ITEM NO. 11A

LO028
TOTAL SHEETS - 44

CONSTRUCTION PLANS
FOR
LOGAN COUNTY AIRPORT
LINCOLN, LOGAN COUNTY, ILLINOIS
REPLACE AIRFIELD LIGHTING, REILS AND VADIS

SCOPE OF WORK
THIS PROJECT CONSISTS OF REPLACING THE MIRL'S, REILS, AND VADIS ON RUNWAY 3-21, REPLACING THE MITL'S ON THE ASSOCIATED TAXIWAYS, AND THE ASSOCIATED CABLING, DUCT WORK AND VAULT WORK. ALSO INCLUDED IS THE REPLACEMENT OF THE WIND CONE WITH A LIGHTED L-807 PRIMARY WIND CONE.

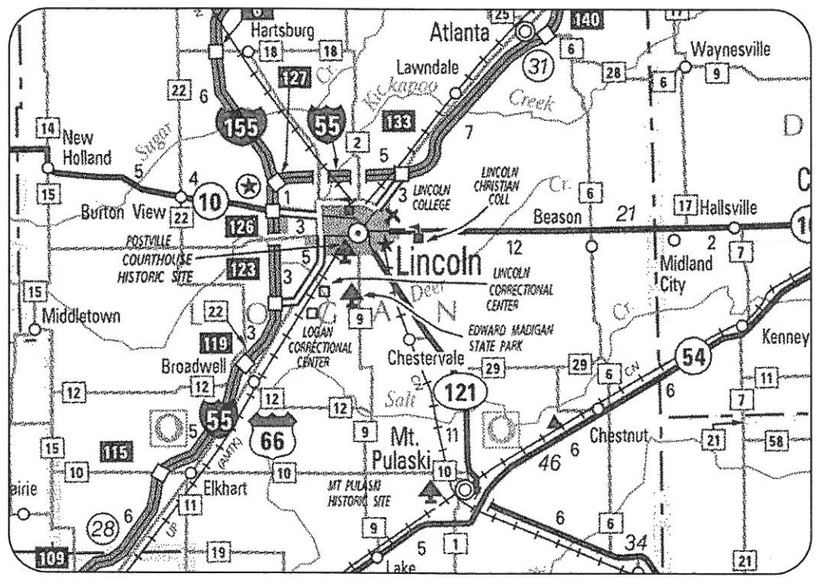
ADDITIVE ALTERNATE NO. 1
REFURBISHMENT OF THE AIRPORT ROTATING BEACON AND ADDITION OF OBSTRUCTION LIGHTING AND LIGHTNING PROTECTION TO THE BEACON TOWER ALONG WITH THE ASSOCIATED CABLING AND DUCT WORK.

ADDITIVE ALTERNATE NO. 2
UPGRADE OF THE MEDIUM INTENSITY TAXIWAY LIGHTS TO TYPE L-861T(L) WITH LED (LIGHT EMITTING DIODE) ILLUMINATION AND UPGRADE OF THE TAXI GUIDANCE SIGNS TO TYPE L-858(L) WITH LED ILLUMINATION.

REVISED APRIL 9, 2013

ILL. PROJ.:	AAA-4217
BLOCK GRANT:	3-17-0062-B20
LATITUDE:	40° 09' 31"
LONGITUDE:	89° 20' 06"
ELEVATION:	597.0' M.S.L.
DATE:	DEC. 14, 2012

LOCATION OF COUNTY



LOCATION

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

LICENSED PROFESSIONAL ENGINEER
CHARLES A. HAGLOCH
062-37821
STATE OF ILLINOIS

COVERS SHEETS No. 25 & 26

HANSON
Hanson Professional Services Inc.
ELECTRICAL ENGINEER
Submitted by: Kevin N. Lightfoot ENG'R
Date Submitted APRIL 9, 2013
Lics. Exp. Date NOVEMBER 30, 2013

HANSON
Hanson Professional Services Inc.
CIVIL ENGINEER
Submitted by: Charles A. Hagloch ENG'R
Date Submitted APRIL 9, 2013
Lics. Exp. Date NOVEMBER 30, 2013

LOGAN COUNTY BOARD
Approved Robert D. Farmer CHAIRMAN
Date 1-10-13
Approved Pamela Meigh SECRETARY
Date 1-10-13

REVISION	DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS
IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A00550
Filename G-001-CVR.dwg
Scale NO SCALE
Date 12/14/2012

LAYOUT	KNL	10/22/12
DRAWN	DAW	11/12/12
REVIEWED	CAH/KNL	12/7/12

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Offices Nationwide

REPLACE AIRFIELD LIGHTING, REILS & VADIS

COVER SHEET

1
1 of 44 sheets

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SUMMARY OF QUANTITIES - BASE BID

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AR107812	L-807 WC-12' INTERNALLY LIT	EA.	1	
AR107900	REMOVE WIND CONE	EA.	1	
AR108086	1/C #6 XLP-USE	L.F.	1,620	
AR108108	1/C #8 5 KV UG CABLE	L.F.	120	
AR108158	1/C #8 5 KV UG CABLE IN UD	L.F.	12,500	
AR108656	3/C #6 600V UG CABLE IN UD	L.F.	9,300	
AR109200	INSTALL ELECTRICAL EQUIPMENT	L.S.	1	
AR109210	VAULT MODIFICATIONS	L.S.	1	
AR110014	4" DIRECTIONAL BORE	L.F.	800	
AR110202	2" PVC DUCT, DIRECT BURY	L.F.	54	
AR110610	ELECTRICAL HANDHOLE	EA.	2	
AR110710	ELECTRICAL MANHOLE	EA.	2	
AR125410	MITL - STAKE MOUNTED	EA.	37	
AR125415	MITL - BASE MOUNTED	EA.	4	
AR125445	TAXI GUIDANCE SIGN, 5 CHARACTER	EA.	3	
AR125505	MIRL, STAKE MOUNTED	EA.	30	
AR125510	MIRL, BASE MOUNTED	EA.	10	
AR125540	MI THRESHOLD LIGHT STAKE MTD	EA.	16	
AR125545	MI THRESHOLD LIGHT BASE MTD	EA.	8	
AR125565	SPLICE CAN	EA.	1	
AR125610	REILS	PAIR	1	
AR125615	PAPI (L-880 SYSTEM)	EA.	2	
AR125901	REMOVE STAKE MOUNTED LIGHT	EA.	63	
AR125902	REMOVE BASE MOUNTED LIGHT	EA.	13	
AR125904	REMOVE TAXI GUIDANCE SIGN	EA.	1	
AR125907	REMOVE REILS	PAIR	1	
AR125910	REMOVE PLASI	EA.	2	
AR150510	ENGINEER'S FIELD OFFICE	L.S.	1	
AR150520	MOBILIZATION	L.S.	1	
AR150540	HAUL ROUTE	L.S.	1	
AR620900	PAVEMENT MARKING REMOVAL	S.F.	1,040	
AR800415	TAXI SIGN, 4 CHARACTER, UNLIGHTED	EA.	3	

SUMMARY OF QUANTITIES - ADDITIVE ALTERNATE NO. 1

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AS101580	REFURBISH 36" BEACON	L. S.	1	
AS110014	4" DIRECTIONAL BORE	L.F.	100	
AS800590	4/C #6 600V UG CABLE IN UD	L.F.	300	
AS800591	UPGRADE AIRPORT ROTATING BEACON	L.S.	1	

SUMMARY OF QUANTITIES - ADDITIVE ALTERNATE NO. 2

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AT800592	MITL LED UPGRADE	EA.	41	
AT800593	5 CHARACTER SIGN LED UPGRADE	EA.	3	

GENERAL NOTES:

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

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

MATERIAL CERTIFICATIONS
COMPLETED WORK **CANNOT** BE PLACED ON A CONSTRUCTION REPORT UNTIL ALL MATERIAL CERTIFICATIONS FOR THAT PAY ITEM HAVE BEEN RECEIVED, REVIEWED AND ACCEPTED BY THE RESIDENT ENGINEER.

RUNWAY CLOSURE SCHEDULING
THE CONTRACTOR SHALL NOTIFY THE AIRPORT MANAGER SEVEN DAYS IN ADVANCE OF THE COMMENCEMENT OF WORK, WHICH WOULD NECESSITATE THE CLOSING OF THE RUNWAY OR CLOSING OF THE AIRPORT.

INDEX TO SHEETS

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5	EXISTING ELECTRICAL PLAN - STA. 103+00 TO STA. 114+50
6	EXISTING ELECTRICAL PLAN - STA. 114+50 TO STA. 126+00
7	EXISTING ELECTRICAL PLAN - STA. 126+00 TO STA. 137+50
8	EXISTING ELECTRICAL PLAN - HOMERUNS AND VAULT
9	PROPOSED ELECTRICAL PLAN - STA. 91+50 TO STA.102+75
10	PROPOSED ELECTRICAL PLAN - STA. 102+75 TO STA. 114+50
11	PROPOSED ELECTRICAL PLAN - STA. 114+50 TO STA. 126+00
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13	PROPOSED ELECTRICAL PLAN - HOMERUNS AND VAULT
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38	LIGHTING CONTACTOR PANEL SCHEMATIC
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41	LEGEND PLATE SCHEDULES
42	CCR GROUND BUS RISER
43	GROUNDING DETAILS
44	GROUNDING NOTES

UTILITY NOTE

THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER 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.

J.U.L.I.E. INFORMATION

COUNTY.....LOGAN
CITY.....LINCOLN
TOWNSHIP.....EAST LINCOLN
SECTION NO.....29
ADDRESS.....LOGAN COUNTY AIRPORT
RR#4, AIRPORT ROAD
LINCOLN, ILLINOIS 62656

811
Know what's **below.**
Call before you dig.

REVISION	DATE
ADDED 4 TXY LTS (AR1125410 & AT800592)	4/6/13

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A00550
Filename G-002-FLP.dwg
Scale NONE
Date 12/14/2012

LAYOUT	MLH	11/08/12
DRAWN	MLH	11/08/12
REVIEWED	CAH/KNL	12/7/12

HANSON

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Offices Nationwide

REPLACE AIRFIELD LIGHTING, REILS & VADIS

SUMMARY OF QUANTITIES AND INDEX TO SHEETS

PROPOSED SAFETY PLAN

GENERAL – THE LOGAN COUNTY AIRPORT IS COMPRISED OF TWO RUNWAYS. THE PROPOSED CONSTRUCTION WILL NECESSITATE CLOSURES OF RUNWAYS AND TAXIWAYS AT TIMES DURING THE PROJECT.

RUNWAY 3–21 WILL BE CLOSED ANY TIME THE CONTRACTOR IS WORKING WITHIN 75' OF THE RUNWAY CENTERLINE. RUNWAY 14–32 (TURF RUNWAY) WILL BE CLOSED ANYTIME THE CONTRACTOR IS WORKING WITHIN 120' OF THE RUNWAY CENTERLINE. ANY TAXIWAY WILL BE CLOSED WHEN THE CONTRACTOR IS WORKING WITHIN 66' OF THE RESPECTIVE TAXIWAY CENTERLINE (TAXIWAY OBJECT FREE AREA). THE CONTRACTOR SHALL COORDINATE ALL CLOSURES WITH THE AIRPORT MANAGER.

THE CONTRACTOR WILL BE ALLOWED TO CLOSE RUNWAY 3–21 FOR THE CONSTRUCTION WEEK. AT THE END OF THE CONSTRUCTION WEEK HE MUST OPEN IT BACK UP FOR "DAYTIME OPERATIONS ONLY". THE CONTRACTOR WILL BE ALLOWED TO CLOSE BOTH RUNWAYS WHEN HE IS WORKING WITHIN THE INTERSECTION OF BOTH RUNWAYS. THE CONTRACTOR WILL EXPEDITE THIS WORK IN ORDER TO REDUCE THE AMOUNT OF TIME THE AIRPORT IS CLOSED. ALL WORK INCLUDING IN OPENING AND CLOSING THE RUNWAY WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

OPEN TRENCHES OR EXCAVATIONS ARE NOT PERMITTED WITHIN THE RUNWAY OR TAXIWAY SAFETY AREAS WHILE THE RESPECTIVE RUNWAY OR TAXIWAY IS OPEN. SMOOTH GRADE ALL AREAS WITHIN THE SAFETY AREA TO THE SATISFACTION OF THE RESIDENT ENGINEER PRIOR TO RE–OPENING THE RUNWAY OR TAXIWAY. IF THE RUNWAY OR TAXIWAY MUST BE OPENED BEFORE EXCAVATIONS ARE BACKFILLED, COVER THE EXCAVATIONS APPROPRIATELY. COVERINGS FOR OPEN TRENCHES OR EXCAVATIONS MUST BE OF SUFFICIENT STRENGTH TO SUPPORT THE HEAVIEST AIRCRAFT OPERATING ON THE RUNWAY.

THE CONTRACTOR AND HIS EMPLOYEES WILL BE RESTRICTED TO THE WORK AREAS AND ALL OTHER AREAS OF THE AIRPORT ARE "OFF LIMITS" TO THEM.

THE CONTRACTOR SHALL STAGE WORK TO MINIMIZE RUNWAY AND TAXIWAY CLOSURE TIME AND MAINTAIN ACCESS TO ALL HANGARS AND ADMINISTRATIVE AREAS.

ALL CONSTRUCTION/OPERATIONS ARE TO BE PERFORMED IN ACCORDANCE WITH FAA ADVISORY CIRCULAR (AC) 150/5370–2F "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION" AND AC 150/5300–13A "AIRPORT DESIGN".

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

RADIO CONTROL – THE CONTRACTOR WILL BE REQUIRED TO BE IN TWO–WAY RADIO CONTACT (122.80 MHz.) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE LOGAN COUNTY AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTIC EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.

HAUL ROUTE, VEHICLE PARKING, EQUIPMENT PARKING AND MATERIAL STORAGE

THE CONTRACTOR WILL USE THE DESIGNATED CONSTRUCTION ACCESS AND HAUL ROUTE SHOWN ON THIS SHEET. ACCESS THROUGH THE EXISTING GATE WILL BE COORDINATED WITH THE AIRPORT MANAGER. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING A SECURE CONDITION WHEN USING THE GATE.

CONTRACTOR SITE PARKING, EQUIPMENT PARKING AND MATERIAL STORAGE WILL BE IN THE WEST HALF OF THE EXISTING PARKING LOT. IN ADDITION, THE CONTRACTOR MAY USE THE AREA DESIGNATED WITHIN THE AIRPORT FENCE FOR ADDITIONAL MATERIAL STORAGE, IN ORDER TO PROVIDE AN ADDED LEVEL OF SECURITY FOR STORAGE OF MATERIALS. ALL CONSTRUCTION MATERIALS WILL BE STORED IN DESIGNATED AREAS AND OUTSIDE OF RUNWAY AND TAXIWAY OBJECT FREE AREAS.

THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE CONSTRUCTION ACCESS, HAUL ROUTE, VEHICLE PARKING, EQUIPMENT PARKING AND MATERIAL STORAGE AREAS THROUGHOUT THE COURSE OF THE PROJECT. ANY AREAS DAMAGED OUTSIDE OF THESE AREAS WILL BE REPAIRED BY THE CONTRACTOR AND AT THE CONTRACTOR'S OWN EXPENSE. AT THE CONCLUSION OF THE PROJECT THE CONTRACTOR WILL RESTORE THESE AREAS TO THEIR PRE–CONSTRUCTION CONDITION, INCLUDING GRADING, FERTILIZING, SEEDING AND MULCHING FOR NON–PAVED AREAS. RESTORATION OF THESE AREAS WILL BE INCLUDED IN THE COST OF ITEM AR150540, HAUL ROUTE, AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

150–ENGINEER'S FIELD OFFICE NOTES

THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE FURNISHED, MAINTAINED, AND REMOVED IN ACCORDANCE WITH ITEM AR150510 "ENGINEER'S FIELD OFFICE" AS STATED ON PAGE 49 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS APRIL 1, 2012.

THE LOCATION OF THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE DETERMINED AT THE PRE–CONSTRUCTION MEETING.

THE ENGINEERING FIRM WILL MAKE PAYMENT FOR ALL LONG DISTANCE TELEPHONE CALLS IN EXCESS OF ONE HUNDRED DOLLARS ($100.00) PER MONTH.

THE CONTRACTOR WILL FURNISH A WIRELESS PHONE TO THE RESIDENT ENGINEER FOR HIS EXCLUSIVE USE FOR THE DURATION OF THIS PROJECT. THE RESIDENT ENGINEER WILL USE THIS PHONE FOR PROJECT BUSINESS ONLY. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL CHARGES ASSOCIATED WITH THIS CELL PHONE.

THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE PAID FOR UNDER ITEMS:
AR150510 ENGINEER'S FIELD OFFICE _____ 1 L.S.

BARRICADES AND TRAFFIC CONES

IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN BARRICADES AND TRAFFIC CONES AS SHOWN AND AS DIRECTED BY THE AIRPORT MANAGER. THE BARRICADES WILL BE EQUIPPED WITH RED FLASHING OR RED STEADY–BURN LIGHTS AND 20" SQUARE ORANGE FLAGS. THE BARRICADES, THEIR MAINTENANCE, PLACEMENT AND REMOVAL WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. INCLUDE BARRICADES FOR TAXIWAYS TO COORDINATE WITH THE RESPECTIVE RUNWAY CLOSURE. WHEN TAXIWAYS ARE CLOSED PLACE BARRICADES AT EACH END OF TAXIWAY AS NEEDED. WHEN BOTH RUNWAYS ARE CLOSED BARRICADES SHALL BE PLACED ON ALL TAXIWAYS LEADING TO THE RUNWAYS.

BENCHMARK DATA

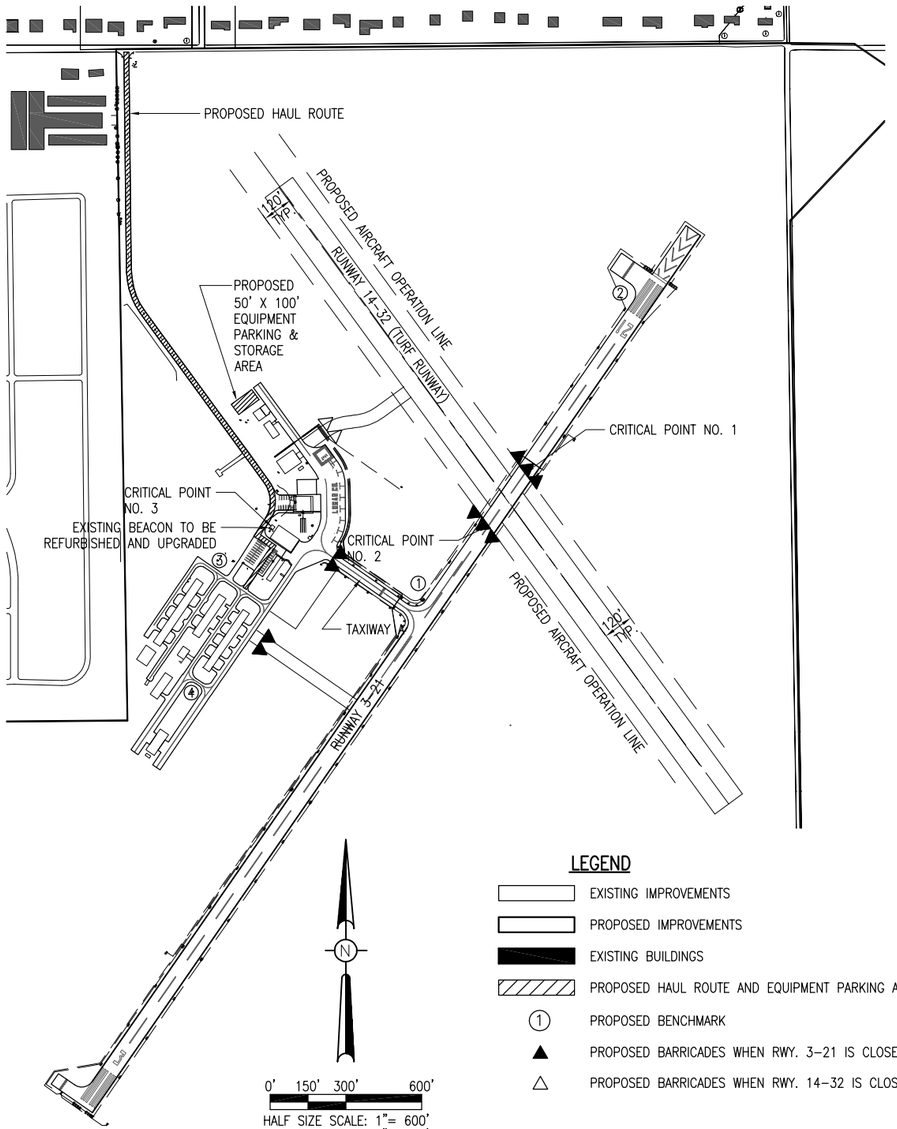
NO.	DESCRIPTION	NORTHING	EASTING	ELEV.
1	NGS BRASS DISC "LINCPORT"	1272840.988	252895.244	587.91
2	NGS BRASS DISC "LINCPORT AZ MK"	1274032.357	2529777.821	591.81
3	CHISELED "X" ON EAST FLANGE BOLT, FIRE HYDRANT	1272954.055	2528188.973	592.57
4	CHISELED SQUARE ON NE CORNER OF LIGHT BASE	1272432.497	2528086.399	591.16

CRITICAL POINT DATA

POINT NO. 1
LATITUDE: 40° 09' 36.58"
LONGITUDE: 89° 20' 01.12"
ELEVATION: 594.8 M.S.L.

POINT NO. 2
LATITUDE: 40° 09' 34.53"
LONGITUDE: 89° 20' 03.01"
ELEVATION: 594.1 M.S.L.

POINT NO. 3
LATITUDE: 40° 09' 34.54"
LONGITUDE: 89° 20' 14.04"
ELEVATION: 657.0 M.S.L.
(TOP OF BEACON)



LEGEND

- EXISTING IMPROVEMENTS
- PROPOSED IMPROVEMENTS
- EXISTING BUILDINGS
- PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
- (1) PROPOSED BENCHMARK
- ▲ PROPOSED BARRICADES WHEN RWY. 3–21 IS CLOSED
- △ PROPOSED BARRICADES WHEN RWY. 14–32 IS CLOSED

AIRCRAFT OPERATION LINE

THE CONTRACTOR WILL LOCATE THIS LINE AT THE START OF CONSTRUCTION AND WILL PLACE FLAGGED LATHE EVERY 150' ALONG IT. THIS LINE WILL BE THE LIMITS THAT ALL CONTRACTOR PERSONNEL MAY VENTURE WHEN A RUNWAY IS NOT CLOSED. THE CONTRACTOR WILL MAINTAIN THE LATHE LINE FOR RUNWAYS.

EROSION CONTROL

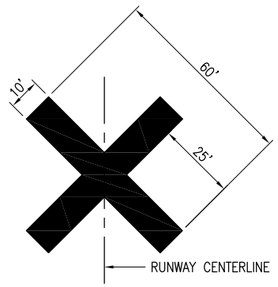
THIS PROJECT WILL DISTURB LESS THAN 1 ACRE OF LAND, THEREFORE NO N.P.D.E.S. PERMIT WILL BE REQUIRED.

AIRPORT SECURITY NOTE

AIRPORT SECURITY WILL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR WILL CLOSE THE EXISTING GATE IN THE HAUL ROUTE AT THE END OF EACH WORKING DAY.

HEIGHT OF CONSTRUCTION EQUIPMENT

THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 70 FEET, WHICH IS EXPECTED TO BE A CRANE AND/OR A BUCKET TRUCK TO WORK ON THE BEACON AND TOWER. THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT AT ALL OTHER LOCATIONS WILL BE 25 FEET, WHICH IS EXPECTED TO BE A CONCRETE TRUCK OR LINE TRUCK. THE CRANE OR BUCKET TRUCK SHALL BE USED DURING THE DAYLIGHT HOURS AND VFR CONDITIONS ONLY AND SHALL BE LOWERED WHEN NOT IN USE, DURING THE HOURS BETWEEN SUNSET AND SUNRISE, AND/OR DURING IFR WEATHER CONDITIONS. WHEN IN USE, THE CRANE OR BUCKET TRUCK SHALL BE MARKED WITH THE 3' SQUARE CHECKERED FLAG.



1. TEMPORARY "CLOSED RUNWAY" MARKINGS SHALL BE "AVIATION YELLOW"
2. TEMPORARY "CLOSED RUNWAY" 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.
3. TEMPORARY "CLOSED RUNWAY" MARKINGS SHALL BE PLACED OVER THE RUNWAY DESIGNATION NUMBERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. THE PROPOSED CROSSES WILL BE PLACED EACH DAY THE RUNWAY IS CLOSED AND REMOVED WHEN THE RUNWAY IS RE–OPENED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE PLACEMENT AND REMOVAL OF THE CROSSES. "CLOSED RUNWAY" MARKINGS SHALL NOT BE A PAY ITEM AND SHALL BE INCIDENTAL TO OTHER CONTRACT BID ITEMS.

TEMPORARY CLOSURE CROSS DETAIL

NOT TO SCALE

J.U.L.I.E. INFORMATION

COUNTY.....LOGAN
CITY.....LINCOLN
TOWNSHIP.....EAST LINCOLN
SECTION NO.....29
ADDRESS.....LOGAN COUNTY AIRPORT
RR#4, AIRPORT ROAD
LINCOLN, ILLINOIS 62656

REVISION	DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA–4217 BLOCK GRANT: 3–17–0062–B20

Hanson Proj. No. 12A0055D
Filename C–003–SFY.dwg
Scale 1" = 300'
Date 12/14/2012

LAYOUT	KNL	11/17/12
DRAWN	ESC	11/20/12
REVIEWED	CAH/KNL	12/7/12

HANSON
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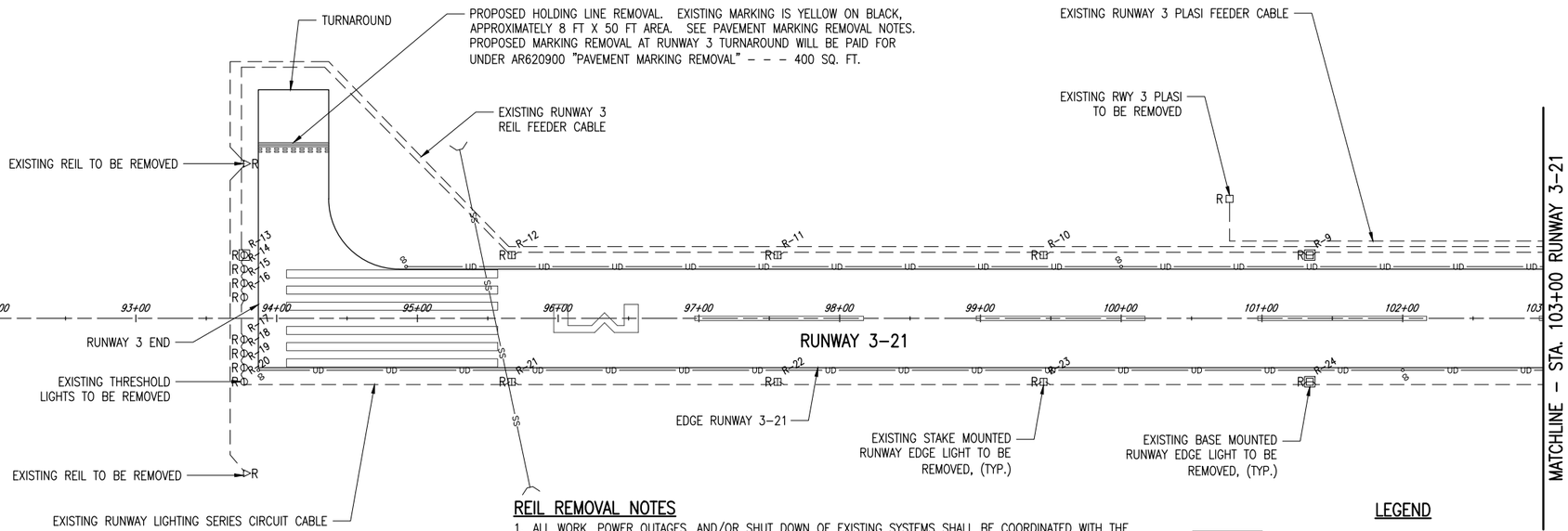
Springfield, Illinois 62703-2886
Ph: (217) 788-2450 Fax: (217) 788-2503
www.Hanson-Inc.com
Offices Nationwide

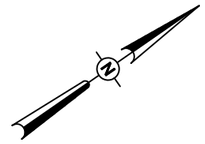
REPLACE AIRFIELD LIGHTING, REILS & VADIS

PROPOSED SAFETY PLAN

PLASI 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 FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING PLASI UNITS.
3. EXISTING PLASI UNITS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED AND SHALL BE TURNED OVER TO THE AIRPORT. THE CONCRETE FOUNDATIONS/BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE.
4. THE HOLE LEFT FROM THE FOUNDATION OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE EARTH MATERIAL WILL COME FROM OFF-SITE AND WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE PLASI REMOVAL. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
5. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH PLASI REMOVALS SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, AND ABANDONED IN PLACE ELSEWHERE.
6. POWER FOR THE PLASI SYSTEMS ON EACH RUNWAY SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO DISCONNECTING AND REMOVING THE RESPECTIVE PLASI SYSTEM. POWER FOR THE EXISTING PLASI SYSTEMS LOCATED ON RUNWAY 3-21 IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM RESPECTIVE POWER SOURCE FOR EACH PLASI SYSTEM.
7. REMOVAL OF PLASI WILL BE PAID FOR UNDER ITEM AR125910 "REMOVE PLASI" PER EACH.
8. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.





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

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. 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. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2F (OR MOST CURRENT ISSUE) **"OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".**
4. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.
5. THE EXISTING AIRFIELD (RUNWAY & TAXIWAY) LIGHTS AND THEIR ISOLATED TRANSFORMERS DESIGNATED FOR REMOVAL SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. THE CONCRETE LIGHT BASES 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 AR125901 REMOVE STAKE MOUNTED LIGHT, PER EACH AND AR125902 REMOVE BASE MOUNTED LIGHT, PER EACH.
6. 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.
7. 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 150/5370-2F, OPERATION SAFETY ON AIRPORTS DURING CONSTRUCTION, SECTION 218, c.
8. 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.
9. NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH THE ABOVE NOTE 1.

THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER 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.

REIL 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 FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING REILS.
3. EXISTING REILS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED AND SHALL BE TURNED OVER TO THE AIRPORT. THE CONCRETE LIGHT BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE.
4. THE HOLE LEFT FROM THE LIGHT OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE EARTH MATERIAL WILL COME FROM OFF-SITE AND WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE LIGHT REMOVAL. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
5. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH LIGHT AND/OR REIL REMOVALS SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, AND ABANDONED IN PLACE ELSEWHERE.
6. POWER FOR THE REIL SYSTEM ON EACH RUNWAY END SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO DISCONNECTING AND REMOVING THE RESPECTIVE REIL SYSTEM. POWER FOR THE EXISTING REIL SYSTEMS LOCATED ON RUNWAY 3 IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM RESPECTIVE POWER SOURCE FOR EACH REIL SYSTEM.
7. REMOVAL OF REILS WILL BE PAID FOR UNDER ITEM AR125907 "REMOVE REILS" PER PAIR.
8. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- EXISTING AIRFIELD LIGHTING ELECTRICAL CABLE
- W — EXISTING WATER
- T — EXISTING TELEPHONE
- UD — EXISTING UNDERDRAIN
- SS — EXISTING STORM SEWER
- ▷R EXISTING REIL (TO BE REMOVED)
- □R EXISTING PLASI (TO BE REMOVED)
- P R EXISTING WIND CONE (TO BE REMOVED)
- R ○ EXISTING STAKE MOUNTED TAXIWAY LIGHT (TO BE REMOVED)
- R ⊠ EXISTING BASE MOUNTED TAXIWAY LIGHT (TO BE REMOVED)
- R ◫ EXISTING STAKE MOUNTED RUNWAY LIGHT (TO BE REMOVED)
- R ⧈ EXISTING BASE MOUNTED RUNWAY LIGHT (TO BE REMOVED)
- R ⊕ EXISTING STAKE MOUNTED THRESHOLD LIGHT (TO BE REMOVED)
- R ⊛ EXISTING BASE MOUNTED THRESHOLD LIGHT (TO BE REMOVED)
- ⊕ EXISTING AIRPORT ROTATING BEACON

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
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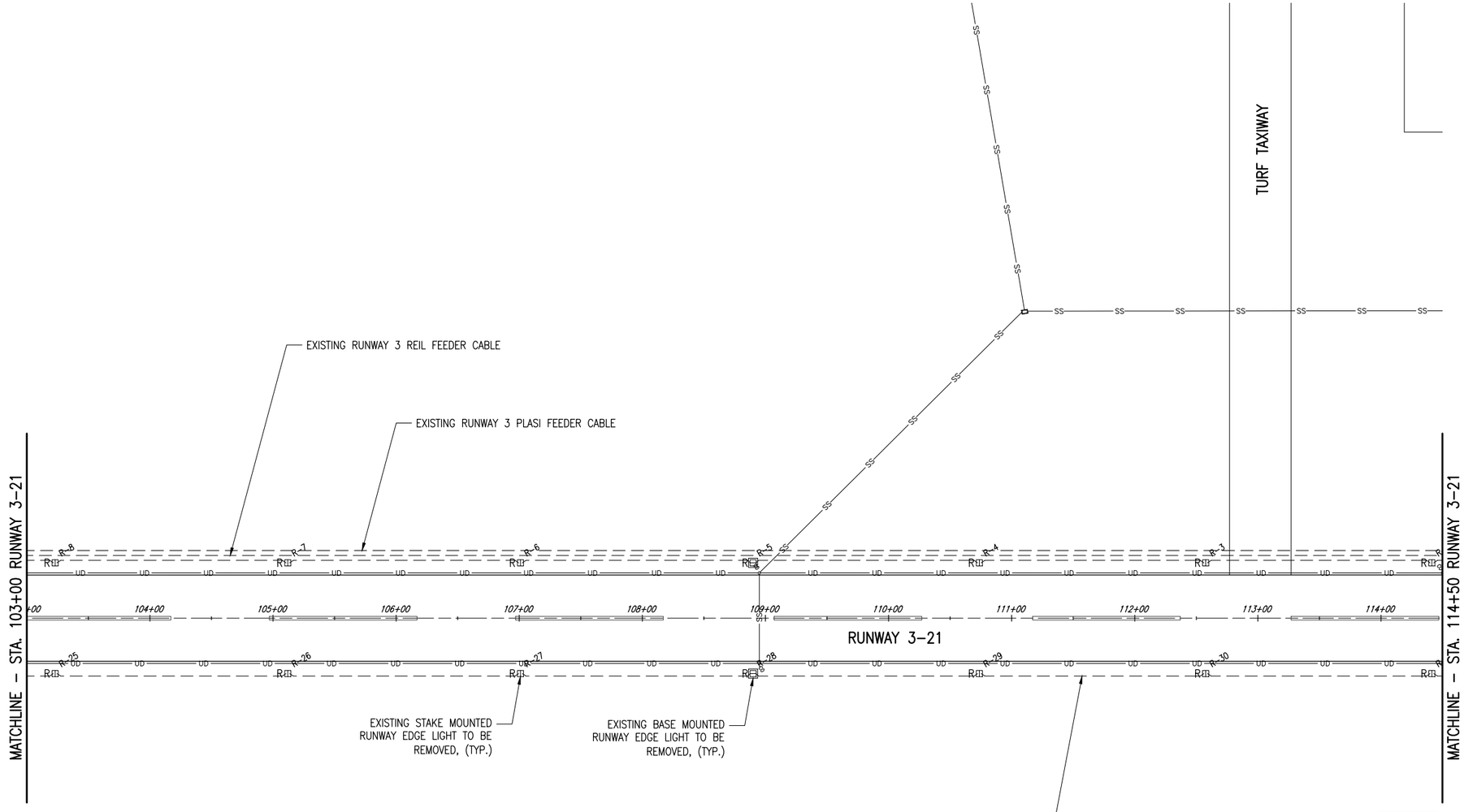

