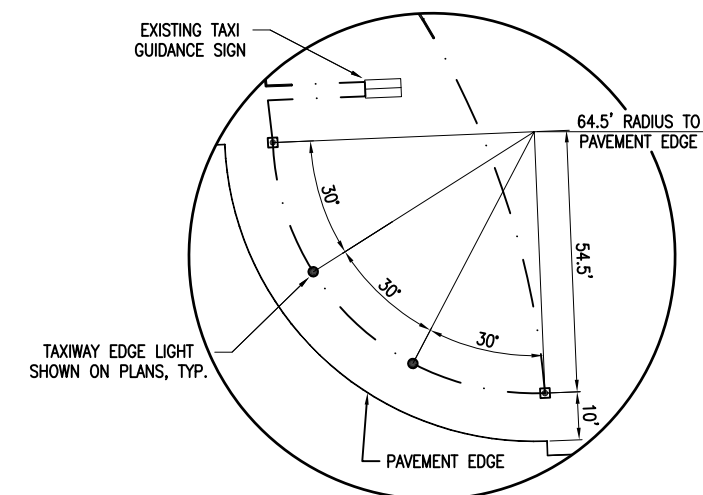
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RADIUS DETAIL "I"
NOT TO SCALE



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

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CAD FILE: E-515.DWG
DESIGN BY: KNL 09/02/2017
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REVIEWED BY: BSS 10/17/2017

SHEET TITLE

**RADIUS DETAILS
SHEET 1**



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
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ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-515.DWG

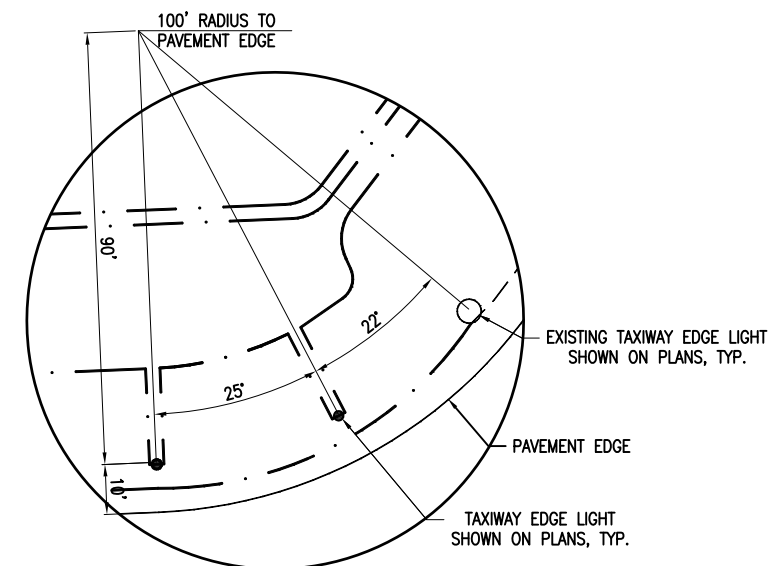
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DRAWN BY: CWS 09/05/2017

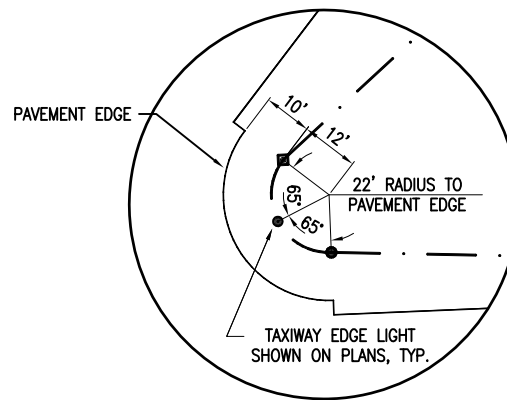
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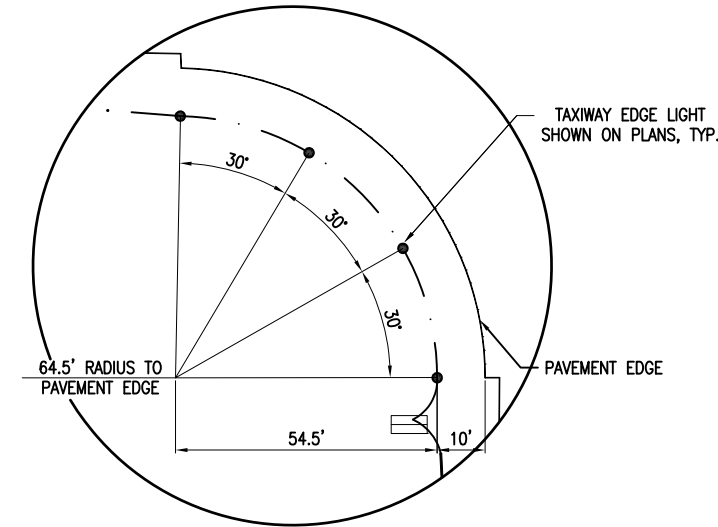
**RADIUS DETAILS
SHEET 2**



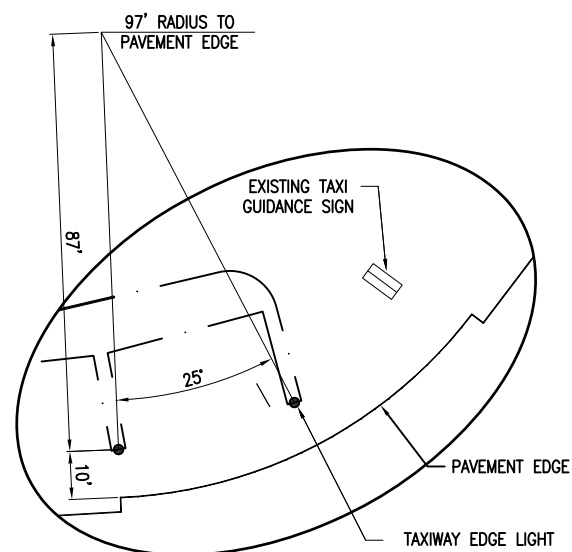
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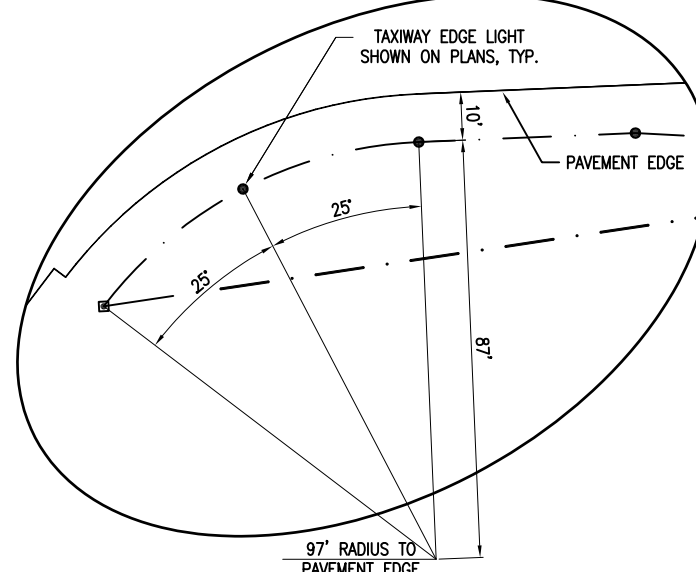
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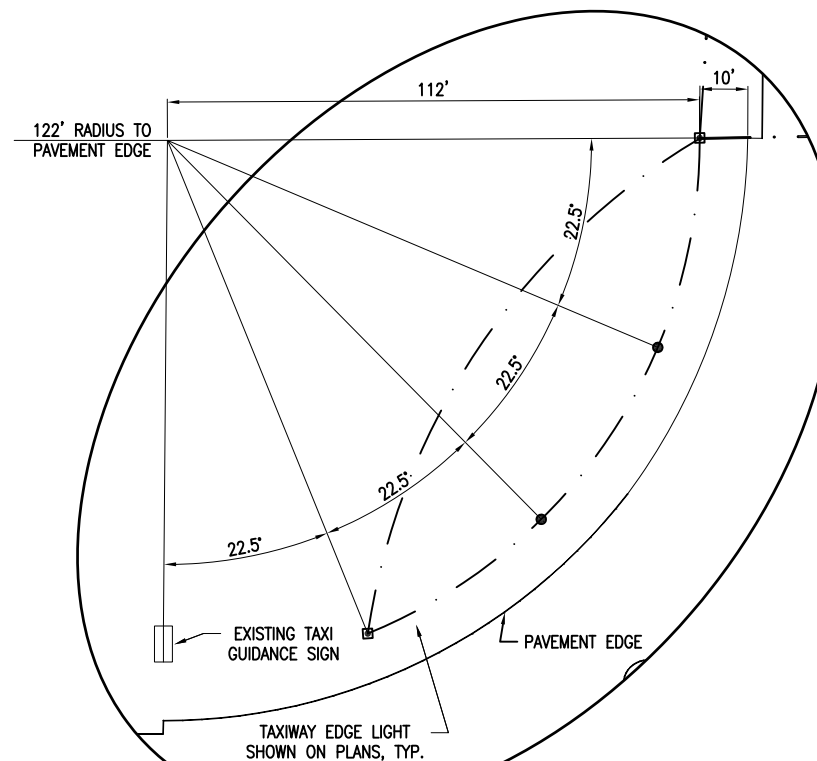
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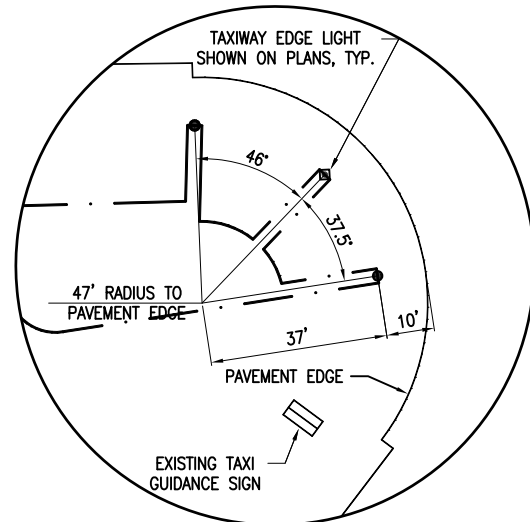
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RADIUS DETAIL "N"
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RADIUS DETAIL "P"
NOT TO SCALE



RADIUS DETAIL "L"
NOT TO SCALE



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-515.DWG

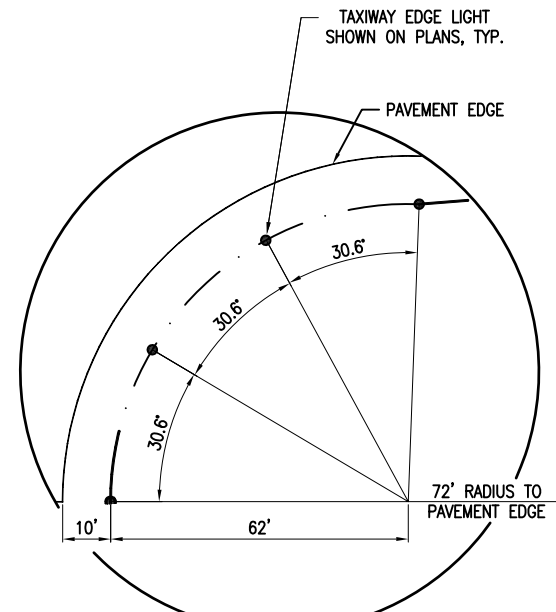
DESIGN BY: KNL 09/02/2017

DRAWN BY: CWS 09/05/2017

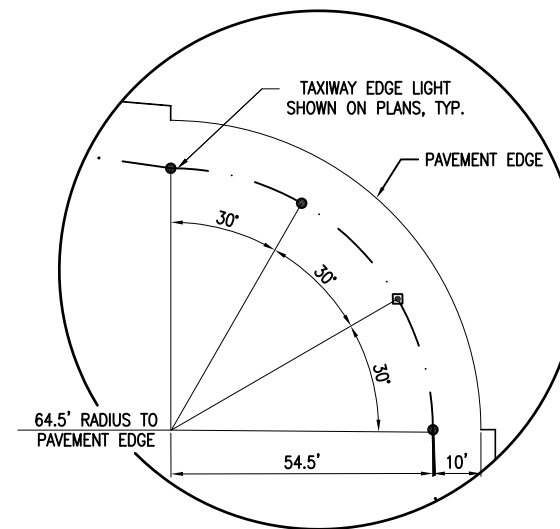
REVIEWED BY: BSS 10/17/2017

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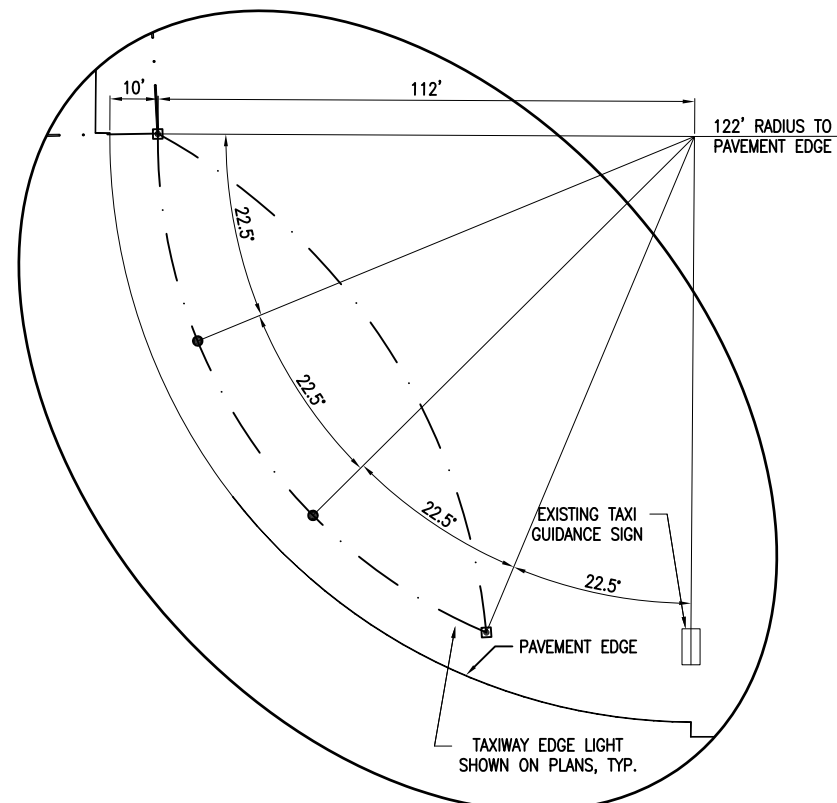
**RADIUS DETAILS
SHEET 3**



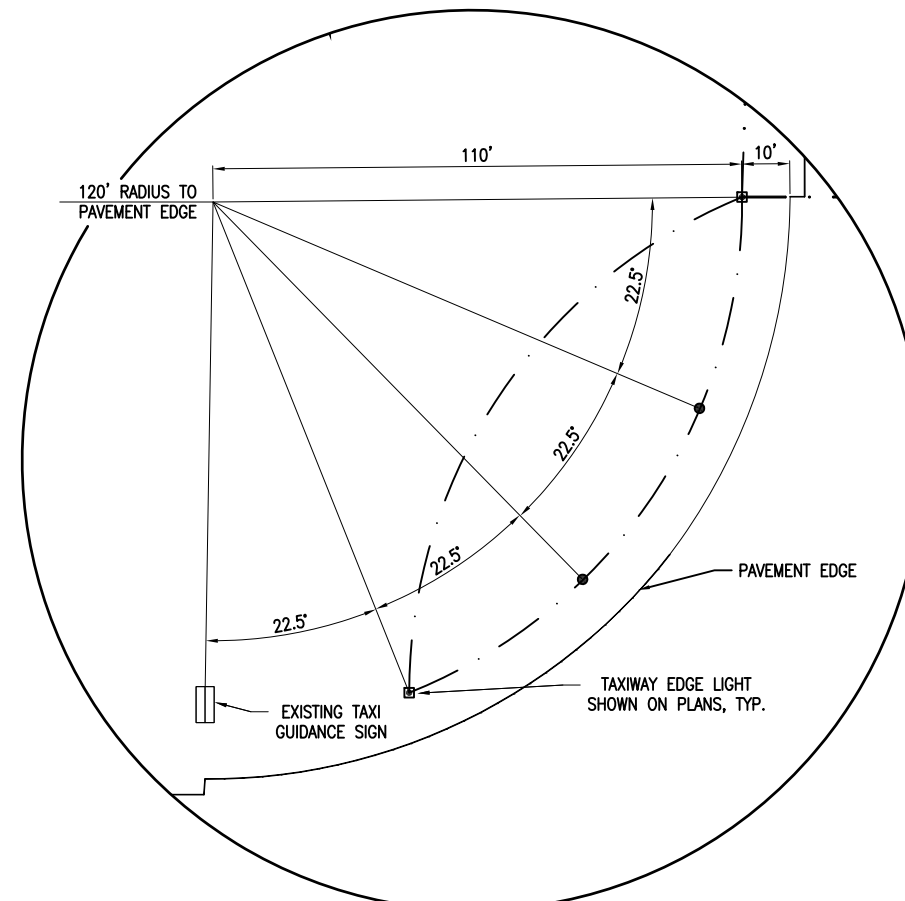
RADIUS DETAIL "Q"
NOT TO SCALE



RADIUS DETAIL "S"
NOT TO SCALE



RADIUS DETAIL "R"
NOT TO SCALE



RADIUS DETAIL "T"
NOT TO SCALE



Kevin N. Lightfoot
EXPIRES: 11/30/2019

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CAD FILE: E-501-DETL.DWG

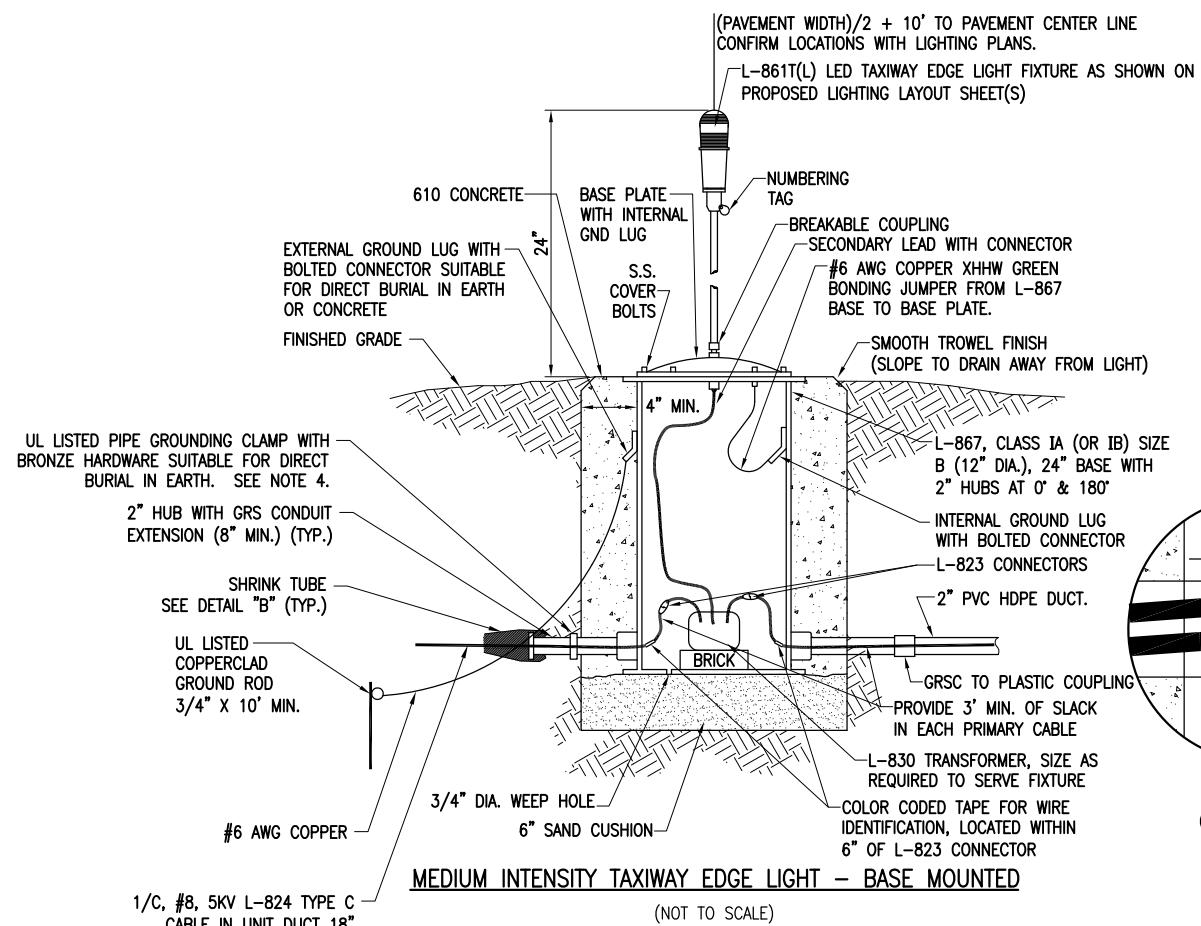
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DRAWN BY: CWS 09/05/2017

REVIEWED BY: BSS 10/17/2017

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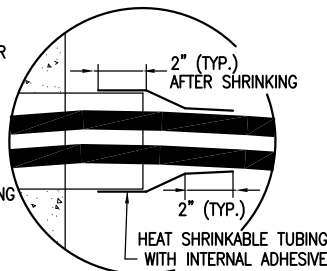
AIRFIELD LIGHTING
DETAILS SHEET 1



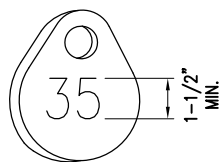
MEDIUM INTENSITY TAXIWAY EDGE LIGHT - BASE MOUNTED

(NOT TO SCALE)

L-867 BASE WITH 1-3" HUB IS ALSO ACCEPTABLE, FOR INTERFACE TO CABLE IN 3/4" UNIT DUCT. L-867 BASES WITH 3" HUBS MAY WORK BETTER FOR TAXIWAY LIGHTS INSTALLED ON TAXIWAY B-WEST DUE TO SITE CONDITIONS AND CABLE ROUTING. FOR INTERFACE TO 2" DUCT 2" HUBS LOCATED AT 0', 180' ARE REQUIRED. ADDITIONAL HUBS WILL BE REQUIRED TO ACCOMMODATE MORE THAN TWO DUCT INTERFACES

