

# CONSTRUCTION PLANS

## FOR

# SHELBY COUNTY AIRPORT

## SHELBYVILLE, SHELBY COUNTY, ILLINOIS

# CONSTRUCT VAULT, LIGHT TAXIWAY AND INSTALL APPROACH NAVAIDS

SCOPE OF WORK

THIS PROJECT SHALL CONSIST OF REMOVAL OF THE EXISTING ELECTRICAL VAULT EQUIPMENT LOCATED IN THE TERMINAL BUILDING, CONSTRUCTING A NEW AIRPORT ELECTRICAL VAULT IN THE EXISTING SNOW REMOVAL EQUIPMENT BUILDING, REPLACING THE RUNWAY LIGHTING, INSTALLATION OF A MEDIUM INTENSITY TAXIWAY LIGHTING SYSTEM ON THE TAXIWAYS, AND INSTALLING A PAPI ON RUNWAY 36 WITH THE ASSOCIATED CABLING AND DUCT WORK. PROVIDING MANDATORY HOLD SIGNS AT THE RUNWAY / TAXIWAY INTERSECTIONS WILL BE INCLUDED WITH THIS PROJECT. ALSO INCLUDED WITH THIS PROJECT WILL BE THE INSTALLATION OF A LIGHTED L-807 PRIMARY WIND CONE, REPLACEMENT OF THE AIRPORT ROTATING BEACON, AND ADDITION OF OBSTRUCTION LIGHTING AND LIGHTNING PROTECTION TO THE BEACON TOWER.

ADDITIVE ALTERNATE NO. 1

UPGRADE MEDIUM INTENSITY TAXIWAY LIGHTS TO TYPE L-861T(L) WITH LED (LIGHT EMITTING DIODE) ILLUMINATION.

ADDITIVE ALTERNATE NO. 2

PROVIDE WEED CONTROL RINGS FOR AIRFIELD LIGHT FIXTURES.

ILL. PROJ.: 2H0-4149  
 A.I.P. PROJ.: 3-17-0093-B11  
 LATITUDE: 39° 24' 38"  
 LONGITUDE: 88° 50' 44"  
 ELEVATION: 618' M.S.L.  
 DATE: FEB. 23, 2012

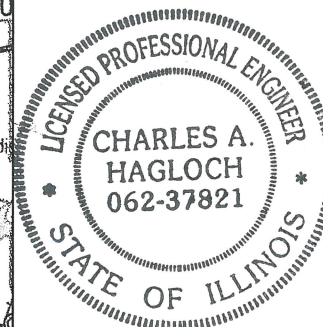
COVERING ELECTRICAL DESIGN

REVISED 03/08/2012



Hanson Professional Services Inc.  
 ELECTRICAL ENGINEER

Submitted by: *Kevin N. Lightfoot* ENG'R  
 Date Submitted: MARCH 9, 2012  
 Lic. Exp. Date: NOVEMBER 30, 2013

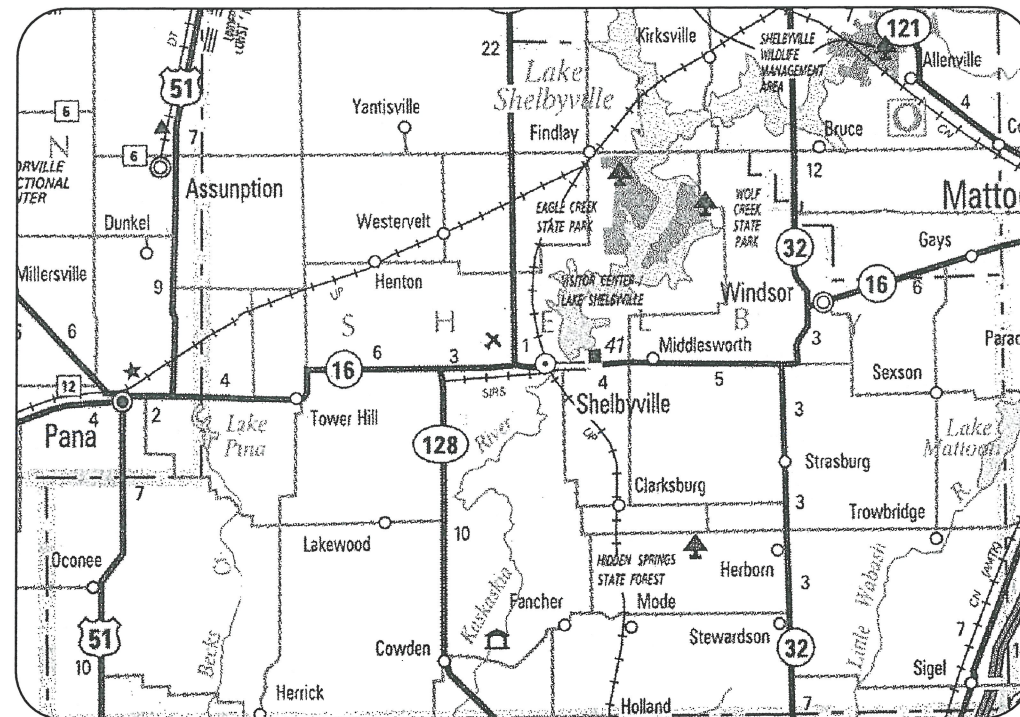


Hanson Professional Services Inc.  
 CIVIL ENGINEER

Submitted by: *Charles A. Hagloch* ENG'R  
 Date Submitted: MARCH 9, 2012  
 Lic. Exp. Date: Nov. 30, 2013

SHELBY COUNTY AIRPORT  
 AND LANDING FIELD COMMISSION

Approved: *Stewart Wempe* SECRETARY  
 Date: 3-7-2012



DATE	REVISION	SHELBY COUNTY AIRPORT SHELBYVILLE, ILLINOIS							
A.I.P. PROJ.: 3-17-0093-B11									
IL PROJ.: 2H0-4149									
Hanson Proj. No. 10A0047	Filename: R-001CVR.DWG	Scale AS SHOWN	Date 02/18/12	LAYOUT KNL 01/18/12	DRAWN CWS 01/23/12	REVIEWED KNL/CAH 02/23/12			
<p>Hanson Professional Services Inc.          1525 South Sixth Street          Springfield, Illinois 62705-2886          Ph: (217) 788-2450 Fax: (217) 788-2503          www.hanson-inc.com          Offices Nationwide</p>									
<b>CONSTRUCT VAULT,          LIGHT TAXIWAY &amp;          INSTALL NAVAIDS</b>									
COVER SHEET									
1									
1 of 39 sheets									

DATE	REVISION
03/08/12	UPDATE PER FAA PGL 12-2 & EB67D

SUMMARY OF QUANTITIES - BASE BID

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AR101580	REFURBISH 36" BEACON	L.S.	1	
AR107812	L-807 WC-12' INTERNALLY LIT	EACH	1	
AR108158	1/C #8 5 KV UG CABLE IN UD	L.F.	20,050	
AR108656	3/C #6 600V UG CABLE IN UD	L.F.	1,300	
AR108658	3/C #8 600V UG CABLE IN UD	L.F.	350	
AR109100	CONSTRUCT ELECTRICAL VAULT	L.S.	1	
AR109200	INSTALL ELECTRICAL EQUIPMENT	L.S.	1	
AR109902	REMOVE ELECTRICAL EQUIPMENT	L.S.	1	
AR110013	3" DIRECTIONAL BORE	L.F.	380	
AR110610	ELECTRICAL HANDHOLE	EACH	2	
AR125410	MITL - STAKE MOUNTED	EACH	70	
AR125415	MITL - BASE MOUNTED	EACH	9	
AR125446	TAXI GUIDANCE SIGN, 6 CHARACTER	EACH	2	
AR125447	TAXI GUIDANCE SIGN, 7 CHARACTER	EACH	6	
AR125505	MIRL, STAKE MOUNTED	EACH	32	
AR125510	MIRL, BASE MOUNTED	EACH	8	
AR125540	MI THRESHOLD LIGHT STAKE MTD	EACH	14	
AR125620	ABBREVIATED PAPI (L-881 SYSTEM)	EACH	1	
AR125901	REMOVE STAKE MOUNTED LIGHT	EACH	47	
AR125902	REMOVE BASE MOUNTED LIGHT	EACH	9	
AR125904	REMOVE TAXI GUIDANCE SIGN	EACH	2	
AR125910	REMOVE PLASI	EACH	1	
AR150510	ENGINEER'S FIELD OFFICE	L.S.	1	
AR150520	MOBILIZATION	L.S.	1	
AR150540	HAUL ROUTE	L.S.	1	
AR620520	PAVEMENT MARKING-WATERBORNE	S.F.	691	
AR620525	PAVEMENT MARKING-BLACK BORDER	S.F.	1,114	
AR620900	PAVEMENT MARKING REMOVAL	S.F.	1,760	
AR800564	REMOVE REFLECTOR	EACH	40	
AR800591	UPGRADE AIRPORT ROTATING BEACON	L.S.	1	

