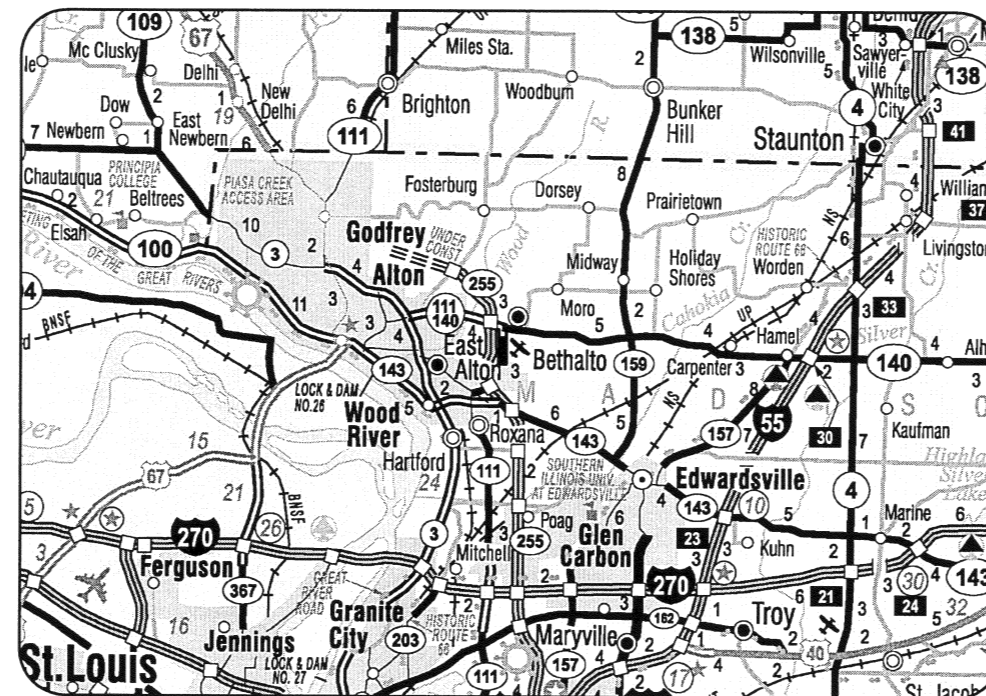
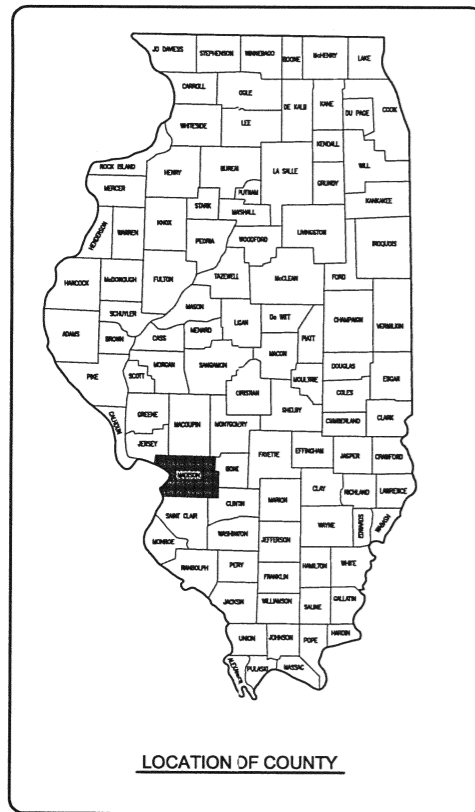


# CONSTRUCTION PLANS FOR ST. LOUIS REGIONAL AIRPORT EAST ALTON, MADISON COUNTY, ILLINOIS REPLACE HIGH INTENSITY RUNWAY LIGHTING ON RUNWAY 11-29

SCOPE OF WORK

THIS PROJECT CONSISTS OF THE REPLACEMENT OF THE HIGH INTENSITY RUNWAY LIGHTING SYSTEM AND INSTALL SUPPLEMENTAL WIND CONES ON RUNWAY 11-29; INSTALL A REIL UNIT ON RUNWAY END 11; VAULT MODIFICATIONS. ALSO ASSOCIATED WITH THIS PROJECT WILL BE THE REPLACEMENT OF THE TAXI GUIDANCE SIGNS AND DISTANCE REMAINING SIGNS ON RUNWAY 11-29



ILL. PROJ.: ALN-4065  
A.I.P. PROJ.: 3-17-0002-B46  
LATITUDE: 38° 53' 42"  
LONGITUDE: 90° 02' 76"  
ELEVATION: 544' M.S.L.  
DATE: FEB. 4, 2011



REVISED 03/01/11

**HANSON**  
Hanson Professional Services Inc.  
ELECTRICAL ENGINEER

Submitted by: *Kevin N. Lightfoot* ENG'R

Date Submitted: March 01, 2011

Lics. Exp. Date: November 30, 2011

ST. LOUIS REGIONAL AIRPORT AUTHORITY

Approved: *[Signature]* AIRPORT MANAGER

Date: \_\_\_\_\_

REVISION									
DATE									
ST. LOUIS REGIONAL AIRPORT									
ST. LOUIS REGIONAL AIRPORT EAST ALTON, ILLINOIS A.I.P. PROJ.: 3-17-0002-B46 ILL. PROJ.: ALN-4065									
Hanson Project No. 10A0121D Filename: R-001CVR.DWG Scale: NOT TO SCALE Date: 02/04/11									
LAYOUT	KNL	01/07/11							
DRAWN	BAK	01/07/11							
REVIEWED	CAH	01/14/11							
<b>HANSON</b> Hanson Professional Services Inc. 2011 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2886 Ph: (217) 785-2450 Fax: (217) 785-2903 www.hanson-inc.com Offices Nationwide									
REPLACE HIRL ON RUNWAY 11-29 COVER SHEET									
1									
1 of 43 sheets									

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REVISION	DATE	REVISION
Revised as per IDA Review - KNL	03/01/11	

**SUMMARY OF QUANTITIES**

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AR107408	L-806 WIND CONE-8' LIGHTED	EACH	2	
AR107900	REMOVE WIND CONE	EACH	1	
AR108086	1/C #6 XLP-USE	L. F.	3,700	
AR108106	1/C #6 5KV UG CABLE	L. F.	21,800	
AR108800	CONTROL CABLE	L. F.	1,100	
AR109200	INSTALL ELECTRICAL EQUIPMENT	L. S.	1	
AR110012	2" DIRECTIONAL BORE	L. F.	1,860	
AR110202	2" PVC DUCT DIRECT BURY	L. F.	18,200	
AR110610	ELECTRICAL HANDHOLE	EACH	19	
AR125445	TAXI GUIDANCE SIGN, 5 CHARACTER	EACH	3	
AR125560	RUNWAY DISTANCE REMAINING SIGN	EACH	7	
AR125565	SPLICE CAN	EACH	11	
AR125610	REILS	PAIR	1	
AR125904	REMOVE TAXI GUIDANCE SIGN	EACH	3	
AR125905	REMOVE RWY DISTANCE REMAIN SIGN	EACH	7	
AR125907	REMOVE REILS	PAIR	1	
AR125965	RELOCATE RWY DISTANCE REMAIN SIGN	EACH	1	
AR125982	REFURBISH BASE MOUNTED LIGHT	EACH	100	
AR150510	ENGINEER'S FIELD OFFICE	L. S.	1	
AR800591	UPGRADE AIRPORT ROTATING BEACON	L. S.	1	

**INDEX TO SHEETS**

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	SUMMARY OF QUANTITIES AND INDEX OF SHEETS
3	PROPOSED SAFETY PLAN
4	EXISTING ELECTRICAL PLAN 300' RT.
5	EXISTING ELECTRICAL PLAN STA. 8+00 TO STA. 21+00
6	EXISTING ELECTRICAL PLAN STA. 21+00 TO STA. 34+00
7	EXISTING ELECTRICAL PLAN STA. 34+00 TO STA. 48+00
8	EXISTING ELECTRICAL PLAN STA. 48+00 TO STA. 62+00
9	EXISTING ELECTRICAL PLAN STA. 62+00 TO STA. 76+00
10	EXISTING ELECTRICAL PLAN STA. 76+00 TO STA. 90+00
11	PROPOSED ELECTRICAL PLAN 300' RT.
12	PROPOSED ELECTRICAL PLAN STA. 8+00 TO STA. 21+00
13	PROPOSED ELECTRICAL PLAN STA. 21+00 TO STA. 34+00
14	PROPOSED ELECTRICAL PLAN STA. 34+00 TO STA. 48+00
15	PROPOSED ELECTRICAL PLAN STA. 48+00 TO STA. 62+00
16	PROPOSED ELECTRICAL PLAN STA. 62+00 TO STA. 76+00
17	PROPOSED ELECTRICAL PLAN STA. 76+00 TO STA. 90+00
18	EXISTING DISTANCE REMAINING SIGN RELOCATION PLAN
19	ELECTRICAL DETAILS SHEET 1
20	ELECTRICAL DETAILS SHEET 2
21	ELECTRICAL DETAILS SHEET 3
22	ELECTRICAL DETAILS SHEET 4
23	L-806 WIND CONE ELEVATION DETAIL
24	REIL INSTALLATION DETAILS
25	LIGHTNING PROTECTION DETAILS FOR BEACON
26	ELECTRICAL NOTES SHEET 1
27	ELECTRICAL NOTES SHEET 2
28	ELECTRICAL LEGEND AND ABBREVIATIONS
29	EXISTING ELECTRICAL EQUIPMENT PLAN FOR AIRPORT VAULT
30	EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT
31	PROPOSED ELECTRICAL PLAN FOR AIRPORT VAULT
32	PROPOSED LIGHTING PLAN FOR AIRPORT VAULT
33	PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT
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35	PANELBOARD SCHEDULES
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38	RUNWAY 11-29 AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC
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41	LEGEND PLATE SCHEDULE
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ST. LOUIS REGIONAL AIRPORT



EAST ALTON, ILLINOIS

IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A0121D	02/04/11	KNL	01/07/11
Filename R-002ELP.DWG	NOT TO SCALE	MAW	01/10/11
Scale	Date	REVIEWED	CAH

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 www.hanson-inc.com  
 Offices Nationwide

REPLACE HIRL  
ON RUNWAY 11-29

SUMMARY OF QUANTITIES  
AND INDEX OF SHEETS

**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.

**HAUL ROUTE AND VEHICLE PARKING**

THE CONTRACTOR WILL USE THE DESIGNATED HAUL ROUTE AND PARKING AREA AS SHOWN ON THIS SHEET. THE PROPOSED PARKING AREA WILL BE 200' X 200'. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE PROPOSED HAUL ROUTE AND PARKING AREA 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 GRADE, FERTILIZE, SEED AND MULCH THE HAUL ROUTE AND PARKING AREA AS NEEDED TO RESTORE IT TO ITS' ORIGINAL STATE. RESTORATION OF THE HAUL ROUTE AND PARKING AREA WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

**CONTRACTOR RESPONSIBILITIES**

THE CONTRACTOR'S EQUIPMENT PARKING AND STORAGE AREA WILL BE AS SHOWN ON THIS SHEET. THE CONTRACTOR'S EMPLOYEES WILL PARK THEIR VEHICLES IN THIS AREA. ONLY CONTRACTOR VEHICLES WILL BE ALLOWED OUTSIDE THIS AREA.

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

THE CONTRACTOR SHALL KEEP RUNWAY 17-35 OPEN AS MUCH AS POSSIBLE AND MAINTAIN CONTINUOUS TAXIWAY ACCESS TO ALL HANGARS AND ADMINISTRATIVE AREAS.




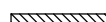


ALL WORK PERFORMED SHALL BE DONE IN A ORDERLY AND EFFECTIVE MANNER TO MINIMIZE RUNWAY CLOSURE.

ALL CONSTRUCTION OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5370-2E "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".

**BARRICADES AND TRAFFIC CONES**

IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN BARRICADES AND TRAFFIC CONES 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.

**LEGEND**

-  EXISTING IMPROVEMENTS
-  PROPOSED IMPROVEMENTS
-  EXISTING BUILDINGS
-  PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
-  PROPOSED BENCHMARK
-  PROPOSED BARRICADES OR TRAFFIC CONES

**SCOPE OF WORK**

THIS PROJECT CONSISTS OF THE REPLACEMENT OF THE HIGH INTENSITY LIGHTING SYSTEM AND INSTALL SUPPLEMENTAL WIND CONES ON RUNWAY 11-29; INSTALL A REIL UNIT ON RUNWAY END 11; VAULT MODIFICATIONS. ALSO ASSOCIATED WITH THIS PROJECT WILL BE THE REPLACEMENT OF THE TAXI GUIDANCE SIGNS AND DISTANCE REMAINING SIGNS ON RUNWAY 11-29

**AIRPORT SECURITY NOTE**

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

**EROSION CONTROL**

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

**HEIGHT OF CONSTRUCTION EQUIPMENT**

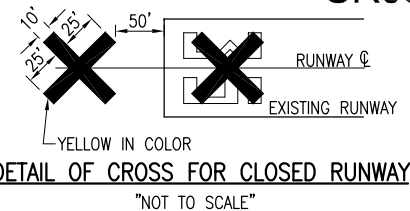
THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 70 FEET WHICH IS EXPECTED TO BE A CRANE OR BUCKET TRUCK TO WORK ON THE BEACON. THE CRANE OR BUCKET TRUCK SHALL BE IN THE LOWERED POSITION WHEN NOT IN USE. AT ALL OTHER LOCATIONS THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 25', WHICH IS EXPECTED TO BE A CONCRETE TRUCK OR A LINE TRUCK.

**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 CERTIFICATION**

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.



**NOTE:**

COST OF CONSTRUCTING, PLACING, MAINTAINING AND REMOVING CROSSES WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. THE CROSSES WILL BE YELLOW IN COLOR AND SHALL BE MADE OF A SUITABLE MATERIAL AS APPROVED BY THE AIRPORT MANAGER. THE CROSSES WILL BE PLACED OVER THE NUMERALS AND SECURED IN A MANNER APPROVED BY THE MANAGER. 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. NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

**J.U.L.I.E. INFORMATION**

COUNTY MADISON  
CITY BETHALTO  
TOWNSHIP ALTON - WOODRIVER  
SECTION NO. 13 & 18  
ADDRESS ST. LOUIS REGIONAL AIRPORT  
8 TERMINAL DRIVE  
EAST ALTON, ILLINOIS 62024

**CRITICAL POINT DATA**

POINT NO. 1  
LATITUDE: 38° 53' 40.02"  
LONGITUDE: 90° 03' 09.48"  
ELEVATION: 539.2 M.S.L.

POINT NO. 2  
LATITUDE: 38° 53' 38.22"  
LONGITUDE: 90° 03' 04.12"  
ELEVATION: 539.6 M.S.L.

**PROPOSED SAFETY PLAN**

GENERAL - THE ST. LOUIS REGIONAL AIRPORT IS COMPRISED OF TWO RUNWAYS. THE PROPOSED CONSTRUCTION WILL NECESSITATE CLOSING BOTH RUNWAYS. RUNWAY 11-29 WILL BE CLOSED AT THE START OF THE CONSTRUCTION WEEK AND WILL REMAIN CLOSED UNTIL THE END OF THE CONSTRUCTION WEEK. AT THAT TIME THE CONTRACTOR WILL RE-ACTIVATE THE LIGHTING SYSTEM AND NAVAIDS, SMOOTH GRADE ALL AREAS WITHIN THE SAFETY AREA TO THE SATISFACTION OF THE RESIDENT ENGINEER AND RE-OPEN RUNWAY 11-29. RUNWAY 17-35 WILL BE CLOSED WHEN CONSTRUCTION ACTIVITIES ARE WITHIN 200' OF IT'S CENTERLINE, RUNWAY 17-35 WILL ONLY BE CLOSED DURING THE CONSTRUCTION DAY. IT WILL BE RE-OPEN AT THE END OF EACH CONSTRUCTION DAY. THE CONTRACTOR WILL EXPEDITE ALL CONSTRUCTION ACTIVITIES WITHIN 200' OF RUNWAY 17-35 TO LIMIT THE TIME THE AIRPORT IS TOTALLY CLOSED. ALL WORK INCLUDED IN OPENING AND CLOSING A RUNWAY WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

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 (120.20 MHz.) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE ST. LOUIS REGIONAL 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.

**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 NOV. 2, 2009.

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

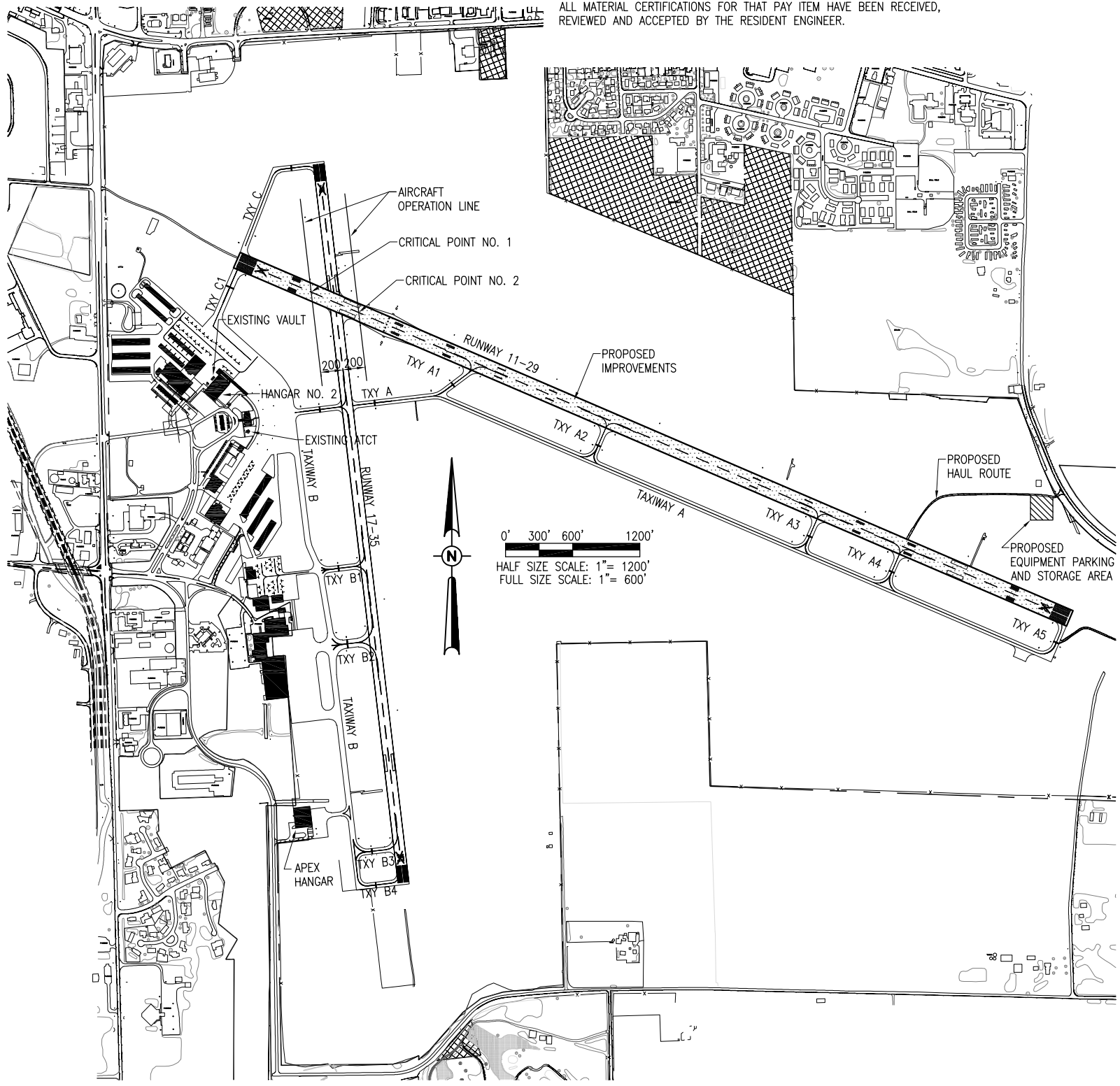
THE ENGINEERING FIRM WILL MAKE PAYMENT FOR ALL LONG DISTANCE TELEPHONE CALLS IN EXCESS OF ONE HUNDRED DOLLARS (\$100.00) PER MONTH.



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.

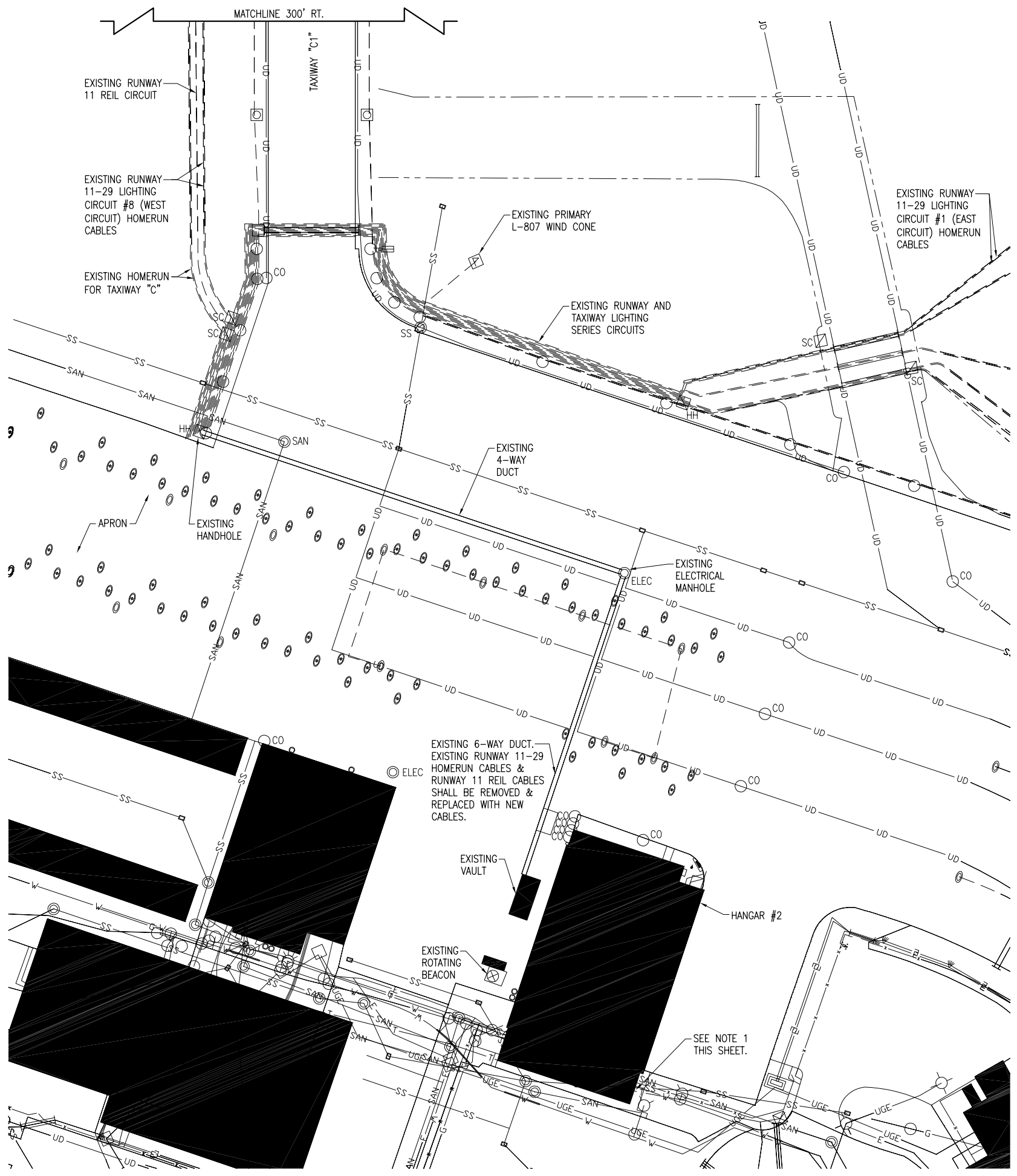
THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE PAID FOR UNDER ITEMS: AR150510 ENGINEER'S FIELD OFFICE \_\_\_\_ 1 L.S.

**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 17-35 IS NOT CLOSED. THE CONTRACTOR WILL MAINTAIN THE LATHE LINE FOR THE DURATION OF THIS PROJECT.



REVISION	
DATE	
ST. LOUIS REGIONAL AIRPORT	
	
EAST ALTON, ILLINOIS	
IL PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46	
Hanson Project No.	10A0121D
Filename	R-0035FY.DWG
Scale	1" = 600'
Date	02/04/11
LAYOUT	10/04/10
DRAWN	BAK
REVIEWED	CAH
	
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REPLACE HIRL ON RUNWAY 11-29	PROPOSED SAFETY PLAN
<span style="font-size: 2em; font-weight: bold;">3</span> 3 of 43 sheets	

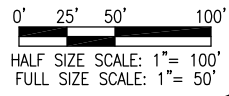


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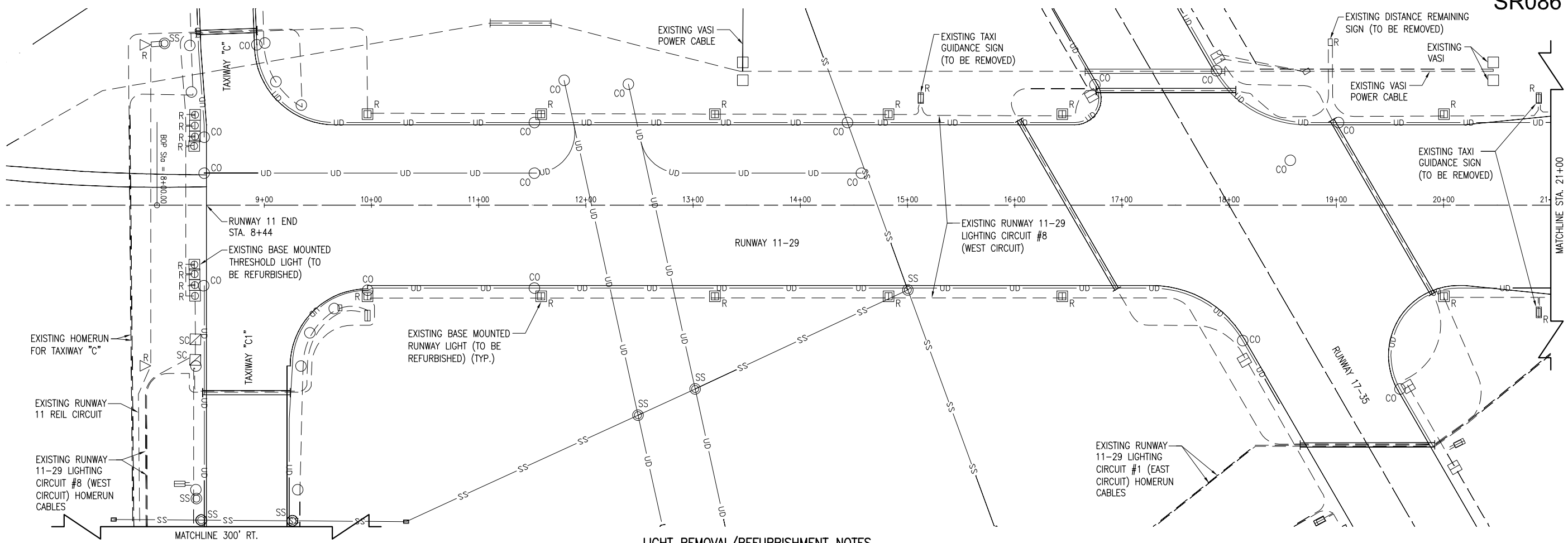
**NOTE:**  
 1. APPROXIMATE LOCATION OF EXISTING SERVICE DISCONNECT FOR VAULT IS AT THE SOUTHEAST CORNER OF HANGAR #2. FEEDER FOR VAULT IS ROUTED THROUGH HANGAR #2. PULL BOX AND CONDUIT FOR CONTROL CABLES BETWEEN THE VAULT AND THE ATCT IS ALSO LOCATED IN THIS AREA. CONTROL WIRING CONDUIT IS ROUTED THROUGH HANGAR #2 THEN TRANSITIONS TO A BELOW GRADE DUCT SYSTEM TO THE ATCT. FIELD VERIFY EXISTING SITE CONDITIONS AND CONDUIT/DUCT ROUTES.

- LEGEND**
- [Solid Line] EXISTING PAVEMENT
  - [Hatched Area] EXISTING BUILDING
  - [Dashed Line] EXISTING ELECTRICAL DUCT
  - [Dotted Line] EXISTING ELECTRICAL CABLES
  - [Dashed Line] ABANDONED ELECTRICAL CABLES
  - [Line with 'UD'] EXISTING UNDERDRAIN
  - [Line with 'SS'] EXISTING STORM SEWER
  - [Line with 'SAN'] EXISTING SANITARY SEWER
  - [Line with 'W'] EXISTING WATER LINE
  - [Line with 'X'] EXISTING FENCE
  - [Circle with 'X'] EXISTING ROTATING BEACON
  - [Circle with 'O'] EXISTING STAKE MOUNTED TAXIWAY LIGHT
  - [Square with 'X'] EXISTING BASE MOUNTED TAXIWAY LIGHT
  - [Square with 'E'] EXISTING TAXI GUIDANCE SIGN
  - [Square with 'HH'] EXISTING ELECTRICAL HANDHOLE
  - [Square with 'SC'] EXISTING SPLICE CAN
  - [Square with 'I'] EXISTING INLET
  - [Circle with 'SAN'] EXISTING SANITARY SEWER MANHOLE
  - [Circle with 'SS'] EXISTING STORM SEWER MANHOLE
  - [Circle with 'CO'] EXISTING EDGEDRAIN CLEANOUT
  - [Triangle with 'A'] EXISTING FLOOD LIGHT
  - [Circle with 'T'] EXISTING TIE-DOWN
  - [Circle with 'G'] EXISTING GROUND ROD



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REVISION		ST. LOUIS REGIONAL AIRPORT  EAST ALTON, ILLINOIS IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46
DATE		
Hanson Project No. 10A0121D Filename R-141ELE.DWG Scale 1" = 50' Date 02/04/11		 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2886 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide
LAYOUT	12/28/10	
DRAWN	BAK	01/07/11
REVIEWED	CAH	01/14/11
REPLACE HIRL ON RUNWAY 11-29	EXISTING ELECTRICAL PLAN 300' RT.	4 4 of 43 sheets



REVISION	DATE

ST. LOUIS REGIONAL AIRPORT  
**St. Louis Regional**  
 EAST ALTON, ILLINOIS  
 IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A0121D	12/28/10
Filename R-141ELE.DWG	BAK/KNL
Scale 1" = 50'	BAK
Date 02/04/11	1/07/11
LAYOUT	REVIEWED
DRAWN	CAH
DATE	01/14/11

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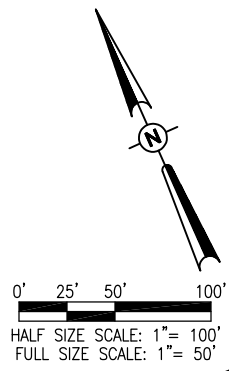
REPLACE HIRL  
 ON RUNWAY 11-29  
 EXISTING ELECTRICAL  
 PLAN STA. 8+00 TO  
 STA. 21+00

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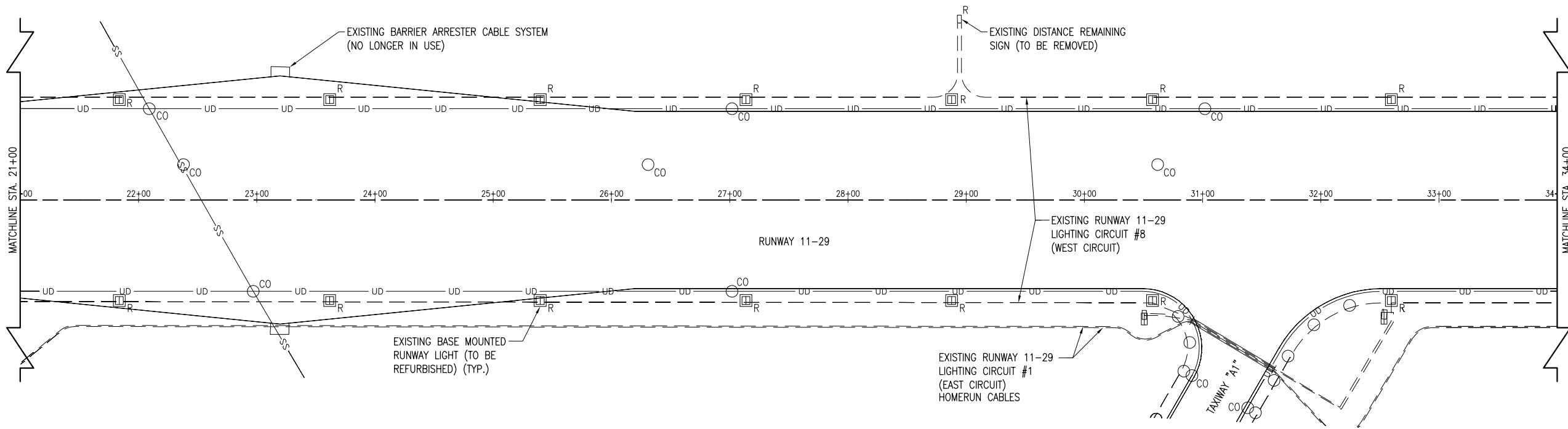
**LIGHT REMOVAL/REFURBISHMENT NOTES**

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT 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).
- CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING THE RESPECTIVE AIRFIELD LIGHTING OR NAVAID DEVICE.
- THE EXISTING HIGH INTENSITY RUNWAY EDGE AND THRESHOLD LIGHTS ON RUNWAY 11-29 WERE RECENTLY REPLACED BY THE AIRPORT. WHEN THESE LIGHTS WERE REPLACED THE EXISTING LIGHT BASES, TRANSFORMERS, & CABLES WERE REUSED. THE EXISTING RUNWAY LIGHTS DESIGNATED FOR REFURBISHMENT SHALL BE DISCONNECTED AND CAREFULLY REMOVED BY THE CONTRACTOR AS NOT TO DAMAGE THE LIGHTS. THE EXISTING ISOLATION TRANSFORMERS SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. THE EXISTING LIGHT BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE. NEW LIGHT BASES AND NEW SERIES ISOLATION TRANSFORMERS SHALL BE PROVIDED FOR EACH LIGHT DESIGNATED TO BE REFURBISHED. ISOLATION TRANSFORMERS FOR RUNWAY EDGE LIGHTS SHALL BE 100 WATT, 20 AMP PRIMARY/6.6 AMP SECONDARY. ISOLATION TRANSFORMERS FOR THE THRESHOLD LIGHTS SHALL BE 200 WATT, 20 AMP PRIMARY/6.6 AMP SECONDARY. THE LIGHT ASSEMBLIES, ISOLATION TRANSFORMERS, AND LIGHT BASES SHALL BE INSTALLED AT THE LOCATIONS SHOWN. REFURBISHED RUNWAY LIGHTS WILL BE PAID FOR UNDER:  
 AR125982 REFURBISH BASE MOUNTED LIGHT PER EACH.
- THE CONTRACTOR IS ENCOURAGED TO INSPECT EACH EXISTING LIGHT PRIOR TO REMOVAL AND IDENTIFY TO THE RESIDENT ENGINEER ANY DAMAGED OR NON-OPERATIONAL PARTS. ONCE THE EXISTING LIGHTS ARE REMOVED, THE CONTRACTOR IS RESPONSIBLE FOR ALL FIXTURES DAMAGED DURING THE RELOCATION AND REFURBISHMENT. ALL LIGHTS WILL BE REINSTALLED IN PROPER WORKING ORDER, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- ALL EXISTING TAXI GUIDANCE SIGNS AND RUNWAY DISTANCE REMAINING SIGNS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED. THE SIGNS AND THEIR ISOLATING TRANSFORMERS SHALL BE TURNED OVER TO THE AIRPORT. THE CONCRETE LIGHT BASES AND FOUNDATIONS SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE. REMOVAL OF THE EXISTING TAXI GUIDANCE SIGNS AND RUNWAY DISTANCE REMAINING SIGNS WILL BE PAID FOR UNDER:  
 AR125904 "REMOVE TAXI GUIDANCE SIGN" PER EACH  
 AR125905 "REMOVE RWY. DISTANCE REMAIN SIGN" PER EACH
- THE HOLE LEFT FROM THE LIGHT OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE CONTRACTOR SHALL PROVIDE EARTH MATERIAL AND WILL BE CONSIDERED AN INCIDENTAL ITEM TO THE LIGHT REMOVAL. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDING IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH LIGHT REMOVALS, RELOCATIONS AND/OR REFURBISHMENTS SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, WHERE APPLICABLE, AND ABANDONED IN PLACE ELSEWHERE.
- POWER FOR REIL SYSTEM ON RUNWAY 11-29 SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO REMOVING THE RESPECTIVE REIL SYSTEM. POWER FOR THE EXISTING REIL SYSTEM LOCATED ON RUNWAY END 11 IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM THE RESPECTIVE POWER SOURCE FOR EACH REIL SYSTEM. REMOVAL OF THE REILS WILL BE PAID FOR UNDER:  
 AR125907 "REMOVE REILS" PER PAIR.
- ALL ABOVE GROUND 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 150/5370-2E, - OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION, PART 3-6, C.
- NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.