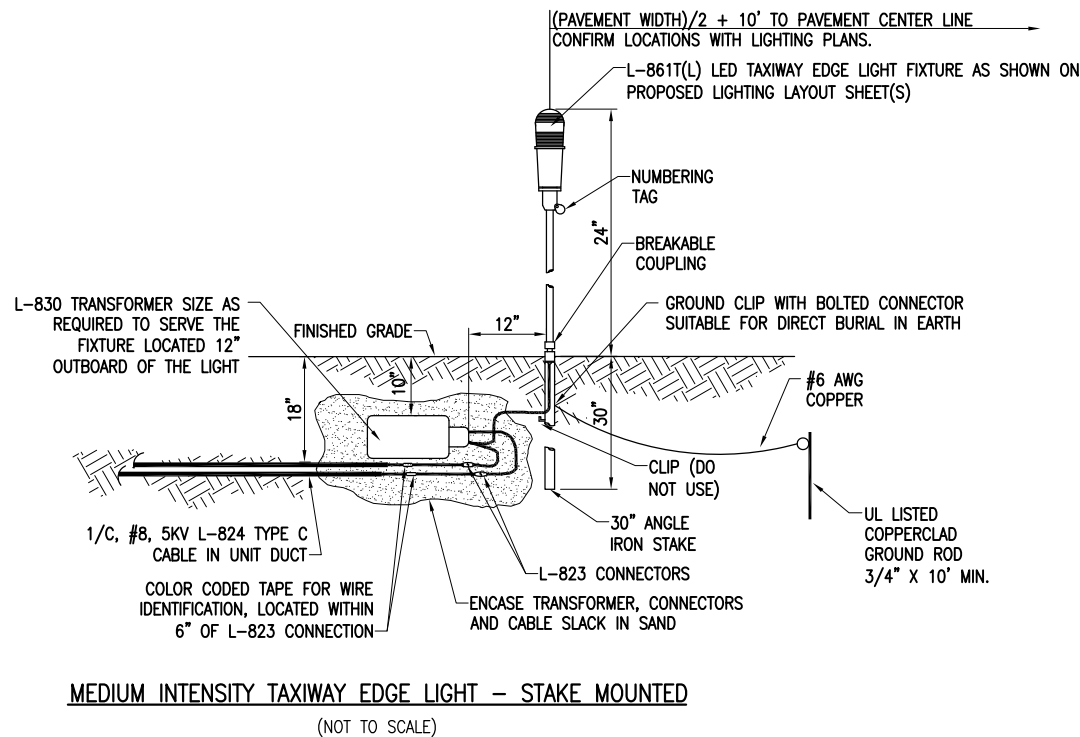


DETAIL "B"
(NOT TO SCALE)



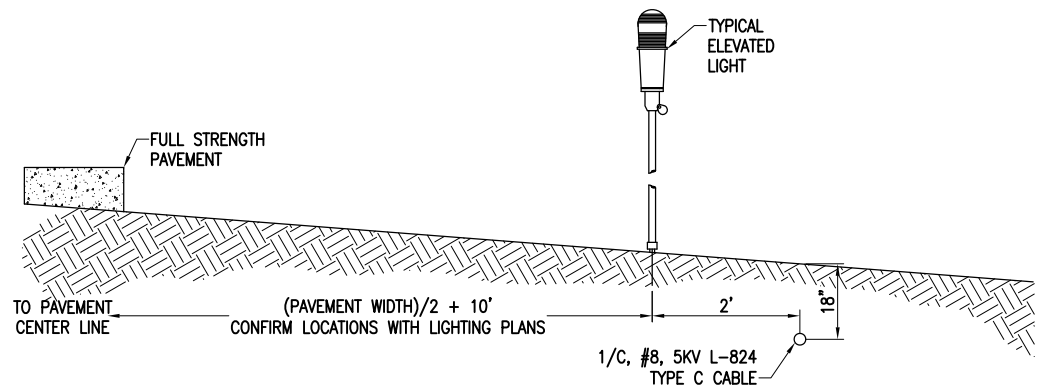
NUMBERING TAG DETAIL
(NOT TO SCALE)

NOTE:
AFFIX NON-CORROSIVE TAG TO FIXTURE FACING RUNWAY WITH SET SCREW, WIRE TIE, OR METAL BAND. NUMERALS SHALL BE ENGRAVED FOR PERMANENT READABILITY.

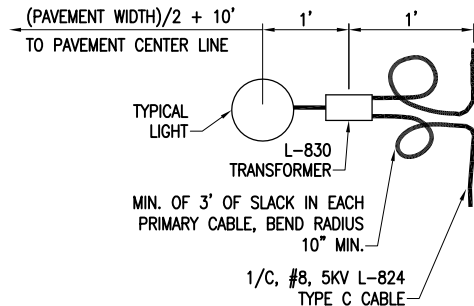


MEDIUM INTENSITY TAXIWAY EDGE LIGHT - STAKE MOUNTED

(NOT TO SCALE)



PROFILE VIEW



PLAN VIEW

LIGHT AND CABLE INSTALLATION DETAIL

(NOT TO SCALE)

NOTES:
SEE PROPOSED LIGHTING LAYOUT SHEET FOR LIGHT LOCATIONS.

NOTES:

- SEE ELECTRICAL NOTES SHEETS.
- SEE "ELECTRICAL NOTES SHEET 2" AND "GROUNDING NOTES" SHEET FOR GROUNDING NOTES FOR AIRFIELD LIGHTING.
- SEE PROPOSED LIGHTING LAYOUT SHEET(S) FOR LIGHT LOCATIONS
- WHERE GROUND LUGS ARE NOT ACCESSIBLE ON EXISTING BASE CANS SCHEDULED TO BE RELOCATED, PROVIDE A UL LISTED PIPE GROUND CLAMP RATED FOR DIRECT BURIAL IN EARTH AND BOND TO THE METAL CONDUIT EXTENSION TO PROVIDE GROUND PATH TO LIGHT BASE.

PER FAA AC 150/5340-30H DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, A LIGHT BASE GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH STAKE MOUNTED LIGHT AND EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. THE LIGHT BASE GROUND SHALL BE A #6 AWG BARE COPPER CONDUCTOR CONNECTED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 3/4-INCH DIAMETER BY 10-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD.



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CAD FILE: E-502-DETL.DWG

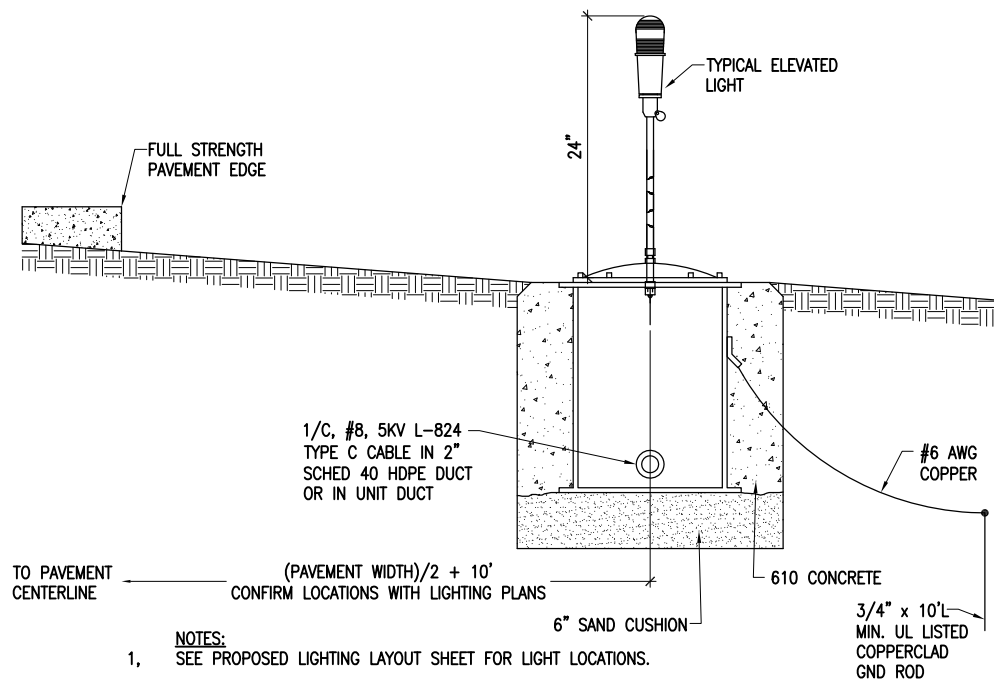
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DRAWN BY: CWS 09/05/2017

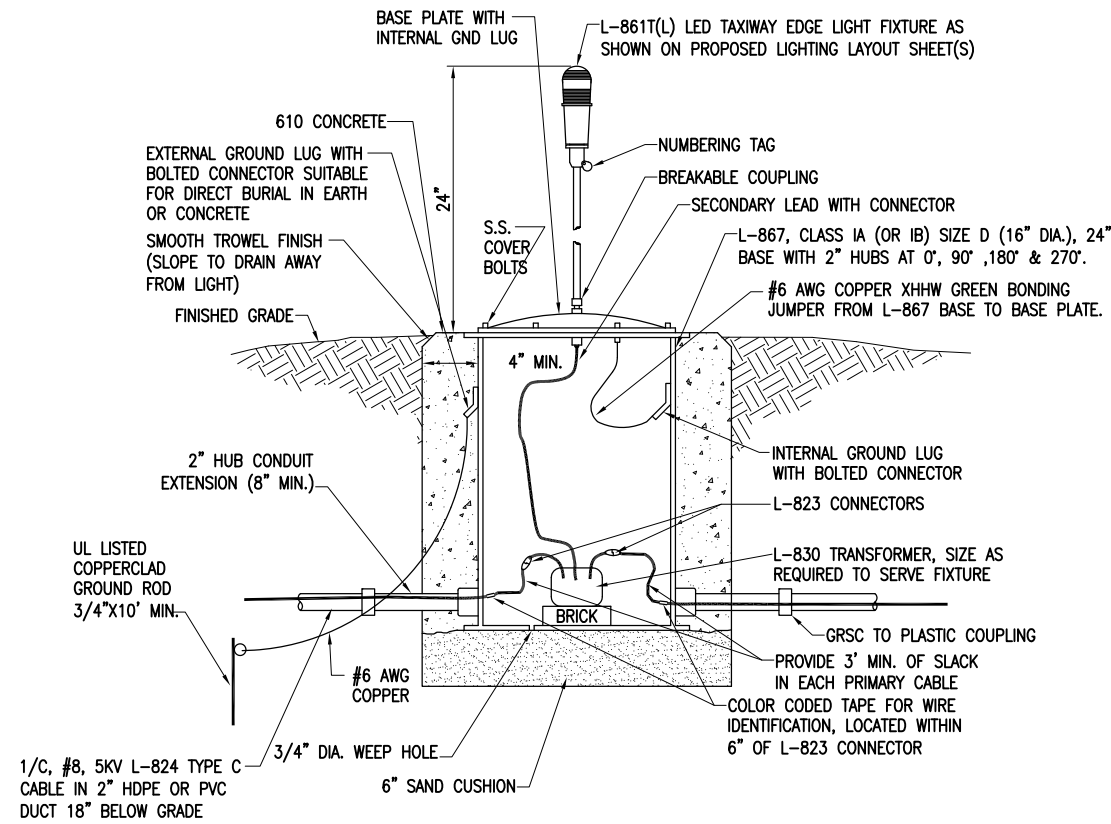
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

AIRFIELD LIGHTING
DETAILS SHEET 2



PROFILE VIEW
LIGHT AND INSTALLATION DETAIL



MEDIUM INTENSITY TAXIWAY EDGE LIGHT - BASE MOUNTED WITH L-867D CAN
(NOT TO SCALE)

NOTES:

1. SEE ELECTRICAL NOTES SHEETS.
2. SEE "ELECTRICAL NOTES SHEET 2" AND "GROUNDING NOTES" SHEET FOR GROUNDING NOTES FOR AIRFIELD LIGHTING.
3. SEE PROPOSED LIGHTING LAYOUT SHEET(S) FOR LIGHT LOCATIONS
4. WHERE GROUND LUGS ARE NOT ACCESSIBLE ON EXISTING BASE CANS SCHEDULED TO BE RELOCATED, PROVIDE A UL LISTED PIPE GROUND CLAMP RATED FOR DIRECT BURIAL IN EARTH AND BOND TO THE METAL CONDUIT EXTENSION TO PROVIDE GROUND PATH TO LIGHT BASE.

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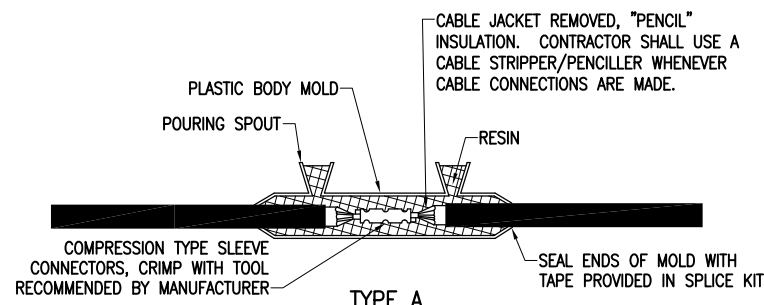
ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-504-DETL.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

AIRFIELD LIGHTING
CABLE SPLICE
DETAILS

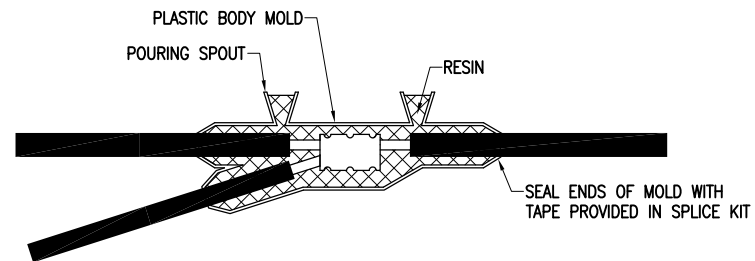
NOTES:

1. SPLICE DETAILS ARE PROVIDED FOR NEW WORK AND TO ASSIST IN REPAIRS OF ACCIDENTAL OR UNEXPECTED INTERRUPTIONS AND/OR CUTS TO AIRFIELD LIGHTING CABLES.
2. CONTRACTOR SHALL 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.
3. EVERY AIRFIELD LIGHTING CABLE SPICER 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.
4. WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.
5. INSIDE DIAMETER OF RESPECTIVE CABLE CONNECTOR SHALL PROPERLY MATCH OUTSIDE DIAMETER OF CABLE.
6. 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 150/5370-10G ITEM L-108, HIGH VOLTAGE ELECTRICAL INSULATING TAPE SHALL BE 3M SCOTCH 23, 3M SCOTCH 130C OR APPROVED EQUIVALENT, AND VINYL ELECTRICAL TAPE SHALL BE 3M SCOTCH 88 OR APPROVED EQUIVALENT. TAPES MUST BE RATED SUITABLE FOR THE APPLICATION.
7. 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.
8. 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. 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

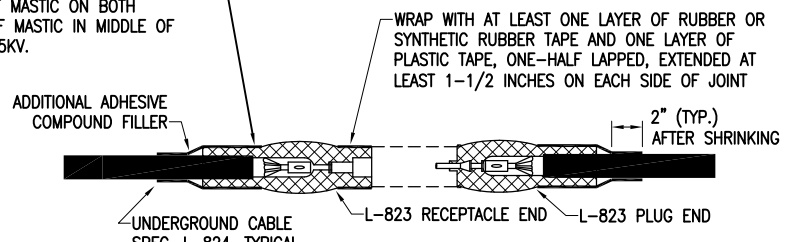
FOR SPLICES IN LOW VOLTAGE CABLE (600V) HOMERUNS FOR EXTENSIONS TO EXISTING LOW VOLTAGE CABLES ONLY. TYPE A SPLICES SHALL BE MADE IN SPLICE CANS, HANDHOLES, MANHOLES, OR JUNCTIONS BOXES



LOW VOLTAGE UNDERGROUND TAP SPLICE

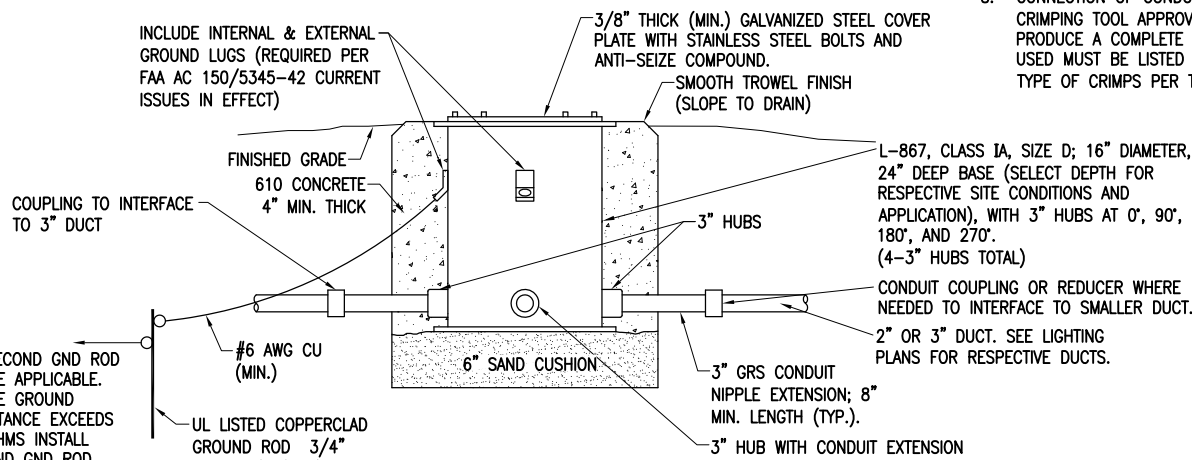
FOR TAP SPLICES IN LOW VOLTAGE (600V) CABLE. SPLICES SHALL BE RATED AND LISTED SUITABLE FOR DIRECT BURIAL LOCATIONS. FOR SPLICES UP TO #2 AWG CONDUCTOR, SPLICES SHALL BE WYE RESIN TYPE POWER CABLE TAP SPLICE KIT SUITABLE FOR THE RESPECTIVE CABLES AND RESPECTIVE APPLICATION.

CONTINUOUS HEAT SHRINK TUBING PLACED OVER THE ENTIRE L-823 CONNECTOR(S) BOTH MALE AND FEMALE AT ALL 5KV JUNCTIONS. THE HEAT SHRINK TUBING SHALL BE APPROXIMATELY 18" IN LENGTH WITH 6 INCHES OF MASTIC ON BOTH ENDS AND VOID OF MASTIC IN MIDDLE OF TUBE RATED FOR 5KV.



TYPE B

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

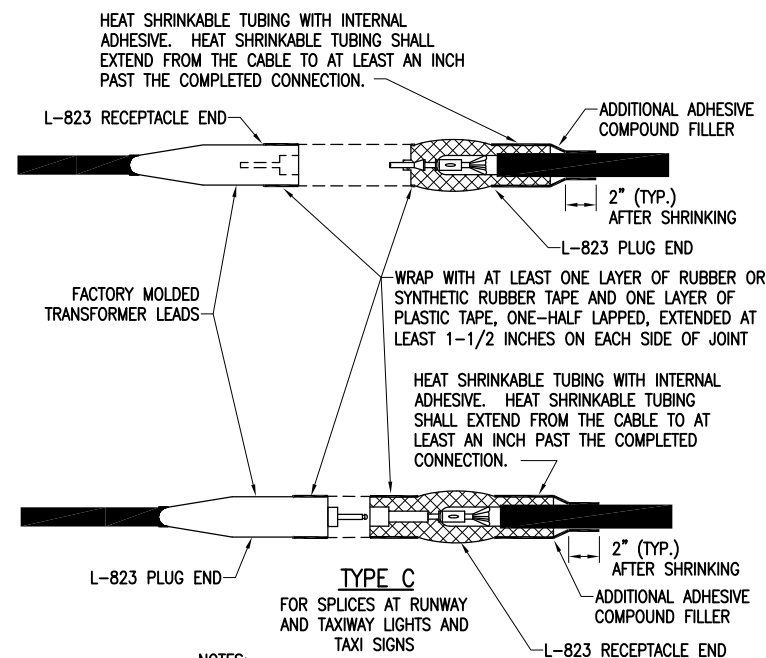


SPLICE CAN DETAIL

(NOT TO SCALE)

NOTES FOR SPLICE CAN DETAIL:

1. SPLICE CANS SHALL CONFORM TO THE REQUIREMENTS OF FAA AC 150/5345-42 (CURRENT ISSUES IN EFFECT), FOR TYPE L-867, CLASS 1A, 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.
2. 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).
3. APPLY AN OXIDE-INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS, AND ALL PLACES WHERE METAL COMES INTO CONTACT WITH METAL.
4. 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.
5. 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.
6. LIDS FOR THE SPLICE CANS CONTAINING LOW VOLTAGE CABLES (RATED 600 VOLTS AND BELOW) WILL BE ACCEPTABLE TO USE BLANK COVERS.