SUMMARY OF QUANTITIES - ADDITIVE ALTERNATE NO. 1

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AS800592	MITL LED UPGRADE	EACH	79	

SUMMARY OF QUANTITIES - ADDITIVE ALTERNATE NO. 2

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AT800580	WEED CONTROL RING	EACH	133	

INDEX TO SHEETS

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4	EXISTING ELECTRICAL PLAN VAULT & TAXIWAYS
5	EXISTING ELECTRICAL PLAN STA. 5+00 TO STA. 13+10
6	EXISTING ELECTRICAL PLAN STA. 13+10 TO STA. 26+75
7	EXISTING ELECTRICAL PLAN STA. 26+75 TO STA. 46+00
8	PAVEMENT MARKING DETAILS
9	PROPOSED ELECTRICAL PLAN VAULT & TAXIWAYS
10	PROPOSED ELECTRICAL PLAN STA. 5+00 TO STA. 13+10
11	PROPOSED ELECTRICAL PLAN STA. 13+10 TO STA. 26+75
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38	GROUNDING DETAILS
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SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

IL PROJ.: 2H0-4149 A.I.P. PROJ.: 3-17-0093-B11

Hanson Proj. No. 10A00047	01/18/12
Filename R-002ELP.DWG	CWS
Scale AS SHOWN	02/23/12
Date 02/18/12	KNL/CAH
LAYOUT	REVIEWED
DRAWN	



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 www.hanson-inc.com  
 Offices Nationwide

CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS  
SUMMARY OF QUANTITIES &  
INDEX TO SHEETS

Mar 09, 2012 1:36 PM KINC00394  
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**SCOPE OF WORK**

THIS PROJECT SHALL CONSIST OF REMOVAL OF THE EXISTING ELECTRICAL VAULT EQUIPMENT LOCATED IN THE TERMINAL BUILDING, CONSTRUCTING A NEW AIRPORT ELECTRICAL VAULT IN THE EXISTING SNOW REMOVAL EQUIPMENT BUILDING, REPLACING THE RUNWAY LIGHTING, INSTALLATION OF A MEDIUM INTENSITY TAXIWAY LIGHTING SYSTEM ON THE TAXIWAYS, AND INSTALLING A PAPI ON RUNWAY 36 WITH THE ASSOCIATED CABLING AND DUCT WORK. PROVIDING MANDATORY HOLD SIGNS AT THE RUNWAY/TAXIWAY INTERSECTIONS WILL BE INCLUDED WITH THIS PROJECT. ALSO INCLUDED WITH THIS PROJECT WILL BE THE INSTALLATION OF A LIGHTED L-807 PRIMARY WIND CONE, REPLACEMENT OF THE AIRPORT ROTATING BEACON, AND ADDITION OF OBSTRUCTION LIGHTING AND LIGHTNING PROTECTION TO THE BEACON TOWER.

**ADDITIVE ALTERNATE NO. 1**

UPGRADE MEDIUM INTENSITY TAXIWAY LIGHTS TO TYPE L-861(L) WITH LED (LIGHT EMITTING DIODE) ILLUMINATION.

**ADDITIVE ALTERNATE NO. 2**

PROVIDE WEED CONTROL RINGS FOR AIRFIELD LIGHT FIXTURES.

**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.

**HEIGHT OF CONSTRUCTION EQUIPMENT**

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

**HAUL ROUTE AND VEHICLE PARKING**

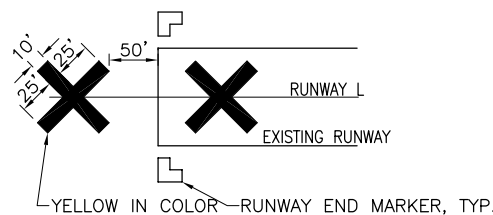
THE CONTRACTOR WILL USE THE DESIGNATED HAUL ROUTE AND PARKING AREA AS SHOWN ON THIS SHEET. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE PROPOSED HAUL ROUTE AND PARKING AREA THROUGHOUT THE COURSE OF THE PROJECT. ANY AREAS DAMAGED OUTSIDE OF THESE AREAS WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE. AT THE CONCLUSION OF THE PROJECT THE CONTRACTOR WILL RESTORE THE HAUL ROUTE AND PARKING AREA 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.

IF THE CONTRACTOR NEEDS MATERIAL STORAGE SPACE WITHIN THE FENCED IN PORTION OF THE AIRPORT, THEN A LOCATION WILL BE DETERMINED AT THE PRE-CONSTRUCTION MEETING. THIS AREA WILL BE RESTORED TO IT'S ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE PROJECT.

**CONTRACTOR RESPONSIBILITIES**

THE CONTRACTOR'S EQUIPMENT PARKING WILL BE AS SHOWN ON THIS SHEET. THE CONTRACTOR'S EMPLOYEES WILL PARK THEIR PERSONAL 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.



**DETAIL OF CROSS FOR CLOSED RUNWAY**

"NOT TO SCALE"

**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.

**CRITICAL POINT DATA**

POINT NO. 1  
LATITUDE: 39° 24' 27.42931"  
LONGITUDE: 88° 50' 49.93958"  
ELEVATION: 617.65 M.S.L.

POINT NO. 2  
LATITUDE: 39° 24' 27.44012"  
LONGITUDE: 88° 50' 47.49167"  
ELEVATION: 616.13 M.S.L.

POINT NO. 3  
LATITUDE: 39° 24' 27.44900"  
LONGITUDE: 88° 50' 45.47772"  
ELEVATION: 615.90 M.S.L.

POINT NO. 4  
LATITUDE: 39° 24' 25.39684"  
LONGITUDE: 88° 50' 41.51742"  
ELEVATION: 613.58 M.S.L.

POINT NO. 5  
LATITUDE: 39° 24' 29.46568"  
LONGITUDE: 88° 50' 43.28995"  
ELEVATION: 615.02 M.S.L.

POINT NO. 6  
LATITUDE: 39° 24' 30.54944"  
LONGITUDE: 88° 50' 44.13797"  
ELEVATION: 615.75 M.S.L.

POINT NO. 7  
LATITUDE: 39° 24' 43.06477"  
LONGITUDE: 88° 50' 47.51018"  
ELEVATION: 617.22 M.S.L.

POINT NO. 8  
LATITUDE: 39° 24' 44.93749"  
LONGITUDE: 88° 50' 47.50201"  
ELEVATION: 616.78 M.S.L.

POINT NO. 9  
LATITUDE: 39° 24' 51.72684"  
LONGITUDE: 88° 50' 50.12535"  
ELEVATION: 616.98 M.S.L.

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

COUNTY \_\_\_\_\_ SHELBY  
CITY \_\_\_\_\_ SHELBYVILLE  
TOWNSHIP \_\_\_\_\_ T-11-N  
RANGE \_\_\_\_\_ R-3-E  
SECTION NO. \_\_\_\_\_ 10,11  
ADDRESS \_\_\_\_\_ SHELBY COUNTY AIRPORT  
RR # 2  
SHELBYVILLE, ILLINOIS 62565