**LEGEND**

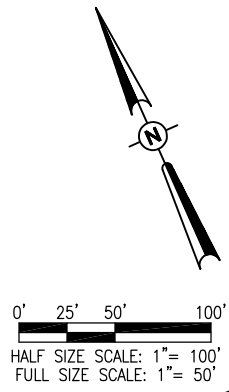
EXISTING PAVEMENT	EXISTING SPICE CAN
EXISTING ELECTRICAL DUCT	EXISTING STORM SEWER MANHOLE
EXISTING ELECTRICAL CABLES	EXISTING UNDERDRAIN CLEANOUT
EXISTING UNDERDRAIN	EXISTING BASE MOUNTED RUNWAY LIGHT (TO BE REFURBISHED)
EXISTING STORM SEWER	EXISTING BASE MOUNTED THRESHOLD LIGHT (TO BE REFURBISHED)
EXISTING STAKE MOUNTED TAXIWAY LIGHT	EXISTING REILS (TO BE REMOVED)
EXISTING STAKE MOUNTED RUNWAY LIGHT	EXISTING DISTANCE REMAINING SIGN (TO BE REMOVED)
EXISTING TAXI GUIDANCE SIGN	EXISTING GUIDANCE SIGN (TO BE REMOVED)



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  - EXISTING UNDERDRAIN
  - EXISTING STORM SEWER
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  - EXISTING TAXI GUIDANCE SIGN
  - EXISTING UNDERDRAIN CLEANOUT
  - EXISTING BASE MOUNTED RUNWAY LIGHT (TO BE REFURBISHED)
  - EXISTING DISTANCE REMAINING SIGN (TO BE REMOVED)



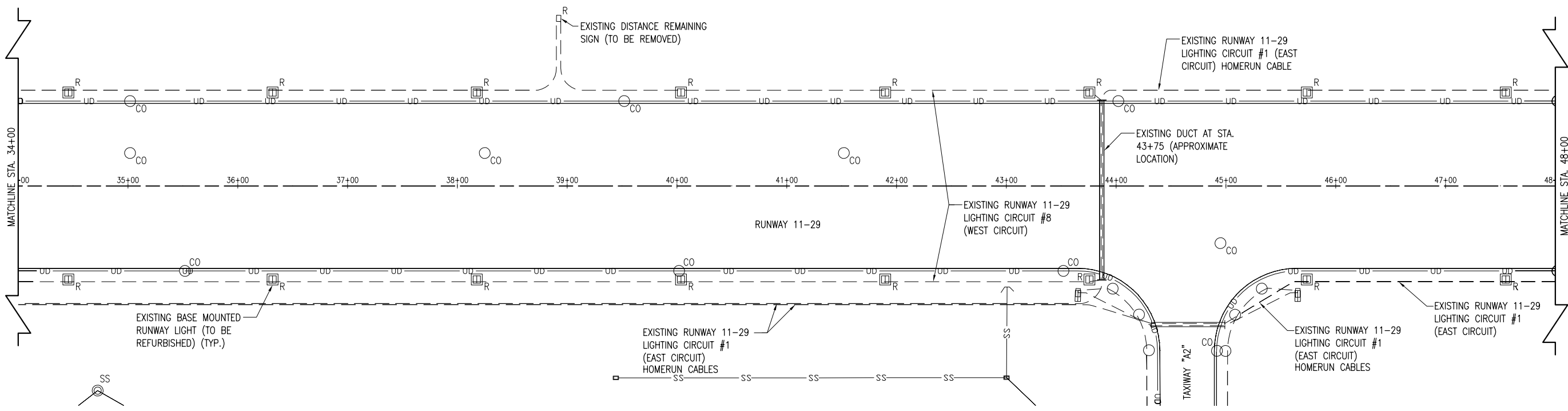
REVISION	DATE

ST. LOUIS REGIONAL AIRPORT  
**St. Louis Regional**  
*Airport*  
 EAST ALTON, ILLINOIS  
 IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A0121D	12/28/10
Filename R-141ELE.DWG	BAK
Scale 1" = 50'	BAK
Date 02/04/11	CAH
LAYOUT	01/14/11
DRAWN	01/07/11
REVIEWED	01/14/11

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REPLACE HIRL  
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 PLAN STA. 21+00 TO  
 STA. 34+00

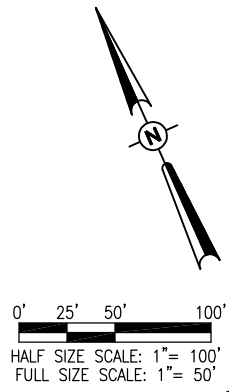


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**LEGEND**

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EXISTING ELECTRICAL DUCT	EXISTING STORM SEWER MANHOLE
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EXISTING UNDERDRAIN	EXISTING INLET
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EXISTING STAKE MOUNTED TAXIWAY LIGHT	EXISTING DISTANCE REMAINING SIGN (TO BE REMOVED)



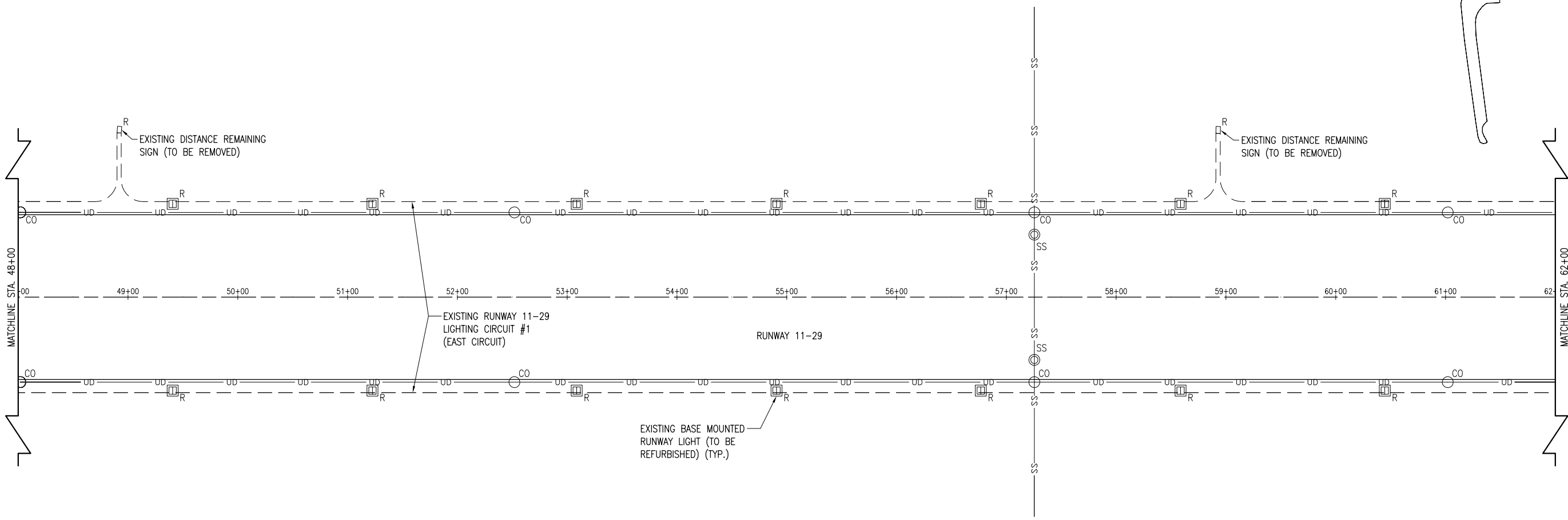
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ST. LOUIS REGIONAL AIRPORT  
**St. Louis Regional**  
 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No.	10A0121D
Filename	R-141ELE.DWG
Scale	1" = 50'
Date	02/04/11
LAYOUT	KNL/BAK 12/28/10
DRAWN	BAK 01/07/11
REVIEWED	CAH 01/14/11

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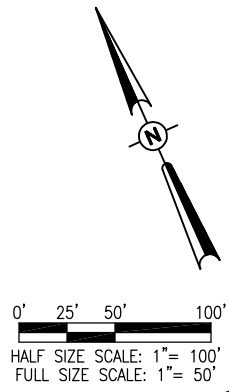
REPLACE HIRL  
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  - EXISTING DISTANCE REMAINING SIGN (TO BE REMOVED)



REVISION	DATE

ST. LOUIS REGIONAL AIRPORT

EAST ALTON, ILLINOIS

IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A0121D	12/28/10
Filename R-141ELE.DWG	BAK
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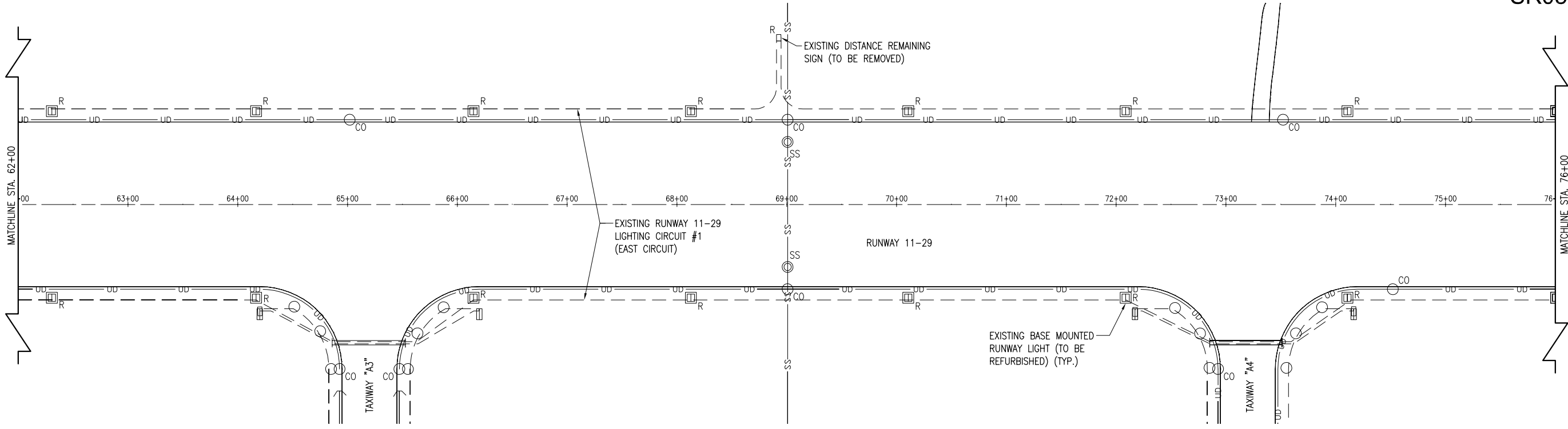
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REPLACE HIRL ON RUNWAY 11-29

EXISTING ELECTRICAL PLAN STA. 48+00 TO STA. 62+00

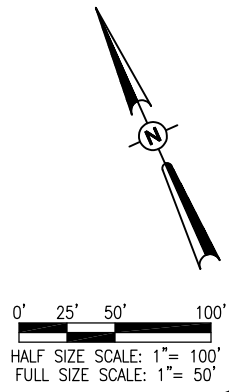




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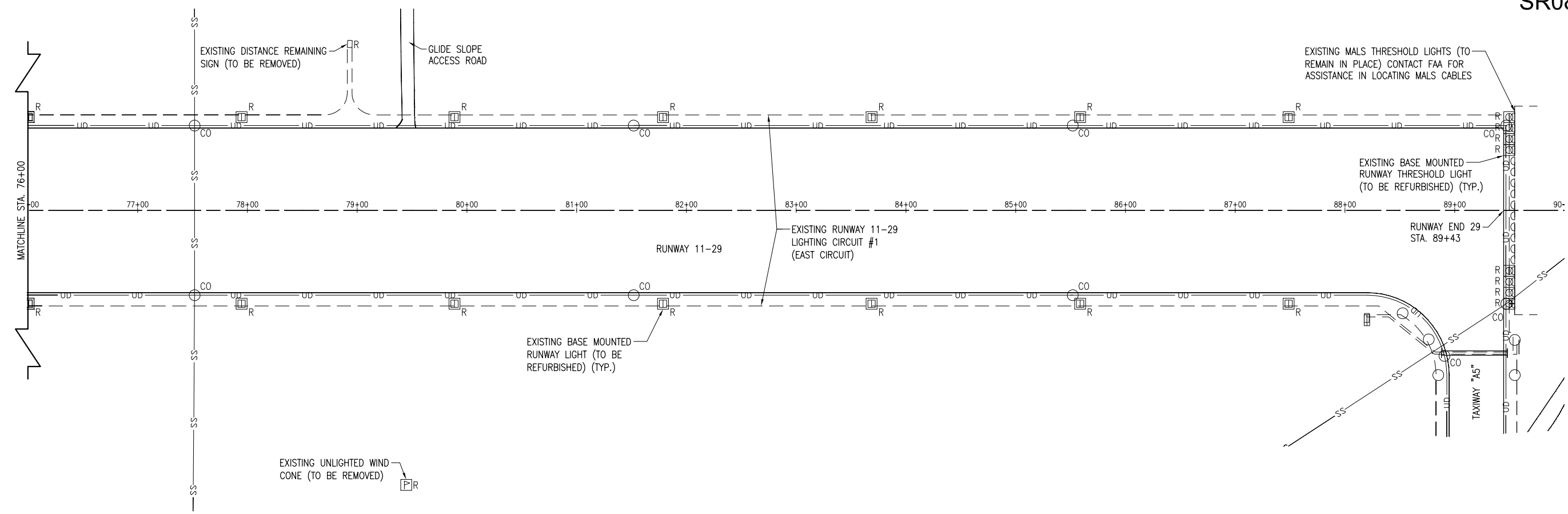
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ST. LOUIS REGIONAL AIRPORT  
  
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 IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A0121D	12/28/10
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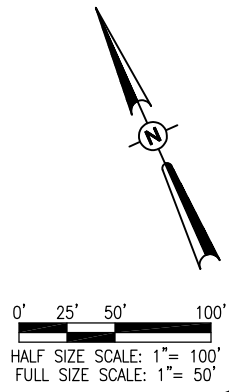
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**WIND CONE REMOVAL NOTES**

- EXISTING UNLIT L-806 SUPPLEMENTAL WIND CONE ON RUNWAY 29 SHALL BE REMOVED. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF THE EXISTING UNLIT WIND CONE WITH THE INSTALLATION OF EACH NEW SUPPLEMENTAL LIGHTED WIND CONE TO MINIMIZE THE TIME THE AIRPORT IS WITHOUT A SUPPLEMENTAL WIND CONE AT THAT RESPECTIVE RUNWAY END. THE CONTRACTOR SHALL ALSO COORDINATE WITH AND NOTIFY THE AIRPORT MANAGER AND THE RESIDENT ENGINEER AND PROVIDE A SCHEDULE FOR THE WIND CONE REMOVAL AND THE INSTALLATION OF THE NEW SUPPLEMENTAL WIND CONE. THE CONTRACTOR WILL TURN EACH 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.
- THE HOLES LEFT FROM THE BASE/FOUNDATION REMOVAL WILL 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 RESIDENT ENGINEER AND IS CONSIDERED INCIDENTAL TO THE REMOVAL OF THE WIND CONE.
- THE EXISTING L-807 PRIMARY LIGHTED WIND CONE SHALL REMAIN IN PLACE.
- REMOVAL OF THE EXISTING UNLIT WIND CONES SHALL BE PAID FOR UNDER ITEM: AR107900 "REMOVE WIND CONE" \_\_\_\_\_ PER EACH.

**LEGEND**

- |  |                                      |  |   |
|--|--------------------------------------|--|---|
|  | EXISTING PAVEMENT                    |  | EXISTING TAXI GUIDANCE SIGN                               |
|  | EXISTING ELECTRICAL DUCT             |  | EXISTING UNDERDRAIN CLEANOUT                              |
|  | EXISTING ELECTRICAL CABLES           |  | EXISTING BASE MOUNTED RUNWAY LIGHT (TO BE REFURBISHED)    |
|  | EXISTING UNDERDRAIN                  |  | EXISTING BASE MOUNTED THRESHOLD LIGHT (TO BE REFURBISHED) |
|  | EXISTING STORM SEWER                 |  | EXISTING DISTANCE REMAINING SIGN (TO BE REMOVED)          |
|  | EXISTING STAKE MOUNTED TAXIWAY LIGHT |  | EXISTING UNLIT WIND CONE (TO BE REMOVED)                  |
|  | EXISTING MALS THRESHOLD LIGHT        |  |   |



REVISION	DATE

ST. LOUIS REGIONAL AIRPORT  
**St. Louis Regional**  
 EAST ALTON, ILLINOIS  
 IL PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A0121D	12/28/10
Filename R-141ELE.DWG	BAK/KNL
Scale 1" = 50'	BAK
Date 02/04/11	CAH
LAYOUT	01/07/11
DRAWN	01/14/11
REVIEWED	

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 Offices Nationwide

REPLACE HIRL  
 ON RUNWAY 11-29  
 EXISTING ELECTRICAL  
 PLAN STA. 76+00 TO  
 STA. 90+00

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.

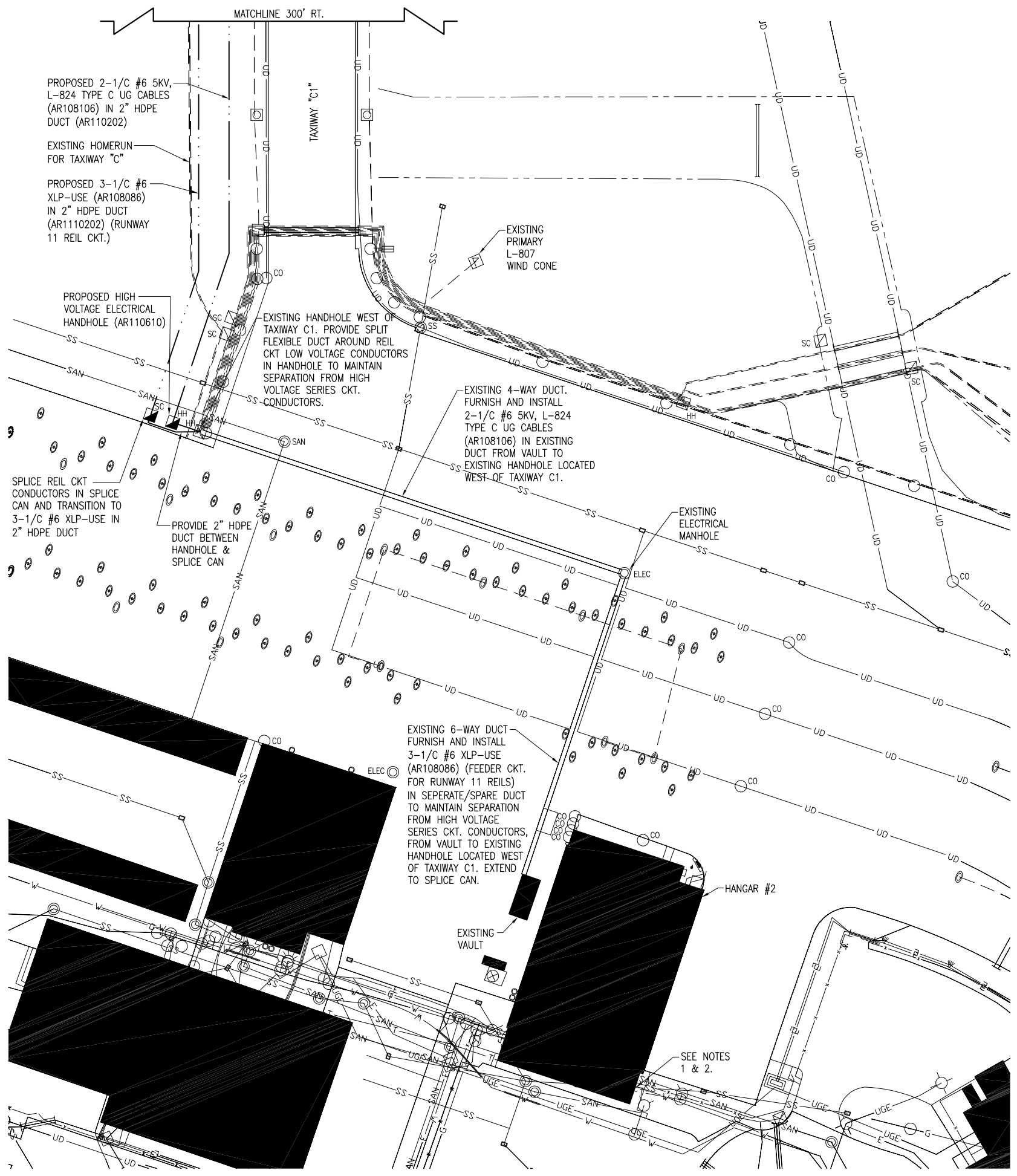
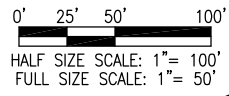
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**NOTES**

1. REPLACE EXISTING FEEDER FROM VAULT SERVICE DISCONNECT TO VAULT MAIN DISCONNECT PANEL.
2. FURNISH AND INSTALL A 12 CONDUCTOR #12 AWG 600 VOLT CONTROL CABLE IN EXISTING LOW VOLTAGE RACEWAY SYSTEM FROM THE VAULT TO THE AIR TRAFFIC CONTROL TOWER. FIELD VERIFY CONDUIT, DUCT, AND CABLE ROUTE.

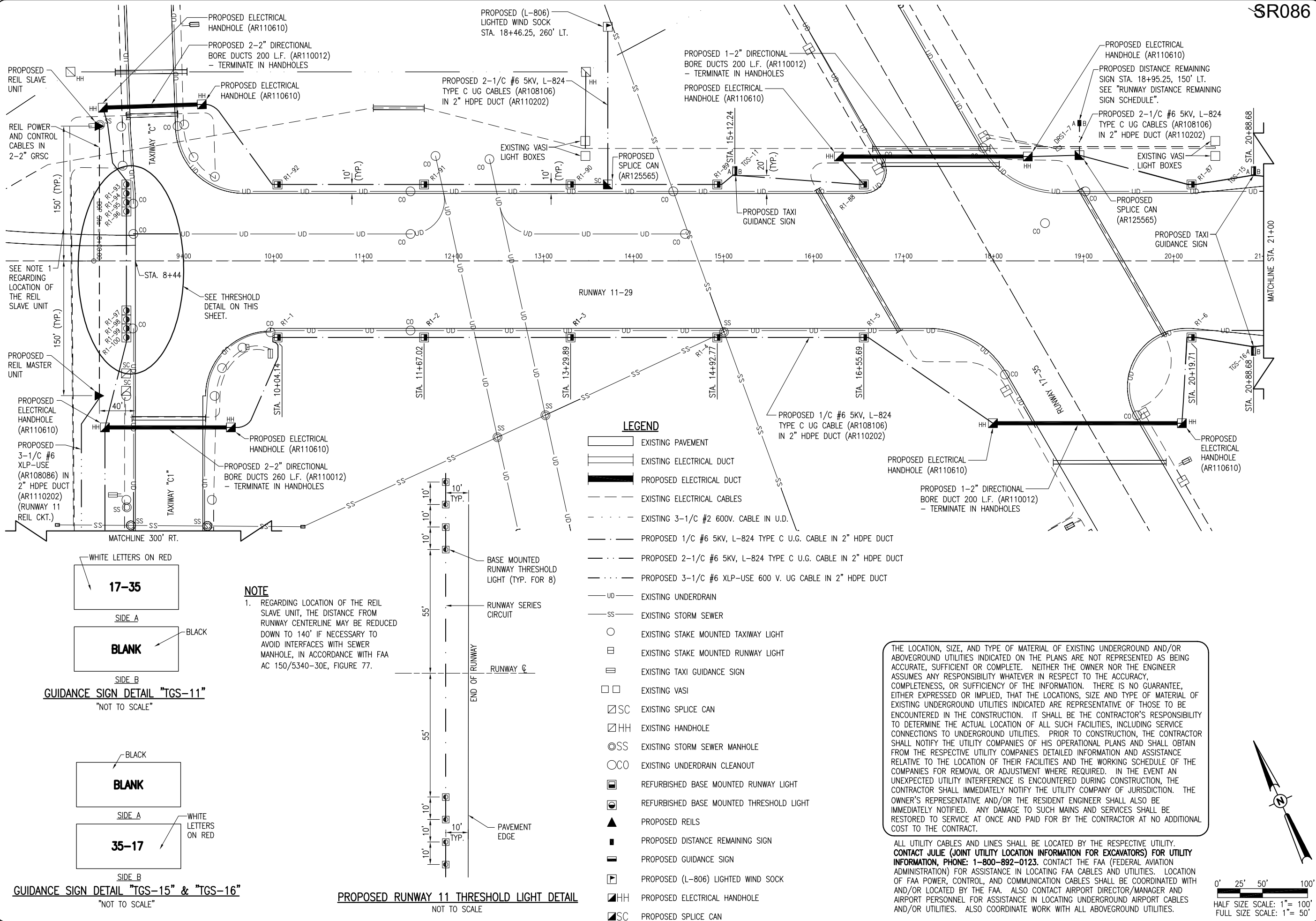
**LEGEND**

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- - - EXISTING ELECTRICAL CABLES
- · - · - PROPOSED 2-1/C #6 5KV, L-824 TYPE C U.G. CABLES IN 2" HDPE DUCT
- · · · · PROPOSED 3-1/C #6 XLP-USE 600 V. UG CABLE IN 2" HDPE DUCT
- - - - ABANDONED ELECTRICAL CABLES
- UD — EXISTING UNDERDRAIN
- SS — EXISTING STORM SEWER
- SAN — EXISTING SANITARY SEWER
- W — EXISTING WATER LINE
- X — EXISTING FENCE
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- ⊠ EXISTING BASE MOUNTED TAXIWAY LIGHT
- ≡ EXISTING TAXI GUIDANCE SIGN
- ⊠ HH EXISTING ELECTRICAL HANDHOLE
- ⊠ SC EXISTING SPLICE CAN
- ⊠ INLET
- ⊙ SAN EXISTING SANITARY SEWER MANHOLE
- ⊙ SS EXISTING STORM SEWER MANHOLE
- CO EXISTING EDGEDRAIN CLEANOUT
- ⊠ EXISTING FLOOD LIGHT
- ⊙ EXISTING TIE-DOWN
- ⊙ EXISTING GROUND ROD
- ⊠ HH PROPOSED ELECTRICAL HANDHOLE
- ⊠ SC PROPOSED SPLICE CAN



FEB 28, 2011 4:04 PM HAGL000382  
E:\AIRPORTS\STLOUIS\10A0121\CADD\AIRPORT\SHEET\R-142ELE.DWG

REVISION		 <b>ST. LOUIS REGIONAL AIRPORT</b> EAST ALTON, ILLINOIS <small>IL PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46</small>
DATE		
Hanson Project No. 10A0121D Filename R-142ELE.DWG Scale 1" = 50' Date 02/04/11		12/29/10 BAK/KNL 01/10/11 BAK 01/14/11 CAH
 © Copyright Hanson Professional Services Inc. 2011 <b>Hanson Professional Services Inc.</b> 1525 South Sixth Street Springfield, Illinois 62703-2886 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide		
REPLACE HIRL ON RUNWAY 11-29		PROPOSED ELECTRICAL PLAN 300' RT.
11 11 of 43 sheets		



LEGEND

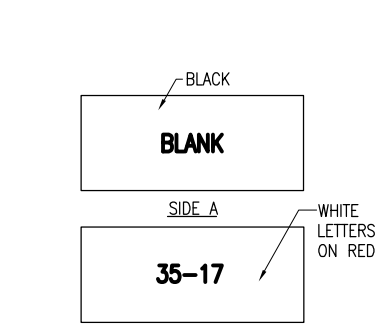
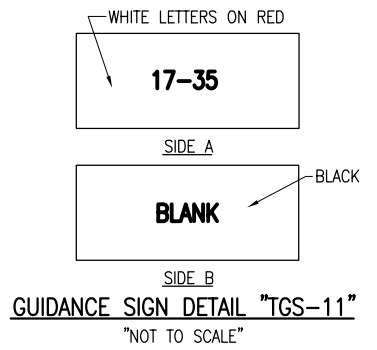
- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLES
- EXISTING 3-1/C #2 600V. CABLE IN U.D.
- 
- 
- 
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING TAXI GUIDANCE SIGN
- EXISTING VASI
- EXISTING SPLICE CAN
- EXISTING HANDHOLE
- EXISTING STORM SEWER MANHOLE
- EXISTING UNDERDRAIN CLEANOUT
- REFURBISHED BASE MOUNTED RUNWAY LIGHT
- REFURBISHED BASE MOUNTED THRESHOLD LIGHT
- PROPOSED REILS
- PROPOSED DISTANCE REMAINING SIGN
- PROPOSED GUIDANCE SIGN
- PROPOSED (L-806) LIGHTED WIND SOCK
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN

NOTE

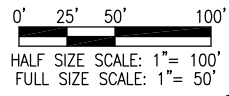
1. REGARDING LOCATION OF THE REIL SLAVE UNIT, THE DISTANCE FROM RUNWAY CENTERLINE MAY BE REDUCED DOWN TO 140' IF NECESSARY TO AVOID INTERFACES WITH SEWER MANHOLE, IN ACCORDANCE WITH FAA AC 150/5340-30E, FIGURE 77.

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.

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PROPOSED RUNWAY 11 THRESHOLD LIGHT DETAIL NOT TO SCALE



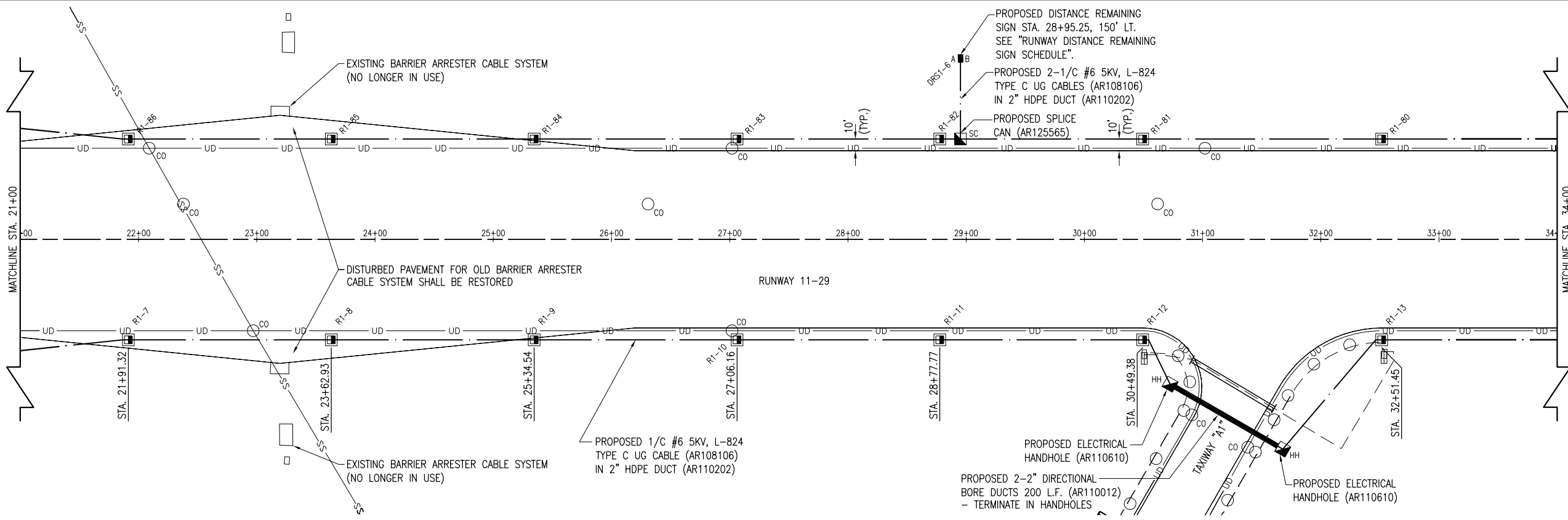
REVISION	DATE

ST. LOUIS REGIONAL AIRPORT  
 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

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REPLACE HIRL ON RUNWAY 11-29  
 PROPOSED ELECTRICAL PLAN STA. 8+00 TO STA. 21+00



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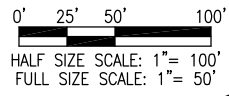
**LEGEND**

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLES
- PROPOSED 1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT
- PROPOSED 2-1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING TAXI GUIDANCE SIGN
- EXISTING UNDERDRAIN CLEANOUT
- REFURBISHED BASE MOUNTED RUNWAY LIGHT
- PROPOSED DISTANCE REMAINING SIGN
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN

LIGHT LENS SCHEDULE		
LIGHT NUMBERS	LENS	ORIENTATION
R1-1 TO R1-10	CLEAR WHITE/AMBER	AMBER SIDE FACING EAST
R1-11 TO R1-32	CLEAR WHITE	CLEAR WHITE ON BOTH SIDES
R1-33 TO R1-42	CLEAR WHITE/AMBER	AMBER SIDE FACING WEST
R1-43 TO R1-50	RED/GREEN	RED SIDE FACING WEST (TOWARDS THRESHOLD)
R1-51 TO R1-60	CLEAR WHITE/AMBER	AMBER SIDE FACING WEST
R1-61 TO R1-82	CLEAR WHITE	CLEAR WHITE ON BOTH SIDES
R1-83 TO R1-92	CLEAR WHITE/AMBER	AMBER SIDE FACING EAST
R1-93 TO R1-100	RED/GREEN	RED SIDE FACING EAST (TOWARDS THRESHOLD)

**AIRFIELD LIGHTING NOTES**

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY AND HEALTH STANDARD FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMIT TO 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)
- PROPOSED/REFURBISHED RUNWAY LIGHTS SHALL BE PLACED 10' FROM THE PAVEMENT EDGE UNLESS SHOWN OTHERWISE. PROPOSED/REFURBISHED RUNWAY THRESHOLD LIGHTS SHALL BE PLACED 10' FROM THRESHOLD AT RUNWAY 11 END AND 5' FROM THRESHOLD AT RUNWAY 29 END.
- ALL PROPOSED/REFURBISHED RUNWAY LIGHTS, THRESHOLD LIGHTS, TAXI GUIDANCE SIGNS, DISTANCE REMAINING SIGNS, WIND CONES, SPLICE CANS, AND OTHER AIRFIELD LIGHTING SHALL BE CONSTRUCTED AS SHOWN ON THE PROPOSED ELECTRICAL PLANS AND IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATIONS, SPECIAL PROVISIONS, RESPECTIVE DETAILS, AND MANUFACTURER'S RECOMMENDATIONS.
- PROPOSED RUNWAY LIGHTING CABLES SHALL BE PLACED APPROXIMATELY 10' FROM THE PAVEMENT EDGE UNLESS SHOWN OTHERWISE. CABLES SHALL BE INSTALLED A MINIMUM OF 18" BELOW FINISHED GRADE.
- THE PROPOSED RUNWAY LIGHTING CABLE SHALL BE 1/C, #6, 5KV FAA L-824 TYPE C UNDERGROUND CABLE IN 2" HDPE DUCT.
- IN AREAS WHERE THERE IS A CONGESTION OF CABLES OR WHERE THE PROPOSED CABLE/DUCT CROSSES AN EXISTING CABLE, THE PROPOSED DUCT/CABLE SHALL BE TRENCHED INTO PLACE. IN ALL OTHER LOCATIONS THE PROPOSED CABLE/DUCT MAY BE EITHER TRENCHED OR PLOWED INTO PLACE. HAND DIGGING, TRENCHING AND/OR PLOWING WILL BE CONSIDERED INCIDENTAL TO THE PROPOSED CABLES AND/OR DUCT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- THE REFURBISHED RUNWAY LIGHTS SHALL BE FITTED WITH EXISTING LENSES ACCORDING TO THE SCHEDULE ON THIS SHEET.
- REFURBISHED RUNWAY LIGHTS SHALL BE TAGGED IN ACCORDANCE WITH THE LIGHT'S NUMBER SHOWN ON THE PLANS.
- THE CONTRACTOR IS REQUIRED TO PROVIDE TEMPORARY CABLE AND CONNECTIONS AS NEEDED TO ENSURE ALL THE EXISTING ELECTRICAL CIRCUITS TO RUNWAY 11-29 AND 17-35 AND THEIR TAXIWAYS REMAIN OPERABLE THROUGHOUT THE PROJECT. RUNWAY 11-29 LIGHTING MAY BE SHUT DOWN DURING EACH WORK WEEK WHEN UNDER CONSTRUCTION. ALL EXISTING CIRCUITS MUST BE IN PROPER WORKING ORDER AT THE END OF EACH WORK WEEK. ALL ABOVE GROUND JUMPERS SHALL BE IN A DUCT WITH ALL CONNECTIONS SEALED. THE CONTRACTOR SHALL SECURE, IDENTIFY AND PLACE ALL TEMPORARY EXPOSED WIRING IN CONDUIT, DUCT OR UNIT DUCT TO PREVENT ELECTROCUTION AND FIRE IGNITION SOURCES AS PER THE REQUIREMENTS OF FAA AC 150/5370-2E, PART 3-6, 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.
- NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE: 1.