TYPE C

FOR SPLICES AT RUNWAY AND TAXIWAY LIGHTS AND TAXI SIGNS

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

CABLE SPLICES

(NOT TO SCALE)



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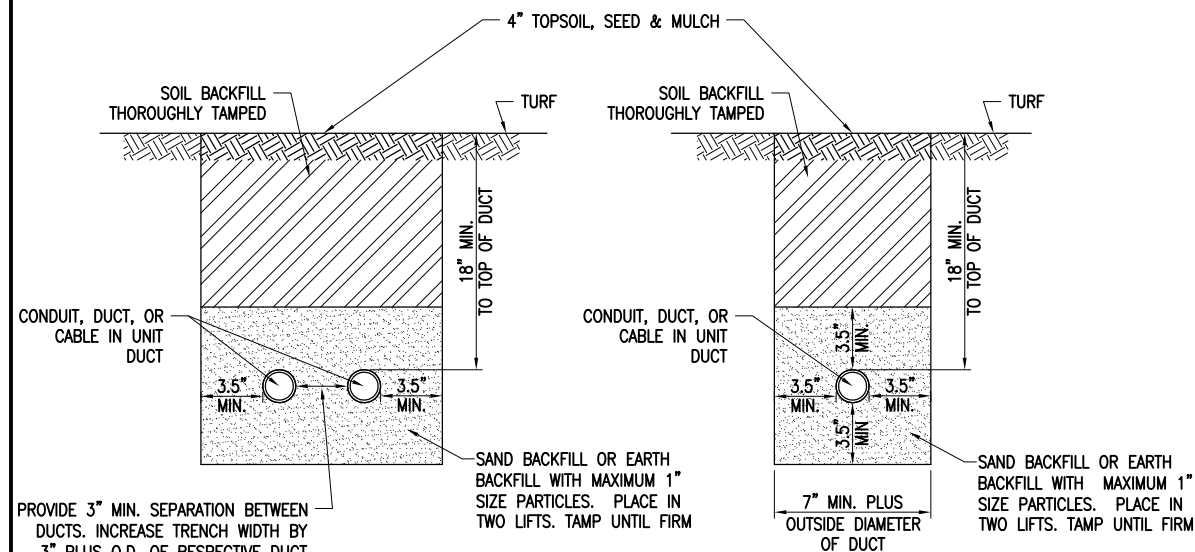
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DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

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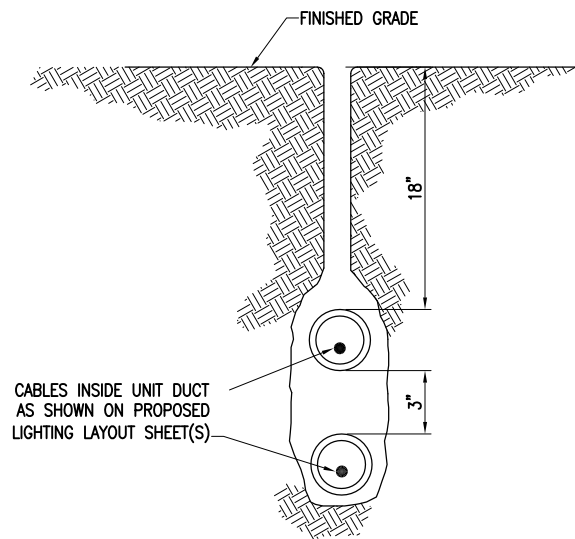
CONDUIT TRENCH
DETAILS



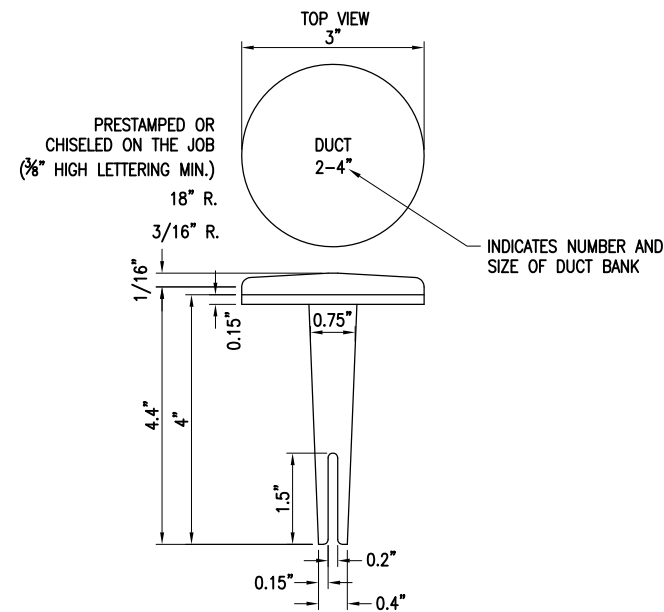
CONDUIT IN TRENCH - NON-PAVEMENT AREAS
"NOT TO SCALE"

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 LOCATED BELOW PAVEMENT OR ROADWAYS IS 30". 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 CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
- CONDUIT, DUCT, CABLE, AND/OR CABLE IN UNIT DUCT INTERFACE TO HANDHOLES, MANHOLES, SPLICE CANS, OR OTHER JUNCTION STRUCTURES WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE CABLE PAY ITEM OR RESPECTIVE DUCT PAY ITEM.
- ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.



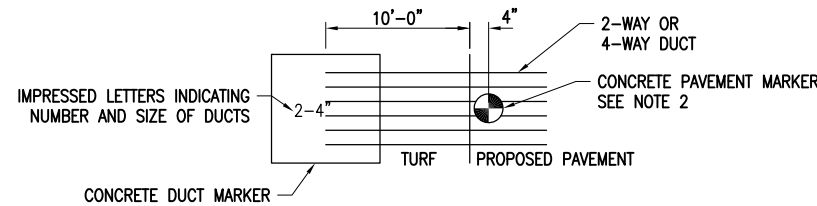
PLOWED CABLE
"NOT TO SCALE"



BITUMINOUS PAVEMENT DUCT MARKERS
"NOT TO SCALE"

NOTES:

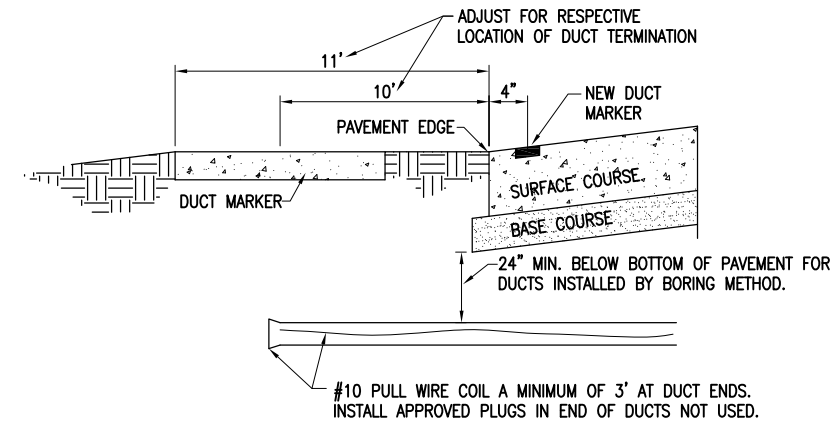
- TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE.
- BRASS DUCT MARKERS ARE AVAILABLE FROM G&S FOUNDRY & MANUFACTURING CO., INC., 210 KASKASKIA DRIVE, RED BUD, IL 62278, PHONE: (618)-282-4114, SURV-KAP, 3225 E. 47TH ST., TUCSON, AZ 85713, PHONE: (520) 622-6011, OR OTHER EQUIVALENT MANUFACTURERS.



DUCT MARKER DETAIL
"NOT TO SCALE"

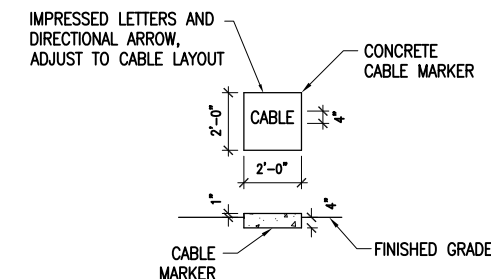
CABLE & DUCT MARKER NOTES:

- 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 FORMED AS DESCRIBED IN NOTE 4.
- CABLE MARKERS SHALL BE PLACED AT CHANGES OF DIRECTION AND APPROXIMATELY EVERY 200' ALONG CABLE RUNS.
- 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 WERE ADDITIONAL SPACE TO FIT 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.

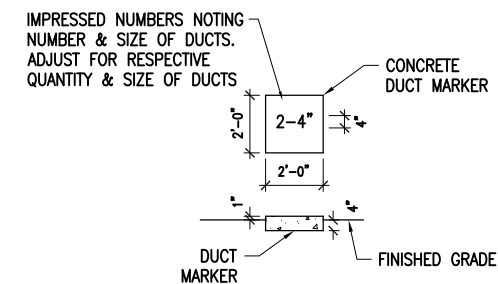


UNDERGROUND ELECTRICAL DUCT
(NOT TO SCALE)

NOTE: DUCTS INSTALLED BY BORING METHOD SHALL NOT DISTURB THE RESPECTIVE PAVEMENT SURFACE.



TURF CABLE MARKERS
"NOT TO SCALE"



TURF DUCT MARKERS
"NOT TO SCALE"



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CAD FILE: E-506-DETL.DWG

DESIGN BY: KNL 09/02/2017

DRAWN BY: CWS 09/05/2017

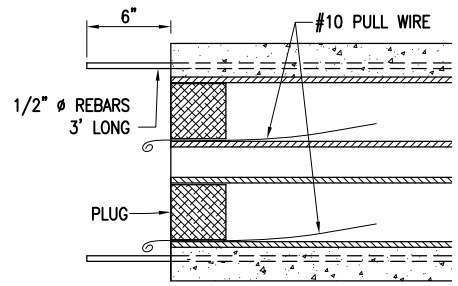
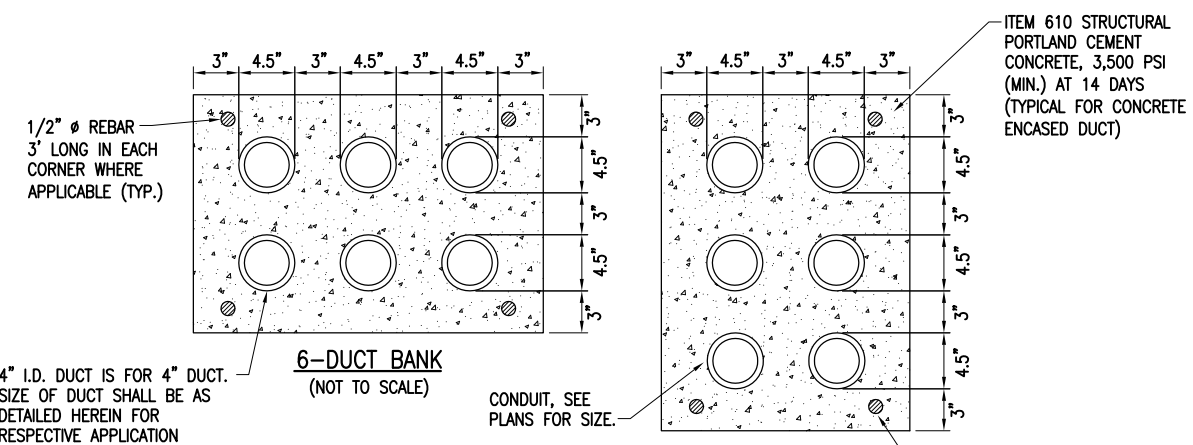
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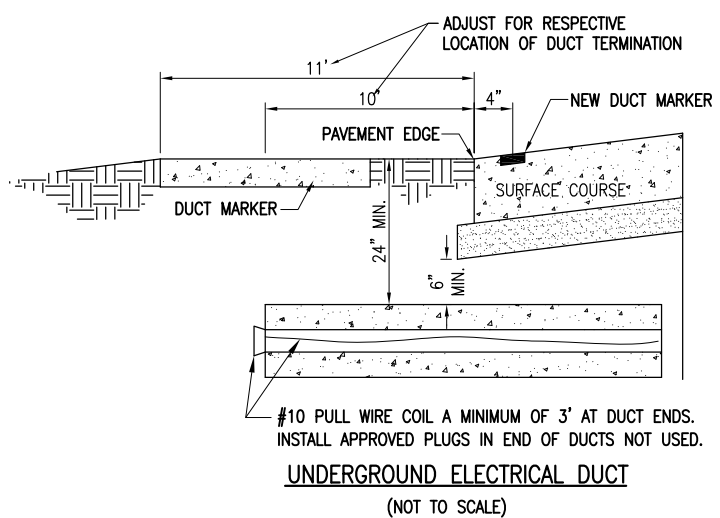
DUCT BANK DETAILS
AND NOTES

DUCT INSTALLATION 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.
- CONTRACTOR SHALL KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING CONSTRUCTION FOR USE AS A REFERENCE.
- 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 ENGINEER/ RESIDENT TECHNICIAN 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. HE 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 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.
- 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 SDR 13.5 OR 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.
- INSTALLATION OF CONDUIT AND DUCTS SHALL CONFORM TO ITEM 110 AIRPORT UNDERGROUND ELECTRICAL DUCT BANKS AND CONDUITS.
- DUCTS INSTALLED IN TRENCH SHALL BE INSTALLED 18 IN. MINIMUM BELOW GRADE IN TURF AREAS NOT SUBJECT TO FARMING. DUCTS LOCATED IN AREAS SUBJECT TO FARMING SHALL BE 42 IN. MINIMUM BELOW GRADE. MINIMUM DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 42" IN AREAS UNDER ROADWAYS. WHERE DETAILED ON THE PLANS OR WHERE REQUIRED TO AVOID OBSTRUCTIONS, DUCTS SHALL BE BURIED DEEPER.
- WHERE CONCRETE-ENCASED DUCT INTERFACES TO AN ELECTRICAL HANDHOLE OR MANHOLE, THE CONCRETE ENCASEMENT SHALL BE INSTALLED UP TO THE RESPECTIVE HANDHOLE OR MANHOLE. PROVIDE BUSHINGS OR BELLS AT CONDUIT TERMINATIONS IN ELECTRICAL HANDHOLES OR MANHOLES.
- 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.
- HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
- CONTROL CABLES SHALL BE RUN IN SEPARATE DUCTS FROM POWER CABLES.
- HOMERUN 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.
- 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.

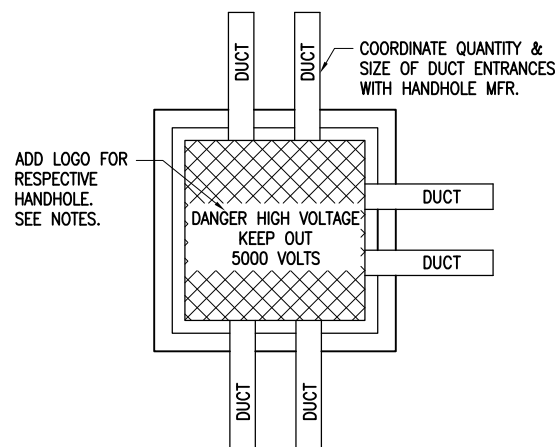


TYPICAL SECTION
(NOT TO SCALE)

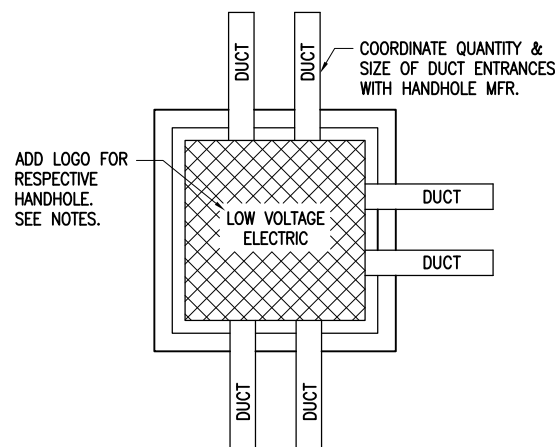


DUCT BANK NOTES:

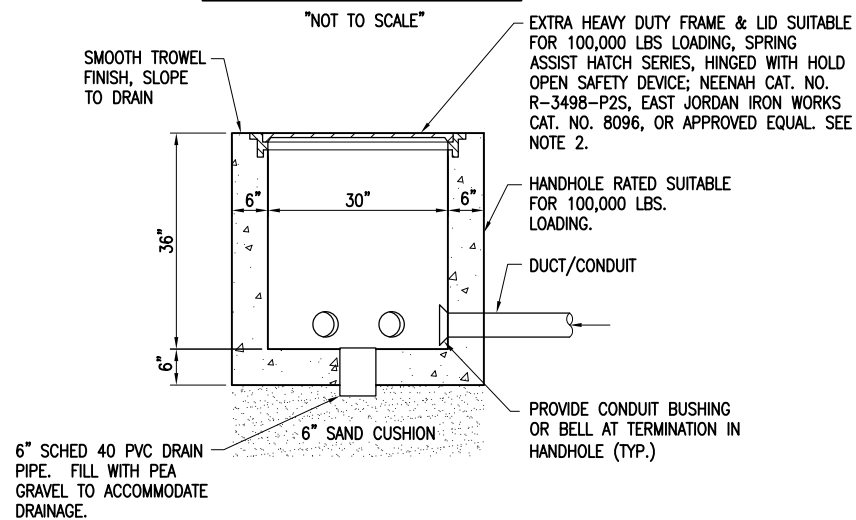
- DIMENSIONS FOR CONCRETE COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
- INCLUDE DUCT SPACERS AS MANUFACTURED BY UNDERGROUND DEVICES INC., CARLON, OR APPROVED EQUAL TO MAINTAIN PROPER SEPARATION OF CONDUITS.
- PROVIDE REBAR WHERE APPLICABLE TO ACCOMMODATE INTERFACE OF CONCRETE ENCASED DUCT BANKS TERMINATING IN HANDHOLE OR MANHOLE. PROVIDE REBAR REINFORCEMENT WHERE DUCT BANK IS LOCATED BELOW PAVEMENT. REBAR SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 706, GRADE 60, OR ASTM A615, GRADE 60.



HIGH VOLTAGE HANDHOLE PLAN
"NOT TO SCALE"



LOW VOLTAGE HANDHOLE PLAN
"NOT TO SCALE"



ELEVATION
"NOT TO SCALE"

HANDHOLE NOTES:

- LIDS FOR LOW VOLTAGE HANDHOLES (CONTAINING CIRCUITS RATED 600 VOLTS AND BELOW) SHALL BE LABELED "LOW VOLTAGE" OR "0V - 600V ELECTRIC". LIDS FOR HIGH VOLTAGE HANDHOLES CONTAINING AIRFIELD LIGHTING SERIES CIRCUIT WIRING SHALL BE LABELED "DANGER HIGH VOLTAGE KEEP OUT 5000 VOLTS" TO COMPLY WITH NEC ARTICLE 300.45 "WARNING SIGNS" AND NEC ARTICLE 314.30(D) "COVERS". COORDINATE LETTERING WITH MFR. HANDHOLES PROVIDED WITH THE WRONG LIDS SHALL HAVE THE LIDS REPLACED WITH THE CORRECT LIDS AT NO ADDITIONAL COST TO THE CONTRACT.
- ELECTRICAL HANDHOLE, FRAME & LID SHALL BE CAPABLE OF WITHSTANDING MINIMUM 100,000 POUND LOADS AS CALLED FOR IN FAA ADVISORY CIRCULAR AC 150/5320-6E APPENDIX 3 ITEM 2.d. (1). AIRPORT HANDHOLE HOLE FRAME & LID SHALL BE NEENAH CATALOG NO. R-3498-P2S, EAST JORDAN IRON WORKS CAT. NO. 8096, OR APPROVED EQUAL.
- REINFORCEMENT SHALL BE #6 BARS AT 6" CENTERS BASE & WALLS EACH WAY.
- CONCRETE SHALL BE 5000 PSI AT 28 DAYS.
- HANDHOLES SHALL BE PRECAST.
- COORDINATE INSTALLATION OF HANDHOLES WITH RESPECTIVE FINISHED GRADE ELEVATION.
- ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, CABLE IN UNIT DUCT, AND/OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE HANDHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

ELECTRICAL HANDHOLE
"NOT TO SCALE"



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-507-DETL.DWG

DESIGN BY: KNL 09/02/2017

DRAWN BY: CWS 09/05/2017

REVIEWED BY: BSS 10/17/2017

SHEET TITLE

ELECTRICAL
HANDHOLE DETAILS



Kevin N. Lightfoot
EXPIRES: 11/30/2019

PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

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DESIGN BY: KNL 09/02/2017

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SHEET TITLE

4'X4'X4' ELECTRICAL
MANHOLE DETAILS

PRECAST 4'x4'x4' ELECTRICAL MANHOLE NOTES

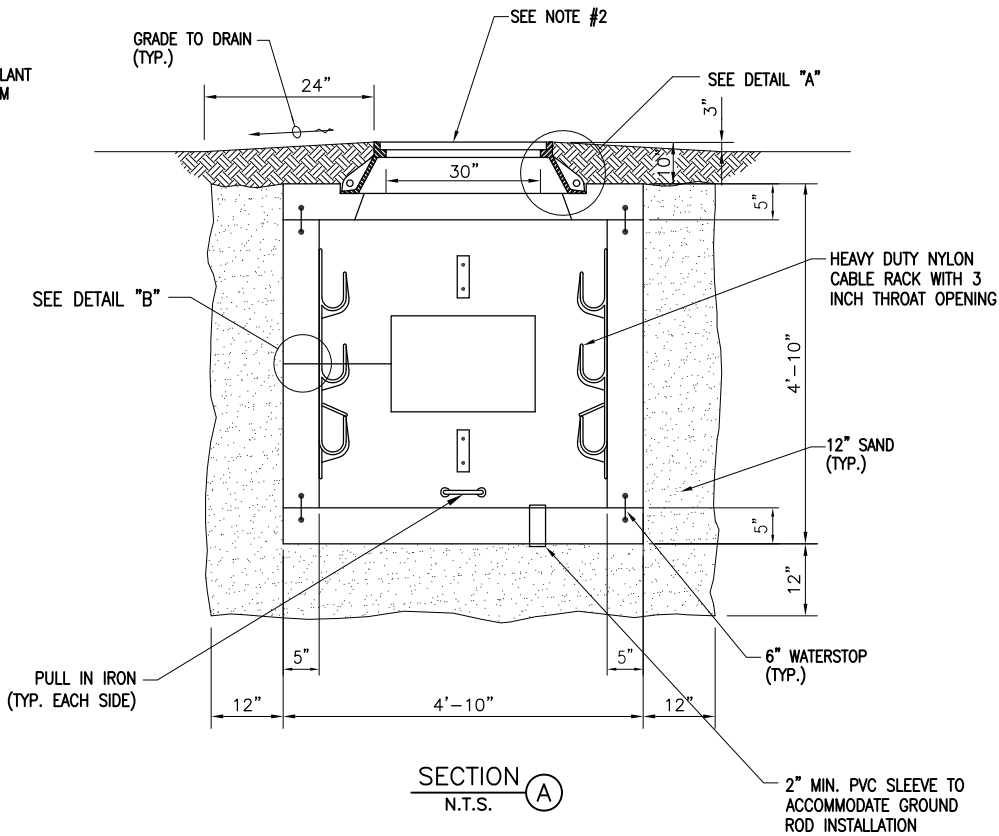
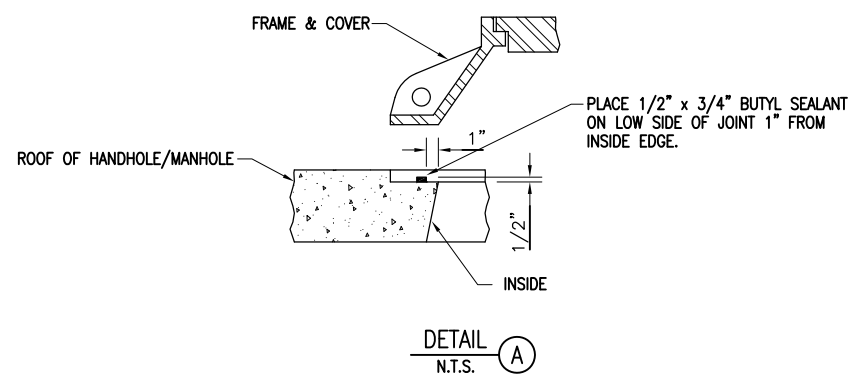
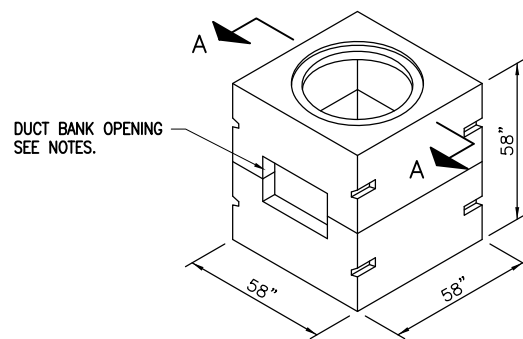
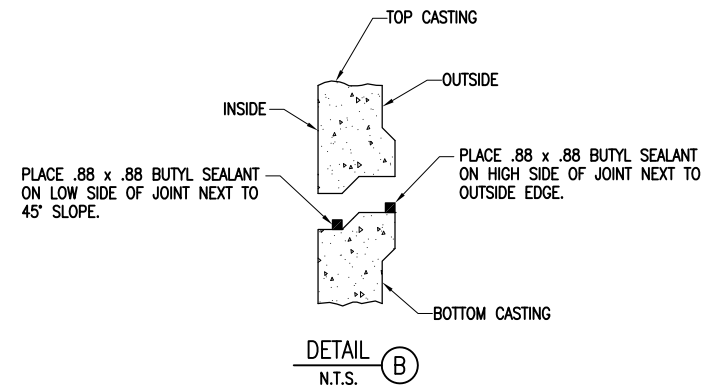
1. 4'x4'x4' ELECTRICAL MANHOLE SHALL BE CONSTRUCTED TO MEET THE FOLLOWING:

- DESIGN CRITERIA:**
- 1) DESIGN SPECIFICATION: ACI 318, AASHTO LOAD FACTOR DESIGN METHOD, AND ASTM C858
 - 2) DESIGN LOADING: AASHTO HS20 (32,000 LB/AXLE)
 - 3) LIVE LOAD SURCHARGE: .5% OF THE WHEEL LOADING APPLIED TO 8'-0" OF DEPTH.
 - 4) CONCRETE COMPRESSIVE STRENGTH: $F'_c = 4500$ PSI
 - 5) REINFORCING STEEL: ASTM A706, $F_y = 60000$ PSI

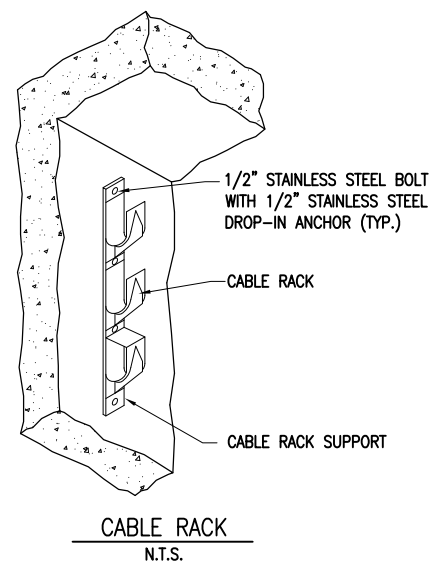
- DESIGN ASSUMPTIONS:**
- 1) GROUND WATER LEVEL: 3'-6" BELOW GRADE.
 - 2) EARTH COVER: 2'-0" MINIMUM TO 5'-0" MAXIMUM
 - 3) LIVE LOAD IMPACT:
 - 2'-0" $1 = 20\%$
 - 2'-1" TO 2'-11" $1 = 10\%$
 - 3'-0" TO 5'-0" $1 = 0\%$
 - 4) COEFFICIENT OF ACTIVE EARTH PRESSURE: $K_a = 0.3$
 - 5) SPECIFIC WEIGHT OF STD. AGGREGATE CONCRETE 150 PCF
 - 6) SPECIFIC WEIGHT OF DRY EARTH: 100 PCF
 - 7) SPECIFIC WEIGHT OF SATURATED EARTH: 120 PCF
 - 8) EQUIVALENT FLUID PRESSURE OF DRY EARTH: 30 PSF
 - 9) EQUIVALENT FLUID PRESSURE OF SATURATED EARTH: 80 PSF

THE SUPPLIER SHALL PROVIDE CERTIFICATION THAT THE PRECAST MANHOLES MEET OR EXCEED THESE REQUIREMENTS PRIOR TO INSTALLATION.

2. MANHOLE FRAME & LID SHALL BE CAPABLE OF WITHSTANDING MINIMUM 50,000 POUND LOADS. MANHOLE FRAME & LID SHALL BE NEENAH CATALOG NO. R-1640-C MANHOLE FRAME A SOLID LID, EAST JORDAN IRON WORKS CATALOG NO. 1825 FRAME AND COVER, OR APPROVED EQUAL. LID FOR LOW VOLTAGE MANHOLES SHALL BE LABELED "LOW VOLTAGE ELECTRIC" OR "0V-600V". LIDS FOR HIGH VOLTAGE MANHOLES CONTAINING AIRFIELD LIGHTING SERIES CIRCUIT WIRING SHALL BE LABELED "DANGER HIGH VOLTAGE KEEP OUT 5000 VOLTS" TO COMPLY WITH 2014 NEC ARTICLE 300.45 "WARNING SIGNS" AND 2014 NEC ARTICLE 314.30(D) "COVERS". COORDINATE LETTERING WITH MFR.
3. COORDINATE DUCT BANK INTERFACE & OPENINGS WITH THE MANHOLE MFR. CONTRACTOR SHALL SLOPE DUCT BANK TO PRECAST MANHOLE OPENINGS. ALL OPENINGS SHALL BE SEALED WATERTIGHT AFTER DUCT BANK INSTALLATION.
4. 4'x4'x4' MANHOLE SHALL BE MANUFACTURED BY A CONCRETE ELECTRICAL MANHOLE PRODUCER ON THE ILLINOIS DEPARTMENT OF TRANSPORTATION APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS..
5. 4'x4'x4' MANHOLE SHALL BE PAID FOR UNDER ITEM AR115710 ELECTRICAL MANHOLE PER EACH.
6. CABLE RACKS SHALL BE HEAVY DUTY CORROSION RESISTANT NYLON MATERIAL WITH CORROSION RESISTANT STAINLESS STEEL MOUNTING HARDWARE; UNDERGROUND DEVICES, INC. CAT. NO. 3SR1N, 3SR2N OR 3SR3N OR EQUAL. PROVIDE AT LEAST TWO TRIPLE HOOK CABLE RACKS ON EACH MANHOLE WALL, SPACED TO SUPPORT RESPECTIVE CABLES.
7. COORDINATE INSTALLATION OF MANHOLES WITH RESPECTIVE FINISHED GRADE ELEVATIONS.
8. INCLUDE FLOOR SUMP OR DRAINAGE PIPE.
9. ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, CABLE IN UNIT DUCT, AND/OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE MANHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
10. INCLUDE 2" MIN. SCHED. 40 PVC CONDUIT SLEEVE IN BOTTOM OF MANHOLE TO ACCOMMODATE GROUND ROD INSTALLATION.
11. THIS MANHOLE IS NOT RATED FOR USE ON THE AIRFIELD WHERE SUBJECT TO POSSIBLE AIRCRAFT LOADING.



PRECAST 4' x 4' x 4' MANHOLE DETAILS
N.T.S. (NOT TO SCALE)

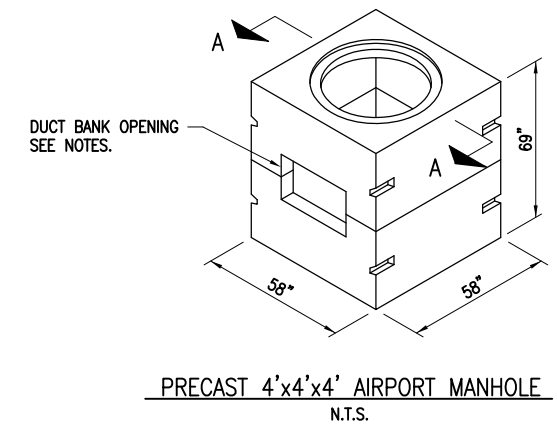
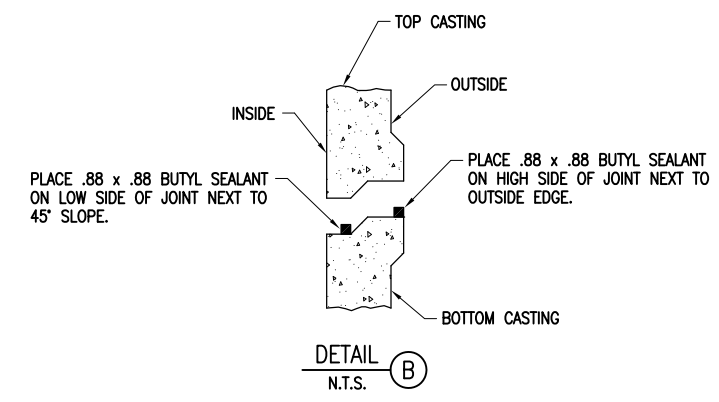


NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-513-DETL.DWG
DESIGN BY: KNL 09/20/2017
DRAWN BY: CWS 09/20/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

4'X4'X4' AIRPORT
MANHOLE



PRECAST 4'x4'x4' AIRPORT MANHOLE NOTES

1. 4'x4'x4' AIRPORT MANHOLE SHALL BE CONSTRUCTED TO MEET THE FOLLOWING:

- DESIGN CRITERIA:**
- 1) DESIGN SPECIFICATIONS: ACI 318, ASTM C858, FAA AC 150/5320-6D
 - 2) DESIGN LOADING:
B727-200 (210,000 LB. TAXI WEIGHT, 97,600 LB. MAX. GEAR)
B777-200/300 (752,000 LB. TAXI WEIGHT, 352,000 LB. MAX. GEAR)
 - 3) LIVE LOAD SURCHARGE: 24.5% OF THE WHEEL LOAD SOIL PRESSURE
 - 4) CONCRETE COMPRESSIVE STRENGTH: $F_c = 5,000$ PSI
 - 5) REINFORCING STEEL: ASTM A706, $F_y = 60,000$ PSI

- DESIGN ASSUMPTIONS:**
- 1) GROUND WATER LEVEL: 3'-6" BELOW GRADE
 - 2) EARTH COVER: 0'-8" - 2'-0"
 - 3) LIVE LOAD IMPACT: $I = 20\%$
 - 4) COEFFICIENT OF ACTIVE EARTH PRESSURE: $K_a = 0.3$
 - 5) SPECIFIC WEIGHT OF STD. AGGREGATE CONCRETE: 150 PCF
 - 6) SPECIFIC WEIGHT OF DRY EARTH: 100 PCF
 - 7) SPECIFIC WEIGHT OF SATURATED EARTH: 120 PCF
 - 8) EQUIVALENT FLUID PRESSURE OF DRY EARTH: 30 PSF
 - 9) EQUIVALENT FLUID PRESSURE OF SATURATED EARTH: 80 PSF

2. AIRPORT MANHOLE FRAME & LID SHALL BE CAPABLE OF WITHSTANDING MINIMUM 100,000 POUND LOADS AS CALLED FOR IN FAA ADVISORY CIRCULAR 150/5320-6F APPENDIX B, ITEM B.2.4 DIRECT LOADING, 1.a. (PREVIOUSLY IDENTIFIED IN FAA ADVISORY CIRCULAR AC 150/5320-6E APPENDIX 3 ITEM 2.d. (1)). AIRPORT MANHOLE FRAME & LID SHALL BE NEENAH CATALOG NO. R-3492-A AIRPORT MANHOLE FRAME & LID, EAST JORDAN IRON WORKS CATALOG NO. 1895 AIRPORT MANHOLE FRAME & COVER OR APPROVED EQUAL. LIDS FOR LOW VOLTAGE MANHOLES SHALL BE LABELED "LOW VOLTAGE ELECTRIC" OR "0V-600V". LIDS FOR HIGH VOLTAGE MANHOLES CONTAINING AIRFIELD LIGHTING SERIES CIRCUIT WIRING SHALL BE LABELED "DANGER HIGH VOLTAGE KEEP OUT 5000 VOLTS" TO COMPLY WITH 2014 NEC ARTICLE 300.45 "WARNING SIGNS" & 2014 NEC ARTICLE 314.30(D) "COVERS". COORDINATE LETTERING WITH MFR.

3. COORDINATE DUCT & DUCT BANK INTERFACE & OPENINGS WITH THE MANHOLE MFR. CONTRACTOR SHALL SLOPE DUCT BANK TO PRECAST MANHOLE OPENINGS WHERE POSSIBLE. ALL OPENINGS SHALL BE SEALED WATERTIGHT AFTER DUCT BANK INSTALLATION.

4. 4'x4'x4' AIRPORT MANHOLE SHALL BE MANUFACTURED BY A CONCRETE ELECTRICAL MANHOLE PRODUCER ON THE ILLINOIS DEPARTMENT OF TRANSPORTATION APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS.

5. 4'x4'x4' AIRPORT MANHOLE SHALL BE PAID FOR UNDER ITEM AR115715 ELECTRICAL MANHOLE-SPECIAL PER EACH.

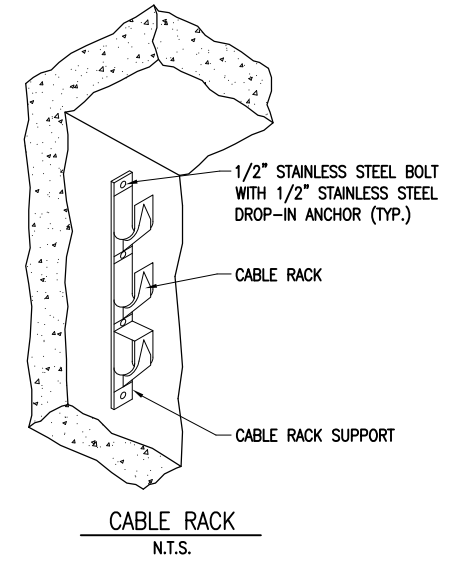
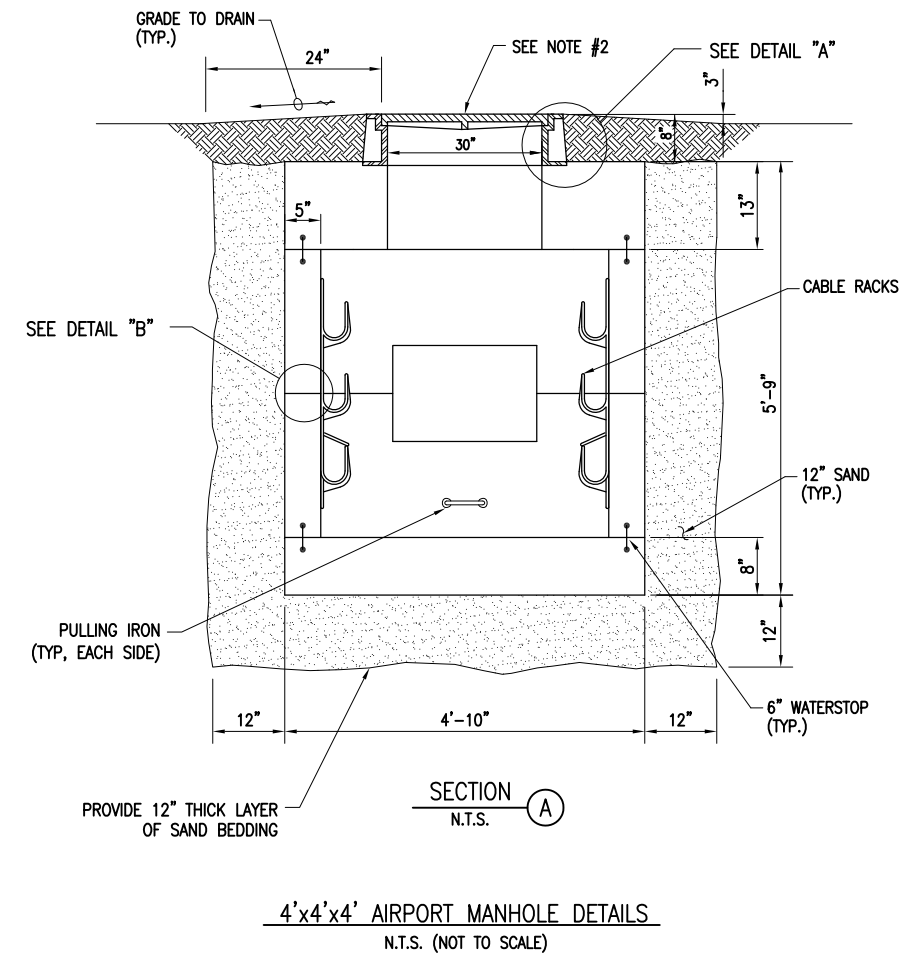
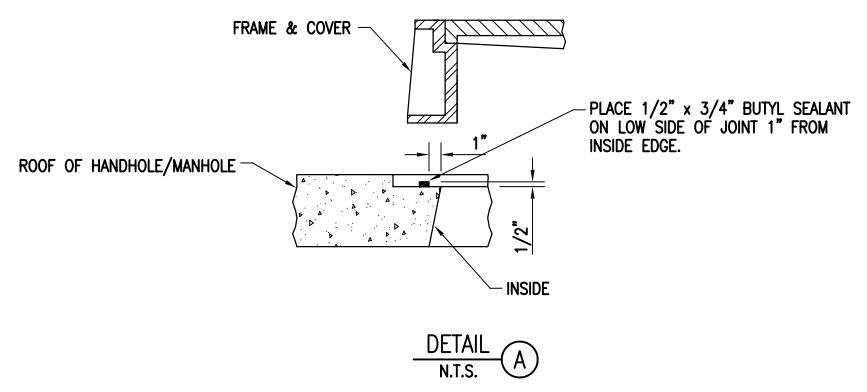
6. CABLE RACKS SHALL BE HEAVY DUTY CORROSION RESISTANT NYLON MATERIAL WITH CORROSION RESISTANT STAINLESS STEEL MOUNTING HARDWARE; UNDERGROUND DEVICES, INC. CAT. NO. 3SR1N, 3SR2N OR 3SR3N OR EQUAL. PROVIDE AT LEAST TWO TRIPLE HOOK CABLE RACKS ON EACH MANHOLE WALL, SPACED TO SUPPORT RESPECTIVE CABLES.

7. COORDINATE INSTALLATION OF MANHOLES WITH RESPECTIVE FINISHED GRADE ELEVATIONS.

8. AIRPORT RATED MANHOLES ARE REQUIRED FOR INSTALLATIONS LOCATED ON THE AIRFIELD.

9. INCLUDE FLOOR SUMP OR DRAINAGE PIPE.

10. ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, DUCT BANK, AND/OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE MANHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.



4'x4'x4' AIRPORT MANHOLE DETAILS
N.T.S. (NOT TO SCALE)