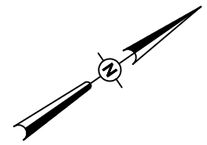

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- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- EXISTING AIRFIELD LIGHTING ELECTRICAL CABLE
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING REIL (TO BE REMOVED)
- EXISTING PLASI (TO BE REMOVED)
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LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
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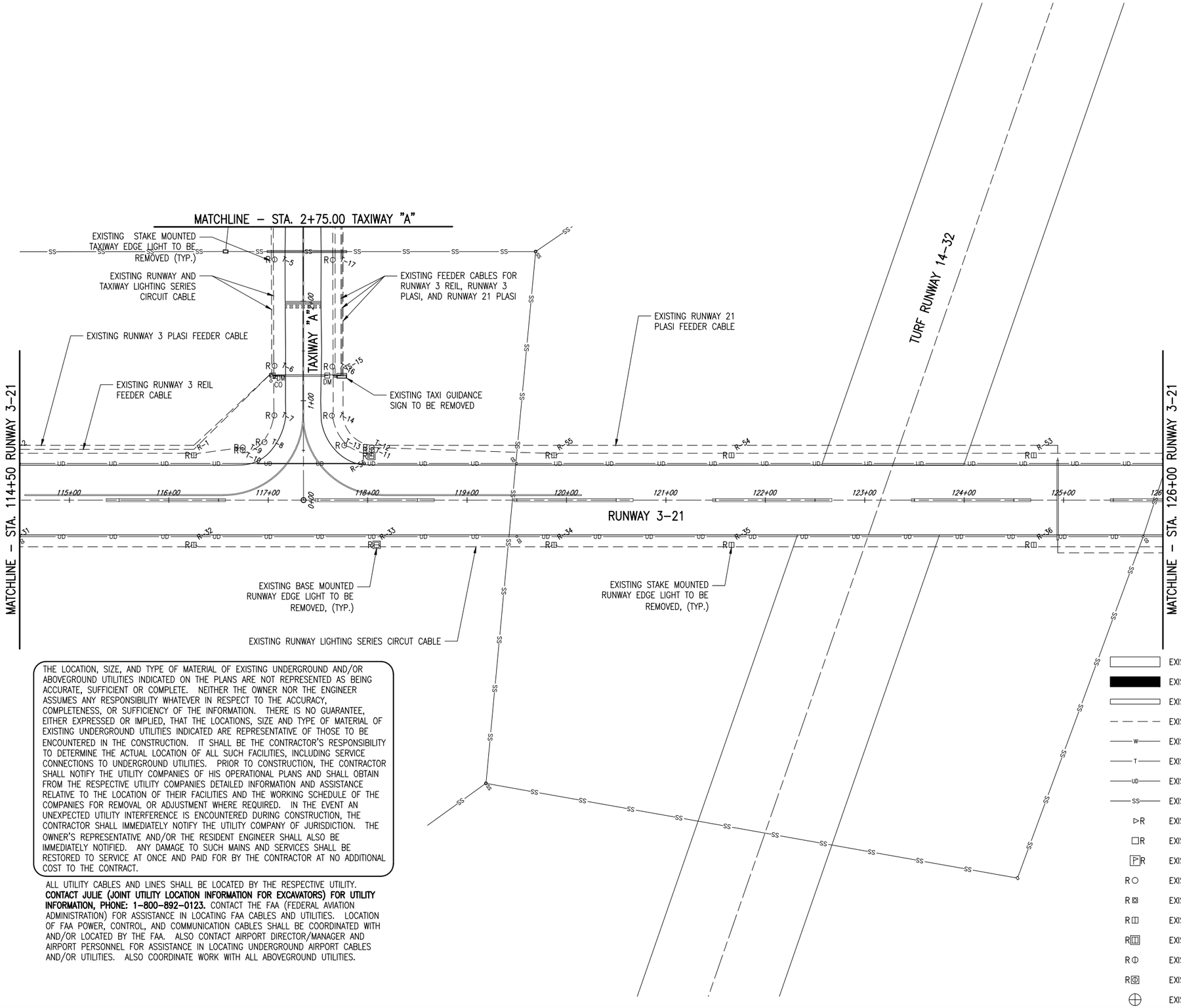

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- EXISTING WATER
- EXISTING TELEPHONE
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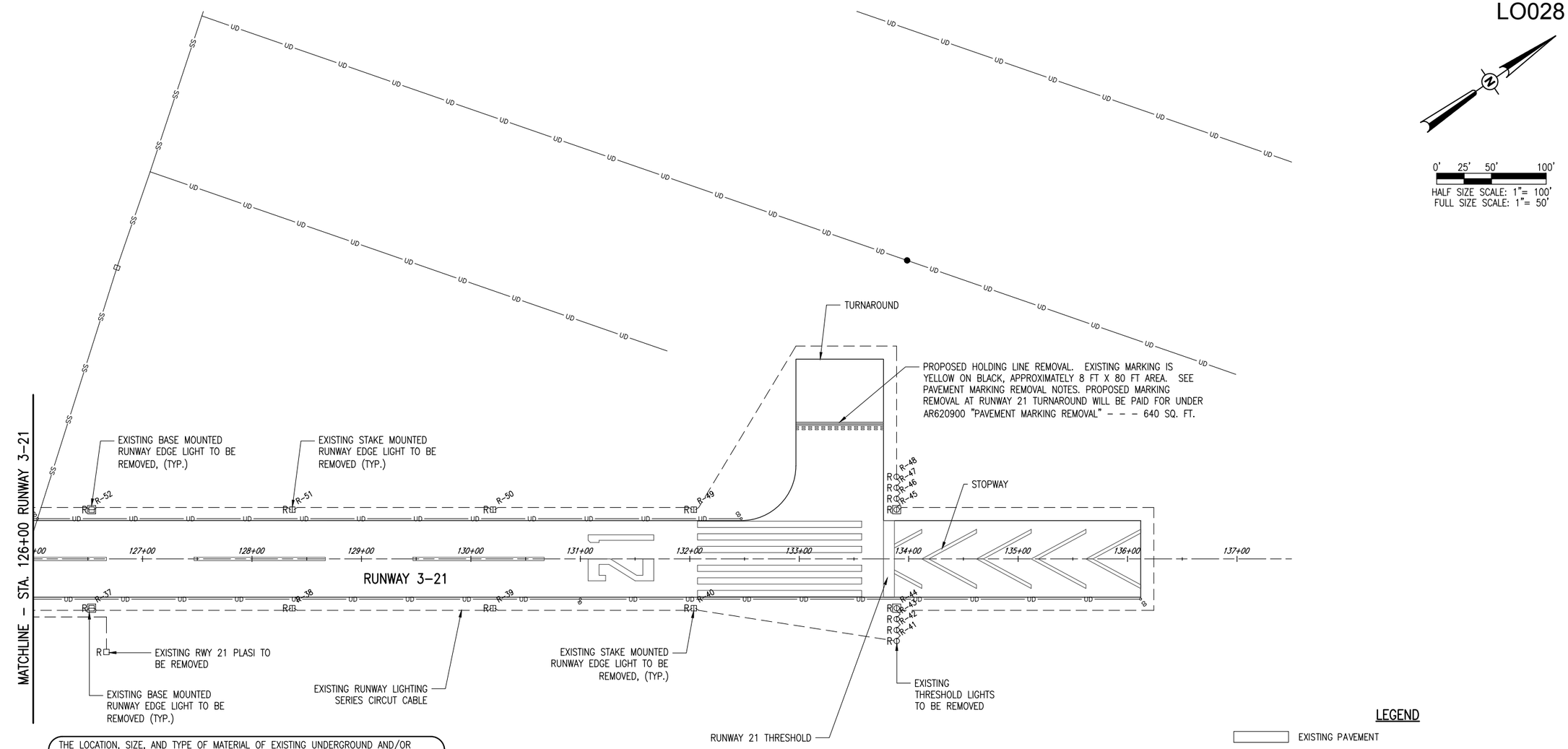

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PAVEMENT MARKING REMOVAL NOTES

1. THE AREAS THAT ARE DESIGNATED EXISTING MARKING (TO BE REMOVED) WILL BE REMOVED BY WATER BLASTING OR SANDBLASTING.
2. ALL AREAS TO BE REMOVED ARE CALCULATED AREAS. ANY ADDITIONAL AREAS, DUE TO OVER SPRAY, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
3. THE PROPOSED MARKING REMOVAL FOR THE TURNAROUNDS ON RUNWAY ENDS 3 AND 21 SHALL BE PAID FOR UNDER ITEM:
   AR620900 "PAVEMENT MARKING REMOVAL" – – – 1040 SQ. FT.

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- EXISTING AIRFIELD LIGHTING ELECTRICAL CABLE
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING REIL (TO BE REMOVED)
- EXISTING PLASI (TO BE REMOVED)
- EXISTING WIND CONE (TO BE REMOVED)
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7 of 44 sheets

WIND CONE 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 FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING THE WIND CONE.

3. POWER FOR THE RESPECTIVE WIND CONE SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO REMOVING THE RESPECTIVE WIND CONE. POWER FOR THE EXISTING PRIMARY WIND CONE IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM THE RESPECTIVE POWER SOURCE FOR EACH WIND CONE.

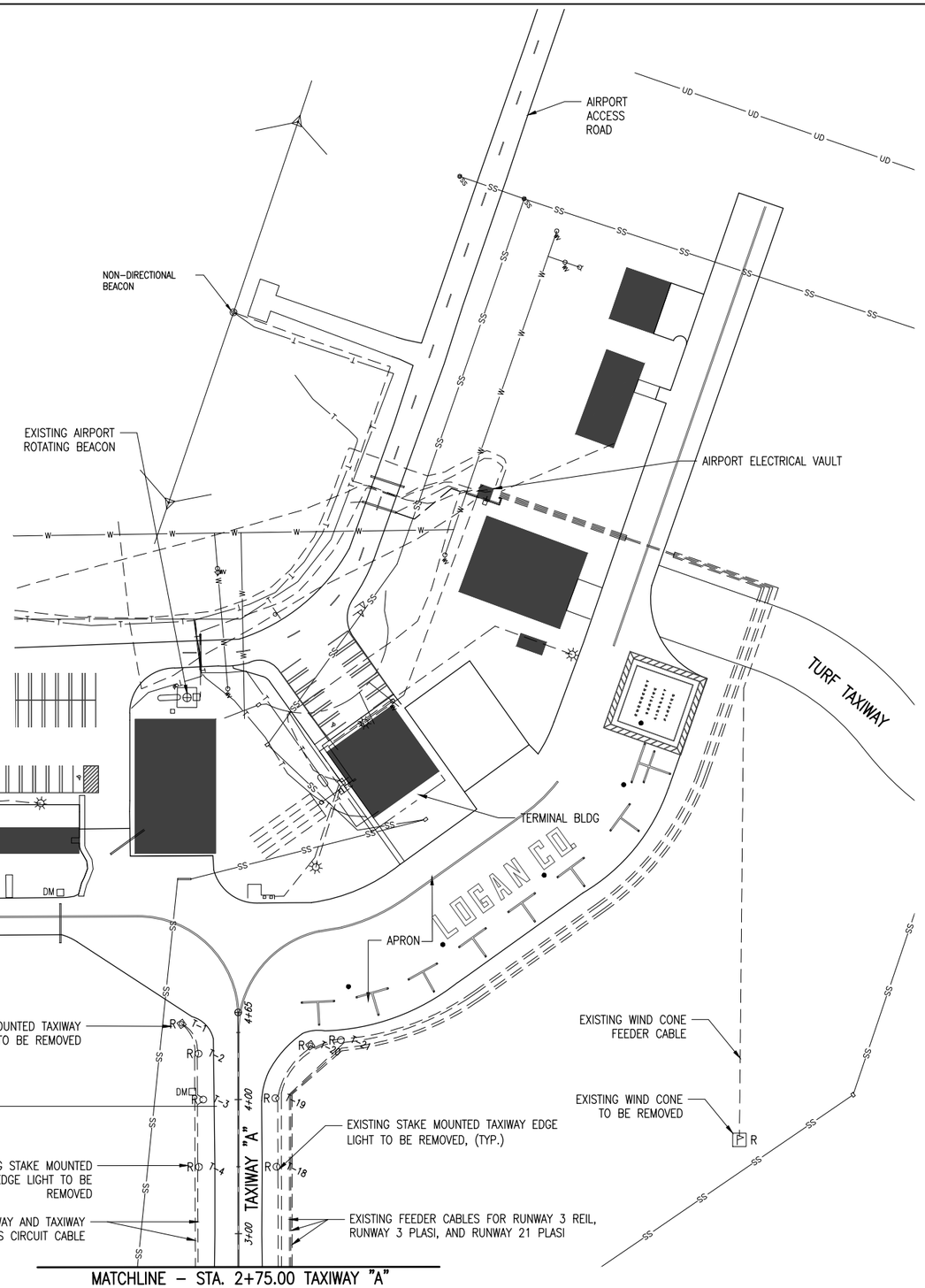
4. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF THE EXISTING WIND CONE WITH THE INSTALLATION OF THE NEW LIGHTED WIND CONE TO MINIMIZE THE TIME WHEN THE AIRPORT IS WITHOUT A WIND CONE. THE CONTRACTOR SHALL COORDINATE WITH AND NOTIFY THE AIRPORT MANAGER AND THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE. HE SHALL PROVIDE A SCHEDULE FOR THE WIND CONE REMOVAL AND THE NEW WIND CONE INSTALLATION. THE CONTRACTOR WILL TURN THE WIND CONE AND SUPPORT POLE OVER TO THE AIRPORT MANAGER. THE CONCRETE BASE/FOUNDATION WILL BE DISPOSED OF OFF THE AIRPORT SITE, IN A LEGAL MANNER, AT THE EXPENSE OF THE CONTRACTOR.

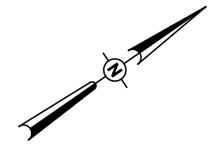
5. THE HOLES LEFT FROM THE BASE/FOUNDATION REMOVAL SHALL BE FILLED WITH EARTH MATERIAL. THE EARTH MATERIAL WILL BE COMPACTED TO PREVENT ANY FUTURE SETTLEMENT. THE EARTH MATERIAL WILL BE OBTAINED FROM OFF THE AIRPORT SITE. THE DISTURBED AREA WILL BE RESTORED, GRADED, AND SEEDED TO THE SATISFACTION OF THE ENGINEER AND IS CONSIDERED INCIDENTAL TO THE REMOVAL OF THE WIND CONE.

6. REMOVAL OF EXISTING WIND CONE WILL BE PAID FOR UNDER ITEM AR107900 REMOVE WIND CONE – PER EACH.

7. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH THE WIND CONE REMOVAL SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, AND ABANDONED IN PLACE ELSEWHERE.

8. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.





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LEGEND

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- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- EXISTING AIRFIELD LIGHTING ELECTRICAL CABLE
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING REIL (TO BE REMOVED)
- EXISTING PLASI (TO BE REMOVED)
- EXISTING WIND CONE (TO BE REMOVED)
- EXISTING STAKE MOUNTED TAXIWAY LIGHT (TO BE REMOVED)
- EXISTING BASE MOUNTED TAXIWAY LIGHT (TO BE REMOVED)
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- EXISTING BASE MOUNTED RUNWAY LIGHT (TO BE REMOVED)
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- EXISTING BASE MOUNTED THRESHOLD LIGHT (TO BE REMOVED)
- EXISTING AIRPORT ROTATING BEACON

REVISION | DATE

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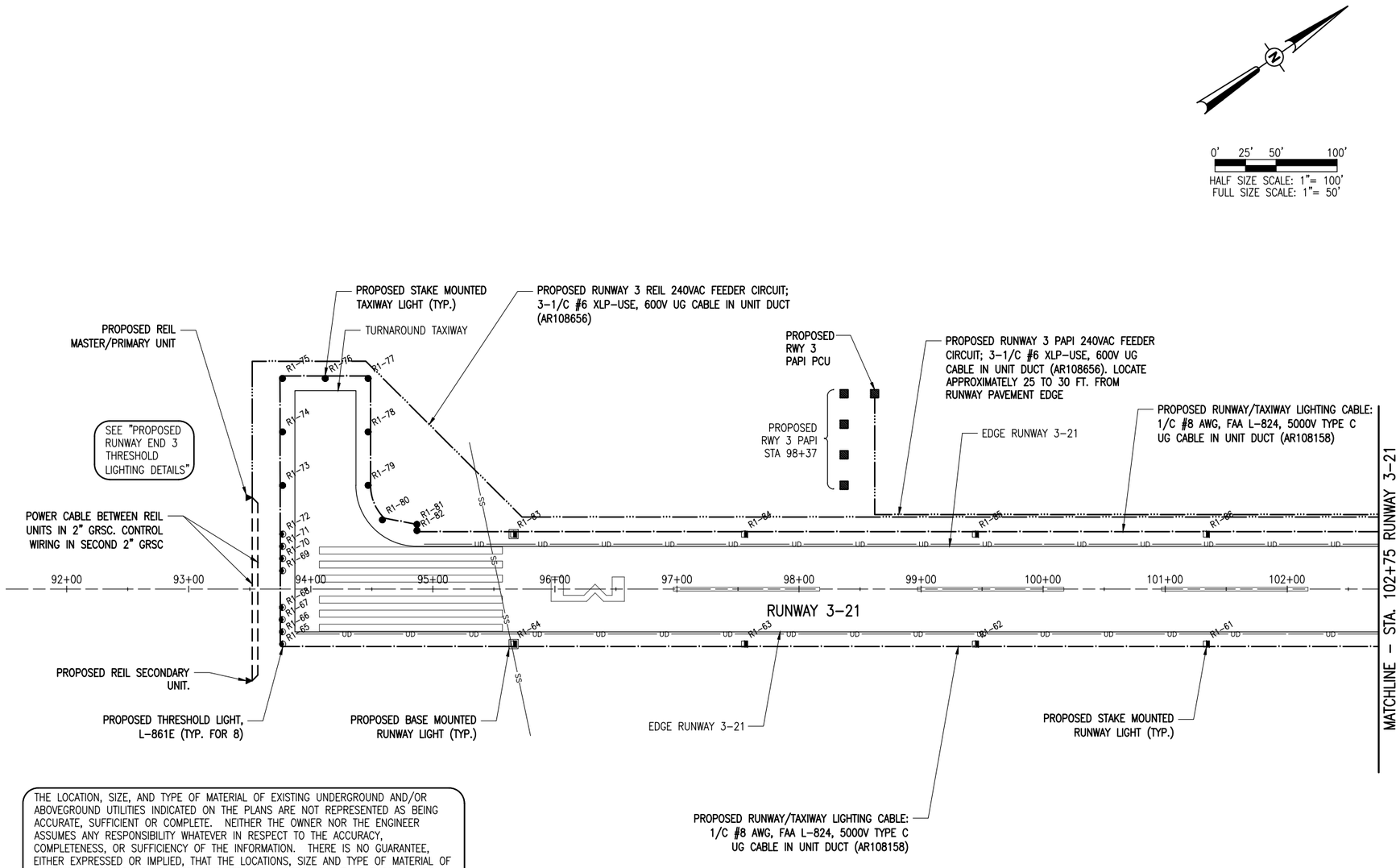
REPLACE AIRFIELD LIGHTING, REILS & VADIS

EXISTING ELECTRICAL PLAN - HOMERUNS AND VAULT



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RUNWAY 3 REIL LOCATION NOTE

THE REILS ON RUNWAY 3 SHALL BE LOCATED 40 FEET DOWNWIND OF THE RUNWAY THRESHOLD & 40 FEET FROM THE RUNWAY EDGE TO COMPLY WITH FAA AC 150/5340-30G, FAA ORDER J06850.2B, AND ACCOMMODATE THE ADJACENT TAXIWAY TURNAROUND AND THE RUNWAY 3 PAPI.

PAPI PCU LOCATION NOTE

PAPI PCU (POWER AND CONTROL UNIT) MUST BE MOUNTED AT THE MINIMUM POSSIBLE HEIGHT AND LOCATED OUTSIDE THE RSA (RUNWAY SAFETY AREA). IF THE PCU CANNOT BE LOCATED OUTSIDE THE RSA IT MUST BE APPROVED AS A FIXED BY FUNCTION DEVICE TO BE LOCATED WITHIN THE RSA AND IT MUST BE MOUNTED WITH FRANGIBLE COUPLINGS. THE RSA FOR RUNWAY 3-21 IS 150FT. WIDE (EXTENDING 75 FT. FROM RUNWAY CENTERLINE).

LEGEND

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- EXISTING BUILDING
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- EXISTING ELECTRICAL DUCT
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- T EXISTING TELEPHONE
- UD EXISTING UNDERDRAIN
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REPLACE AIRFIELD LIGHTING, REILS & VADIS

PROPOSED ELECTRICAL PLAN - STA. 91+50 TO STA. 102+75

9

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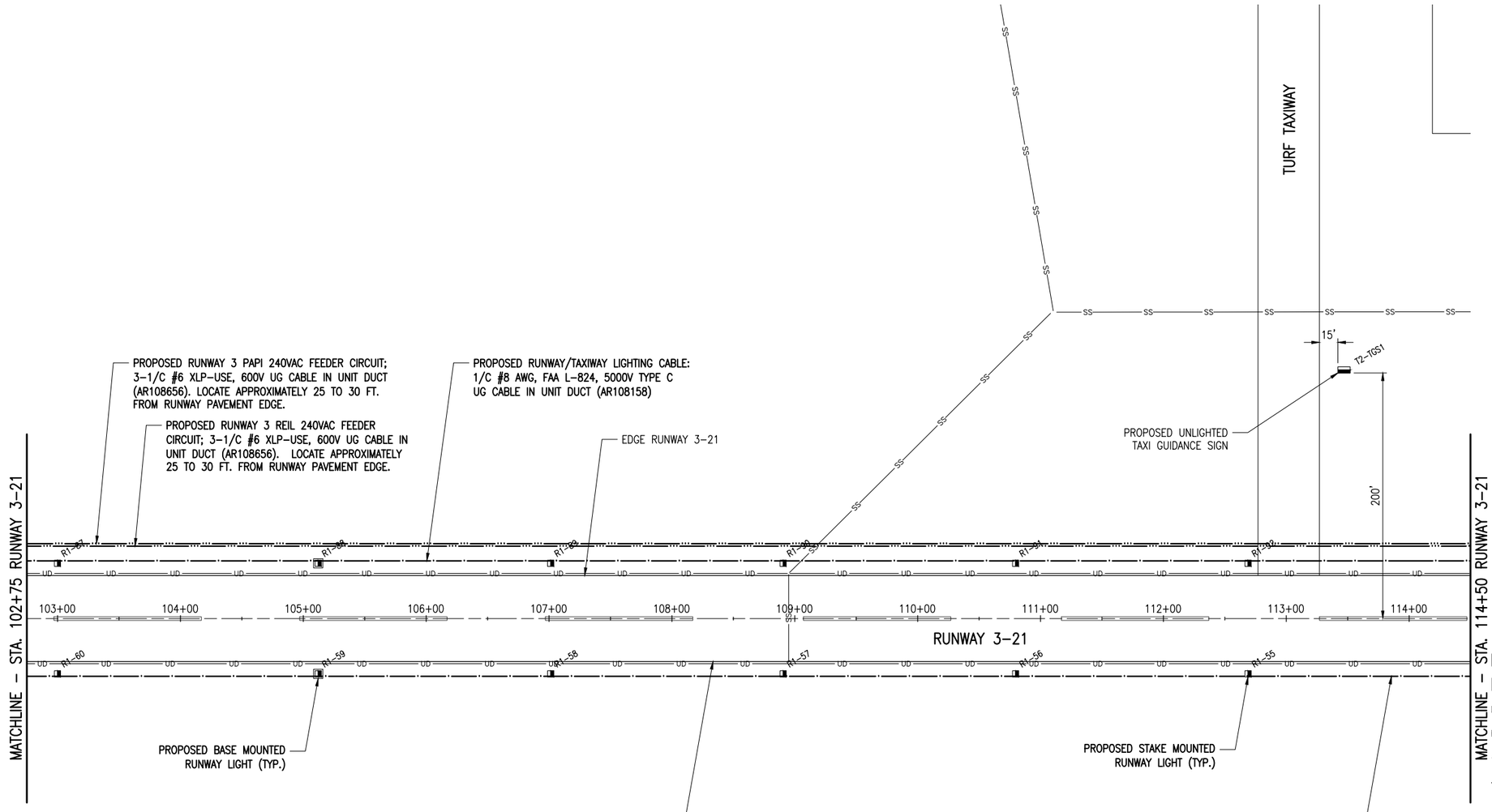

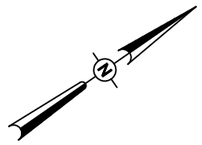

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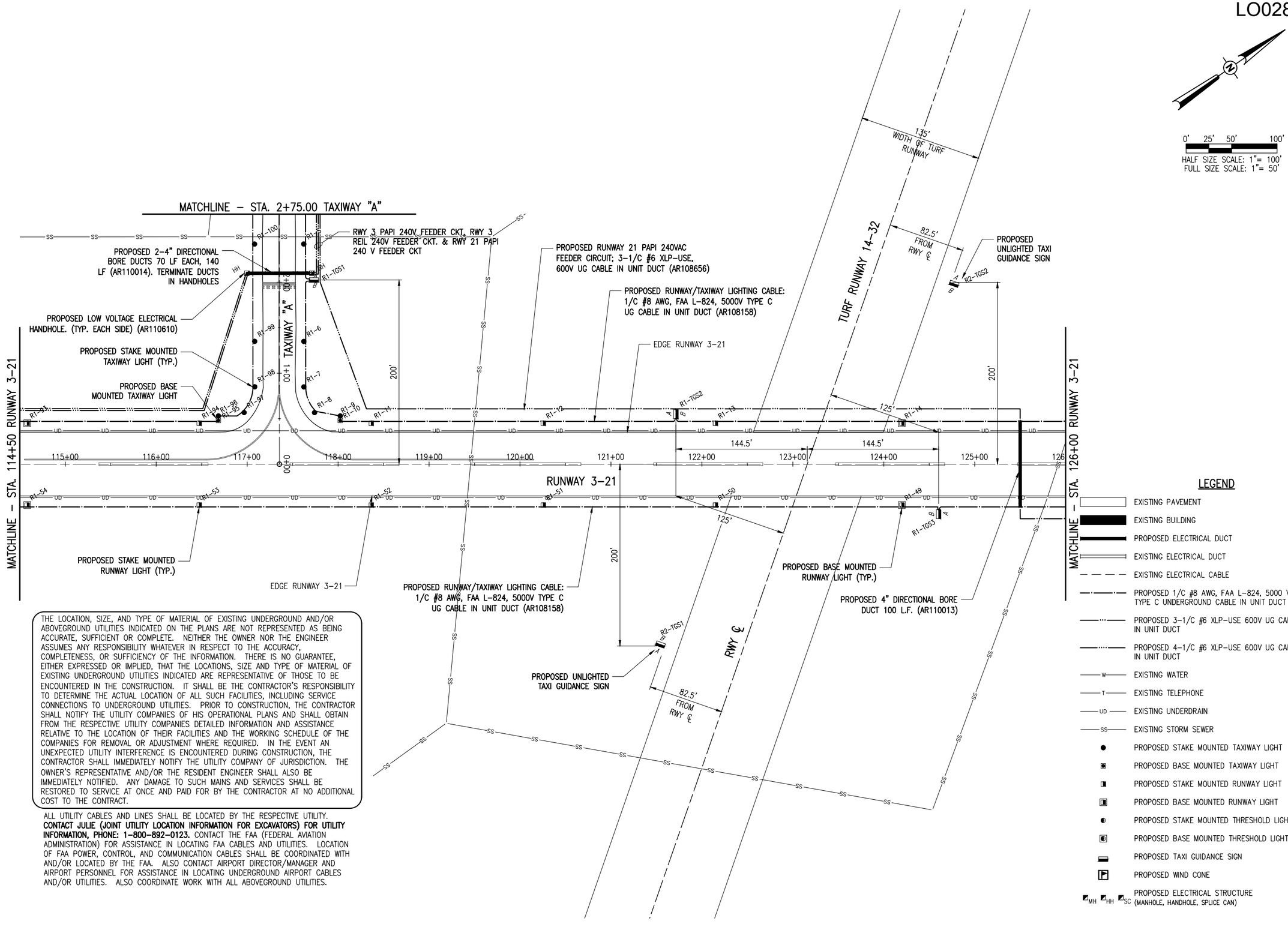

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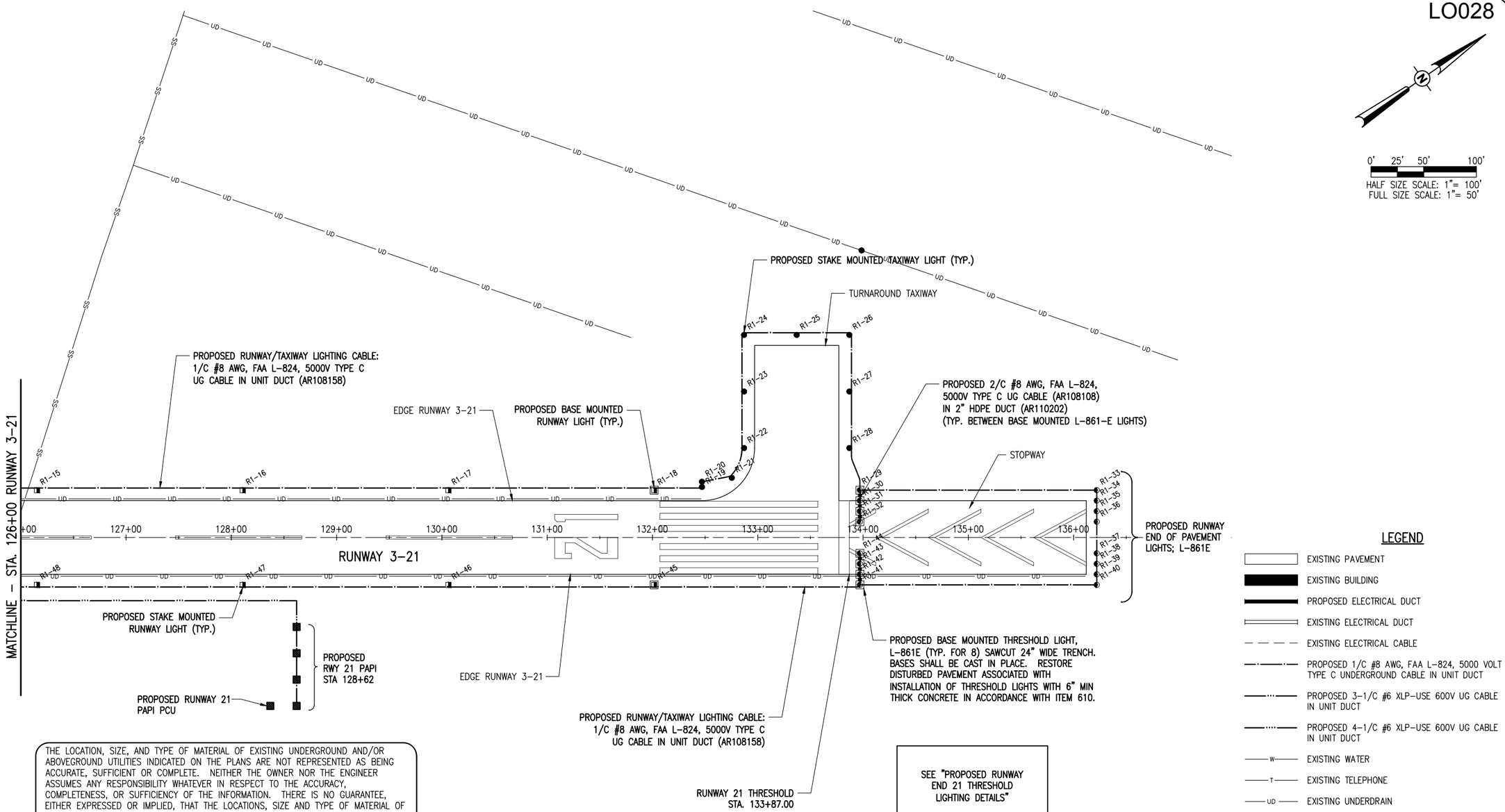

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LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename C-142-ELE.dwg
Scale AS SHOWN
Date 12/14/2012

LAYOUT	KNL	11/05/12
DRAWN	DAW	11/07/12
REVIEWED	CAH/KNL	12/7/12

Hanson Professional Services Inc.
1525 South Sixth Street
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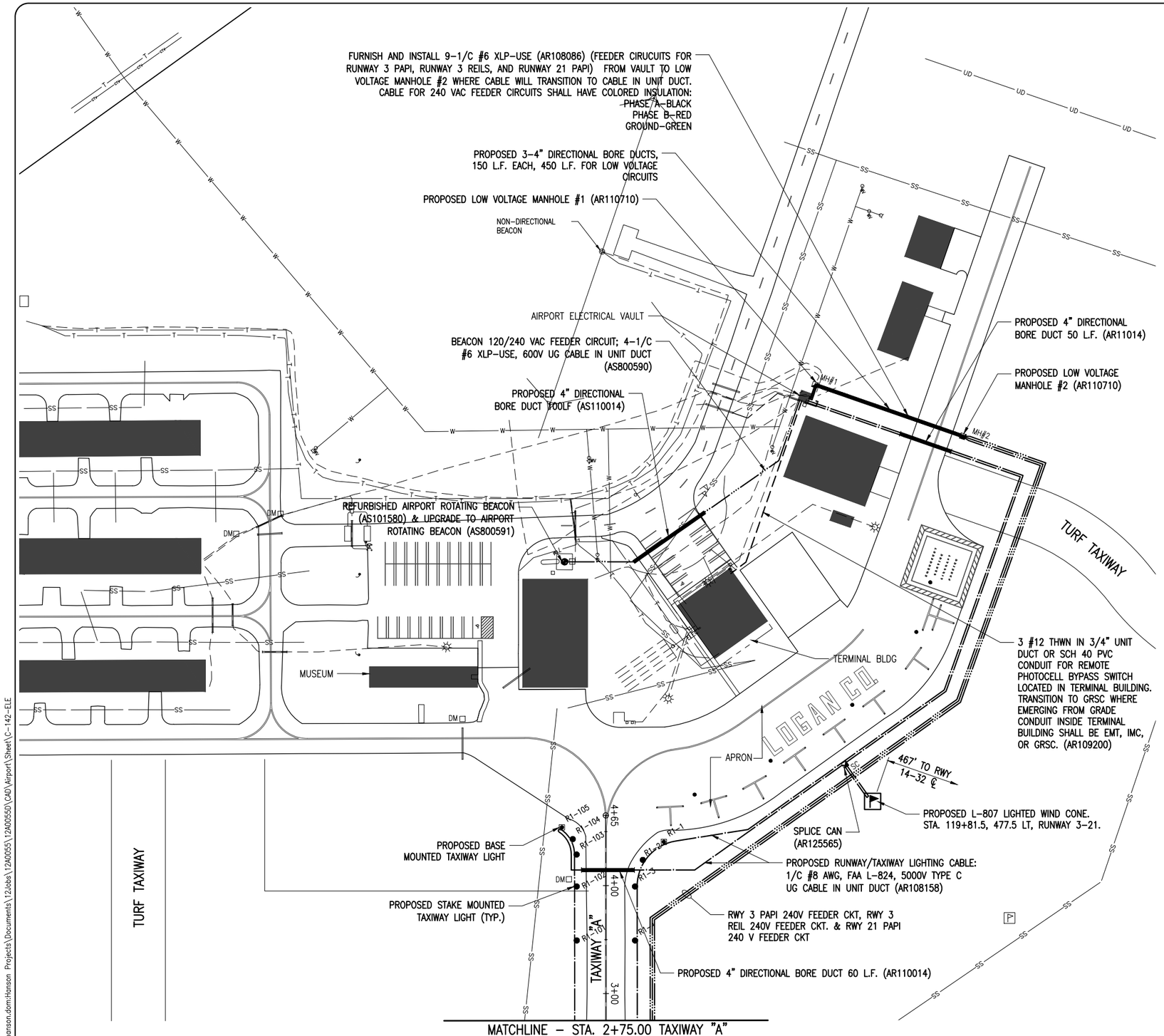
REPLACE AIRFIELD LIGHTING, REILS & VADIS

PROPOSED ELECTRICAL PLAN - STA. 126+00 TO STA. 137+50

12
12 of 44 sheets

LO028



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 WHATEVER 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.