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ST. LOUIS REGIONAL AIRPORT

**St. Louis Regional**  
AIRPORT

EAST ALTON, ILLINOIS

IL PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

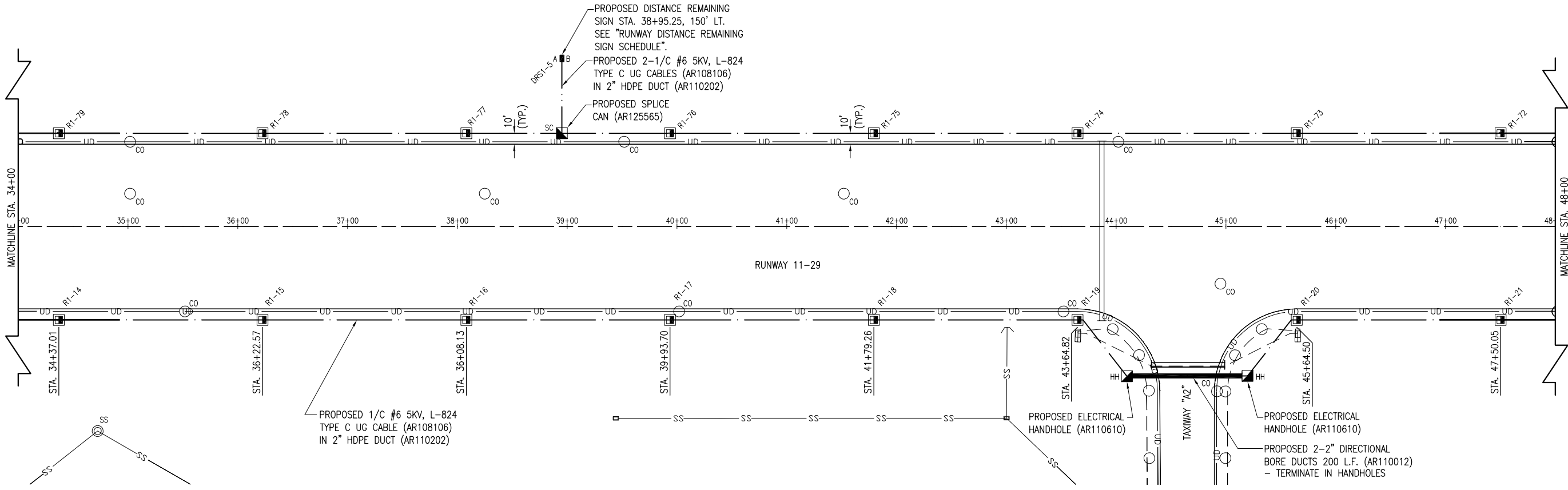
Hanson Project No.	10A0121D
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REPLACE HIRL  
ON RUNWAY 11-29

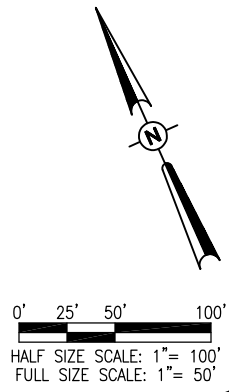
PROPOSED ELECTRICAL  
PLAN STA. 21+00 TO STA.  
34+00



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  - EXISTING ELECTRICAL DUCT
  - PROPOSED ELECTRICAL DUCT
  - EXISTING ELECTRICAL CABLES
  - PROPOSED 1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT
  - PROPOSED 2-1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT
  - EXISTING UNDERDRAIN
  - EXISTING STORM SEWER
  - EXISTING STAKE MOUNTED TAXIWAY LIGHT
  - EXISTING TAXI GUIDANCE SIGN
  - EXISTING UNDERDRAIN CLEANOUT
  - EXISTING STORM SEWER MANHOLE
  - EXISTING INLET
  - REFURBISHED BASE MOUNTED RUNWAY LIGHT
  - PROPOSED DISTANCE REMAINING SIGN
  - PROPOSED ELECTRICAL HANDHOLE
  - PROPOSED SPLICE CAN



REVISION	DATE

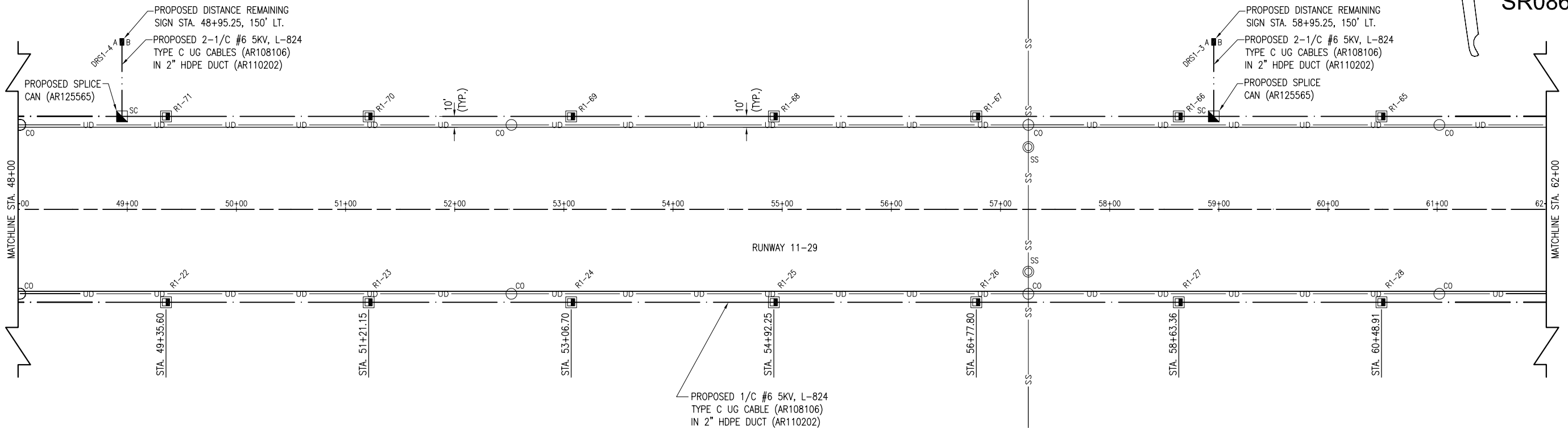
ST. LOUIS REGIONAL AIRPORT  
**St. Louis Regional**  
 EAST ALTON, ILLINOIS  
 IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No.	10A0121D
Filename	R-142ELE.DWG
Scale	1" = 50'
Date	02/04/11
LAYOUT	BAK/KNL 12/29/10
DRAWN	BAK 01/10/11
REVIEWED	CAH 01/14/11

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REPLACE HIRL  
 ON RUNWAY 11-29  
 PROPOSED ELECTRICAL  
 PLAN STA. 34+00 TO  
 STA. 48+00

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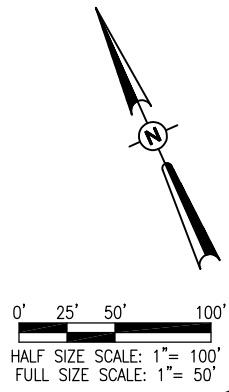
- LEGEND**
- EXISTING PAVEMENT
  - · — PROPOSED 1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT
  - · · — PROPOSED 2-1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT
  - UD — EXISTING UNDERDRAIN
  - SS — EXISTING STORM SEWER
  - CO EXISTING UNDERDRAIN CLEANOUT
  - ⊙ SS EXISTING STORM SEWER MANHOLE
  - REFURBISHED BASE MOUNTED RUNWAY LIGHT
  - PROPOSED DISTANCE REMAINING SIGNS
  - HH PROPOSED ELECTRICAL HANDHOLE
  - SC PROPOSED SPLICE CAN

**RUNWAY DISTANCE REMAINING SIGN SCHEDULE**

SIGN DESIGNATION	SIDE A	SIDE B
DRS1-1	1	7
DRS1-2	2	6
DRS1-3	3	5
DRS1-4	4	4
DRS1-5	5	3
DRS1-6	6	2
DRS1-7	7	1

**NOTES**

1. THE PROPOSED RUNWAY DISTANCE REMAINING SIGNS SHALL CONFORM TO ADVISORY CIRCULAR 150/5345-44H (OR LATEST ISSUE IN FORCE) AND BE FAA APPROVED FOR TYPE L-858-B RUNWAY DISTANCE REMAINING SIGN. THE SIGN SHALL BE SIZE 4, 48-IN. SIGN FACE WITH A 40-IN. LEGEND; STYLE 3, POWERED FROM A 8.5 TO 20 AMP SERIES LIGHTING CIRCUIT; CLASS 2, FOR OPERATION FROM -40°F TO 131°F; MODE 2, TO WITHSTAND WIND LOADS OF 200 M.P.H., BASE-MOUNTED, DOUBLE-SIDED, AS SPECIFIED ON THE PLANS. NOTE: THE CONSTANT CURRENT REGULATOR POWERING THE SERIES CIRCUIT FOR THE RUNWAY DISTANCE REMAINING SIGNS HAS BEEN SIZED FOR THE RESPECTIVE RUNWAY LIGHTING LOADS AND RUNWAY DISTANCE REMAINING SIGNS THAT HAVE A LOAD OF LESS THAN 250 VA. IN THE EVENT THAT A RUNWAY DISTANCE REMAINING SIGN 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 RUNWAY DISTANCE REMAINING SIGN IS PROPOSED THAT REQUIRES A LOAD THAT EXCEEDS 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 RUNWAY DISTANCE REMAINING SIGNS.



ST. LOUIS REGIONAL AIRPORT

**St. Louis Regional**  
AIRPORT

EAST ALTON, ILLINOIS

IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

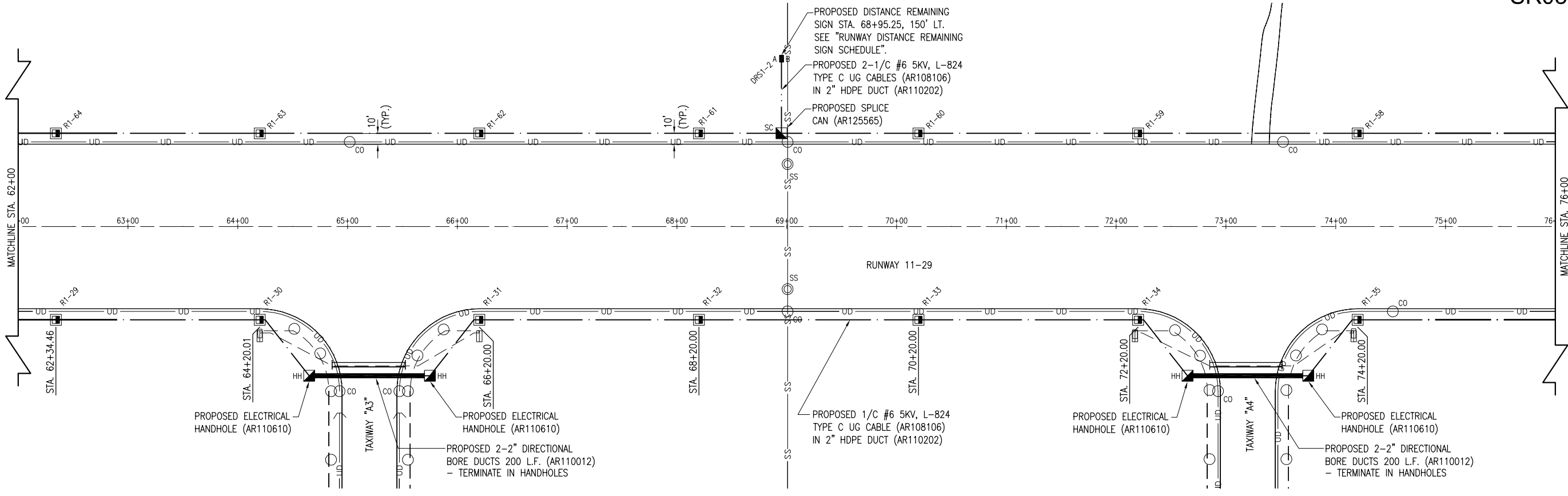
Hanson Project No. 10A0121D  
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REPLACE HIRL  
ON RUNWAY 11-29

PROPOSED ELECTRICAL  
PLAN STA. 48+00 TO  
STA. 62+00

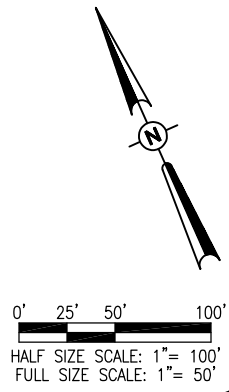


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**LEGEND**

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLES
- PROPOSED 1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT
- PROPOSED 2-1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT
- EXISTING UNDERDRAIN
- EXISTING STORM SEWER
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING TAXI GUIDANCE SIGN
- EXISTING UNDERDRAIN CLEANOUT
- EXISTING STORM SEWER MANHOLE
- PROPOSED BASE MOUNTED RUNWAY LIGHT
- PROPOSED DISTANCE REMAINING SIGN
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN



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REVISION	DATE

ST. LOUIS REGIONAL AIRPORT

EAST ALTON, ILLINOIS

IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

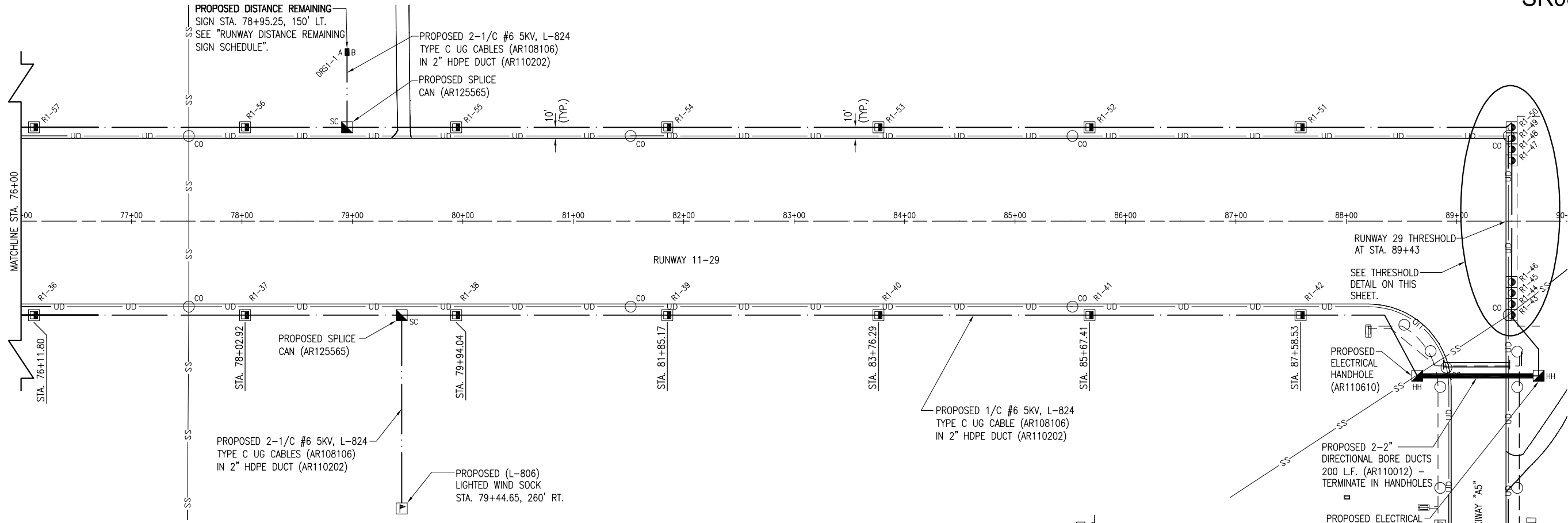
Hanson Project No.	10A0121D
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REPLACE HIRL ON RUNWAY 11-29

PROPOSED ELECTRICAL PLAN STA. 62+00 TO STA. 76+00





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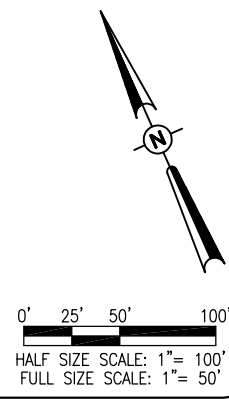
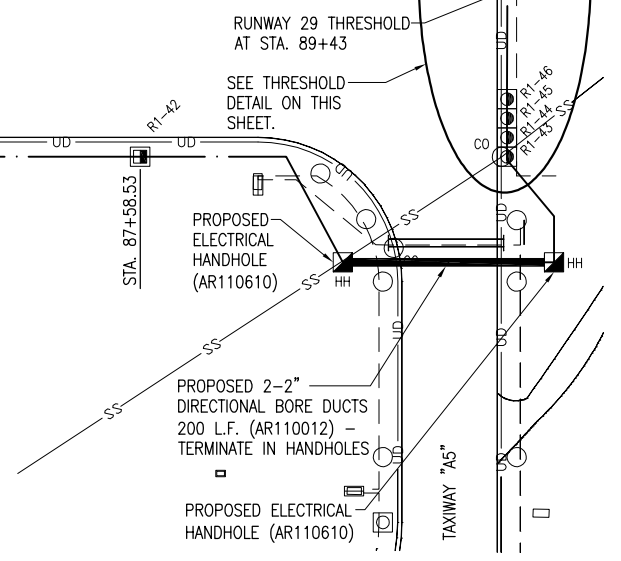
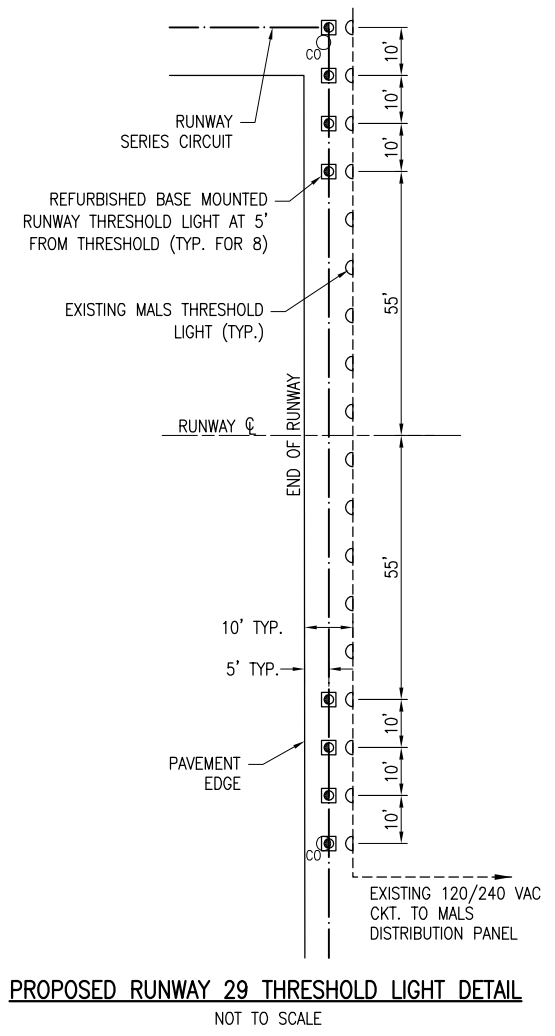
**WIND CONE NOTES**

1. THE PROPOSED WIND CONES SHALL BE INSTALLED AS SHOWN ON THE PROPOSED ELECTRICAL PLANS, THE "L-806 WIND CONES ELEVATION DETAIL" SHEET, AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS SPECS.
2. SUPPLEMENTAL WIND CONES WILL BE PAID FOR UNDER ITEM:  
AR107408 L-806 WIND CONE - 8' LIGHTED \_\_\_\_ PER EACH

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**LEGEND**

	EXISTING PAVEMENT		EXISTING BASE MOUNTED TAXIWAY LIGHT
	EXISTING ELECTRICAL DUCT		EXISTING TAXI GUIDANCE SIGN
	PROPOSED ELECTRICAL DUCT		EXISTING UNDERDRAIN CLEANOUT
	EXISTING ELECTRICAL CABLES		PROPOSED BASE MOUNTED RUNWAY LIGHT
	PROPOSED 1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT		PROPOSED BASE MOUNTED THRESHOLD LIGHT
	PROPOSED 2-1/C #6 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT		PROPOSED DISTANCE REMAINING SIGN
	EXISTING UNDERDRAIN		PROPOSED (L-806) LIGHTED WIND SOCK
	EXISTING STORM SEWER		PROPOSED ELECTRICAL HANDHOLE
	EXISTING STAKE MOUNTED TAXIWAY LIGHT		PROPOSED SPLICE CAN



REVISION	DATE

ST. LOUIS REGIONAL AIRPORT  
**St. Louis Regional Airport**  
 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A01210	Filename R-142ELE.DWG	Scale 1" = 50'	Date 02/04/11
LAYOUT	BAK/KNL	12/29/10	
DRAWN	BAK	01/10/11	
REVIEWED	CAH	01/14/11	

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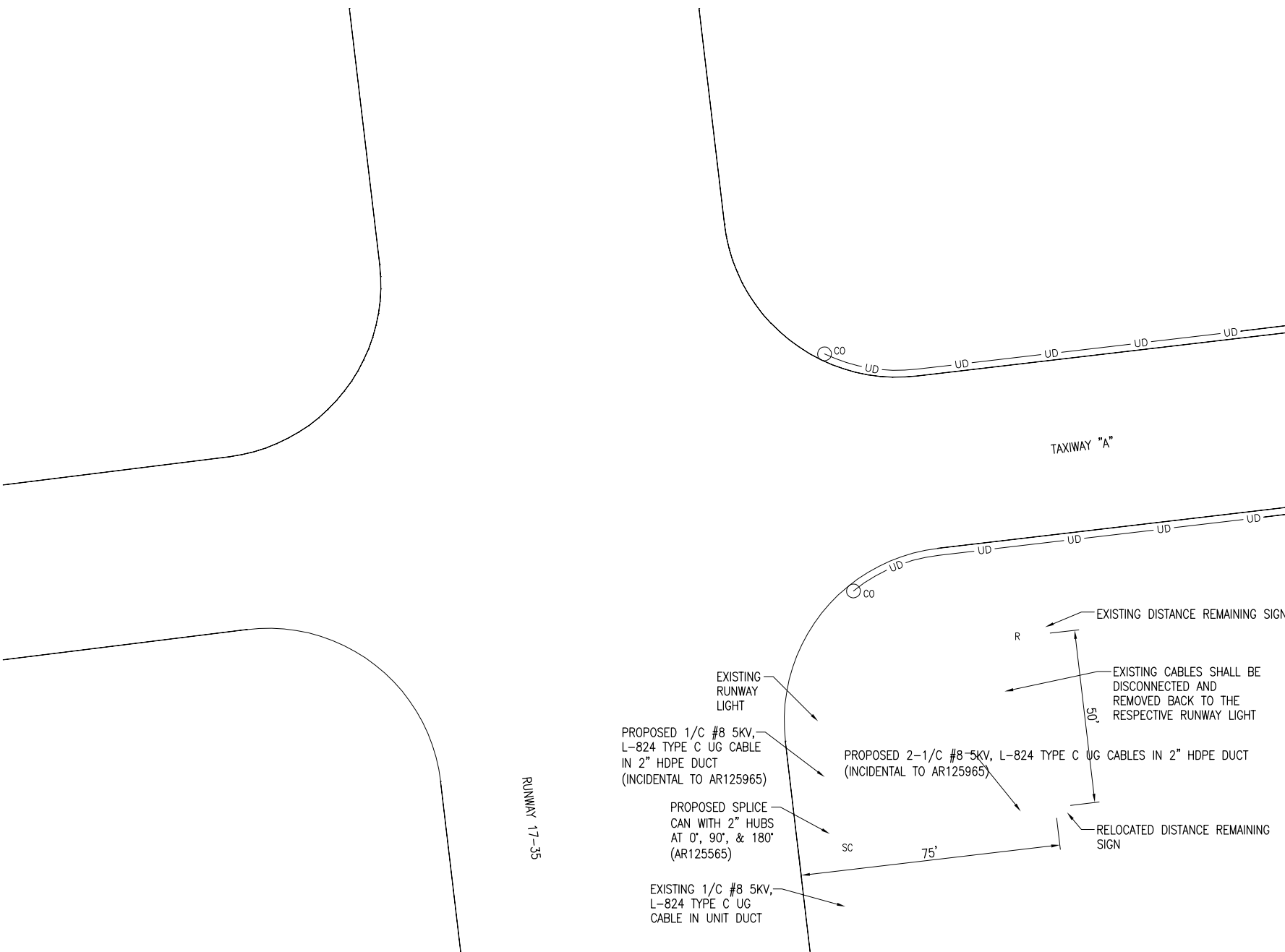
REPLACE HIRL  
 ON RUNWAY 11-29  
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 PLAN STA. 76+00 TO STA.  
 90+00

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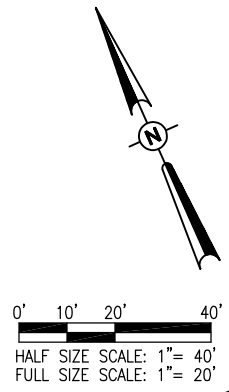
**DISTANCE REMAINING SIGN REMOVAL/RELOCATION NOTES**

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.
3. EXISTING DISTANCE REMAINING SIGNS THAT ARE DESIGNATED FOR RELOCATION SHALL BE DISCONNECTED AND CAREFULLY REMOVED BY THE CONTRACTOR AS NOT TO DAMAGE THE SIGN. THE SIGN ASSEMBLY AND ISOLATION TRANSFORMERS SHALL BE RELOCATED AND INSTALLED IN THE LOCATIONS SHOWN. EXISTING SIGN FOUNDATION SHALL BE REMOVED AND LEGALLY DISPOSED OFF THE AIRPORT SITE. A NEW FOUNDATION SHALL BE CONSTRUCTED WITH THE SIGN RELOCATION AS SHOWN ON ELECTRICAL DETAILS SHEETS. EXISTING CABLES ASSOCIATED WITH THE SIGN RELOCATION SHALL BE DISCONNECTED AND REMOVED. REMOVAL OF EXISTING CABLE AND INSTALLATION OF THE NEW CABLE AND DUCT WILL BE CONSIDERED INCIDENTAL TO THE SIGN RELOCATION AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
4. DISTANCE REMAINING SIGNS SHALL BE LOCATED 75 FEET PERPENDICULAR DISTANCE FROM DEFINED RUNWAY PAVEMENT EDGE TO NEAR SIDE OF THE SIGN TO COMPLY WITH FAA AC150/5340-18F "STANDARD FOR AIRPORT SIGN SYSTEM".
5. THE CONTRACTOR IS REQUIRED TO FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE SIGN REMOVAL, WITH EARTH MATERIAL AND WILL BE CONSIDERED AN INCIDENTAL ITEM TO THE SIGN RELOCATION. THE AREAS SHALL BE COMPACTED TO PREVENT FUTURE SETTLEMENT AND FERTILIZED, SEEDED, AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908 RESPECTIVELY.
6. THE CONTRACTOR IS ENCOURAGED TO INSPECT EACH EXISTING SIGN PRIOR TO RELOCATION AND IDENTIFY TO THE RESIDENT ENGINEER ANY DAMAGED OR INOPERATING PARTS. ONCE THE EXISTING SIGN IS REMOVED, THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DURING THE RELOCATION. SIGNS SHALL BE REINSTALLED IN PROPER WORKING ORDER, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
7. ALL ABOVE GROUND 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 150/5370-2E, - OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, PART 3-6, C.
8. NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.
9. REMOVAL AND RELOCATION OF THE DISTANCE REMAINING SIGNS WILL BE PAID FOR UNDER ITEM:  
AR125965 RELOCATE RWY DISTANCE REMAIN SIGN \_\_\_\_\_ PER EACH.