AIRFIELD LIGHTING NOTES

1. UNLESS OTHERWISE NOTED, ALL UNDERGROUND AIRFIELD LIGHTING SERIES CIRCUIT CONDUCTORS WHETHER DEB OR IN DUCT/CONDUIT SHALL BE FAA APPROVED 5000 VOLT L-824 TYPE. ALL UNDERGROUND FIELD POWER LOW VOLTAGE (600 VOLT & BELOW) CIRCUIT CONDUCTORS WHETHER DEB OR IN DUCT/CONDUIT SHALL BE UL LISTED 600 VOLT, TYPE XLP-USE-2 COPPER CONDUCTORS. CONDUCTOR SIZES SHALL BE AS SPECIFIED, HEREIN.
2. NO COMPONENTS OF PRIMARY CIRCUIT SUCH AS CABLE, CONNECTORS AND TRANSFORMERS SHALL BE BROUGHT ABOVE GROUND AT EDGE LIGHTS, SIGNS, REIL, PAPI, ETC.
3. THERE SHALL BE NO EXPOSED POWER/CONTROL CABLES BETWEEN THE POINT WHERE THEY LEAVE THE UNDERGROUND (DEB OR L-867 BASES) AND WHERE THEY ENTER THE EQUIPMENT (SUCH AS TAXIWAY SIGNS, PAPI, REIL, ETC.) ENCLOSURES. THESE CABLES SHALL BE ENCLOSED IN RIGID CONDUIT OR IN FLEXIBLE, WATERTIGHT CONDUIT WITH BREAKABLE COUPLING(S) AT THE GRADE OR THE HOUSING COVER, AS SHOWN IN APPLICABLE DETAILS.
4. THE JOINTS OF THE L-823 PRIMARY CONNECTORS SHALL BE WRAPPED WITH AT LEAST ONE LAYER OF RUBBER OR SYNTHETIC RUBBER TAPE AND ONE LAYER OF PLASTIC TAPE, ONE-HALF LAPPED, EXTENDING AT LEAST 1-1/2 INCHES ON EACH SIDE OF THE JOINT, AS SHOWN ON AIRFIELD LIGHTING CABLE SPLICE DETAILS.
5. THE CABLE ENTRANCE INTO THE FIELD-ATTACHED L-823 CONNECTORS SHALL BE ENCLOSED BY A HEAT-SHRINKABLE TUBING WITH CONTINUOUS INTERNAL ADHESIVE, AS SHOWN ON AIRFIELD LIGHTING CABLE SPLICE DETAILS.
6. L-823 TYPE II, TWO-CONDUCTOR SECONDARY CONNECTORS SHALL BE CLASS 'A' (FACTORY MOLDED).
7. THERE SHALL BE NO SPLICES IN THE SECONDARY CABLE(S) WITHIN THE STEMS OF A RUNWAY/TAXIWAY EDGE/THRESHOLD LIGHTING FIXTURE AND THE WIREWAYS LEADING TO TAXIWAY SIGNS AND PAPI/REIL EQUIPMENT.
8. ELECTRICAL INSULATING GREASE SHALL BE APPLIED WITHIN THE L-823, SECONDARY, TWO CONDUCTOR CONNECTORS TO PREVENT WATER ENTRANCE. THESE CONNECTORS SHALL NOT BE TAPED.
9. DEB ISOLATION TRANSFORMERS SHALL BE BURIED AT A DEPTH OF TEN (10") INCHES ON A LINE CROSSING THE LIGHT AND PERPENDICULAR TO THE RUNWAY/TAXIWAY CENTERLINE AT A LOCATION TWELVE (12") INCHES FROM THE LIGHT OPPOSITE FROM THE RUNWAY/TAXIWAY.
10. A SLACK OF THREE (3') FEET, MINIMUM, PLUS DEPTH OF BASE CAN (IF APPLICABLE), SHALL BE PROVIDED IN THE PRIMARY CABLE AT EACH TRANSFORMER/CONNECTOR TERMINATION. AT STAKE-MOUNTED LIGHTS, THE SLACK SHALL BE LOOSELY COILED IMMEDIATELY BELOW THE ISOLATION TRANSFORMER. THERE SHALL BE NO ADDITIONAL PAYMENT FOR CABLE SLACK AND THEREFORE THE QUANTITY OF PROPOSED CABLE SLACK HAS NOT BEEN INCLUDED IN THE RESPECTIVE CABLE PAY ITEMS.
11. DIRECTION OF PRIMARY CABLES SHALL BE IDENTIFIED BY COLOR CODING AS FOLLOWS: WHEN FACING LIGHT WITH BACK TO PAVEMENT, CABLE TO THE LEFT IS CODED RED AND CABLE TO RIGHT IS CODED BLUE. THIS APPLIES TO STAKE MOUNTED LIGHTS AND BASE MOUNTED LIGHTS WHERE THE BASE HAS ONLY ONE ENTRANCE.
12. L-867 BASES SHALL BE SIZE B, 24" DEEP, CLASS I, UNLESS OTHERWISE NOTED.
13. BASE MOUNTED BREAKABLE COUPLINGS SHALL NOT HAVE WEEP HOLES TO THE OUTSIDE. PLUGGED UP HOLES SHALL NOT BE ACCEPTABLE. IT SHALL BE A 1/4" DIAMETER, MINIMUM, OR EQUIVALENT OPENING FOR DRAINAGE FROM THE SPACE AROUND THE SECONDARY CONNECTOR INTO THE L-867 BASE.
14. THE ELEVATION OF THE BREAKABLE COUPLING GROOVE SHALL NOT EXCEED 1-1/2" ABOVE THE EDGE OF THE COVER IN CASE OF BASE MOUNTED COUPLINGS, OR THE TOP OF THE STAKE IN CASE OF STAKE MOUNTED COUPLINGS.
15. WHERE THE BREAKABLE COUPLING IS NOT AN INTEGRAL PART OF THE LIGHT FIXTURE STEM OR MOUNTING LEG, A BEAD OF SILICON SEAL SHALL BE APPLIED COMPLETELY AROUND LIGHT STEM OR WIREWAY AT BREAKABLE COUPLING TO PROVIDE A WATERTIGHT SEAL.
16. TOPS OF THE STAKES SUPPORTING LIGHT FIXTURES SHALL BE FLUSH WITH THE SURROUNDING GRADE.
17. PLASTIC LIGHTING FIXTURE COMPONENTS, SUCH AS LAMP HEADS, STEMS, BREAKABLE COUPLINGS, BASE COVERS, BRACKETS, STAKES, SHALL NOT BE ACCEPTABLE.
18. THE TOLERANCE FOR THE HEIGHT OF RUNWAY/TAXIWAY EDGE LIGHTS SHALL BE: ONE (1) INCH. IN CASE OF STAKE MOUNTED LIGHTS, THE SPECIFIED LIGHTING FIXTURE HEIGHT SHALL BE MEASURED BETWEEN THE TOP OF THE STAKE AND THE TOP OF THE LENS. IN CASE OF BASE MOUNTED LIGHTS, THE SPECIFIED LIGHTING FIXTURE HEIGHT SHALL BE MEASURED BETWEEN THE TOP OF THE BASE FLANGE AND THE TOP OF THE LENS, THUS INCLUDING THE BASE COVER, THE FRANGIBLE COUPLING, THE STEM, THE LAMP HOUSING AND THE LENS.
19. THE TOLERANCE FOR THE LATERAL SPACING (LIGHT LANE TO RUNWAY/TAXIWAY CENTERLINE) OF RUNWAY/TAXIWAY EDGE LIGHTS SHALL BE ONE (1) INCH. THIS ALSO APPLIES AT INTERSECTIONS TO LATERAL SPACING BETWEEN LIGHTS OF A RUNWAY/TAXIWAY AND THE INTERSECTING RUNWAY/TAXIWAY.

GROUNDING NOTES FOR AIRFIELD LIGHTING

20. ENTRANCES INTO L-867 BASES SHALL HAVE CONDUIT COUPLINGS OR REDUCERS TO INTERFACE UNIT DUCT/CONDUIT TO L-867 BASE HUBS, OR SHALL BE SEALED WITH HEAT SHRINK.
21. GALVANIZED/PAINTED EQUIPMENT/COMPONENT SURFACES SHALL NOT BE DAMAGED BY DRILLING, FILING, ETC. DRAIN HOLES IN METAL TRANSFORMER HOUSINGS SHALL BE MADE BEFORE GALVANIZING.
22. EDGE LIGHT NUMBERING TAGS SHALL BE FACING THE PAVEMENT.
23. CABLE/SPLICE/DUCT MARKERS SHALL BE PRECAST CONCRETE OF THE SIZE SHOWN. LETTERS/NUMBERS/ARROWS FOR THE LEGEND TO BE IMPRESSED INTO THE TOPS OF THE MARKERS SHALL BE PRE-ASSEMBLED AND SECURED IN THE MOLD BEFORE THE CONCRETE IS POURED. LEGEND INSCRIBED BY HAND IN WET CONCRETE SHALL NOT BE ACCEPTABLE.
24. ALL UNDERGROUND CABLE RUNS SHALL BE IDENTIFIED BY CABLE MARKERS AT 200 FEET MAXIMUM SPACING, WITH AN ADDITIONAL MARKER AT EACH CHANGE OF DIRECTION OF THE CABLE RUN. CABLE MARKERS SHALL BE INSTALLED IMMEDIATELY ABOVE THE CABLES.
25. THERE SHALL BE NO SPLICES BETWEEN THE ISOLATION TRANSFORMERS. L-823 CONNECTORS ARE ALLOWED AT TRANSFORMER CONNECTIONS ONLY, UNLESS OTHERWISE SHOWN.
26. APPLY AN OXIDE INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS AND BREAKAGE COUPLING THREADS.
27. LOCATIONS OF ENDS OF ALL UNDERGROUND DUCTS SHALL BE IDENTIFIED BY DUCT MARKERS.
28. WHERE A PARALLEL, CONSTANT VOLTAGE PAPI SYSTEM IS PROVIDED, THE "T" SPLICES SHALL BE OF THE CAST TYPE.
29. CONCRETE USED FOR SLABS, FOOTINGS, BACKFILL AROUND TRANSFORMER HOUSINGS, MARKINGS, ETC. SHALL BE 3500 PSI (MINIMUM) AT 14 DAYS, IN ACCORDANCE WITH ITEM 610 STRUCTURAL PORTLAND CEMENT CONCRETE.
30. ALL POWER AND CONTROL CABLES IN MAN/HAND HOLES SHALL BE TAGGED. USE EMBOSSED COPPER STRIPS TO BE ATTACHED AT BOTH ENDS TO THE CABLE BY THE USE OF PLASTIC STRAPS. MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A MAN/HAND HOLE-ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT.
31. 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. 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 ABOVE GROUND UTILITIES.
32. WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.

1. GROUNDING FOR RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS SHALL BE AS DETAILED ON THE PLANS AND AS SPECIFIED HEREIN. PER FAA AC 150/5340-30H DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, CHAPTER 12, PART 12.6; A GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. THE PURPOSE OF THE LIGHT BASE GROUND IS TO PROVIDE A DEGREE OF PROTECTION FOR MAINTENANCE PERSONNEL FROM POSSIBLE CONTACT WITH AN ENERGIZED LIGHT BASE OR MOUNTING STAKE THAT MAY RESULT FROM A SHORTED POWER CABLE OR ISOLATION TRANSFORMER. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. A LIGHT BASE GROUND SHALL ALSO BE INSTALLED AT EACH STAKE MOUNTED LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AND CONNECTED TO THE METAL FRAME OF EACH TAXI GUIDANCE SIGN AS DETAILED ON THE PLANS AND IN ACCORDANCE WITH THE RESPECTIVE TAXI GUIDANCE SIGN MANUFACTURER RECOMMENDATIONS. THE LIGHT BASE GROUND SHALL BE A #6 AWG BARE TINNED COPPER CONDUCTOR BONDED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 3/4-INCH DIAMETER BY 10-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD. CONNECTIONS TO GROUND LUGS ON THE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE SHALL BE WITH A UL LISTED GROUNDING CONNECTOR. CONNECTIONS TO LIGHT BASES MAY ALSO BE MADE WITH A UL 467 LISTED PIPE CLAMP CONNECTED TO THE GRSC NIPPLE EXTENDING FROM A THREADED LIGHT BASE HUB. CONNECTIONS TO GROUND RODS SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE: 800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE: 918-663-1440), ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE: 800-842-7437), 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. TOP OF GROUND RODS SHALL BE BURIED 12 INCHES MINIMUM BELOW GRADE, UNLESS SPECIFIED OTHERWISE HEREIN, FOR RESPECTIVE APPLICATIONS.
2. PER THE REQUIREMENTS OF FAA AC 150/5340-30H DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, CHAPTER 12, PART 12.7; FOR BASE MOUNTED LIGHT FIXTURES THE LIGHT FIXTURE MUST BE BONDED TO THE LIGHT BASE INTERNAL GROUND LUG VIA A #6 AWG STRANDED COPPER WIRE RATED FOR 600 VOLTS WITH GREEN XHHW INSULATION OR A BRAIDED GROUNDING STRAP OF EQUIVALENT CURRENT RATING. THE GROUND WIRE LENGTH MUST BE SUFFICIENT TO ALLOW THE REMOVAL OF THE LIGHT FIXTURE FROM THE LIGHT BASE FOR ROUTINE MAINTENANCE. SEE THE LIGHT FIXTURE MANUFACTURER'S INSTRUCTIONS FOR PROPER METHODS OF ATTACHING A BONDING WIRE.
3. STEEL USED TO MANUFACTURE GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.
4. CLEAN ALL METAL SURFACES BEFORE MAKING GROUND CONNECTIONS. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL PER 2014 NATIONAL ELECTRICAL CODE ARTICLE 250-12.
5. PER FAA 150/5340-30H THE RESISTANCE TO GROUND OF THE RESPECTIVE MOUNTING STAKE OR LIGHT BASE (WITH GROUND ROD CONNECTED) MUST BE 25 OHMS OR LESS.
6. FOR EACH AIRFIELD LIGHT FIXTURE AND TAXI GUIDANCE SIGN THE CONTRACTOR SHALL TEST THE MADE ELECTRODE GROUND SYSTEM WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUNDING SYSTEMS. TEST RESULTS SHALL BE RECORDED FOR EACH AIRFIELD LIGHT FIXTURE AND EACH TAXI GUIDANCE SIGN INSTALLATION. IF GROUND RESISTANCE EXCEEDS 25 OHMS, LONGER GROUND RODS MIGHT BE REQUIRED. CONTRACTOR IS RESPONSIBLE TO PROVIDE GROUNDING AT EACH AIRFIELD LIGHT FIXTURE AND/OR TAXI GUIDANCE SIGN THAT HAS A RESISTANCE TO GROUND OF 25 OHMS OR LESS. COPIES OF THE GROUND SYSTEM TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT PROJECT REPRESENTATIVE AND/OR THE AIRPORT'S REPRESENTATIVE.



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Professional Service Corporation
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PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-002-NOTES.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

ELECTRICAL NOTES
SHEET 2



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION	
		DES	DWN REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-509-DETL.DWG

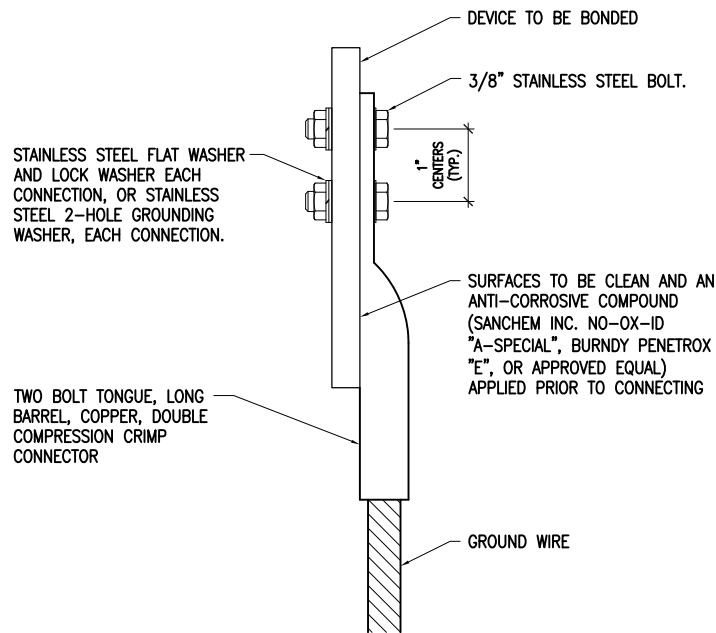
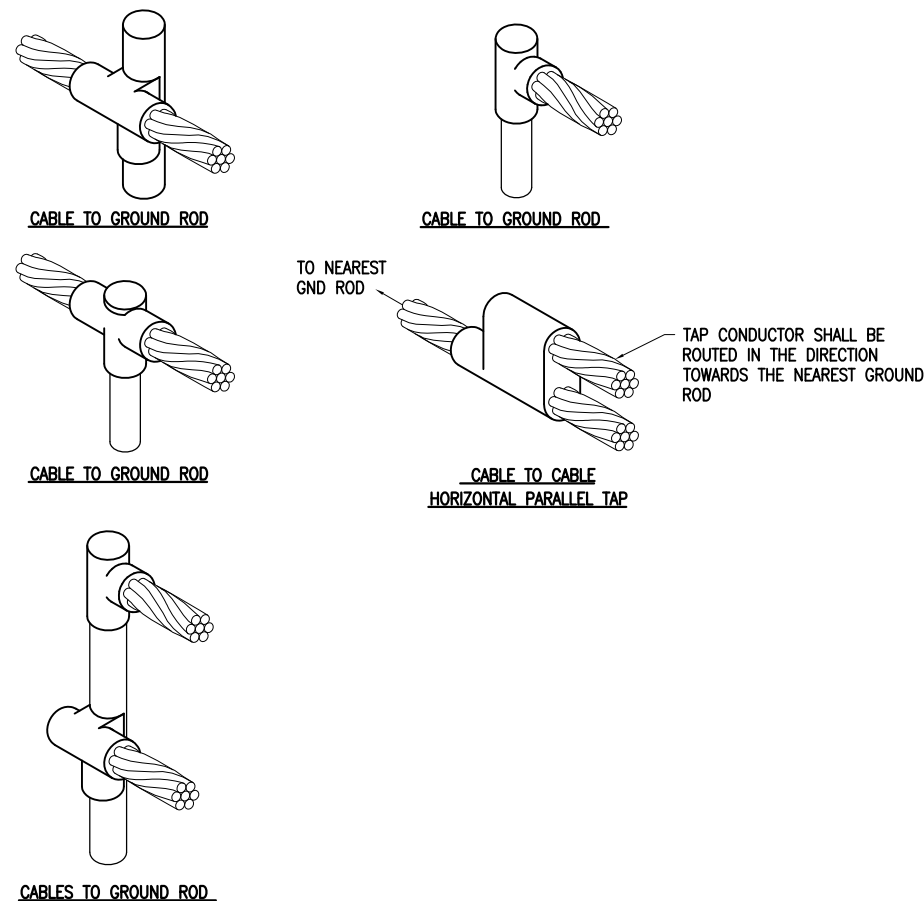
DESIGN BY: KNL 09/02/2017

DRAWN BY: CWS 09/05/2017

REVIEWED BY: BSS 10/17/2017

SHEET TITLE

GROUNDING DETAILS

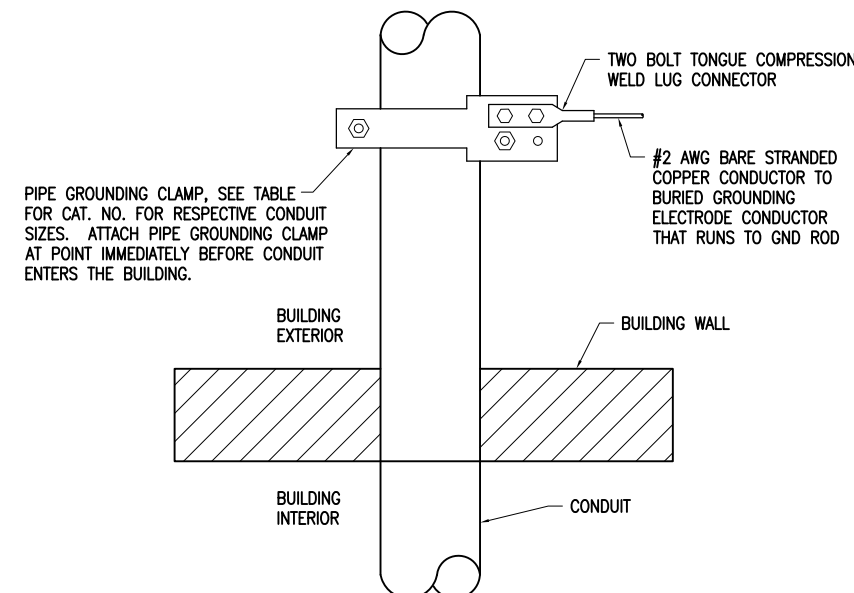


WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1		
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159	BBLU-4D-2TC38
#2 AWG STRANDED	YA2C-2TC38	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



HUBBELL ELECTRICAL CAT. NO.	BURNDY CAT. NO.	CONDUIT SIZE
GAR3902TC	GAR3902TC	1/2" - 1"
GAR3903TC	GAR3903TC	1 1/4" - 2"
GAR3904TC	GAR3904TC	2 1/2" - 3 1/2"
GAR3905TC	GAR3905TC	4" - 5"
GAR3906TC	GAR3906TC	6"
GAR3907TC	GAR3907TC	8"

NOTES

- EXTERIOR CONDUIT GROUNDING IS REQUIRED FOR THE PHOTOCCELL CONDUIT, RADIO ANTENNA CONDUIT, & OTHER CONDUITS EXTENDING TO THE ROOF LEVEL.
- CONNECTIONS TO BURIED GROUNDING ELECTRODE CONDUCTOR SHALL BE EXOTHERMIC WELD.

EXTERIOR CONDUIT GROUNDING DETAIL

DETAIL NOTES

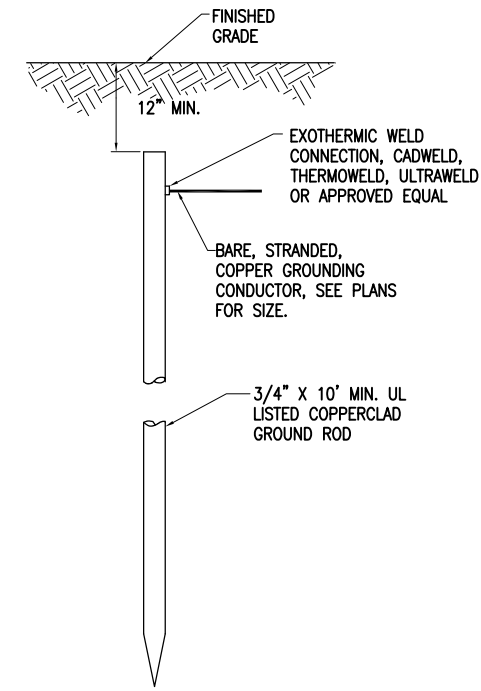
- ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY PENTAIR ERICO PRODUCTS, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, OR THERMOWELD AS MANUFACTURED BY 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 40 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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- 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-019e (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 FOR AIRFIELD LIGHTING (RUNWAY LIGHTING, TAXIWAY LIGHTING, TAXI GUIDANCE SIGNS & NAVAIDS) SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS FOR OTHER APPLICATIONS SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED, COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. 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. 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. SANICHEM INC. "NO-OX-ID "A-SPECIAL" COMPOUND, BURNDY PENTROX E, OR APPROVED EQUAL.
- METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2017 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, THOMAS AND BETTS, OR 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 2017 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 2017 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 2017 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 GROUNDING 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 GROUND 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, 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 40 OR 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 2017 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.
- GROUND RODS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA FROM 100 PERCENT DOMESTIC STEEL TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS AND THE STEEL PRODUCTS PROCUREMENT ACT.



10 FT. GROUND ROD

GROUND RODS
(NOT TO SCALE)

NOTES

- TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
- THE RESISTANCE TO GROUND OF THE GROUNDING ELECTRODES FOR AIRFIELD LIGHTING, NAVAIDS, AND SPLICE CANS 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.
- GROUND RODS FOR WIND CONE SHALL BE 3/4-IN DIAMETER BY 10 FT LONG. TWO GROUND RODS SPACED MINIMUM 10 FT APART (ONE ROD LENGTH APART) SHALL BE FURNISHED AND INSTALLED FOR THE WIND CONE.
- GROUND RODS FOR INDIVIDUAL SPLICE CANS SHALL BE TWO 3/4-IN DIAMETER BY 10 FT LONG GROUND RODS SPACED MINIMUM OF 10 FT APART (ONE ROD LENGTH APART)

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Professional Service Corporation
#184-001084



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554
SBG Project No:
3-17-SBGP-139
Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-003-GND.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

GROUNDING NOTES



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NO.	DATE	DESCRIPTION
		DES DWN REV

ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-004-LGND.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

ELECTRICAL LEGEND
AND ABBREVIATIONS

	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

	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

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
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)
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

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

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

NOTES:

- ALL ELECTRICAL EQUIPMENT 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 KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING/CONSTRUCTION FOR USE AS A REFERENCE.
- 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).

120/240 VAC, 1 PHASE, 3 WIRE
 PHASE A BLACK
 PHASE B RED
 NEUTRAL WHITE
 GROUND GREEN
- 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:
- 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 VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING THE RESPECTIVE AIRFIELD LIGHTING, TAXI SIGN, NAVAID, 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.