**CERTIFIED PAYROLLS**

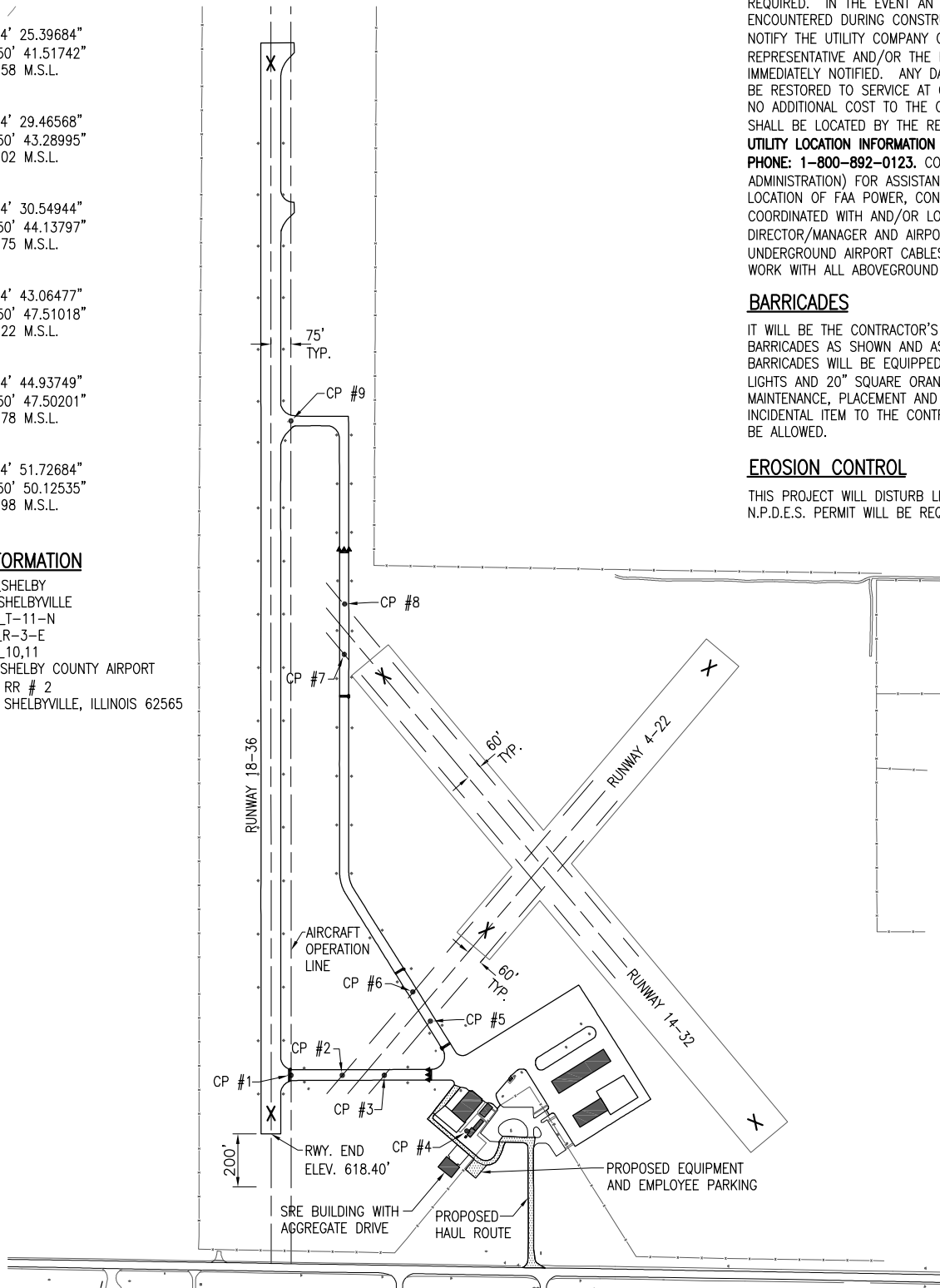
THE RESIDENT ENGINEER CANNOT FORWARD CONSTRUCTION REPORTS TO THE ILLINOIS DIVISION OF AERONAUTICS FOR PROCESSING UNTIL ALL CERTIFIED PAYROLLS FOR THE PERIOD HAVE BEEN RECEIVED.

**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**

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



**UTILITY NOTE**

THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE, EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF 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.

**BARRICADES**

IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN BARRICADES AS SHOWN AND AS DIRECTED BY THE AIRPORT MANAGER. THE BARRICADES WILL BE EQUIPPED WITH RED FLASHING OR RED STEADY-BURN LIGHTS AND 20" SQUARE ORANGE FLAGS. THE BARRICADES, THEIR MAINTENANCE, PLACEMENT AND REMOVAL WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

**EROSION CONTROL**

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

**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.

**LEGEND**

- EXISTING IMPROVEMENTS
- EXISTING BUILDINGS
- PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
- PROPOSED BARRICADES

**PROPOSED SAFETY PLAN**

**SE004**

GENERAL - THE SHELBY COUNTY AIRPORT IS COMPRISED OF THREE RUNWAYS. THE PROPOSED CONSTRUCTION WILL NECESSITATE CLOSING ALL THREE OF THE RUNWAYS. ANY TIME THE CONTRACTOR IS WORKING WITHIN 60' OF THE RUNWAY CENTERLINE THE RUNWAY SHALL BE CLOSED. ANY TIME THE CONTRACTOR IS WORKING WITHIN 45' OF THE TAXIWAY CENTERLINE THE TAXIWAY WILL BE CLOSED. THE CONTRACTOR WILL BE ALLOWED TO CLOSE RUNWAY 18-36 FOR THE CONSTRUCTION WEEK. AT THE END OF THE CONSTRUCTION WEEK HE MUST OPEN IT BACK UP FOR "DAYTIME OPERATIONS ONLY".

THE CONTRACTOR WILL CONCENTRATE ALL HIS EFFORTS ON COMPLETING ALL WORK ASSOCIATED WITH RUNWAY 18-36 BEFORE HE BEGINS WORKING ON INSTALLING THE MITL SYSTEM. ONCE THE CONTRACTOR HAS COMPLETED INSTALLING THE MITL SYSTEM AND THE PAPI UNIT HE WILL RE-OPEN RUNWAY 18-36 FOR BOTH DAY AND NIGHT OPERATIONS.

WHEN THE CONTRACTOR IS WORKING ON RUNWAY 18-36 HE MUST KEEP RUNWAY 4-22 OPEN. RUNWAY 14-32 WILL BE CLOSED WHEN HE IS WITHIN 60 FEET OF ITS CENTERLINE. THE CONTRACTOR WILL EXPEDITE WORK WITHIN 60 FEET OF RUNWAY 14-32 CENTERLINE IN ORDER TO LIMIT THE LENGTH OF TIME THIS RUNWAY IS CLOSED.

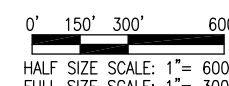
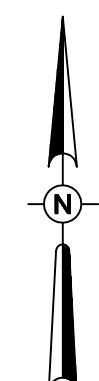
ONCE RUNWAY 18-36 IS OPEN THE CONTRACTOR WILL BE ALLOWED TO CLOSE BOTH SOD STRIPS IN ORDER TO COMPLETE THE WORK ON THE TAXIWAY AS QUICKLY AS POSSIBLE. THESE RUNWAYS WILL BE RE-OPENED AT THE END OF THE CONSTRUCTION WEEK FOR AIRCRAFT OPERATIONS DURING THE WEEKEND.

TO PROVIDE ACCESS BETWEEN THE AIRCRAFT PARKING APRON AND RUNWAY 18-36 THE CONTRACTOR WILL BE REQUIRED TO COMPLETE THE INSTALLATION OF LIGHTS AND CABLING ON TAXIWAY "A" BEFORE MOVING ONTO TAXIWAY "B" IN THIS MANNER AND AIRCRAFT WILL BE ABLE TO TAXI BETWEEN THE RUNWAY AND THE APRON.

ALL WORK INCLUDED IN OPENING AND CLOSING THE RUNWAYS 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 (122.80 MHz.) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE SHELBY COUNTY AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTIC EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.



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

REVISION	DATE	REVISED R/WY 18-36 PER IDA REVIEW

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS  
A.I.P. PROJ.: 3-17-0093-B11  
ILL. PROJ.: 2HO-4-149

Hanson Proj. No. 10A00047			
Filename R-0035FY.DWG			
Scale 1" = 300'			
Date 02/18/12			
LAYOUT	CAH	02/21/12	
DRAWN	BAK	02/21/12	
REVIEWED	CAH/KNL	02/22/12	

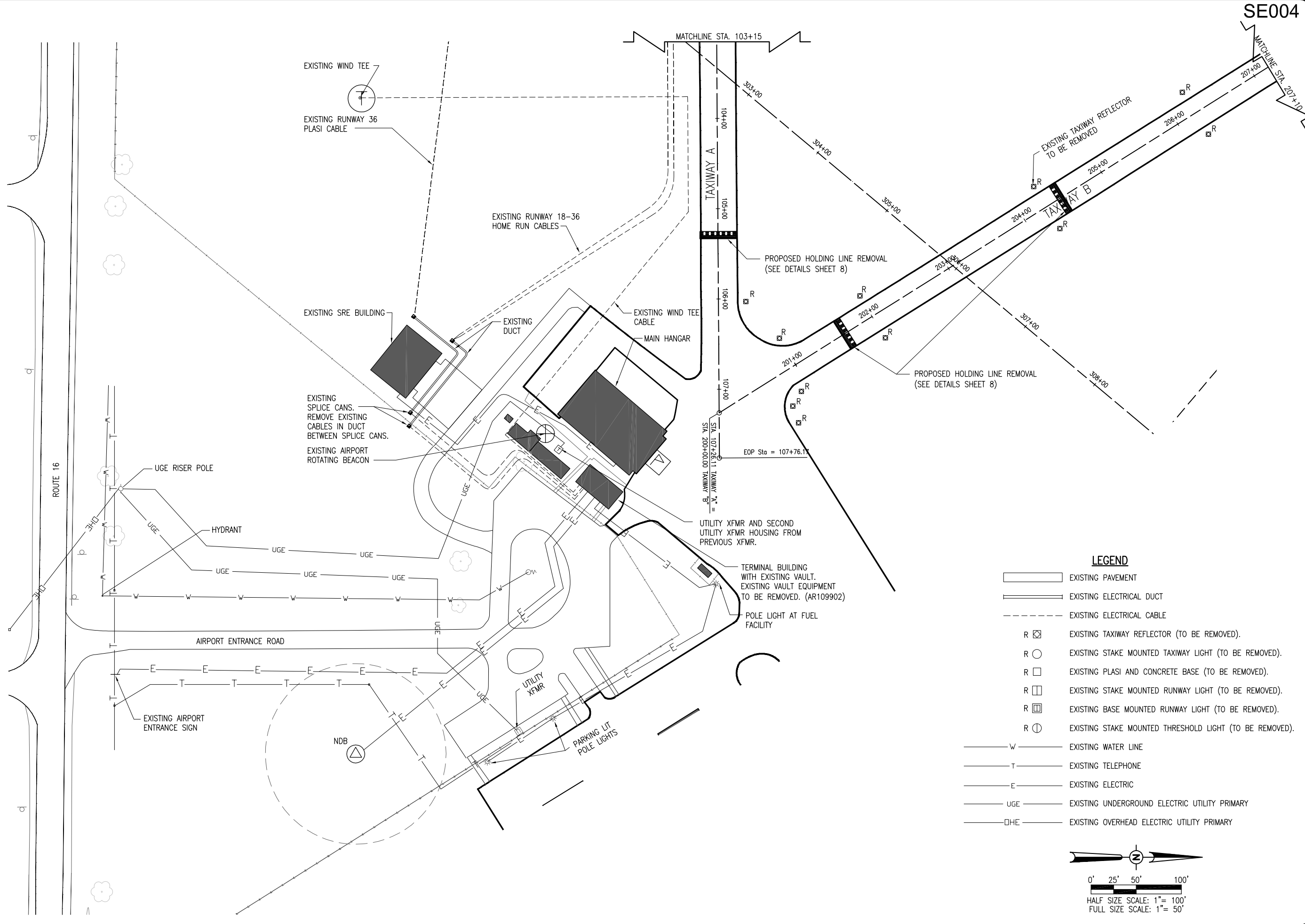
**HANSON**  
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Springfield, Illinois 62703-2886  
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www.hanson-inc.com  
Offices Nationwide

CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS  
PROPOSED  
SAFETY PLAN

MAR 09, 2012 1:37 PM KINC00394 E:\100095\10A0047\10A0047.DWG (AIRPORT) SHEET R-0035FY.DWG



MAR 09, 2012 1:38 PM KINCAC0394  
 E:\100085\10A0047\10A0047D\CAD\AIRPORT\141ELE.DWG



- LEGEND**
- EXISTING PAVEMENT
  - EXISTING ELECTRICAL DUCT
  - EXISTING ELECTRICAL CABLE
  - EXISTING TAXIWAY REFLECTOR (TO BE REMOVED).
  - EXISTING STAKE MOUNTED TAXIWAY LIGHT (TO BE REMOVED).
  - EXISTING PLASI AND CONCRETE BASE (TO BE REMOVED).
  - EXISTING STAKE MOUNTED RUNWAY LIGHT (TO BE REMOVED).
  - EXISTING BASE MOUNTED RUNWAY LIGHT (TO BE REMOVED).
  - EXISTING STAKE MOUNTED THRESHOLD LIGHT (TO BE REMOVED).
  - EXISTING WATER LINE
  - EXISTING TELEPHONE
  - EXISTING ELECTRIC
  - EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
  - EXISTING OVERHEAD ELECTRIC UTILITY PRIMARY

SE004

REVISION	DATE

**SHELBY COUNTY AIRPORT  
 SHELBYVILLE, ILLINOIS**

IL PROJ.: 2HO-4149 A.I.P. PROJ.: 3-17-0093-B11

Hanson Proj. No. 10A0047	
Filename AS SHOWN	
Scale 02/18/12	
LAYOUT KNL 12/16/11	
DRAWN CWS 01/24/12	
REVIEWED CAH/KNL 02/22/12	

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**CONSTRUCT VAULT,  
 LIGHT TAXIWAY &  
 INSTALL NAVAIDS**

**EXISTING ELECTRICAL PLAN  
 VAULT & TAXIWAYS**




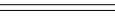
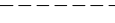






**AIRFIELD LIGHTING REMOVAL NOTES**

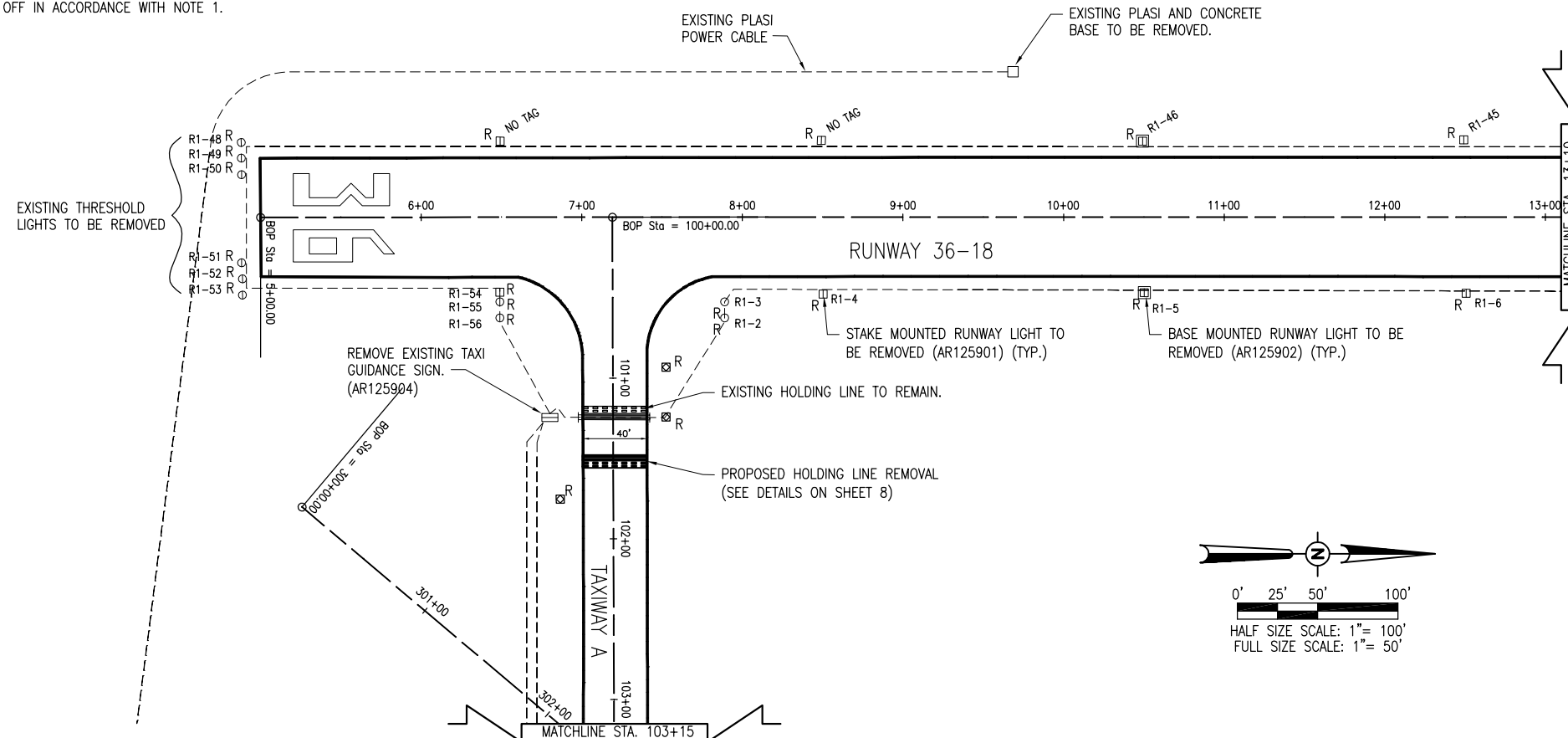
1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE THE EXTENT OF THE WORK. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING THE RESPECTIVE AIRFIELD LIGHTING, NAVAIDS, OR OTHER DEVICE.
3. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2F (OR MOST CURRENT ISSUE) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
4. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.
5. THE EXISTING AIRFIELD LIGHTS, TAXI GUIDANCE SIGNS, AND THEIR ISOLATION TRANSFORMERS DESIGNATED FOR REMOVAL SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. REMOVAL OF THE EXISTING AIRFIELD LIGHTS WILL BE PAID FOR UNDER ITEM AR125901 REMOVE STAKE MOUNTED LIGHT, PER EACH AND AR125902 REMOVE BASE MOUNTED LIGHT, PER EACH. REMOVAL OF THE EXISTING TAXI GUIDANCE SIGNS & FOUNDATIONS WILL BE PAID FOR UNDER ITEM AR125904 "REMOVE TAXI GUIDANCE SIGN" PER EACH
6. EXISTING TAXIWAY REFLECTIVE MARKERS SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. REMOVAL OF EXISTING REFLECTORS WILL BE PAID FOR UNDER ITEM AR800564 REMOVE REFLECTOR PER EACH.
7. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH AIRFIELD LIGHTING REMOVAL SHALL BE ABANDONED IN PLACE UNLESS IT CONFLICTS WITH THE INSTALLATION OF A PROPOSED LIGHT OR CABLE, PAVEMENT, OR OTHER WORK, THEN IT SHALL BE REMOVED AT NO ADDITIONAL COST TO THE CONTRACT.
8. ALL ABOVEGROUND JUMPERS SHALL BE IN A DUCT WITH ALL CONNECTIONS SEALED. THE CONTRACTOR SHALL SECURE, IDENTIFY AND PLACE ALL TEMPORARY EXPOSED WIRING IN CONDUIT, DUCT, OR UNIT DUCT TO PREVENT ELECTROCUTION AND FIRE IGNITION SOURCES AS PER THE REQUIREMENTS OF FAA 150/5370-2F, OPERATION SAFETY ON AIRPORTS DURING CONSTRUCTION, PART 218.c.
9. THE CONTRACTOR IS REQUIRED TO FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE LIGHT, SIGN, AND/OR BASE REMOVAL WITH EARTH MATERIAL. THE AREAS SHALL BE COMPACTED TO PREVENT FUTURE SETTLEMENT AND FERTILIZED, SEEDED, AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908 RESPECTIVELY.
10. NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