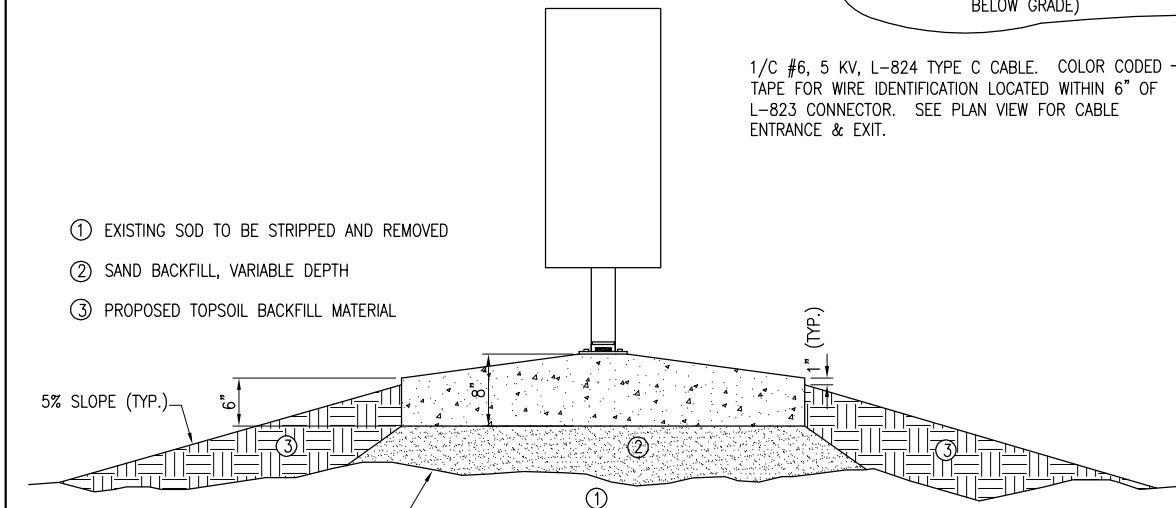
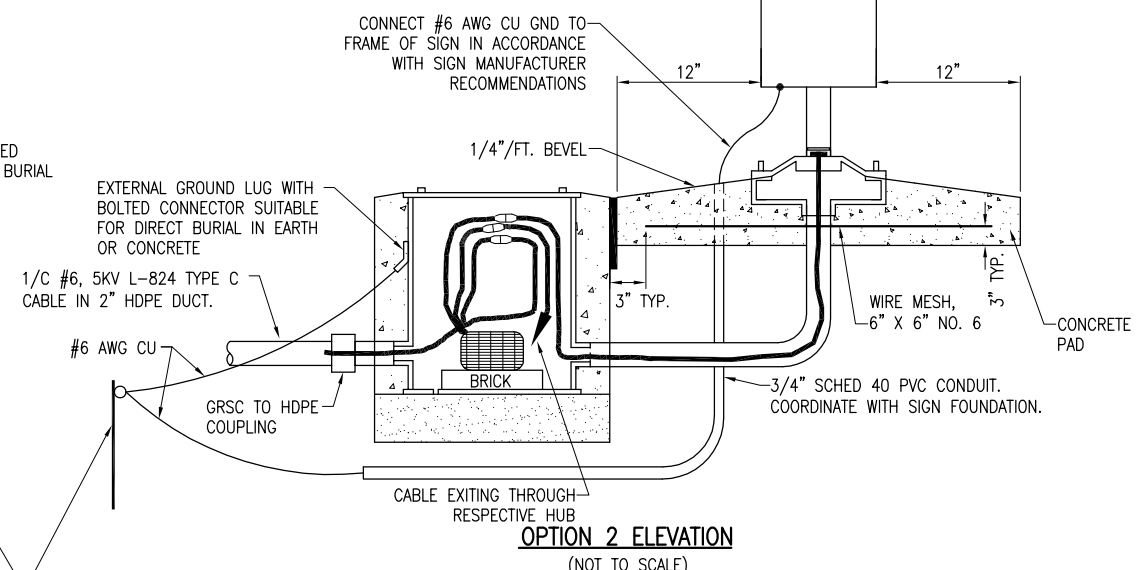
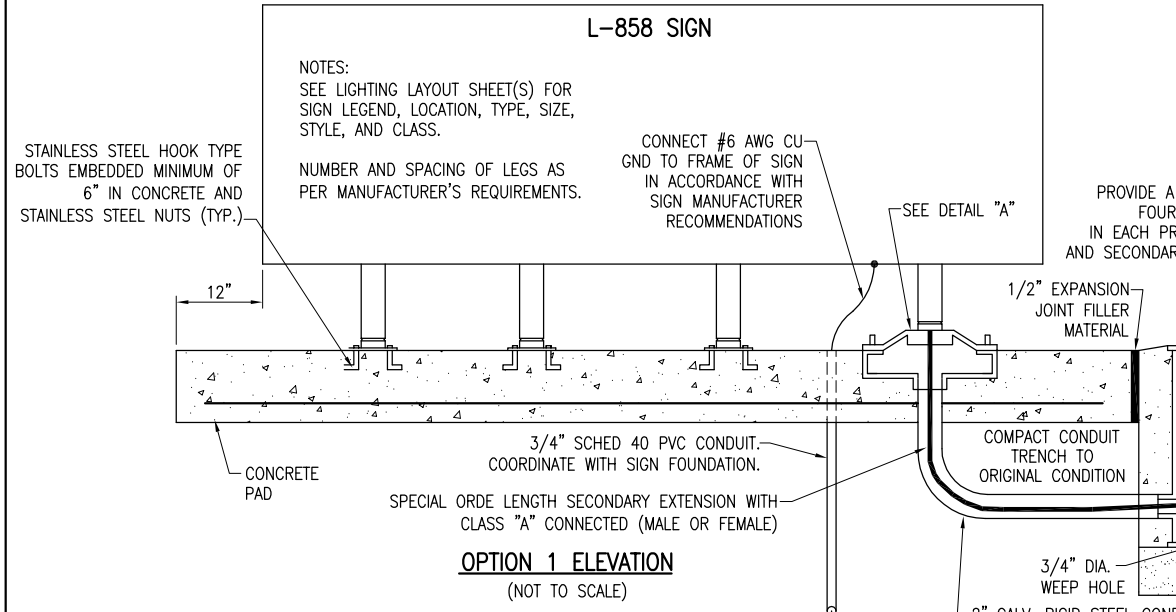
**LEGEND**

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLES
- PROPOSED #8 5KV, L-824 TYPE C U.G. CABLE IN 2" HDPE DUCT SEE PLANS FOR QUANTITY OF CABLES
- EXISTING UNDERDRAIN
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING TAXI GUIDANCE SIGN
- EXISTING DISTANCE REMAINING SIGN (TO BE RELOCATED)
- EXISTING EDGEDRAIN CLEANOUT
- PROPOSED SPLICE CAN
- RELOCATED DISTANCE REMAINING SIGN



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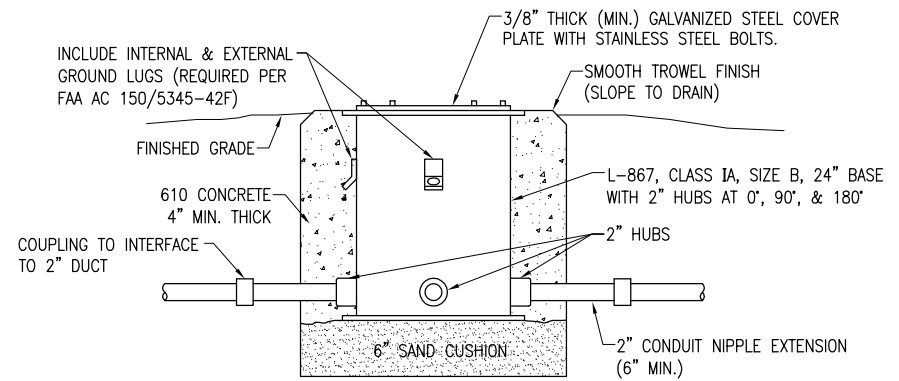
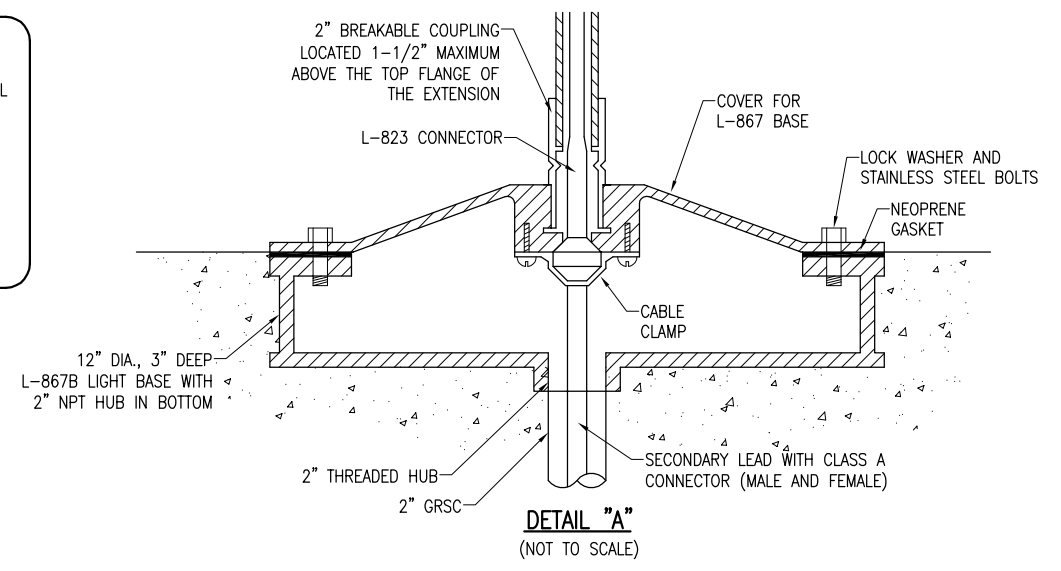
<p>ST. LOUIS REGIONAL AIRPORT</p> <p>EAST ALTON, ILLINOIS</p> <p>IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46</p>	<p>Hanson Project No. 10A0121D                  File Name: R-143ELE.DWG                  Scale: 1" = 20'                  Date: 02/04/11</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>LAYOUT</td> <td>BAK/KNL</td> <td>12/29/10</td> </tr> <tr> <td>DRAWN</td> <td>BAK</td> <td>01/10/11</td> </tr> <tr> <td>REVIEWED</td> <td>CAH</td> <td>01/14/11</td> </tr> </table>	LAYOUT	BAK/KNL	12/29/10	DRAWN	BAK	01/10/11	REVIEWED	CAH	01/14/11	<p><b>HANSON</b>                  © Copyright Hanson Professional Services Inc. 2011                  Hanson Professional Services Inc.                  1525 South Sixth Street                  Springfield, Illinois 62703-2986                  Ph: (217) 788-2450 Fax: (217) 788-2503                  www.hanson-inc.com                  Offices Nationwide</p>
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REVIEWED	CAH	01/14/11									
<p>REPLACE HIRL ON RUNWAY 11-29</p>	<p>EXISTING DISTANCE REMAINING SIGN RELOCATION PLAN</p>	<p><b>18</b> 18 of 43 sheets</p>									



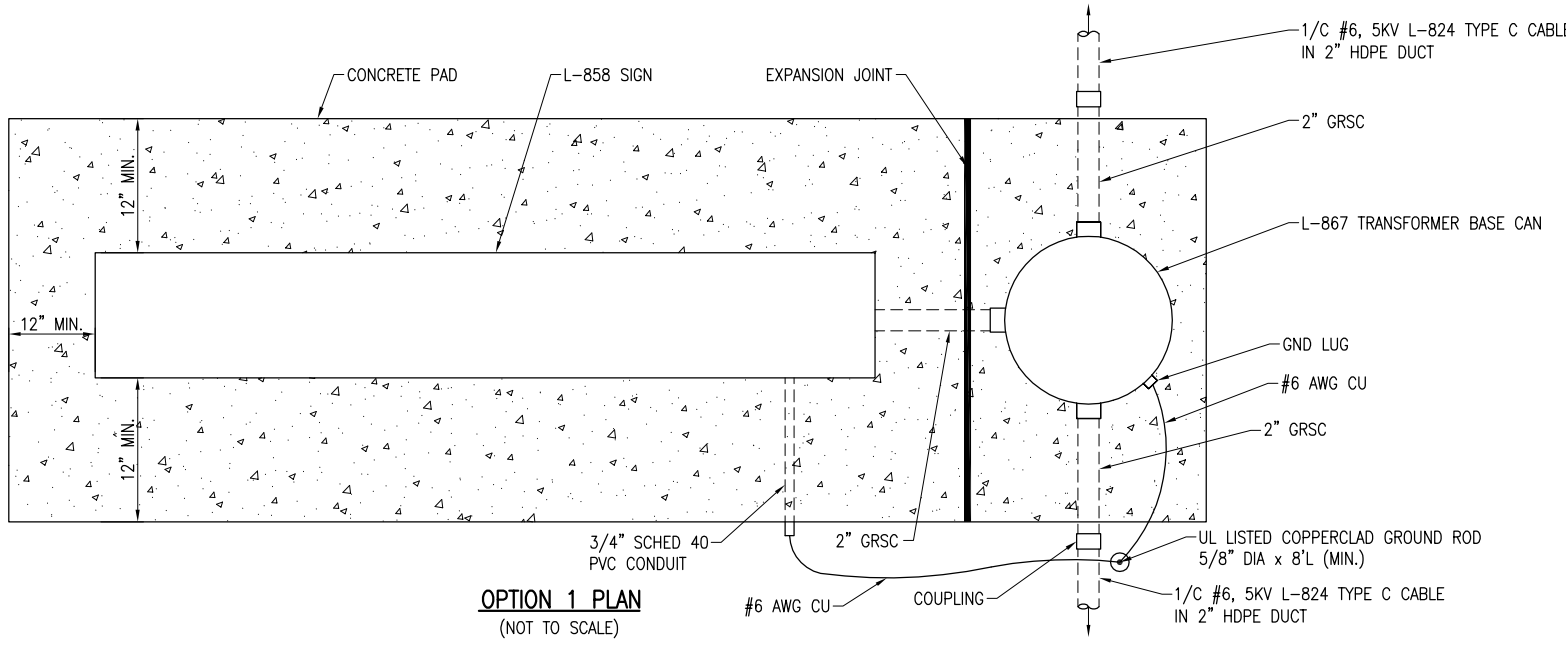
PER FAA AC 150/5340-30E DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, A LIGHT BASE GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH STAKE MOUNTED LIGHT AND EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED 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 3/8-INCH DIAMETER BY 8-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD.

**GENERAL NOTES**

- SEE LIGHTING LAYOUT SHEET FOR SIGN LEGEND, LOCATION, TYPE, SIZE, STYLE, AND CLASS.



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

ST. LOUIS REGIONAL AIRPORT  
 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065  
 A.I.P. PROJ.: 3-17-0002-B46

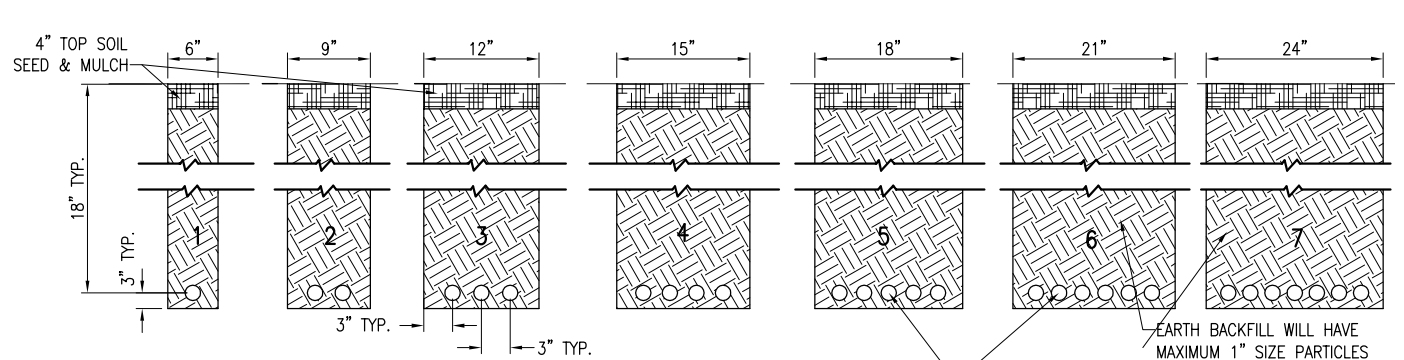
Hanson Project No. 10A0121D	FILENAME E-501.DWG	SCALE NONE	DATE 02/04/11
LAYOUT	KNL	11/19/10	
DRAWN	MAW	11/29/10	
REVIEWED	CAH	01/14/11	

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REPLACE HIRL  
 ON RUNWAY 11-29  
 ELECTRICAL DETAILS  
 SHEET 1

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

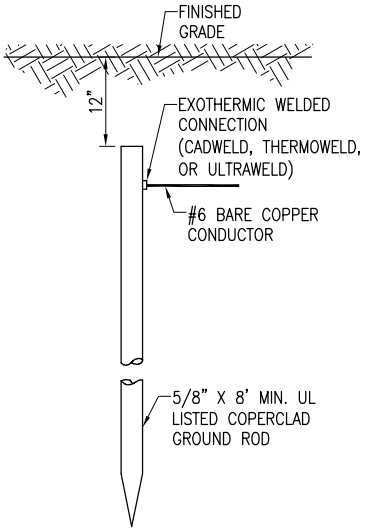


**NOTES:**

1. DETAIL NUMBERS INDICATE NO. OF CABLES.
2. 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.
3. DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS.
4. ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.
5. CABLES INSTALLED IN AREAS SUBJECT TO FARMING SHALL BE INSTALLED 42" MINIMUM BELOW GRADE.

**CABLE TRENCHES**  
(NOT TO SCALE)

PER FAA AC 150/5340-30E DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, A LIGHT BASE GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH STAKE MOUNTED LIGHT AND EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. THE LIGHT BASE GROUND SHALL BE A #6 AWG BARE COPPER CONDUCTOR CONNECTED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 5/8-INCH DIAMETER BY 8-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD.

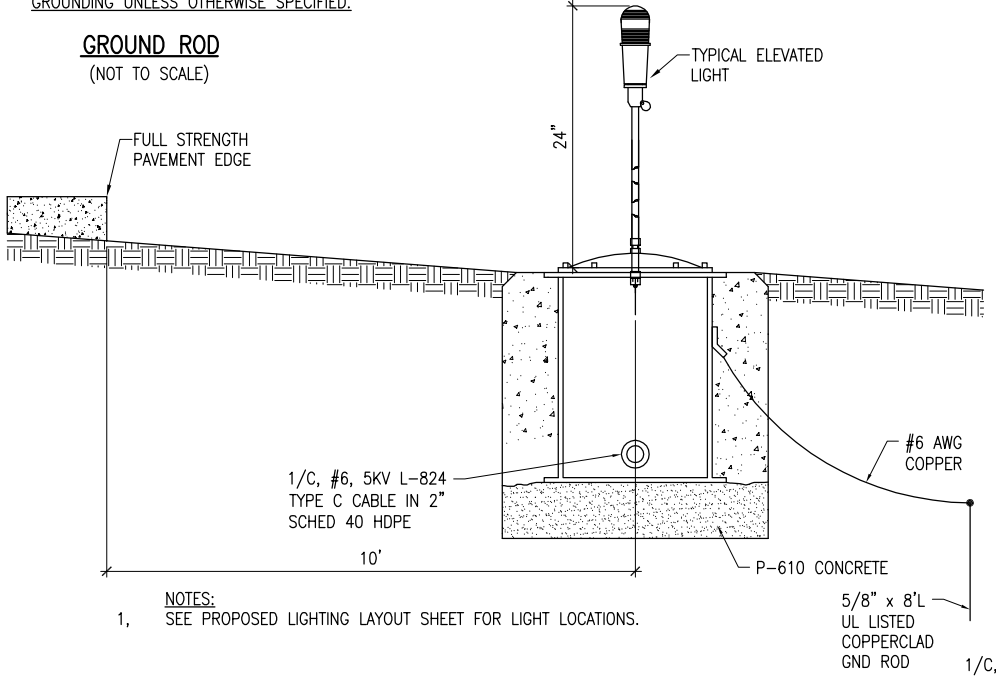


**NOTES:**  
TYPE AND MINIMUM NUMBER OF GROUND  
RODS SHALL BE AS SPECIFIED ON THE PLAN.

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

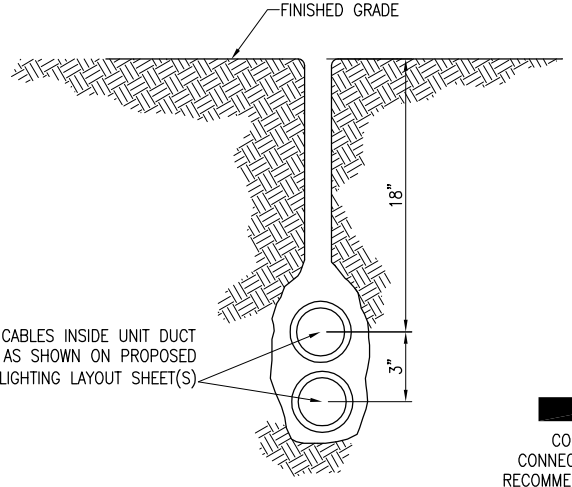
COST OF GROUND RODS IS INCIDENTAL TO  
THE ASSOCIATED ITEMS REQUIRING  
GROUNDING UNLESS OTHERWISE SPECIFIED.

**GROUND ROD**  
(NOT TO SCALE)



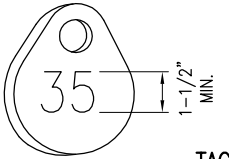
**NOTES:**  
1. SEE PROPOSED LIGHTING LAYOUT SHEET FOR LIGHT LOCATIONS.

**PROFILE VIEW**  
**LIGHT AND INSTALLATION DETAIL**

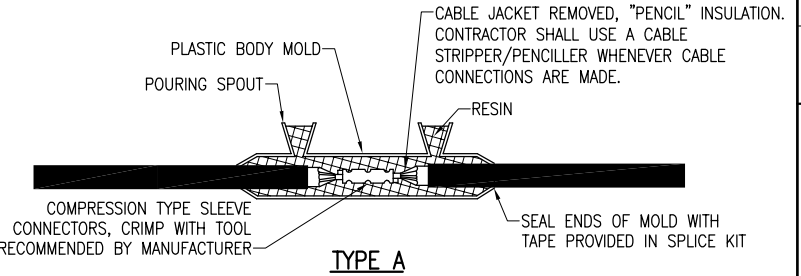


**PLOWED CABLE**  
(NOT TO SCALE)

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.

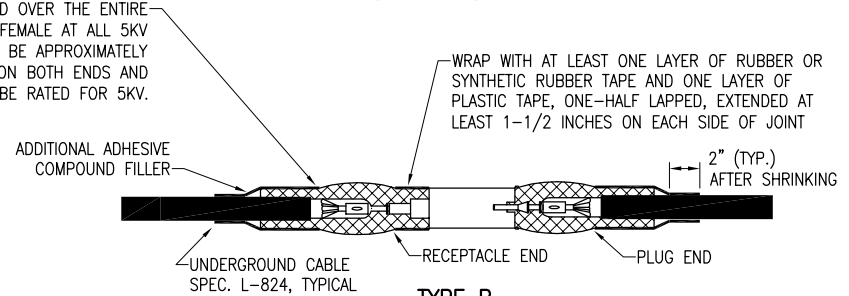


**TAG DETAIL**  
(NOT TO SCALE)



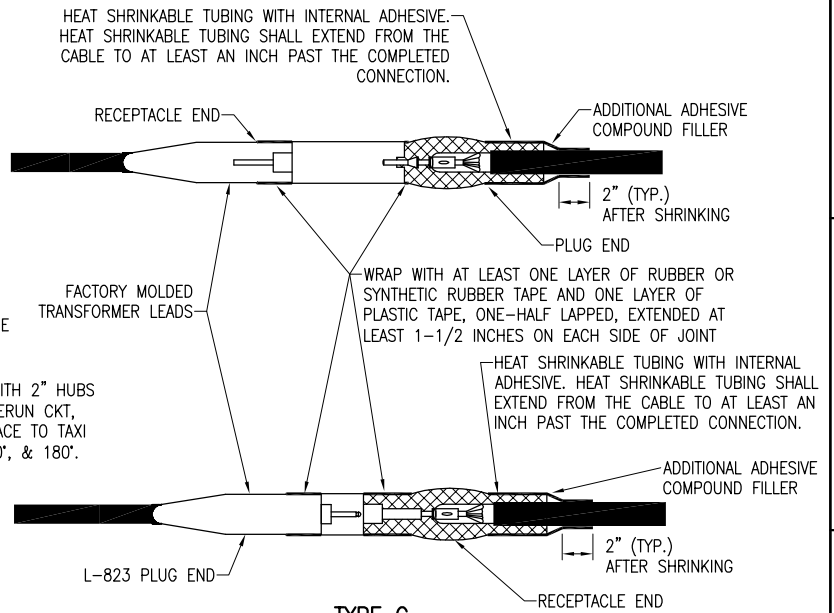
**TYPE A**

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 JUNCTION BOXES.



**TYPE B**

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



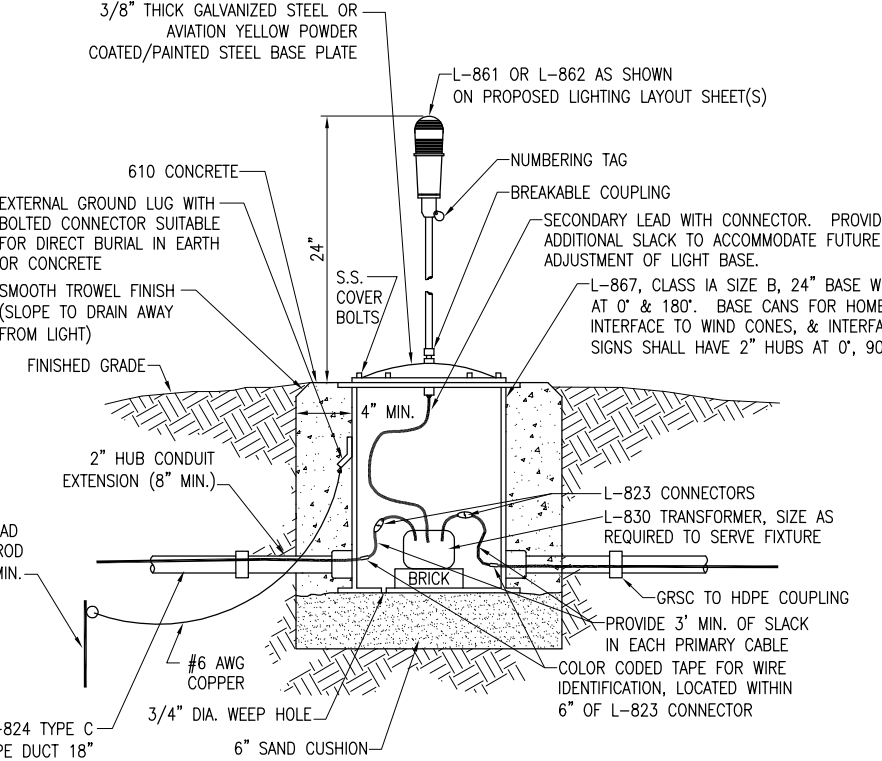
**TYPE C**

FOR SPLICES AT RUNWAY AND TAXIWAY LIGHTS

**NOTES:**

1. SEE PROPOSED LIGHTING LAYOUT SHEET(S) FOR SPLICE TYPE.
2. INSIDE DIAMETER OF CONNECTOR SHALL PROPERLY MATCH THE OUTSIDE DIAMETER OF CABLE.
3. SPLICES SHALL BE MADE IN SPLICE CANS, BASE CANS, HANDHOLES, MANHOLES, OR JUNCTION BOXES.

**CABLE SPLICES**  
(NOT TO SCALE)



**MEDIUM/HIGH INTENSITY LIGHT - BASE MOUNTED**

(NOT TO SCALE)

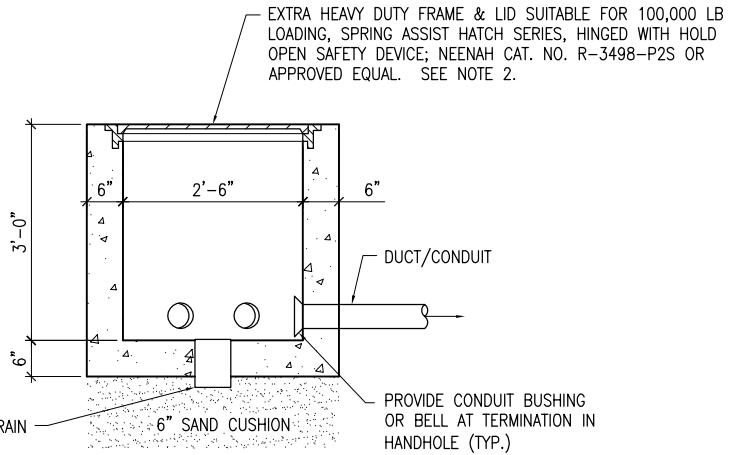
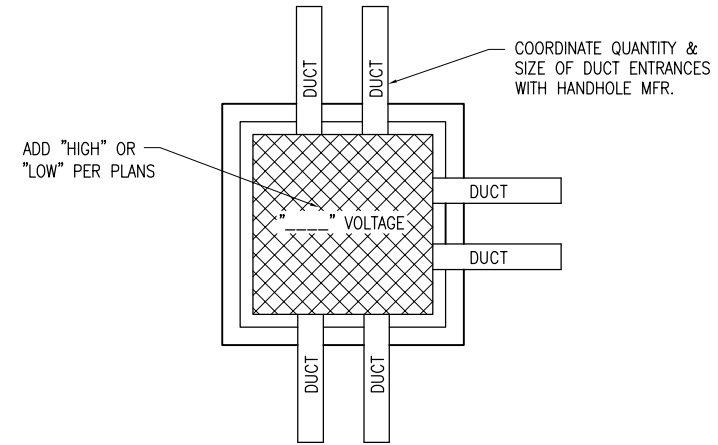
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DATE	
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EAST ALTON, ILLINOIS	
I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46	

Hanson Project No.	10A0121D
File Name	E-502.DWG
Scale	NONE
Date	02/04/11
LAYOUT	11/19/10
DRAWN	MAW
REVIEWED	CAH

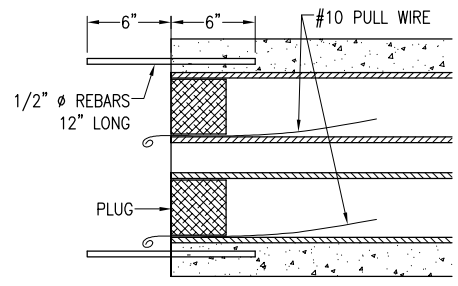
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REPLACE HIRL  
ON RUNWAY 11-29

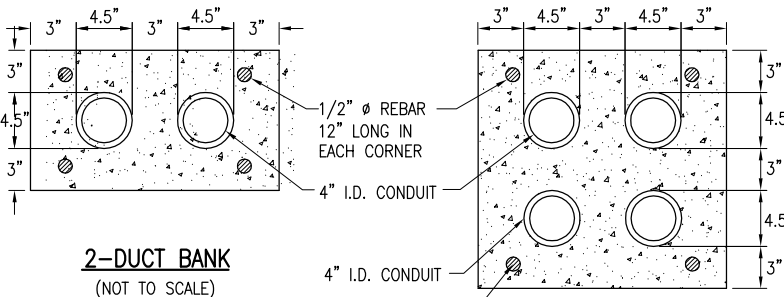
ELECTRICAL DETAILS  
SHEET 2



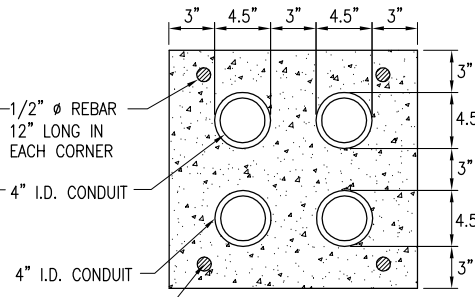
**ELECTRICAL HANDHOLE**  
"NOT TO SCALE"



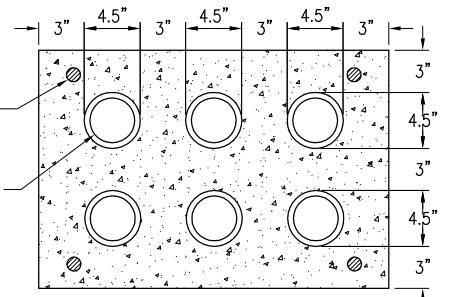
**TYPICAL SECTION**  
"NOT TO SCALE"



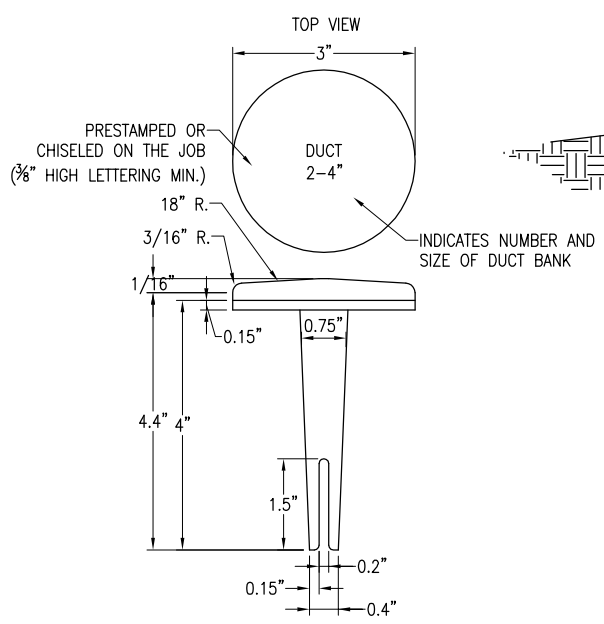
**2-DUCT BANK**  
"NOT TO SCALE"



**4-DUCT BANK**  
"NOT TO SCALE"

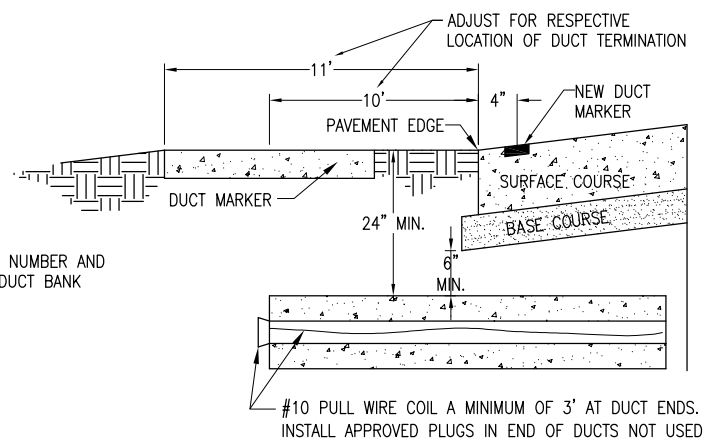


**6-DUCT BANK**  
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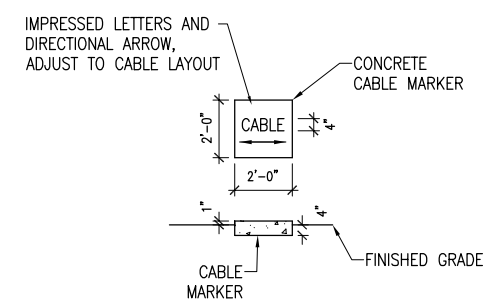


**BITUMINOUS PAVEMENT DUCT MARKERS**  
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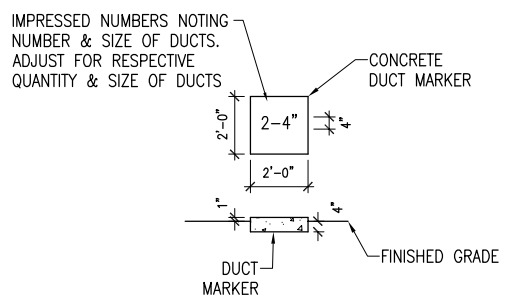
**NOTE:**  
TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE.



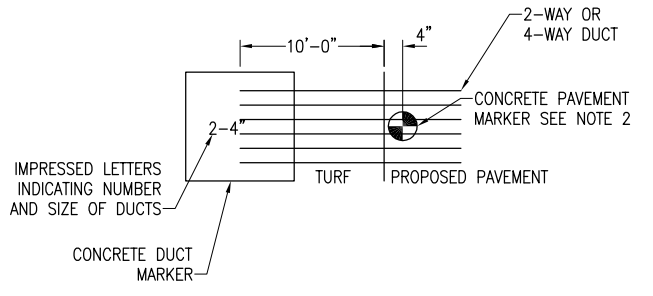
**UNDERGROUND ELECTRICAL DUCT**  
"NOT TO SCALE"



**TURF CABLE MARKERS**  
"NOT TO SCALE"



**TURF DUCT MARKERS**  
"NOT TO SCALE"



**DUCT MARKER DETAIL**  
"NOT TO SCALE"

**DUCT BANK NOTES:**

- ALL DIMENSION ARE MINIMUM.
- INCLUDE DUCT SPACERS AS MANUFACTURED BY UNDERGROUND DEVICES INC., TO MAINTAIN PROPER SEPARATION OF CONDUITS.
- REBAR IS REQUIRED TO ACCOMODATE FUTURE DUCT EXTENSIONS & INTERFACE AT DUCT BANK TERMINATIONS. DUCT BANKS TERMINATING IN MANHOLES DO NOT REQUIRE REBAR AT TERMINATIONS.
- CONDUITS FOR CONCRETE ENCASED DUCT SHALL BE SCHEDULE 40 PVC CONFORMING TO ITEM 110.
- MINIMUM DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 18" BELOW FINISHED GRADE. DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 42" MINIMUM TO FINISHED GRADE IN CULTIVATED/FARMED AREAS.
- HIGH VOLTAGE AND LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
- HOMERUN CABLES FOR A RESPECTIVE CIRCUIT SHALL BE INSTALLED IN THE SAME RACEWAY OR DUCT.
- INSTALL DUCT BANKS WITH SLOPE TO DRAIN WHERE TERMINATING IN MANHOLES OR HANDHOLES.

**CABLE & DUCT MARKER NOTES:**

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

**NOTES:**

- LIDS FOR LOW VOLTAGE HANDHOLES SHALL BE LABELED "LOW VOLTAGE". LIDS FOR HIGH VOLTAGE HANDHOLES SHALL BE LABELED "HIGH VOLTAGE". COORDINATE LETTERING WITH MFR.
- ELECTRICAL HANDHOLE, FRAME & LID SHALL BE CAPABLE OF WITHSTANDING MINIMUM 100,000 POUND LOADS AS CALLED FOR IN FAA ADVISORY CIRCULAR AC 150/5320-6D APPENDIX 3 ITEM 2.d. (1). AIRPORT HANDHOLE HOLE FRAME & LID SHALL BE NEENAH CATALOG NO. R-3498-P2S OR APPROVED EQUAL.
- REINFORCEMENT SHALL BE #6 BARS AT 6" CENTERS BASE & WALLS EACH WAY.
- CONCRETE SHALL BE 5000 PSI AT 28 DAYS.
- HANDHOLES SHALL BE PRECAST. PRECAST MANUFACTURERS MUST BE ON IDOT (ILLINOIS DEPT. OF TRANSPORTATION) LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS.
- HANDHOLES WILL BE PAID FOR UNDER ITEM AR110610 ELECTRICAL HANDHOLE PER EACH.
- COORDINATE INSTALLATION OF HANDHOLES WITH RESPECTIVE FINISHED GRADE ELEVATION.