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- PROPOSED STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED BASE MOUNTED TAXIWAY LIGHT
- PROPOSED STAKE MOUNTED RUNWAY LIGHT
- PROPOSED BASE MOUNTED RUNWAY LIGHT
- PROPOSED STAKE MOUNTED THRESHOLD LIGHT
- PROPOSED BASE MOUNTED THRESHOLD LIGHT
- PROPOSED TAXI GUIDANCE SIGN
- PROPOSED WIND CONE
- PROPOSED ELECTRICAL STRUCTURE (MANHOLE, HANDHOLE, SPLICE CAN) — MH HH SC

DATE	REVISION
3/6/13	ADDED TXY END INDICATOR LIGHTS

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PROPOSED ELECTRICAL PLAN - HOMERUNS AND VAULT

13
13 of 44 sheets

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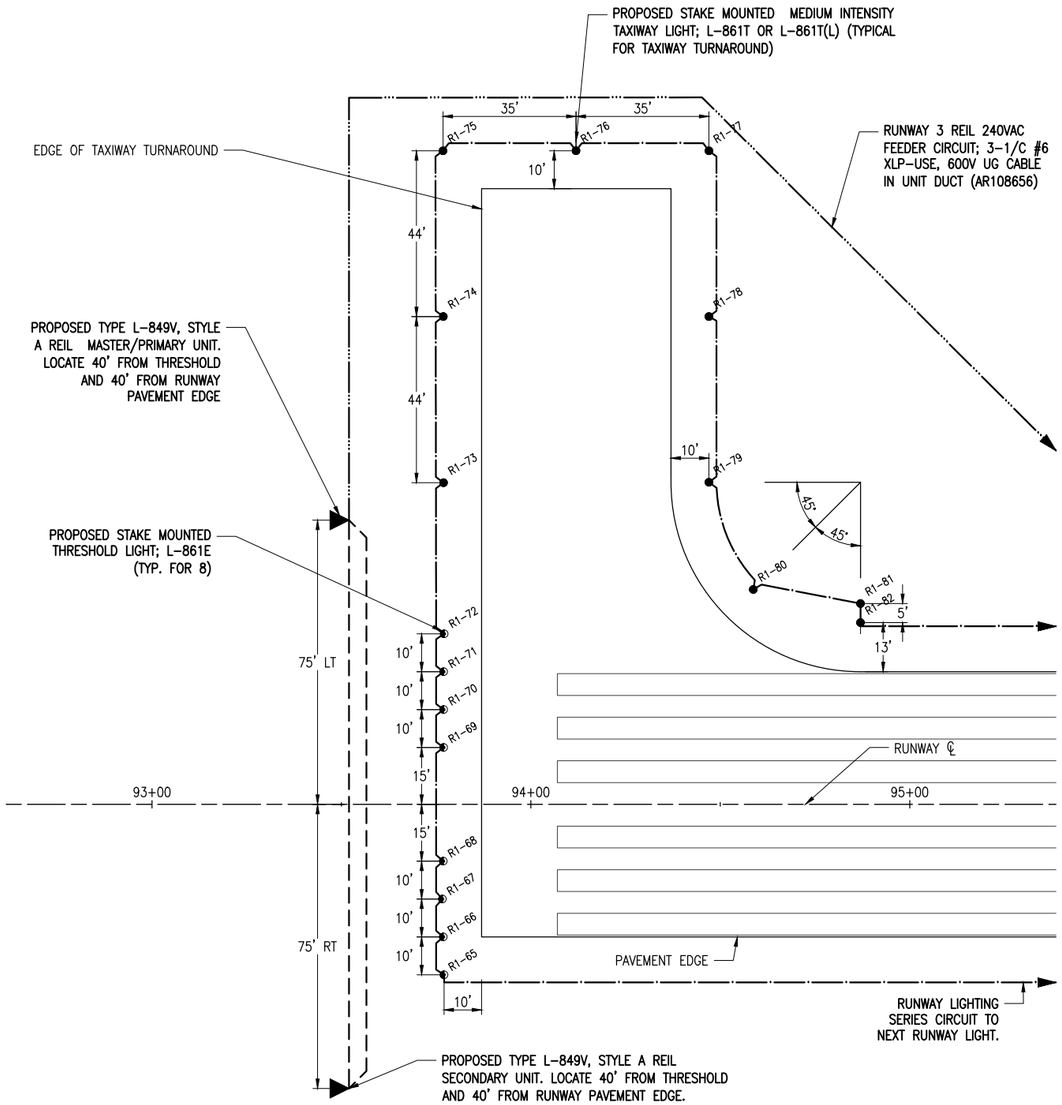

PROPOSED RUNWAY END 3 THRESHOLD LIGHTING DETAILS

SCALE: 1" = 20' (FOR 22"x34" SHEET)

AIRFIELD LIGHTING NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. 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.
3. PROPOSED RUNWAY, THRESHOLD, AND TAXIWAY LIGHTS SHALL BE PLACED 10' (FT.) FROM THE PAVEMENT EDGE UNLESS SHOWN OTHERWISE ON THESE CONSTRUCTION DRAWINGS. PROPOSED TAXI GUIDANCE SIGNS SHALL BE LOCATED SUCH THAT THE CLOSEST SIDE OF THE SIGN IS 15' FROM THE PAVEMENT EDGE, UNLESS SHOWN OTHERWISE.
4. PROPOSED RUNWAY LIGHTS, THRESHOLD 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.
5. PROPOSED CABLE FOR RUNWAY AND TAXIWAY LIGHTING SHALL BE INSTALLED APPROXIMATELY 12' FROM THE PAVEMENT EDGE. CABLES SHALL BE PLACED A MINIMUM OF 18" BELOW FINISHED GRADE.
6. 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 AS DETAILED HEREIN.
7. 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.
8. PROPOSED RUNWAY LIGHTS SHALL BE FITTED WITH LENSES IN ACCORDANCE WITH THE "LIGHT LENS SCHEDULE". ALL PROPOSED TAXIWAY LIGHTS WILL BE FITTED WITH 360° BLUE LENSES.
9. ALL PROPOSED RUNWAY, THRESHOLD, AND TAXIWAY LIGHTS SHALL BE TAGGED BY THE CONTRACTOR IN ACCORDANCE WITH THE LIGHT NUMBERS SHOWN ON THESE CONSTRUCTION DRAWINGS.
10. SEE "TAXI GUIDANCE SIGN SCHEDULE" FOR INFO ON SIGN LEGENDS.
11. 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.
12. HOMERUN CABLES FOR A RESPECTIVE CIRCUIT THAT ARE INSTALLED IN CONDUIT OR DUCT SHALL BE RUN TOGETHER IN THE SAME RACEWAY OR DUCT.
13. EXISTING AIRFIELD LIGHTING CABLES IN AREAS OF NEW WORK SHALL BE DISCONNECTED & REMOVED WHERE IN CONFLICT WITH NEW CONSTRUCTION. IN OTHER AREAS CABLES MAY BE ABANDONED IN PLACE.
14. THE CONTRACTOR IS REQUIRED TO FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE NEW WORK, WITH EARTH MATERIAL. THE AREAS SHALL BE COMPACTED TO PREVENT FUTURE SETTLEMENT AND FERTILIZED, SEEDED, AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908 RESPECTIVELY. THIS WORK WILL BE CONSIDERED AS AN INCIDENTAL ITEM AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
15. SEE "PROPOSED REIL DETAILS AND NOTES" SHEET AND SPECIAL PROVISION SPECS FOR REQUIREMENTS ON INSTALLATION OF REILS ON RUNWAY 3 END.
16. NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

DATE	REVISION
4/6/13	UPDATED LIGHT NUMBERS

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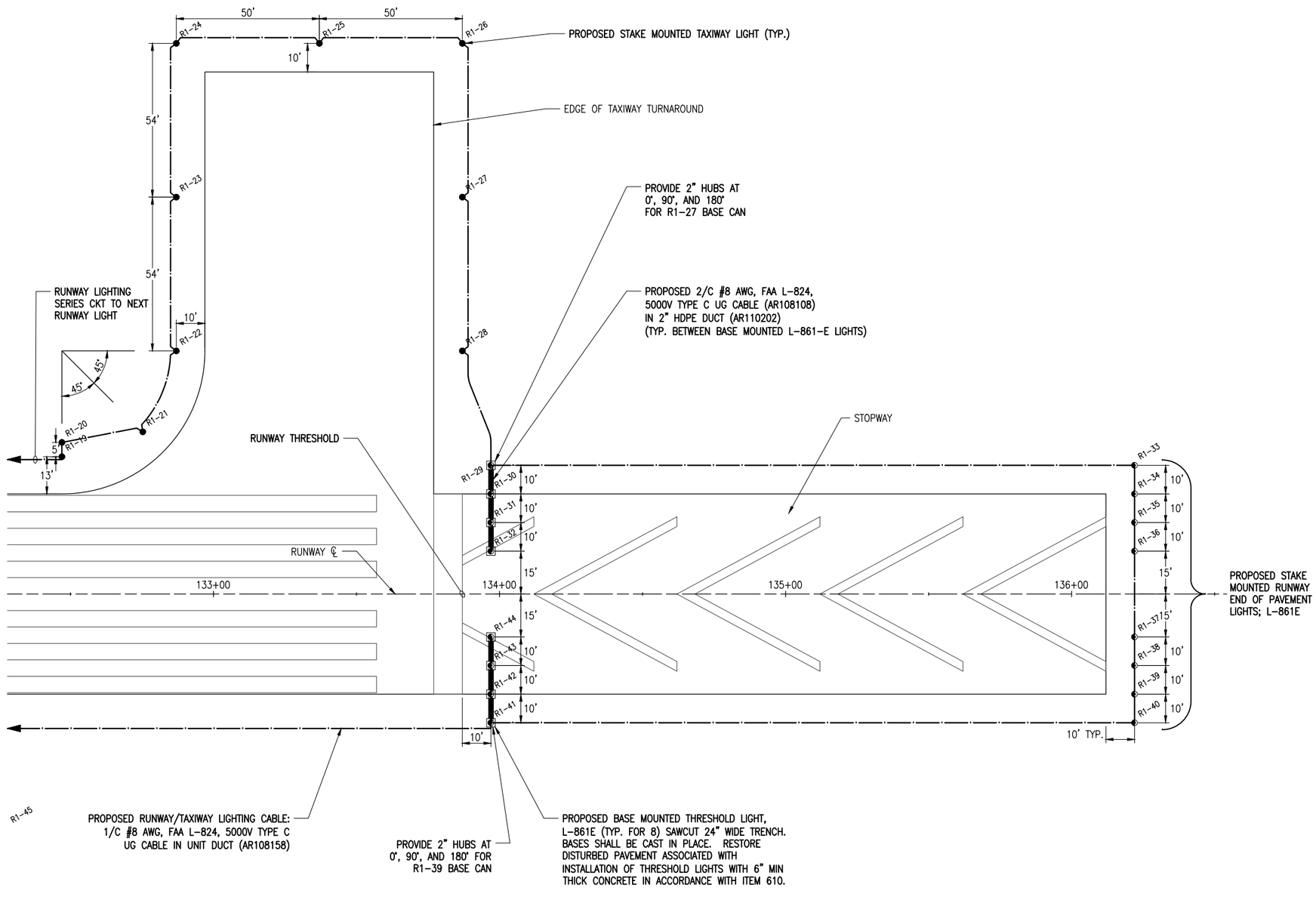
RUNWAY 3 THRESHOLD DETAILS & AIRFIELD LIGHTING NOTES

14
14 of 44 sheets



PROPOSED RUNWAY END 21 THRESHOLD LIGHTING DETAILS

SCALE: 1" = 20' (FOR 22"x34" SHEET)

REVISION	DATE
UPDATED LIGHT NUMBERS	4/6/13

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

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REPLACE AIRFIELD LIGHTING, REILS & VADIS

RUNWAY 21 THRESHOLD DETAILS

LIGHT LOCATION TABLE

TAG NO.	NORTHING	EASTING	STATION	OFFSET	LT/RT	REFERENCE ALIGNMENT
R1-1	2528671.20	1273014.12	4+40.38	53.8	RT	TAXIWAY A
R1-2	2528673.79	1272988.60	4+23.73	34.3	RT	TAXIWAY A
R1-3	2528689.84	1272968.61	3+99.16	27.0	RT	TAXIWAY A
R1-4	2528731.00	1272940.16	3+49.16	27.0	RT	TAXIWAY A
R1-5	2528819.04	1272879.20	2+42.04	27.0	RT	TAXIWAY A
R1-6	2528907.12	1272818.24	1+34.92	27.0	RT	TAXIWAY A
R1-7	2528948.24	1272789.79	0+84.92	27.0	RT	TAXIWAY A
R1-8	2528978.14	1272783.32	0+56.65	38.7	RT	TAXIWAY A
R1-9	2528997.29	1272804.44	0+52.92	67.0	RT	TAXIWAY A
R1-10	2529001.34	1272801.60	118+02.39	48.1	LT	RUNWAY 3-21
R1-11	2529023.28	1272827.86	118+36.47	45.0	LT	RUNWAY 3-21
R1-12	2529131.12	1272983.31	120+25.66	45.0	LT	RUNWAY 3-21
R1-13	2529238.96	1273138.75	122+14.85	45.0	LT	RUNWAY 3-21
R1-14	2529355.82	1273307.18	124+19.85	45.0	LT	RUNWAY 3-21
R1-15	2529467.22	1273467.75	126+15.28	45.0	LT	RUNWAY 3-21
R1-16	2529578.62	1273628.33	128+10.71	45.0	LT	RUNWAY 3-21
R1-17	2529690.02	1273788.90	130+06.14	45.0	LT	RUNWAY 3-21
R1-18	2529801.42	1273949.47	132+01.57	45.0	LT	RUNWAY 3-21
R1-19	2529824.85	1273988.50	132+47.00	48.0	LT	RUNWAY 3-21
R1-20	2529820.74	1273991.35	132+47.00	53.0	LT	RUNWAY 3-21
R1-21	2529833.81	1274016.71	132+75.28	56.7	LT	RUNWAY 3-21
R1-22	2529817.25	1274042.46	132+87.00	85.0	LT	RUNWAY 3-21
R1-23	2529773.09	1274073.10	132+87.00	138.8	LT	RUNWAY 3-21
R1-24	2529728.93	1274103.74	132+87.00	192.5	LT	RUNWAY 3-21
R1-25	2529757.43	1274144.82	133+37.00	192.5	LT	RUNWAY 3-21
R1-26	2529785.93	1274185.90	133+87.00	192.5	LT	RUNWAY 3-21
R1-27	2529830.09	1274155.26	133+87.00	138.8	LT	RUNWAY 3-21
R1-28	2529874.25	1274124.62	133+87.00	85.0	LT	RUNWAY 3-21
R1-29	2529912.82	1274110.04	133+97.00	45.0	LT	RUNWAY 3-21
R1-30	2529921.04	1274104.34	133+97.00	35.0	LT	RUNWAY 3-21
R1-31	2529929.25	1274098.64	133+97.00	25.0	LT	RUNWAY 3-21
R1-32	2529937.47	1274092.94	133+97.00	15.0	LT	RUNWAY 3-21
R1-33	2530041.08	1274294.90	136+22.00	45.0	LT	RUNWAY 3-21
R1-34	2530049.29	1274289.20	136+22.00	35.0	LT	RUNWAY 3-21
R1-35	2530057.51	1274283.50	136+22.00	25.0	LT	RUNWAY 3-21
R1-36	2530065.72	1274277.80	136+22.00	15.0	LT	RUNWAY 3-21
R1-37	2530090.37	1274260.70	136+22.00	15.0	RT	RUNWAY 3-21
R1-38	2530098.59	1274255.00	136+22.00	25.0	RT	RUNWAY 3-21
R1-39	2530106.81	1274249.30	136+22.00	35.0	RT	RUNWAY 3-21
R1-40	2530115.02	1274243.60	136+22.00	45.0	RT	RUNWAY 3-21
R1-41	2529986.77	1274058.73	133+97.00	45.0	RT	RUNWAY 3-21
R1-42	2529978.55	1274064.44	133+97.00	35.0	RT	RUNWAY 3-21
R1-43	2529970.33	1274070.14	133+97.00	25.0	RT	RUNWAY 3-21
R1-44	2529962.12	1274075.84	133+97.00	15.0	RT	RUNWAY 3-21
R1-45	2529875.37	1273898.16	132+01.57	45.0	RT	RUNWAY 3-21
R1-46	2529763.97	1273737.59	130+06.14	45.0	RT	RUNWAY 3-21
R1-47	2529652.57	1273577.02	128+10.71	45.0	RT	RUNWAY 3-21
R1-48	2529541.17	1273416.45	126+15.28	45.0	RT	RUNWAY 3-21
R1-49	2529429.77	1273255.88	124+19.85	45.0	RT	RUNWAY 3-21
R1-50	2529312.91	1273087.45	122+14.85	45.0	RT	RUNWAY 3-21
R1-51	2529205.07	1272932.00	120+25.66	45.0	RT	RUNWAY 3-21
R1-52	2529097.22	1272776.56	118+36.47	45.0	RT	RUNWAY 3-21
R1-53	2528989.38	1272621.12	116+47.28	45.0	RT	RUNWAY 3-21
R1-54	2528881.54	1272465.67	114+58.09	45.0	RT	RUNWAY 3-21
R1-55	2528773.70	1272310.23	112+68.90	45.0	RT	RUNWAY 3-21
R1-56	2528665.85	1272154.79	110+79.71	45.0	RT	RUNWAY 3-21
R1-57	2528558.01	1271999.34	108+90.52	45.0	RT	RUNWAY 3-21
R1-58	2528450.17	1271843.90	107+01.33	45.0	RT	RUNWAY 3-21
R1-59	2528342.32	1271688.46	105+12.14	45.0	RT	RUNWAY 3-21
R1-60	2528221.40	1271514.16	103+00.00	45.0	RT	RUNWAY 3-21
R1-61	2528126.64	1271377.57	101+33.76	45.0	RT	RUNWAY 3-21
R1-62	2528018.79	1271222.13	99+44.57	45.0	RT	RUNWAY 3-21
R1-63	2527910.95	1271066.68	97+55.38	45.0	RT	RUNWAY 3-21
R1-64	2527803.11	1270911.24	95+66.19	45.0	RT	RUNWAY 3-21
R1-65	2527695.31	1270755.86	93+77.00	45.0	RT	RUNWAY 3-21
R1-66	2527686.98	1270761.39	93+77.00	35.0	RT	RUNWAY 3-21
R1-67	2527678.64	1270766.92	93+77.00	25.0	RT	RUNWAY 3-21
R1-68	2527670.54	1270772.79	93+77.00	15.0	RT	RUNWAY 3-21
R1-69	2527645.97	1270790.00	93+77.00	15.0	LT	RUNWAY 3-21
R1-70	2527637.75	1270795.70	93+77.00	25.0	LT	RUNWAY 3-21
R1-71	2527629.53	1270801.40	93+77.00	35.0	LT	RUNWAY 3-21
R1-72	2527621.39	1270807.20	93+77.00	45.0	LT	RUNWAY 3-21
R1-73	2527588.50	1270829.79	93+76.94	84.9	LT	RUNWAY 3-21
R1-74	2527552.44	1270854.74	93+76.88	128.8	LT	RUNWAY 3-21
R1-75	2527516.46	1270879.63	93+76.82	172.5	LT	RUNWAY 3-21

LIGHT LOCATION TABLE

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R1-76	2527536.46	1270908.46	94+11.91	172.5	LT	RUNWAY 3-21
R1-77	2527556.46	1270937.29	94+47.00	172.5	LT	RUNWAY 3-21
R1-78	2527592.41	1270912.35	94+47.00	128.8	LT	RUNWAY 3-21
R1-79	2527628.35	1270887.41	94+47.00	85.0	LT	RUNWAY 3-21
R1-80	2527658.27	1270880.91	94+58.72	56.7	LT	RUNWAY 3-21
R1-81	2527677.45	1270902.04	94+87.00	53.0	LT	RUNWAY 3-21
R1-82	2527681.58	1270899.17	94+87.00	48.0	LT	RUNWAY 3-21
R1-83	2527729.16	1270962.54	95+66.19	45.0	LT	RUNWAY 3-21
R1-84	2527837.00	1271117.98	97+55.38	45.0	LT	RUNWAY 3-21
R1-85	2527944.85	1271273.43	99+44.57	45.0	LT	RUNWAY 3-21
R1-86	2528052.69	1271428.87	101+33.76	45.0	LT	RUNWAY 3-21
R1-87	2528147.45	1271565.46	103+00.00	45.0	LT	RUNWAY 3-21
R1-88	2528268.38	1271739.76	105+12.14	45.0	LT	RUNWAY 3-21
R1-89	2528376.22	1271895.20	107+01.33	45.0	LT	RUNWAY 3-21
R1-90	2528484.06	1272050.65	108+90.52	45.0	LT	RUNWAY 3-21
R1-91	2528591.91	1272206.09	110+79.71	45.0	LT	RUNWAY 3-21
R1-92	2528699.75	1272361.53	112+68.90	45.0	LT	RUNWAY 3-21
R1-93	2528807.59	1272516.98	114+58.09	45.0	LT	RUNWAY 3-21
R1-94	2528915.44	1272672.42	116+47.28	45.0	LT	RUNWAY 3-21
R1-95	2528924.96	1272691.50	116+68.39	48.1	LT	RUNWAY 3-21
R1-96	2528920.91	1272694.34	0+53.08	67.0	LT	TAXIWAY A
R1-97	2528933.97	1272719.72	0+56.78	38.7	LT	TAXIWAY A
R1-98	2528917.38	1272745.47	0+85.08	27.0	LT	TAXIWAY A
R1-99	2528876.26	1272773.92	1+35.08	27.0	LT	TAXIWAY A
R1-100	2528788.31	1272834.79	2+42.04	27.0	LT	TAXIWAY A
R1-101	2528700.18	1272895.79	3+49.22	27.0	LT	TAXIWAY A
R1-102	2528659.06	1272924.24	3+99.22	27.0	LT	TAXIWAY A
R1-103	2528634.75	1272941.07	4+28.79	27.0	LT	TAXIWAY A
R1-104	2528620.94	1272946.22	4+43.07	30.6	LT	TAXIWAY A
R1-105	2528606.29	1272944.19	4+53.97	40.6	LT	TAXIWAY A

TAXI GUIDANCE SIGN SCHEDULE

SIGN NUMBERS	LOCATION	SIDE A	SIDE B
R1-TGS1	TAXIWAY A INTERSECTION WITH RUNWAY 21-3 (AT HOLD LINE)	A 21-3	RAMP ↑
R1-TGS2	RUNWAY 3 INTERSECTION WITH RUNWAY 14-32	14-32	BLANK
R1-TGS3	RUNWAY 21 INTERSECTION WITH RUNWAY 32-14	32-14	BLANK
R2-TGS1**	RUNWAY 32 INTERSECTION WITH RUNWAY 3-21	3-21	BLANK
R2-TGS2**	RUNWAY 14 INTERSECTION WITH RUNWAY 21-3	21-3	BLANK
T2-TGS1**	TURF TAXIWAY INTERSECTION WITH RUNWAY 21-3	21-3	BLANK

** UNLIGHTED SIGN

TAXI GUIDANCE SIGN LEGEND

A — TYPE L-858L LOCATION SIGN - YELLOW LEGEND AND BORDER ON A BLACK BACKGROUND

13-31 — TYPE L-858R MANDATORY INSTRUCTION SIGN - BLACK OUTLINE ON OUTSIDE EDGE OF WHITE LEGEND ON A RED BACKGROUND

RAMP ↑ — TYPE L-858Y DIRECTION, DESTINATION, AND BOUNDARY SIGN - BLACK LEGEND ON A YELLOW BACKGROUND

BLANK — BLANK - BLACK BACKGROUND

TAXI GUIDANCE SIGN NOTES

1. THE PROPOSED LIGHTED TAXI GUIDANCE SIGNS SHALL CONFORM TO ADVISORY CIRCULAR 150/5345 44J (OR LATEST ISSUE IN FORCE) AND BE FAA-APPROVED FOR TYPE L-858Y OR L-858Y(L) DIRECTION, DESTINATION, AND BOUNDARY SIGNS (BLACK LEGEND ON YELLOW BACKGROUND); TYPE L-858R OR L-858R(L) MANDATORY INSTRUCTION SIGN (BLACK OUTLINE ON OUTSIDE EDGE OF WHITE LEGEND ON RED BACKGROUND); AND/OR TYPE L-858L OR L-858L(L) LOCATION SIGN (YELLOW LEGEND AND BORDER ON BLACK BACKGROUND). THE SIGNS SHALL BE SIZE 1, 18-IN. SIGN FACE WITH A 12-IN. LEGEND; STYLE 2, POWERED FROM A 4.8 TO 6.6 AMP SERIES LIGHTING CIRCUIT; CLASS 2, FOR OPERATION FROM -40 DEGREES F TO 131 DEGREES F; MODE 2, TO WITHSTAND WIND LOADS OF 200 M.P.H., BASE-MOUNTED, DOUBLE-SIDED, AS SPECIFIED ON THE PLANS.

2. THE PROPOSED UNLIGHTED TAXI GUIDANCE SIGNS SHALL CONFORM TO ADVISORY CIRCULAR 150/5345-44J (OR LATEST ISSUE IN FORCE) AND BE FAA-APPROVED FOR TYPE L-858 TAXIWAY AND RUNWAY SIGNS. THE SIGNS SHALL BE SIZE 1, 18-IN. SIGN FACE WITH A 12-IN. LEGEND; STYLE 4, UNLIGHTED SIGNS; MODE 2, TO WITHSTAND WIND LOADS OF 200 M.P.H., BASE-MOUNTED.

LIGHT LENS SCHEDULE

LIGHT NUMBERS	LENS	ORIENTATION	FIXTURE TYPE
R1-1 TO R1-10	BLUE	---	L-861T OR L-861T(L)
R1-11 TO R1-18	CLEAR WHITE/YELLOW	YELLOW SIDE FACING SOUTHWEST (TOWARD RUNWAY 3 APPROACH)	L-861
R1-19 TO R1-28	BLUE	---	L-861T OR L-861T(L)
R1-29 TO R1-32	RED/GREEN	GREEN SIDE FACING NORTHEAST (TOWARD RUNWAY 21 APPROACH)	L-861E
R1-33 TO R1-40	RED/RED	---	L-861E
R1-41 TO R1-44	RED/GREEN	GREEN SIDE FACING NORTHEAST (TOWARD RUNWAY 21 APPROACH)	L-861E
R1-45 TO R1-54	CLEAR WHITE/YELLOW	YELLOW SIDE FACING SOUTHWEST (TOWARD RUNWAY 3 APPROACH)	L-861
R1-55 TO R1-64	CLEAR WHITE/YELLOW	YELLOW SIDE FACING NORTHEAST (TOWARD RUNWAY 21 APPROACH)	L-861
R1-65 TO R1-72	RED/GREEN	GREEN SIDE FACING SOUTHWEST (TOWARD RUNWAY 3 APPROACH)	L-861E
R1-73 TO R1-82	BLUE	---	L-861T OR L-861T(L)
R1-83 TO R1-92	CLEAR WHITE/YELLOW	YELLOW SIDE FACING NORTHEAST (TOWARD RUNWAY 21 APPROACH)	L-861
R1-93 TO R1-94	CLEAR WHITE/YELLOW	YELLOW SIDE FACING SOUTHWEST (TOWARD RUNWAY 3 APPROACH)	L-861
R1-95 TO R1-105	BLUE	---	L-861T OR L-861T(L)

REVISION	DATE
ADDED 4 TXY END INDICATOR LTS	3/6/13

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A00550
Filename C-642-SCHD.dwg
Scale NOT TO SCALE
Date 12/14/2012

LAYOUT	KNL	11/17/12
DRAWN	ESC	11/21/12
REVIEWED	CAH/KNL	12/7/12

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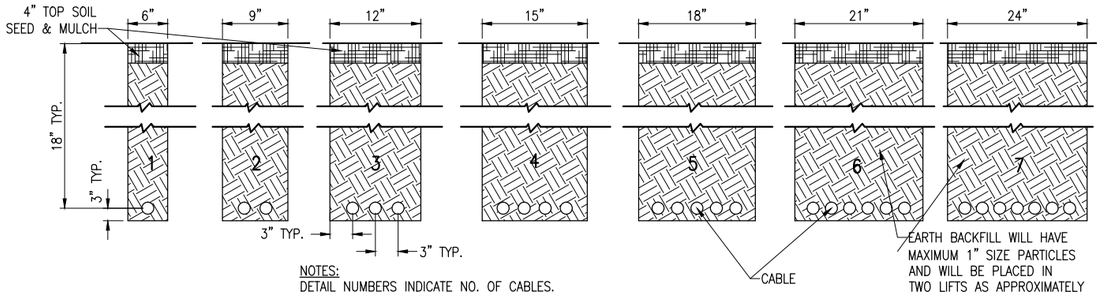
REPLACE AIRFIELD LIGHTING, REILS & VADIS

AIRFIELD LIGHTING SCHEDULES AND LIGHT LOCATION TABLE



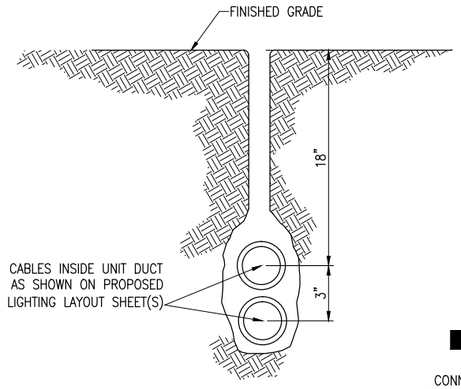
NOTES:
DETAIL NUMBERS INDICATE NO. OF CABLES.

TRENCHES WITH MORE THAN SEVEN CABLES SHALL BE INCREASED 3" IN WIDTH FOR EACH ADDITIONAL CABLE; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.

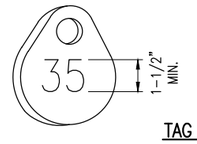
DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.

CABLE TRENCHES
(NOT TO SCALE)

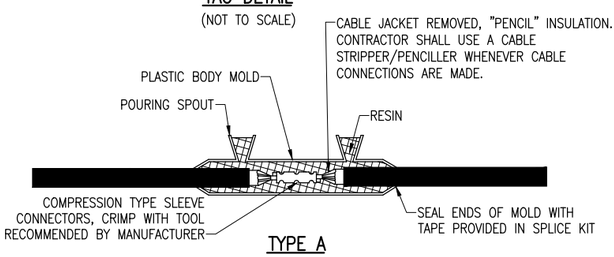


PLOWED CABLE
(NOT TO SCALE)



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

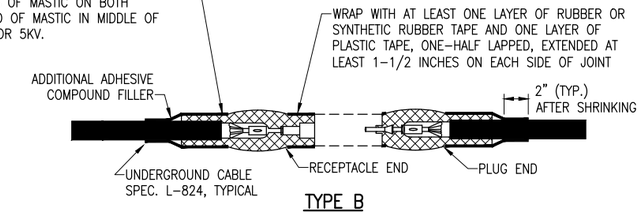
TAG DETAIL
(NOT TO SCALE)



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

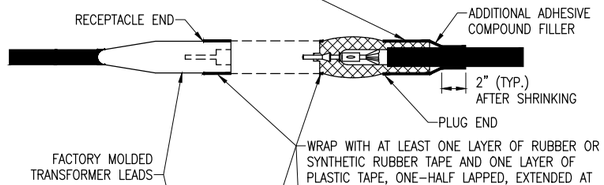
CONTINUOUS HEAT SHRINK TUBING PLACED OVER THE ENTIRE L-823 CONNECTOR(S) BOTH MALE AND FEMALE AT ALL 5KV JUNCTIONS. THE HEAT SHRINK TUBING SHALL BE APPROXIMATELY 18" IN LENGTH WITH 6 INCHES OF MASTIC ON BOTH ENDS AND VOID OF MASTIC IN MIDDLE OF TUBE RATED FOR 5KV.



TYPE B

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

HEAT SHRINKABLE TUBING WITH INTERNAL ADHESIVE. HEAT SHRINKABLE TUBING SHALL EXTEND FROM THE CABLE TO AT LEAST AN INCH PAST THE COMPLETED CONNECTION.



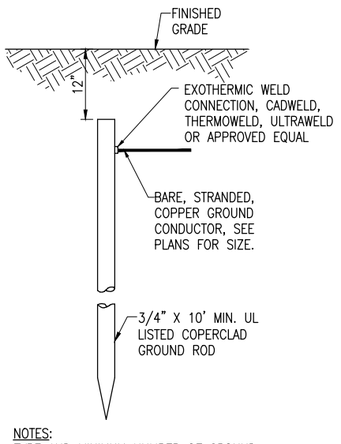
TYPE C
FOR SPLICES AT RUNWAY AND TAXIWAY LIGHTS

NOTES:
SEE PROPOSED LIGHTING LAYOUT SHEET(S) FOR SPLICE TYPE.

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

CABLE SPLICES
(NOT TO SCALE)

PER FAA AC 150/5340-30G 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 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.

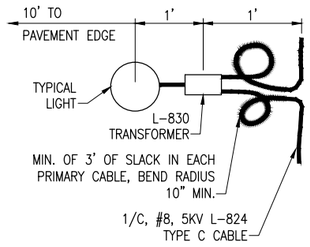


NOTES:
TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.

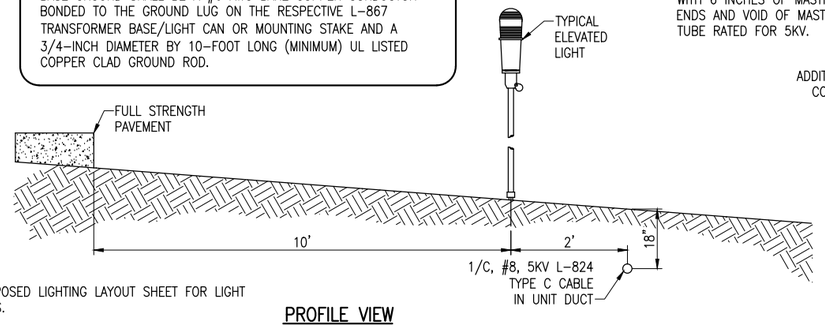
THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.

COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.

GROUND ROD
(NOT TO SCALE)



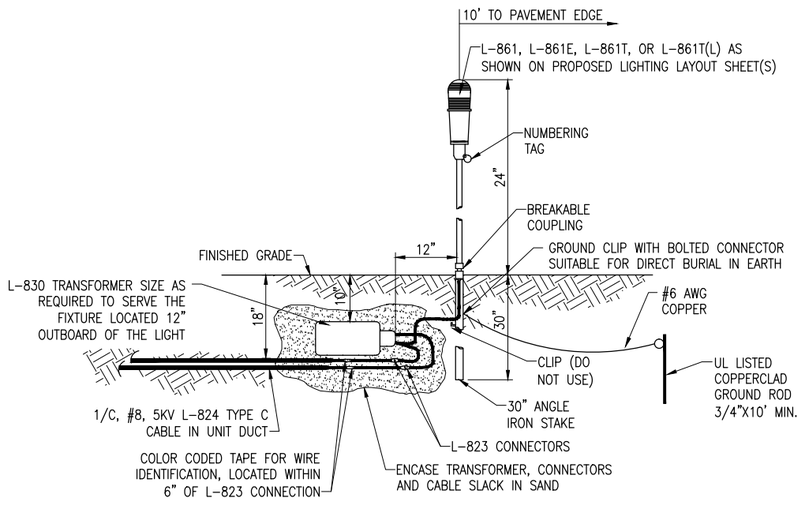
PLAN VIEW



NOTES:
SEE PROPOSED LIGHTING LAYOUT SHEET FOR LIGHT LOCATIONS.

PROFILE VIEW

LIGHT AND CABLE INSTALLATION DETAIL
(NOT TO SCALE)



SEE "ELECTRICAL DETAILS SHEET 2" FOR BASE MOUNT LIGHT DETAILS

MEDIUM INTENSITY LIGHT - STAKE MOUNTED
(NOT TO SCALE)

DATE	REVISION
4/6/13	3/4" X 10' L GND ROD FOR AIRFIELD LIGHTS

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename E-501-DETL.dwg
Scale NOT TO SCALE
Date 12/14/2012

LAYOUT	KNL	10/20/12
DRAWN	MLH	01/27/12
REVIEWED	CAH/KNL	12/7/12

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REPLACE AIRFIELD LIGHTING, REILS & VADIS

ELECTRICAL DETAILS SHEET 1

17
17 of 44 sheets

APR 08, 2013 3:58 PM RYAN01552
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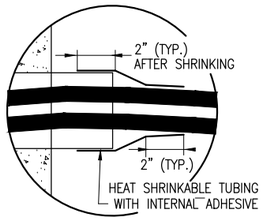
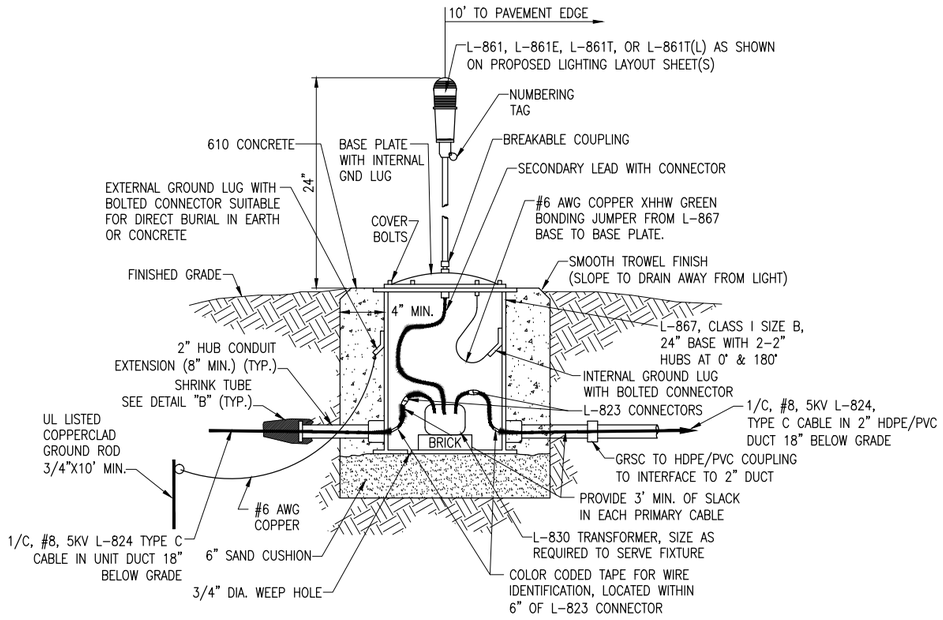


DETAIL "B"
(NOT TO SCALE)



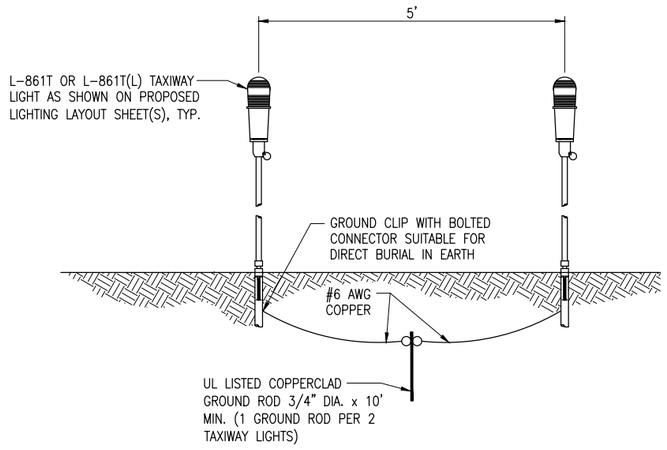
MEDIUM/HIGH INTENSITY LIGHT – BASE MOUNTED

(NOT TO SCALE)

NOTE: SEE PROPOSED ELECTRICAL PLANS FOR LOCATIONS OF BASE MOUNTED LIGHTS WITH 2" DUCT INTERFACE AND LOCATIONS WITH CABLE IN UNIT DUCT INTERFACE.