**PLASI REMOVAL NOTES**

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING PLASI UNITS.
3. EXISTING PLASI UNITS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED AND SHALL BE TURNED OVER TO THE AIRPORT. THE CONCRETE FOUNDATIONS/BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE.
4. THE HOLE LEFT FROM THE FOUNDATION OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE EARTH MATERIAL WILL COME FROM OFF-SITE AND WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE PLASI REMOVAL. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
5. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH PLASI REMOVALS SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, AND ABANDONED IN PLACE ELSEWHERE.
6. POWER FOR THE PLASI SYSTEM ON THE RUNWAY SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO DISCONNECTING AND REMOVING THE RESPECTIVE PLASI SYSTEM. POWER FOR THE EXISTING PLASI SYSTEMS LOCATED ON RUNWAY 36 IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT LOCATED IN THE TERMINAL BUILDING. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM RESPECTIVE POWER SOURCE FOR EACH PLASI SYSTEM.
7. REMOVAL OF PLASI WILL BE PAID FOR UNDER ITEM AR125910 "REMOVAL PLASI" PER EACH.
8. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

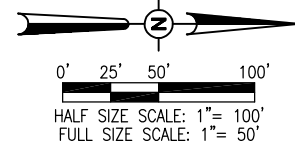
**LEGEND**


-  EXISTING PAVEMENT
-  EXISTING ELECTRICAL DUCT
-  EXISTING ELECTRICAL CABLE
- R  EXISTING TAXIWAY REFLECTOR (TO BE REMOVED).
- R  EXISTING STAKE MOUNTED TAXIWAY LIGHT (TO BE REMOVED).
- R  EXISTING PLASI AND CONCRETE BASE (TO BE REMOVED).
- R  EXISTING STAKE MOUNTED RUNWAY LIGHT (TO BE REMOVED).
- R  EXISTING BASE MOUNTED RUNWAY LIGHT (TO BE REMOVED).
- R  EXISTING STAKE MOUNTED THRESHOLD LIGHT (TO BE REMOVED).



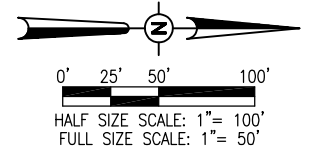
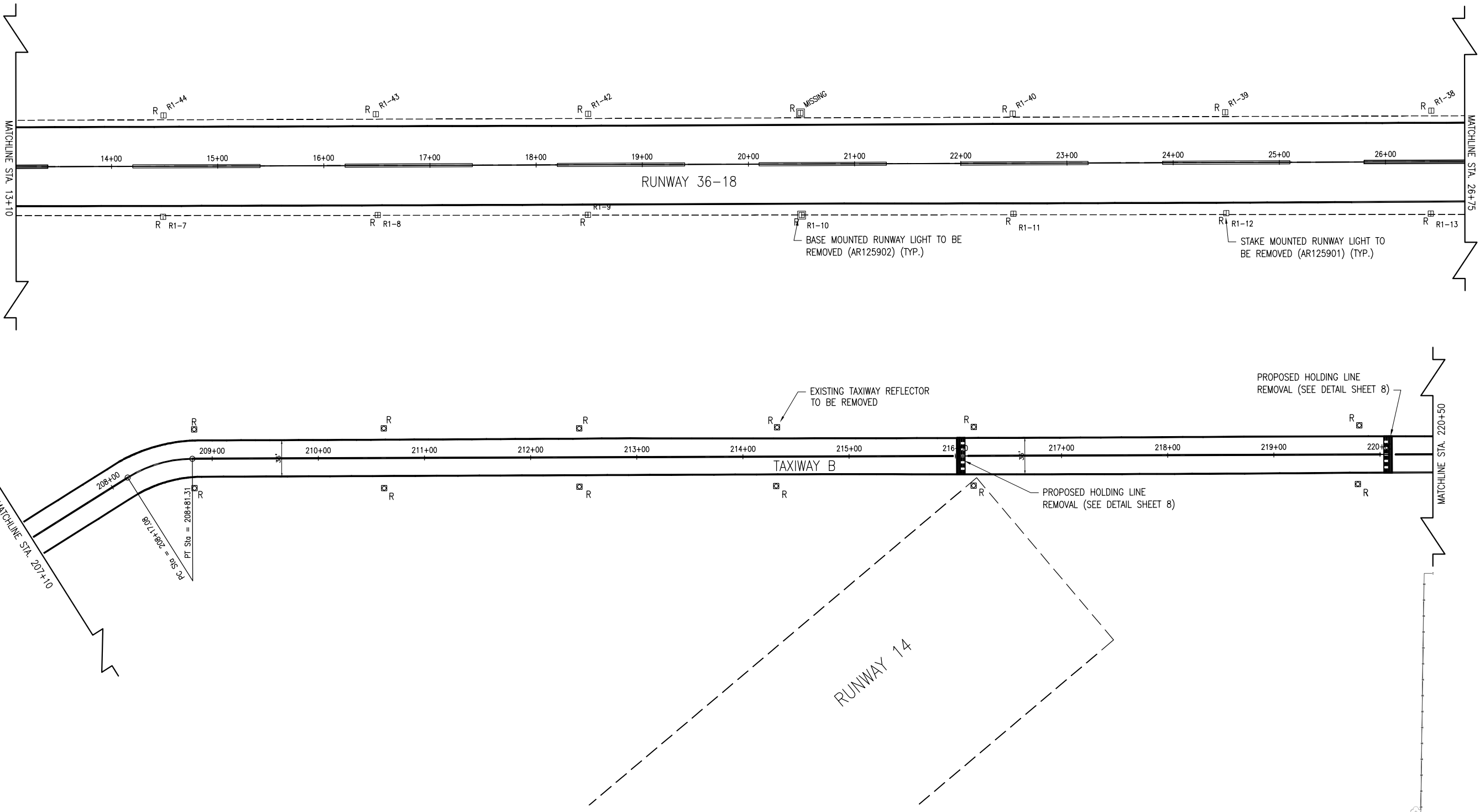
THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY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

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



REVISION					
DATE	UPDATE	PER	ID#	REVIEW	
03/08/12					
<b>SHELBY COUNTY AIRPORT SHELBYVILLE, ILLINOIS</b>					
A.I.P. PROJ.: 3-17-0093-B11					
IL PROJ.: 2HO-4149					
Hanson Proj. No. 10A00047	AS SHOWN	12/16/11	KWL	CWS	02/23/12
Scale 02/18/12	DRAWN	KWL	CWS	01/24/12	REVIEWED
 <b>HANSON</b> Professional Services Inc. 2012 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					
<b>CONSTRUCT VAULT, LIGHT TAXIWAY &amp; INSTALL NAVAIDS</b>					
EXISTING ELECTRICAL PLAN STA. 5+00 TO STA. 13+10					
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5 of 39 sheets					