PHASE 1 - REPLACE
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SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-601.DWG

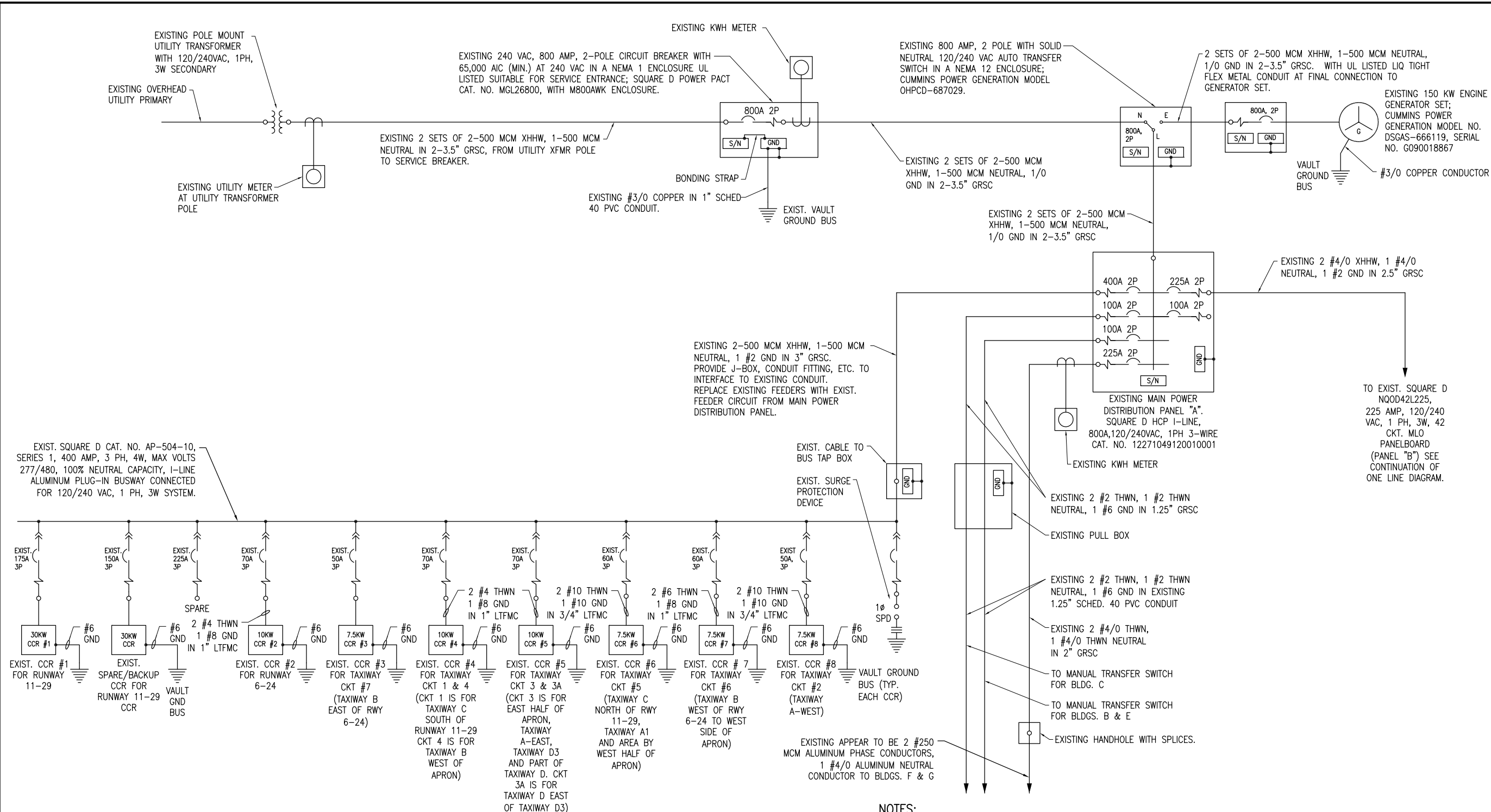
DESIGN BY: KNL 09/02/2017

DRAWN BY: CWS 09/05/2017

REVIEWED BY: BSS 10/17/2017

SHEET TITLE

EXISTING
ELECTRICAL ONE
LINE DIAGRAM FOR
VAULT



EXISTING ELECTRICAL ONE LINE DIAGRAM FOR VAULT

NOTES:

- EXISTING ONE-LINE DIAGRAM WIRING IS BASED ON FIELD DATA AND INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND WIRING AND REPORT ANY VARIATIONS TO THE RESIDENT PROJECT REPRESENTATIVE.
- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER/DIRECTOR AND THE AIRPORT MAINTENANCE STAFF. 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, DISCONNECTING OR CONNECTING THE RESPECTIVE AIRFIELD LIGHTING, TAXI SIGN, NAVAID, OR OTHER DEVICE.
- CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2F (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.
- 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.



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NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-602.DWG

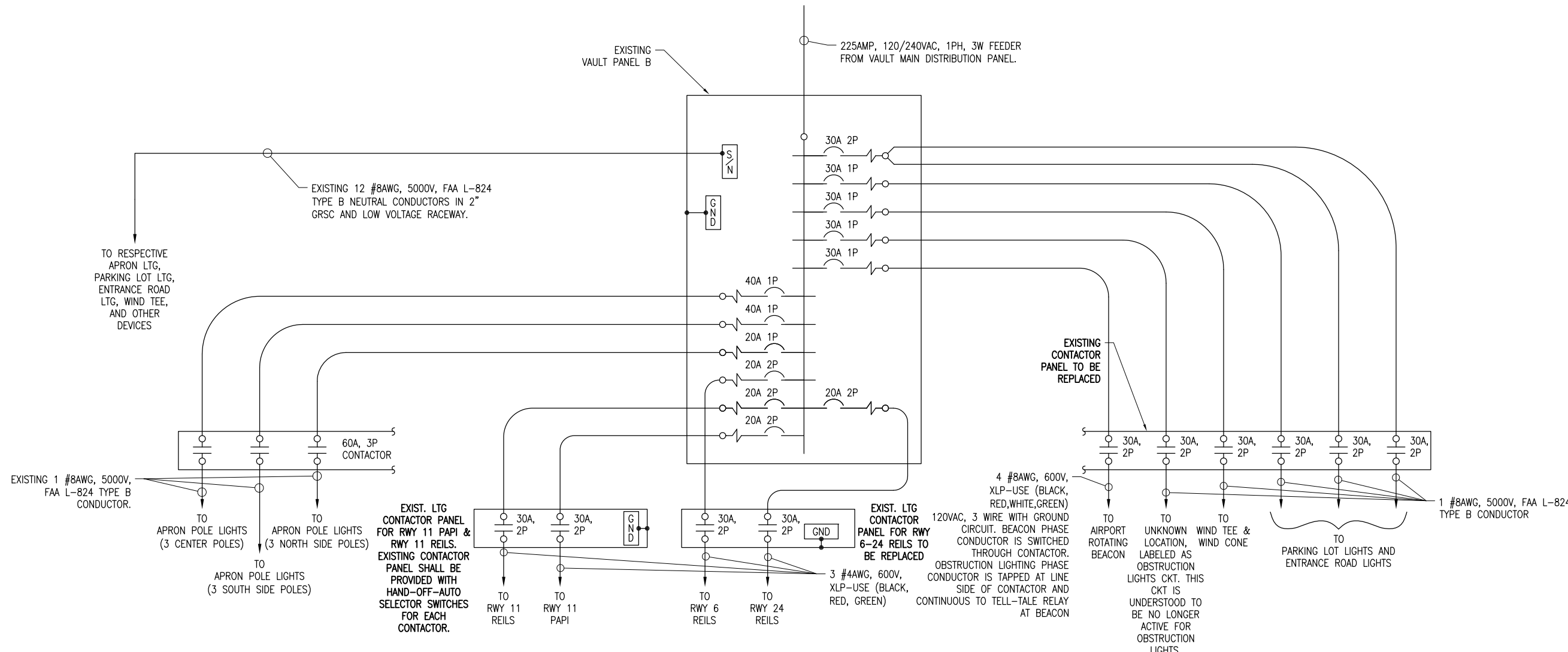
DESIGN BY: KNL 09/02/2017

DRAWN BY: CWS 09/05/2017

REVIEWED BY: BSS 10/17/2017

SHEET TITLE

EXISTING
ELECTRICAL ONE
LINE FOR VAULT AND
AIRFIELD
CONTINUATION



EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD (CONTINUED)

NOTES:

- NOTE SOME OF THE EXISTING PANELBOARD B BRANCH CIRCUITS AND FEEDER CIRCUITS HAVE APPARENT NEC (NATIONAL ELECTRICAL CODE) VIOLATIONS WHICH MIGHT CAUSE UNSAFE WORKING CONDITIONS. APPARENT NEC VIOLATIONS INCLUDE, BUT NOT LIMITED TO, ABANDONED CIRCUITS STILL CONNECTED TO THE PANELBOARD, MISSING EQUIPMENT GROUND CONDUCTORS, GREEN INSULATED CONDUCTORS USED FOR NEUTRAL CONDUCTORS, UNDERSIZED EQUIPMENT GROUND WIRES, NEUTRAL CONDUCTORS NOT PROPERLY IDENTIFIED, #8AWG NEUTRAL CONDUCTORS WITH BLACK COLORED INSULATION AND NO MARKING TO IDENTIFY AS NEUTRAL CONDUCTOR, NEUTRAL CONDUCTORS RUN IN SEPARATE CONDUIT NOT WITH THE RESPECTIVE BRANCH/FEEDER CIRCUIT PHASE CONDUCTOR, POSSIBLE EQUIPMENT GROUND WIRES LANDED ON NEUTRAL BUS IN PANEL B, INCORRECT IDENTIFICATION OF CIRCUIT CONDUCTORS, AND CIRCUITS WITHOUT IDENTIFICATION OF ITEM BEING FED. CONTRACTOR WILL NEED TO EXERCISE CAUTION WHEN WORKING AT THIS SITE. CORRECTIVE MEASURES WILL NEED TO ADDRESS APPARENT NEC VIOLATIONS.
- EXISTING CONTACTOR PANEL FOR WIND TEE, BEACON, PARKING LOT LIGHTING, ENTRANCE ROAD LIGHTING, APRON LIGHTING, AND OTHER CIRCUITS SHALL BE REMOVED AND REPLACED WITH A NEW LIGHTING CONTACTOR CONTROL PANEL.

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SERVING RUNWAY
11-29

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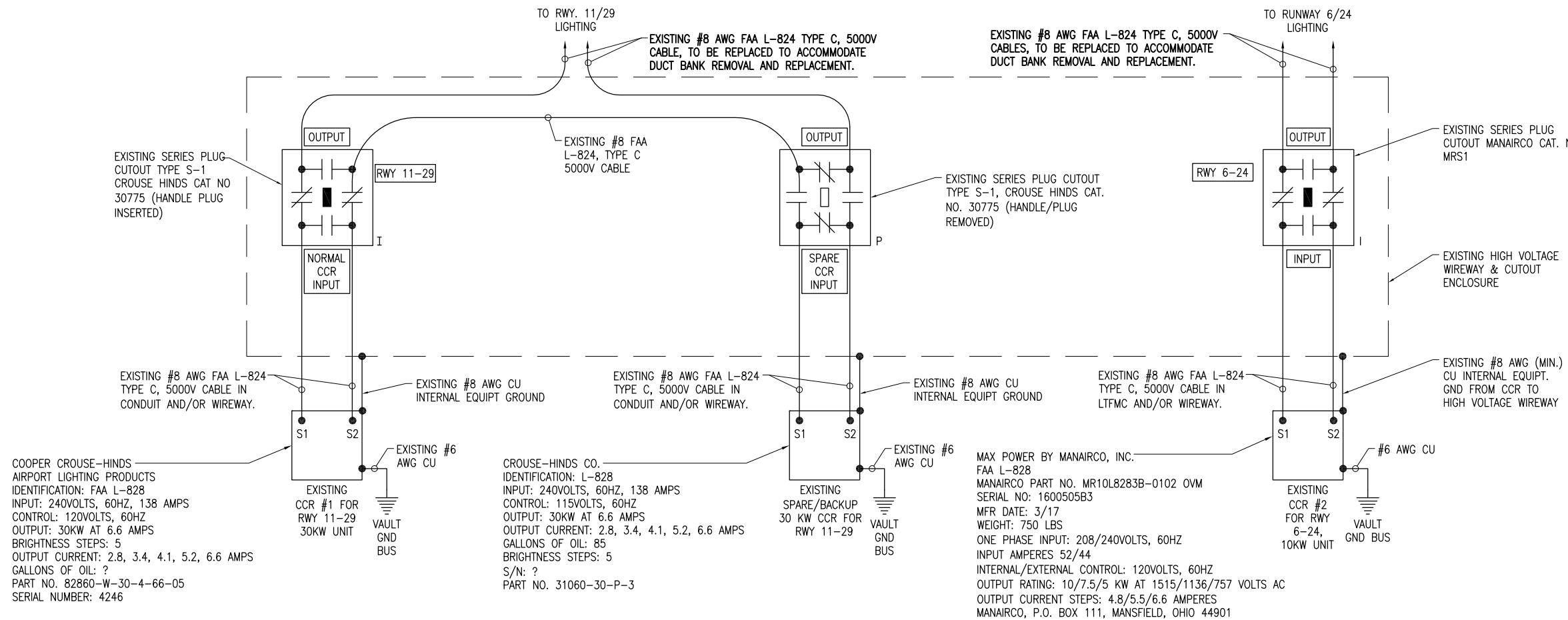
NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D
CAD FILE: E-603.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

EXISTING HIGH
VOLTAGE WIRING
SCHEMATIC FOR
RUNWAYS



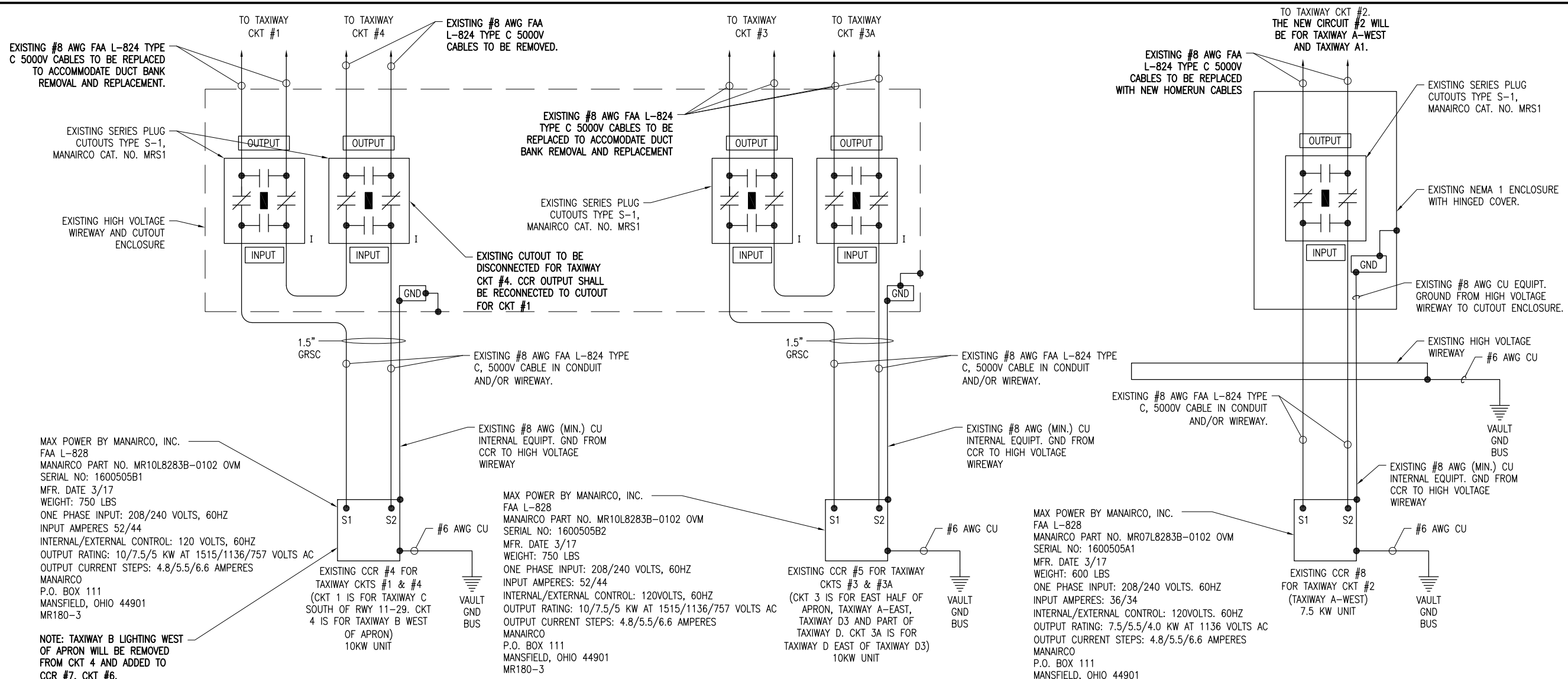
EXISTING HIGH VOLTAGE WIRING SCHEMATIC FOR RUNWAYS

LEGEND

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

NOTES:

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER/DIRECTOR AND RESIDENT ENGINEER/TECHNICIAN. 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).
2. CONTRACTOR SHALL EXAMINE THE SITE TO CONFIRM AND FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL REPORT ANY VARIATIONS, DEFICIENCIES, AND/OR APPARENT SAFETY CONCERNS TO THE ENGINEER.
3. 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.
4. CONTRACTOR SHALL 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.
5. MEGGER TEST (WITH AN INSULATION RESISTANCE TESTER) AND RECORD EXISTING SERIES CIRCUITS PRIOR TO CABLE WORK AND AGAIN AFTER AIRFIELD LIGHTING MODIFICATIONS, ADDITIONS, AND/OR UPGRADES HAVE BEEN COMPLETED. ALSO TEST AND RECORD SERIES CIRCUIT LOOP RESISTANCE, (WITH AN OHMMETER).
6. RUNWAY 11-29 CCR, BACKUP CCR FOR RUNWAY 11-29, RUNWAY 6-24 CCR AND THE ASSOCIATED CUTOUTS ARE EXISTING.
7. THE RESPECTIVE RUNWAY AND TAXIWAY LIGHTING CCR'S SHALL BE TESTED FOR PROPER OPERATION BEFORE REMOVAL WORK, MODIFICATIONS, AND/OR ADDITIONS AND AFTER THE NEW CABLES AND LIGHTING SYSTEM MODIFICATIONS 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 OPERATIONS. CONTRACTOR SHALL REPORT CONCERNS AND/OR DEFICIENCIES TO THE RESIDENT PROJECT REPRESENTATIVE. TEST RESULTS SHALL BE PROVIDED TO THE PROJECT ENGINEER AND RESIDENT PROJECT REPRESENTATIVE.



NOTES:

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER/DIRECTOR AND RESIDENT ENGINEER/TECHNICIAN. 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 CONFIRM AND FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL REPORT ANY VARIATIONS, DEFICIENCIES, AND/OR APPARENT SAFETY CONCERNS TO THE ENGINEER.
- 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.
- CONTRACTOR SHALL 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.
- MEGGER TEST (WITH AN INSULATION RESISTANCE TESTER) AND RECORD EXISTING SERIES CIRCUITS PRIOR TO CABLE WORK AND AGAIN AFTER AIRFIELD LIGHTING MODIFICATIONS, ADDITIONS, AND/OR UPGRADES HAVE BEEN COMPLETED. ALSO TEST AND RECORD SERIES CIRCUIT LOOP RESISTANCE, (WITH AN OHMMETER).
- THE TAXIWAY CCR'S AND THE ASSOCIATED CUTOUTS ARE EXISTING.
- THE RESPECTIVE RUNWAY AND TAXIWAY LIGHTING CCR'S SHALL BE TESTED FOR PROPER OPERATION BEFORE REMOVAL WORK, MODIFICATIONS, AND/OR ADDITIONS AND AFTER THE NEW CABLES AND LIGHTING SYSTEM MODIFICATIONS 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 OPERATIONS. CONTRACTOR SHALL REPORT CONCERNS AND/OR DEFICIENCIES TO THE RESIDENT PROJECT REPRESENTATIVE. TEST RESULTS SHALL BE PROVIDED TO THE PROJECT ENGINEER AND RESIDENT PROJECT REPRESENTATIVE.
- TAXIWAY A LIGHTING WEST OF THE APRON AND TAXIWAY A1 LIGHTING WILL BE REPLACED. TAXIWAY A-WEST AND TAXIWAY A1 WILL BE POWERED BY CCR #8.
- TAXIWAY B LIGHTING WILL BE REPLACED. THE NEW TAXIWAY B LIGHTING SYSTEM WILL HAVE 2 CIRCUITS. TAXIWAY B-EAST (EAST OF RUNWAY 6-24) WILL BE POWERED BY CCR #3. TAXIWAY B-WEST (WEST OF RUNWAY 6-24) WILL BE POWERED BY CCR #7.
- EXISTING TAXIWAY CKT #4 FOR TAXIWAY B-WEST OF APRON WILL BE REMOVED FROM CCR #4.