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**St. Louis Regional**  
AIRPORT

EAST ALTON, ILLINOIS

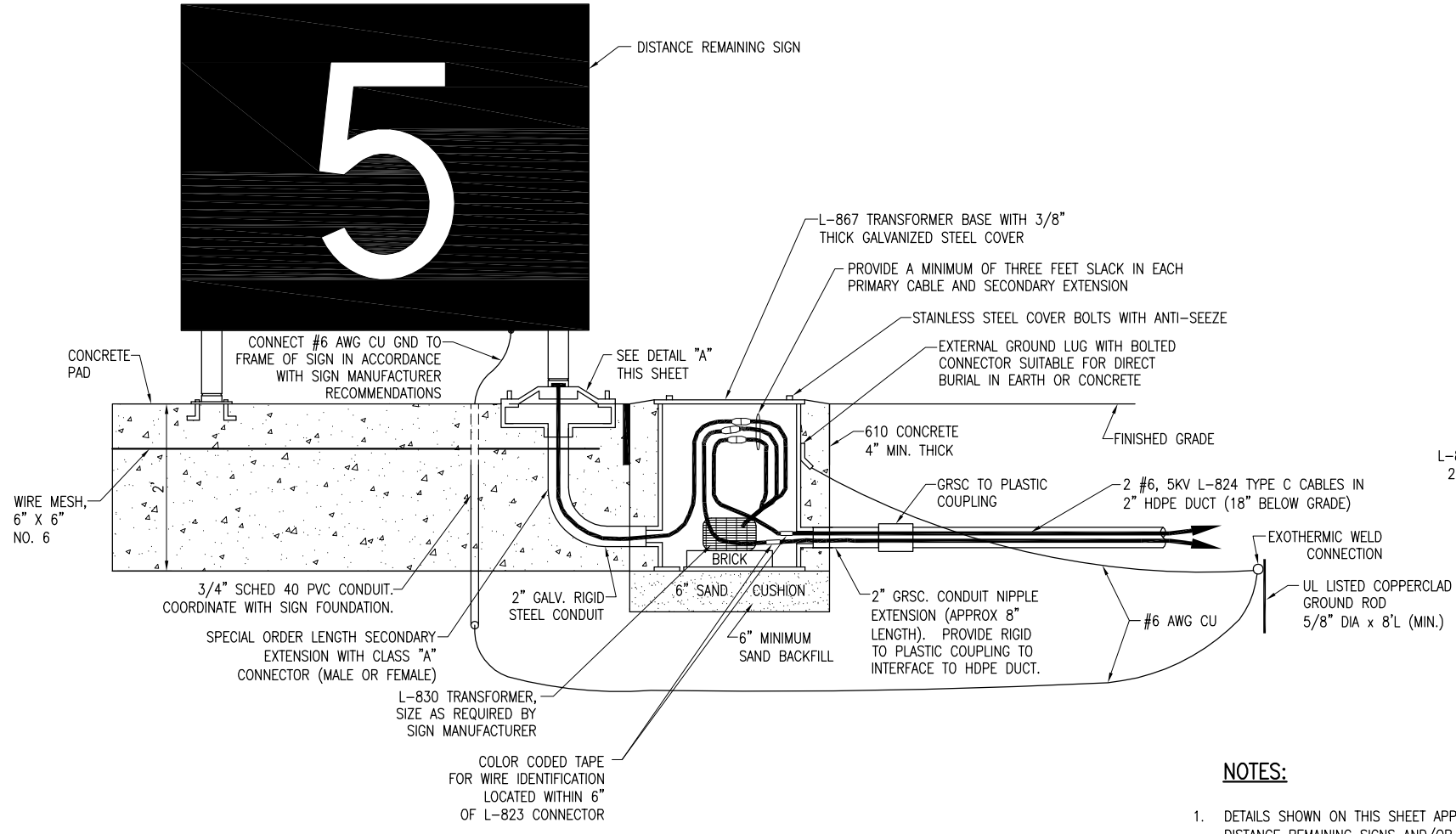
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Hanson Project No.	10A0121D
Filename	E-503.DWG
Scale	NONE
Date	02/04/11
LAYOUT	KNL 11/19/10
DRAWN	MAW 11/29/10
REVIEWED	CAH 01/14/11

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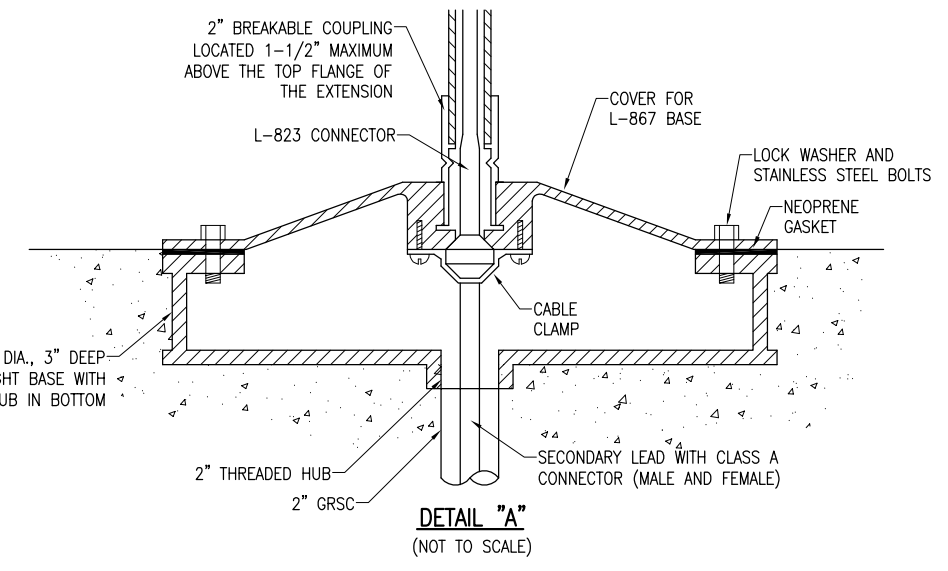
REPLACE HIRL  
ON RUNWAY 11-29

ELECTRICAL DETAILS  
SHEET 3

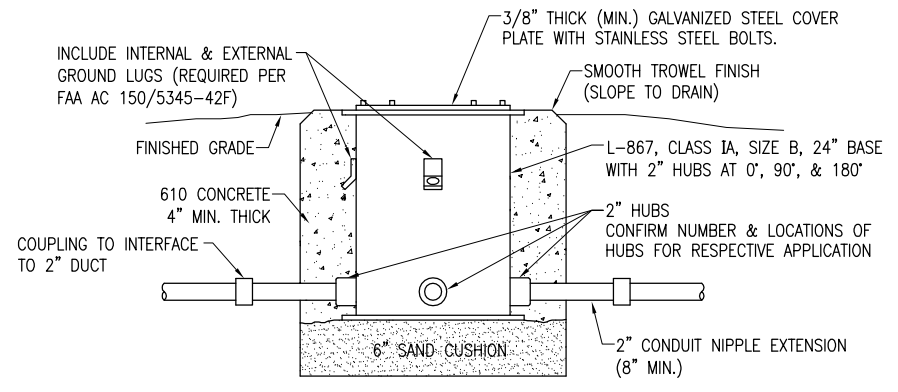
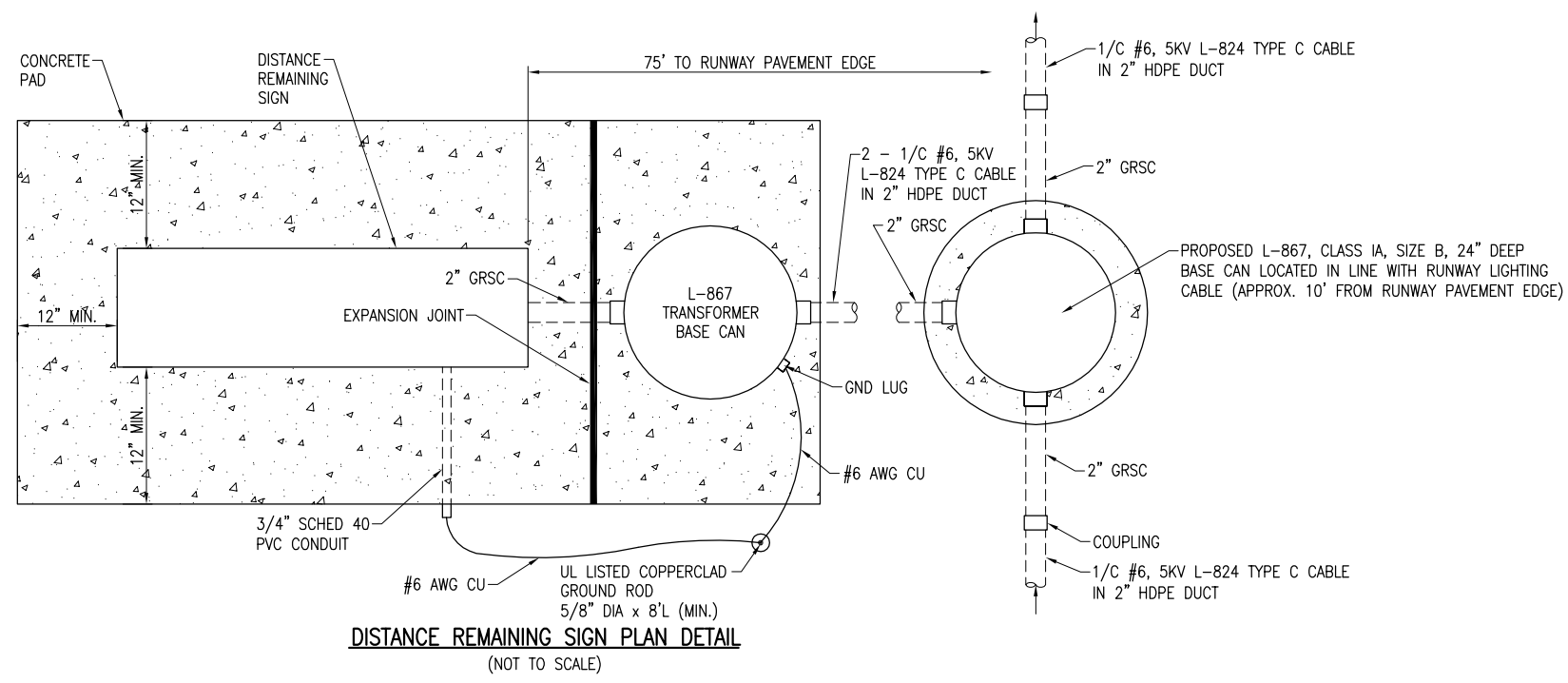


**NOTES:**

1. DETAILS SHOWN ON THIS SHEET APPLY TO NEW DISTANCE REMAINING SIGNS AND/OR RELOCATED DISTANCE REMAINING SIGNS.
2. RUNWAY 17-35 SERIES CIRCUIT CABLES SHALL BE #8 AWG. RUNWAY 11-29 SERIES CIRCUIT CABLES SHALL BE #6 AWG.



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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.

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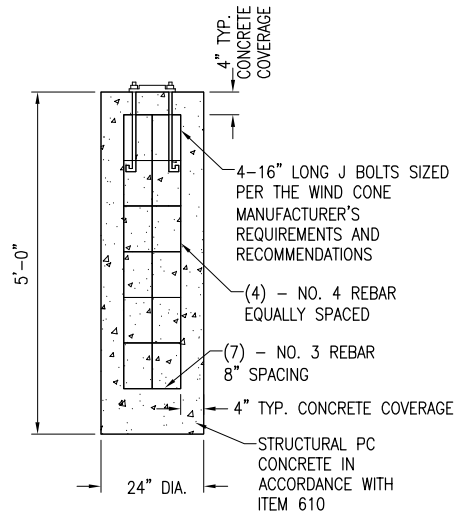
REVISION	DATE

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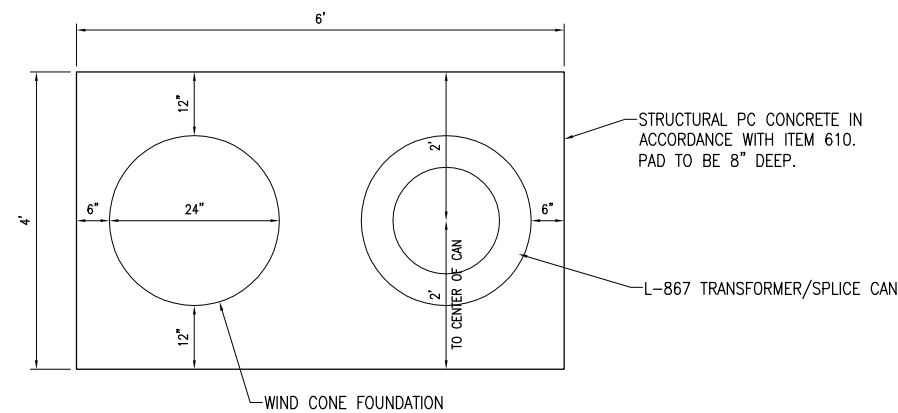
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Filename	E-504.DWG
Scale	NONE
Date	02/04/11
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DRAWN	MAW 11/29/10
REVIEWED	CAH 01/14/11

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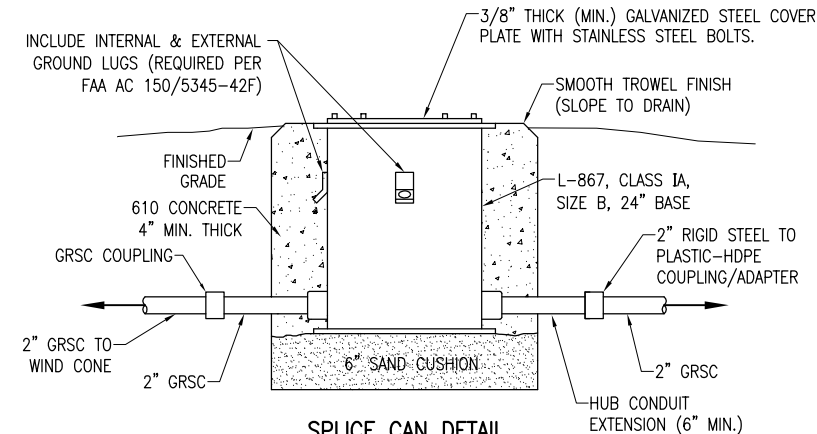
REPLACE HIRL  
 ON RUNWAY 11-29  
 ELECTRICAL DETAILS  
 SHEET 4



**ANCHORING DETAIL**  
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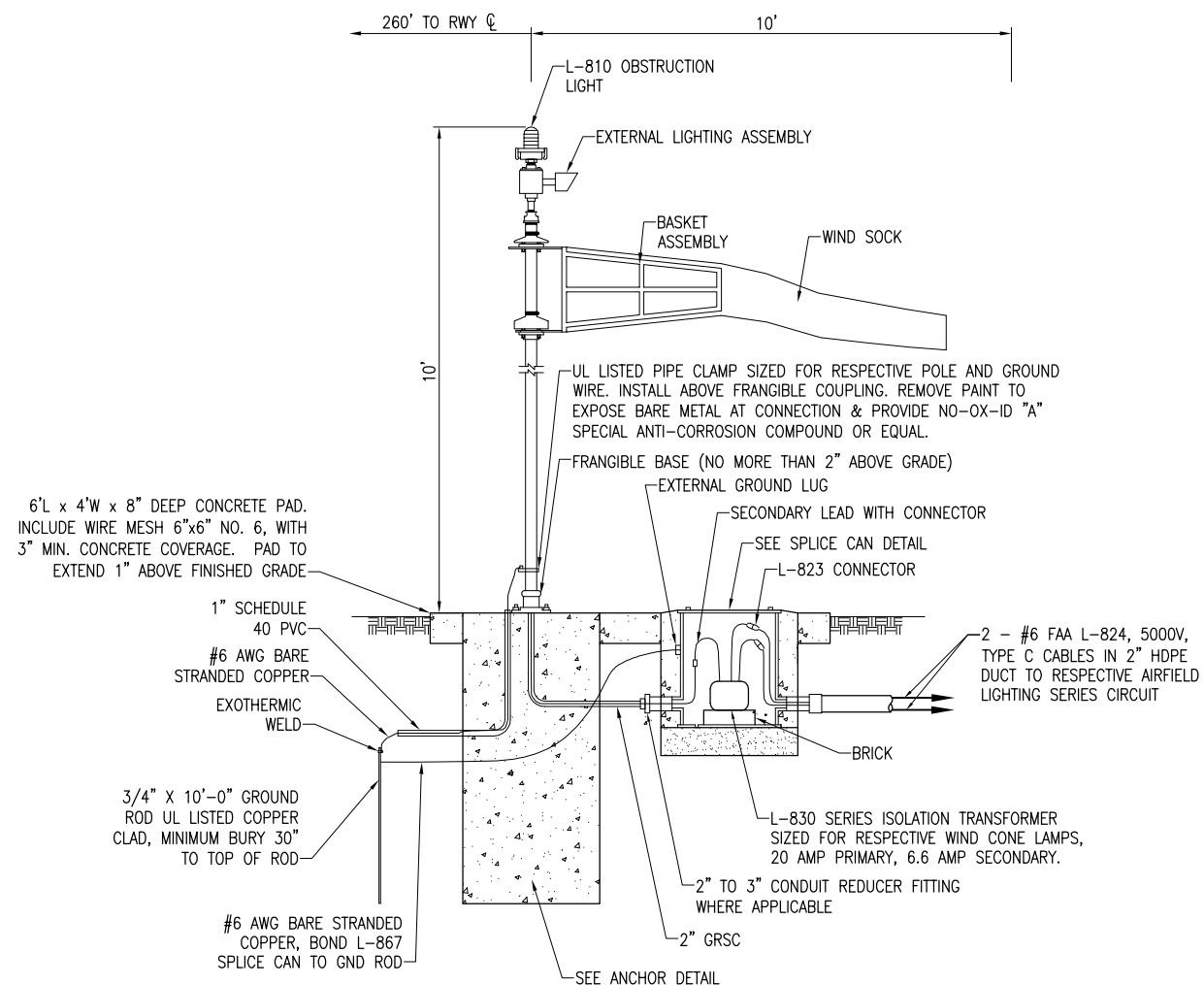


**CONCRETE PAD PLAN VIEW**  
(NOT TO SCALE)



**SPLICE CAN DETAIL**  
(NOT TO SCALE)

INCLUDE INTERNAL AND EXTERNAL GROUND LUGS



**NOTES**

1. WIND CONES SHALL INCLUDE CONSTANT-BRIGHTNESS SERIES CIRCUIT POWER ADAPTER. SEE SPECIAL PROVISION SPECS.
2. THE RUNWAY 11-29 LIGHTING SERIES CIRCUIT WILL BE POWERED BY AN L-828 CLASS 2 - 20 AMP OUTPUT CURRENT, STYLE 2-5 BRIGHTNESS STEPS CONSTANT CURRENT REGULATOR. COORDINATE WITH THE RESPECTIVE WIND CONE MANUFACTURER TO PROVIDE A COMPATIBLE AND PROPERLY SIZED SERIES ISOLATION TRANSFORMER.
3. THE CONSTANT CURRENT REGULATOR POWERING THE SERIES CIRCUIT FOR THE WIND CONES HAS BEEN SIZED FOR THE RESPECTIVE RUNWAY LIGHTING LOADS AND WIND CONES THAT HAVE A LOAD OF LESS THAN 150VA AND DO 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 CONES.
4. WIND CONES WILL BE PAID FOR UNDER ITEM AR107408 L-806 WIND CONE - 8' LIGHTED PER EACH. SPLICE CANS FOR L-806 WIND CONE SERIES CIRCUIT TRANSFORMERS WILL BE INCIDENTAL TO ITEM AR107408.
5. REBAR SHALL BE MANUFACTURED FROM 100% DOMESTIC STEEL.

**EXTERNALLY LIGHTED L806 WIND CONE (SERIES CIRCUIT TYPE)**  
"NOT TO SCALE"

REVISION	DATE

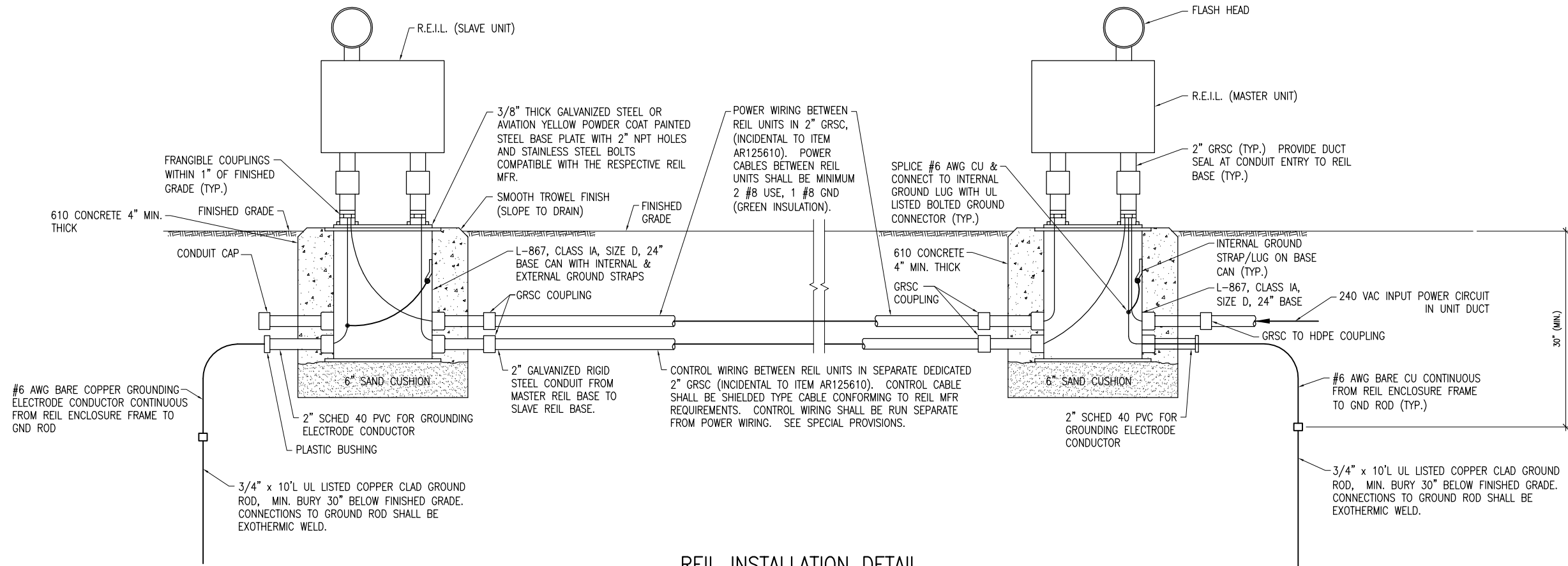
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**St. Louis Regional**  
 EAST ALTON, ILLINOIS  
 A.I.P. PROJ.: 3-17-0002-B46  
 IL. PROJ.: ALN-4065

Hanson Project No. 10A0121D	12/11/10
Filename E-505.DWG	KNL
Scale AS SHOWN	MAW
Date 02/04/11	REVIEWED CAH
LAYOUT	01/14/11
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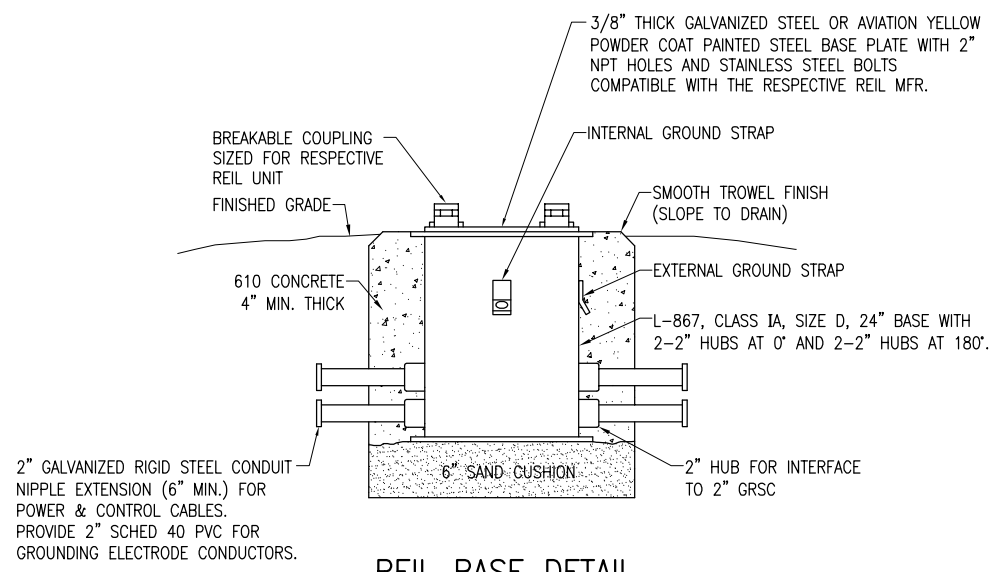
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REPLACE HIRL  
 ON RUNWAY 11-29  
 L-806 WIND CONE  
 ELEVATION DETAIL

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**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**

- 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.
- REILS SHALL BE AIMED AT ANGLE 10 DEGREES VERTICALLY AND TOED OUT 15 DEGREES FROM THE LINE PARALLEL TO THE RUNWAY CENTERLINE.
- REILS WILL BE PAID FOR UNDER ITEM AR125610 "REILS" PER PAIR.
- 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.
- 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.

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ST. LOUIS REGIONAL AIRPORT  
**St. Louis Regional**  
 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

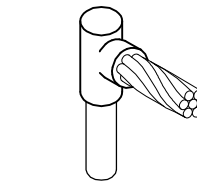
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Scale	AS SHOWN	REVIEWED	01/14/11
Date	02/04/11		

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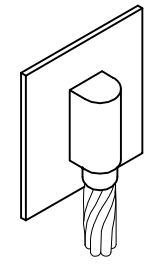
REPLACE HIRL  
 ON RUNWAY 11-29  
 REIL INSTALLATION DETAILS

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CABLE TO GROUND ROD

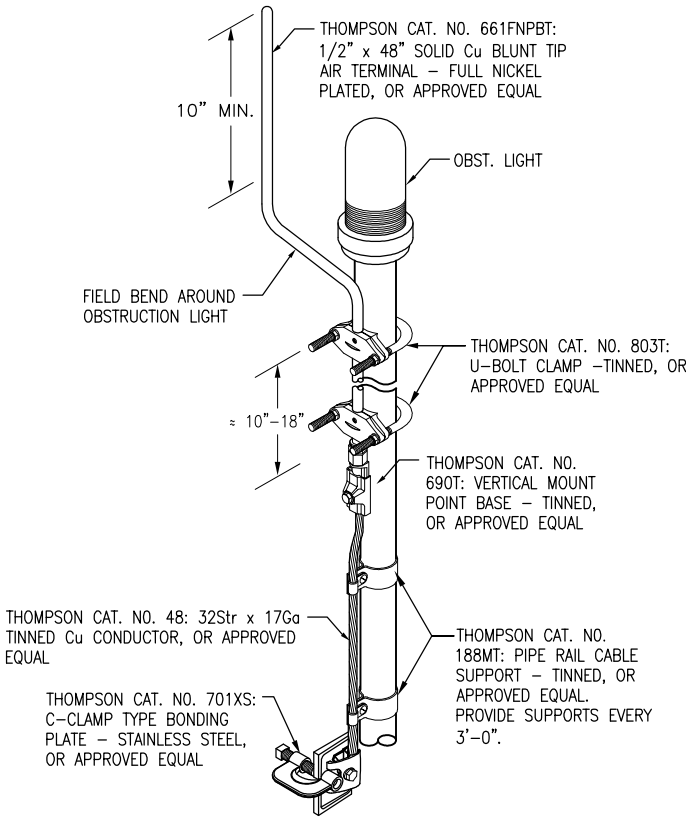


CABLE TO SURFACE

**DETAIL NOTES**

- EXOTHERMIC WELDS SHALL BE CADWELDED 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 OR APPROVED EQUAL. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.
- FOR APPLICATIONS TO GALVANIZED STEEL OR PAINTED STEEL, REMOVE GALVANIZING AND/OR PAINT & CLEAN THE SURFACE TO EXPOSE BARE STEEL BEFORE MAKING EXOTHERMIC WELD CONNECTION.
- VERIFY EXOTHERMIC MOLDS ARE SUITABLE FOR USE WITH THE RESPECTIVE TYPE (SOLID OR STRANDED) & SIZE CONDUCTOR.

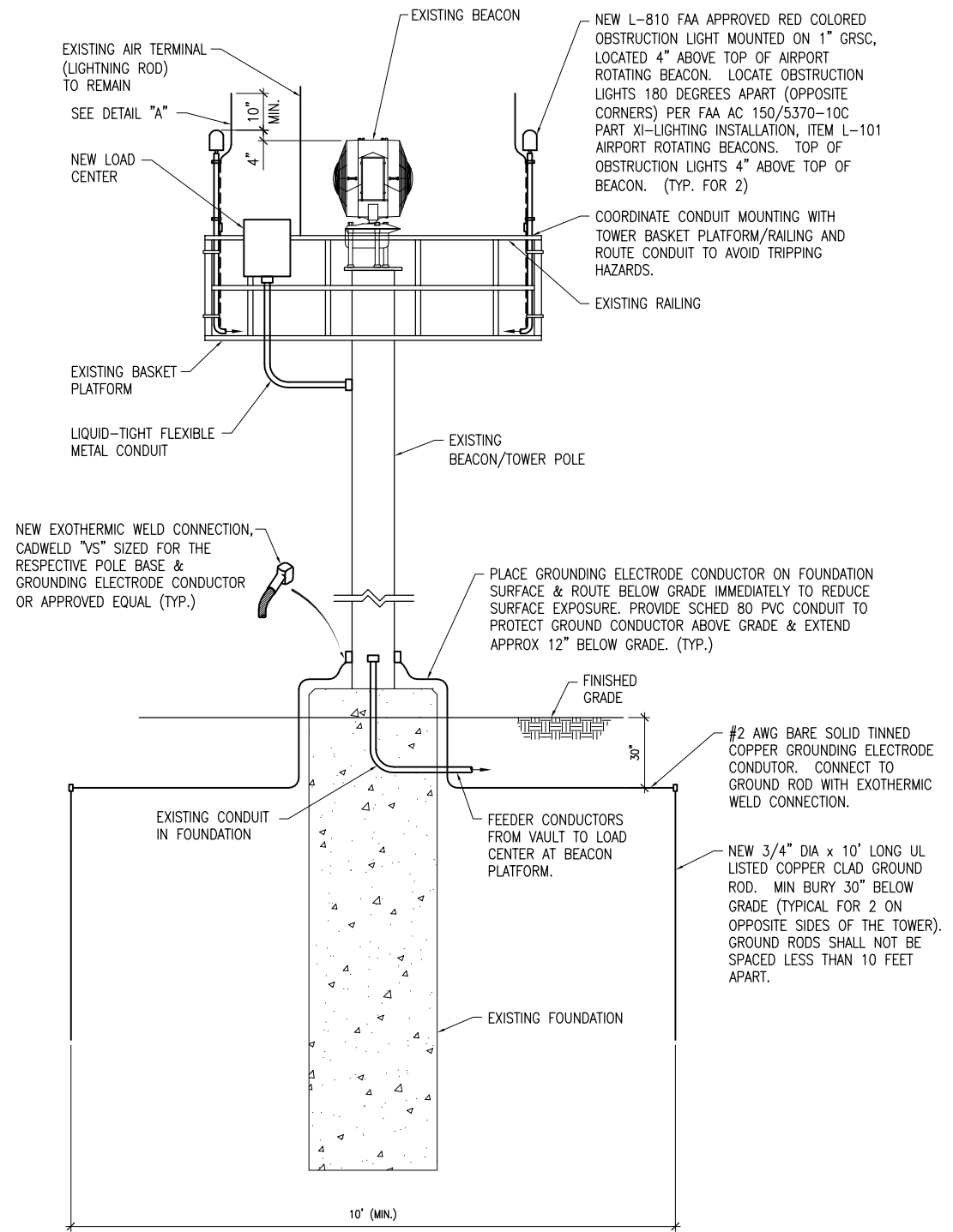
**EXOTHERMIC WELD DETAILS**



**DETAIL A**  
NTS

**NOTES**

- 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.
- VERIFY LIGHTNING PROTECTION COMPONENTS AND CATALOG NUMBERS WITH THE RESPECTIVE LIGHTNING PROTECTION EQUIPMENT MANUFACTURER.



**LIGHTNING PROTECTION DETAIL FOR AIRPORT ROTATING BEACON**  
NTS

WORK SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER ITEM AR800591 - UPGRADE AIRPORT ROTATING BEACON - PER L.S.

AIRPORT ROTATING BEACON LOAD CENTER SCHEDULE		
CKT #	DUTY	SIZE
1	SURGE PROTECTOR (PHASE A)	30A 1P
2	SURGE PROTECTOR (PHASE B)	30A 1P
3	AIRPORT ROTATING BEACON	15A 1P
4	OBSTRUCTION LIGHTS	15A 1P
5	BLANK	
6	BLANK	

100 AMP, 120/240 VAC, 1 PHASE, 3 WIRE, 6 CIRCUIT LOAD CENTER WITH MAIN LUGS IN A NEMA 3R RAIN PROOF ENCLOSURE, SQUARE D CAT. NO. Q0612L100RBCU WITH EQUIPMENT GROUND BAR KIT OR APPROVED EQUAL.

**NOTES**

- INCLUDE EQUIPT GROUND BAR KIT.
- ALL BREAKERS SHALL HAVE 10,000 AIC RATING AT 120/240 VAC.
- PHASE "A" SHALL BE SWITCHED THROUGH A LIGHTING CONTACTOR AT THE VAULT. PHASE "B" SHALL BE UNSWITCHED.
- INCLUDE ENGRAVED PHENOLIC LEGEND PLATE LABELED ARB PANEL, 120/240 VAC, 1PH, 3W, FED FROM VAULT.
- SURGE PROTECTORS SHALL BE SUITABLE FOR 120VAC, 1PH, 2W PLUS GROUND, 30KA (MINIMUM) SURGE CURRENT RATING, JOSLYN MODEL 1260-21 OR LIGHTNING PROTECTION CORP. MODEL LPC 11765-132, OR APPROVED EQUAL. FURNISH & INSTALL TWO SURGE PROTECTORS (ONE FOR EACH PHASE).
- 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

ST. LOUIS REGIONAL AIRPORT

**St. Louis Regional**  
AIRPORT

EAST ALTON, ILLINOIS

IL PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A0121D	12/14/10
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REPLACE HIRL ON RUNWAY 11-29



LIGHTNING PROTECTION DETAILS FOR BEACON

**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. BLACK, RED AND BLUE SHALL BE USED FOR PHASE CONDUCTORS ON 208/120VAC, THREE-PHASE, FOUR WIRE SYSTEMS. 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
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 U.L. 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 MINIMUM.
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					
					
ST. LOUIS REGIONAL AIRPORT EAST ALTON, ILLINOIS I.L. PROJ.: ALN-4066 A.I.P. PROJ.: 3-17-0002-B46					
Hanson Project No. 10A0121D	E-002.DWG	AS SHOWN	02/04/11	11/19/10	01/14/11
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REPLACE HIRL ON RUNWAY 11-29			ELECTRICAL NOTES SHEET 1		
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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, PHONE: (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 150/5340-30E 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 BONDED 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 5/8-INCH DIAMETER BY 8-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. 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 2008 NATIONAL ELECTRICAL CODE ARTICLE 250-12.
3. PER FAA 150/5340-30E THE RESISTANCE TO GROUND OF THE RESPECTIVE MOUNTING STAKE OR LIGHT BASE (WITH GROUND ROD CONNECTED) MUST BE 25 OHMS OR LESS.