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REVISION	DATE

**SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS**

A.I.P. PROJ.: 3-17-0093-B11  
IL PROJ.: 2HO-4149

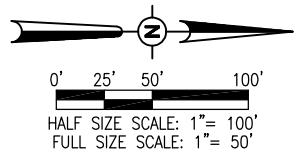
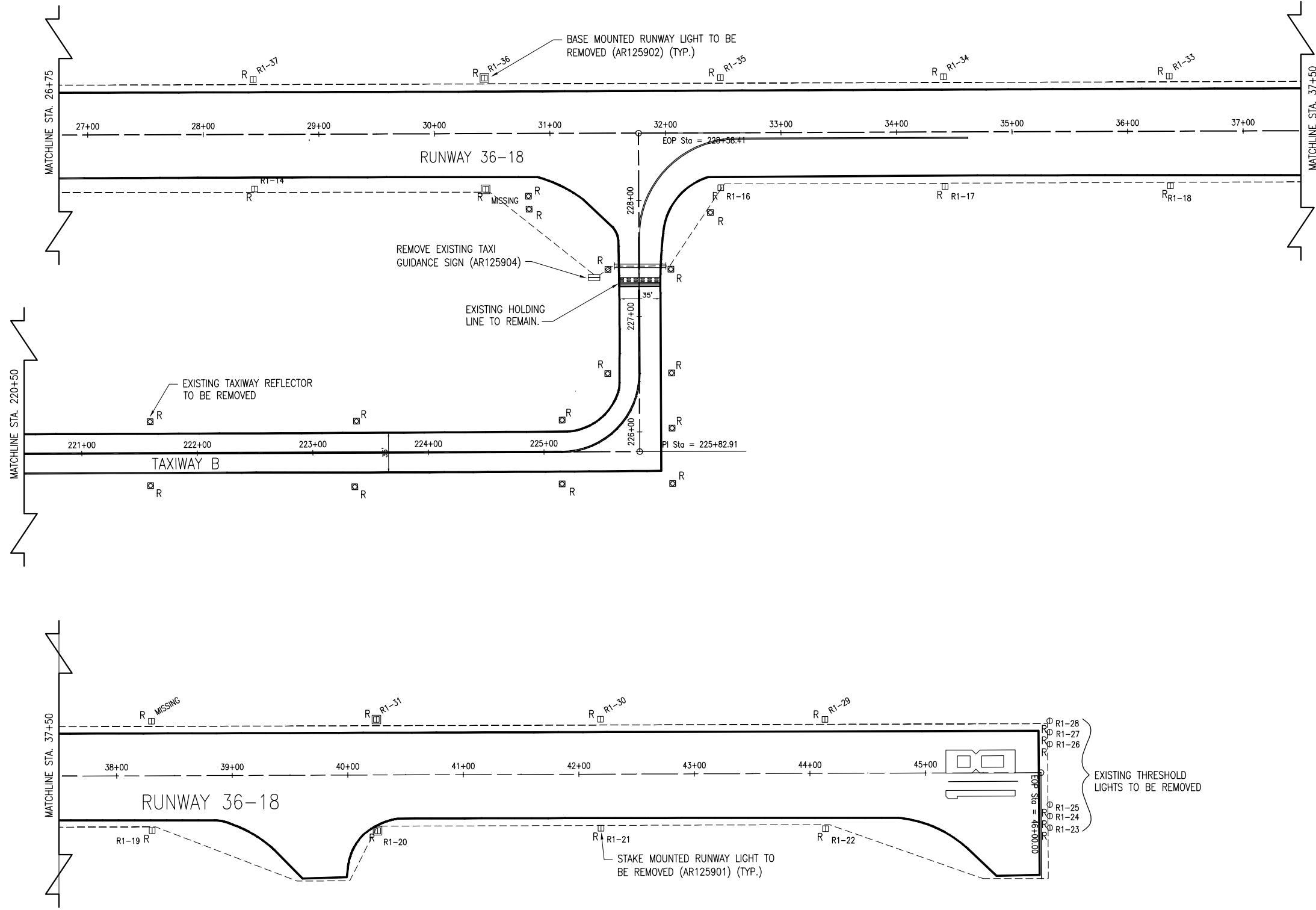
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**CONSTRUCT VAULT,  
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INSTALL NAVAIDS**

**EXISTING ELECTRICAL PLAN  
STA. 13+10 TO STA. 26+75**

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REVISION	DATE

**SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS**

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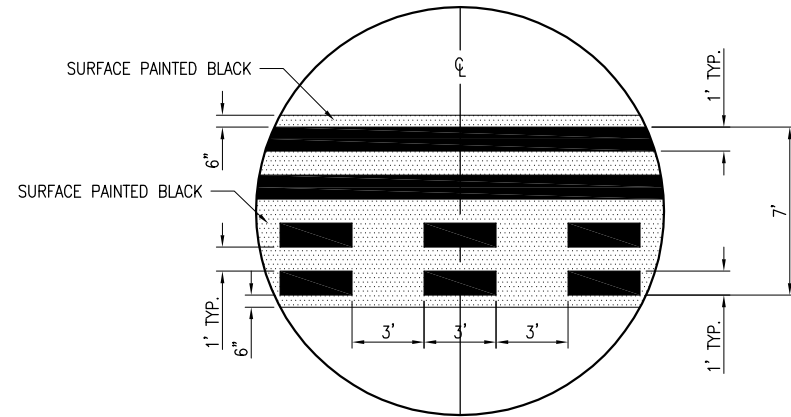
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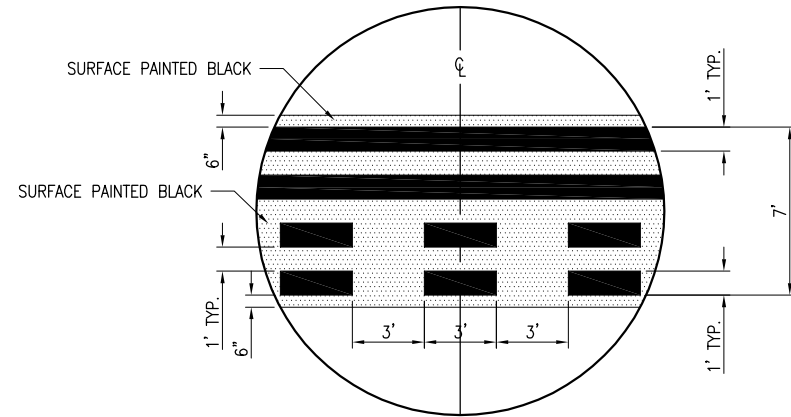
**CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS**

**EXISTING ELECTRICAL PLAN  
STA. 26+75 TO STA. 46+00**





EXISTING HOLDING POSITION MARKING DETAIL FOR REMOVAL  
"NOT TO SCALE"



PROPOSED HOLDING POSITION DETAIL  
"NOT TO SCALE"

MARKING QUANTITIES			
DESCRIPTION	UNIT AREA	NO. REQUIRED	TOTAL AREA
HOLDING LINE (TAXIWAY "A" AT RWY 36)	145	1	145
HOLDING LINE (TAXIWAY "A")	122	1	122
HOLDING LINE (TAXIWAY "B")	106	4	424
TOTAL YELLOW MARKING =			691
BLACK BORDER (TAXIWAY "A" AT RWY 36)	220	1	220
BLACK BORDER (TAXIWAY "A")	198	1	198
BLACK BORDER (TAXIWAY "B")	174	4	696
TOTAL BLACK MARKING =			1,114

**PAVEMENT MARKING REMOVAL NOTES**

- THE AREAS THAT ARE DESIGNATED EXISTING MARKING (TO BE REMOVED) WILL BE REMOVED BY WATER BLASTING OR SANDBLASTING.
- ALL AREAS TO BE REMOVED ARE CALCULATED AREAS. ANY ADDITIONAL AREAS, DUE TO OVER SPRAY, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- THE PROPOSED MARKING REMOVAL FOR THE HOLD LINES ON TAXIWAY "A" AND TAXIWAY "B" SHALL BE PAID FOR UNDER ITEM:  
AR620900 "PAVEMENT MARKING REMOVAL" PER. S.F.

**620-PAVEMENT MARKING-WATERBORNE NOTES**

- THE PAVEMENT MARKING-WATERBORNE (620) SHALL BE PLACED IN ACCORDANCE WITH ITEM 620 "PAVEMENT MARKING" AS STATED ON PAGE 277 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS, ADOPTED NOV. 2, 2009.
- THIS ITEM SHALL CONSIST OF HOLDING MARKING IN ACCORDANCE WITH THESE SPECIFICATIONS AND AT THE LOCATIONS SHOWN ON THE CONSTRUCTION PLANS. MARKING SHALL BE YELLOW IN COLOR. THE PROPOSED PAVEMENT MARKING SHALL BE APPLIED IN TWO APPLICATIONS.
- ANY MATERIAL DELIVERED THAT FAILS TO MEET THE SPECIFICATIONS SHALL BE DISPOSED OF BY THE VENDOR AND IMMEDIATELY REPLACED WITH ACCEPTABLE MATERIAL ENTIRELY AT THE VENDOR'S EXPENSE, INCLUDING HANDLING AND TRANSPORTATION CHARGES.
- ALL PROPOSED MARKING WILL BE COMPLETED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE CONSTRUCTION PLANS.
- GLASS BEADS SHALL BE REQUIRED ONLY ON THE SECOND APPLICATION OF YELLOW MARKING.
- CUT-OFF SHEETS WILL BE REQUIRED TO INSURE STRAIGHT EDGES.
- THE TAXIWAY HOLDING LINES WILL BE OUTLINED IN A BLACK BORDER. REFLECTIVE MEDIA WILL NOT BE REQUIRED FOR THE BLACK BORDER.
- THE PROPOSED TAXIWAY HOLDING LINE MARKING WILL BE PAID FOR UNDER ITEM:  
AR620520 "PAVEMENT MARKING-WATERBORNE" \_\_\_\_\_ PER SQ. FT.
- THE PROPOSED BLACK BORDER AROUND THE TAXIWAY HOLDING LINES WILL BE PAID FOR UNDER ITEM:  
AR620525 "BLACK BORDER" \_\_\_\_\_ PER SQ. FT.