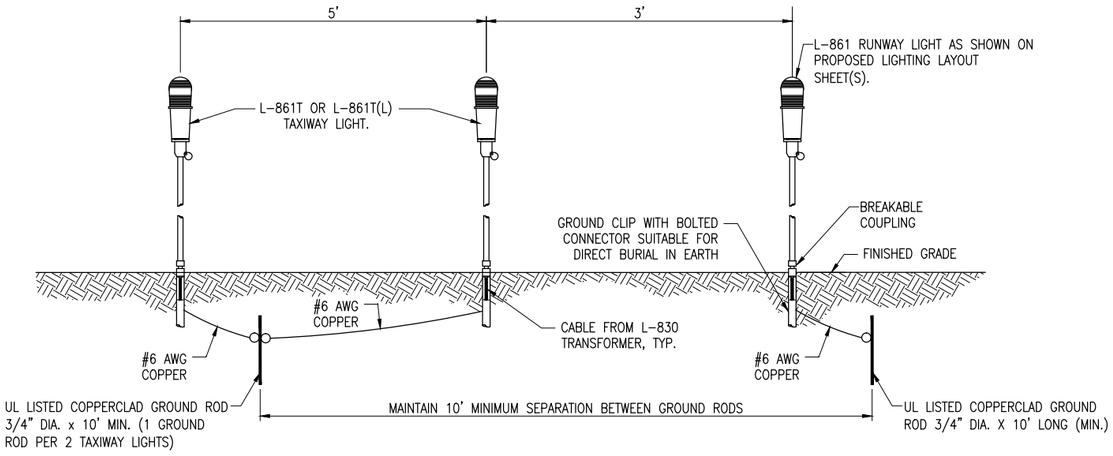
NOTES

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 150/5340-30G 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 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-FEET 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 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. 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 OR USE INSULATION. 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. FOR TAXIWAY LIGHTS THAT ARE SPACED WITH LESS THAN 10 FEET OF SEPARATION BETWEEN THEM PROVIDE ONE 3/4-INCH DIAMETER BY 10-FOOT LONG GROUND ROD PER TWO ADJACENT TAXIWAY LIGHTS.
4. STEEL USED TO MANUFACTURE GROUND RODS SHALL BE 100% DOMESTIC STEEL.
5. 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 2011 NATIONAL ELECTRICAL CODE ARTICLE 250-12.
6. PER FAA 150/5430-30G THE RESISTANCE TO THE GROUND OF THE RESPECTIVE MOUNTING STAKE OR LIGHT BASE (WITH GROUND RCD CONNECTED) MUST BE 25 OHMS OR LESS.
7. FOR EACH GROUNDING ELECTRODE SYSTEM 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 GROUNDING ELECTRODE SYSTEM. IF GROUND RESISTANCE EXCEEDS 25 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. COPIES OF THE GROUND SYSTEM TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT PROJECT REPRESENTATIVE/RESIDENT ENGINEER.



GROUNDING DETAIL FOR ADJACENT TAXIWAY LIGHTS

(NOT TO SCALE)



GROUNDING DETAIL FOR ADJACENT RUNWAY AND TAXIWAY LIGHTS

(NOT TO SCALE)

DATE	REVISION
4/6/13	3/4" X 10' L GND ROD FOR AIRFIELD LTS

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename E-502-DETL.dwg
Scale NOT TO SCALE
Date 12/14/2012

LAYOUT	KNL	10/20/12
DRAWN	MLH	01/27/12
REVIEWED	CAH/KNL	12/7/12

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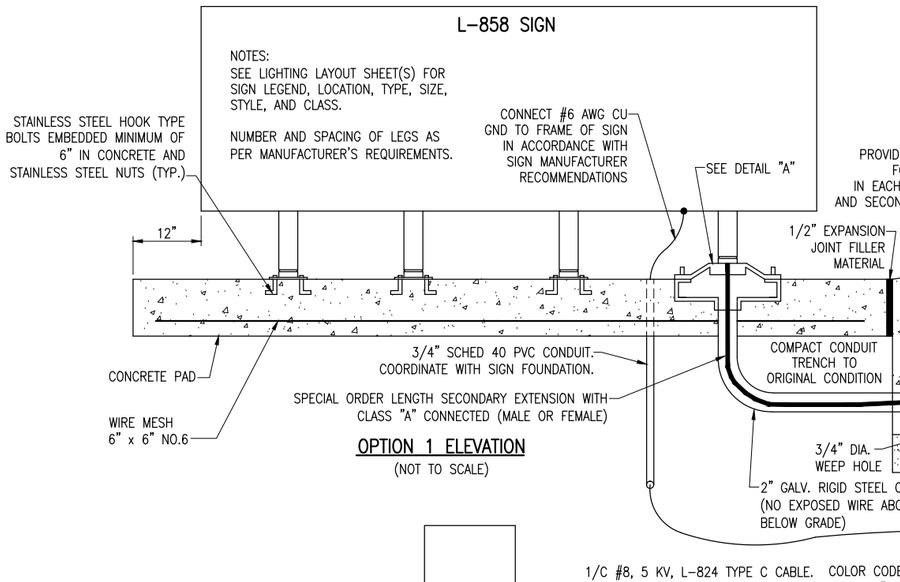
REPLACE AIRFIELD LIGHTING, REILS & VADIS

ELECTRICAL DETAILS SHEET 2

L-858 SIGN

NOTES:
SEE LIGHTING LAYOUT SHEET(S) FOR SIGN LEGEND, LOCATION, TYPE, SIZE, STYLE, AND CLASS.

NUMBER AND SPACING OF LEGS AS PER MANUFACTURER'S REQUIREMENTS.



OPTION 1 ELEVATION
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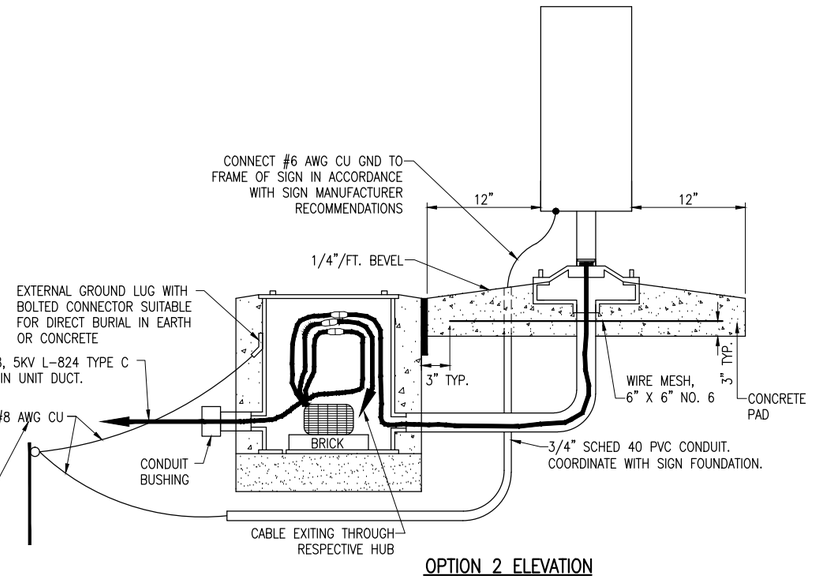
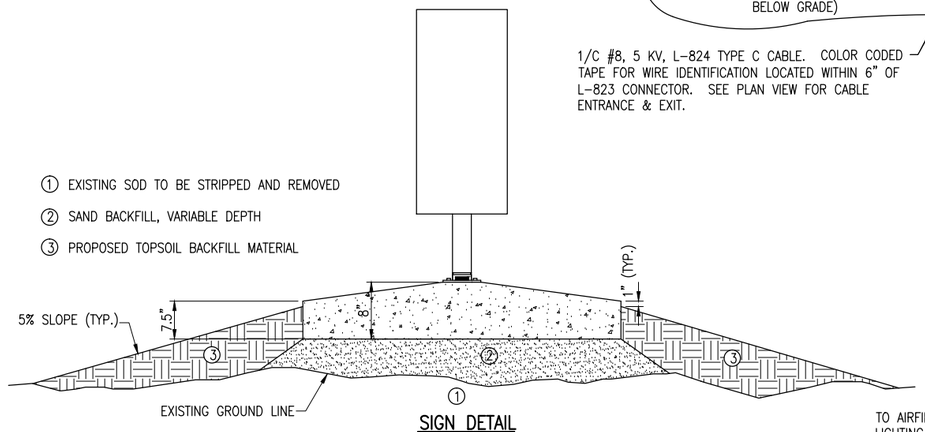


OPTION 2 ELEVATION
(NOT TO SCALE)

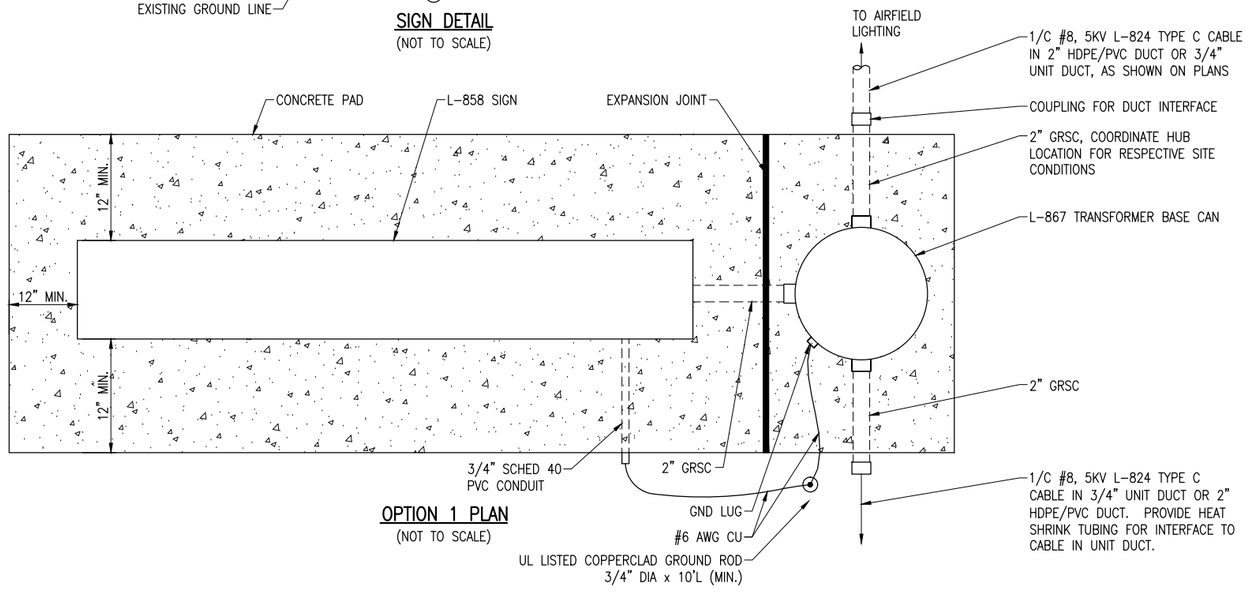
PER FAA AC 150/5340-30G DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, A LIGHT BASE GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH STAKE MOUNTED LIGHT AND EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED 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, TAXI SIGN FRAME, OR MOUNTING STAKE AND A ¾-INCH DIAMETER BY 10-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD. ALSO BOND THE SIGN FRAME TO THE GROUND ROD WITH A #6 AWG BARE COPPER CONDUCTOR.



SIGN DETAIL
(NOT TO SCALE)

GENERAL NOTES

1. SEE LIGHTING LAYOUT SHEET FOR SIGN LEGEND, LOCATION, TYPE, SIZE, STYLE, AND CLASS.
2. SEE ELECTRICAL NOTES SHEETS.



OPTION 1 PLAN
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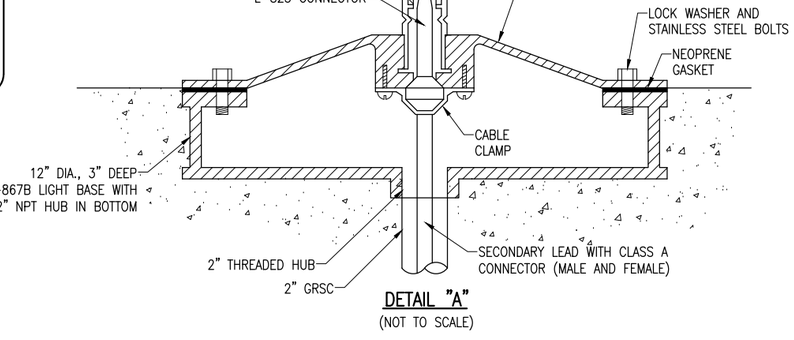

DETAIL "A"
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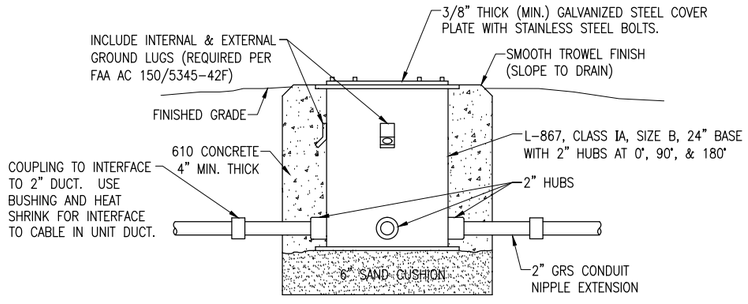

TRANSFORMER BASE/SPLICE CAN DETAIL FOR TAXI SIGN
(NOT TO SCALE)

NOTE:
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 150/5345-42F.

REVISION	DATE
3/4" X 10' L GND ROD	4/6/13

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename E-503-DETL.dwg
Scale NOT TO SCALE
Date 12/14/2012

LAYOUT	KNL	10/20/12
DRAWN	MLH	01/27/12
REVIEWED	CAH/KNL	12/7/12

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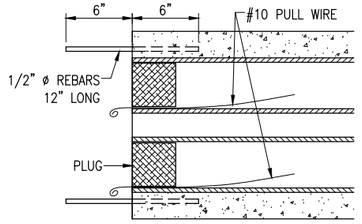
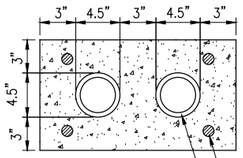
REPLACE AIRFIELD LIGHTING, REILS & VADIS

ELECTRICAL DETAILS SHEET 3

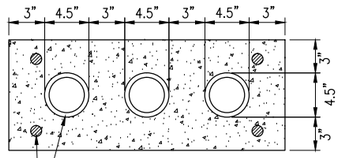
19
19 of 44 sheets



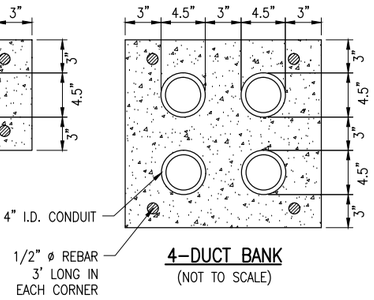
TYPICAL SECTION
(NOT TO SCALE)



2–DUCT BANK
(NOT TO SCALE)



3–DUCT BANK
(NOT TO SCALE)



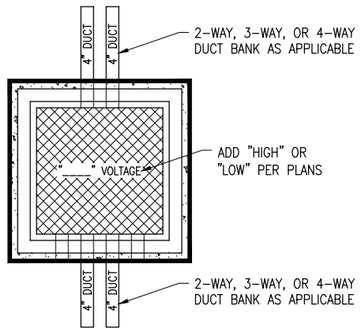
4–DUCT BANK
(NOT TO SCALE)

DUCT BANK NOTES:

1. DIMENSIONS FOR CONCRETE COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
2. INCLUDE DUCT SPACERS AS MANUFACTURED BY UNDERGROUND DEVICES INC., OR APPROVED EQUAL TO MAINTAIN PROPER SEPARATION OF CONDUITS.
3. REBAR IS REQUIRED TO ACCOMMODATE FUTURE DUCT EXTENSIONS & INTERFACE AT DUCT BANK TERMINATIONS. CONCRETE ENCASED DUCT BANKS TERMINATING IN HANDHOLES REQUIRE REBAR AT TERMINATIONS.
4. CONDUITS FOR CONCRETE ENCASED DUCT SHALL BE SCHEDULE 40 PVC CONFORMING TO ITEM 110.
5. MINIMUM DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 18" BELOW FINISHED GRADE.
6. HIGH VOLTAGE AND LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
7. HOMERUN CABLES FOR A RESPECTIVE CIRCUIT SHALL BE INSTALLED IN THE SAME RACEWAY OR DUCT.
8. DUCT INTERFACE TO HANDHOLES OR MANHOLES WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT PAY ITEM.

CABLE & DUCT MARKER NOTES:

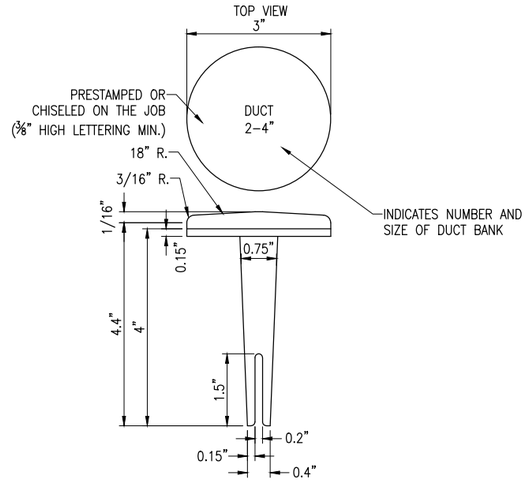
1. THE COST OF ALL TURF AND PAVEMENT DUCT MARKERS SHALL BE INCIDENTAL TO THE DUCT. THE COST OF ALL CABLE MARKERS SHALL BE INCIDENTAL TO THE CABLE.
2. BITUMINOUS PAVEMENT DUCT MARKER AND CONCRETE DUCT MARKER TO BE PROVIDED AT EACH END OF EACH DUCT AS SHOWN ON THE LOCATION PLAN. FOR CONCRETE PAVEMENT, THE LETTER "D" SHALL BE IMPRESSED IN THE PAVEMENT INSTEAD OF THE MARKER. THE LETTER SHALL BE FORMED AS DESCRIBED IN NOTE 4.
3. CABLE MARKERS SHALL BE PLACED AT CHANGES OF DIRECTION AND APPROXIMATELY EVERY 200' ALONG CABLE RUNS.
4. CONCRETE CABLE MARKERS AND DUCT MARKERS SHALL HAVE LETTERS 4" HIGH, 3" WIDE WITH WIDTH OF STROKE ½" AND ¼" DEEP. ALL LETTERS, NUMBERS AND ARROWS TO BE IMPRESSED.



NOTES:

1. LIDS FOR LOW VOLTAGE HANDHOLES SHALL BE LABELED "LOW VOLTAGE". LIDS FOR HIGH VOLTAGE HANDHOLES SHALL BE LABELED "HIGH VOLTAGE". COORDINATE LETTERING WITH MFR.
2. HANDHOLES MAY BE CAST IN PLACE OR PRECAST. PRECAST MANUFACTURERS MUST BE ON THE IDOT (ILLINOIS DEPT. OF TRANSPORTATION) APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS.
3. 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.

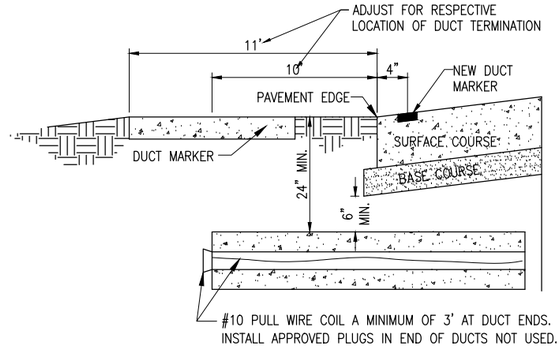
ELECTRICAL HANDHOLE
"NOT TO SCALE"



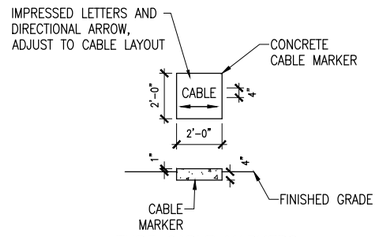
BITUMINOUS PAVEMENT DUCT MARKERS
"NOT TO SCALE"

NOTES:

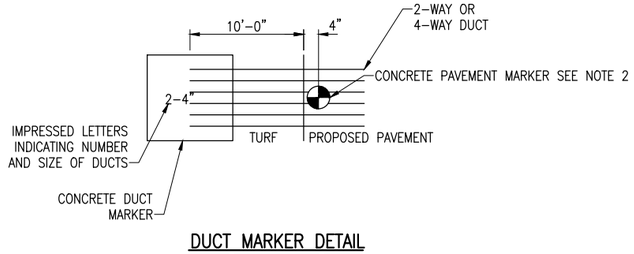
1. TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE.
2. BRASS DUCT MARKERS ARE AVAILABLE FROM G&S FOUNDRY & MANUFACTURING CO., INC., 210 KASKASKIA DRIVE, RED BUD, IL 62278, PHONE: (618)–282–4114



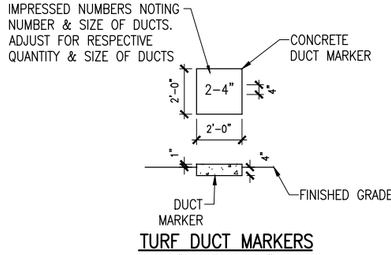
UNDERGROUND ELECTRICAL DUCT
(NOT TO SCALE)



TURF CABLE MARKERS
"NOT TO SCALE"



DUCT MARKER DETAIL
"NOT TO SCALE"



TURF DUCT MARKERS
"NOT TO SCALE"

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA–4217 BLOCK GRANT: 3–17–0062–B20

REVISION	DATE

Hanson Proj. No. 12A0055D
Filename E–504–DETL.dwg
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Date 12/14/2012

LAYOUT	KNL	10/20/12
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REVIEWED	CAH/KNL	12/7/12

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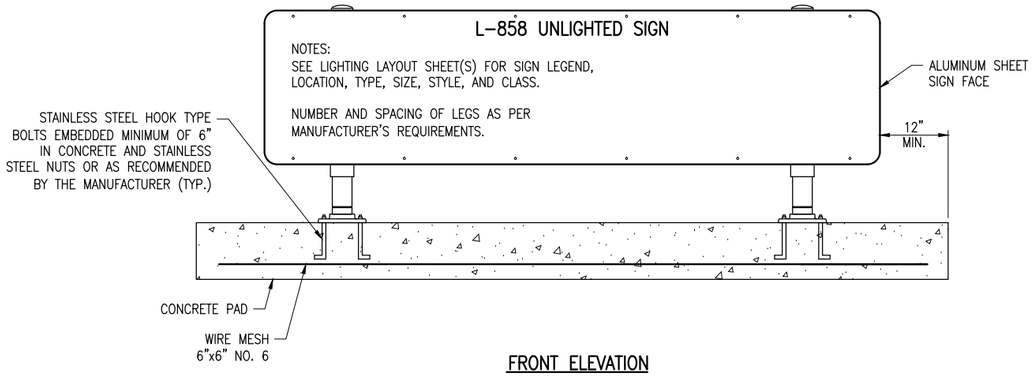
REPLACE AIRFIELD
LIGHTING, REILS & VADIS

ELECTRICAL DETAILS
SHEET 4

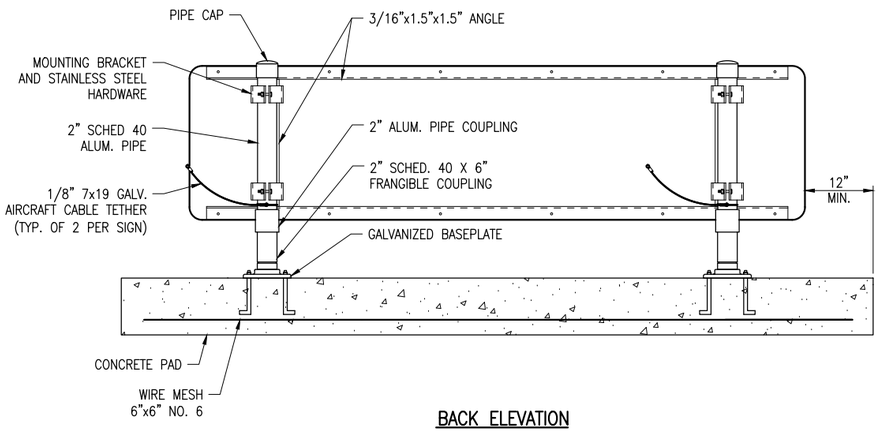
20
20 of 44 sheets



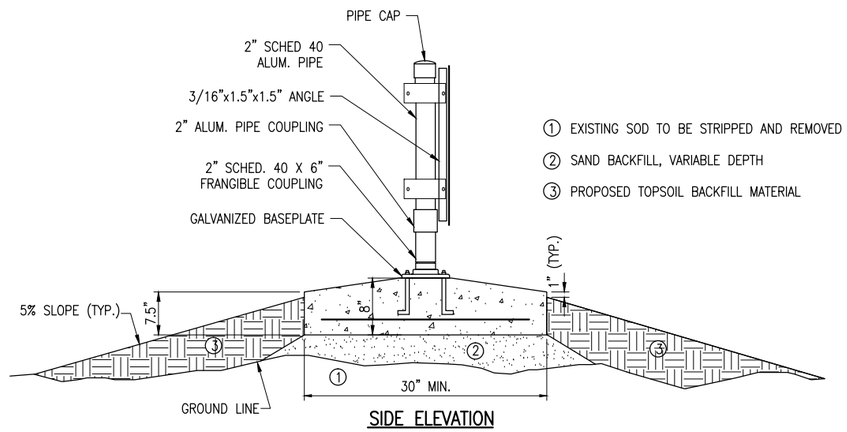
FRONT ELEVATION

UNLIGHTED TAXI GUIDANCE SIGN NOTES

1. THE PROPOSED UNLIGHTED TAXI GUIDANCE SIGNS SHALL CONFORM TO ADVISORY CIRCULAR 150/5345-44J (OR LATEST ISSUE IN FORCE) AND BE FAA-APPROVED FOR TYPE L-858 TAXIWAY AND RUNWAY SIGNS. THE SIGNS SHALL BE SIZE 1, 18-IN. SIGN FACE WITH A 12-IN. LEGEND; STYLE 4, UNLIGHTED SIGNS; MODE 2, TO WITHSTAND WIND LOADS OF 200 M.P.H., BASE-MOUNTED.
2. THE SIGNS SHALL READ AS DESCRIBED ON THE TAXI GUIDANCE SIGN SCHEDULE. THE PROPOSED TAXI GUIDANCE SIGNS WILL BE TYPE L-858-Y DIRECTION, DESTINATION, AND BOUNDARY SIGNS (BLACK LEGEND ON YELLOW BACKGROUND); TYPE L-858-R MANDATORY INSTRUCTION SIGN (BLACK OUTLINE ON OUTSIDE EDGE OF WHITE LEGEND ON RED BACKGROUND); AND TYPE L-858-L LOCATION SIGN (YELLOW LEGEND AND BORDER ON BLACK BACKGROUND).
3. THE CONCRETE USED IN THE CONSTRUCTION OF THESE ITEMS SHALL BE IN ACCORDANCE WITH ITEM 610 STRUCTURAL PORTLAND CEMENT CONCRETE.



BACK ELEVATION



SIDE ELEVATION

UNLIGHTED SIGN DETAILS

(NOT TO SCALE)

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename E-505-DETL.dwg
Scale NOT TO SCALE
Date 12/14/2012

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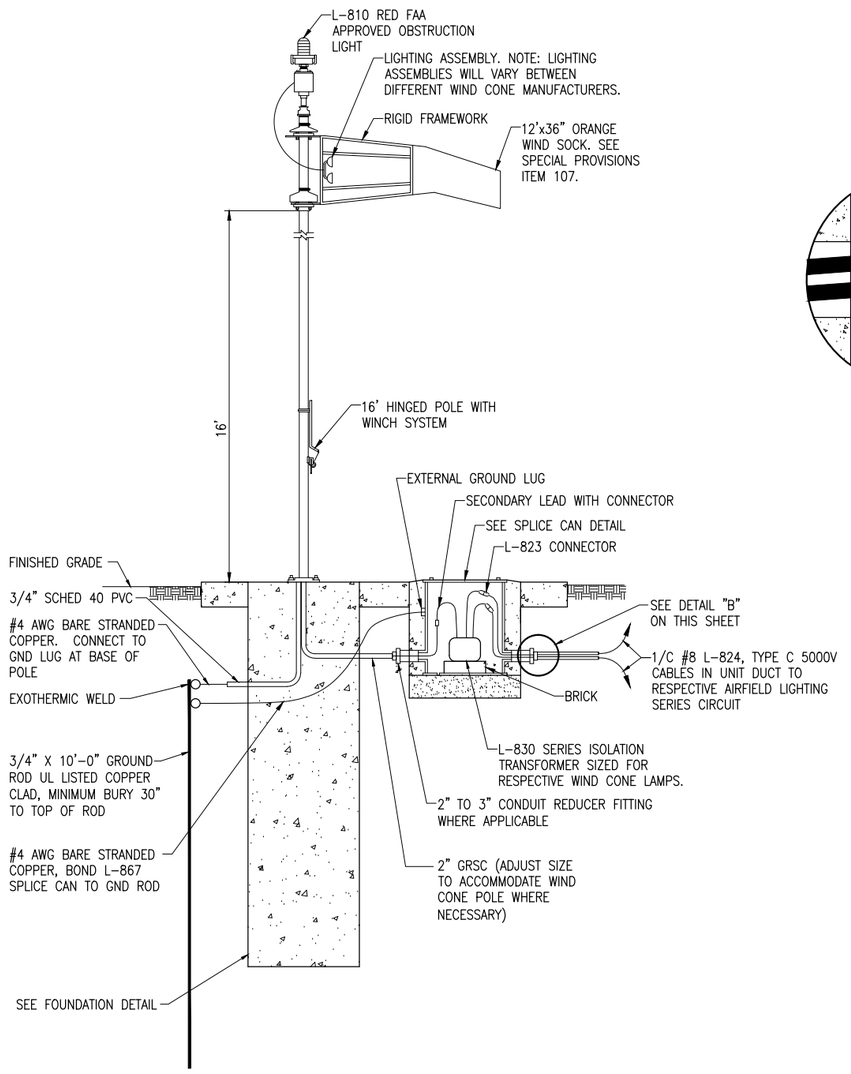
REPLACE AIRFIELD LIGHTING, REILS & VADIS

UNLIGHTED SIGN DETAILS

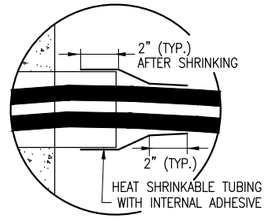


NOTES

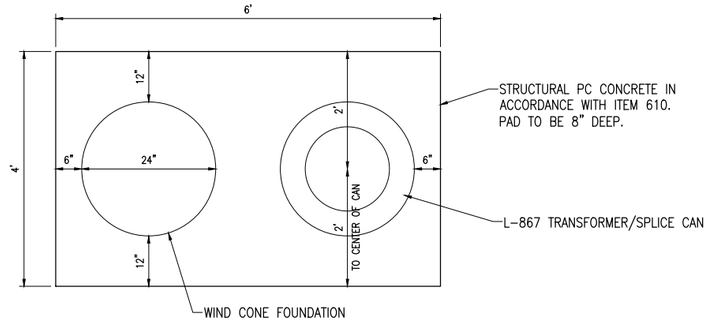
1. WIND CONE SHALL INCLUDE CONSTANT-BRIGHTNESS SERIES CIRCUIT POWER ADAPTER.
2. THE RUNWAY LIGHTING SERIES CIRCUIT IS POWERED BY AN L-828 CLASS 1 – 6.6 AMP OUTPUT CURRENT, STYLE 1-3 BRIGHTNESS STEPS CONSTANT CURRENT REGULATOR. COORDINATE WITH THE RESPECTIVE WIND CONE MANUFACTURER TO PROVIDE A COMPATIBLE AND PROPERLY SIZED SERIES ISOLATION TRANSFORMER.
3. THE EXISTING CONSTANT CURRENT REGULATOR POWERING THE SERIES CIRCUIT FOR THE WIND CONE HAS BEEN SIZED FOR THE RESPECTIVE RUNWAY LIGHTING LOADS AND A WIND CONE THAT HAS A LOAD OF LESS THAN 200VA AND DOES NOT REQUIRE A SERIES ISOLATION TRANSFORMER LARGER THAN A 300 WATT RATING. IN THE EVENT THAT A WIND CONE IS PROPOSED THAT EXCEEDS THIS RATING, THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT THE RESPECTIVE CONSTANT CURRENT REGULATOR IS PROPERLY SIZED FOR THE TOTAL SERIES CIRCUIT LOAD. WHERE A WIND CONE IS PROPOSED THAT REQUIRES LOADS THAT EXCEED THE RATING OF THE RESPECTIVE CONSTANT CURRENT REGULATOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADJUSTMENTS INCLUDING PROVIDING A LARGER CONSTANT CURRENT REGULATOR AND ALL ASSOCIATED CIRCUIT BREAKERS, CONDUITS, WIRING AND VAULT WORK AS APPLICABLE TO ACCOMMODATE THE RESPECTIVE SERIES CIRCUIT LOAD WITH THE WIND CONE.
4. L-807 OR L-807(L) WIND CONE WILL BE PAID FOR UNDER ITEM AR107812 L-807 WC-12' INTERNALLY LIT PER EACH. SPLICE CANS FOR WIND CONE SERIES CIRCUIT TRANSFORMER WILL BE INCIDENTAL TO THE RESPECTIVE WIND CONE PAY ITEM.
5. REBAR SHALL BE MANUFACTURED FROM 100% DOMESTIC STEEL. INCLUDE CERTIFICATION OF 100% DOMESTIC STEEL WITH SHOP DRAWING SUBMITTAL.

INTERNALLY LIGHTED L-807 WIND CONE

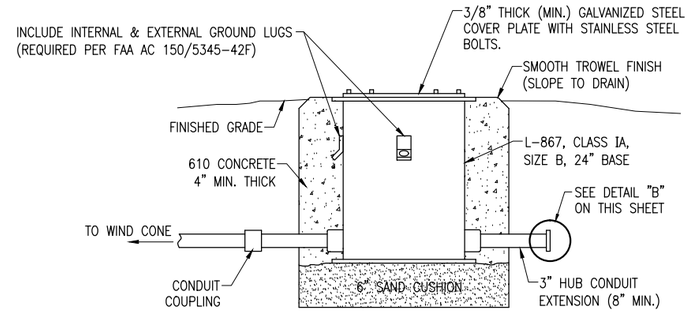
"NOT TO SCALE"



DETAIL "B"
(NOT TO SCALE)

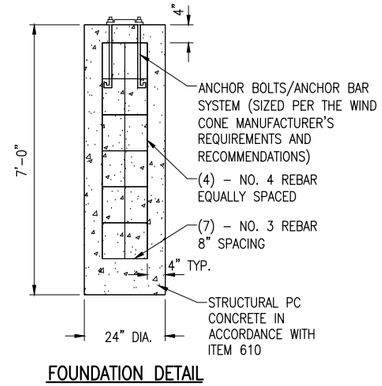


CONCRETE PAD PLAN VIEW
(NOT TO SCALE)



TRANSFORMER/SPLICE CAN DETAIL
(NOT TO SCALE)

NOTES:
1. INCLUDE INTERNAL AND EXTERNAL GROUND LUGS.
2. L-867 CAN FOR WIND CONE SHALL HAVE 2" HUB AT 0°, AND 3" HUB AT 180°. L-867 CAN WITH 2" HUB AT 0°, 2" HUB AT 90°, 2" HUB AT 180° IS ALSO ACCEPTABLE.