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<b>ST. LOUIS REGIONAL AIRPORT</b> EAST ALTON, ILLINOIS I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46					
Hanson Project No. 10A0121D	E-003.DWG	Scale NONE	Date 02/04/11	LAYOUT 11/19/10	DRAWN MAW 11/29/10
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© Copyright Hanson Professional Services Inc. 2011 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2886 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide					
REPLACE HIRL ON RUNWAY 11-29			ELECTRICAL NOTES SHEET 2		
<span style="font-size: 2em; font-weight: bold;">27</span> 27 of 43 sheets					

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

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

ELECTRICAL ABBREVIATIONS	
A.F.F.	ABOVE FINISHED FLOOR
A, AMP	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CR	CONTROL RELAY
CU	COPPER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
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
LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT (UL LISTED)
LTG	LIGHTING
LP	LIGHTING PANEL
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCM	THOUSAND CIRCUAR MIL
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
N	NEUTRAL
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	GRADE 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
MALSRL	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH RUNWAY ALIGNMENT INDICATING LIGHTS
MIRL	MEDIUM INTENSITY RUNWAY LIGHT
MITL	MEDIUM INTENSITY TAXIWAY LIGHT
NDB	NON-DIRECTIONAL BEACON
PAPI	PRECISION APPROACH PATH INDICATOR
PLASI	PULSE LIGHT APPROACH SLOPE INDICATOR
RAIL	RUNWAY ALIGNMENT INDICATING LIGHTS
REIL	RUNWAY END IDENTIFIER LIGHT
RVR	RUNWAY VISUAL RANGE
VADI	VISUAL APPROACH DESCENT INDICATOR
VASI	VISUAL APPROACH SLOPE INDICATOR
VOR	VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE FACILITY
WC	WIND CONE

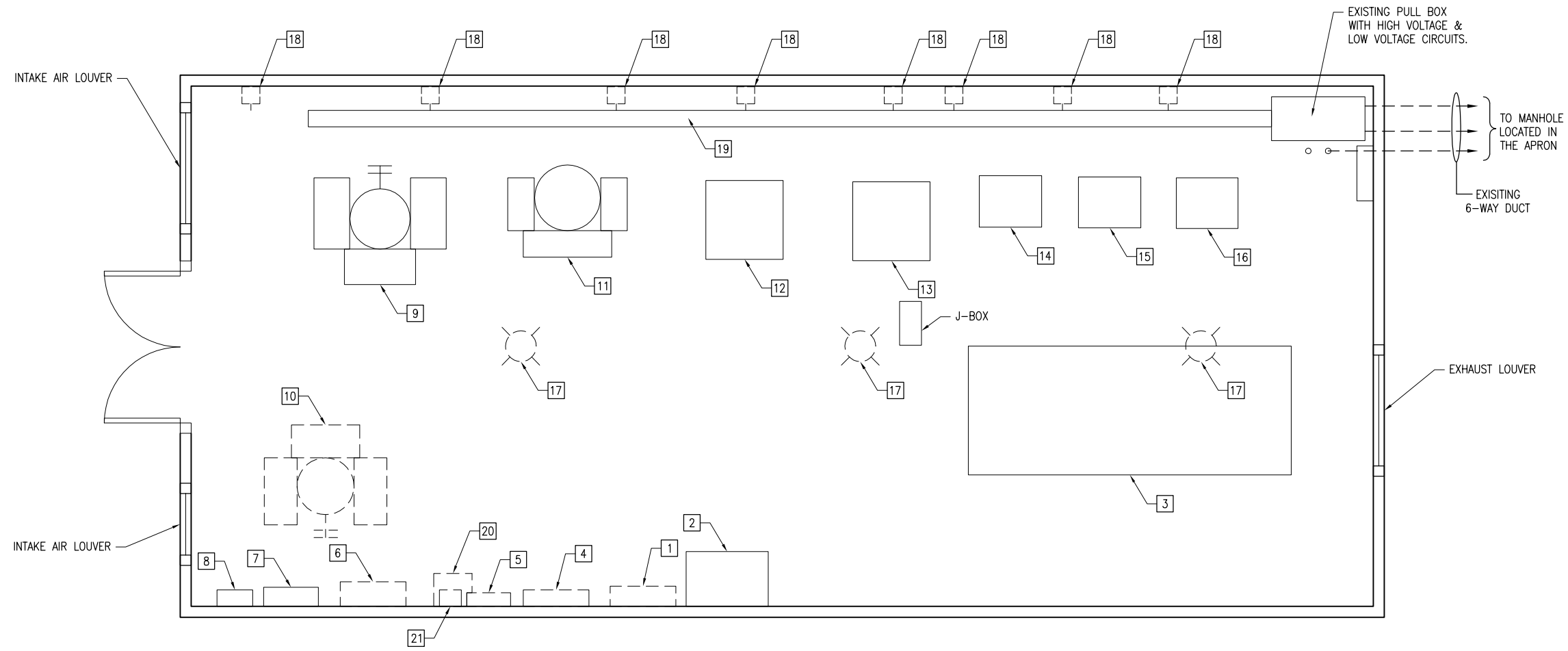
ELECTRICAL LEGEND - PLANS	
	CONDUIT (EXPOSED)
	CONDUIT OR UNIT DUCT (CONCEALED OR BURIED)
	POLE OR CONDUIT MOUNTED LIGHT FIXTURE
	WALL OR CEILING MT'D. JUNCTION BOX. CONFIGURATION VARIES WITH USE
	SINGLE THROW DISCONNECT SWITCH
	SINGLE THROW, FUSIBLE DISCONNECT SWITCH
	ENCLOSED CIRCUIT BREAKER
	DOUBLE THROW SAFETY SWITCH, MANUAL TRANSFER SWITCH
	CONTROL PANEL
	TRANSFORMER
	ELECTRIC UTILITY METER
	ENCLOSURE
	CIRCUIT BREAKER PANEL-SEE SCHEDULES
	GROUND ROD
	#12 AWG THWN COPPER UNLESS NOTED OTHERWISE. LONG SLASHES INDICATE NEUTRAL. SHORT SLASHES INDICATE HOT OR SWITCHED LEG. SLASHES WITH DOT INDICATE SEPARATE GROUND WIRE.
	HOMERUN TO PANEL PNL A INDICATES PANEL 1,3,5 INDICATES CIRCUIT NUMBERS
	PHOTO-ELECTRIC CELL

**NOTES:**

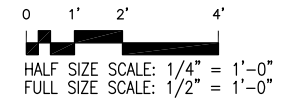
- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- 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).
- 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:

208/120 VAC, 3 PHASE, 4 WIRE  
 PHASE A      BLACK  
 PHASE B      RED  
 PHASE C      BLUE  
 NEUTRAL      WHITE  
 GROUND      GREEN

REVISION							
	DATE						
ST. LOUIS REGIONAL AIRPORT  EAST ALTON, ILLINOIS I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46							
Revision Project No. 10A0121D Filename E-001.DWG Scale NOT TO SCALE Date 02/04/11		LAYOUT KNL 11/19/10 DRAWN MAW 11/29/10 REVIEWED CAH 01/14/11		 © Copyright Hanson Professional Services Inc. 2011 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2886 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-hc.com Offices Nationwide			
REPLACE HIRL ON RUNWAY 11-29				ELECTRICAL LEGEND AND ABBREVIATIONS			
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EXISTING ELECTRICAL EQUIPMENT PLAN FOR VAULT



**KEYED NOTES**

- 1 EXISTING VAULT MAIN DISCONNECT TO BE REMOVED AND REPLACED WITH A NEW MAIN DISCONNECT PANEL.
- 2 EXISTING AUTO TRANSFER SWITCH TO REMAIN.
- 3 EXISTING ENGINE GENERATOR SET TO REMAIN.
- 4 EXISTING MAIN DISTRIBUTION PANELBOARD TO BE REMOVED AND REPLACED WITH A NEW MAIN DISTRIBUTION PANELBOARD.
- 5 EXISTING AUXILIARY PANELBOARD TO BE REMOVED AND REPLACED WITH A NEW PANELBOARD. EXISTING BRANCH CIRCUITS SHALL BE RECONNECTED TO THE NEW PANELBOARD, OR REPLACED WITH NEW CIRCUITS AS DETAILED HEREIN.
- 6 EXISTING LIGHTING CONTACTOR/RELAY PANEL TO BE REMOVED AND REPLACED WITH A NEW AIRFIELD LIGHTING CONTACTOR PANEL.
- 7 EXISTING RELAY INTERFACE PANEL TO REMAIN.
- 8 EXISTING L-854 RADIO RECEIVER TO REMAIN.
- 9 EXISTING RUNWAY 11-29 EAST CKT #1 CCR TO REMAIN AND BE RECONNECTED FOR USE AS A BACKUP CCR FOR RUNWAY 11-29.
- 10 EXISTING RUNWAY 11-29 WEST CKT #8 CCR TO BE REMOVED AND RELOCATED TO STORAGE.
- 11 EXISTING TAXIWAY A-EAST CCR TO REMAIN. INPUT POWER WIRING TO CCR & OUTPUT SERIES CIRCUIT WIRING FROM CCR SHALL BE REPLACED.

- 12 EXISTING TAXIWAY B CCR TO REMAIN. INPUT POWER WIRING TO CCR & OUTPUT SERIES CIRCUIT WIRING FROM CCR SHALL BE REPLACED.
- 13 EXISTING RUNWAY 17-35 CCR TO REMAIN. INPUT POWER WIRING TO CCR & OUTPUT SERIES CIRCUIT WIRING FROM CCR SHALL BE REPLACED.
- 14 EXISTING TAXIWAY C-SOUTH CCR TO REMAIN. INPUT POWER WIRING TO CCR & OUTPUT SERIES CIRCUIT WIRING FROM CCR SHALL BE REPLACED.
- 15 EXISTING TAXIWAY C-NORTH CCR TO REMAIN. INPUT POWER WIRING TO CCR & OUTPUT SERIES CIRCUIT WIRING FROM CCR SHALL BE REPLACED.
- 16 EXISTING TAXIWAY A-WEST CCR TO REMAIN. INPUT POWER WIRING TO CCR & OUTPUT SERIES CIRCUIT WIRING FROM CCR SHALL BE REPLACED.
- 17 EXISTING VAULT LIGHTING TO BE REMOVED AND REPLACED WITH NEW LIGHTING.
- 18 EXISTING SERIES PLUG CUTOFF TO BE REMOVED AND REPLACED WITH A NEW CUTOFF AND ENCLOSURE. OUTPUT SERIES CIRCUIT WIRING FROM EACH CCR SHALL BE REMOVED & REPLACED WITH NEW WIRING.
- 19 EXISTING HIGH VOLTAGE WIREWAY. EXISTING LOW VOLTAGE CIRCUITS IN HIGH VOLTAGE WIREWAY TO BE REMOVED AND REROUTED THROUGH LOW VOLTAGE WIREWAY AND RACEWAY SYSTEM. LOW VOLTAGE WIREWAY IS LOCATED OVERHEAD/ABOVE HIGH VOLTAGE WIREWAY.
- 20 STEP-UP TRANSFORMER & BOOST TRANSFORMER FOR BARRIER ARRESTER CABLE SYSTEM SHALL BE DISCONNECTED & REMOVED ALONG WITH THE ASSOCIATED FEEDER CIRCUIT.
- 21 CONTACTOR FOR RUNWAY 11 REILS TO BE REMOVED.

**GENERAL NOTES**

1. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS.
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. 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 LEGALLY DISPOSE OF THE EQUIPMENT OFF OF THE AIRPORT SITE.

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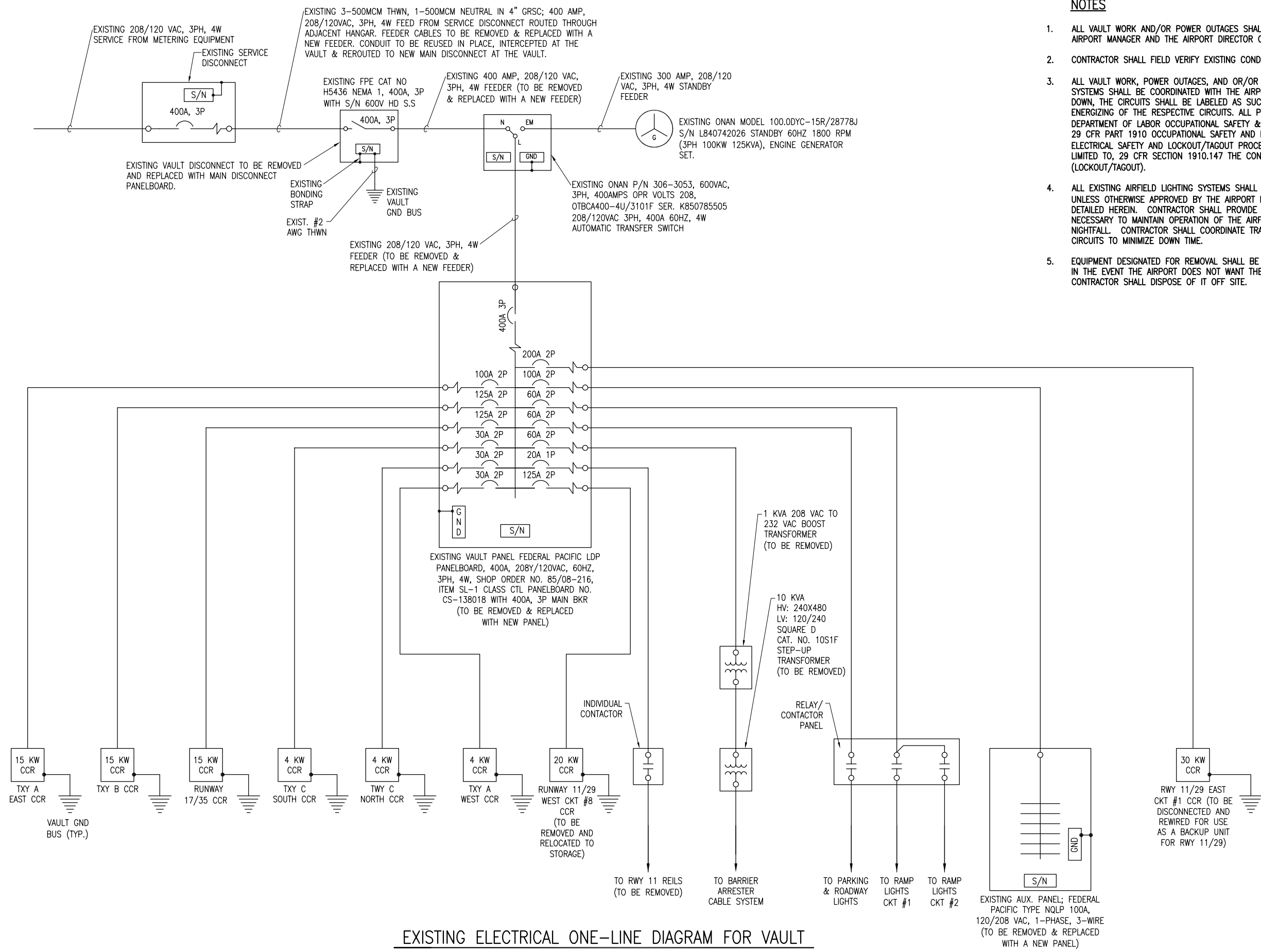
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ST. LOUIS REGIONAL AIRPORT  
  
 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

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REPLACE HIRL  
 ON RUNWAY 11-29  
 EXISTING ELECTRICAL  
 EQUIPMENT PLAN FOR  
 AIRPORT VAULT



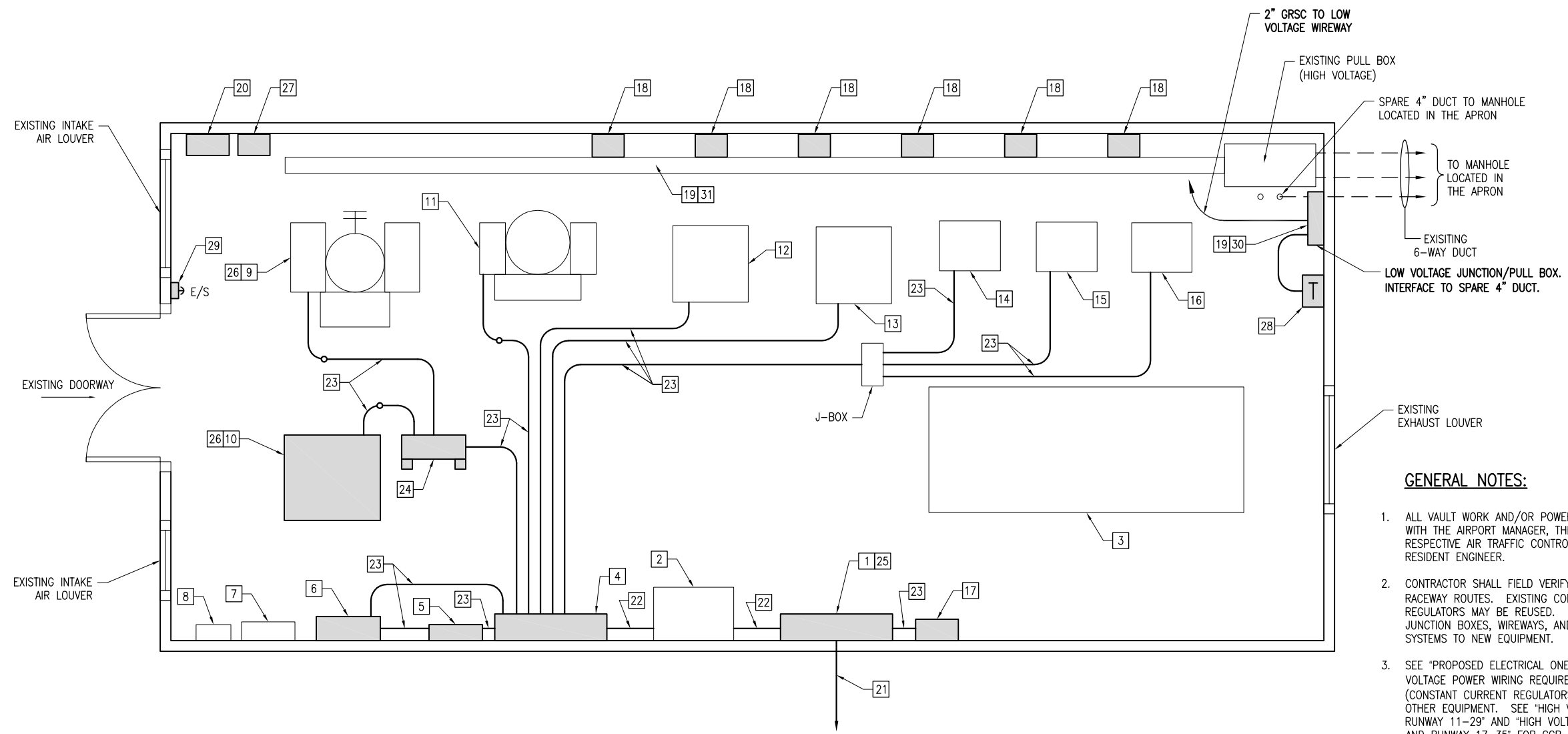
EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT

NOTES

1. ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND THE AIRPORT DIRECTOR OF OPERATIONS.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS.
3. ALL VAULT WORK, POWER OUTAGES, AND OR/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. ALL EXISTING AIRFIELD LIGHTING SYSTEMS SHALL BE OPERABLE DURING NIGHTFALL UNLESS OTHERWISE APPROVED BY THE AIRPORT MANAGER AND/OR OTHERWISE DETAILED HEREIN. CONTRACTOR SHALL PROVIDE ALL TEMPORARY WORK AS NECESSARY TO MAINTAIN OPERATION OF THE AIRFIELD LIGHTING SYSTEMS AT NIGHTFALL. CONTRACTOR SHALL COORDINATE TRANSFER OF EXISTING AIRFIELD CIRCUITS TO MINIMIZE DOWN TIME.
5. 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.

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<p>REPLACE HIRL ON RUNWAY 11-29</p> <p>EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT</p> <p style="text-align: center; font-size: 24pt; font-weight: bold;">30</p> <p style="text-align: center; font-size: 10pt;">30 of 43 sheets</p>	<p>Hanson Project No. 10A0121D                  Filename E-601.DWG                  Scale AS SHOWN                  Date 02/04/11</p> <p>LAYOUT KNL 12/01/10                  DRAWN MAW 12/02/10                  REVIEWED CAH 01/14/11</p> <p style="text-align: center; font-weight: bold; font-size: 18pt;">HANSON</p> <p style="font-size: 8pt;">© Copyright Hanson Professional Services Inc. 2011                  Hanson Professional Services Inc.                  1525 South Sixth Street                  Springfield, Illinois 62703-2886                  Ph: (217) 788-2450 Fax: (217) 788-2503                  www.hanson-inc.com                  Offices Nationwide</p>	<p>ST. LOUIS REGIONAL AIRPORT</p> <p style="text-align: center; font-weight: bold; font-size: 14pt;">St. Louis Regional AIRPORT</p> <p style="text-align: center;">EAST ALTON, ILLINOIS</p> <p style="text-align: center; font-size: 8pt;">IL PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46</p>
REVISION DATE 03/07/11 Revised as per IDA Review - KNL		



- GENERAL NOTES:**
- ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER, THE DIRECTOR OF OPERATIONS, THE RESPECTIVE AIR TRAFFIC CONTROL TOWER PERSONNEL, AND THE RESIDENT ENGINEER.
  - CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND PROPOSED RACEWAY ROUTES. EXISTING CONDUITS TO/FROM CONSTANT CURRENT REGULATORS MAY BE REUSED. PROVIDE CONDUIT EXTENSIONS, FITTINGS, JUNCTION BOXES, WIREWAYS, AND HARDWARE TO INTERFACE EXISTING SYSTEMS TO NEW EQUIPMENT.
  - SEE "PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT" FOR LOW VOLTAGE POWER WIRING REQUIREMENTS TO PANELBOARDS, TVSS, CCR'S (CONSTANT CURRENT REGULATORS), LIGHTING CONTACTOR PANEL, AND OTHER EQUIPMENT. SEE "HIGH VOLTAGE WIRING SCHEMATIC FOR RUNWAY 11-29" AND "HIGH VOLTAGE WIRING SCHEMATICS FOR TAXIWAYS AND RUNWAY 17-35" FOR CCR OUTPUT WIRING REQUIREMENTS. SEE RESPECTIVE CONTROL WIRING SCHEMATICS AND DETAILS FOR CCR AND AIRFIELD LIGHTING CONTROL WIRING REQUIREMENTS.
  - VAULT WORK WILL BE PAID FOR UNDER ITEM AR109200 UNLESS NOTED OTHERWISE HEREIN.

**PROPOSED ELECTRICAL EQUIPMENT PLAN FOR VAULT**

0 1' 2' 4'

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

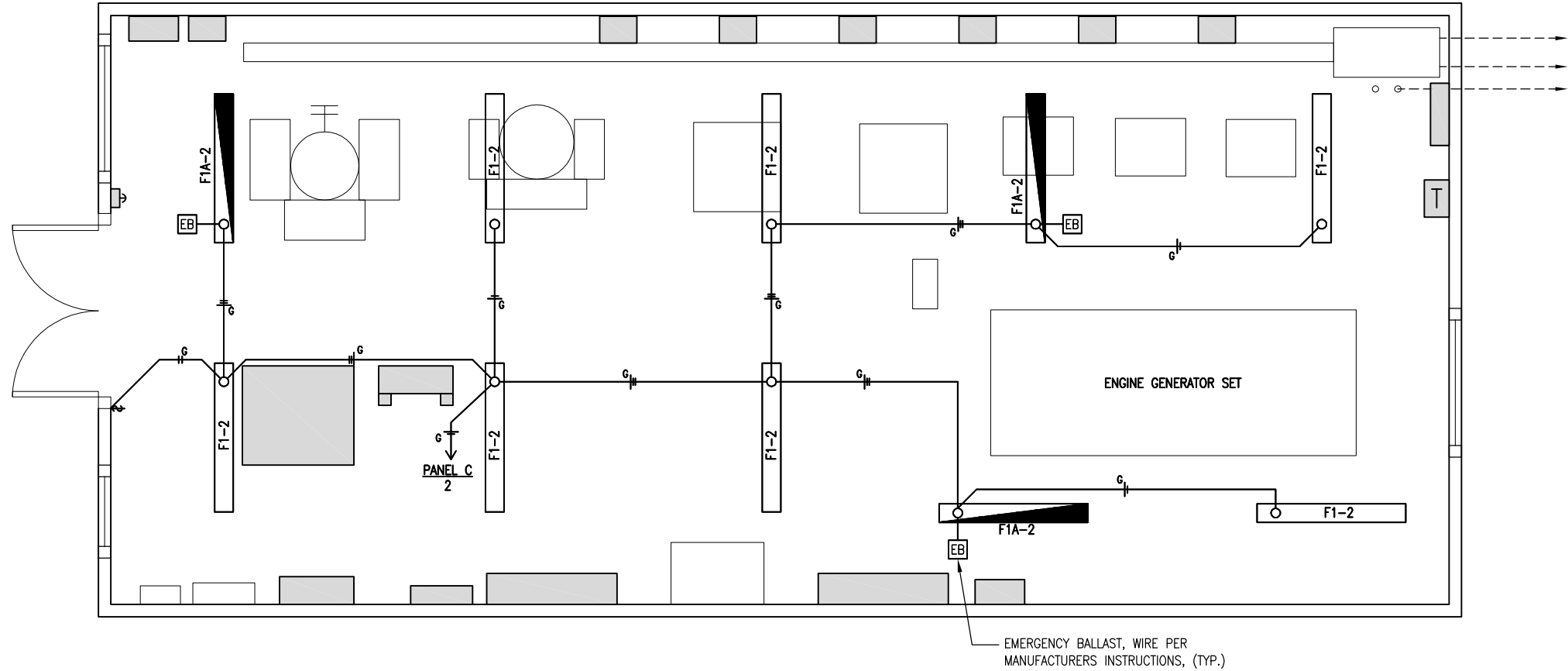
**KEYED NOTES**

- 1 NEW MAIN DISCONNECT PANEL "A".
- 2 EXISTING AUTO TRANSFER SWITCH TO REMAIN.
- 3 EXISTING ENGINE GENERATOR SET TO REMAIN.
- 4 NEW MAIN DISTRIBUTION PANELBOARD "B".
- 5 NEW AUXILIARY PANELBOARD "C". CONNECT TO EXISTING & PROPOSED CIRCUITS.
- 6 NEW LIGHTING CONTACTOR PANEL FOR AIRFIELD NAVAIDS & LIGHTING.
- 7 EXISTING RELAY INTERFACE PANEL TO REMAIN.
- 8 EXISTING L-854 RADIO RECEIVER TO REMAIN.
- 9 EXISTING RUNWAY 11-29 CCR SHALL BE REWIRED FOR USE AS A SPARE BACKUP CCR FOR RUNWAY 11-29.
- 10 NEW RUNWAY 11-29 CCR.
- 11 EXISTING TAXIWAY A-EAST CCR. REWIRE TO NEW MAIN DISTRIBUTION PANEL "B".
- 12 EXISTING TAXIWAY B CCR. TO BE RECONNECTED TO NEW MAIN DISTRIBUTION PANEL "B".
- 13 EXISTING RUNWAY 17-35 CCR. TO BE RECONNECTED TO NEW DISTRIBUTION PANEL "B".

- 14 EXISTING TAXIWAY C-SOUTH CCR. REWIRE TO NEW MAIN DISTRIBUTION PANEL "B".
- 15 EXISTING TAXIWAY C-NORTH CCR. REWIRE TO NEW MAIN DISTRIBUTION PANEL "B".
- 16 EXISTING TAXIWAY A-WEST CCR. REWIRE TO NEW MAIN DISTRIBUTION PANEL "B".
- 17 NEW TRANSIENT VOLTAGE SURGE SUPPRESSOR.
- 18 ALL EXISTING EXPOSED CUTOUTS SHALL BE REMOVED, REPLACED WITH A NEW CUTOUT INSTALLED IN A CUTOUT ENCLOSURE AND REWIRED (SEE GENERAL NOTES 2 & 3).
- 19 EXISTING HIGH VOLTAGE WIREWAY. EXISTING LOW VOLTAGE CIRCUITS IN HIGH VOLTAGE WIREWAY TO BE REMOVED AND REROUTED THROUGH LOW VOLTAGE WIREWAY AND RACEWAY SYSTEM. LOW VOLTAGE WIREWAY IS LOCATED OVERHEAD/ABOVE HIGH VOLTAGE WIREWAY. PROVIDE NEW LOW VOLTAGE PULL BOX & INTERFACE TO LOW VOLTAGE AND TO SPARE 4" DUCT. ROUTE RUNWAY 11 REIL CIRCUIT THROUGH LOW VOLTAGE RACEWAY SYSTEM.
- 20 NEW CUTOUTS FOR RUNWAY 11-29 LIGHTING. PROVIDE CLEAR WORKING SPACE IN FRONT OF CUTOUT ENCLOSURE TO MEET NEC CLEARANCE REQUIREMENTS. SEE "HIGH VOLTAGE WIRING SCHEMATIC FOR RUNWAY 11-29".
- 21 NEW 400 AMP, 208/120 VAC, 3PH, 4W FEEDER FROM SERVICE DISCONNECT; 3-600 MCM XHHW, 1-600 MCM XHHW NEUTRAL, 1 #2 GND IN 4" GRSC. EXISTING 4" GRSC MAY BE REUSED. PROVIDE JUNCTION BOXES, CONDUITS, AND FITTINGS TO REROUTE TO NEW MAIN DISCONNECT PANEL "A".
- 22 3-600 MCM XHHW, 1-600 MCM XHHW NEUTRAL, 1 #2 GND IN 4" GRSC.

- 23 SEE GENERAL NOTES 2 AND 3.
- 24 NEW 400 AMP, 2P DTFSS IN A NEMA 1 ENCLOSURE. PROVIDE STRUT SUPPORT HARDWARE TO INTERFACE TO FLOOR AND SUPPORT ENCLOSURE. TOP OF ENCLOSURE SHALL BE APPROXIMATELY 5 FEET, 6 INCHES ABOVE FLOOR.
- 25 BOND MAIN DISCONNECT PANEL "A" TO THE VAULT GROUND BUS WITH A #1/0 AWG COPPER BONDING JUMPER.
- 26 BOND CCR TO VAULT GROUND BUS WITH A #6 AWG COPPER BONDING JUMPER.
- 27 NEW TRANSFER RELAY PANEL FOR RUNWAY 11-29 CCR'S CONTROL WIRING. FIELD VERIFY LOCATION. INTERFACE TO EXISTING CONTROL WIRING FOR RUNWAY 11-29 LIGHTING, THE NEW RUNWAY 11-29 CCR, AND THE SPARE/BACKUP CCR FOR RUNWAY 11-29.
- 28 BOOST TRANSFORMER FOR RUNWAY 11 REILS. FIELD VERIFY LOCATION.
- 29 ENGINE GENERATOR REMOTE EMERGENCY SHUT DOWN PUSH BUTTON STATION. FURNISH AND INSTALL EMERGENCY SHUT DOWN CONTROL WIRING IN 3/4" GRSC AND INTERFACE TO ENGINE GENERATOR STANDBY POWER SYSTEM.
- 30 BOND LOW VOLTAGE PULL BOX TO VAULT GROUND BUS WITH A #6 AWG COPPER BONDING JUMPER.
- 31 BOND HIGH VOLTAGE WIREWAY AND LOW VOLTAGE WIREWAY TO VAULT GROUND BUS WITH A #6 AWG COPPER BONDING JUMPER.

REVISION	
DATE	
<p>ST. LOUIS REGIONAL AIRPORT                  EAST ALTON, ILLINOIS                  A.I.P. PROJ.: ALN-4065</p>	
Hanson Project No.	10A0121D
Filename	EP-102.DWG
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LAYOUT	12/31/10
DRAWN	KNL
REVIEWED	MAW
	01/05/11
	CAH
	01/14/11
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REPLACE HIRL ON RUNWAY 11-29	PROPOSED ELECTRICAL PLAN FOR AIRPORT VAULT
31 31 of 43 sheets	



**PROPOSED LIGHTING PLAN FOR AIRPORT VAULT**

0 1' 2' 4'

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

**NOTES:**

- 15 AMP & 20 AMP BRANCH CIRCUITS FOR LIGHTING AND RECEPTACLES SHALL USE #12 AWG THWN (MIN.) IN 3/4" GRSC, IMC, OR EMT. PROVIDE UL LISTED LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR LIGHT FIXTURE CORDS OR WHIPS. EXPOSED LIGHT FIXTURE CORDS ARE NOT ACCEPTABLE.
- LIGHT FIXTURES SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWINGS SUBMITTAL.
- ADJUST LIGHT FIXTURE LOCATIONS WHERE NECESSARY TO ACCOMMODATE EQUIPMENT LAYOUT, CONDUITS AND VAULT STRUCTURE.
- TEST EMERGENCY LIGHTING AND CONFIRM PROPER OPERATION WITH RESIDENT ENGINEER.