REVISION	DATE

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

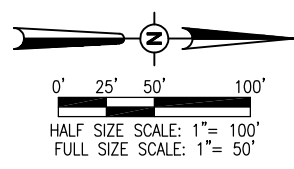
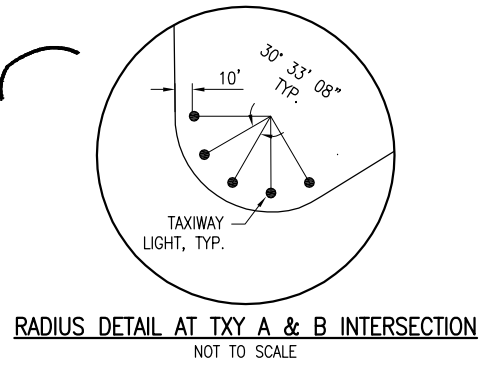
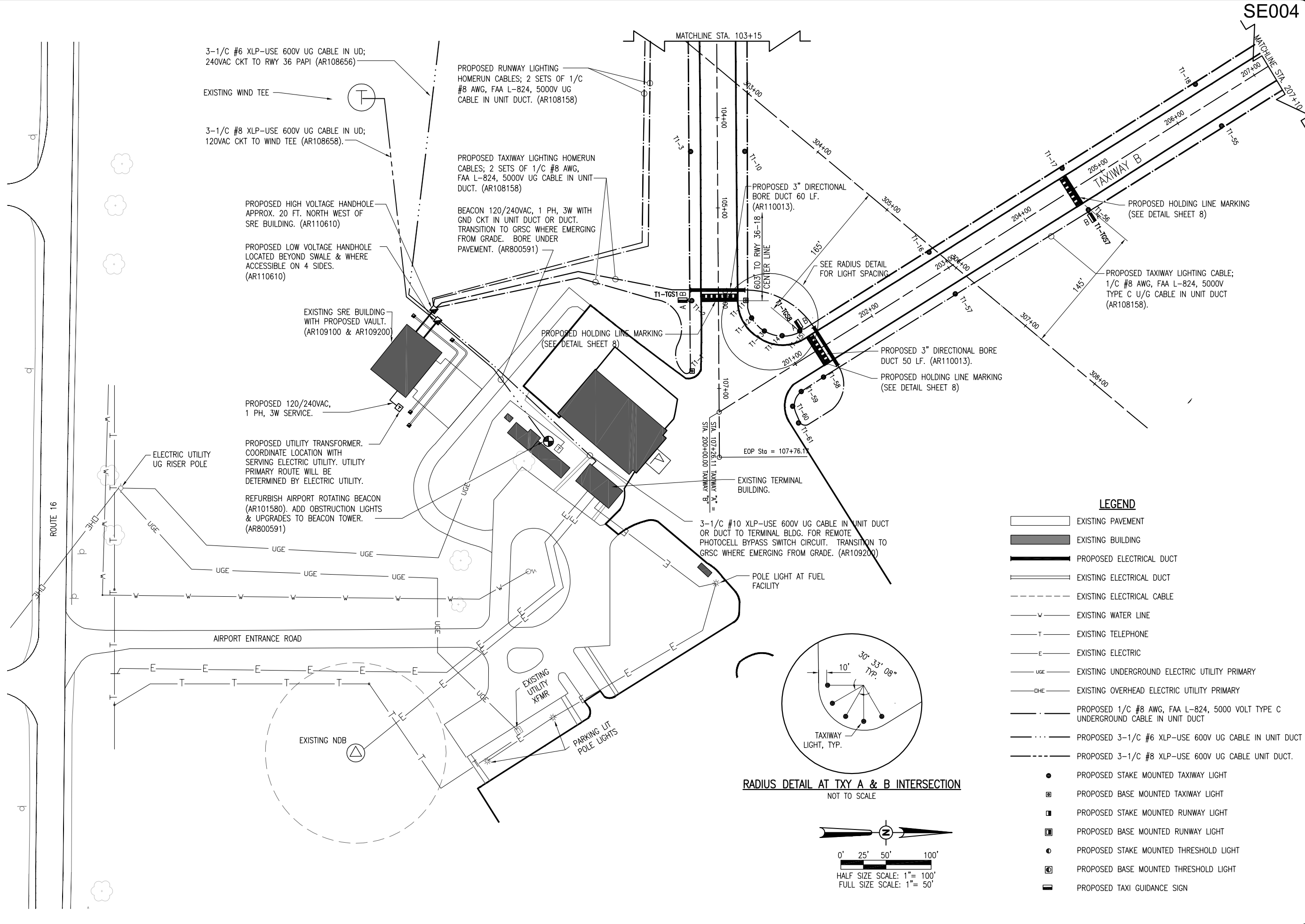
IL PROJ.: 2H0-4149 A.I.P. PROJ.: 3-17-0093-B11

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Filename AS_SHOWN				
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CONSTRUCT VAULT,  
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PAVEMENT MARKING DETAILS

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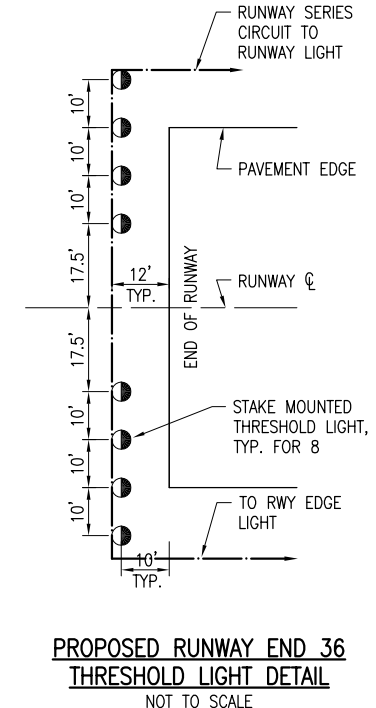
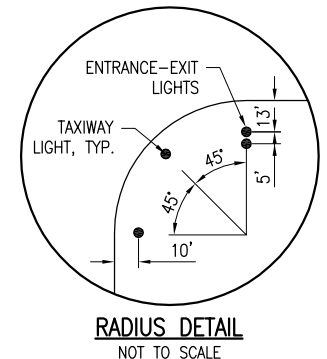
- LEGEND**
- EXISTING PAVEMENT
  - EXISTING BUILDING
  - PROPOSED ELECTRICAL DUCT
  - EXISTING ELECTRICAL DUCT
  - EXISTING ELECTRICAL CABLE
  - EXISTING WATER LINE
  - EXISTING TELEPHONE
  - EXISTING ELECTRIC
  - EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
  - EXISTING OVERHEAD ELECTRIC UTILITY PRIMARY
  - PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
  - PROPOSED 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
  - PROPOSED 3-1/C #8 XLP-USE 600V UG CABLE UNIT DUCT.
  - PROPOSED STAKE MOUNTED TAXIWAY LIGHT
  - PROPOSED BASE MOUNTED TAXIWAY LIGHT
  - PROPOSED STAKE MOUNTED RUNWAY LIGHT
  - PROPOSED BASE MOUNTED RUNWAY LIGHT
  - PROPOSED STAKE MOUNTED THRESHOLD LIGHT
  - PROPOSED BASE MOUNTED THRESHOLD LIGHT
  - PROPOSED TAXI GUIDANCE SIGN

REVISION					
DATE					
<b>SHELBY COUNTY AIRPORT SHELBYVILLE, ILLINOIS</b>					
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<b>PROPOSED ELECTRICAL PLAN VAULT AND TAXIWAYS</b>					
<b>9</b>					
9 of 39 sheets					