FOUNDATION DETAIL
"NOT TO SCALE"

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DATE
03/09/12 UPDATE PER FAA PGL 12-2 & EB67D

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

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Date 12/14/2012

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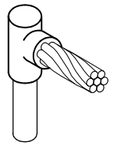
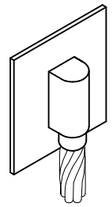
L-807 WIND CONE ELEVATION DETAIL

22
22 of 44 sheets



CABLE TO GROUND ROD



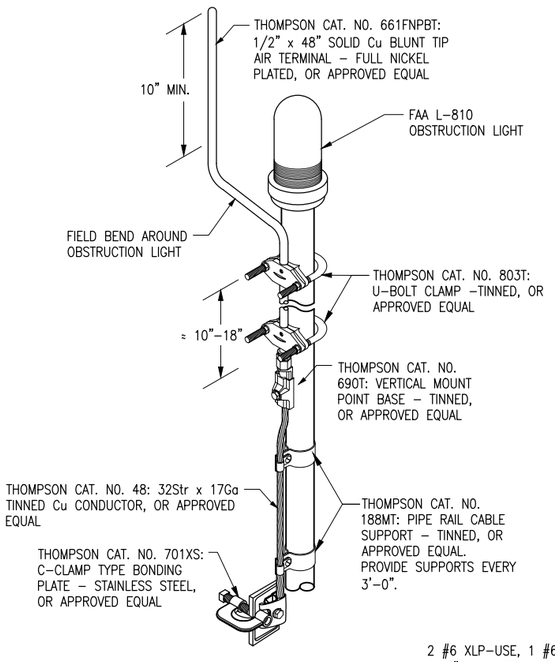
CABLE TO SURFACE

DETAIL NOTES

1. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA OR APPROVED EQUAL. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.
2. 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.
3. VERIFY EXOTHERMIC MOLDS ARE SUITABLE FOR USE WITH THE RESPECTIVE TYPE (SOLID OR STRANDED) & SIZE CONDUCTOR.

EXOTHERMIC WELD DETAILS

NOT TO SCALE

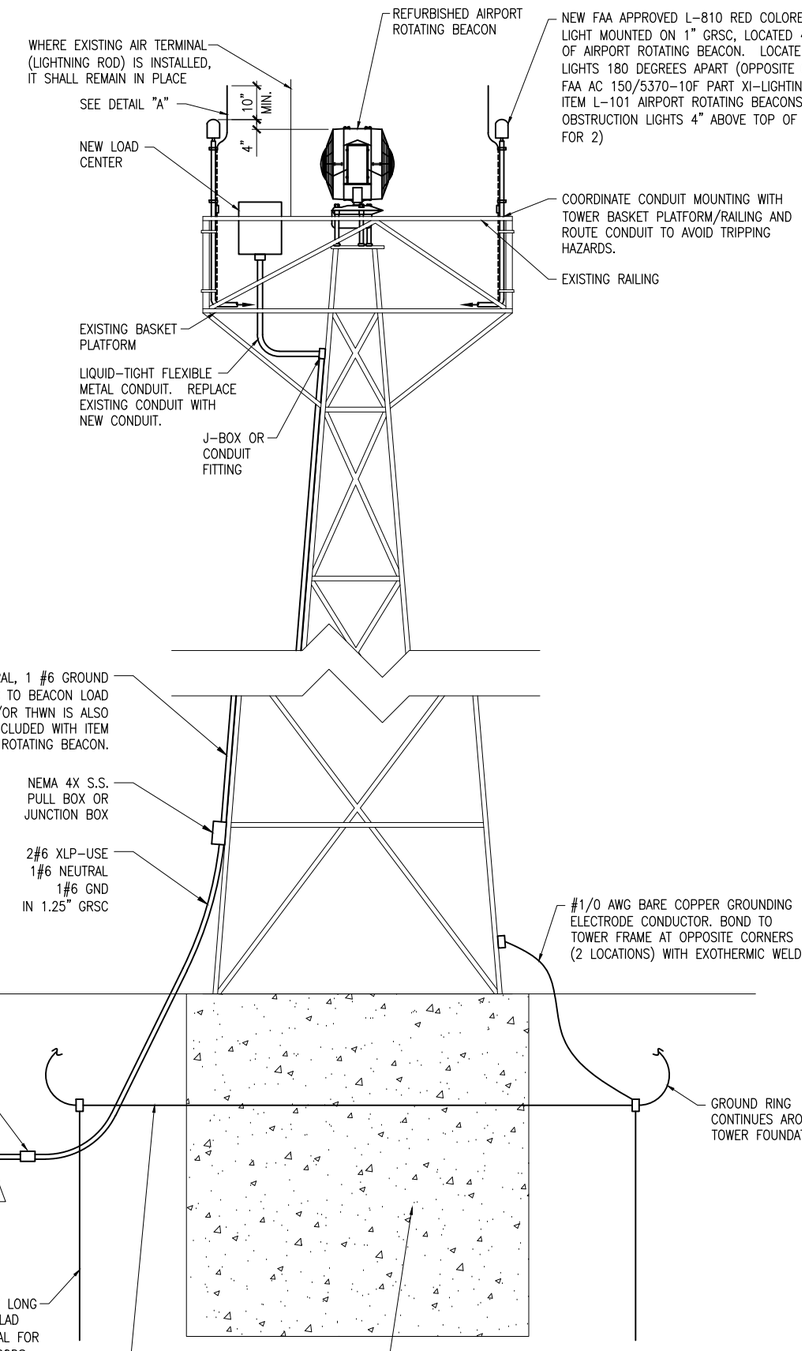


DETAIL A

NOT TO SCALE

NOTES

1. REFERENCES TO THOMPSON ARE THOMPSON LIGHTNING PROTECTION INC., 901 SIBLEY MEMORIAL HWY, ST. PAUL, MN 55188, PHONE: 651–455–7661, 800–777–1230, FAX: 651–455–2545.
2. VERIFY LIGHTNING PROTECTION COMPONENTS AND CATALOG NUMBERS WITH THE RESPECTIVE LIGHTNING PROTECTION EQUIPMENT MANUFACTURER.
3. CLEAN ALL CONNECTIONS TO EXPOSE BARE METAL.



LIGHTNING PROTECTION DETAIL FOR AIRPORT ROTATING BEACON

NOT TO SCALE

AIRPORT ROTATING BEACON LOAD CENTER SCHEDULE

CKT #	DUTY	SIZE	SIZE	DUTY	CKT #
1	BLANK		30A 1P	SURGE PROTECTOR (PHASE A)	2
3	BLANK		30A 1P	SURGE PROTECTOR (PHASE B)	4
5	AIRPORT ROTATING BEACON	15A 1P		BLANK	6
7	OBSTRUCTION LIGHTS	15A 1P		BLANK	8
9	BLANK			BLANK	10
11	BLANK			BLANK	12

GND S/N

100 AMP, 120/240 VAC, 1 PHASE, 3 WIRE, 12 CIRCUIT LOAD CENTER WITH MAIN LUGS IN A NEMA 3R RAIN PROOF ENCLOSURE, SQUARE D CAT. NO. QO112L125GRB WITH EQUIPMENT GROUND BAR KIT OR APPROVED EQUAL. CONFIRM LOAD CENTER IS MADE IN THE USA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT.

NOTES

1. INCLUDE EQUIPT GROUND BAR KIT.
2. ALL BREAKERS SHALL HAVE 10,000 AIC RATING AT 120/240 VAC.
3. PHASE "A" SHALL BE SWITCHED THROUGH A LIGHTING CONTACTOR AT THE VAULT. PHASE "B" SHALL BE UNSWITCHED.
4. INCLUDE ENGRAVED PHENOLIC LEGEND PLATE LABELED ARB PANEL, 120/240 VAC, 1PH, 3W, FED FROM VAULT.
5. SURGE PROTECTORS SHALL BE SUITABLE FOR 120VAC, 1PH, 2W PLUS GROUND, 30KA (MINIMUM) SURGE CURRENT RATING, JOSLYN MODEL 1260–21 OR LIGHTING PROTECTION CORP. MODEL LPC 11765–132, OR APPROVED EQUAL. FURNISH & INSTALL TWO SURGE PROTECTORS (ONE FOR EACH PHASE).
6. LOAD CENTER SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWING SUBMITTAL.

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename E-507-DETL.dwg
Scale AS SHOWN
Date 12/14/2012

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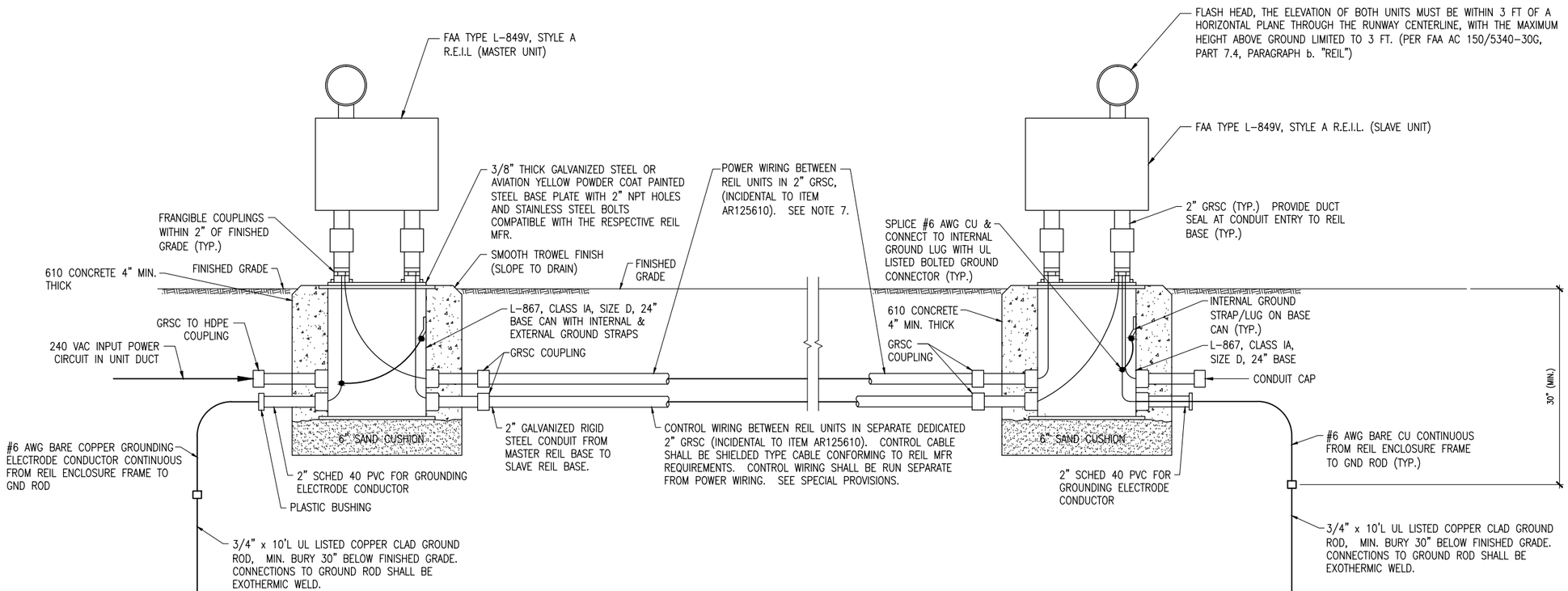
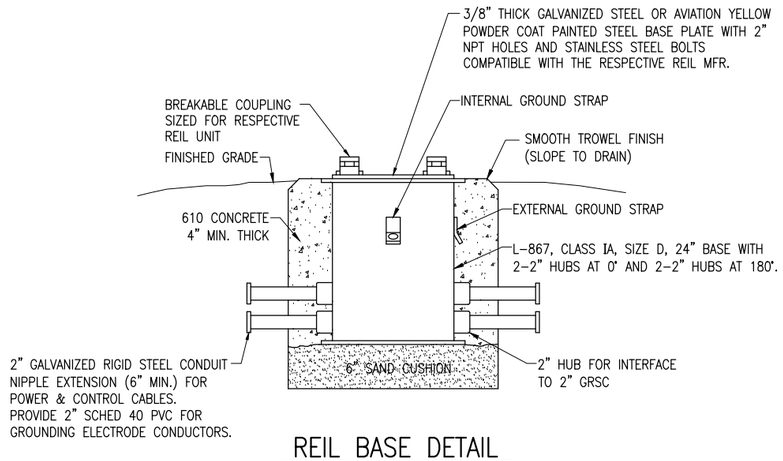
AIRPORT ROTATING BEACON UPGRADE DETAILS AND NOTES



REIL INSTALLATION DETAIL

NOT TO SCALE



REIL BASE DETAIL

NOT TO SCALE

NOTE:
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 150/5345-42F.

REIL INSTALLATION NOTES

1. REILS SHALL BE FAA APPROVED TYPE L-849V, STYLE A (UNIDIRECTIONAL, HIGH INTENSITY, ONE BRIGHTNESS STEP), 240 VAC, 60 HZ INPUT POWER. SEE SPECIAL PROVISION SPECS FOR ADDITIONAL REIL REQUIREMENTS.
2. REILS SHALL BE AIMED AT ANGLE 10 DEGREES VERTICALLY AND TOED OUT 15 DEGREES FROM THE LINE PARALLEL TO THE RUNWAY CENTERLINE.
3. REILS WILL BE PAID FOR UNDER ITEM AR125610 "REILS" PER PAIR.
4. ANY AND ALL TRENCHES AND DISTURBED AREAS WILL BE BACKFILLED AND RESTORED TO A SMOOTH GRADE AND SEEDED TO THE SATISFACTION OF THE ENGINEER. ALL TRENCH SETTLEMENT SHALL BE CORRECTED FOR A PERIOD OF ONE YEAR. RESTORATION, GRADING, SEEDING, AND MULCHING OF AREAS DISTURBED DURING THE REIL INSTALLATION AND ASSOCIATED CABLE WILL BE INCIDENTAL TO ITEM AR125610 REILS.
5. GROUNDING FOR REILS. GROUNDING FOR REILS SHALL CONFORM TO THE RESPECTIVE REIL MANUFACTURER'S INSTALLATION INSTRUCTIONS, AS DETAILED ON THE PLANS, AND AS SPECIFIED HEREIN. THE POWER CIRCUIT TO MASTER REIL UNIT, AND EACH SLAVE UNIT, SHALL INCLUDE AN EQUIPMENT GROUND WIRE OF THE SAME SIZE AND TYPE AS THE PHASE CONDUCTORS. FURNISH AND INSTALL A 3/4-INCH DIAMETER BY 10-FOOT LONG COPPER CLAD GROUND ROD AT EACH REIL UNIT. GROUND RODS SHALL BE BURIED 30" MINIMUM BELOW GRADE. BOND EACH REIL UNIT HOUSING AND THE REIL BASE CAN TO THE RESPECTIVE GROUND ROD IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WITH A #6 AWG BARE SOLID OR STRANDED (PER REIL MANUFACTURER REQUIREMENTS) COPPER GROUNDING ELECTRODE CONDUCTOR. ALL CONNECTIONS TO GROUND RODS SHALL BE EXOTHERMIC WELD AS MANUFACTURED BY CADWELD, THERMOWELD, ULTRAWELD OR APPROVED EQUAL. CONNECTIONS TO REIL UNIT FRAMES SHALL BE AS RECOMMENDED BY THE MANUFACTURER OR WITH UL LISTED GROUNDING CONNECTORS. PROVIDE MULTI TERMINAL EQUIPMENT GROUND BAR OR INDIVIDUAL GROUND LUGS TO TERMINATE EACH GROUND WIRE IN EACH REIL UNIT.
6. REFER TO PROPOSED ELECTRICAL SITE PLANS FOR SITING AND ORIENTATION OF REIL'S.
7. POWER WIRING BETWEEN THE REIL MASTER UNIT AND THE REIL SLAVE UNIT SHALL CONFORM TO THE RESPECTIVE REIL MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS. POWER WIRING SHALL BE TYPE XLP-USE, TYPE XHHW, TYPE THWN, OR EQUIVALENT TYPE WITH 600 VOLT RATED INSULATION. POWER WIRING BETWEEN THE MASTER AND SLAVE UNITS WILL VARY DEPENDING UPON THE MANUFACTURER, POWER WIRING BETWEEN THE MASTER REIL UNIT AND SLAVE REIL UNIT SHALL BE AS FOLLOWS FOR THE RESPECTIVE REIL MANUFACTURER AND MODEL:
   - FOR FLASH TECHNOLOGY TYPE L-849V MODEL 812 SERIES, 240 VAC REILS THE POWER WIRING BETWEEN THE MASTER UNIT AND THE SLAVE UNIT SHALL BE MINIMUM 2#12 XLP-USE, #12 GROUND (WITH GREEN INSULATION), FOR POWER FROM A 20 AMP (MAX), 2-POLE, 240 VAC BREAKER.
   - FOR STROBE APPROACH LIGHTING TYPE L-849V MODEL PSUV-101/102 240 VAC REILS THE POWER WIRING BETWEEN THE MASTER UNIT AND THE SLAVE UNIT SHALL BE MINIMUM 2#12 XLP-USE, 1#12 GROUND (WITH GREEN INSULATION), FOR POWER FROM A 20 AMP (MAX), 2-POLE, 240 VAC BREAKER.
   - FOR ADB AIRFIELD SOLUTIONS TYPE L-849V, ORDERING CODE 44A1161 SERIES, 240 VAC REILS THE POWER WIRING BETWEEN THE MASTER UNIT AND THE SLAVE UNIT SHALL BE 2#12 XLP-USE, 1#12 XLP-USE FOR "ON" SIGNAL, 1#12 NEUTRAL (WITH WHITE INSULATION), 1#12 GROUND (WITH GREEN INSULATION), FOR POWER FROM A 20 AMP (MAX), 2 POLE, 240 VAC BREAKER.
   - CONTRACTOR SHALL CONFIRM WIRING WITH THE RESPECTIVE REIL MANUFACTURER AND CONFORM TO THEIR REQUIREMENTS.

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
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Date 12/14/2012

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DRAWN	DAW	10/24/12
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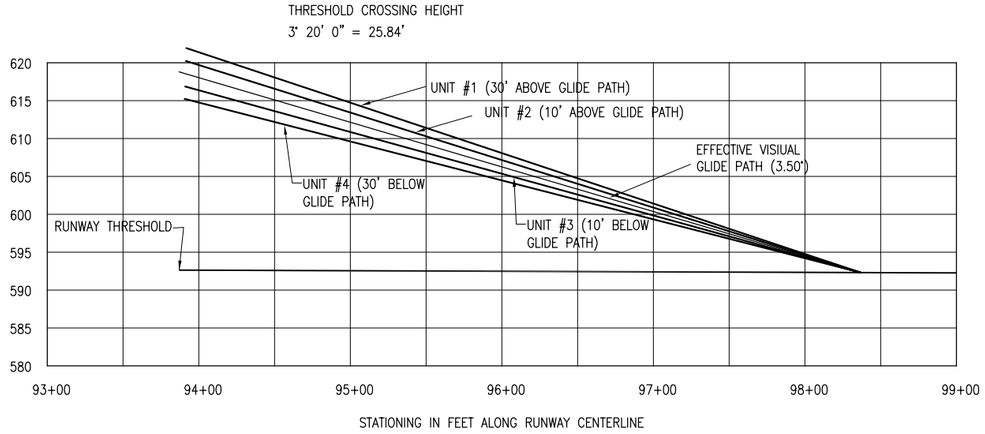
REPLACE AIRFIELD LIGHTING, REILS & VADIS

PROPOSED REIL DETAILS AND NOTES

P.A.P.I. NOTES

1. THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON PROPOSED ELECTRICAL PLAN SHEETS.
2. THE PROPOSED CONCRETE FOUNDATION PIERS SHALL BE AS DETAILED ON THE "PAPI FOUNDATION DETAILS" SHEET.
3. EACH PAPI UNIT SHALL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 592.26.
4. THE PROPOSED PAPI SIGNAL SHALL BE VISIBLE FOR A 10 DEGREE ZONE ON EITHER SIDE OF THE RUNWAY CENTERLINE IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5340-30G, FIGURE 80. THE PAPI SIGNAL SHALL NOT BE VISIBLE BEYOND THE 10 DEGREE ZONE WITH A TOLERANCE OF PLUS 0.5 DEGREES, MINUS 0.0 DEGREES. IT WILL BE THE PAPI MANUFACTURER'S RESPONSIBILITY TO COMPLY WITH THIS REQUIREMENT. ANY FIELD ADJUSTMENTS WILL BE IN ACCORDANCE WITH THE PAPI MANUFACTURER'S INSTRUCTIONS AND WILL BE CONSIDERED AS INCIDENTAL TO THE INSTALLATION OF THE PROPOSED PAPI AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
5. THE PAPI INSTALLATION WILL BE PAID FOR UNDER ITEM: AR125615 PAPI (L-880 SYSTEM) PER EACH

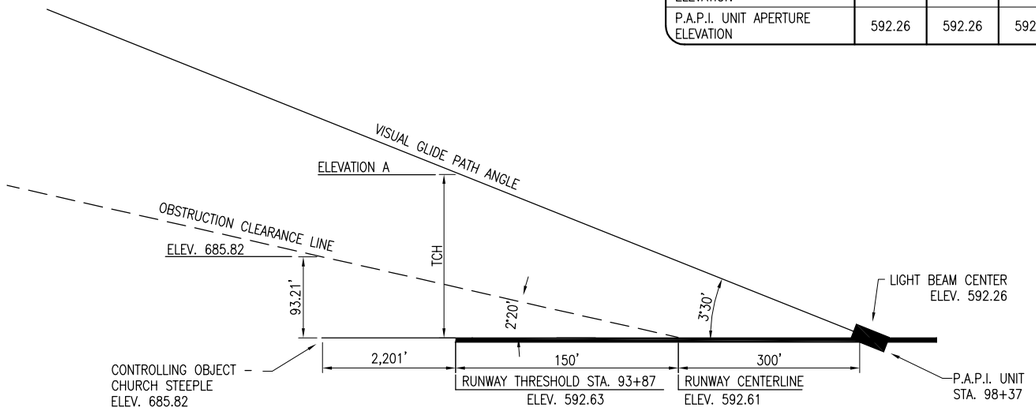


RUNWAY CENTERLINE PROFILE

NOTE:

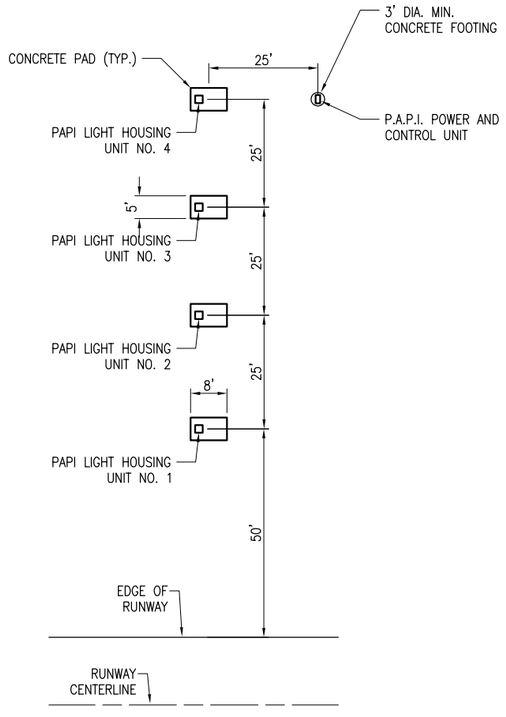
LOWEST ON-COURSE ANGLE – 3° 20' ELEVATION A = 618.82 TCH = 25.84'

PAPI DATA-RUNWAY END 3					
	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P.A.P.I. UNIT #3	P.A.P.I. UNIT #4	P AND C UNIT
DISTANCE FROM RUNWAY ℄	85'	110'	135'	160'	160'
AIMING ANGLE	4°00'	3°40'	3°20'	3°00'	N/A
APPROXIMATE GROUND ELEVATION	590.4	592.3	589.6	589.0	591.3
P.A.P.I. UNIT APERTURE ELEVATION	592.26	592.26	592.26	592.26	N/A



P.A.P.I. AIMING DIAGRAM 3 END

"NOT TO SCALE"



P.A.P.I. LAYOUT DETAIL

"NOT TO SCALE"

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

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PROPOSED PAPI DETAILS AND NOTES RUNWAY END 3

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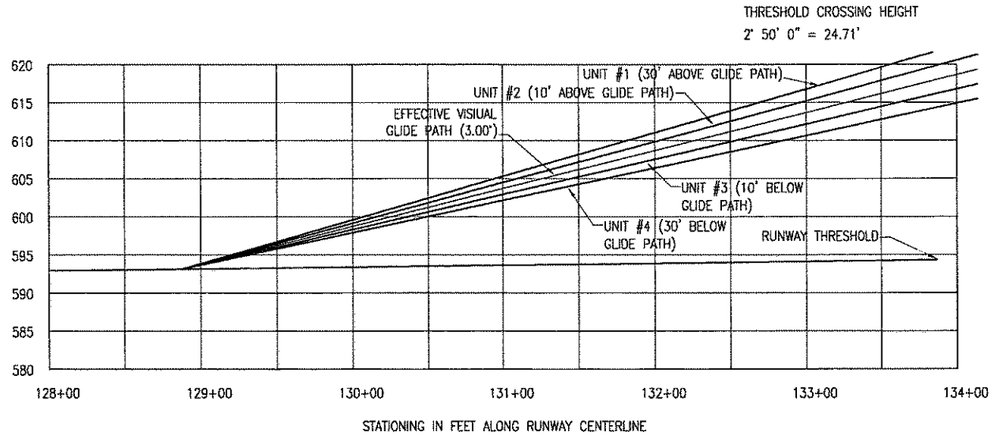
25 of 44 sheets

P.A.P.I. NOTES

1. THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON PROPOSED ELECTRICAL PLAN SHEETS.
2. THE PROPOSED CONCRETE FOUNDATION PIERS SHALL BE AS DETAILED ON THE "PAPI FOUNDATION DETAILS" SHEET.
3. EACH PAPI UNIT SHALL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 592.26.
4. THE PROPOSED PAPI SIGNAL SHALL BE VISIBLE FOR A 10 DEGREE ZONE ON EITHER SIDE OF THE RUNWAY CENTERLINE IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5340-30G, FIGURE 80. THE PAPI SIGNAL SHALL NOT BE VISIBLE BEYOND THE 10 DEGREE ZONE WITH A TOLERANCE OF PLUS 0.5 DEGREES, MINUS 0.0 DEGREES. IT WILL BE THE PAPI MANUFACTURER'S RESPONSIBILITY TO COMPLY WITH THIS REQUIREMENT. ANY FIELD ADJUSTMENTS WILL BE IN ACCORDANCE WITH THE PAPI MANUFACTURER'S INSTRUCTIONS AND WILL BE CONSIDERED AS INCIDENTAL TO THE INSTALLATION OF THE PROPOSED PAPI AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
5. THE PAPI INSTALLATION WILL BE PAID FOR UNDER ITEM: AR125615 PAPI (L-880 SYSTEM) PER EACH

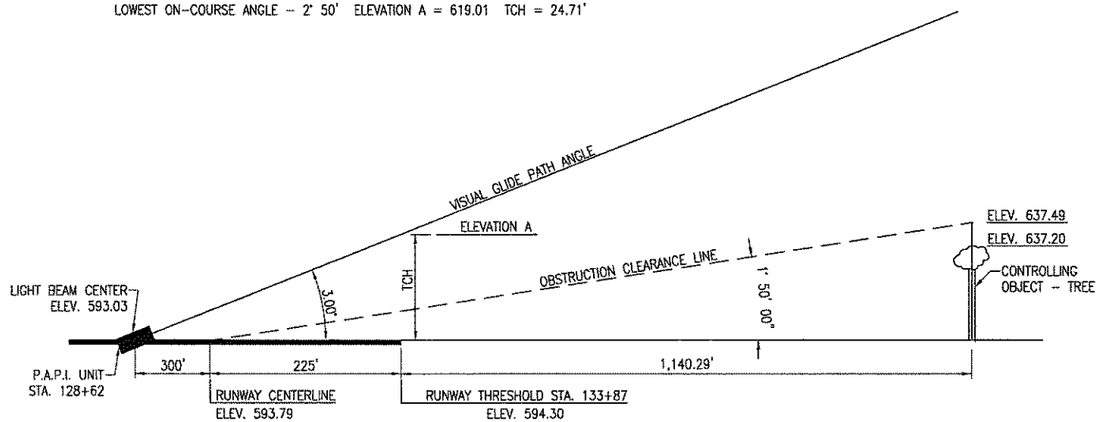


RUNWAY CENTERLINE PROFILE

PAPI DATA-RUNWAY END 21					
	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P.A.P.I. UNIT #3	P.A.P.I. UNIT #4	P AND C UNIT
DISTANCE FROM RUNWAY ℄	85'	110'	135'	160'	160'
AIMING ANGLE	3°30'	3°10'	2°50'	2°30'	N/A
APPROXIMATE GROUND ELEVATION	591.3	591.0	591.0	590.3	590.1
P.A.P.I. UNIT APERTURE ELEVATION	593.03	593.03	593.03	593.03	N/A

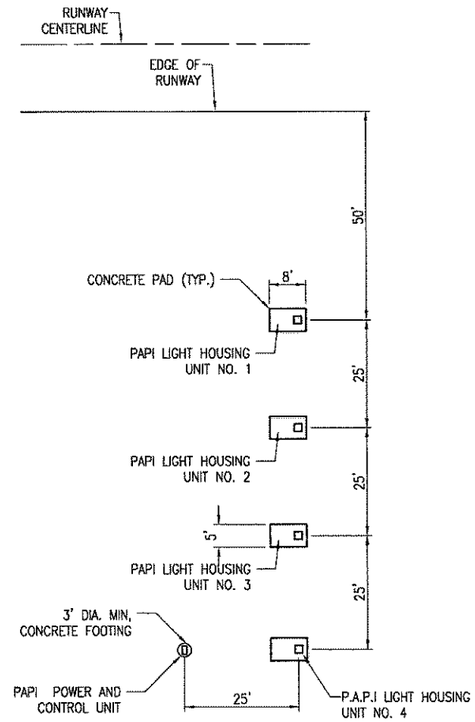
NOTE:

LOWEST ON-COURSE ANGLE -- 2° 50' ELEVATION A = 619.01 TCH = 24.71'



P.A.P.I. AIMING DIAGRAM 21 END

"NOT TO SCALE"



P.A.P.I. LAYOUT DETAIL

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DATE | REVISION

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT.: 3-17-0062-B20

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PAPI DETAILS AND NOTES RUNWAY END 21

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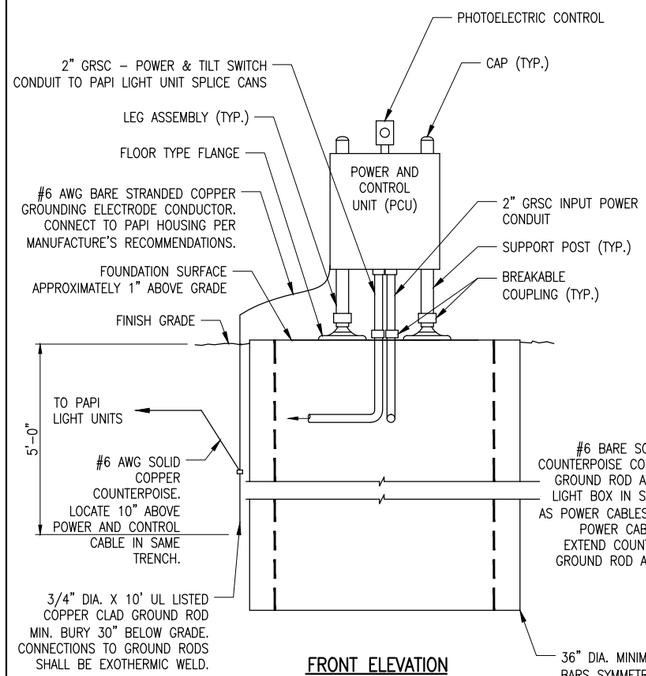
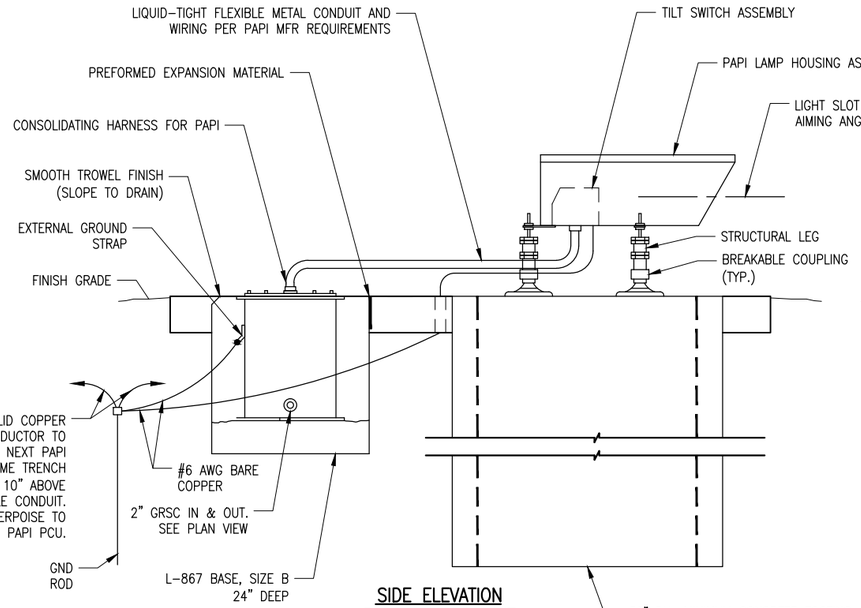
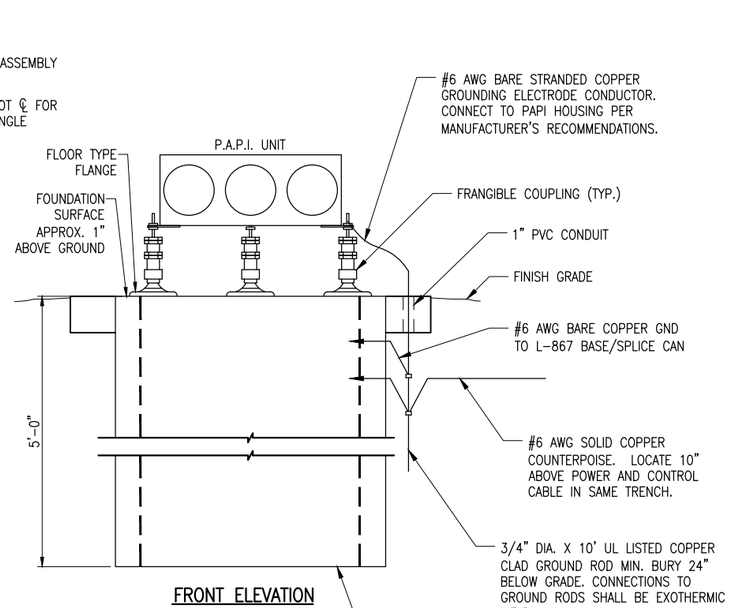


FRONT ELEVATION
POWER AND CONTROL UNIT
"NOT TO SCALE"



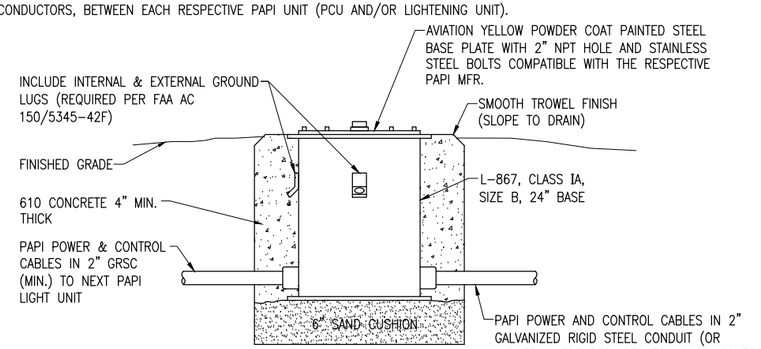
SIDE ELEVATION
P.A.P.I. LIGHT UNIT
"NOT TO SCALE"