LEGEND

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

NO.	DATE	DESCRIPTION	
		DES	DWN REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-604.DWG

DESIGN BY: KNL 09/02/2017

DRAWN BY: CWS 09/05/2017

REVIEWED BY: BSS 10/17/2017

SHEET TITLE

EXISTING HIGH
VOLTAGE WIRING
SCHEMATIC FOR
TWY CKTS 1,2,3,3A &
4



**PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29**

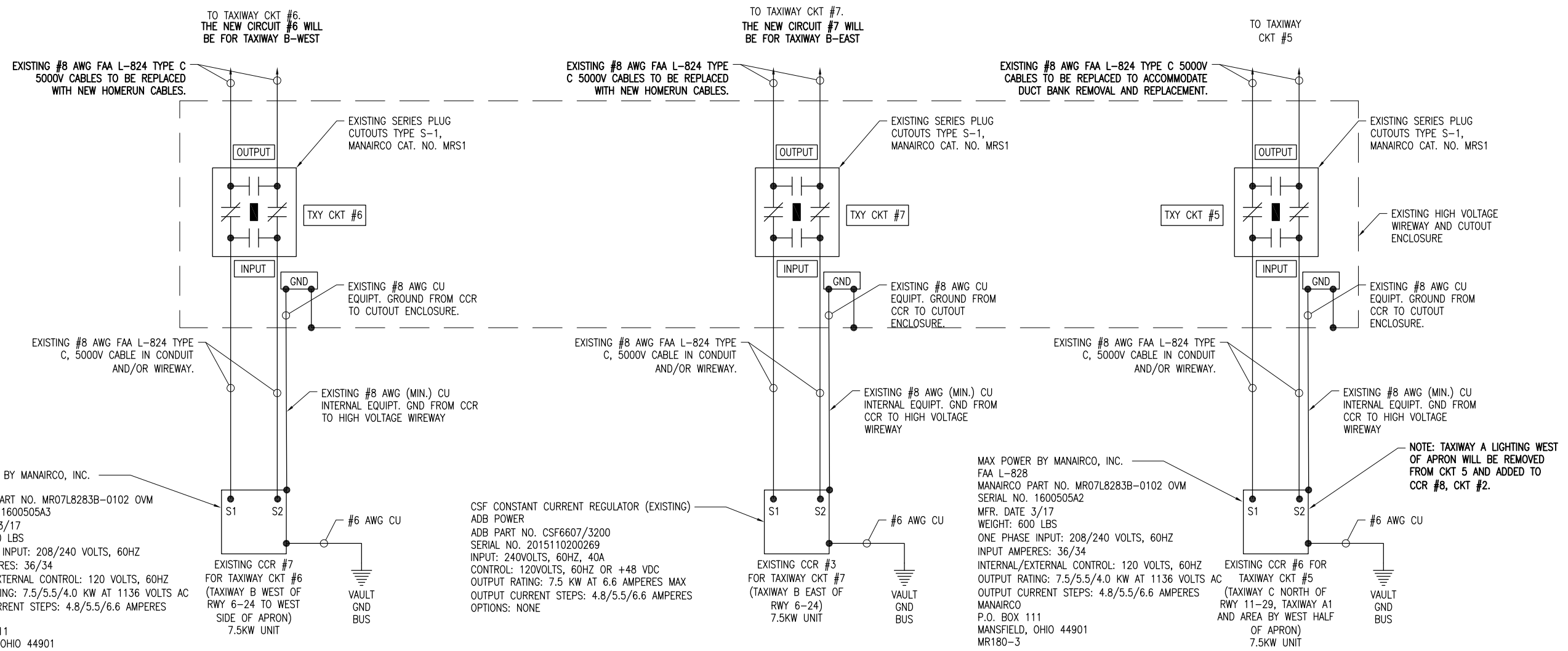
IDA No: MTO-4554
SBG Project No:
3-17-SBGP-139
Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-605.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

**EXISTING HIGH
VOLTAGE WIRING
SCHEMATIC FOR
TWY CKTS 5, 6, & 7**



EXISTING HIGH VOLTAGE WIRING SCHEMATIC FOR TAXIWAY CKTS 5, 6, & 7

NOTES:

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER/DIRECTOR AND RESIDENT ENGINEER/TECHNICIAN. 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 CONFIRM AND FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL REPORT ANY VARIATIONS, DEFICIENCIES, AND/OR APPARENT SAFETY CONCERNS TO THE ENGINEER.
- 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.
- CONTRACTOR SHALL 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.
- MEGGER TEST (WITH AN INSULATION RESISTANCE TESTER) AND RECORD EXISTING SERIES CIRCUITS PRIOR TO CABLE WORK AND AGAIN AFTER AIRFIELD LIGHTING MODIFICATIONS, ADDITIONS, AND/OR UPGRADES HAVE BEEN COMPLETED. ALSO TEST AND RECORD SERIES CIRCUIT LOOP RESISTANCE, (WITH AN OHMMETER).
- THE TAXIWAY CCR'S AND THE ASSOCIATED CUTOUTS ARE EXISTING.
- THE RESPECTIVE RUNWAY AND TAXIWAY LIGHTING CCR'S SHALL BE TESTED FOR PROPER OPERATION BEFORE REMOVAL WORK, MODIFICATIONS, AND/OR ADDITIONS AND AFTER THE NEW CABLES AND LIGHTING SYSTEM MODIFICATIONS 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 OPERATIONS. CONTRACTOR SHALL REPORT CONCERNS AND/OR DEFICIENCIES TO THE RESIDENT PROJECT REPRESENTATIVE. TEST RESULTS SHALL BE PROVIDED TO THE PROJECT ENGINEER AND RESIDENT PROJECT REPRESENTATIVE.
- TAXIWAY B LIGHTING WILL BE REPLACED. THE NEW TAXIWAY IS LIGHTING SYSTEM WILL HAVE 2 CIRCUITS TAXIWAY B-EAST (EAST OF RUNWAY 6-24) WILL BE POWERED BY CCR #3. TAXIWAY B-WEST (WEST OF RUNWAY 6-24) WILL BE POWERED BY CCR #7.
- EXISTING TAXIWAY A1 LIGHTING LOAD WILL BE REMOVED FROM CCR #6.

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

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PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-606-LINE.DWG

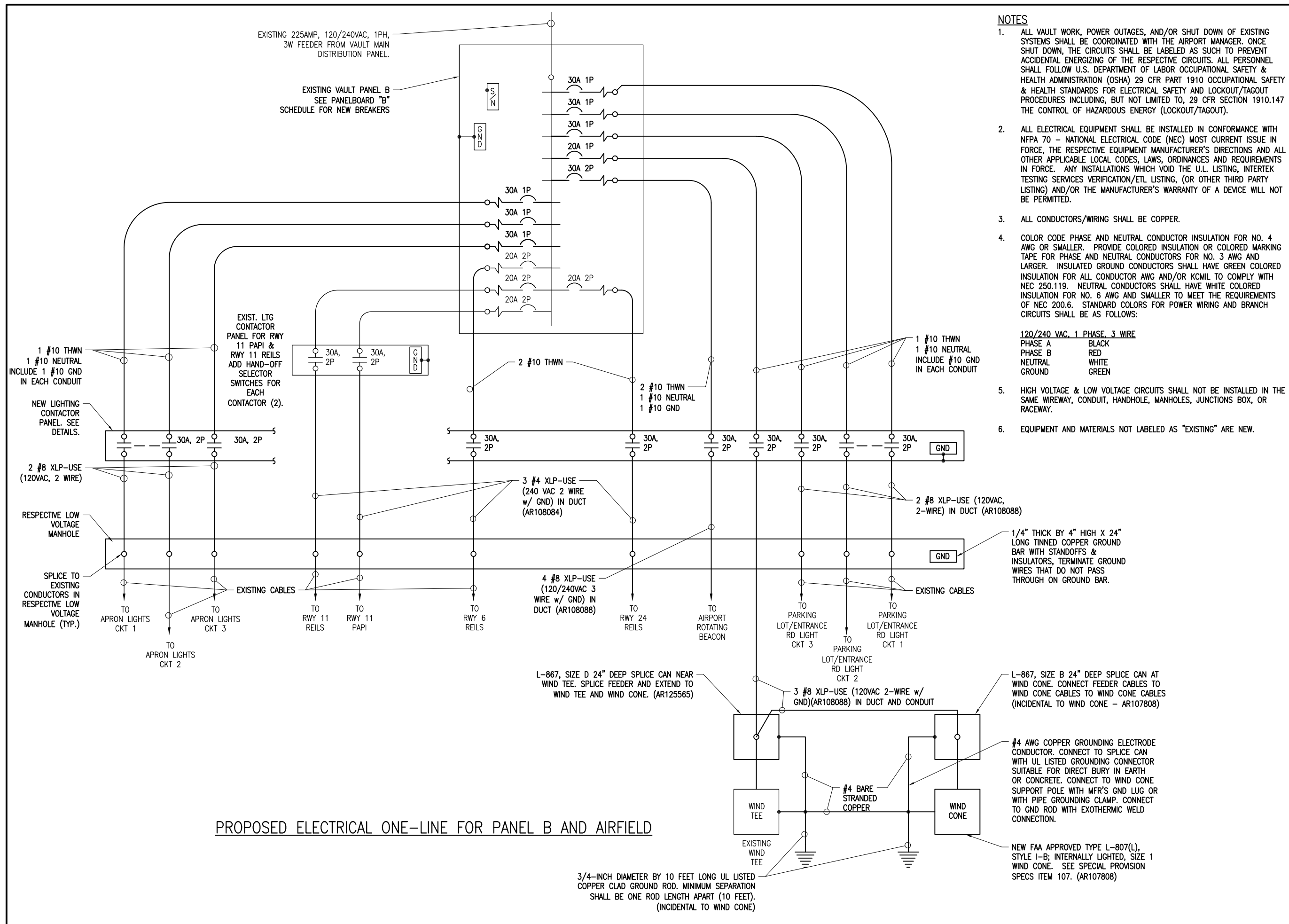
DESIGN BY: KNL 09/02/2017

DRAWN BY: CWS 09/05/2017

REVIEWED BY: BSS 10/17/2017

SHEET TITLE

PROPOSED
ELECTRICAL ONE
LINE FOR PANEL B
AND AIRFIELD



NOTES

1. 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).
2. ALL ELECTRICAL EQUIPMENT 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.
3. ALL CONDUCTORS/WIRING SHALL BE COPPER.
4. COLOR CODE PHASE AND NEUTRAL CONDUCTOR INSULATION FOR NO. 4 AWG OR SMALLER. PROVIDE COLORED INSULATION OR COLORED MARKING TAPE FOR PHASE AND NEUTRAL CONDUCTORS FOR NO. 3 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:

120/240 VAC, 1 PHASE, 3 WIRE
PHASE A BLACK
PHASE B RED
NEUTRAL WHITE
GROUND GREEN
5. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, MANHOLES, JUNCTIONS BOX, OR RACEWAY.
6. EQUIPMENT AND MATERIALS NOT LABELED AS "EXISTING" ARE NEW.

PROPOSED ELECTRICAL ONE-LINE FOR PANEL B AND AIRFIELD

3/4-INCH DIAMETER BY 10 FEET LONG UL LISTED COPPER CLAD GROUND ROD. MINIMUM SEPARATION SHALL BE ONE ROD LENGTH APART (10 FEET). (INCIDENTAL TO WIND CONE)



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017

PROJECT NO: 17A0004D

CAD FILE: E-611-SCHD.DWG

DESIGN BY: KNL 09/13/2017

DRAWN BY: CWS 09/13/2017

REVIEWED BY: BSS 10/17/2017

SHEET TITLE

**VAULT PANELBOARD
B SCHEDULES**

EXISTING VAULT PANEL B			
CKT #	DUTY		CKT #
1	VAULT HEATER H1	25A 2P	2
3	---	---	4
5	VAULT HEATER H2	20A 2P	6
7	---	---	8
9	VAULT LIGHTS	20A 1P	10
11	GEN RM LIGHTS	20A 1P	12
13	SPARE	20A 1P	14
15	SPARE	20A 1P	16
17	DAY TANK	20A 1P	18
19	(UNKNOWN)	20A 1P	20
21	NEW GATE OPERATOR	20A 2P	22
23	---	---	24
25	APRON LIGHTS	40A 1P	26
27	APRON LIGHTS	40A 1P	28
29	APRON LIGHTS	20A 1P	30
31	RWY 6 REILS	20A 2P	32
33	---	---	34
35	RWY 11 REILS	20A 2P	36
37	---	---	38
39	RWY 11 PAPI	20A 2P	40
41	---	---	42

GND S/N

SQUARE D TYPE NQOD PANELBOARD CAT NO NQOD42L225 SER E2, 225AMP, 120/240 VOLTS, 1PH, 3 WIRE MADE IN U.S.A.

EXISTING VAULT PANEL B WITH ADDITIONS			
CKT #	DUTY		CKT #
1	VAULT HEATER H1	25A 2P	2
3	---	---	4
5	VAULT HEATER H2	20A 2P	6
7	---	---	8
9	VAULT LIGHTS	20A 1P	10
11	GEN RM LIGHTS	20A 1P	12
13	SPARE	20A 1P	14
15	SPARE	20A 1P	16
17	DAY TANK	20A 1P	18
19	(UNKNOWN)	20A 1P	20
21	NEW GATE OPERATOR	20A 2P	22
23	---	---	24
25	APRON LIGHTS CKT 1 - CENTER	30A 1P	26
27	APRON LIGHTS CKT 2 - SOUTH	30A 1P	28
29	APRON LIGHTS CKT 3 - NORTH	30A 1P	30
31	RWY 6 REILS	20A 2P	32
33	---	---	34
35	RWY 11 REILS	20A 2P	36
37	---	---	38
39	RWY 11 PAPI	20A 2P	40
41	---	---	42

GND S/N

SQUARE D TYPE NQOD PANELBOARD CAT NO NQOD42L225 SER E2, 225AMP, 120/240 VOLTS, 1PH, 3 WIRE MADE IN U.S.A.

NOTES:

- REPLACE THE 40 AMP, 1-POLE BREAKER (FOR THE APRON LIGHTS CIRCUIT 1) IN POSITION 25 WITH A NEW 30 AMP, 1-POLE BOLT-ON BREAKER WITH 10,000 AIC AT 120 VAC. REPLACEMENT CIRCUIT FROM BREAKER TO LIGHTING CONTACTOR CONTROL PANEL SHALL BE 1 #10 THWN, 1 #10 NEUTRAL, 1 #10 GROUND.
- REPLACE THE 40 AMP, 1-POLE BREAKER (FOR THE APRON LIGHTS CIRCUIT 2) IN POSITION 27 WITH A NEW 30 AMP, 1-POLE BOLT-ON BREAKER WITH 10,000 AIC AT 120 VAC. REPLACEMENT CIRCUIT FROM BREAKER TO LIGHTING CONTACTOR CONTROL PANEL SHALL BE 1 #10 THWN, 1 #10 NEUTRAL.
- REPLACE THE 20 AMP, 1-POLE BREAKER (FOR THE APRON LIGHTS CIRCUIT 3) IN POSITION 29 WITH A NEW 30 AMP, 1-POLE BOLT-ON BREAKER WITH 10,000 AIC AT 120 VAC. REPLACEMENT CIRCUIT FROM BREAKER TO LIGHTING CONTACTOR CONTROL PANEL SHALL BE 1 #10 THWN, 1 #10 NEUTRAL.
- REPLACE THE VEEDER-ROOT TANK MONITORING PANEL BRANCH CIRCUIT WITH A NEW CIRCUIT IN 3/4" GRSC OR EMT TO ACCOMMODATE INSTALLATION OF THE NEW LIGHTING CONTACTOR PANEL. BRANCH CIRCUIT SHALL BE 1 #14 THWN, 1 #14 NEUTRAL, 1 #14 EQUIPMENT GROUND, 1 #12 BARRIER GROUND.
- REPLACE THE 30 AMP, 2-POLE BREAKER (FOR THE PARKING LOT AND ENTRANCE ROAD LIGHTS CIRCUITS 1 AND 2) IN POSITIONS 12 AND 14 WITH TWO NEW 30 AMP, 1-POLE BOLT-ON BREAKERS WITH 10,000 AIC AT 120 VAC. REPLACEMENT CIRCUITS FROM EACH BREAKER TO LIGHTING CONTACTOR CONTROL PANEL SHALL BE 1 #10 THWN, 1 #10 NEUTRAL.
- 30 AMP, 2-POLE BREAKER (FOR THE PARKING LOT AND ENTRANCE ROAD LIGHTS CIRCUIT 3) IN POSITION 16 TO REMAIN. REPLACEMENT CIRCUIT FROM BREAKER TO LIGHTING CONTACTOR CONTROL PANEL SHALL BE 1 #10 THWN, 1 #10 NEUTRAL.
- REPLACE THE 30 AMP, 1-POLE BREAKER (FOR THE WIND TEE AND WIND CONE) IN POSITION 20 WITH A NEW 20 AMP, 1-POLE BOLT-ON BREAKER WITH 10,000 AIC AT 120 VAC. REPLACEMENT CIRCUIT FROM BREAKER TO LIGHTING CONTACTOR CONTROL PANEL SHALL BE 1 #10 THWN, 1 #10 NEUTRAL, 1 #10 GROUND.
- REPLACE THE TWO 30 AMP, 1-POLE BREAKERS (ONE LABELED FOR OBSTRUCTION LIGHTS AND OTHER FOR THE BEACON) IN POSITIONS 22 AND 24 WITH A NEW 20 AMP, 2-POLE BOLT-ON BREAKER WITH 10,000 AIC AT 120/240 VAC. REPLACEMENT CIRCUIT FROM BREAKER TO LIGHTING CONTACTOR CONTROL PANEL SHALL BE 2 #10 THWN, 1 #10 NEUTRAL, 1 #10 GROUND. THE AIRPORT ROTATING BEACON CIRCUIT SHALL HAVE THE "A" PHASE SWITCHED THROUGH THE CONTACTOR FOR CONTROL OF THE BEACON. THE "B" PHASE SHALL BE UN-SWITCHED FROM THE CIRCUIT BREAKER TO THE TELL-TALE RELAY AT THE BEACON FOR USE WITH THE OBSTRUCTION LIGHT AT THE BEACON TOWER.
- THERE ARE 5 #10 GREEN INSULATED WIRES TERMINATED ON THE NEUTRAL BAR IN PANELBOARD "B". THESE APPEAR THAT THEY MIGHT BE NEUTRAL CONDUCTORS. CONTRACTOR SHALL TRACE THE CIRCUITS AND DETERMINE IF THEY ARE NEUTRAL CONDUCTORS. IF CONFIRMED TO BE NEUTRAL CONDUCTORS THEY SHALL BE REPLACED WITH #10 AWG THWN WHITE INSULATED CONDUCTORS TO COMPLY WITH THE REQUIREMENTS OF NEC 200.6. IF ANY OF THE RESPECTIVE CONDUCTORS ARE DETERMINED TO BE EQUIPMENT GROUND WIRES THEY SHALL BE TERMINATED ON THE EQUIPMENT GROUND BAR.
- ALL EXISTING CIRCUIT BREAKERS SCHEDULED FOR REPLACEMENT SHALL REMAIN AIRPORT PROPERTY.
- UPDATE CIRCUIT DIRECTORY TO REFLECT ALL ADDITIONS AND CHANGES.



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

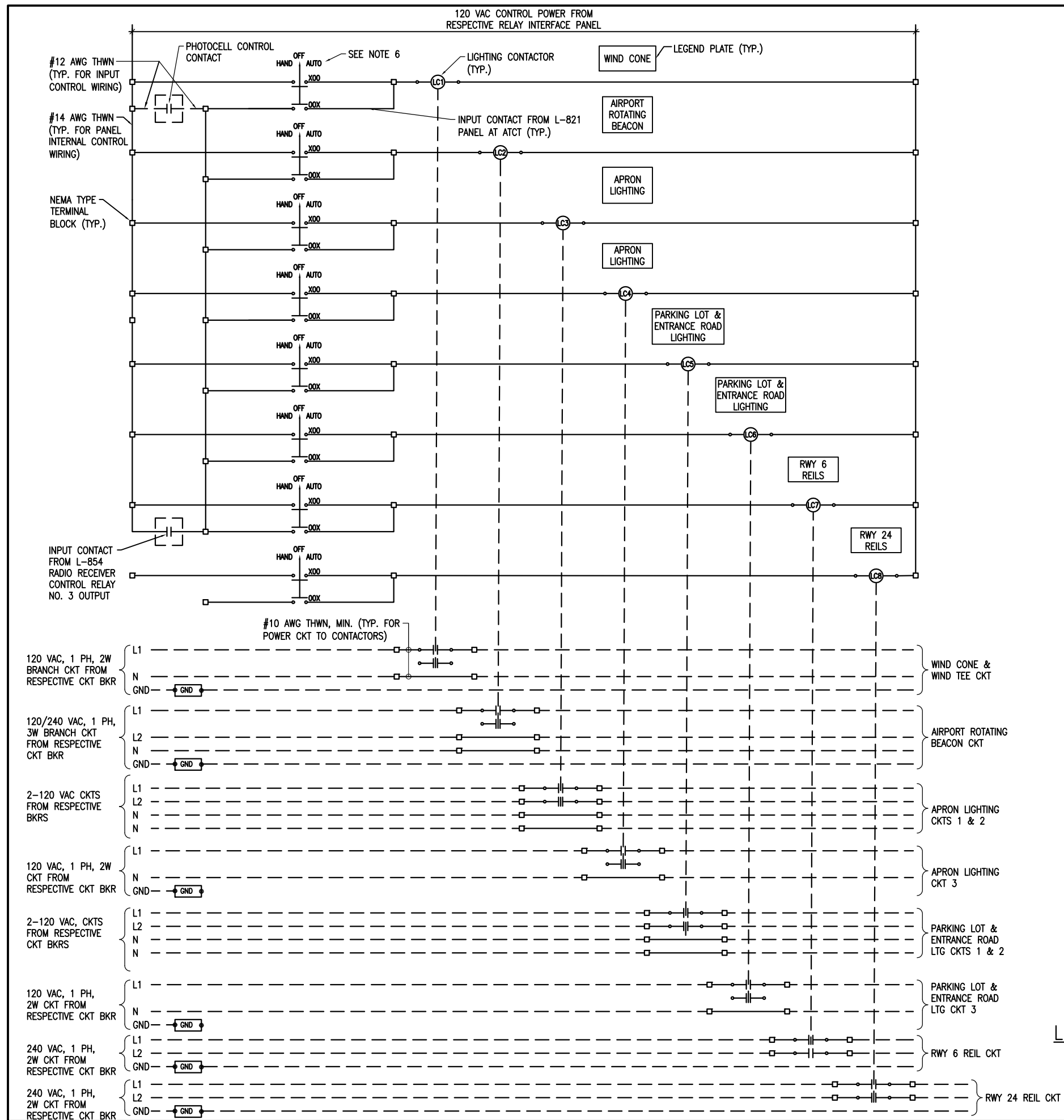
Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-607-SCM.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

LIGHTING
CONTACTOR
SCHEMATIC



LIGHTING CONTACTOR CONTROL PANEL SCHEMATIC

- NOTES**
- 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 25 AMP AND 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
 - INPUT CONTROL CIRCUIT WIRING SHALL BE #12 AWG COPPER THWN.
 - FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
 - THE AIRPORT ROTATING BEACON CIRCUIT SHALL HAVE PHASE "A" SWITCHED THROUGH THE LIGHTING CONTACTOR. PHASE "B" SHALL BE UNSWITCHED FROM THE POWER SOURCE TO THE LOAD CENTER AT THE AIRPORT ROTATING BEACON.
 - PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
 - PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, ALLEN-BRADLEY CAT. NO. 800T-J2A, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "WIND CONE" OR "AIRPORT ROTATING BEACON").