LIGHTING FIXTURE SCHEDULE						
FIXT. TYPE	DESCRIPTION	MANUFACTURER AND CATALOG NO.	LAMPS/WATTS	VOLTS	MOUNTING	REMARKS
F1	4 FT., 2-LAMP INDUSTRIAL FLUORESCENT LIGHT FIXTURE SUITABLE FOR DAMP LOCATIONS, NORMAL OR STANDARD DISTRIBUTION, WHITE POWDER COAT WITH UPLIGHT REFLECTOR, ACRYLIC WITH WIREGUARD SHIELDING, MULTI-VOLT BALLAST SUITABLE FOR LOCATIONS UP TO 131' F.	LITHONIA: FGB14-2-54T5HO-N1-D20U-A1215WG-MVOLT-ACRB-LP841-PAF-USPOM (UNITED STATES POINT OF MANUFACTURE), OR APPROVED EQUAL	2-54W T5HO 4100K	120	APPROXIMATELY 8' ABOVE FLOOR SUSPENDED WITH AIRCRAFT CABLE, CHAIN HANGERS OR MONOPOINT HANGER	INCLUDE APPROPRIATE MOUNTING HARDWARE
F1A	SAME AS F1 EXCEPT PROVIDE AN EMERGENCY BALLAST CAPABLE OF OPERATING 1 LAMP FOR 90 MINUTES AT 1150-1250 TOTAL LUMENS, BODINE LP600STU, IOTA ISD-80, OR APPROVED EQUAL. NOTE: CONFIRM WITH LIGHT FIXTURE MFR. IF BALLAST WILL HAVE TO BE REMOTE MOUNTED NEAR FIXTURE AS INDICATED ON THE PLANS.	LITHONIA: FGB14-2-54T5HO-N1-D20U-A1215WG-MVOLT-ACRB-LP841-PAF-USPOM (UNITED STATES POINT OF MANUFACTURE), OR APPROVED EQUAL	2-54W T5HO 4100K	120	APPROXIMATELY 8' ABOVE FLOOR SUSPENDED WITH AIRCRAFT CABLE, CHAIN HANGERS OR MONOPOINT HANGER	INCLUDE APPROPRIATE MOUNTING HARDWARE

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REVISION	DATE

ST. LOUIS REGIONAL AIRPORT

**St. Louis Regional**  
AIRPORT

EAST ALTON, ILLINOIS

IL PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No.	10A0121D
Filename	EL-101.DWG
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Date	02/04/11
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DRAWN	MAW 01/06/11
REVIEWED	CAH 01/14/11

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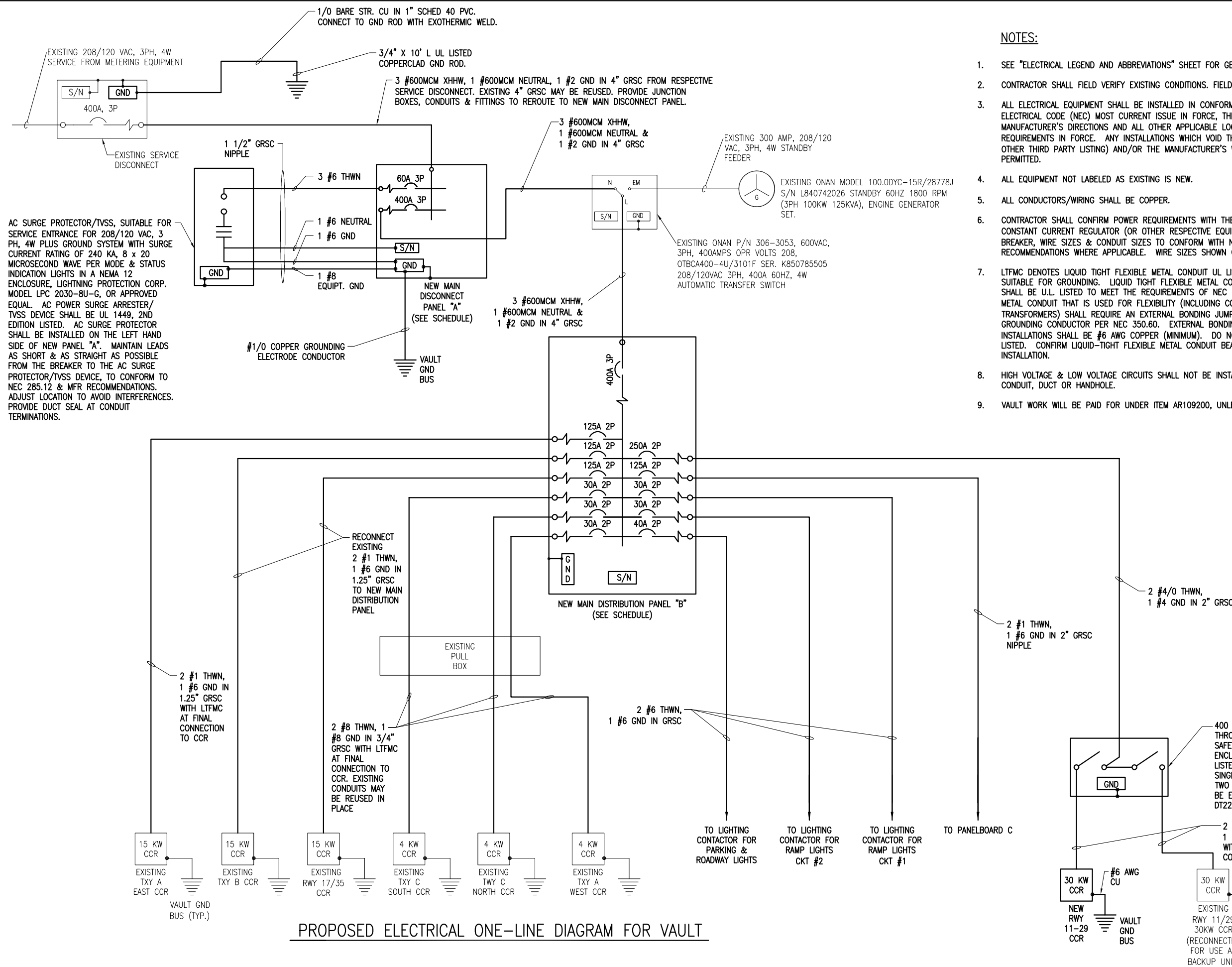
REPLACE HIRL ON RUNWAY 11-29

PROPOSED LIGHTING PLAN FOR AIRPORT VAULT



NOTES:

- SEE "ELECTRICAL LEGEND AND ABBREVIATIONS" SHEET FOR GENERAL NOTES AND REQUIREMENTS.
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. FIELD VERIFY CONDUIT & CABLE ROUTING.
- 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.
- ALL EQUIPMENT NOT LABELED AS EXISTING IS NEW.
- ALL CONDUCTORS/WIRING SHALL BE COPPER.
- 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.
- 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 LIQUID-TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLATION.
- HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT OR HANDHOLE.
- VAULT WORK WILL BE PAID FOR UNDER ITEM AR109200, UNLESS NOTED OTHERWISE HEREIN.



PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT

REVISION	03/07/11	Revised as per IDA Review - KNL
DATE		

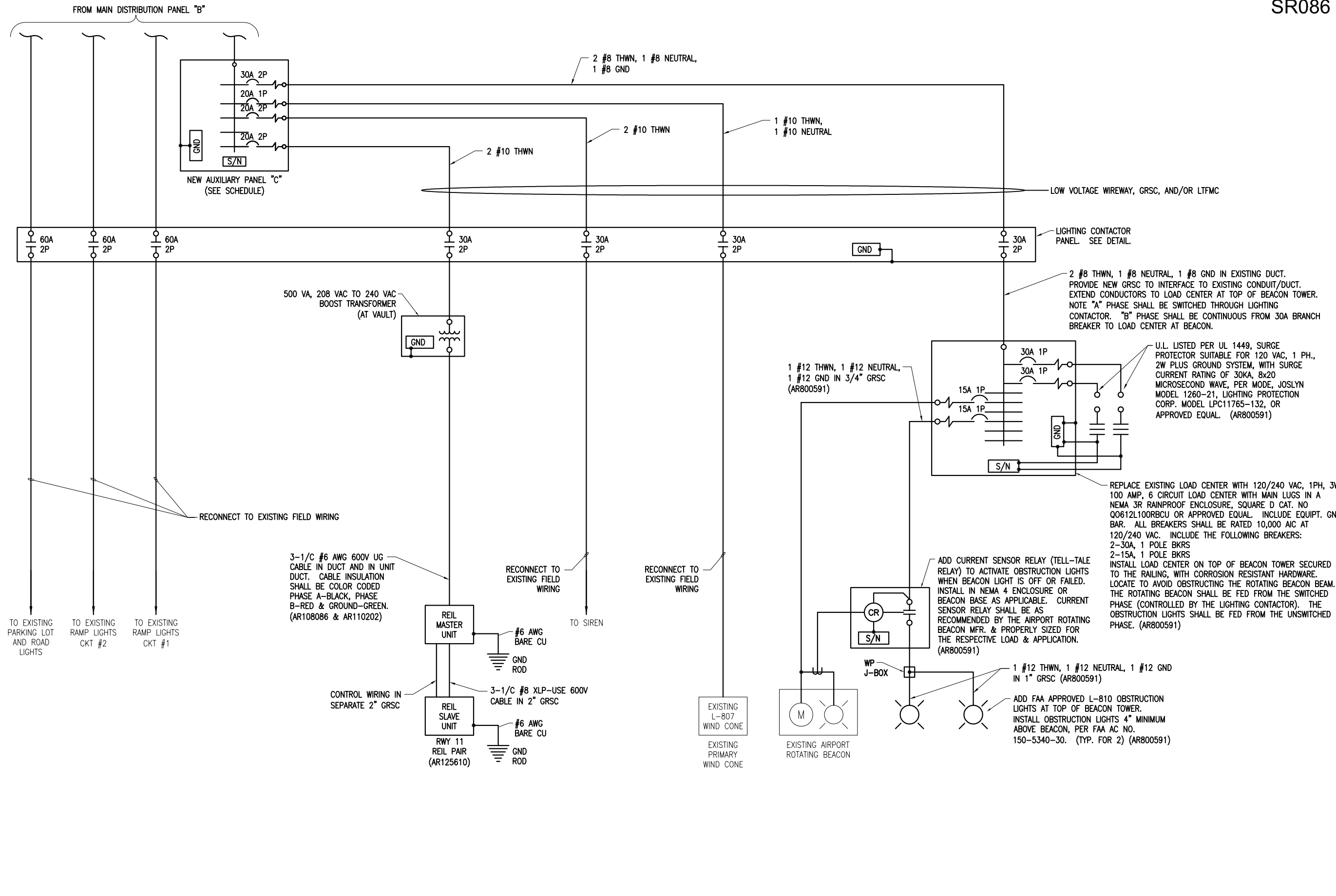
ST. LOUIS REGIONAL AIRPORT  
 EAST ALTON, ILLINOIS  
 PROJECT: ALN-4066  
 I.L. PROJ.: ALN-4066

Hanson Project No.	10A0121D	LAYOUT	KNL	12/01/10
Filename	E-602.DWG	DRAWN	MAW	12/09/10
Scale	AS SHOWN	REVIEWED	CAH	01/14/11
Date	02/04/11			

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REPLACE HIRL ON RUNWAY 11-29  
 PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT

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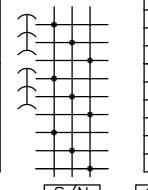


PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD

REVISION									
DATE									
ST. LOUIS REGIONAL AIRPORT									
EAST ALTON, ILLINOIS									
A.I.P. PROJ.: 3-17-0002-B46									
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Hanson Project No.	10A0121D								
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LAYOUT	12/01/10								
DRAWN	12/09/10								
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REPLACE HIRL ON RUNWAY 11-29									
PROPOSED ELECTRICAL ONE-LINE FOR VAULT AND AIRFIELD									
<div style="font-size: 2em; font-weight: bold;">34</div>									
34 of 43 sheets									

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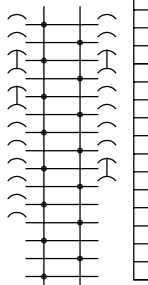
MAIN DISCONNECT PANEL "A" FOR VAULT			
CKT #	DUTY	SIZE	CKT #
1	TRANSIENT VOLTAGE SURGE SUPPRESSOR	60A, 3P	
		---	
		---	
2	VAULT MAIN DISCONNECT	400A, 3P	
		---	
		---	
	(SPACE USED BY MAIN DISCONNECT)	---	
	1.5" SPACE	---	
	1.5" SPACE	---	



600 AMP, 208/120 VAC, 3 PHASE, 4 WIRE MAIN DISCONNECT PANEL WITH MAIN LUGS IN A NEMA 1 SURFACE MOUNT ENCLOSURE. PANELBOARD SHALL HAVE 27" OF CIRCUIT BREAKER MOUNTING SPACE & ACCOMMODATE BRANCH/FEEDER BREAKERS UP TO 600 AMP FRAME SIZE. PANELBOARD SHALL BE SQUARE D I-LINE, HCP SERIES OR APPROVED EQUAL WITH BOX, TRIM, & DOOR.

- NOTES**
- PANELBOARD BUS SHALL BE BRACED FOR 42,000 AMPS SYMMETRICAL MINIMUM AT 240 VAC.
  - PANELBOARD BUSSES SHALL BE COPPER. NEUTRAL BUS SHALL BE COPPER. EQUIPMENT GROUND BAR SHALL BE COPPER.
  - ALL FEEDER & BRANCH BREAKERS SHALL HAVE AN INTERRUPTING RATING OF 25,000 AIC MINIMUM AT 240 VAC.
  - INCLUDE PHENOLIC ENGRAVED LEGEND PLATE LABELED "MAIN DISCONNECT PANEL "A" 208/120 VAC, 3 PHASE, 4-WIRE".
  - INCLUDE PHENOLIC ENGRAVED LEGEND PLATES TO IDENTIFY EACH BREAKER.
  - PANELBOARD 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.

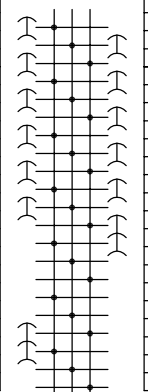
AUXILIARY PANEL "C"			
CKT #	DUTY	SIZE	CKT #
1	EXHAUST FAN	20A, 1P	2
3	CONTROL POWER	20A, 1P	4
5	AIRPORT ROTATING BEACON	30A, 2P	6
		---	8
9	SIREN	20A, 2P	10
11		---	12
13	DAY TANK PUMP	20A, 1P	14
15	LOUVER MOTORS	10A, 1P	16
17	PRIMARY WIND SOCK	15A, 1P	18
19	RUNWAY 11-29 TRANSFER RELAY PANEL	10A, 1P	20
21	SPARE	20A, 1P	22
23	SPARE	20A, 1P	24
25	SPARE	15A, 1P	26
27	BLANK	---	28
29		---	30



225 AMP, 120/208 VAC, 1 PHASE, 3 WIRE, 30 CKT PANELBOARD WITH MAIN LUGS IN A NEMA 1 ENCLOSURE. INCLUDE SEPARATE COPPER GROUND BAR KIT. ALL FEEDER & BRANCH BREAKERS SHALL BE BOLT-ON TYPE WITH 10,000 AIC AT 120/240 VAC. PANELBOARD SHALL BE SQUARE D CAT. NO. NQ30L2C WITH COPPER NEUTRAL & COPPER GROUND BAR KIT OR APPROVED EQUAL. INCLUDE ENGRAVED PHENOLIC LEGEND PLATE LABELED "AUXILIARY PANEL C, 120/208VAC, 1 PH, 3 WIRE".

- NOTES**
- PANELBOARD BUSSES SHALL BE COPPER. NEUTRAL BUS SHALL BE COPPER. EQUIPMENT GROUND BAR SHALL BE COPPER.
  - PANELBOARD 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.

MAIN DISTRIBUTION PANEL "B" FOR VAULT			
CKT #	DUTY	SIZE	CKT #
1	TAXIWAY A EAST CCR	125A, 2P	
	(PHASE A & B)	---	
3	TAXIWAY B CCR	125A, 2P	
	(PHASE C & A)	---	
5	RUNWAY 17/35 CCR	125A, 2P	
	(PHASE B & C)	---	
7	TAXIWAY C-SOUTH CCR	30A, 2P	
	(PHASE A & B)	---	
9	TAXIWAY C-NORTH CCR	30A, 2P	
	(PHASE C & A)	---	
11	TAXIWAY A-WEST CCR	30A, 2P	
	(PHASE B & C)	---	
	1.5" SPACE	---	
	1.5" SPACE	---	
	1.5" SPACE	---	
	1.5" SPACE	---	
	1.5" SPACE	---	
	1.5" SPACE	---	
	MAIN BREAKER	400A, 3P	
		---	
	(SPACE USED BY MAIN BREAKER)	---	



600 AMP, 208/120 VAC, 3 PHASE, 4 WIRE MAIN POWER DISTRIBUTION PANEL WITH MAIN LUGS IN A NEMA 1 SURFACE MOUNT ENCLOSURE. PANELBOARD SHALL HAVE 63" OF CIRCUIT BREAKER MOUNTING SPACE & ACCOMMODATE BRANCH/FEEDER BREAKERS UP TO 600 AMP FRAME SIZE. PANELBOARD SHALL BE SQUARE D I-LINE, HCP SERIES OR APPROVED EQUAL WITH BOX, TRIM, & DOOR.

- NOTES**
- PANELBOARD BUS SHALL BE BRACED FOR 42,000 AMPS SYMMETRICAL MINIMUM AT 240 VAC.
  - PANELBOARD BUSSES SHALL BE COPPER. NEUTRAL BUS SHALL BE COPPER. EQUIPMENT GROUND BAR SHALL BE COPPER.
  - ALL FEEDER & BRANCH BREAKERS SHALL HAVE AN INTERRUPTING RATING OF 25,000 AIC MINIMUM AT 240 VAC.
  - INCLUDE PHENOLIC ENGRAVED LEGEND PLATE LABELED "MAIN DISCONNECT PANEL "B" 208/120 VAC, 3 PHASE, 4-WIRE".
  - INCLUDE PHENOLIC ENGRAVED LEGEND PLATES TO IDENTIFY EACH BREAKER.
  - PANELBOARD 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

ST. LOUIS REGIONAL AIRPORT

EAST ALTON, ILLINOIS

IL PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

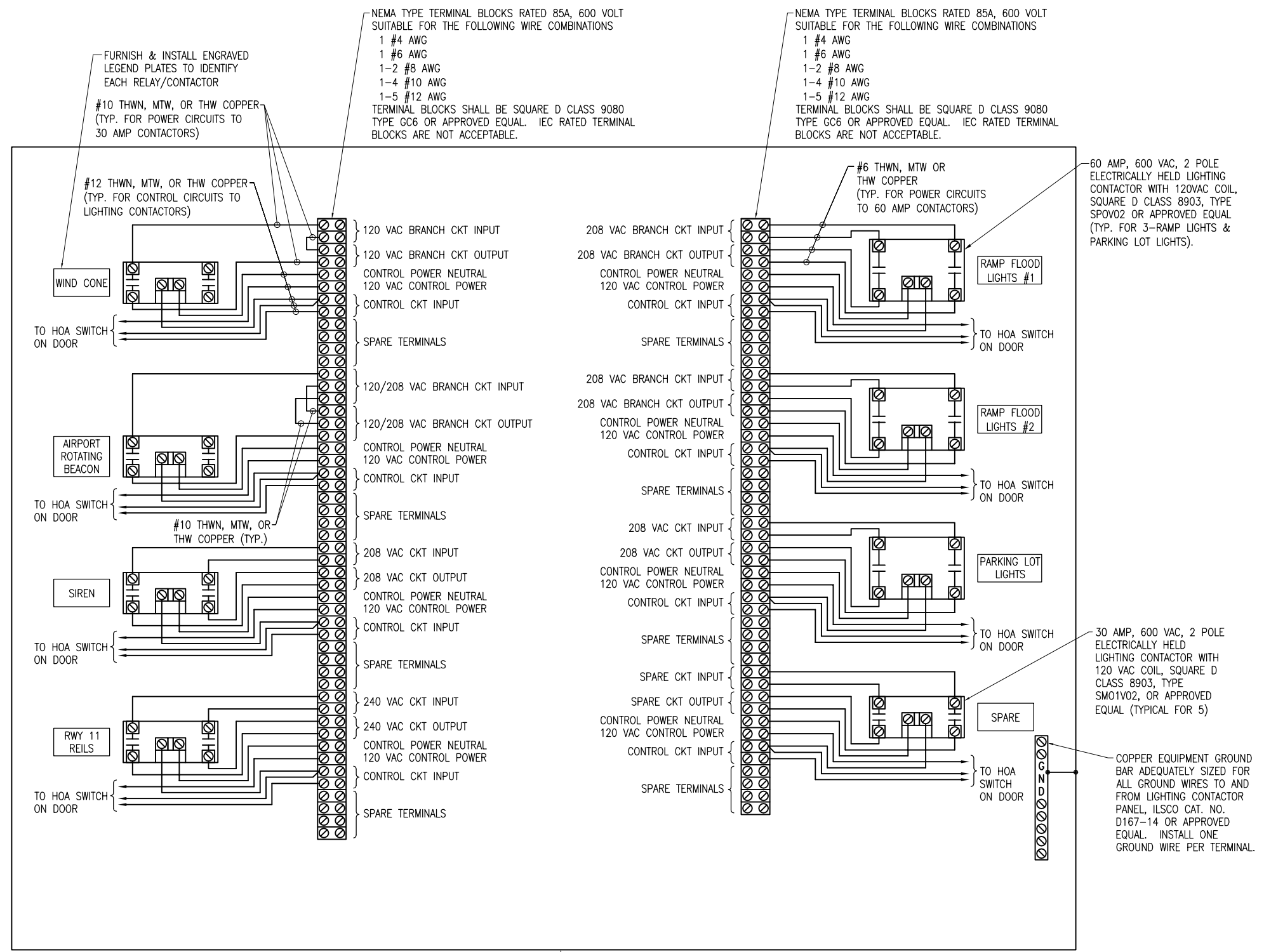
Hanson Project No.	10A0121D	LAYOUT	KNL	12/30/10
Filename	E-609.DWG	DRAWN	MAW	1/04/11
Scale	AS SHOWN	REVIEWED	CAH	01/14/11
Date	02/04/11			

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REPLACE HIRL  
ON RUNWAY 11-29

PANELBOARD SCHEDULES

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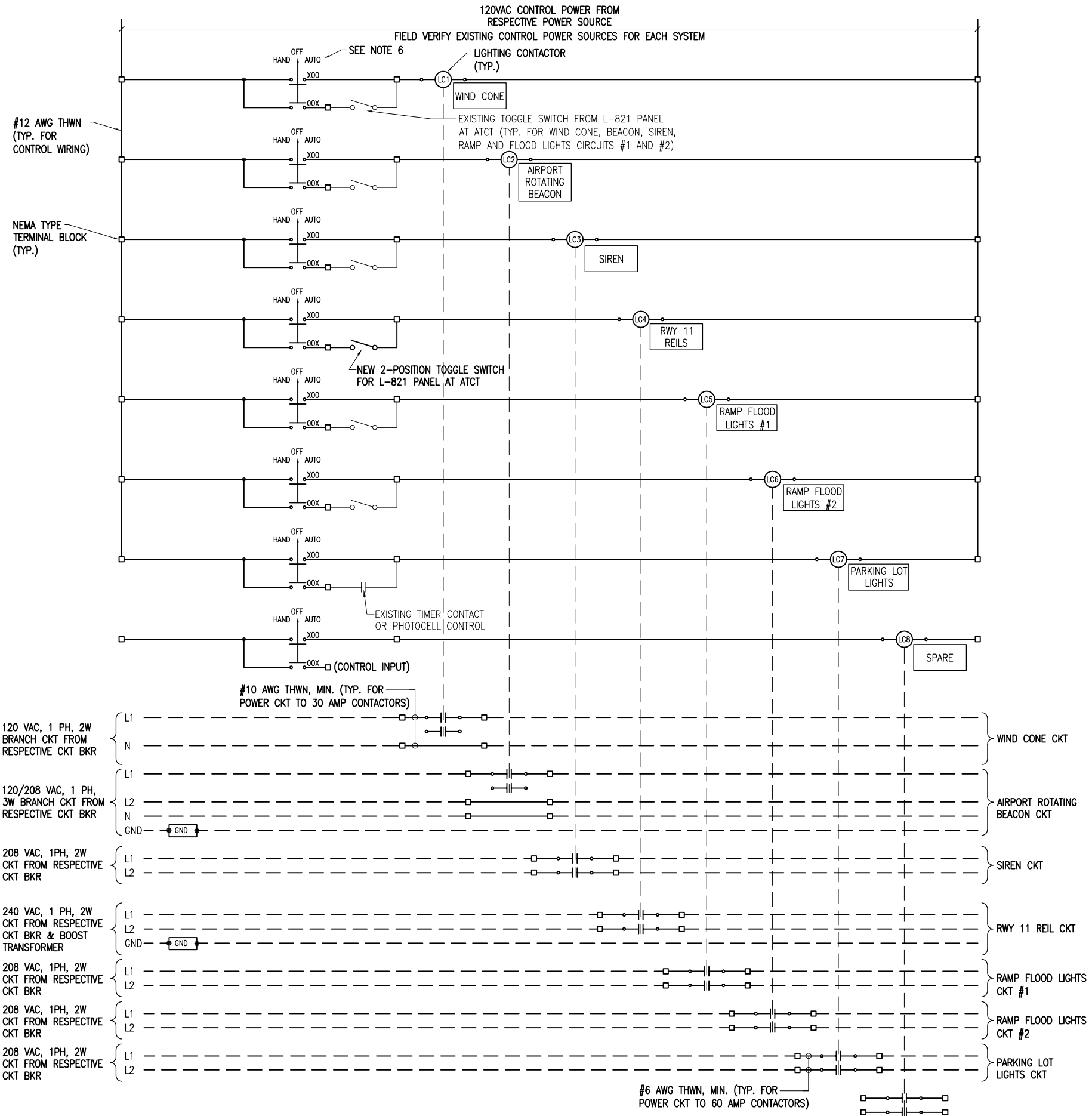
**NOTES:**

- 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
- INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
- FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
- THE AIRPORT ROTATING BEACON CIRCUIT SHALL HAVE PHASE "A" SWITCHED THROUGH THE LIGHTING CONTACTOR. PHASE "B" SHALL BE UNSWITCHED FROM THE POWER SOURCE TO THE LOAD CENTER AT THE AIRPORT ROTATING BEACON.
- PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
- PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "WIND CONE" OR "AIRPORT ROTATING BEACON").
- SEE "LIGHTING CONTACTOR SCHEMATIC" SHEET FOR ADDITIONAL INFORMATION ON WIRING.
- INCLUDE LEGEND PLATE ON CONTROL PANEL ENCLOSURE OUTER DOOR LABELED "NOTICE CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME."
- CONTROL PANEL FOR AIRFIELD LIGHTING 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 REQUIREMENT AND THE "BUY AMERICAN ACT". BUS BERTHOLD ELECTRIC (1900 WEST CARROLL AVENUE, CHICAGO, IL 60612, PHONE: (312)243-5767) IS AN APPROVED UL 508 INDUSTRIAL CONTROL PANEL BUILDER.

NEMA 12 ENCLOSURE WITH HINGED DOOR SIZED AS REQUIRED TO HOUSE LIGHTING CONTACTORS, TERMINAL BLOCKS, WIRING & INTERFACE TO EXISTING CONDUITS, MINIMUM 36"x24"x8"D AS MANUFACTURED BY HOFFMAN OR APPROVED EQUAL.

**CONTROL PANEL FOR AIRFIELD NAVAIDS & LIGHTING**

REVISION	
DATE	
<p>ST. LOUIS REGIONAL AIRPORT                  EAST ALTON, ILLINOIS                  A.I.P. PROJ.: 3-17-0002-B46</p>	
Hanson Project No.	10A0121D
Filename	E-606.DWG
Scale	AS SHOWN
Date	02/04/11
LAYOUT	KNL 12/11/10
DRAWN	MAW 12/14/10
REVIEWED	CAH 01/14/11
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REPLACE HIRL ON RUNWAY 11-29 LIGHTING CONTACTOR PANEL DETAIL	
<p>36</p> <p>36 of 43 sheets</p>	



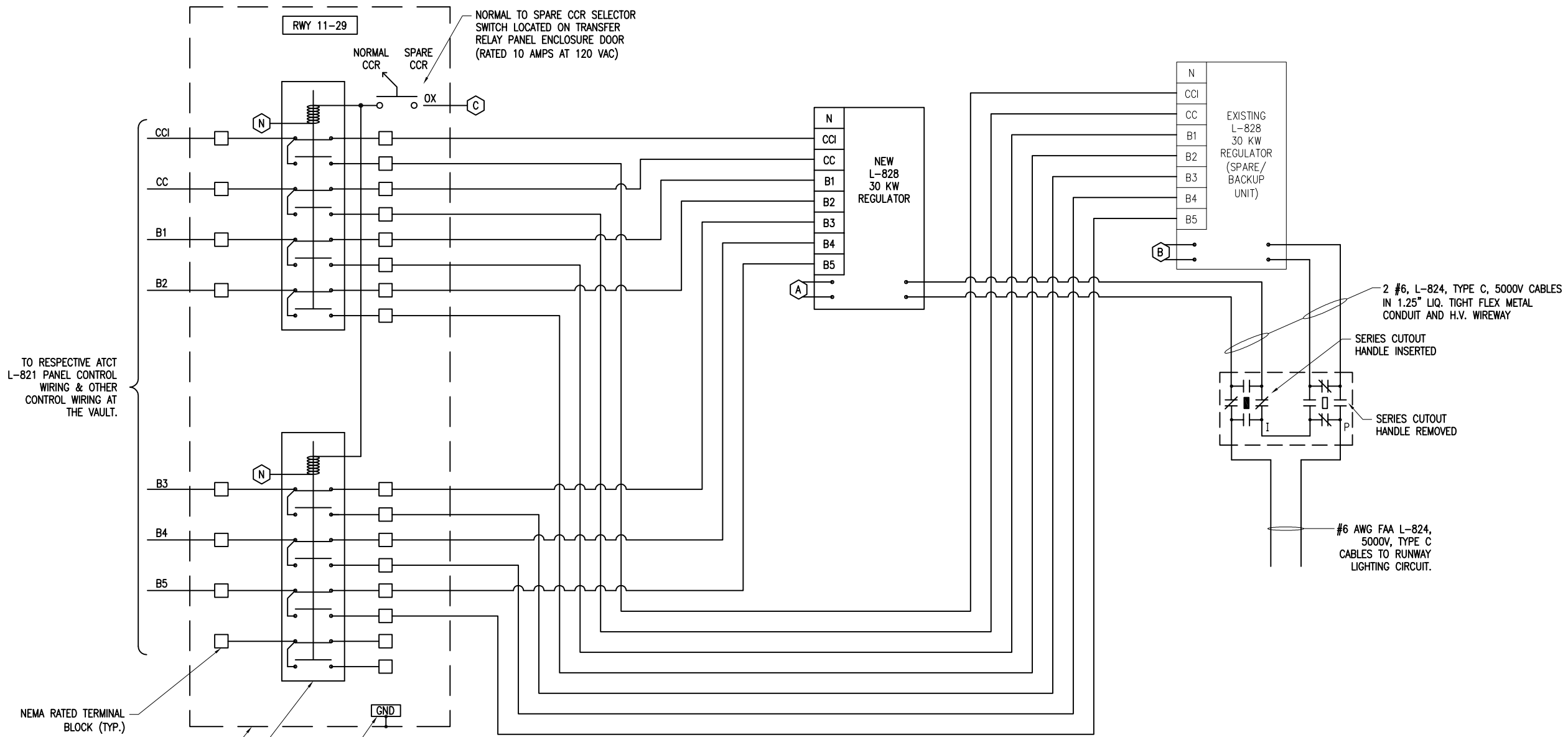
CONTROL PANEL FOR AIRFIELD NAVAIDS & LIGHTING SCHEMATIC

NOTES:

- 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR 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 PANEL. INPUT POWER/FEEDER CIRCUITS FOR RAMP FLOOD LIGHTS & PARKING LOT LIGHTS SHALL BE #6 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR PANEL.
- INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
- FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
- THE AIRPORT ROTATING BEACON CIRCUIT SHALL HAVE PHASE "A" SWITCHED THROUGH THE LIGHTING CONTACTOR. PHASE "B" SHALL BE UNSWITCHED FROM THE POWER SOURCE TO THE LOAD CENTER AT THE AIRPORT ROTATING BEACON.
- PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
- PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "WIND CONE" OR "AIRPORT ROTATING BEACON").
- FIELD VERIFY AND COORDINATE CONTROL WIRING INTERFACE BETWEEN THE L-821 CONTROL PANEL AT THE AIR TRAFFIC CONTROL TOWER AND THE CONTROL PANEL FOR AIRFIELD NAVAIDS, LIGHTING AND SIREN.
- PARKING LOT LIGHTING APPEARS TO BE CONTROLLED BY AN EXISTING TIME CLOCK CONTROLLER. FIELD VERIFY EXISTING CONTROL SYSTEM & INTERFACE TO NEW LIGHTING CONTACTOR.
- THE CONTROL CIRCUIT FOR THE RUNWAY 11 REILS WILL REQUIRE NEW CONTROL WIRING FROM THE VAULT TO THE AIR TRAFFIC CONTROL TOWER (ATCT). THE EXISTING CONTROL WIRING CONDUIT FROM THE VAULT TO THE ATCT RUNS FROM THE VAULT THROUGH HANGAR #2 THEN TRANSITIONS TO AN UNDERGROUND DUCT SYSTEM TO THE ATCT. A NEW CONTROL CABLE SHALL BE FURNISHED & INSTALLED IN THE EXISTING CONTROL WIRING RACEWAY SYSTEM FROM THE VAULT TO THE ATCT, AND WILL BE PAID FOR UNDER ITEM AR108800 CONTROL CABLE PER L.F.

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REVISION					
DATE					
<p style="text-align: center;">ST. LOUIS REGIONAL AIRPORT EAST ALTON, ILLINOIS A.I.P. PROJ.: 3-17-0002-B46</p>					
Hanson Project No. 10A0121D	E-607.DWG	AS SHOWN	Date	12/11/10	12/14/10
LAYOUT	KNL	MAW	CAH	01/14/11	01/14/11
DRAWN	MAW	MAW	CAH	01/14/11	01/14/11
REVIEWED	MAW	MAW	CAH	01/14/11	01/14/11
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REPLACE HIRL ON RUNWAY 11-29			LIGHTING CONTACTOR SCHEMATIC		
37					
37 of 43 sheets					



RUNWAY 11-29 AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC

TO RESPECTIVE ATCT L-821 PANEL CONTROL WIRING & OTHER CONTROL WIRING AT THE VAULT.

NEMA RATED TERMINAL BLOCK (TYP.)

NEMA 12 ENCLOSURE

10 AMP, 600V, 8 POLE INDUSTRIAL CONTROL RELAY WITH 120VAC COIL, 4 N.O. CONTACTS, & 4 N.C. CONTACTS SQUARE D CLASS 8501, TYPE X080V02 OR APPROVED EQUAL (TYP. FOR 2). INSTALL IN A NEMA 12 ENCLOSURE WITH HINGED COVER. (NORMAL CCR TO SPARE/BACKUP CCR TRANSFER RELAYS).

COPPER EQUIPT. GROUND BAR ILSCO D167-6 OR APPROVED EQUAL.

**SHEET LEGEND:**

- (A) OUTPUT POWER NORMAL POSITION FROM MANUAL TRANSFER SWITCH FOR RWY 11-29 REGULATORS.
- (B) OUTPUT POWER BACKUP POSITION FROM MANUAL TRANSFER SWITCH FOR RWY 11-29 REGULATORS.
- (C) 120 VAC CONTROL POWER FROM AUXILIARY PANELBOARD "C".
- (N) N DESIGNATES NEUTRAL FROM PANEL THAT POWERS THE DEVICE.

**GENERAL NOTES:**

1. ALL WORK AND SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER, THE DIRECTOR OF OPERATIONS, THE RESPECTIVE AIR TRAFFIC CONTROL TOWER PERSONNEL, AND THE RESIDENT ENGINEER. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND TEST THE EXISTING RUNWAY 11-29 CCR'S AND LIGHTING SYSTEM PRIOR TO PERFORMING CONTROL WIRING MODIFICATIONS. THE EXISTING RUNWAY LIGHTING SYSTEM FOR RUNWAY 11-29 HAS TWO SERIES CIRCUITS EACH POWERED BY A SEPARATE CONSTANT CURRENT REGULATOR (RUNWAY 11-29 EAST CCR AND RUNWAY 11-29 WEST CCR). THE PROPOSED RUNWAY LIGHTING FOR RUNWAY 11-29 WILL HAVE ONE SERIES CIRCUIT POWERED BY EITHER OF TWO CONSTANT CURRENT REGULATORS (NORMAL RUNWAY 11-29 CCR AND SPARE/BACKUP CCR FOR RUNWAY 11-29). TESTS SHALL INCLUDE ATCT CONTROL AND MANUAL CONTROL OF THE CCR OUTPUT STEPS (8.5A, 10.3A, 12.4A, 15.8A, AND 20.0A). ALSO TEST L-854 RADIO RECEIVER CONTROL SYSTEM. RECORD TEST RESULTS. CONTRACTOR SHALL CONFIRM AND RECORD EXISTING CONTROL WIRING TO THE EXISTING RUNWAY 11-29 CCR'S PRIOR TO DISCONNECTING THE EXISTING CONTROL WIRING. CONTRACTOR SHALL PERFORM CONTROL WIRING MODIFICATIONS AND UPGRADES TO ACCOMMODATE THE NEW RUNWAY LIGHTING SYSTEM.
2. ALL CONTROL CABLE SHALL BE NO. 12 AWG, 600VOLT, COPPER CABLE.
3. ALL ELECTRICAL EQUIPMENT SHALL BE PROPERLY LABELED AND ALL ELECTRICAL CABLES SHALL BE TAGGED.
4. ALL ELECTRICAL CABLES INSIDE THE VAULT SHALL BE IN CONDUIT OR DUCT.
5. RUNWAY 11-29 CONSTANT CURRENT REGULATORS (NORMAL UNIT AND SPARE/BACKUP UNIT) SHALL BE CONTROLLED BY THE L-821 PANEL AT THE AIR TRAFFIC CONTROL TOWER. CONTROL STEPS SHALL BE AS FOLLOWS:
  - OFF
  - B1 - 0.15% BRIGHTNESS
  - B2 - 1.2% BRIGHTNESS
  - B3 - 5% BRIGHTNESS
  - B4 - 25% BRIGHTNESS
  - B5 - 100% BRIGHTNESS
6. PROVIDE A DEDICATED 120 VAC BRANCH CIRCUIT FROM AUXILIARY PANELBOARD C FOR CONTROL POWER SOURCE FOR THE TRANSFER RELAY CONTROL PANEL.
7. COLOR CODING FOR THE CONTROL WIRING TO EACH CONSTANT CURRENT REGULATOR SHALL BE CONSISTENT FOR BOTH RUNWAY 11-29 REGULATORS. ALSO TAG THE CONTROL WIRES WITH THE RESPECTIVE DESIGNATION (CCI, CC, B1, B2, B3, B4, & B5). COLOR CODING SHALL BE AS FOLLOWS:
  - CCI - BLACK
  - CC - RED
  - B1 - VIOLET
  - B2 - BROWN
  - B3 - ORANGE
  - B4 - YELLOW
  - B5 - BLUE
  - EQUIPT. GROUND - GREEN
8. EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT AND EACH CONTROL CIRCUIT.
9. TRANSFER RELAYS SHALL BE INSTALLED IN A NEMA 12 RATED ENCLOSURE WITH HINGED COVER. ALL TERMINAL BLOCKS SHALL BE NEMA RATED TERMINALS SIZED FOR THE RESPECTIVE CONTROL WIRES. IEC RATED TERMINAL BLOCKS ARE NOT ACCEPTABLE. TRANSFER RELAY CONTROL PANEL SHALL BE MANUFACTURED BY A UL 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 REQUIREMENTS AND THE "BUY AMERICAN ACT".
10. VAULT WORK AND ASSOCIATED CONTROL WORK WILL BE PAID FOR UNDER ITEM AR109200 UNLESS NOTED OTHERWISE HEREIN.
11. FIELD VERIFY EXISTING CONTROL WIRING FROM THE L-854 RADIO RECEIVER. INTERFACE EXISTING CONTROL WIRING TO THE TRANSFER RELAY PANEL FOR RUNWAY 11-29.