FRONT ELEVATION
P.A.P.I. LIGHT UNIT
"NOT TO SCALE"

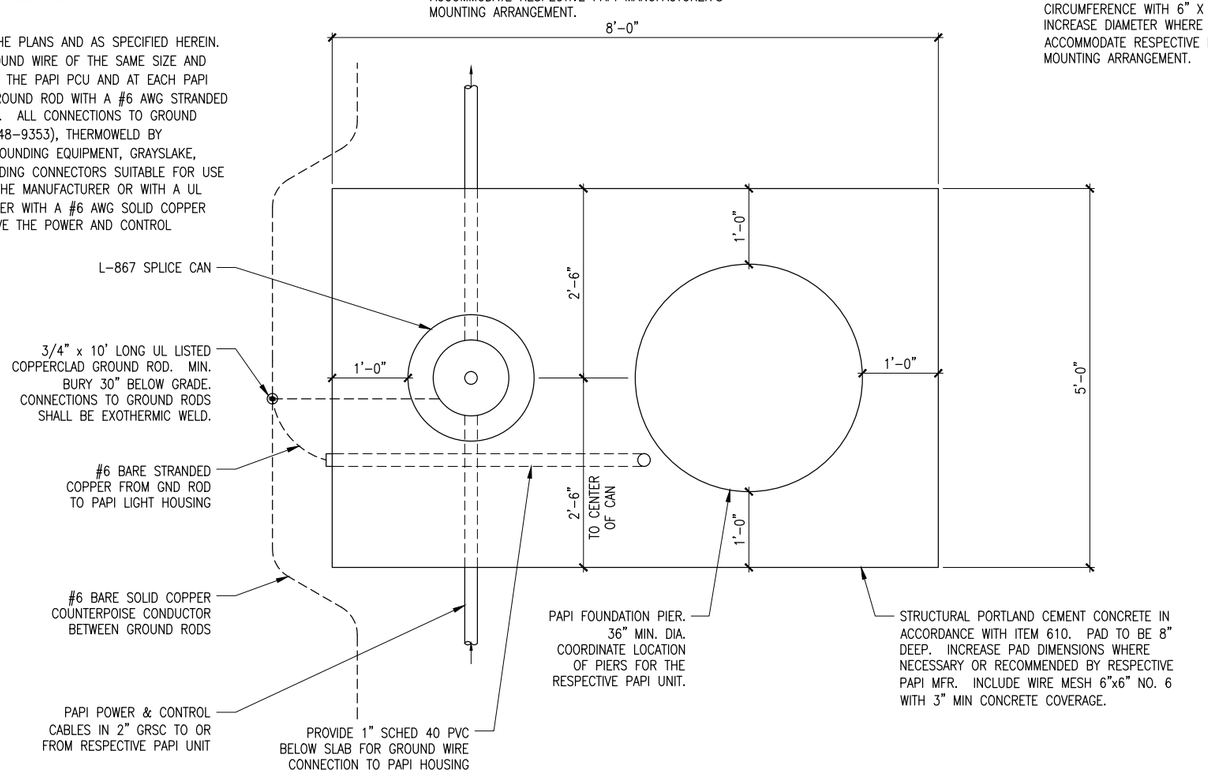
GROUNDING FOR PAPI'S

1. GROUNDING FOR PAPI'S SHALL CONFORM TO THE RESPECTIVE PAPI MANUFACTURER'S INSTALLATION INSTRUCTIONS. AS DETAILED ON THE PLANS AND AS SPECIFIED HEREIN. THE POWER CIRCUIT TO EACH PAPI UNIT INCLUDING THE PAPI PCU (POWER AND CONTROL UNIT) SHALL INCLUDE ON EQUIPMENT GROUND WIRE OF THE SAME SIZE AND TYPE AS THE PHASE CONDUCTORS. FURNISH AND INSTALL A 3/4-INCH DIAMETER BY 10-FEET LONG COPPER CLAD GROUND ROD AT THE PAPI PCU AND AT EACH PAPI LIGHTING UNIT. BOND EACH PAPI UNIT (PCU AND LIGHTING UNITS) AND THE RESPECTIVE L-867 SPLICE CAN TO THE RESPECTIVE GROUND ROD WITH A #6 AWG STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR. TOP OF GORUND RODS SHALL BE BURIED APPROXIMATELY 24 INCHES BELOW GRADE. ALL CONNECTIONS TO GROUND RODS SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS; CADWELD BY ERICO PRODUCTS, IN SOLON, OHIO (PHONE: 800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE: 918-663-1440), OR ULTRAWELD BY HARGER LIGHTENING PROTECTION GROUNDING EQUIPMENT, GRAYSLAKE, ILLINOIS (PHONE: 800-842-7437), OR APPROVED EQUAL. CONNECTIONS TO L-867 SPLICE CANS SHALL BE WITH UL LISTED GROUNDING CONNECTORS SUITABLE FOR USE IN DIRECT BURIAL OR CONCRETE ENCASEMENT APPLICATIONS. CONNECTIONS TO PAPI UNIT FRAME SHALL BE AS RECOMMENDED BY THE MANUFACTURER OR WITH A UL LISTED GROUNDING CONNECTOR. ALL GROUND RODS ASSOCIATED WITH THE COMPLETE PAPI INSTALLATION SHALL BE BONDED TOGETHER WITH A #6 AWG SOLID COPPER COUNTERPOISE CONDUCTOR. THIS COUNTERPOISE CONDUCTOR SHALL BE INSTALLED IN THE SAME TRENCH LOCATED 10 INCHES ABOVE THE POWER AND CONTROL CONDUCTORS, BETWEEN EACH RESPECTIVE PAPI UNIT (PCU AND/OR LIGHTENING UNIT).



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

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



CONCRETE PAD/FOUNDATION PLAN VIEW
"NOT TO SCALE"

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LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

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PAPI FOUNDATION DETAILS

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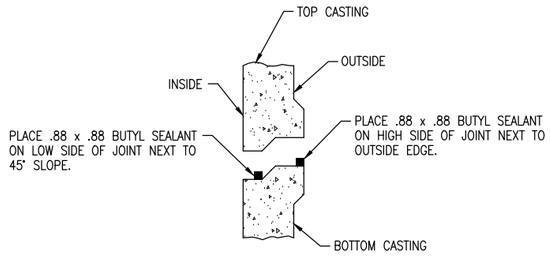
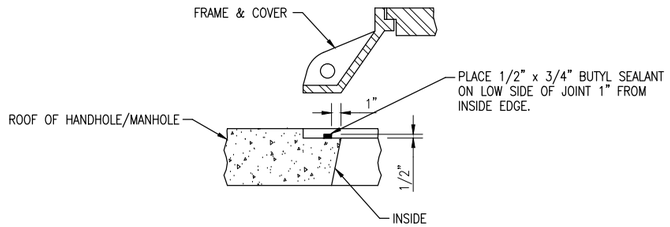
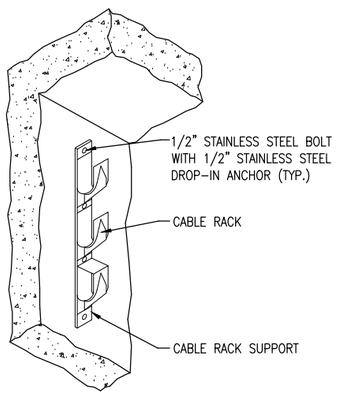


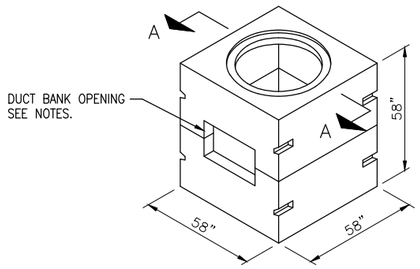
DETAIL (B)
N.T.S.



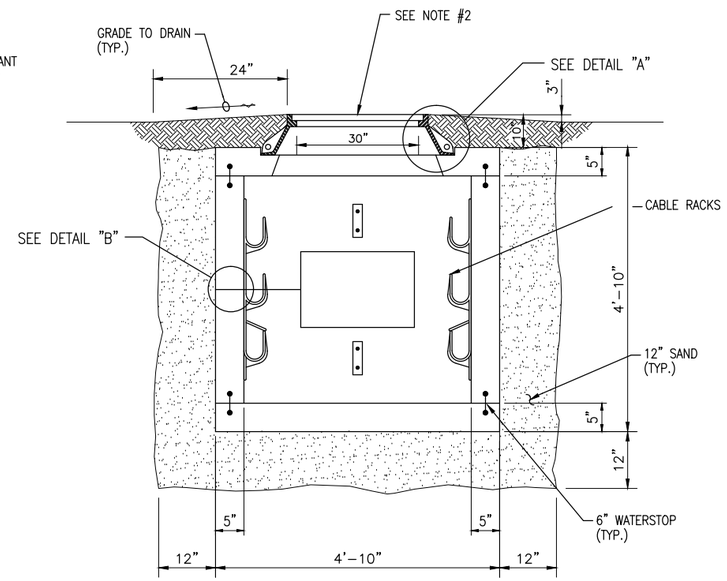
DETAIL (A)
N.T.S.



CABLE RACK
N.T.S.



PRECAST 4'x4'x4' MANHOLE
N.T.S.



SECTION (A)
N.T.S.

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

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, Fy = 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: Ka – 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 OR APPROVED EQUAL. LID FOR HIGH VOLTAGE MANHOLE SHALL BE LABELED "HIGH VOLTAGE". LID FOR LOW VOLTAGE MANHOLE SHALL BE LABELED "LOW VOLTAGE" OR "0V-600V".

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. MANHOLE PRODUCER SHALL SUBMIT CERTIFICATION THAT THE RESPECTIVE PRE-CAST MANHOLES ARE MANUFACTURED IN THE UNITED STATES.

5. 4'x4'x4' MANHOLE SHALL BE PAID FOR UNDER ITEM AR110710 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.

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

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REPLACE AIRFIELD LIGHTING, REILS & VADIS

4' X 4' X 4' ELECTRICAL MANHOLE

GENERAL NOTES

1. 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, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.

2. CONTRACTOR SHALL KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING CONSTRUCTION FOR USE AS A REFERENCE.

3. 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).

4. THE CONTRACTOR SHALL ASCERTAIN THAT ALL LIGHTING SYSTEM COMPONENTS FURNISHED BY HIM, INCLUDING FAA APPROVED EQUIPMENT, ARE COMPATIBLE IN ALL RESPECTS WITH EACH OTHER AND THE REMAINDER OF THE NEW/EXISTING SYSTEM. ANY NONCOMPATIBLE COMPONENTS FURNISHED BY THIS CONTRACTOR SHALL BE REPLACED BY HIM AT NO ADDITIONAL COST TO THE AIRPORT SPONSOR WITH A SIMILAR UNIT, APPROVED BY THE ENGINEER (DIFFERENT MODEL OR DIFFERENT MANUFACTURER) THAT IS COMPATIBLE WITH THE REMAINDER OF THE AIRPORT LIGHTING SYSTEM.

5. IN CASE THE CONTRACTOR ELECTS TO FURNISH AND INSTALL AIRPORT LIGHTING EQUIPMENT REQUIRING ADDITIONAL WIRING, TRANSFORMERS, ADAPTORS, MOUNTINGS, ETC., TO THOSE SHOWN ON THE DRAWINGS AND/OR LISTED IN THE SPECIFICATION, ANY COST FOR THESE ITEMS SHALL BE INCIDENTAL TO THE EQUIPMENT COST.

6. THE CONTRACTOR INSTALLED EQUIPMENT (INCLUDING FAA APPROVED) SHALL NOT GENERATE ANY ELECTROMAGNETIC INTERFERENCE IN THE EXISTING AND/OR NEW COMMUNICATIONS, WEATHER, AIR NAVIGATION, AND AIR TRAFFIC CONTROL EQUIPMENT. ANY EQUIPMENT GENERATING SUCH INTERFERENCE SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST WITH THE EQUIPMENT MEETING THE APPLICABLE SPECIFICATIONS AND NOT GENERATING ANY INTERFERENCE.

7. WHEN A SPECIFIC TYPE, STYLE, CLASS, ETC. OF FAA APPROVED EQUIPMENT IS SPECIFIED ONLY THAT TYPE, STYLE, CLASS, WILL BE ACCEPTABLE, EVEN THOUGH EQUIPMENT OF OTHER TYPES STYLES, CLASSES, ETC. MAY BE APPROVED.

8. ANY AND ALL INSTRUCTIONS FROM THE RESIDENT ENGINEER TO THE CONTRACTOR REGARDING CHANGES IN OR DEVIATIONS FROM THE PLANS AND SPECIFICATIONS SHALL BE IN WRITING WITH COPIES SENT TO THE AIRPORT SPONSOR AND THE ILLINOIS DEPARTMENT OF TRANSPORTATION DIVISION OF AERONAUTICS). THE CONTRACTOR SHALL NOT ACCEPT ANY VERBAL INSTRUCTIONS FROM THE RESIDENT ENGINEER REGARDING ANY CHANGES FROM THE PLANS AND SPECIFICATIONS.

9. A MINIMUM OF THREE COPIES OF THE INSTRUCTION BOOK SHALL BE SUPPLIED WITH EACH DIFFERENT TYPE OF EQUIPMENT. THE BOOKS DESCRIBING A MORE SOPHISTICATED TYPE OF EQUIPMENT, SUCH AS REGULATORS, PAPI, REIL, ETC. AS A MINIMUM SHALL CONTAIN THE FOLLOWING:

   A. A DETAILED DESCRIPTION OF THE OVERALL EQUIPMENT AND ITS INDIVIDUAL COMPONENTS.

   B. THEORY OF OPERATION INCLUDING THE FUNCTION OF EACH COMPONENT.

   C. INSTALLATION INSTRUCTION.

   D. START–UP INSTRUCTIONS.

   E. PREVENTATIVE MAINTENANCE REQUIREMENTS.

   F. CHART FOR TROUBLE–SHOOTING.

   G. COMPLETE POWER AND CONTROL DETAILED WIRING DIAGRAM(S), SHOWING EACH CONDUCTOR/CONNECTION/COMPONENT – "BLACK" BOXES ARE NOT ACCEPTABLE. THE DIAGRAM OF THE NARRATIVE SHALL SHOW VOLTAGE/CURRENTS/WAVE SHAPES AT STRATEGIC LOCATIONS TO BE USED WHEN CHECKING AND/OR TROUBLE–SHOOTING THE EQUIPMENT. WHEN THE EQUIPMENT HAS SEVERAL MODES OF OPERATION, SUCH AS SEVERAL BRIGHTNESS STEPS, THESE PARAMETERS SHALL BE INDICATED FOR ALL DIFFERENT MODES.

   H. PARTS LIST WHICH WILL INCLUDE ALL MAJOR AND MINOR COMPONENTS SUCH AS RESISTORS, DIODES, ETC. IT SHALL INCLUDE A COMPLETE NOMENCLATURE OF EACH COMPONENT AND, IF APPLICABLE, THE NAME OF ITS MANUFACTURER AND THE CATALOG NUMBER.

   I. SAFETY INSTRUCTIONS.

POWER AND CONTROL NOTES

1. PROVIDE LEGEND PLATES FOR ALL ELECTRICAL EQUIPMENT TO IDENTIFY FUNCTION, CIRCUIT VOLTAGE AND PHASE. WHERE THE EQUIPMENT CONTAINS FUSES, ALSO IDENTIFY THE FUSE OR FUSE LINK AMPERE RATING. WHERE THE EQUIPMENT DOES NOT HAVE SUFFICIENT AREA TO INSTALL LEGEND PLATES, THE LEGEND PLATES SHALL BE INSTALLED ON THE WALL NEXT TO THE UNIT. LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND UNLESS NOTED OTHERWISE. SECURE WITH WEATHERPROOF ADHESIVE AND MACHINE SCREWS. FURNISH ADDITIONAL LEGEND PLATES WHERE REQUIRED BY CODE, FOR ADDITIONAL EQUIPMENT, AS DETAILED HEREIN ON THE PLANS, AND AS NOTED IN THE SPECIAL PROVISION SPECIFICATIONS.

2. COLOR CODE ALL PHASE WIRING BY THE USE OF COLORED WIRE INSULATION AND/OR COLORED TAPE. WHERE TAPE IS USED, THE WIRE INSULATION SHALL BE BLACK. BLACK AND RED SHALL BE USED FOR PHASE CONDUCTORS ON 120/240VAC SINGLE–PHASE, THREE WIRE SYSTEMS AND BLACK, ORANGE (FOR HIGH LEG) AND BLUE SHALL BE USED FOR PHASE CONDUCTORS ON 240/120VAC THREE–PHASE, FOUR WIRE SYSTEMS. NEUTRAL CONDUCTORS, SIZE NO. 6 AWG OR SMALLER, SHALL BE IDENTIFIED BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH. NEUTRAL CONDUCTORS LARGER THAN NO. 6 AWG SHALL BE IDENTIFIED EITHER BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH OR BY THE USE OF WHITE TAPE AT ITS TERMINATIONS AND INSIDE ACCESSIBLE WIREWAYS. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR SIZES (AWG OR KCMIL).

3. ALL BRANCH CIRCUIT CONDUCTORS CONNECTED TO A PARTICULAR PHASE SHALL BE IDENTIFIED WITH THE SAME COLOR. THE COLOR CODING SHALL BE EXTENDED TO THE POINT OF UTILIZATION.

4. IN CONTROL WIRING THE SAME COLOR SHALL BE USED THROUGHOUT THE SYSTEM FOR THE SAME FUNCTION, SUCH AS 10%, 30%, 100% BRIGHTNESS CONTROL, ETC.

5. LOW VOLTAGE (600 V.) AND HIGH VOLTAGE (5000 V.) CONDUCTORS SHALL BE INSTALLED IN SEPARATE WIREWAYS.

6. NEATLY LACE WIRING IN DISTRIBUTION PANELS, WIREWAYS, SWITCHES AND JUNCTION/PULL BOXES.

7. THE MINIMUM SIZE OF PULL/JUNCTION BOXES, REGARDLESS OF THE QUANTITY AND SIZE OF THE CONDUCTORS SHOWN, SHALL BE AS FOLLOWS:

   A. IN STRAIGHT PULLS THE LENGTH OF THE BOX SHALL NOT BE LESS THAN EIGHT TIMES THE TRADE DIAMETER OF THE LARGER CONDUIT. THE TOTAL AREA (INCLUDING THE CONDUIT CROSS–SECTIONAL AREA) OF A BOX END SHALL BE AT LEAST 3 TIMES GREATER THAN THE TOTAL TRADE CROSS–SECTIONAL AREA OF THE CONDUITS TERMINATING AT THE END.

   B. IN ANGLE PULLS OR 'U' PULLS THE DISTANCE BETWEEN EACH CONDUIT ENTRY INSIDE THE BOX AND THE OPPOSITE WALL OF THE BOX SHALL NOT BE LESS THAN SIX (6) TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT. THIS DISTANCE SHALL BE INCREASED FOR ADDITIONAL ENTRIES BY THE AMOUNT OF THE SUM OF THE DIAMETERS OF ALL OTHER CONDUIT ENTRIES ON THE SAME WALL AS THE BOX. THE DISTANCE BETWEEN CONDUIT ENTRIES ENCLOSING THE SAME CONDUCTOR SHALL NOT BE LESS THAN SIX TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT.

8. A RUN OF CONDUIT BETWEEN TERMINATIONS AT EQUIPMENT ENCLOSURES, SQUARE DUCTS AND PULL/JUNCTION BOXES, SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL), INCLUDING THOSE BENDS LOCATED IMMEDIATELY AT THE TERMINATIONS, CAST, CONDUIT TYPE OUTLETS SHALL NOT BE TREATED AS PULL/JUNCTION BOXES.

9. EQUIPMENT CABINETS SHALL NOT BE USED AS PULL/JUNCTION BOXES. ONLY WIRING TERMINATING AT THE EQUIPMENT SHALL BE BROUGHT INTO THESE ENCLOSURES.

10. SPLICES AND JUNCTION POINTS SHALL BE PERMITTED ONLY IN JUNCTION BOXES, DUCTS EQUIPPED WITH REMOVABLE COVERS, AND AT EASILY ACCESSIBLE LOCATIONS.

11. CIRCUIT BREAKERS IN POWER DISTRIBUTION PANEL(S) SHALL BE THERMAL–MAGNETIC MOLDED CASE, PERMANENT TRIP WITH 100 AMPERE, MINIMUM FRAME.

12. DUAL LUGS SHALL BE USED WHERE TWO (2) WIRES, SIZE NO. 6 OR LARGER, ARE TO BE CONNECTED TO THE SAME TERMINAL.

13. ALL INTERIOR WALL MOUNTED EQUIPMENT ENCLOSURES SHALL BE MOUNTED ON HOT DIPPED GALVANIZED STEEL STRUT SUPPORT, OR STAINLESS STEEL STRUT SUPPORT, WITH CORROSION RESISTANT HARDWARE.

14. SUPPORT FOR EXTERIOR MOUNTED EQUIPMENT SHALL USE HOT DIPPED GALVANIZED STEEL STRUT SUPPORT OR STAINLESS STEEL STRUT SUPPORT WITH STAINLESS STEEL HARDWARE. PROVIDE ZINC RICH PAINT APPLIED TO FIELD CUTS OF GALVANIZED STEEL SUPPORT TO MINIMIZE THE POTENTIAL FOR CORROSION PER THE RESPECTIVE STRUT SUPPORT MANUFACTURER'S RECOMMENDATIONS.

15. CONDUITS FOR ELECTRIC SERVICE ENTRANCE AND FEEDERS SHALL BE AS DETAILED HEREIN ON THE PLANS. WHERE GALVANIZED RIGID STEEL CONDUIT IS SPECIFIED IT SHALL HAVE THREADED FITTINGS. SET SCREW TYPE FITTINGS WILL NOT BE ACCEPTABLE. CONDUITS FOR UNDERGROUND APPLICATIONS SHALL BE AS DETAILED HEREIN. CONDUITS FOR GROUNDING ELECTRODE CONDUCTORS OR INDIVIDUAL GROUNDING CONDUCTORS SHALL BE SCHEDULE 40 OR SCHEDULE 80 PVC.

16. PROVIDE LIQUID TIGHT FLEXIBLE METAL CONDUIT AT CONNECTIONS TO EQUIPMENT SUBJECT TO VIBRATION OR WHERE FLEXIBILITY IS REQUIRED. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING, SUNLIGHT RESISTANT, AND RESISTANT TO OIL, GASOLINE, AND GREASE. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO MOTORS, TRANSFORMERS, & CONSTANT CURRENT REGULATORS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. DO NOT INSTALL LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL. LISTED. CONFIRM LIQUID–TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.

17. UNLESS OTHERWISE SHOWN, ALL EXPOSED CONDUITS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES WITH THE LINES OF THE STRUCTURE.

18. ALL STEEL CONDUITS, FITTINGS, NUTS, BOLTS, ETC. SHALL BE GALVANIZED.

19. USE CONDUIT BUSHINGS AT EACH CONDUIT TERMINATION. WHERE NO. 4 AWG OR LARGER UNDERGROUND WIRE IS INSTALLED, USE INSULATED BUSHINGS.

20. USE DOUBLE LOCK NUTS AT EACH CONDUIT TERMINATION.

21. WRAP ALL PRIMARY AND SECONDARY POWER TRANSFORMER CONNECTIONS WITH SUFFICIENT LAYERS OF INSULATING TAPE (3M SCOTCH 23 ALL–VOLTAGE SPLICING TAPE, 3M SCOTCH 130C LINERLESS RUBBER SPLICING TAPE, OR APPROVED EQUAL) AND COVER WITH VINYL ELECTRICAL TAPE (3M SCOTCH 88 VINYL ELECTRICAL TAPE OR APPROVED EQUAL) FOR FULL VALUE OF CABLE INSULATION VOLTAGE.

22. UNLESS OTHERWISE NOTED, ALL SINGLE CONDUCTOR CONTROL WIRING SHALL BE NO. 12 AWG. COPPER MINUMUM.

23. THE FOLLOWING SHALL APPLY TO RELAY/CONTACTOR PANELS/ENCLOSURES:

   A. FOR INTERIOR LOCATIONS ALL COMPONENTS SHALL BE MOUNTED IN NEMA 12 (DUST TIGHT) ENCLOSURE(S) WITH VERTICALLY HINGED COVERS. FOR EXTERIOR/OUTDOOR LOCATIONS ALL COMPONENTS SHALL BE MOUNTED IN NEMA 4X STAINLESS STEEL ENCLOSURE(S) WITH VERTICALLY HINGED COVERS. ALL CONDUIT ENTRIES INTO NEMA 4, 4X ENCLOSURES SHALL HAVE NEMA 4 HUBS LISTED SUITABLE FOR THE RESPECTIVE ENCLOSURE TO MAINTAIN THE NEMA 4, 4X RATING OF THE ENCLOSURE.

   B. THE ENCLOSURE(S) SHALL HAVE AMPLE SPACE FOR THE CIRCUIT COMPONENTS, TERMINAL BLOCKS AND INCOMING AND INTERNAL WIRING.

   C. ALL CONTROL CONDUCTOR TERMINATIONS SHALL BE OF THE OPEN–EYE CONNECTOR/SCREW TYPE. SOLDERED CLOSED–EYE TERMINATIONS, OR TERMINATIONS WITHOUT CONNECTORS ARE NOT ACCEPTABLE.

   D. WHEN THE ENCLOSURE COVER IS OPENED, ALL CIRCUIT COMPONENTS, WIRING AND TERMINALS SHALL BE EXPOSED AND ACCESSIBLE WITHOUT REMOVAL OF ANY PANELS, COVERS, ETC., EXCEPT THOSE COVERING HIGH VOLTAGE COMPONENTS.

   E. ACCESS TO, OR REMOVAL OF A CIRCUIT COMPONENT OR TERMINAL BLOCK WILL NOT REQUIRE THE REMOVAL OF ANY OTHER CIRCUIT COMPONENT OR TERMINAL BLOCK.

   F. EACH CIRCUIT COMPONENT SHALL BE CLEARLY IDENTIFIED INDICATING ITS CORRESPONDING NUMBER SHOWN ON THE DRAWINGS AND ITS FUNCTION.

   G. A COMPLETE WIRING DIAGRAM SHALL BE MOUNTED ON THE INSIDE OF THE COVER. THE DIAGRAM SHALL REPRESENT EACH CONDUCTOR BY A SEPARATE LINE.

   H. THE DIAGRAM SHALL IDENTIFY EACH CIRCUIT COMPONENT AN NUMBERING AND COLOR OF EACH TERMINAL CONDUCTOR AND TERMINAL.

   I. ALL WIRING SHALL BE NEATLY TRAINED AND LACED.

   J. MINIMUM WIRE SIZE SHALL BE NO. 12 AWG.

24. FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH METER SOCKET, SERVICE DISCONNECT, SAFETY SWITCH, CUTOUT, PANELBOARD, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION".

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

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Hanson Proj. No. 12A00550
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REPLACE AIRFIELD LIGHTING, REILS & VADIS

ELECTRICAL NOTES SHEET 1

29
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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 ELECTRICAL DETAILS SHEET 1.

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 ELECTRICAL DETAILS SHEET 1.

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, 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.

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.

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 AS SHOWN IN DETAIL "B" ON ELECTRICAL DETAILS SHEET 1.

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, AIR-ENTRAINED.

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 WHATEVER 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 J.U.L.I.E. FOR UTILITY INFORMATION AT 1-800-892-0123.** ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVEGROUND UTILITIES.

32. WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.

GROUNDING NOTES FOR AIRFIELD LIGHTING

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 150/5340-30G 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 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 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. 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. 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 2011 NATIONAL ELECTRICAL CODE ARTICLE 250-12.

4. PER FAA 150/5340-30G THE RESISTANCE TO GROUND OF THE RESPECTIVE MOUNTING STAKE OR LIGHT BASE (WITH GROUND ROD CONNECTED) MUST BE 25 OHMS OR LESS.

5. FOR EACH GROUNDING ELECTRODE SYSTEM 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 GROUNDING ELECTRODE SYSTEM. IF GROUND RESISTANCE EXCEEDS 25 OHMS. CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. COPIES OF THE GROUND SYSTEM TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT PROJECT REPRESENTATIVE/RESIDENT ENGINEER.

DATE	REVISION
4/6/13	3/4" X 10' L GND ROD

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

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REPLACE AIRFIELD LIGHTING, REILS & VADIS

ELECTRICAL NOTES SHEET 2

ELECTRICAL LEGEND – ONE-LINE DIAGRAM

	CABLE TERMINATOR/LUG
	TRANSFORMER
	DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
	CIRCUIT BREAKER
	THERMAL MAGNETIC CIRCUIT BREAKER
	FUSE
	TRANSIENT VOLTAGE SURGE SUPPRESSOR OR SURGE PROTECTOR DEVICE
	GROUND – GROUND ROD, GROUNDING ELECTRODE, OR AT EARTH POTENTIAL
	INDICATING LIGHT
M	MOTOR
#	LOAD, MOTOR, # = HORSEPOWER
	ELECTRIC UTILITY METER BASE
	JUNCTION BOX WITH SPLICE
XXX	EQUIPMENT, XXX = DEVICE DESCRIPTION
GND	GROUND BUS OR TERMINAL
S/N	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
N EM L	TRANSFER SWTICH
G	ENGINE GENERATOR SET

ELECTRICAL LEGEND – SCHEMATIC

	NORMALLY OPEN (N.O.) CONTACT
	NORMALLY CLOSED (N.C.) CONTACT
S*	STARTER COIL, * = STARTER NUMBER
OL	OVERLOAD RELAY CONTACT
CR*	CONTROL RELAY, * = CONTROL RELAY NUMBER
R*	RELAY, * = RELAY NUMBER
	TOGGLE SWITCH / 2 POSITION SWITCH
OFF AUTO OX	2-POSITION SELECTOR SWITCH
OFF HAND AUTO XOO OOX	3-POSITION SELECTOR SWITCH (H-O-A SHOWN)
	2 POLE DISCONNECT SWITCH
	3 POLE DISCONNECT SWITCH
PH	PHOTOCELL
	TERMINAL BLOCK, * = TERMINAL NUMBER
	DEVICE TERMINAL, * = DEVICE TERMINAL NUMBER
	INTERNAL PANEL WIRING
	FIELD WIRING
	FUSE
GND	GROUND BUS OR TERMINAL
S/N	NEUTRAL BUS
	GROUND, GROUND ROD, GROUND BUS
	INDUSTRIAL CONTROL RELAY OR LIGHTING CONTACTOR
P	S1 CUTOUT HANDLE REMOVED
I	S1 CUTOUT HANDLE INSERTED
	N.O. THERMAL SWITCH
	N.C. THERMAL SWITCH
	L-830 SERIES ISOLATION TRANSFORMER

ELECTRICAL ABBREVIATIONS

A.F.F.	ABOVE FINSHED 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 CIRCLUAR MIL
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OHE	OVERHEAD ELECTRIC
OL	OVERLOAD

ELECTRICAL ABBREVIATIONS (CONTINUED)

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

AIRPORT EQUIPMENT/FACILITY ABBREVIATIONS

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

NOTES:

1. 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, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
2. 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).
3. 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:

   120/240 VAC, 1 PHASE, 3 WIRE

PHASE A	BLACK
PHASE B	RED
NEUTRAL	WHITE
GROUND	GREEN

4. SEE RESPECTIVE SITE PLANS FOR SITE LEGEND INFORMATION.
5. 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.
6. 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.
7. HIGH VOLTAGE AND LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, OR HANDHOLE.

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

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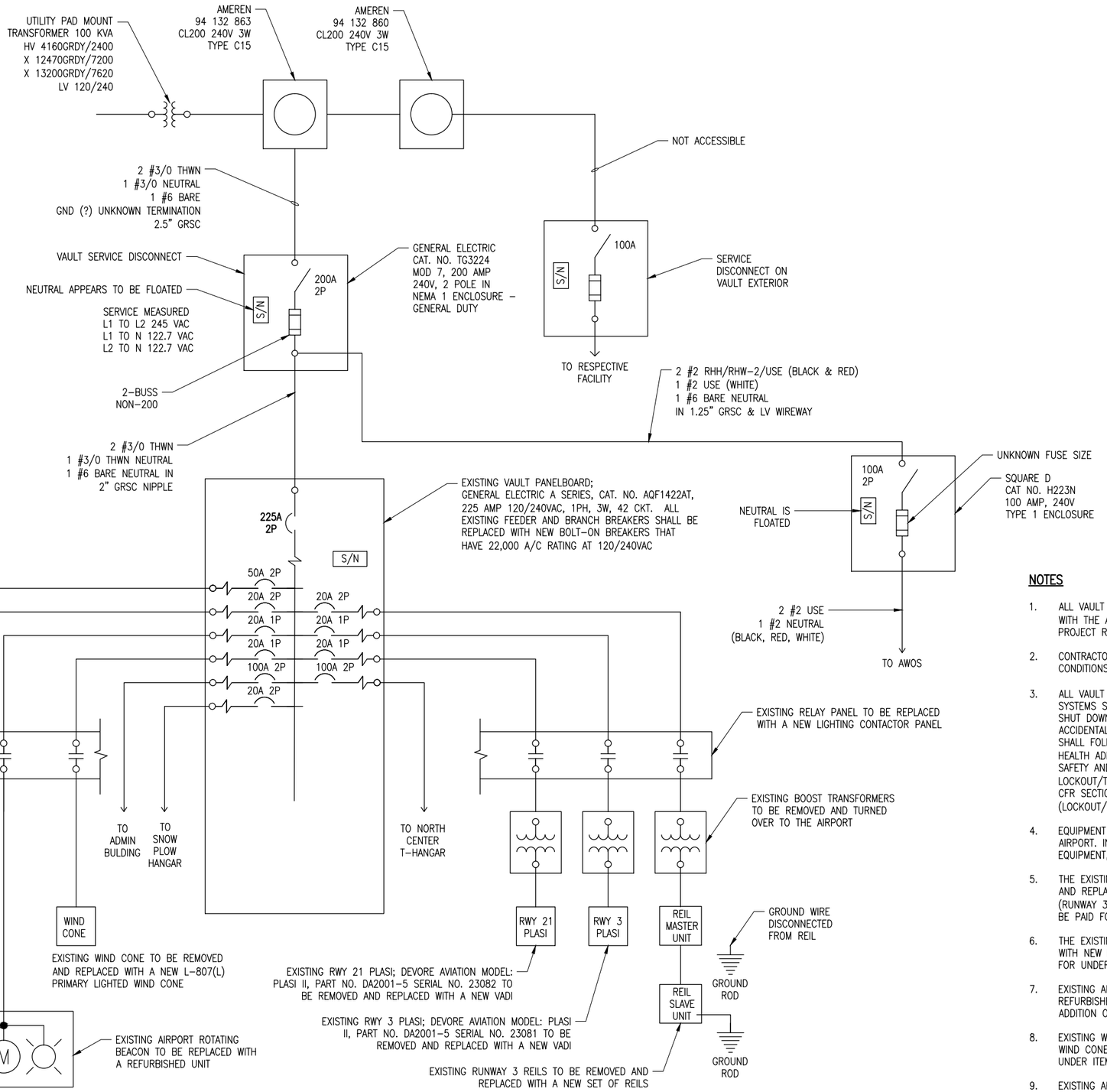
REPLACE AIRFIELD LIGHTING, REILS & VADIS

ELECTRICAL LEGEND AND ABBREVIATIONS

31
31 of 44 sheets



EXISTING ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD

NOTES

1. ALL VAULT WORK, AND/OR POWER OUTAGES, SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE.
2. CONTRACTOR SHALL EXAMINE THE SITE AND FIELD VERIFY EXISTING CONDITIONS.
3. 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 AND 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).
4. EQUIPMENT DESIGNATED FOR REMOVAL SHALL BE TURNED OVER TO THE AIRPORT. IN THE EVENT THE AIRPORT DOES NOT WANT THE RESPECTIVE EQUIPMENT, THE CONTRACTOR SHALL DISPOSE OF IT OFF SITE.
5. THE EXISTING PLASI SYSTEMS ON RUNWAY 3-21 SHALL BE REMOVED AND REPLACED WITH NEW PAPI SYSTEMS ON EACH RUNWAY APPROACH (RUNWAY 3 & RUNWAY 21). REMOVAL OF EXISTING PLASI SYSTEMS WILL BE PAID FOR UNDER ITEM AR125910, REMOVE PLASI PER EACH.
6. THE EXISTING REILS ON RUNWAY 3 SHALL BE REMOVED AND REPLACED WITH NEW REILS. REMOVAL OF EXISTING REILS SYSTEMS WILL BE PAID FOR UNDER ITEM AR125907, REMOVE REILS PER PAIR.
7. EXISTING AIRPORT ROATING BEACON SHALL BE REPLACED WITH A REFURBISHED UNIT. THE BEACON TOWER WILL BE UPGRADED WITH THE ADDITION OF OBSTRUCTION LIGHTING AND LIGHTNING PROTECTION.
8. EXISTING WIND CONE SHALL BE REMOVED AND REPLACED WITH A NEW WIND CONE. REMOVAL OF EXISTING WIND CONE WILL BE PAID FOR UNDER ITEM AR107900 REMOVE WIND CONE PER EACH.
9. EXISTING ABANDONED CABLES INSIDE VAULT SHALL BE REMOVED. EXISTING CABLES AND WIRING ASSOCIATED WITH SYSTEMS TO BE REMOVED AND/OR REPLACED SHALL BE REMOVED WHERE ACCESSIBLE.