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PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

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NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-608-ELEC.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

SHEET TITLE

LIGHTING
CONTACTOR PANEL
DETAIL

NEMA TYPE TERMINAL BLOCKS RATED 85A, 600 VOLT
SUITABLE FOR THE FOLLOWING WIRE COMBINATIONS

- 1 #4 AWG
- 1 #6 AWG
- 1-2 #8 AWG
- 1-4 #10 AWG
- 1-5 #12 AWG

TERMINAL BLOCKS SHALL BE SQUARE D CLASS 9080
TYPE GC6, ALLEN-BRADLEY BULLETIN 1492, CAT. NO.
1492-CD2, OR APPROVED EQUAL. IEC RATED
TERMINAL BLOCKS ARE NOT ACCEPTABLE.

NEMA TYPE TERMINAL BLOCKS RATED 85A, 600 VOLT
SUITABLE FOR THE FOLLOWING WIRE COMBINATIONS

- 1 #4 AWG
- 1 #6 AWG
- 1-2 #8 AWG
- 1-4 #10 AWG
- 1-5 #12 AWG

TERMINAL BLOCKS SHALL BE SQUARE D CLASS 9080
TYPE GC6, ALLEN-BRADLEY BULLETIN 1492, CAT. NO.
1492-CD2, OR APPROVED EQUAL. IEC RATED
TERMINAL BLOCKS ARE NOT ACCEPTABLE.

NOTES

1. 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR PANEL. 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR PANEL. PROVIDE NEW BRANCH/FEEDER CIRCUITS FROM THE RESPECTIVE POWER SOURCE TO EACH LIGHTING CONTACTOR.
2. INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
3. FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
4. THE AIRPORT ROTATING BEACON CIRCUIT SHALL HAVE PHASE "A" SWITCHED THROUGH THE LIGHTING CONTACTOR. PHASE "B" SHALL BE UNSWITCHED FROM THE POWER SOURCE TO THE LOAD CENTER AT THE AIRPORT ROTATING BEACON.
5. PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
6. PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, ALLEN-BRADLEY CAT. NO. 800T-J2A, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "WIND CONE" OR "AIRPORT ROTATING BEACON").
7. SEE "LIGHTING CONTACTOR SCHEMATIC" FOR ADDITIONAL INFORMATION ON WIRING.
8. INCLUDE LEGEND PLATE ON CONTROL PANEL ENCLOSURE OUTER DOOR LABELED "NOTICE: CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME".
9. 120/240 VAC PHASE "A" CONDUCTORS SHALL HAVE BLACK COLORED INSULATION. 120/240 VAC PHASE "B" CONDUCTORS SHALL HAVE RED COLORED INSULATION. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION. INSULATED EQUIPMENT GROUND WIRES SHALL HAVE GREEN COLORED INSULATION.
10. CONTROL PANEL FOR AIRFIELD NAVAIDS & VAULT FAN SHALL BE MANUFACTURED BY A UL 508A INDUSTRIAL CONTROL PANEL BUILDER OR AN FAA APPROVED L-821 PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENTS. WHERE THE CONTROL PANEL IS MANUFACTURED BY AN L-821 PANEL BUILDER IT SHALL BE LABELED AS AN L-821 PANEL.

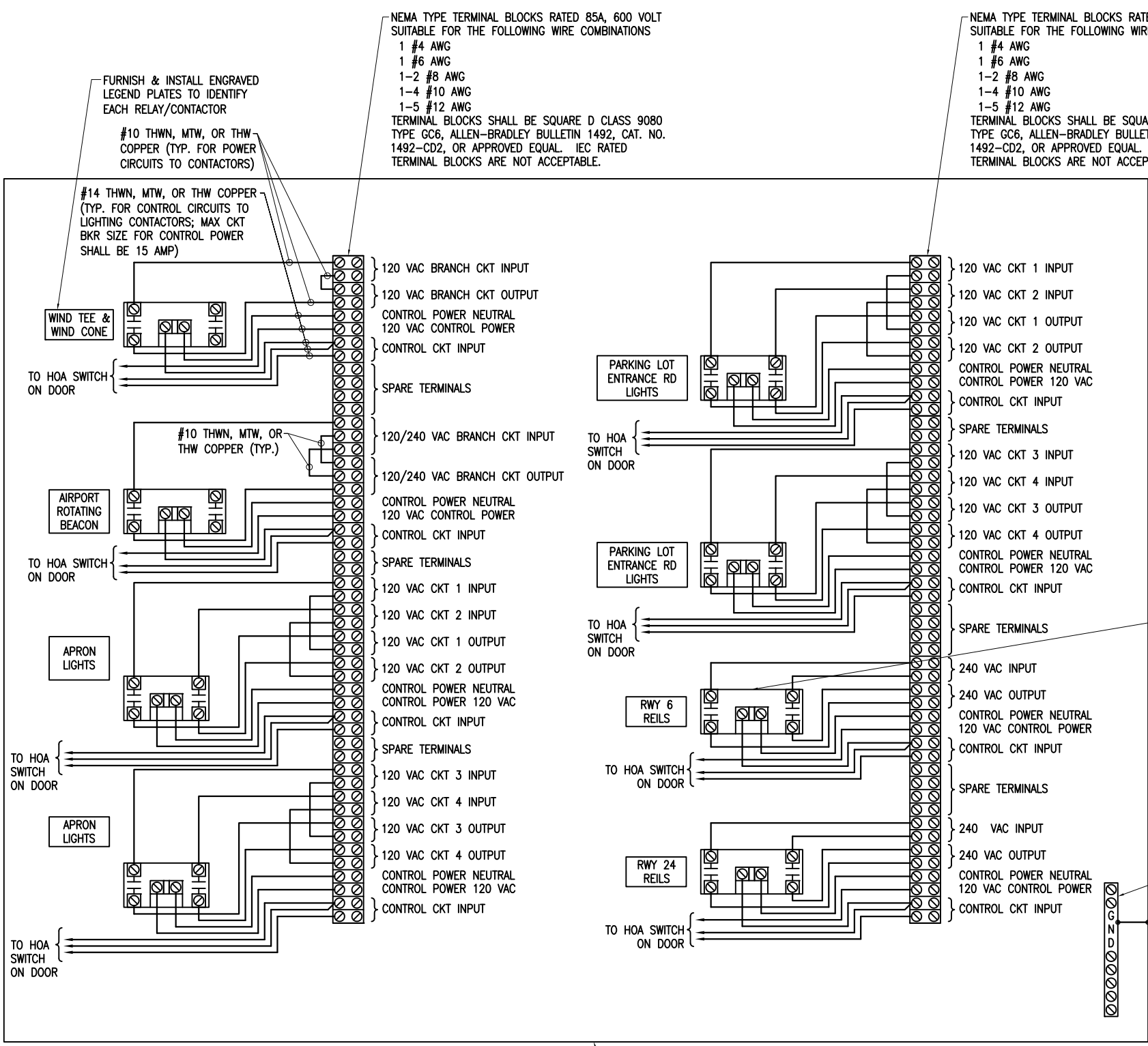
USE TERMINALS TO TRANSITION FROM
BOOST XFMR OUTPUT WIRING TO
FIELD WIRING WHERE APPLICABLE.
USE SPARE TERMINALS FOR NEUTRAL
CONDUCTORS WHERE APPLICABLE.

30 AMP, 600 VAC, 2 POLE
ELECTRICALLY HELD
LIGHTING CONTACTOR WITH
120 VAC COIL, SQUARE D
CLASS 8903, TYPE
SM01V02, ALLEN-BRADLEY
CAT. NO. 500FL-B0D92, OR
APPROVED EQUAL (TYPICAL
FOR 7)

EQUIPMENT GROUND BAR
ADEQUATELY SIZED FOR ALL
GROUND WIRES TO AND FROM
LIGHTING CONTACTOR PANEL.
INSTALL ONE GROUND WIRE
PER TERMINAL.

NEMA 12 ENCLOSURE WITH HINGED DOOR SIZED AS
REQUIRED TO HOUSE LIGHTING CONTACTORS,
TERMINAL BLOCKS, WIRING & INTERFACE TO EXISTING
CONDUITS, MINIMUM 36"H x 24"W x 8"D AS
MANUFACTURED BY HOFFMAN, SAGINAW CONTROL &
ENGINEERING, OR APPROVED EQUAL. NOTE MAXIMUM
ENCLOSURE WIDTH TO ACCOMMODATE INSTALLATION IN
RESPECTIVE LOCATION IS 24" WIDE.

LIGHTING CONTACTOR PANEL DETAIL



FURNISH & INSTALL ENGRAVED
LEGEND PLATES TO IDENTIFY
EACH RELAY/CONTACTOR

#10 THWN, MTW, OR THW
COPPER (TYP. FOR POWER
CIRCUITS TO CONTACTORS)

#14 THWN, MTW, OR THW COPPER
(TYP. FOR CONTROL CIRCUITS TO
LIGHTING CONTACTORS; MAX CKT
BKR SIZE FOR CONTROL POWER
SHALL BE 15 AMP)

#10 THWN, MTW, OR
THW COPPER (TYP.)

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

ISSUE: NOVEMBER 10, 2017
PROJECT NO: 17A0004D
CAD FILE: E-609-SCM.DWG
DESIGN BY: KNL 09/02/2017
DRAWN BY: CWS 09/05/2017
REVIEWED BY: BSS 10/17/2017

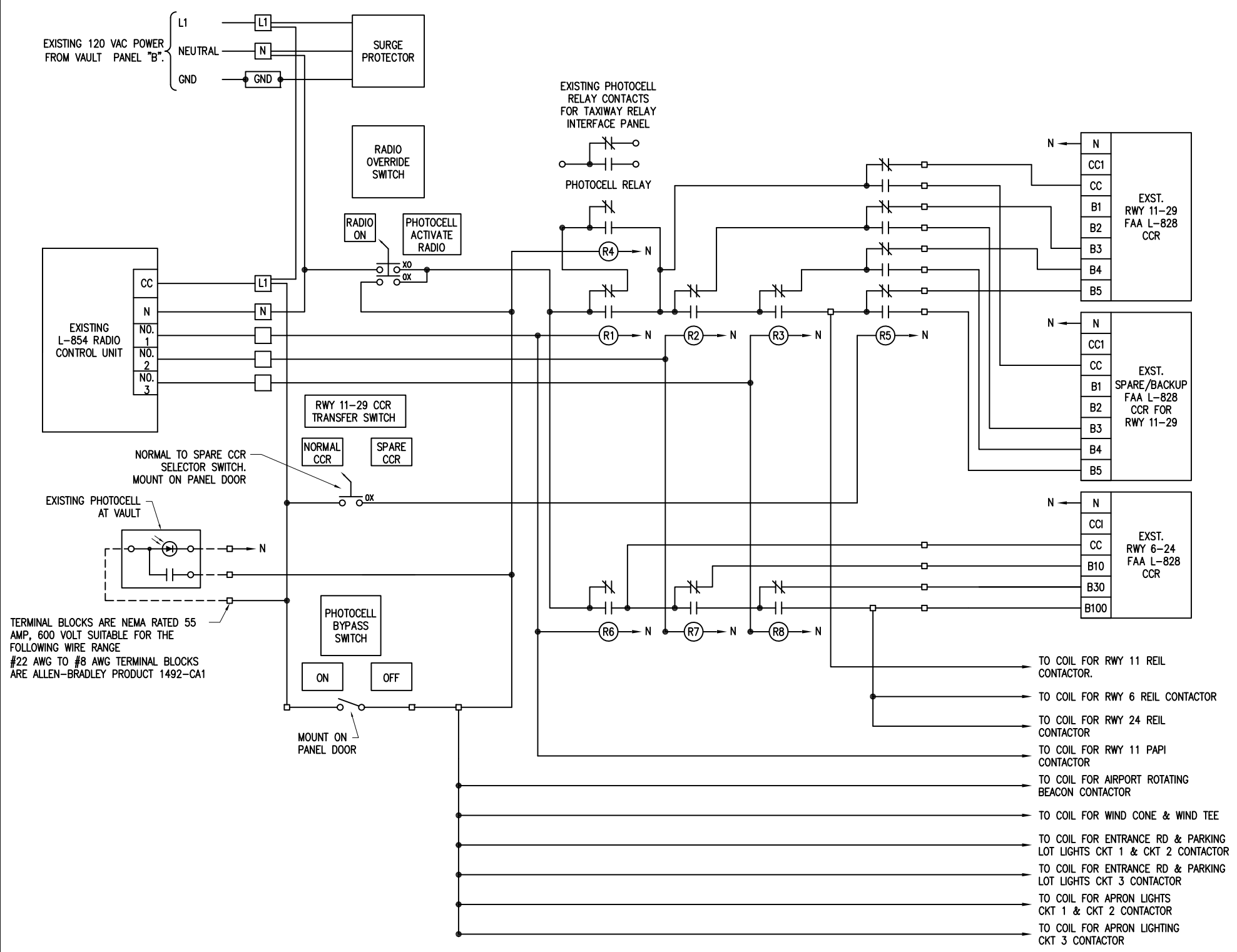
SHEET TITLE

AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC FOR RUNWAYS

NOTES:

1. THE EXISTING RELAY INTERFACE PANEL NAMEPLATE DATA IS AS FOLLOWS:

PRECISION CONTROL SYSTEMS OF INDIANAPOLIS
7225 GIRL SCHOOL AV. INDIANAPOLIS, IN 46241,
RUNWAY RELAY INTERFACE PANEL MODEL: P15016,
TAG: RRIP, 120 VOLTS, 60HZ, 1 PHASE.
2. IN THE AUTOMATIC MODE OF OPERATION THE RUNWAY 11-29 CONSTANT CURRENT REGULATORS (PRIMARY UNIT & SPARE UNIT) IS CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:
PHOTOCELL - B3-5% BRIGHTNESS AND ACTIVATE RADIO CONTROL
3 CLICKS - B3-5% BRIGHTNESS
5 CLICKS - B4-20% BRIGHTNESS
7 CLICKS - B5-100% BRIGHTNESS
3. IN THE AUTOMATIC MODE OF OPERATION THE RUNWAY 6-24 CIRCUIT IS CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:
PHOTOCELL -ACTIVATE RADIO CONTROL
3 CLICKS -10% BRIGHTNESS
5 CLICKS -30% BRIGHTNESS
7 CLICKS -100% BRIGHTNESS
4. THE RUNWAY 11 PAPI CIRCUIT IS CONTROLLED IN THE AUTOMATIC MODE BY THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER.
3 CLICKS - ON
5 CLICKS - REMAIN ON
7 CLICKS - REMAIN ON
5. THE RUNWAY 11, 6 AND 24 REIL CIRCUITS ARE CONTROLLED IN THE AUTOMATIC MODE BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER.
PHOTOCELL ACTIVATION ENABLES RADIO CONTROL
3 CLICKS - OFF
5 CLICKS - OFF
7 CLICKS - ON
6. THE RADIO OVERRIDE SWITCH WILL ACTIVATE L-854 RADIO CONTROL 24 HOURS PER DAY IN THE "RADIO ON" POSITION. THE PHOTOCELL WILL ACTIVATE RADIO CONTROL IN THE "PHOTOCELL ACTIVATE RADIO" POSITION.
7. IN THE AUTOMATIC MODE OF OPERATION THE AIRPORT ROTATING BEACON WIND TEE, WIND CONE, APRON LIGHTING, PARKING LOT LIGHTING, ENTRANCE ROAD LIGHTING, AND OBSTRUCTION LIGHTING ARE ACTIVATED BY THE PHOTOCELL OR PHOTOCELL BYPASS SWITCH.
8. EXTERNAL CONTROL CABLE SHALL BE NO. 12 AWG COPPER 600 VOLT CONDUCTOR. EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT & EACH CONTROL CIRCUIT.
9. "N" DESIGNATES NEUTRAL CONNECTION OR NEUTRAL CONDUCTOR.
10. PROVIDE NEW CONTROL WIRING TO THE LIGHTING CONTACTORS FOR THE WIND CONE, WIND TEE, BEACON, APRON LIGHTS, PARKING LOT LIGHTING, ENTRANCE ROAD LIGHTING, RWY 6 REILS AND RWY 24 REILS. EXISTING CONTROL WIRING MAY BE USED IN PLACE WHERE ADEQUATE LENGTH AND SUITABLE FOR USE.



TERMINAL BLOCKS ARE NEMA RATED 55 AMP, 600 VOLT SUITABLE FOR THE FOLLOWING WIRE RANGE
#22 AWG TO #8 AWG TERMINAL BLOCKS ARE ALLEN-BRADLEY PRODUCT 1492-CA1

AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC FOR RUNWAYS & NAVAIDS



PHASE 1 - REPLACE
MITL ON TAXIWAYS
SERVING RUNWAY
11-29

IDA No: MTO-4554

SBG Project No:
3-17-SBGP-139

Contract No. CO063

NO.	DATE	DESCRIPTION		
		DES	DWN	REV

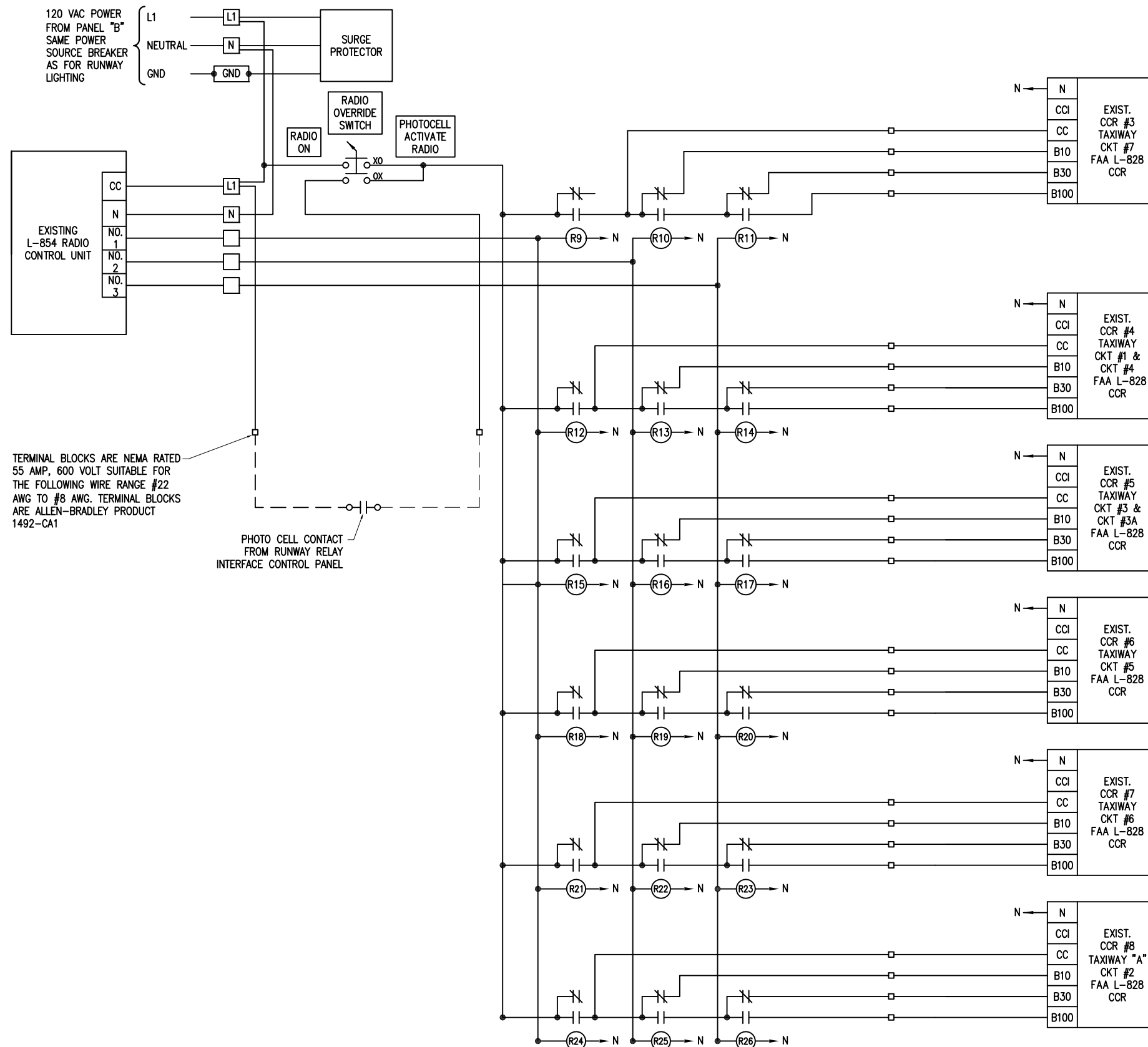
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REVIEWED BY: BSS 10/17/2017

SHEET TITLE

AIRFIELD LIGHTING
CONTROL WIRING
SCHEMATIC FOR
TAXIWAYS

NOTES:

1. THE EXISTING TAXIWAY RELAY INTERFACE PANEL NAMEPLATE DATA IS AS FOLLOWS:
PRECISION CONTROL SYSTEMS OF INDIANAPOLIS,
7725 GIRL SCHOOL AV., INDIANAPOLIS IN 46241,
TAXIWAY RELAY INTERFACE PANEL MODEL: P15016,
TAG: TRIP, 120 VOLTS, 60HZ, 1 PHASE
2. IN THE AUTOMATIC MODE OF OPERATION THE TAXIWAY CCR'S ARE CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:
PHOTOCELL -ACTIVATE RADIO CONTROL
3 CLICKS -10% BRIGHTNESS
5 CLICKS -30% BRIGHTNESS
7 CLICKS -100% BRIGHTNESS
3. THE RADIO OVERRIDE SWITCH ACTIVATES L-854 RADIO CONTROL 24 HOURS PER DAY IN THE "RADIO ON" POSITION. THE PHOTOCELL WILL ACTIVATE RADIO CONTROL IN THE "PHOTOCELL ACTIVATE RADIO" POSITION.
4. "N" DESIGNATES NEUTRAL CONNECTION OR NEUTRAL CONDUCTOR.
5. EXISTING TAXIWAY LIGHTING CONTROL WIRING SCHEMATIC IS PROVIDED FOR INFORMATION AND REFERENCE. THERE ARE NO SCHEDULED CHANGES FOR THE TAXIWAY LIGHTING CCR CONTROL WIRING, ON THE PROJECT.



TERMINAL BLOCKS ARE NEMA RATED
55 AMP, 600 VOLT SUITABLE FOR
THE FOLLOWING WIRE RANGE #22
AWG TO #8 AWG. TERMINAL BLOCKS
ARE ALLEN-BRADLEY PRODUCT
1492-CA1

PHOTO CELL CONTACT
FROM RUNWAY RELAY
INTERFACE CONTROL PANEL

EXISTING TAXIWAY LIGHTING CONTROL WIRING SCHEMATIC