REVISION	DATE

ST. LOUIS REGIONAL AIRPORT  
 St. Louis Regional Airport  
 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

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REPLACE HIRL ON RUNWAY 11-29  
 RUNWAY 11-29 AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC

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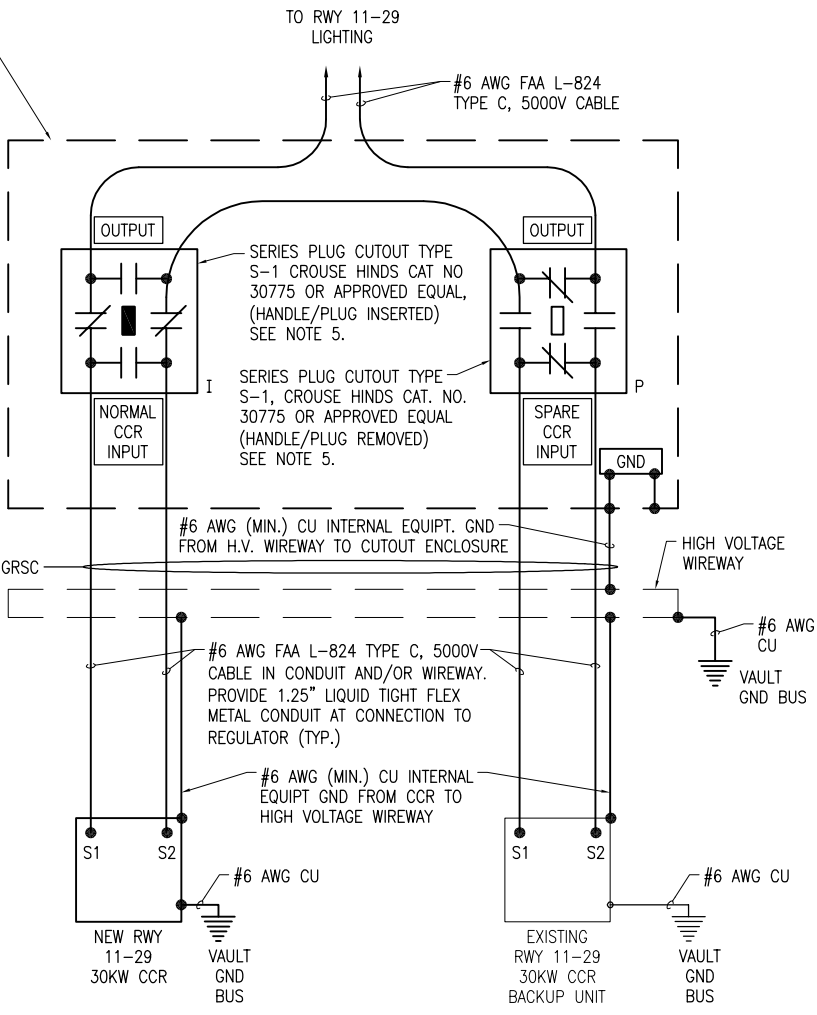
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 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065  
 A.I.P. PROJ.: 3-17-0002-B46

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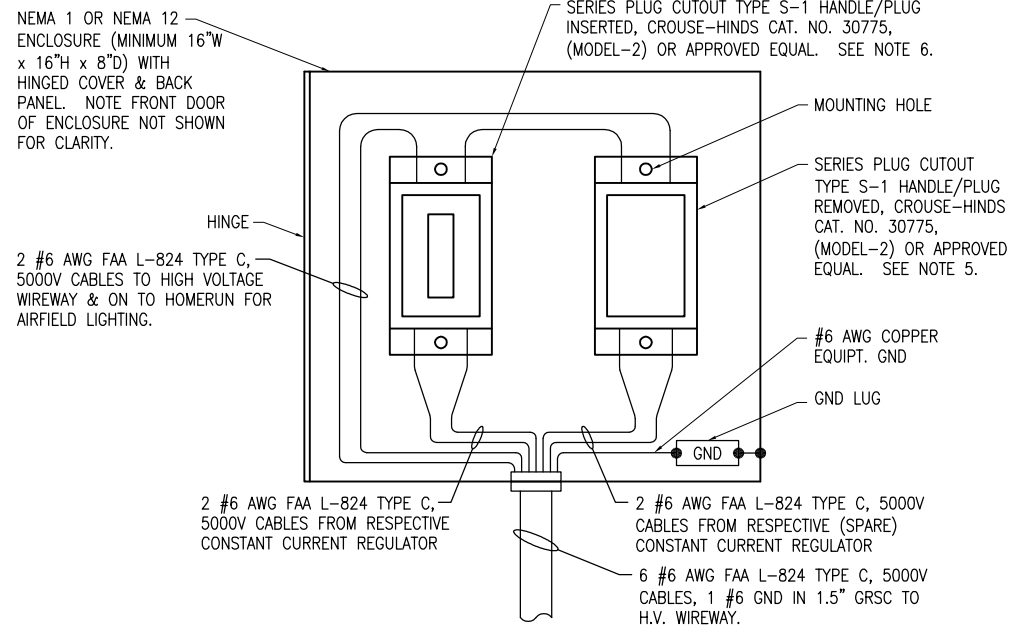
REPLACE HIRL  
 ON RUNWAY 11-29  
 HIGH VOLTAGE WIRING  
 SCHEMATIC FOR RUNWAY 11-29

NEMA 1 OR NEMA 12 ENCLOSURE WITH HINGED COVER AND BACK PANEL. ENCLOSURE SHALL BE PAD LOCKABLE AND ADEQUATELY SIZED FOR TWO TYPE S-1 PLUG CUTOUTS ADJACENT TO EACH OTHER. PLUG CUTOUT PAIR SHALL BE WIRED FOR MANUAL LOAD TRANSFER SWITCH OPERATION BETWEEN TWO REGULATORS AND SHALL HAVE ONE S1 HANDLE/PLUG ASSEMBLY FOR THE PAIR OF CUTOUTS.



HIGH VOLTAGE WIRING SCHEMATIC FOR RUNWAY 11-29

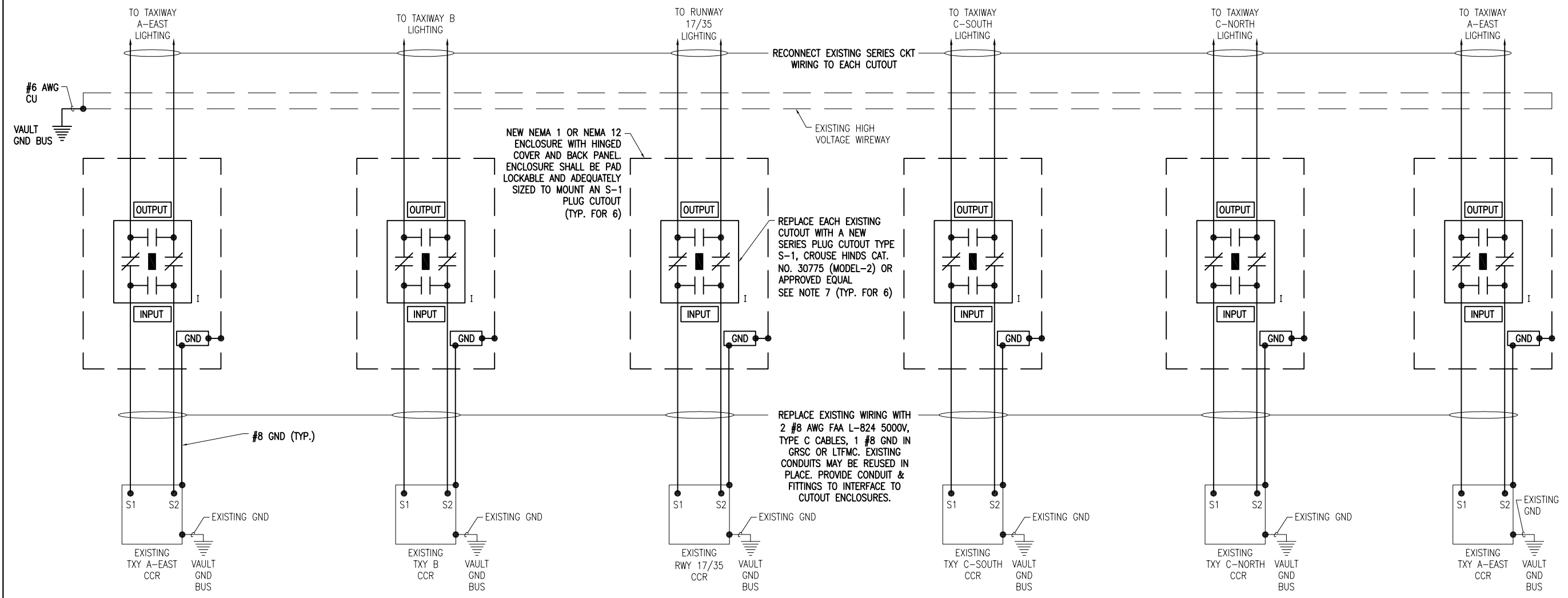
**LEGEND**  
 "I" DENOTES PLUG CUTOUT WITH PLUG INSERTED  
 "P" DENOTES PLUG CUTOUT WITH PLUG PULLED  
 "CCR" DENOTES CONSTANT CURRENT REGULATOR



SERIES PLUG CUTOUT MOUNTING DETAIL FOR RUNWAY 11-29

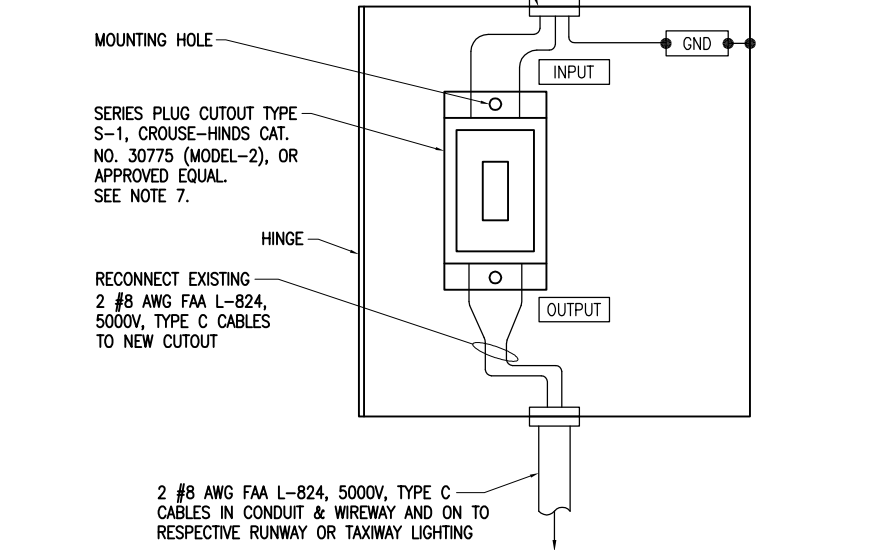
**NOTES:**

1. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CONSTANT CURRENT REGULATOR NOTING THE REGULATOR DESIGNATION AND THE RUNWAY OR TAXIWAY SERVED.
2. EACH PLUG CUTOUT CABINET SHALL BE FURNISHED WITH A PHENOLIC ENGRAVED LEGEND PLATE THAT IDENTIFIES THE RESPECTIVE CIRCUIT OR REGULATOR. INCLUDE AN ADDITIONAL LEGEND PLATE LABELED "CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF". FURNISH & INSTALL A WARNING LABEL FOR CUTOUT ENCLOSURE TO WARN PERSONS OF POTENTIAL ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION". PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CUTOUT TO IDENTIFY THE RESPECTIVE CUTOUT INPUT CONNECTION AND THE RESPECTIVE CUTOUT OUTPUT CONNECTION.
3. PROVIDE ADEQUATE WORKING SPACE IN FRONT OF EACH CUTOUT ENCLOSURE TO MEET NEC CLEARANCE REQUIREMENTS.
4. 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 INSTALLATION
5. 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.
6. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY.
7. BOND ALL REGULATORS TO THE RESPECTIVE VAULT GROUND BUS WITH A DEDICATED #6 AWG BONDING JUMPER FOR EACH REGULATOR.
8. RUNWAY 11-29 LIGHTING REGULATOR SHALL BE A TYPE L-828, CLASS 2-20 AMP, STYLE 2-5 BRIGHTNESS STEPS CIRCUIT.



HIGH VOLTAGE WIRING SCHEMATIC FOR TAXIWAYS & RUNWAY 17-35

14"H x 12"W x 8" (APPROXIMATE DIMENSIONS) NEMA 1 OR NEMA 12 ENCLOSURE WITH HINGED COVER & BACK PANEL. HOFFMAN CAT. NO. A14N128 WITH BACK PANEL, OR EQUAL. INCLUDE PAD LOCK KIT, HOFFMAN ACCESSORY CAT. NO. APLKJIC, OR EQUAL. NOTE FRONT DOOR OF ENCLOSURE NOT SHOWN FOR CLARITY. PROVIDE HOT DIPPED GALVANIZED STEEL STRUT SUPPORT & CORROSION RESISTANT HARDWARE TO MOUNT ENCLOSURES.



SERIES PLUG CUTOUT MOUNTING DETAIL

NOT TO SCALE

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

- NOTES:**
- ALL POWER WIRING SHALL BE INSTALLED IN CONDUIT OR ENCLOSED WIREWAYS TO CONFORM TO THE REQUIREMENTS OF FAA AC 150/5340-30E, PART 13.2 POWER DISTRIBUTION, e. INSTALLATION OF CABLES. EXPOSED SERIES CIRCUIT CABLES ARE NOT ACCEPTABLE.
  - EACH PLUG CUTOUT CABINET SHALL BE FURNISHED WITH A PHENOLIC ENGRAVED LEGEND PLATE THAT IDENTIFIES THE RESPECTIVE CIRCUIT OR REGULATOR. INCLUDE AN ADDITIONAL LEGEND PLATE LABELED "CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF". FURNISH & INSTALL A WARNING LABEL FOR CUTOUT ENCLOSURE TO WARN PERSONS OF POTENTIAL ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION".
  - PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CUTOUT TO IDENTIFY THE RESPECTIVE CUTOUT INPUT CONNECTION AND THE RESPECTIVE CUTOUT OUTPUT CONNECTION.
  - PROVIDE ADEQUATE WORKING SPACE IN FRONT OF EACH CUTOUT ENCLOSURE TO MEET NEC CLEARANCE REQUIREMENTS.
  - 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 U.L. LISTED. CONFIRM LIQUID TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.
  - HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY.
  - 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. 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.

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REVISION
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ST. LOUIS REGIONAL AIRPORT  
 EAST ALTON, ILLINOIS  
 I.L. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

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REPLACE HIRL  
 ON RUNWAY 11-29  
 HIGH VOLTAGE WIRING  
 SCHEMATIC FOR TAXIWAYS  
 AND RUNWAY 17-35



LEGEND PLATE SCHEDULE	
DEVICE	LABEL
SERVICE DISCONNECT FOR VAULT (SEE NOTE 2)	VAULT SERVICE DISCONNECT 208/120 VAC, 3PH, 4W
SERVICE DISCONNECT FOR VAULT (SEE NOTE 2)	NOTE: ENGINE GENERATOR NEUTRAL IS ALSO BONDED TO GROUND AT SERVICE DISCONNECT
VAULT GENERATOR	NOTE: ENGINE GENERATOR NEUTRAL IS BONDED TO GROUND AT SERVICE DISCONNECT
VAULT MAIN DISCONNECT PANEL "A" (SEE NOTE 2)	MAIN DISCONNECT PANEL A 208/120 VAC, 3PH, 4W
MAIN BREAKER FOR VAULT MAIN DISCONNECT PANEL "A" (SEE NOTE 2)	VAULT MAIN DISCONNECT
TVSS BREAKER IN PANEL "A" (SEE NOTE 2)	TVSS
AUTO TRANSFER SWITCH	AUTO TRANSFER SWITCH 208/120 VAC, 3PH, 4W
VAULT MAIN DISTRIBUTION PANEL "B"	MAIN DIST. PANEL B 208/120 VAC, 3PH, 4W
MAIN BREAKER IN VAULT MAIN DISTRIBUTION PANEL "B"	MAIN BREAKER
TAXIWAY A EAST CCR BRANCH BREAKER IN PANEL "B"	TXY A-EAST CCR
TAXIWAY B CCR BRANCH BREAKER IN PANEL "B"	TXY B CCR
RUNWAY 17/35 CCR BRANCH BREAKER IN PANEL "B"	RWY 17/35 CCR
TAXIWAY C SOUTH CCR BRANCH BREAKER IN PANEL "B"	TXY C-SOUTH CCR
TAXIWAY C NORTH CCR BRANCH BREAKER IN PANEL "B"	TXY C-NORTH CCR
TAXIWAY A WEST CCR BRANCH BREAKER IN PANEL	TXY A-WEST CCR
RUNWAY 11/29 CCR TRANSFER SWITCH FEEDER BREAKER IN PANEL "B"	RWY 11/29 CCR TRANSFER SWITCH
PANELBOARD "C" FEEDER BREAKER IN PANEL "B"	PANEL C
RAMP LIGHTS CIRCUIT #1 FEEDER BREAKER IN PANEL "B"	RAMP LIGHTS CIRCUIT #1
RAMP LIGHTS CIRCUIT #2 FEEDER BREAKER IN PANEL "B"	RAMP LIGHTS CIRCUIT #2
PARKING LOT LIGHTS FEEDER BREAKER IN PANEL "B"	PARKING LOT LIGHTS
TAXIWAY A EAST CCR	TXY A-EAST CCR
TAXIWAY B CCR	TXY B CCR
RUNWAY 17/35 CCR	RWY 17/35 CCR
TAXIWAY C SOUTH CCR	TXY C-SOUTH CCR
TAXIWAY C NORTH CCR	TXY C-NORTH CCR
TAXIWAY A WEST CCR	TXY A-WEST CCR
MANUAL TRANSFER SWITCH FOR RUNWAY 11-29 NORMAL CCR AND SPARE/BACKUP CCR	TRANSFER SWITCH FOR RUNWAY 11-29 CONSTANT CURRENT REGULATORS
MANUAL TRANSFER SWITCH FOR RUNWAY 11-29 NORMAL CCR AND SPARE/BACKUP CCR - NORMAL SWITCH POSITION	NORMAL CCR
MANUAL TRANSFER SWITCH FOR RUNWAY 11-29 NORMAL CCR AND SPARE/BACKUP CCR - OFF POSITION	OFF
MANUAL TRANSFER SWITCH FOR RUNWAY 11-29 NORMAL CCR AND SPARE/BACKUP CCR - BACKUP SWITCH POSITION	SPARE/BACKUP CCR
NEW CCR FOR RUNWAY 11/29	RWY 11/29 CCR
EXISTING/BACKUP CCR FOR RUNWAY 11/29	RWY 11/29 BACKUP CCR

LEGEND PLATE SCHEDULE	
DEVICE	LABEL
PANELBOARD "C"	AUX. PANEL C 120/208 VAC, 1PH, 3W
LIGHTING CONTACTOR PANEL FOR AIRFIELD NAVAIDS AND LIGHTING	AIRFIELD NAVAIDS AND LIGHTING CONTROL PANEL. NOTE POWER FROM MULTIPLE BRANCH CIRCUITS.
LIGHTING CONTACTOR PANEL FOR AIRFIELD NAVAIDS AND LIGHTING	NOTICE: CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME
CUTOUT ENCLOSURE FOR TAXIWAY A EAST CCR	TXY A-EAST
CUTOUT ENCLOSURE FOR TAXIWAY B CCR	TXY B
CUTOUT ENCLOSURE FOR RUNWAY 17/35 CCR	RWY 17/35
CUTOUT ENCLOSURE FOR TAXIWAY C SOUTH CCR	TXY C-SOUTH
CUTOUT ENCLOSURE FOR TAXIWAY C NORTH CCR	TXY C-NORTH
CUTOUT ENCLOSURE FOR TAXIWAY A WEST CCR	TXY A-WEST
CUTOUT ENCLOSURE FOR RUNWAY 11/29 CCR	RWY 11/29
NEW RUNWAY 11/29 CCR CUTOUT INPUT SIDE	NORMAL CCR INPUT
EXISTING/BACKUP RUNWAY 11/29 CCR CUTOUT INPUT SIDE	SPARE CCR INPUT
NEW RUNWAY 11/29 CCR CUTOUT OUTPUT SIDE	OUTPUT
EXISTING/BACKUP RUNWAY 11/29 CCR CUTOUT OUTPUT SIDE	OUTPUT
EACH CCR (EXCEPT RUNWAY 11/29) CUTOUT INPUT SIDE (TYP. FOR 6)	INPUT
EACH CCR (EXCEPT RUNWAY 11/29) CUTOUT OUTPUT SIDE (TYP. FOR 6)	OUTPUT
EACH CUTOUT ENCLOSURE (TYP. FOR 7)	CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF
HIGH VOLTAGE WIREWAY (TYP. FOR 5)	HIGH VOLTAGE
HIGH VOLTAGE PULL BOX	HIGH VOLTAGE
LOW VOLTAGE WIREWAY (TYP. FOR 5)	LOW VOLTAGE
LOW VOLTAGE PULL BOX	LOW VOLTAGE
ENGINE GENERATOR EMERGENCY SHUT OFF STATION	ENGINE GENERATOR EMERGENCY STOP PUSH TO STOP PULL TO RESET

**GENERAL NOTES**

- LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH WHITE LETTERS ON A RED 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.
- LEGEND PLATES FOR EQUIPMENT THAT IS NOT BACKED UP BY THE ENGINE GENERATOR SET SHALL HAVE 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND.
- 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.

- DIRECTIONS TO TRANSFER RUNWAY 11-29 LIGHTING FROM NORMAL CCR TO SPARE/BACKUP CCR.
- SHUT OFF INPUT POWER (CIRCUIT BREAKER) TO BOTH RWY 11-29 CCR'S & TURN CCR SELECTOR SWITCHES TO OFF.
  - OPERATE MANUAL TRANSFER SWITCH AND MOVE HANDLE FROM "NORMAL" POSITION TO "SPARE/BACKUP" POSITION.
  - PULL CUTOUT HANDLE FROM NORMAL CCR UNIT & INSERT INTO SPARE CCR CUTOUT.
  - TURN ON INPUT POWER (CIRCUIT BREAKER) TO SPARE RWY 11-29 CCR.
  - GO TO TRANSFER RELAY PANEL & TURN "RWY 11-29 CCR TRANSFER" SELECTOR SWITCH FROM "NORMAL" TO "SPARE" POSITION.
  - 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 CUTOUT ENCLOSURE OR AS DIRECTED BY AIRPORT MAINTENANCE PERSONNEL.

**CCR TRANSFER PROCEDURE PLACARD DETAIL**

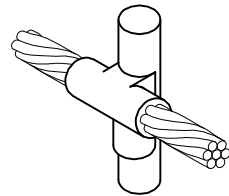


**"DANGER - HIGH VOLTAGE" SIGN**

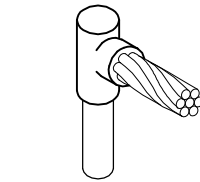
FURNISH AND INSTALL "DANGER - HIGH VOLTAGE" LABELS/SIGNS FOR EACH CUTOUT ENCLOSURE, EACH CONSTANT CURRENT REGULATOR, AND THE HIGH VOLTAGE WIREWAY, TO COMPLY WITH FAA AC 150/5340-26B "MAINTENANCE OF AIRPORT VISUAL AID FACILITIES".

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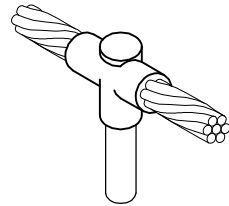
REVISION		DATE			
<b>ST. LOUIS REGIONAL AIRPORT</b> EAST ALTON, ILLINOIS AL.P. PROJ.: 3-17-0002-B46 IL. PROJ.: ALN-4065					
Hanson Project No. 10A0121D	E-608.DWG	AS SHOWN	02/04/11	12/30/10	01/04/11
Filename	Scale	Date	LAYOUT	KWL	CAH
DRAWN	MAW	REVIEWED	01/14/11		
© Copyright Hanson Professional Services Inc. 2011 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2886 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide					
REPLACE HIRL ON RUNWAY 11-29			LEGEND PLATE SCHEDULE		
41					
41 of 43 sheets					



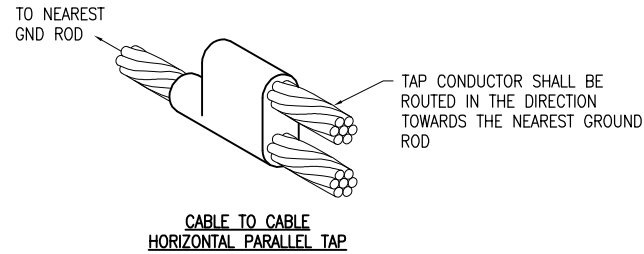
CABLE TO GROUND ROD



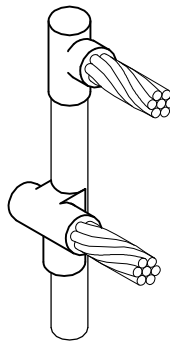
CABLE TO GROUND ROD



CABLE TO GROUND ROD



CABLE TO CABLE HORIZONTAL PARALLEL TAP

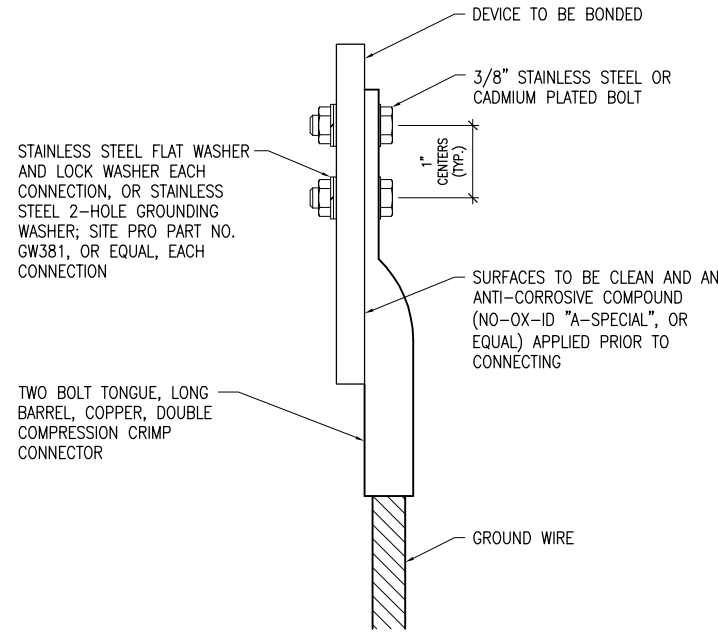


CABLES TO GROUND ROD

**DETAIL NOTES**

- ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY 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.
- FOR APPLICATIONS TO GALVANIZED STEEL OR PAINTED STEEL, REMOVE GALVANIZING AND/OR PAINT & CLEAN THE SURFACE TO EXPOSE BARE STEEL BEFORE MAKING EXOTHERMIC WELD CONNECTION.
- INDIVIDUAL GROUNDING ELECTRODE CONDUCTORS SHALL NOT BE INSTALLED IN METAL CONDUIT. INSTALL GROUNDING ELECTRODE CONDUCTORS IN SCHED 40 PVC CONDUIT AS REQUIRED IN FOUNDATIONS, FOR PROTECTION, WHERE ENTERING ENCLOSURES, ETC. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENIRCLE 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

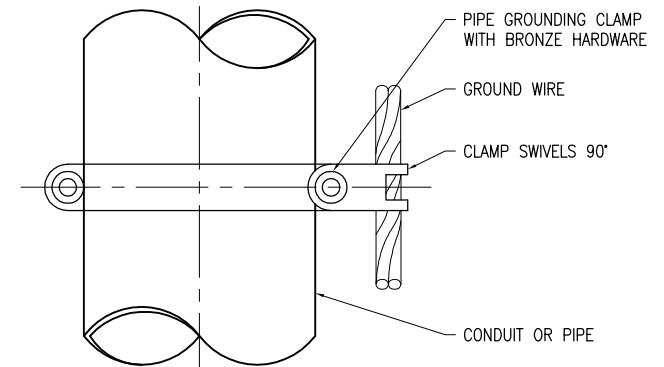
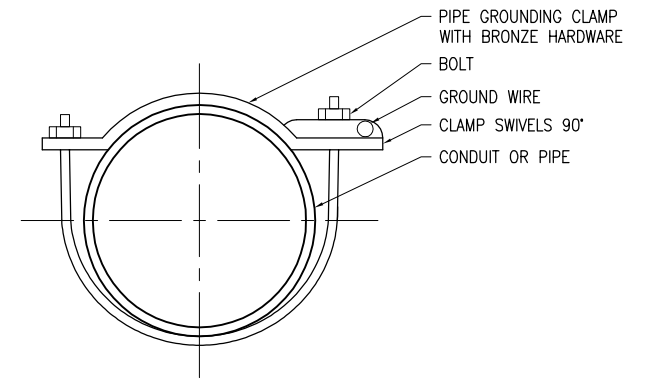


2 HOLE LONG BARREL COMPRESSION LUG TABLE			
WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1		
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159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

- ALL CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.
- GROUND WIRE CONNECTIONS TO EQUIPMENT SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE DEVICE OR WITH THE RESPECTIVE EQUIPT MANUFACTURER'S LUG OR TERMINAL WHERE APPLICABLE.
- GROUNDING ELECTRODE CONDUCTORS, BONDING JUMPERS, & INDIVIDUAL GROUND WIRES SHALL NOT BE INSTALLED IN METAL CONDUIT. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC APTH FROM ENCIRCLING THE CONDUIT.
- ALL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND (SANCHEM INC. NO-OX-ID "A-SPECIAL", BURNDY PENETROX E, OR 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.	PIPE SIZE
GAR3902-BU	1/2" - 1"
GAR3903-BU	1 1/4" - 2"
GAR3904-BU	2 1/2" - 3 1/2"
GAR3905-BU	4" - 5"
GAR3906-BU	6"

**NOTES**

- PIPE GROUNDING CLAMPS SHALL HAVE BRONZE HARDWARE, BE CORROSION RESISTANT, SUITABLE FOR DIRECT BURIAL IN EARTH OR CONCRETE, & UL467 LISTED.

PIPE/CONDUIT GROUNDING CLAMP DETAIL

REVISION	DATE

ST. LOUIS REGIONAL AIRPORT  
**St. Louis Regional**  
 EAST ALTON, ILLINOIS  
 IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46

Hanson Project No. 10A0121D	12/30/10
Filename E-508.DWG	01/04/11
Scale AS SHOWN	01/04/11
Date 02/04/11	01/14/11
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 1525 South Sixth Street  
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 Ph: (217) 788-2450 Fax: (217) 788-2503  
 www.hanson-inc.com  
 Offices Nationwide



REPLACE HIRL  
 ON RUNWAY 11-29

GROUNDING DETAILS

**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 SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT). THE RELIABILITY OF THE GROUNDING SYSTEM IS DEPENDENT ON CAREFUL, PROPER INSTALLATION AND CHOICE OF MATERIALS. IMPROPER PREPARATION OF SURFACES TO BE JOINED TO MAKE AN ELECTRICAL PATH, LOOSE JOINTS OR CORROSION CAN INTRODUCE IMPEDANCE THAT WILL SERIOUSLY IMPAIR THE ABILITY OF THE GROUND PATH TO PROTECT PERSONNEL AND EQUIPMENT AND TO ABSORB TRANSIENTS THAT CAN CAUSE NOISE IN COMMUNICATIONS CIRCUITS. THE FOLLOWING FUNCTIONS ARE PARTICULARLY IMPORTANT TO ENSURE A RELIABLE GROUND SYSTEM:
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 5/8-IN. DIAMETER BY 8-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 10 OHMS, CONTACT THE ENGINEER FOR FURTHER DIRECTION. COPIES OF GROUND FIELD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER, UPON REQUEST, FOR REVIEW AND RECORD PURPOSES.
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/CONDUCTIVE GREASE AND LUBRICANT SUITABLE FOR ELECTRICAL CONNECTIONS AND GROUNDING CONNECTIONS, 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 2008 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 SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT
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 2008 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 2008 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 2008 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 GROUND 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 GROUND CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.
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 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 ENIRCLE 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 ENCLICLING 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 2008 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.

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REVISION					
DATE					
<p><b>ST. LOUIS REGIONAL AIRPORT</b></p>  <p><b>EAST ALTON, ILLINOIS</b></p> <p>IL. PROJ.: ALN-4065 A.I.P. PROJ.: 3-17-0002-B46</p>					
<p>Hanson Project No. 10A0121D                  Filename E-004.DWG                  Scale NONE                  Date 02/04/11</p>		<p>LAYOUT KNL 11/19/10                  DRAWN MAW 11/29/10                  REVIEWED CAH 01/14/11</p>		 <p><b>HANSON</b>                  Professional Services Inc. 2011                  Hanson Professional Services Inc.                  1525 South Sixth Street                  Springfield, Illinois 62703-2886                  Ph: (217) 788-2450 Fax: (217) 788-2503                  www.hanson-inc.com                  Offices Nationwide</p>	
<p><b>REPLACE HIRL ON RUNWAY 11-29</b></p>			<p><b>GROUNDING NOTES</b></p>		
<p><b>43</b></p> <p>43 of 43 sheets</p>					