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
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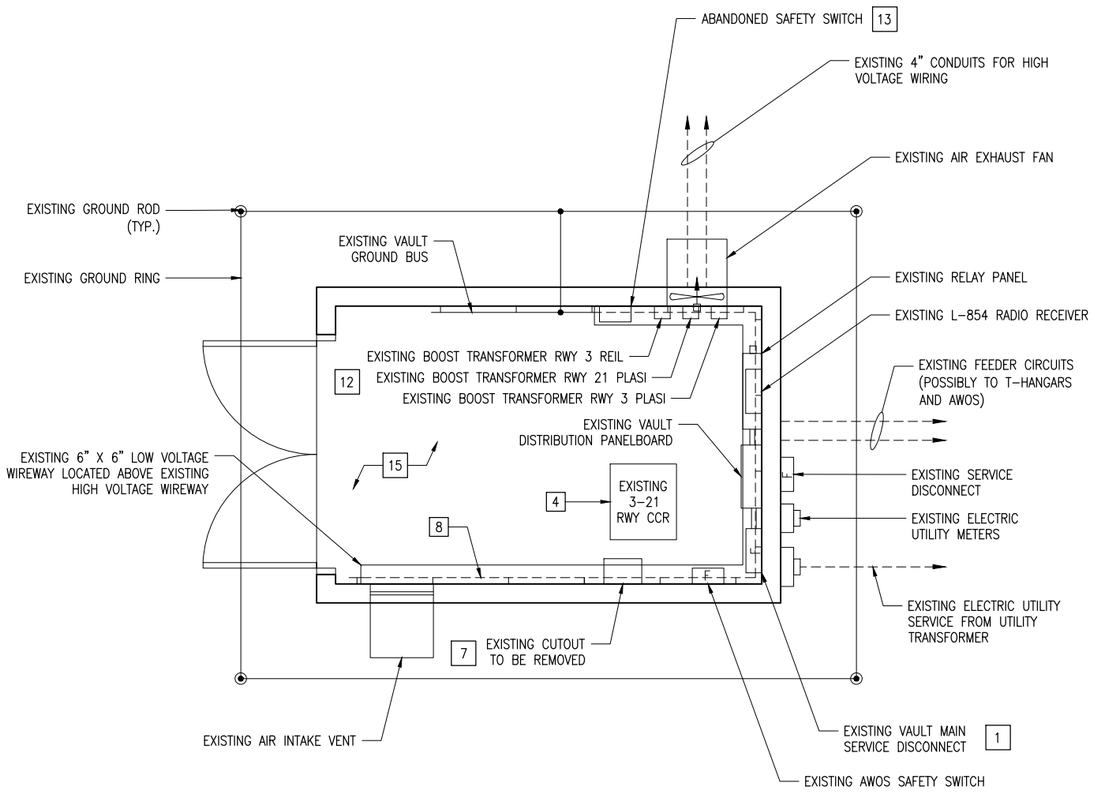
REPLACE AIRFIELD LIGHTING, REILS & VADIS

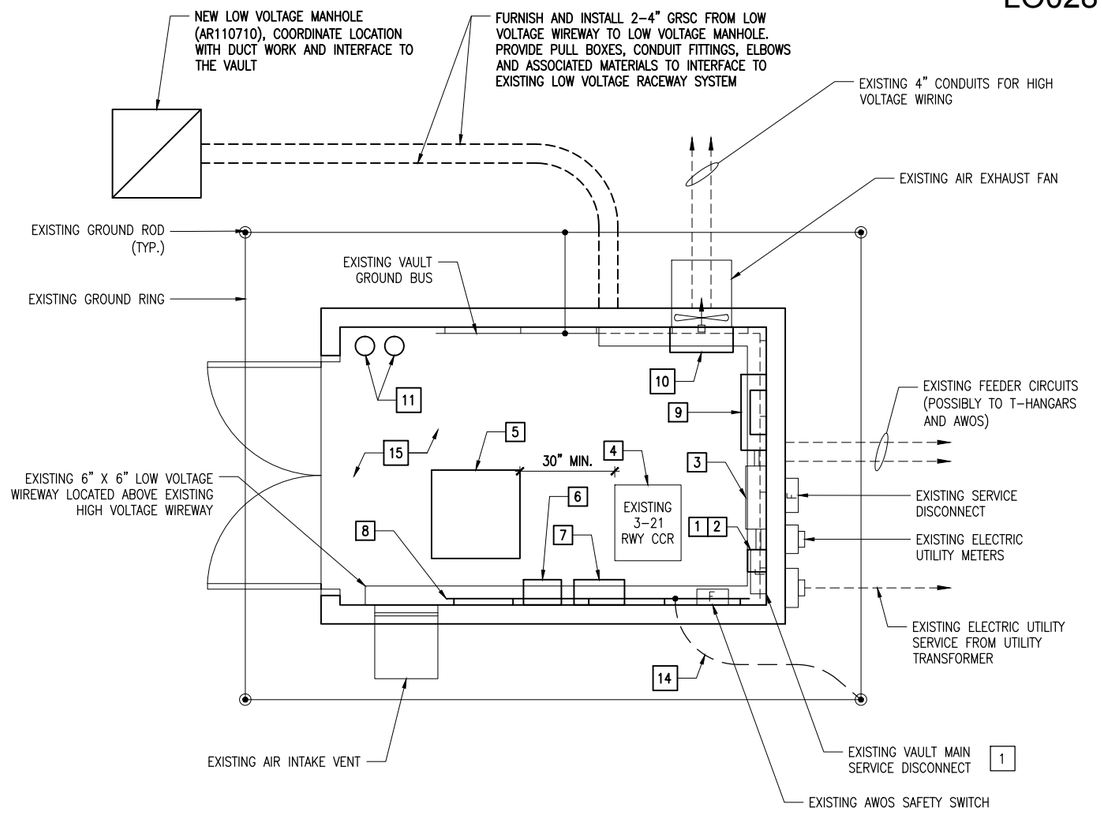
EXISTING ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD



EXISTING FLOOR PLAN FOR VAULT

0 1' 2' 4'

HALF SIZE SCALE: 1/4" = 1'-0"
FULL SIZE SCALE: 1/2" = 1'-0"



NEW FLOOR PLAN FOR VAULT

0 1' 2' 4'

HALF SIZE SCALE: 1/4" = 1'-0"
FULL SIZE SCALE: 1/2" = 1'-0"

KEYED NOTES

1. EXISTING VAULT SERVICE DISCONNECT. REPLACE FUSES WITH 2-200 AMP, 250V, CLASS RK5 FUSES.
2. FURNISH AND INSTALL SURGE PROTECTIVE DEVICE ABOVE EXISTING VAULT SERVICE DISCONNECT. SEE GENERAL NOTE 1.
3. EXISTING VAULT DISTRIBUTION PANELBOARD. SEE "VAULT DISTRIBUTION PANELBOARD SCHEDULES" SHEET FOR REPLACEMENT BREAKERS.
4. EXISTING RUNWAY 3-21 CCR TO BE REWIRED TO SERVE AS A BACKUP UNIT.
5. NEW RUNWAY 3-21 CCR. SEE GENERAL NOTE 1.
6. NEW DOUBLE THROW FUSIBLE SAFETY SWITCH FOR CCR'S. SEE GENERAL NOTE 1.
7. REPLACE EXISTING CUTOUT WITH A NEW PAIR OF SERIES PLUG CUTOUTS IN A NEMA 1 OR NEMA 12 ENCLOSURE WITH PAD LOCKABLE FEATURE. SEE GENERAL NOTE 1.
8. EXISTING 1/8 INCH THICK X 3/4 INCH WIDE GROUND BUS BEHIND CONSTANT CURRENT REGULATORS SHALL BE REPLACED WITH A 1/4 INCH THICK X 2 INCH WIDE X 8 FEET LONG COPPER GROUND BUS. SEE "CCR GROUND BUS RISER" FOR DETAILS.
9. REPLACE THE EXISTING RELAY PANEL WITH A NEW LIGHTING CONTACTOR PANEL. SEE "LIGHTING CONTACTOR PANEL SCHEMATIC" AND "LIGHTING CONTACTOR PANEL DETAIL". EXISTING L-854 RADIO RECEIVER LOCATED ABOVE.
10. FURNISH AND INSTALL A NEW RELAY INTERFACE CONTROL PANEL FOR THE RUNWAY CCR'S.

KEYED NOTES

11. FURNISH AND INSTALL A UL RATED, 10 POUND CARBON DIOXIDE FIRE EXTINGUISHER SUITABLE FOR USE ON CLASS C FIRES AND A 10 POUND CLASS 4A:80B:C DRY CHEMICAL ABC FIRE EXTINGUISHER SUITABLE FOR USE ON CLASS A,B,C FIRES, IN THE VAULT SHELTER. PER NFPA 10 "PORTABLE FIRE EXTINGUISHERS" CLASS C ARE FOR FIRES THAT INVOLVE ENERGIZED ELECTRICAL EQUIPMENT. FIRE EXTINGUISHERS SHALL BE MADE IN THE UNITED STATES OF AMERICA TO COMPLY WITH BUY AMERICAN REQUIREMENT. FIRE EXTINGUISHER TYPE CO2 SHALL BE AMEREX MODEL 330, ANSUL SENTRY 10 MODEL CD10A-1 OR APPROVED EQUAL. FIRE EXTINGUISHER DRY CHEMICAL TYPE ABC SHALL BE AMEREX MODEL B456, OR APPROVED EQUAL. PROVIDE WALL MOUNTING BRACKET FOR EACH FIRE EXTINGUISHER. CONFIRM MODEL NUMBERS WITH THE RESPECTIVE FIRE EXTINGUISHER MANUFACTURER.
12. REMOVE EXISTING BOOST TRANSFORMERS FOR RUNWAY 3-21 PLASI UNITS AND RUNWAY 3 REILS AND TURN OVER TO THE AIRPORT.
13. REMOVE ABANDONED SAFETY SWITCH AND ASSOCIATED WIRING. SAFETY SWITCH SHALL BE TURNED OVER TO THE AIRPORT.
14. #2 AWG COPPER GROUNDING ELECTRODE CONDUCTIOR FROM NEW GROUND BUS TO EXISTING GROUND ROD. PROVIDE 3/4" SCHEDULE 40 PVC CONDUIT FROM VAULT TO BELOW GRADE.
15. REPLACE EXISTING FLOOR IN THE VAULT WITH A NEW FLOOR SUITABLE AND RATED FOR THE RESPECTIVE EQUIPMENT LOADS AND PERSONNEL. INCLUDE WEATHERPROOF TREATED PLYWOOD 3/4" MIN THICKNESS, FLOOR TILE, AND ALL REQUIRED SUPPORT HARDWARE.

GENERAL NOTES

1. SEE "PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD" FOR LOW VOLTAGE INPUT POWER WIRING REQUIREMENTS TO CCR'S (CONSTANT CURRENT REGULATORS), LIGHTING CONTACTOR PANEL, AND OTHER EQUIPMENT. SEE "HIGH VOLTAGE WIRING SCHEMATIC" FOR CCR OUTPUT WIRING REQUIREMENTS. SEE "AIRFIELD LIGHTING WIRING SCHEMATIC" FOR CCR AND NAVAID CONTROL WIRING REQUIREMENTS.
2. CONSTANT CURRENT REGULATORS AND THEIR RESPECTIVE SERIES PLUG CUTOUTS SHALL BE CLEARLY LABELED TO IDENTIFY THE RESPECTIVE REGULATOR DESIGNATION, RUNWAY OR TAXIWAY SERVED, POWER SOURCE OR CIRCUIT, AND VOLTAGE SYSTEM.
3. MAINTAIN SEPARATION OF HIGH VOLTAGE WIRING FROM LOW VOLTAGE WIRING TO COMPLY WITH NEC 300.3(C)(2). HIGH VOLTAGE AND LOW VOLTAGE WIRING SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, WIREWAY, PULL BOX, SPLICE CAN, HANDHOLE, OR MANHOLE.
4. THE CONTRACTOR SHALL SECURE, IDENTIFY AND PLACE ANY TEMPORARY EXPOSED WIRING IN CONDUIT TO PREVENT ELECTROCUTION AND FIRE IGNITION SOURCES AS PER THE REQUIREMENTS OF FFA AC 150/5370-2F OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, PART 218, PARAGRAPH C.
5. BOND EACH WIREWAY TO VAULT GROUND BUS WITH #6 AWG COPPER BONDING JUMPER.
6. BOND EACH CCR FRAME/HOUSING TO VAULT GROUND BUS WITH #6 AWG COPPER BONDING JUMPER.
7. MAINTAIN SEPARATION OF HIGH VOLTAGE AND LOW VOLTAGE CIRCUITS. LOW VOLTAGE WIRING SHALL ENTER THE RESPECTIVE CCR AT THE LOW VOLTAGE SECTION. HIGH VOLTAGE WIRING SHALL ENTER THE RESPECTIVE CCR AT THE HIGH VOLTAGE SECTION.

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

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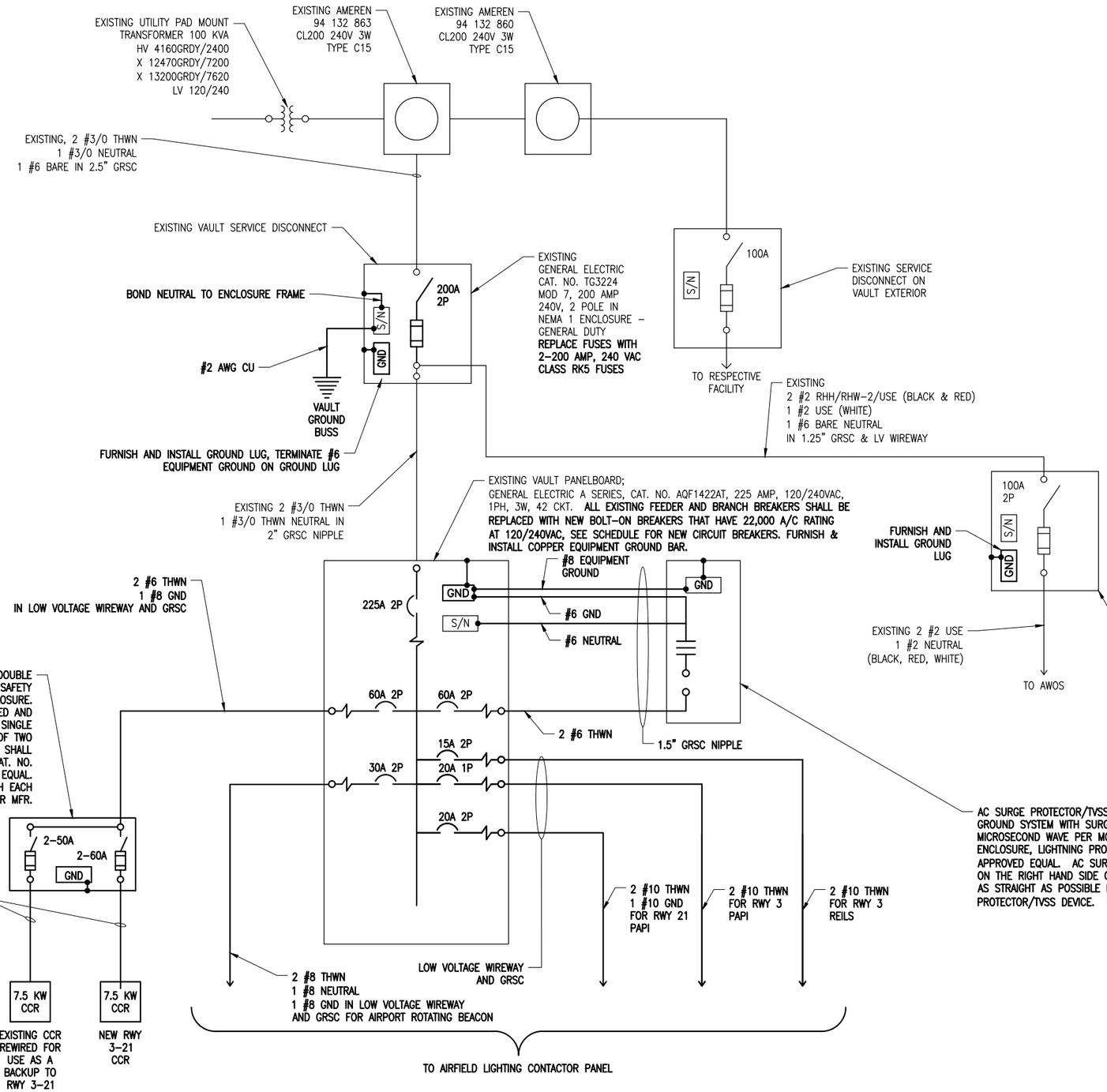
REPLACE AIRFIELD LIGHTING, REILS & VADIS

VAULT FLOOR PLAN

33
33 of 44 sheets



PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT 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).
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3. ALL CONDUCTORS/WIRING SHALL BE COPPER.
4. CONTRACTOR SHALL CONFIRM POWER REQUIREMENTS WITH THE ACTUAL NAMEPLATE ON EACH CONSTANT CURRENT REGULATOR (OR OTHER RESPECTIVE EQUIPMENT) AND ADJUST CIRCUIT BREAKER, WIRE SIZES & CONDUIT SIZES TO CONFORM WITH NEC & MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE. WIRE SIZES SHOWN ON THE PLANS ARE MINIMUM.
5. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, JUNCTION BOX, OR RACEWAY.
6. 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.

REVISION	DATE

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LINCOLN, ILLINOIS

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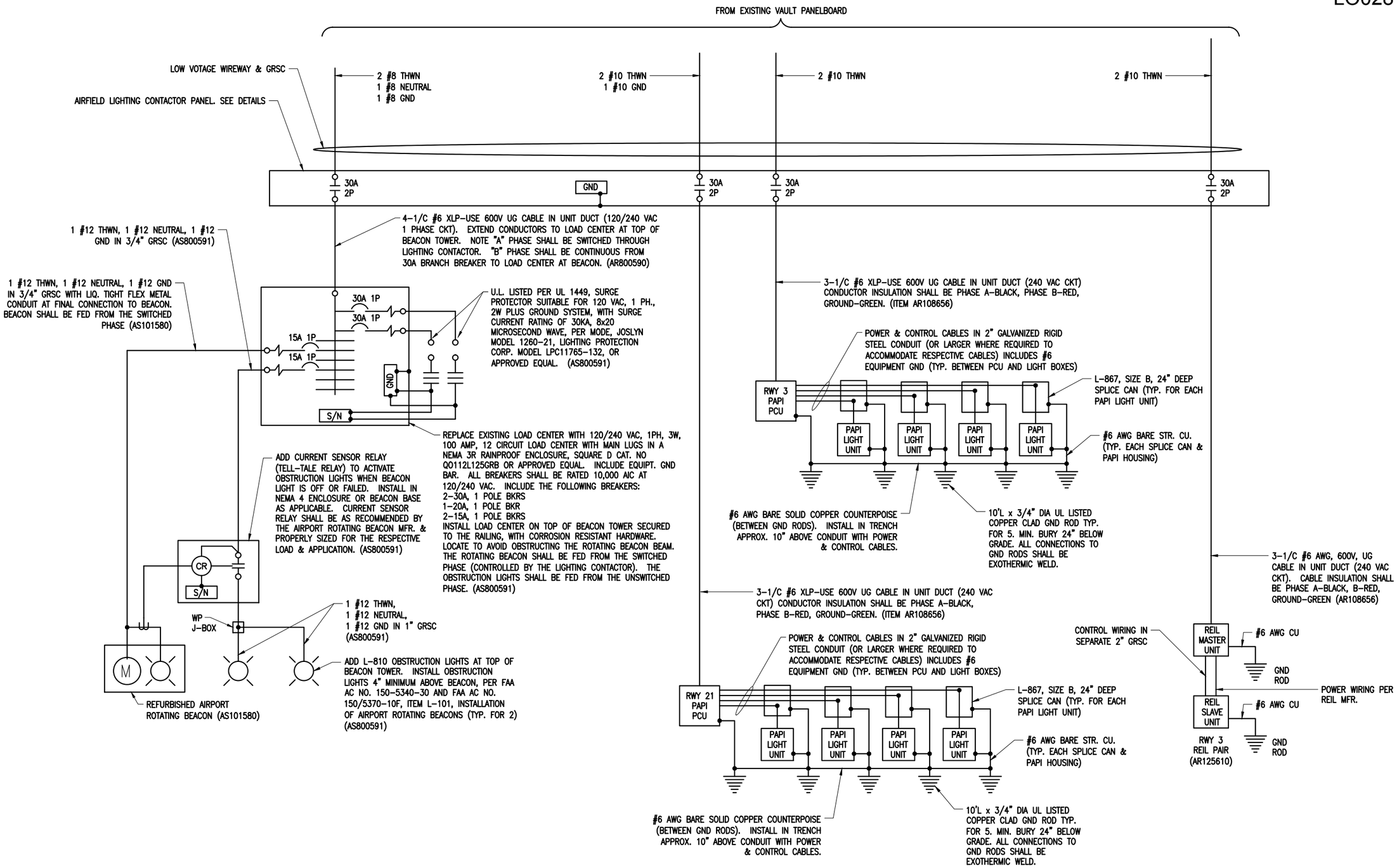
REPLACE AIRFIELD LIGHTING, REILS & VADIS

PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD SHEET 1



NOTE:

1. PROVIDE BOOST TRANSFORMER FOR EACH PAPI CIRCUIT WHERE VOLTAGE DROP FROM VAULT TO PAPI PCU EXCEEDS 5%. BOOST TRANSFORMER SHALL BE INSTALLED IN THE VAULT.

PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD (CONTINUED)

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LINCOLN, ILLINOIS

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REPLACE AIRFIELD LIGHTING, REILS & VADIS

PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD SHEET 2

EXISTING VAULT PANELBOARD

CKT #	DUTY				DUTY	CKT #
1	REGULATOR	50A 2P			BLANK	2
3		---		20A 2P	REIL	4
5	NDB	20A 2P		---		6
7		---		20A 1P	PLASI 3	8
9	CONTROL CIRCUIT	20A 1P		20A 1P	PLASI 21	10
11	BEACON	20A 1P		20A 1P	OUTLET	12
13	WIND CONE	20A 1P		20A 1P	LIGHTS	14
15	RADIO CONTROL	20A 1P		100A 2P	PANEL (T-HANGAR)	16
17	FAN	20A 1P		---		18
19	ADMIN BLDG	100A 2P			BLANK	20
21		---			BLANK	22
23	BLANK				BLANK	24
25	BLANK				BLANK	26
27	BLANK				BLANK	28
29	BLANK				BLANK	30
31	BLANK				BLANK	32
33	BLANK				BLANK	34
35	BLANK				BLANK	36
37	BLANK				BLANK	38
39	SNOW PLOW HANGAR	20A 2P			BLANK	40
41		---			BLANK	42

S/N

EXISTING VAULT PANEL IS A GENERAL ELECTRIC CAT NO. AQF14221T, 225 AMP, 120/240V, 1PH, 3W, 42 CKT WITH 225AMP, 2 POLE MAIN BREAKER WITH 22,000 A/C AT 240V IN A NEMA 1 ENCLOSTURE.

BRANCH BREAKERS HAVE 10,000 A/C AT 120/240VAC

EXISTING VAULT PANEL WITH ADDITIONS

CKT #	DUTY				DUTY	CKT #
1	RUNWAY 3-21 CONSTANT	60A 2P		60A 2P	SURGE PROTECTIVE DEVICE	2
3	CURRENT REGULATORS	---		---		4
5	NDB	20A 2P		15A 2P	RUNWAY 3 REIL	6
7		---		---		8
9	CONTROL CIRCUIT	15A 1P		30A 2P	RUNWAY 3 PAPI	10
11	AIRPORT ROTATING BEACON	30A 2P		---		12
13		---		20A 1P	OUTLET	14
15	SPARE	20A 1P		15A 1P	LIGHTS	16
17	VAULT FAN	15A 1P		100A 2P	T-HANGER PANEL	18
19	ADMIN BUILDING	100A 2P		---		20
21		---		20A 2P	RUNWAY 21 PAPI	22
23	BLANK			---		24
25	BLANK				BLANK	26
27	BLANK				BLANK	28
29	BLANK				BLANK	30
31	BLANK				BLANK	32
33	BLANK				BLANK	34
35	BLANK				BLANK	36
37	BLANK				BLANK	38
39	SNOW PLOW HANGAR	20A 2P			BLANK	40
41					BLANK	42

S/N GND

EXISTING VAULT PANEL IS A GENERAL ELECTRIC CAT. NO. AQF1422AT, 225 AMP, 120/240V, 1 PH, 3W, 42 CKT WITH 225 AMP, 2 POLE MAIN BREAKER WITH 22,000 A/C AT 240V IN A NEMA 1 ENCLOSURE

NOTES:

1. REPLACE THE 50 AMP, 2-POLE BREAKER (FOR THE REGULATOR) IN POSITIONS 1 & 3 WITH A NEW 60 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC.
2. REPLACE THE 20 AMP, 2 POLE BREAKER (FOR THE NDB) IN POSITIONS 5 & 7 WITH A NEW 20 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC.
3. REPLACE THE 20 AMP, 1-POLE BREAKER (FOR CONTROL POWER) IN POSITION 9 WITH A NEW 15 AMP, 1-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120 VAC.
4. REPLACE THE TWO 20 AMP, 1-POLE BREAKERS IN POSITIONS 11 & 13 WITH A NEW 30 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC TO FEED THE AIRPORT ROTATING BEACON.
5. REPLACE THE 20 AMP, 1 POLE BREAKER (FOR RADIO CONTROL) IN POSITION 15 WITH A NEW 20 AMP, 1-POLE BOLT-ON SPARE BREAKER WITH 22,000 A/C AT 120 VAC.
6. REPLACE THE 20 AMP, 1-POLE BREAKER (FOR VAULT FAN) IN POSITION 17 WITH A NEW 15 AMP, 1-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120 VAC.
7. REPLACE THE 100 AMP, 2-POLE BREAKER (FOR ADMIN BLDG) IN POSITIONS 19 & 21 WITH A NEW 100 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC.
8. REPLACE THE 20 AMP, 2-POLE BREAKER (FOR SNOW PLOW HANGAR) IN POSITIONS 39 & 41 WITH A NEW 20 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC.
9. FURNISH AND INSTALL A 60 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC IN POSITIONS 2 & 4 FOR THE SURGE PROTECTIVE DEVICE.
10. REPLACE THE 20 AMP, 2-POLE BREAKER (FOR RUNWAY 3 REILS) IN POSITIONS 6 & 8 WITH A NEW 15 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC.
11. REPLACE THE TWO 20 AMP, 1-POLE BREAKERS IN POSITIONS 10 & 12 WITH A NEW 20 AMP, 2 POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC TO FEED THE RUNWAY 3 PAPI.
12. REPLACE THE 20 AMP, 1-POLE BREAKER (FOR OUTLET) IN POSITION 14 WITH A NEW 20 AMP, 1-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120 VAC.
13. REPLACE THE 20 AMP, 1-POLE BREAKER (FOR LIGHTS) IN POSITION 16 WITH A NEW 15 AMP, 1-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120 VAC.
14. REPLACE THE 100 AMP, 2-POLE BREAKER (FOR T-HANGAR PANEL) IN POSITIONS 18 & 20 WITH A NEW 100 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC.
15. FURNISH AND INSTALL A 20 AMP, 2-POLE BOLT-ON BREAKER WITH 22,000 A/C AT 120/240 VAC IN POSITIONS 22 & 24 TO FEED THE RUNWAY 21 PAPI.
16. ALL EXISTING BREAKERS SCHEDULE FOR REPLACEMENT SHALL REMAIN AIRPORT PROPERTY.
17. UPDATE CIRCUIT DIRECTORY TO REFLECT ALL ADDITIONS AND CHANGES.
18. FURNISH AND INSTALL A COPPER EQUIPMENT GROUND BAR TO ACCOMMODATE ALL GROUND WIRES TO AND FROM THE PANELBOARD.
19. CIRCUIT BREAKERS AND WIRING SHALL BE SIZED FOR THE ACTUAL EQUIPMENT FURNISHED IN CONFOMANCE WITH THE RESPECTIVE MANUFACTURES RECOMMENDATION AND N.E.C. CONTRACTOR SHALL ADJUST CIRCUIT BREAKER SIZES AND WIRING SHERE APPLICABLE TO CONFORM WITH THE MANUFACTURER'S RECOMMENDATIONS AND N.E.C.

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

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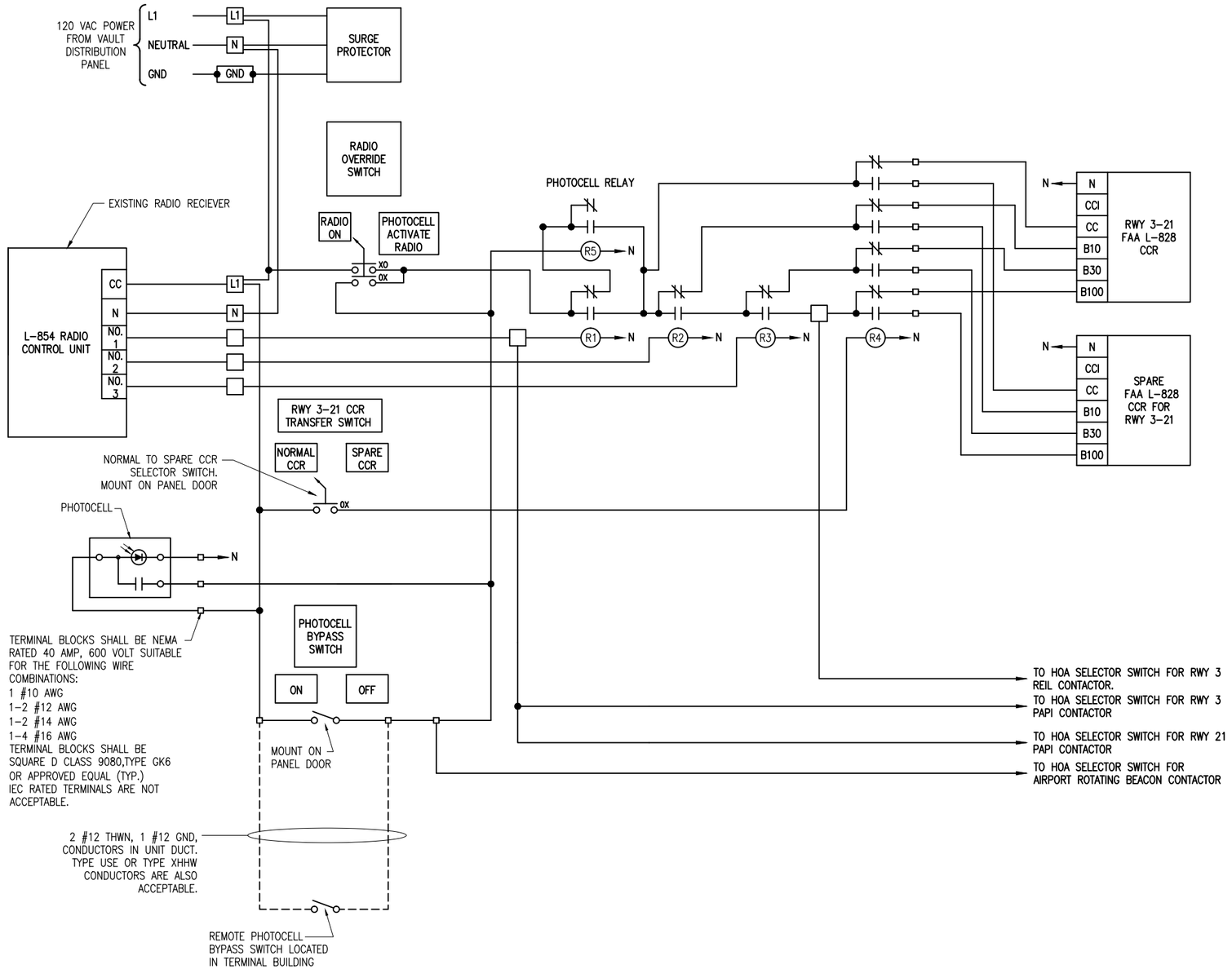
REPLACE AIRFIELD LIGHTING, REILS & VADIS

VAULT DISTRIBUTION PANELBOARD SCHEDULES



NOTES:

1. RELAY INTERFACE CONTROL PANEL SHALL BE MANUFACTURED BY AN FAA APPROVED L-821 PANEL BUILDER OR A UL 508 INDUSTRIAL CONTROL PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT AND THE "BUY AMERICAN ACT". RELAY INTERFACE CONTROL PANEL SHALL BE A SEPARATE PANEL. DO NOT COMBINE WITH LIGHTING CONTACTOR PANEL.
2. PANEL SHALL BE IN A NEMA 12 ENCLOSURE WITH HINGED COVER. DRILL HOLE IN BOTTOM OF ENCLOSURE TO ALLOW CONDENSATION TO ESCAPE.
3. EXTERNAL CONTROL CABLE SHALL BE NO. 12 AWG COPPER, 600 VOLT CABLE. ALL PANEL INTERIOR CONTROL CABLE SHALL BE MINIMUM 16 AWG, COPPER, 600 VOLT CABLE.
4. IN THE AUTOMATIC MODE OF OPERATION THE RUNWAY 3-21 CONSTANT CURRENT REGULATORS (PRIMARY UNIT & SPARE UNIT) SHALL BE CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:
   PHOTOCELL – 10% BRIGHTNESS & ACTIVATE RADIO CONTROL
   5 CLICKS – 30% BRIGHTNESS
   7 CLICKS – 100% BRIGHTNESS
5. THE RUNWAY 3-21 PAPI CIRCUITS WILL BE CONTROLLED IN THE AUTOMATIC MODE BY THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER. CONFIRM CONTROL WITH AIRPORT MANAGER.
   3 CLICKS – ON
   5 CLICKS – REMAIN ON
   7 CLICKS – REMAIN ON
6. THE RUNWAY 3 REIL CIRCUIT WILL BE 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
7. 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.
8. IN THE AUTOMATIC MODE OF OPERATION THE AIRPORT ROTATING BEACON SHALL BE ACTIVATED BY THE PHOTOCELL OR PHOTOCELL BYPASS SWITCH.
9. EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT & EACH CONTROL CIRCUIT.
10. INCLUDE PHOTOCELL BYPASS SWITCH.
11. SURGE PROTECTOR SHALL BE UL LISTED PER UL 1449, SUITABLE FOR 120 VAC, 1 PH, 2 WIRE PLUS GROUND SYSTEM WITH SURGE CURRENT RATING OF 40 KA (MIN.), 8x20 MICROSECOND WAVE, AND STATUS INDICATION LIGHTS IN A WEATHERPROOF HOUSING, JOSLYN MODEL 1260-21, OR APPROVED EQUAL. MAINTAIN LEADS AS SHORT & AS STRAIGHT AS POSSIBLE. INCLUDE MOUNTING BRACKET.
12. INCLUDE EQUIPMENT GROUND BAR, ILSCO D167-12 OR EQUAL.
13. CONTROL RELAYS SHALL HAVE 10 AMP CONTACT RATINGS AT 240 VAC WITH 120 VAC COILS. PROVIDE 3 SPARE RELAYS FOR EACH TYPE USED IN THE RELAY INTERFACE PANEL.
14. COLOR CODING FOR THE CONTROL WIRING TO EACH CONSTANT CURRENT REGULATOR SHALL BE CONSISTENT FOR ALL REGULATORS. COLOR CODING SHALL BE AS FOLLOWS:
    CC –RED
    10% –ORANGE
    30% –YELLOW
    100% –BLUE
    NEUTRAL –WHITE
    EQUIPT. GND –GREEN
    ALSO TAG THE CONTROL WIRES WITH THE RESPECTIVE DESIGNATION (CC, 10%, 30%, 100%)
15. "N" DESIGNATES NEUTRAL CONNECTION OR NEUTRAL CONDUTOR.

AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC

REVISION | DATE

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LINCOLN, ILLINOIS

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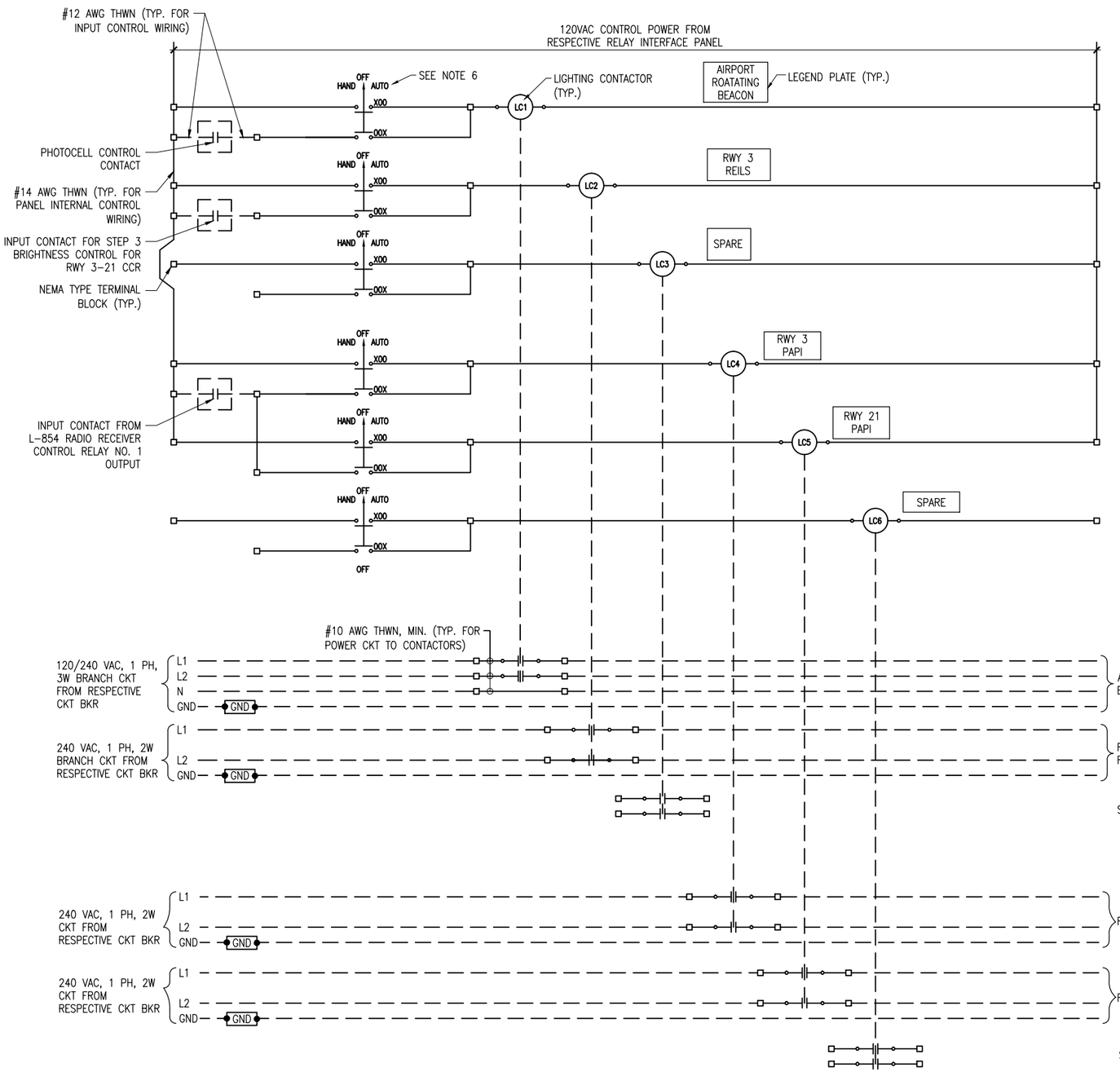
REPLACE AIRFIELD LIGHTING, REILS & VADIS

AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC



CONTROL PANEL FOR AIRFIELD NAVAIDS SCHEMATIC

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/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.
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, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "RWY 3 REIL" OR "AIRPORT ROTATING BEACON").

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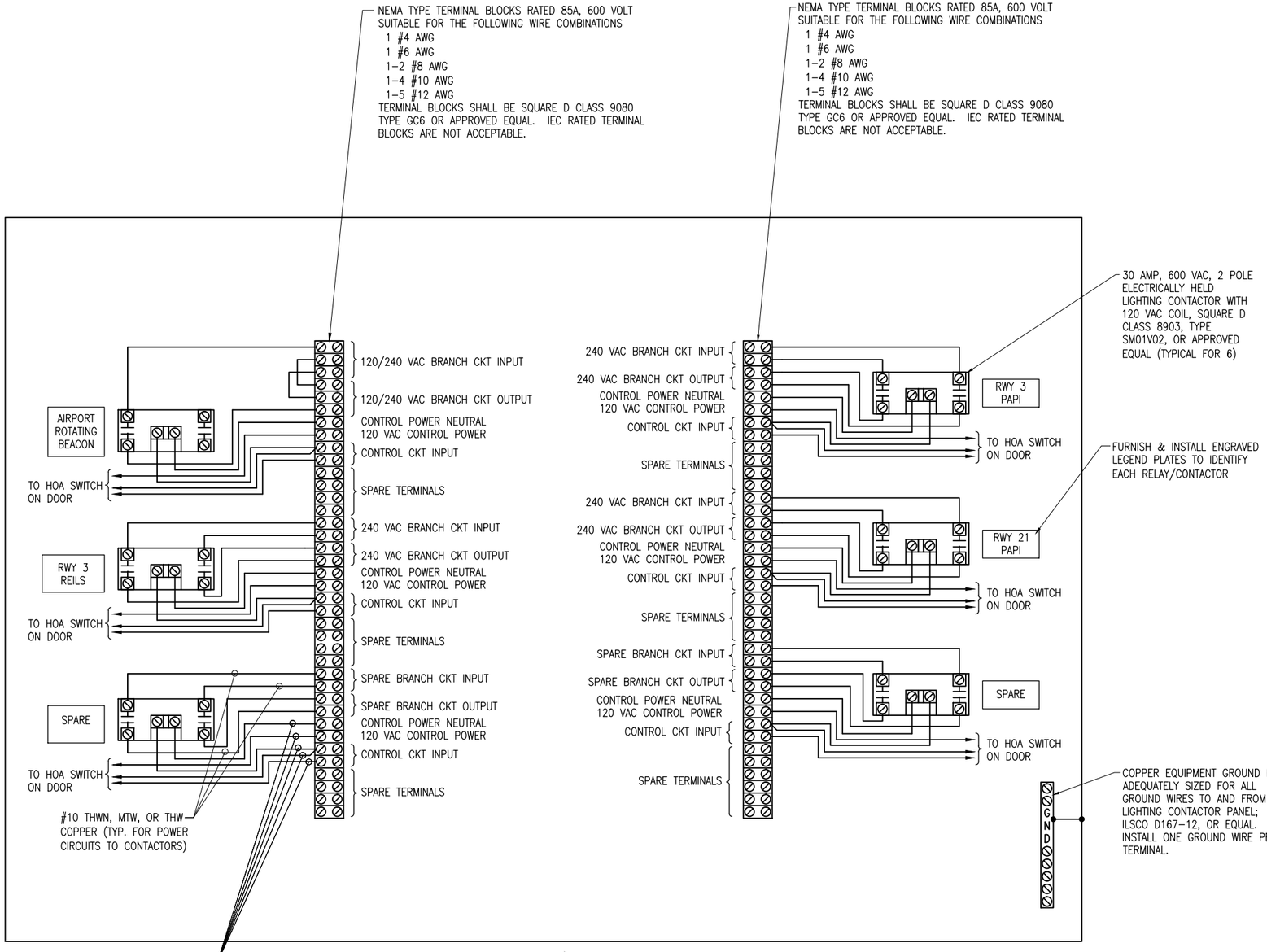
REPLACE AIRFIELD LIGHTING, REILS & VADIS

LIGHTING CONTACTOR PANEL SCHEMATIC



CONTROL PANEL FOR AIRFIELD NAVAIDS

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/RELAY PANEL. 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
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, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "AIRPORT ROTATING BEACON" OR "RWY 3 PLASI").
7. SEE "LIGHTING CONTACTOR SCHEMATIC" SHEET FOR ADDITIONAL INFORMATION ON WIRING. ALSO SEE "AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC" SHEET FOR INFORMATION ON WIRING.
8. INCLUDE LEGEND PLATE 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 LIGHTING AND NAVAIDS SHALL BE MANUFACTURED BY A UL 508 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. GUS BERTHOLD ELECTRIC (1900 WEST CARROLL AVENUE, CHICAGO, IL 60612, PHONE: 312-243-5767) IS AN APPROVED UL 508 INDUSTRIAL CONTROL PANEL BUILDER. WHERE THE PANEL MANUFACTURER IS AN FAA APPROVED L-821 PANEL BUILDER PROVIDE AN "L-821" LABEL ON THE PANEL.
11. ALL FEEDER AND/OR BRANCH CIRCUIT CONDUCTORS OF THE SAME CIRCUIT (INCLUDING NEUTRAL CONDUCTORS AND EQUIPMENT GROUNDING CONDUCTORS) SHALL BE CONTAINED WITHIN THE SAME RACEWAY, AUXILIARY GUTTER, OR WIREWAY TO COMPLY WITH NEC 300.3(B). FOR VOLTAGE POWERED CIRCUITS TO AIRFIELD DEVICES, ROUTE ALL PHASE, NEUTRAL, AND EQUIPMENT GROUNDING CONDUCTORS FROM THE VAULT PANELBOARD TO THE RELAY/CONTACTOR PANEL AND THEN TO THE RESPECTIVE AIRFIELD DEVICE.

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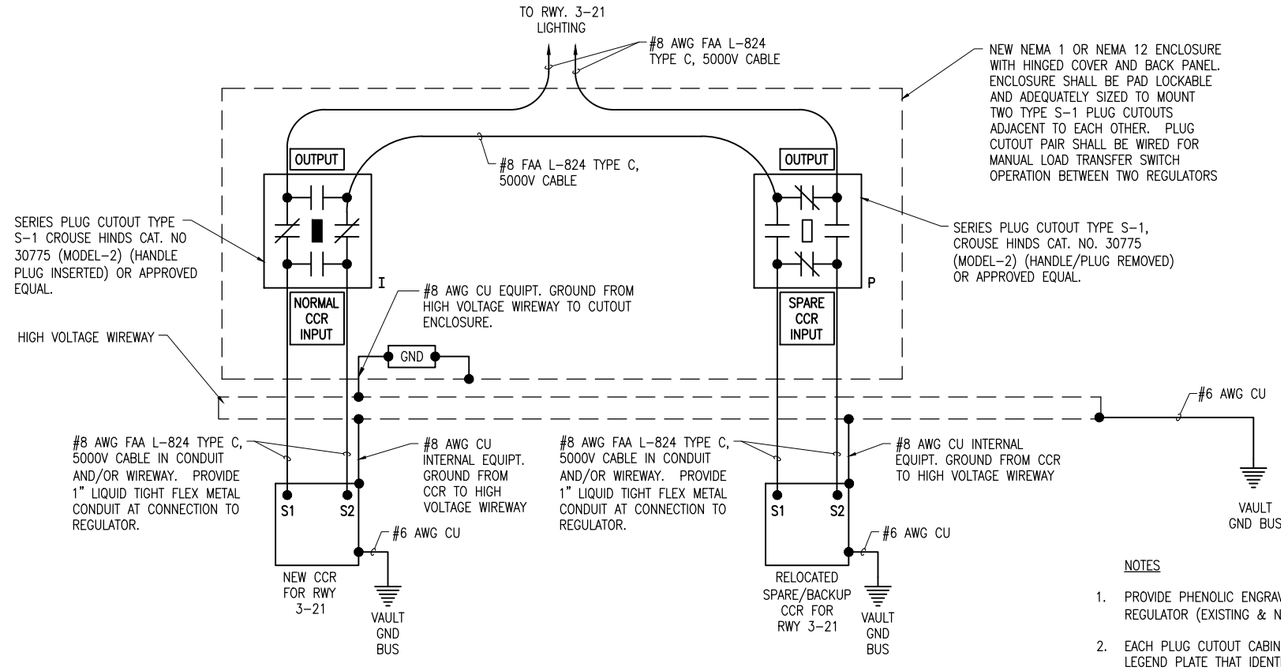
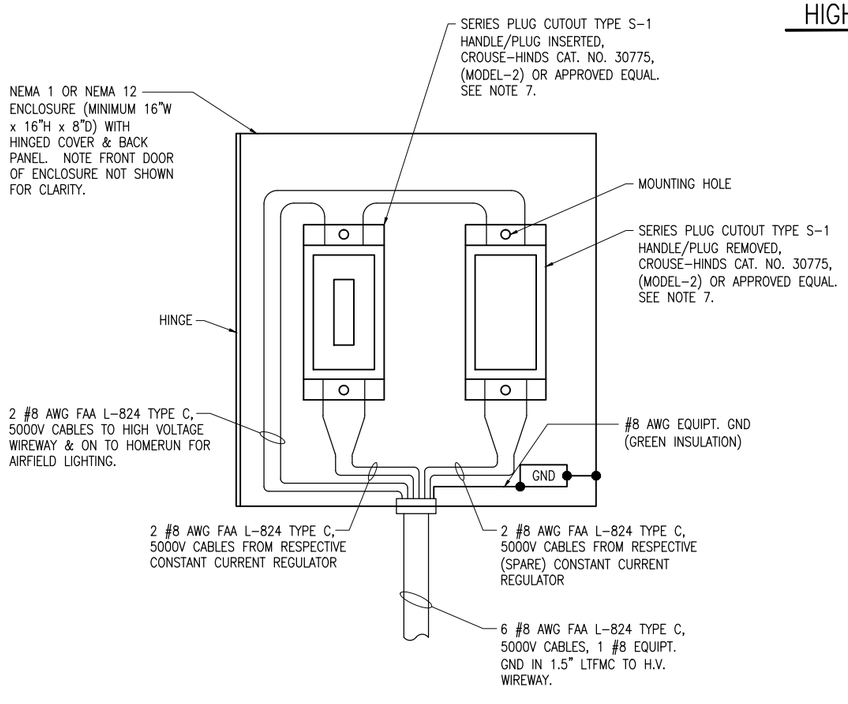
REPLACE AIRFIELD LIGHTING, REILS & VADIS

LIGHTING CONTACTOR PANEL DETAIL



HIGH VOLTAGE WIRING SCHEMATIC FOR RUNWAY

NOT TO SCALE



SERIES PLUG CUTOUT MOUNTING DETAIL FOR RUNWAY CIRCUIT

NOT TO SCALE

NOTES

1. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CONSTANT CURRENT REGULATOR (EXISTING & NEW) NOTING THE RUNWAY AND/OR TAXIWAY SERVED.
2. EACH PLUG CUTOUT CABINET SHALL BE FURNISHED WITH A PHENOLIC ENGRAVED LEGEND PLATE THAT IDENTIFIES THE RESPECTIVE RUNWAY OR TAXIWAY CIRCUIT OR REGULATOR. INCLUDE AN ADDITIONAL LEGEND PLATE LABELED "CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF".
3. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR THE CUTOUTS TO IDENTIFY THE RESPECTIVE REGULATOR OUTPUT CONNECTION AND THE RESPECTIVE CIRCUIT LOAD CONNECTION.
4. BOND EACH REGULATOR FRAME TO VAULT GROUND BUS WITH A DEDICATED #6 AWG COPPER BONDING JUMPER.
5. PROVIDE ADEQUATE WORKING SPACE IN FRONT OF EACH CUTOUT ENCLOSURE TO MEET NEC CLEARANCE REQUIREMENTS.
6. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING AND SUNLIGHT RESISTANT. 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 LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL LISTED. CONFIRM LIQUID TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.
7. SERIES PLUG CUTOUTS SHALL BE TYPE S-1, RATED 5000 VOLTS, 20-AMP, AND SHALL COMPLY WITH FAA AC 150/5340-4C, SERIES PLUG CUTOUTS SHALL BE RATED SUITABLE FOR NORMAL OPERATION WITH HANDLE REMOVED OR HANDLE INSERTED. CUTOUTS SHALL DISCONNECT THE INPUT FROM THE OUTPUT, SHORT THE INPUT TERMINALS, AND SHORT THE OUTPUT TERMINALS WHEN THE HANDLE/PLUG IS REMOVED. CUTOUTS SHALL BE SUITABLE FOR MANUAL TRANSFER OPERATION (ONE SERIES CIRCUIT LOOP WITH THE CAPABILITY OF BEING POWERED FROM EITHER OF TWO CONSTANT CURRENT REGULATOR POWER SOURCES). SERIES PLUG CUTOUTS SHALL BE CROUSE-HINDS CAT. NO. 30775, OR APPROVED EQUAL THE RESPECTIVE MANUFACTURER SHALL CERTIFY IN WRITING THAT THEIR CUTOUT IS SUITABLE AND RATED FOR THE RESPECTIVE APPLICATION.
8. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, JUNCTION BOX, OR RACEWAY.

LEGEND

"I" DENOTES PLUG CUTOUT WITH PLUG INSERTED

"P" DENOTES PLUG CUTOUT WITH PLUG PULLED

"CCR" DENOTES CONSTANT CURRENT REGULATOR

REVISION | DATE

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REPLACE AIRFIELD LIGHTING, REILS & VADIS

HIGH VOLTAGE WIRING SCHEMATIC FOR RUNWAY

LEGEND PLATE SCHEDULE

DEVICE	LABEL
VAULT MAIN SERVICE DISCONNECT	VAULT MAIN SERVICE DISCONNECT 120/240 VAC, 1 PH, 3 W
VAULT MAIN SERVICE DISCONNECT	MAX AVAILABLE FAULT CURRENT CALCULATED TO BE 17,705 AMPS LINE TO LINE ON 10/15/2012
VAULT MAIN DISTRIBUTION PANELBOARD	MAIN DIST PANEL 120/240 VACM 1 PH, 3W
MAIN BREAKER IN VAULT PANEL	MAIN BREAKER
RUNWAY 3–21 CCR	RUNWAY 3–21
BACKUP/SPARE CCR FOR RUNWAY 3–21	SPARE FOR RUNWAY 3–21
CUTOUT ENCLOSURE FOR RUNWAY 3–21	RUNWAY 3–21 CUTOUTS
NORMAL CUTOUT INPUT SIDE CONNECTION FOR RUNWAY 3–21	NORMAL CCR INPUT
SPARE CUTOUT INPUT SIDE CONNECTION FOR RUNWAY 3–21	SPARE CCR INPUT
EACH CUTOUT (RUNWAY 3–21) OUTPUT SIDE CONNECTION (2 LEGEND PLATES)	OUTPUT
EACH CUTOUT ENCLOSURE (2 LEGEND PLATES)	CAUTION OPERATE CUTOUTS WITH CCR'S SHUT OFF
RADIO RELAY INTERFACE PANEL	RADIO RELAY INTERFACE PANEL
MANUAL TRANSFER SWITCH FOR RUNWAY 3–21 NORMAL CCR AND SPARE/BACKUP CCR	TRANSFER SWITCH FOR RUNWAY 3–21 CONSTANT CURRENT REGULATORS
MANUAL TRANSFER SWITCH FOR RUNWAY 3–21 NORMAL CCR AND SPARE/BACKUP CCR – NORMAL SWITCH POSITION	NORMAL CCR
MANUAL TRANSFER SWITCH FOR RUNWAY 3–21 NORMAL CCR AND SPARE/BACKUP CCR – BACKUP SWITCH POSITION	SPARE/BACKUP CCR
CONTROL PANEL FOR AIRFIELD NAVAIDS	LIGHTING CONTACTOR PANEL FOR AIRFIELD NAVAIDS
CONTACTOR PANEL FOR AIRFIELD NAVAIDS	NOTICE CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME
LOW VOLTAGE WIREWAY (PROVIDE 3 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND)	LOW VOLTAGE
HIGH VOLTAGE WIREWAY (PROVIDE 3 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND)	HIGH VOLTAGE
VAULT GROUND BUS (PROVIDE 2 LEGEND PLATES 1/2" HIGH WHITE LETTERS GREEN BACKGROUND; INSTALL ABOVE OR BELOW GROUND BUS)	VAULT GROUND BUS
GROUNDING ELECTRODE CONDUCTORS TERMINATED ON VAULT GROUND BUS. (PROVIDE 3 LEGEND PLATES & SECURE TO CONDUCTORS WITH NYLON STRING OR CABLE TIES)	DO NOT DISCONNECT

DIRECTIONS TO TRANSFER RUNWAY 3–21 LIGHTING FROM NORMAL CCR TO SPARE/BACKUP CCR.

1. SHUT OFF INPUT POWER (CIRCUIT BREAKER) TO BOTH RWY 3–21 CCR'S & TURN CCR SELECTOR SWITCHES TO OFF.
2. OPERATE MANUAL TRANSFER SWITCH FOR RWY 3–21 AND MOVE HANDLE FROM "NORMAL" POSITION TO "SPARE/BACKUP" POSITION.
3. PULL CUTOUT HANDLE FROM NORMAL CCR UNIT & INSERT INTO SPARE CCR CUTOUT.
4. GO TO RADIO RELAY INTERFACE PANEL & TURN "RWY 3–21 CCR TRANSFER" SELECTOR SWITCH FROM "NORMAL" TO "SPARE" POSITION.
5. TURN ON INPUT POWER (CIRCUIT BREAKER) TO SPARE RWY 3–21 CCR.
6. TURN SELECTOR SWITCH ON SPARE CCR TO "REMOTE" POSITION.

PROVIDE PLACARD OR LEGEND PLATE FOR RUNWAY CONSTANT CURRENT REGULATOR PAIR AS NOTED ABOVE: LETTERING TO BE MIN. 1/4" HIGH, BLACK ON WHITE BACKGROUND. LOCATE PLACARD ABOVE OR ADJACENT TO CUTOUT ENCLOSURE FOR RESPECTIVE RUNWAY.

RUNWAY 3–21 CCR TRANSFER PROCEDURE PLACARD DETAIL

NOTES:

1. LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND UNLESS NOTED OTHERWISE. SECURE WITH WEATHERPROOF ADHESIVE AND MACHINE SCREWS. FURNISH ADDITIONAL LEGEND PLATES WHERE REQUIRED BY CODE, FOR ADDITIONAL EQUIPMENT, AS DETAILED HEREIN ON THE PLANS, AND AS NOTED IN THE SPECIAL PROVISION SPECIFICATIONS.
2. FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH SAFETY SWITCH, PANELBOARD, LOAD CENTER, CUTOUT, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION". LABELS SHALL BE HAZARD COMMUNICATION SYSTEMS, LLC (190 OLD MILFORD RD., BOX 1174, MILFORD, PA 18337, PHONE: 1–877–748–0244) PART NO. H6010–9VWHBJ OR APPROVED EQUAL.

"DANGER – HIGH VOLTAGE KEEP OUT" SIGN

PROVIDE WARNING SIGN ON VAULT EXTERIOR DOORS LABELED "DANGER – HIGH VOLTAGE – KEEP OUT" PER THE REQUIREMENTS OF NEC 110.34 (C). PROVIDE MINIMUM OF 2 SIGNS (ONE ON EACH DOOR TO THE VAULT).

"DANGER – HIGH VOLTAGE" SIGN

FURNISH AND INSTALL "DANGER – HIGH VOLTAGE" LABELS/SIGNS FOR EACH CUTOUT ENCLOSURE, EACH CONSTANT CURRENT REGULATOR, AND THE HIGH VOLTAGE WIREWAY, TO COMPLY WITH FAA AC 150/5340–26B "MAINTENANCE OF AIRPORT VISUAL AID FACILITIES".

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3–17–0062–B20

Hanson Proj. No. 12A0055D
Filename E–606–SCHD.dwg
Scale NOT TO SCALE
Date 12/14/2012

LAYOUT	KNL	11/04/12
DRAWN	TRR	11/06/12
REVIEWED	CAH/KNL	12/7/12

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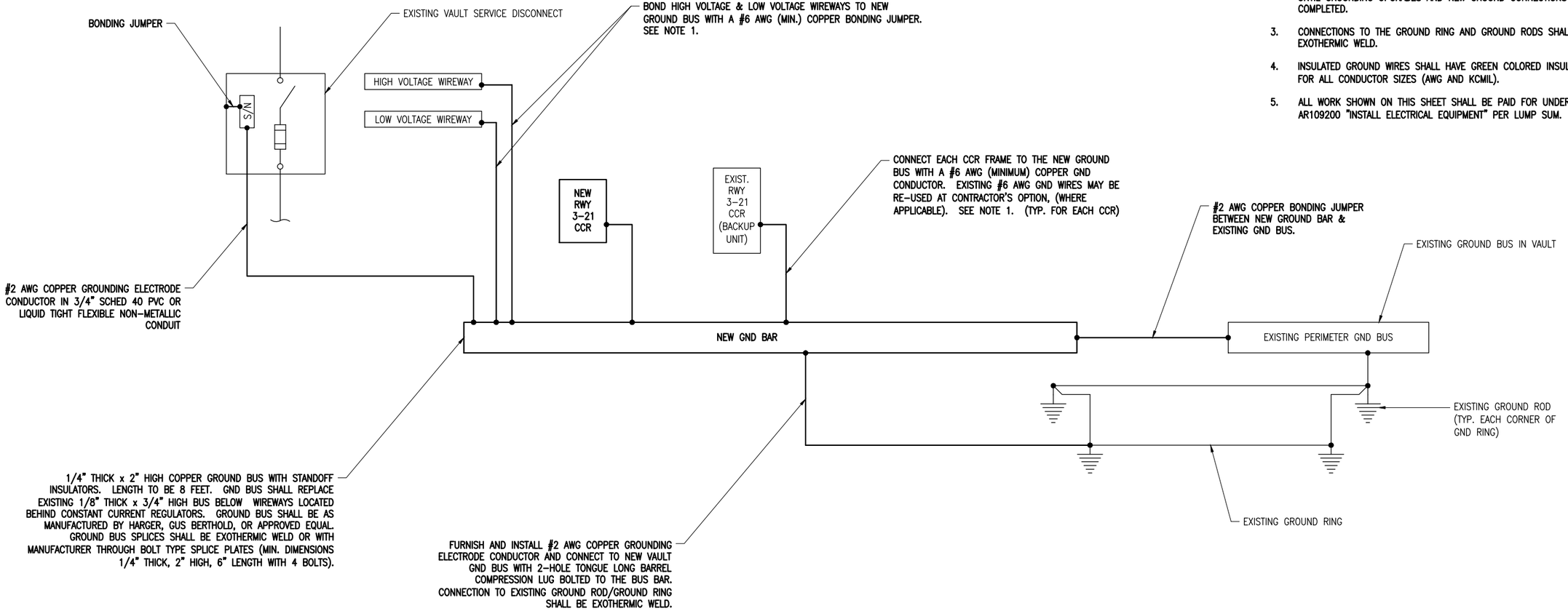
REPLACE AIRFIELD LIGHTING, REILS & VADIS

LEGEND PLATE SCHEDULES



CCR GROUND BUSS RISER

NOTES FOR CCR GROUND BUS RISER

1. CONNECTIONS TO GROUND BUS BARS SHALL BE WITH 2-HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.
2. CONSTANT CURRENT REGULATORS SHALL BE SHUT OFF PRIOR TO DISCONNECTING EXISTING FRAME GROUNDS AND SHALL REMAIN OFF UNTIL GROUNDING UPGRADES AND NEW GROUND CONNECTIONS ARE COMPLETED.
3. CONNECTIONS TO THE GROUND RING AND GROUND RODS SHALL BE EXOTHERMIC WELD.
4. INSULATED GROUND WIRES SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR SIZES (AWG AND KCMIL).
5. ALL WORK SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER ITEM AR109200 "INSTALL ELECTRICAL EQUIPMENT" PER LUMP SUM.

NOTE: LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND UNLESS NOTED OTHERWISE. SECURE WITH WEATHERPROOF ADHESIVE AND MACHINE SCREWS. FURNISH ADDITIONAL LEGEND PLATES WHERE REQUIRED BY CODE, FOR ADDITIONAL EQUIPMENT, AS DETAILED HEREIN ON THE PLANS, AND AS NOTED IN THE SPECIAL PROVISION SPECIFICATIONS.

FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH SAFETY SWITCH, PANELBOARD, LOAD CENTER, CUTOUT, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION". LABELS SHALL BE HAZARD COMMUNICATION SYSTEMS, LLC (190 OLD MILFORD RD., BOX 1174, MILFORD, PA 18337, PHONE: 1-877-748-0244) PART NO. H6010-9VWHBJ OR APPROVED EQUAL.

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename E-607-CCR.dwg
Scale NOT TO SCALE
Date 12/14/2012

LAYOUT	KNL	11/04/12
DRAWN	TRR	11/06/12
REVIEWED	CAH/KNL	12/7/12

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CCR GROUND BUS RISER

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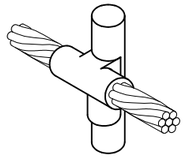
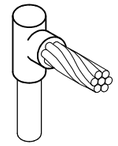


CABLE TO GROUND ROD



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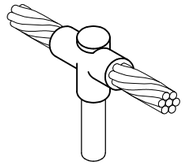

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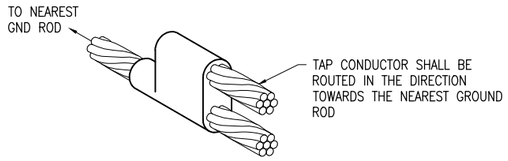
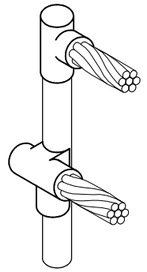


CABLE TO CABLE
HORIZONTAL PARALLEL TAP



CABLES TO GROUND ROD

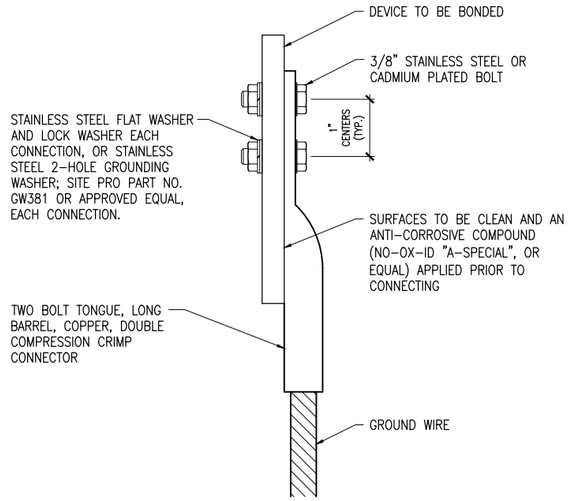
DETAIL NOTES

1. ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, OR THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.

2. 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.

3. 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



2 HOLE LONG BARREL COMPRESSION LUG TABLE			
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

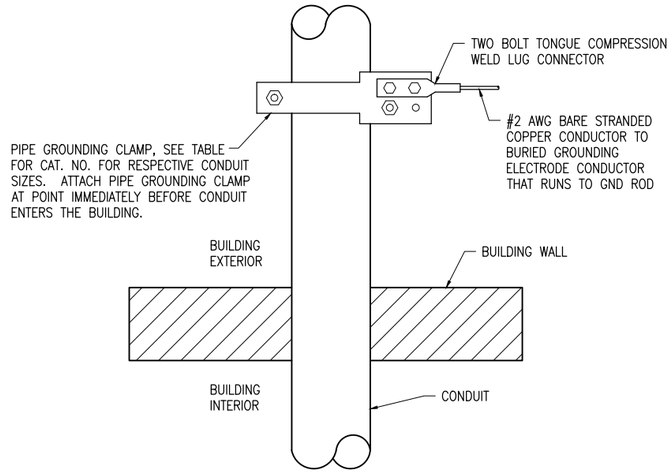
1. ALL CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.

2. 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.

3. 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.

4. ALL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND (SANCHEM INC. NO-OX-ID "A-SPECIAL", BURNDY PENETROX E, OR 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



PIPE GROUNDING CLAMP TABLE	
BURNDY CAT. NO.	CONDUIT SIZE
GAR3902TC	1/2" - 1"
GAR3903TC	1 1/4" - 2"
GAR3904TC	2 1/2" - 3 1/2"
GAR3905TC	4" - 5"
GAR3906TC	6"
GAR3907TC	8"

NOTES

1. EXTERIOR CONDUIT GROUNDING IS REQUIRED FOR THE PHOTOCELL CONDUIT, RADIO ANTENNA CONDUIT, & OTHER CONDUITS EXTENDING TO THE ROOF LEVEL.

2. CONNECTIONS TO BURIED GROUNDING ELECTRODE CONDUCTOR SHALL BE EXOTHERMIC WELD.

EXTERIOR CONDUIT GROUNDING DETAIL

REVISION | DATE

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename E-509-GRND.dwg
Scale NONE
Date 12/14/2012

LAYOUT	KNL	10/20/12
DRAWN	DAW	12/3/12
REVIEWED	CAH/KNL	12/7/12

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REPLACE AIRFIELD LIGHTING, REILS & VADIS

GROUNDING DETAILS

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GROUNDING NOTES

1. 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 SHEILDING 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:

2. FURNISH AND INSTALL GROUND RODS AS DETAILED HEREIN. GROUND RODS FOR AIRFIELD LIGHTING (RUNWAY LIGHTING, TAXIWAY LIGHTING, TAXI GUIDANCE SIGNS, & DISTANCE REMAINING SIGNS) 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 ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE 1-800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE 918-663-1440) OR ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE 1-800-842-7437) 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 OR AT BURIED GROUNDING ELECTRODE CONDUCTORS.

3. 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 PROJECT REPRESENTATIVE.

4. ALL PRODUCTS ASSOCIATED WITH THE GROUNDING SYSTEM SHALL BE UL-LISTED AND LABELED.

5. ALL BOLTED OR MECHANICAL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND BEFORE JOINING, SANCHEM INC. "NO-OX-ID "A-SPECIAL" COMPOUND, BURNDY PENETROX E, OR EQUAL.

6. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2011 NATIONAL ELECTRICAL CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.

7. 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 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

8. 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.

9. ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.

10. 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.

11. 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 2011 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.

12. 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 2011 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 2011 NEC 250-102.

13. 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.

14. PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUNDED NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.

15. EACH AND ALL GROUNDED CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.

16. 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, OR APPROVED EQUAL.

17. BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.

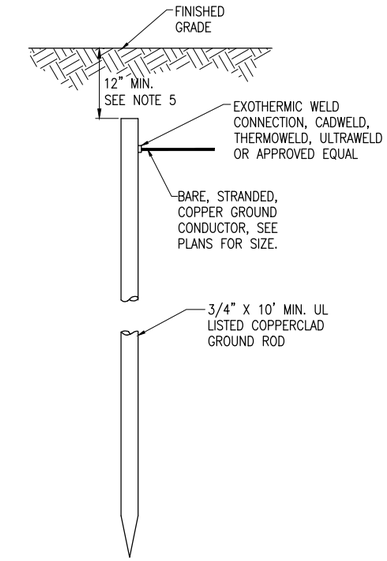
18. BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.

19. 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.

20. 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 2011 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.

21. 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.

22. GROUND RODS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. STEEL USED TO MANUFACTURER GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.



10 FT. GROUND ROD

NOTES

1. TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
2. THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.
3. COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED. GROUND RODS FOR VAULT WILL BE CONSIDERED INCIDENTAL TO ITEM AR109200.
4. GROUND RODS SHALL BE SPACED AS DETAILED ON THE PLANS AND SHALL NOT BE SPACED LESS THAN ONE ROD LENGTH APART.
5. TOP OF GROUND RODS SHALL BE 12" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN. TOP OF GROUND RODS FOR VAULT SHALL BE 30" MIN. BELOW GRADE. GROUND RING CONDUCTORS SHALL BE 40" MINIMUM BELOW GRADE TO BE BELOW FROST LINE (FOR LOGAN COUNTY, ILLINOIS).
6. GROUND RODS FOR RUNWAY LIGHTING, TAXIWAY LIGHTING, AND TAXI GUIDANCE SIGNS SHALL BE A MINIMUM 3/4-INCH DIAMETER BY 10-FT LONG UL LISTED COPPER CLAD.
7. GROUND RODS FOR VAULT, WIND CONES, BEACON TOWER, AND OTHER NAVAIDS SHALL BE A MINIMUM 3/4-INCH DIAMETER BY 10-FT LONG UL LISTED COPPER CLAD.

GROUND RODS
(NOT TO SCALE)

DATE	REVISION
4/6/13	3/4" X 10' L GND ROD FOR AIRFIELD LIGHTING

LOGAN COUNTY AIRPORT
LINCOLN, ILLINOIS

IL PROJ: AAA-4217 BLOCK GRANT: 3-17-0062-B20

Hanson Proj. No. 12A0055D
Filename E-004-NOTE.dwg
Scale NONE
Date 12/14/2012

LAYOUT	KNL	10/20/12
DRAWN	DAW	12/3/12
REVIEWED	CAH/KNL	12/7/12

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REPLACE AIRFIELD LIGHTING, REILS & VADIS

GROUNDING NOTES