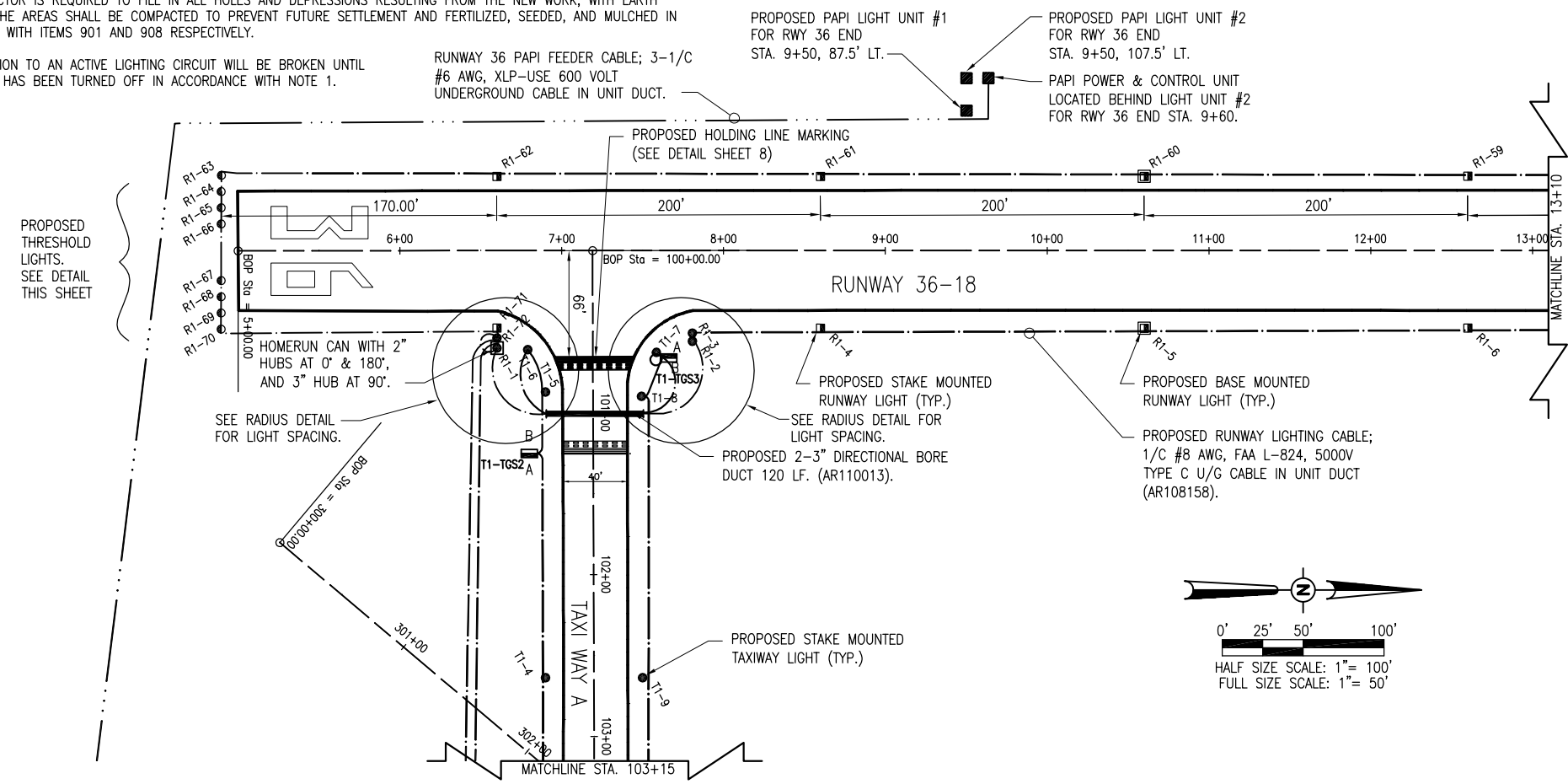
**AIRFIELD LIGHTING NOTES**

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING THE RESPECTIVE AIRFIELD LIGHTING, NAVAID, OR OTHER DEVICE.
- PROPOSED RUNWAY, THRESHOLD, AND TAXIWAY LIGHTS SHALL BE PLACED 10' (FT.) FROM THE PAVEMENT EDGE UNLESS SHOWN OTHERWISE ON THESE CONSTRUCTION DRAWINGS. PROPOSED TAXI GUIDANCE SIGNS SHALL BE LOCATED SUCH THAT THE CLOSEST SIDE OF THE SIGN IS 15' FROM THE PAVEMENT EDGE, UNLESS SHOWN OTHERWISE.
- PROPOSED RUNWAY LIGHTS, THRESHOLD LIGHTS, TAXIWAY LIGHTS, GUIDANCE SIGNS, OTHER AIRFIELD LIGHTING, SPLICE CANS, HANDHOLES, MANHOLES, ELECTRICAL DUCTS, AND CABLE SHALL BE INSTALLED AT THE LOCATIONS SHOWN AND IN COMPLIANCE WITH THE SPECIFICATIONS, SPECIAL PROVISIONS, RESPECTIVE DETAILS, AND MANUFACTURER'S RECOMMENDATIONS.
- PROPOSED CABLE FOR RUNWAY AND TAXIWAY LIGHTING SHALL BE INSTALLED APPROXIMATELY 12' FROM THE PAVEMENT EDGE. CABLES SHALL BE PLACED A MINIMUM OF 18" BELOW FINISHED GRADE.
- THE PROPOSED RUNWAY AND TAXIWAY LIGHTING CABLE SHALL BE 1/C, #8 AWG, FAA L-824, 5000 VOLT, TYPE C UNDERGROUND CABLE IN UNIT DUCT.
- IN AREAS WHERE THERE IS A CONGESTION OF CABLES OR WHERE THE PROPOSED CABLE CROSSES AN EXISTING CABLE, THE CONTRACTOR IS REQUIRED TO HAND DIG THE TRENCH NECESSARY FOR THE PROPOSED CABLE. AT OTHER LOCATIONS, THE PROPOSED CABLE MAY BE TRENCHED OR PLOWED INTO PLACE. HAND DIGGING, TRENCHING AND/OR PLOWING WILL BE CONSIDERED INCIDENTAL TO THE PROPOSED CABLES AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- PROPOSED RUNWAY LIGHTS SHALL BE FITTED WITH LENSES IN ACCORDANCE WITH THE "LIGHT LENS SCHEDULE". ALL PROPOSED TAXIWAY LIGHTS WILL BE FITTED WITH 360° BLUE LENSES.
- ALL PROPOSED RUNWAY, THRESHOLD, AND TAXIWAY LIGHTS SHALL BE TAGGED BY THE CONTRACTOR IN ACCORDANCE WITH THE LIGHT NUMBERS SHOWN ON THESE CONSTRUCTION DRAWINGS.
- SEE "TAXI GUIDANCE SIGN SCHEDULE" FOR INFO ON SIGN LEGENDS.
- THE CONTRACTOR SHALL SECURE, IDENTIFY AND PLACE ALL TEMPORARY EXPOSED WIRING IN CONDUIT, DUCT OR UNIT DUCT TO PREVENT ELECTROCUTION AND FIRE IGNITION SOURCES AS PER THE REQUIREMENTS OF FAA AC 150/5370-2F, PART 218.c. ALL LABOR, MATERIALS, AND TIME NECESSARY TO COMPLY WITH THIS REQUIREMENT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- HOMERUN CABLES FOR A RESPECTIVE CIRCUIT THAT ARE INSTALLED IN CONDUIT OR DUCT SHALL BE RUN TOGETHER IN THE SAME RACEWAY OR DUCT.
- EXISTING AIRFIELD LIGHTING CABLES IN AREAS OF NEW WORK SHALL BE DISCONNECTED & REMOVED WHERE IN CONFLICT WITH NEW CONSTRUCTION. IN OTHER AREAS CABLES MAY BE ABANDONED IN PLACE.
- THE CONTRACTOR IS REQUIRED TO FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE NEW WORK, WITH EARTH MATERIAL. THE AREAS SHALL BE COMPACTED TO PREVENT FUTURE SETTLEMENT AND FERTILIZED, SEEDED, AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908 RESPECTIVELY.
- NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

LIGHT LENS SCHEDULE		
LIGHT NUMBERS	LENS	ORIENTATION
T1-1 TO T1-60	BLUE	---
R1-1 TO R1-3	BLUE	---
R1-4 TO R1-12	CLEAR WHITE	---
R1-13 TO R1-15	CLEAR WHITE / AMBER	AMBER SIDE FACING SOUTH
R1-16 TO R1-19	BLUE	---
R1-20 TO R1-26	CLEAR WHITE / AMBER	AMBER SIDE FACING SOUTH
R1-27 TO R1-36	BLUE	---
R1-37 TO R1-42	RED / GREEN	RED SIDE FACING SOUTH (TOWARDS THRESHOLD)
R1-43 TO R1-52	CLEAR WHITE / AMBER	AMBER SIDE FACING SOUTH
R1-53 TO R1-62	CLEAR WHITE	---
R1-63 TO R1-70	RED / GREEN	RED SIDE FACING NORTH (TOWARDS THRESHOLD)
R1-71	CLEAR WHITE	---
R1-72	BLUE	---



- LEGEND**
- EXISTING PAVEMENT
  - EXISTING BUILDING
  - PROPOSED ELECTRICAL DUCT
  - EXISTING ELECTRICAL DUCT
  - EXISTING ELECTRICAL CABLE
  - PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
  - PROPOSED 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
  - PROPOSED STAKE MOUNTED TAXIWAY LIGHT
  - PROPOSED BASE MOUNTED TAXIWAY LIGHT
  - PROPOSED STAKE MOUNTED RUNWAY LIGHT
  - PROPOSED BASE MOUNTED RUNWAY LIGHT
  - PROPOSED STAKE MOUNTED THRESHOLD LIGHT
  - PROPOSED BASE MOUNTED THRESHOLD LIGHT
  - PROPOSED TAXI GUIDANCE SIGN



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

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

REVISION PER IDA REVIEW  
DATE 03/08/12 UPDATE PER IDA REVIEW

**SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS**

IL PROJ.: 2H0-4149  
A.I.P. PROJ.: 3-17-0093-B11

Hanson Proj. No. 10A0047	AS SHOWN	02/06/12
Filename	Scale	02/18/12
DATE	LAYOUT	KNL
	DRAWN	CWS
	REVIEWED	CAH/KNL

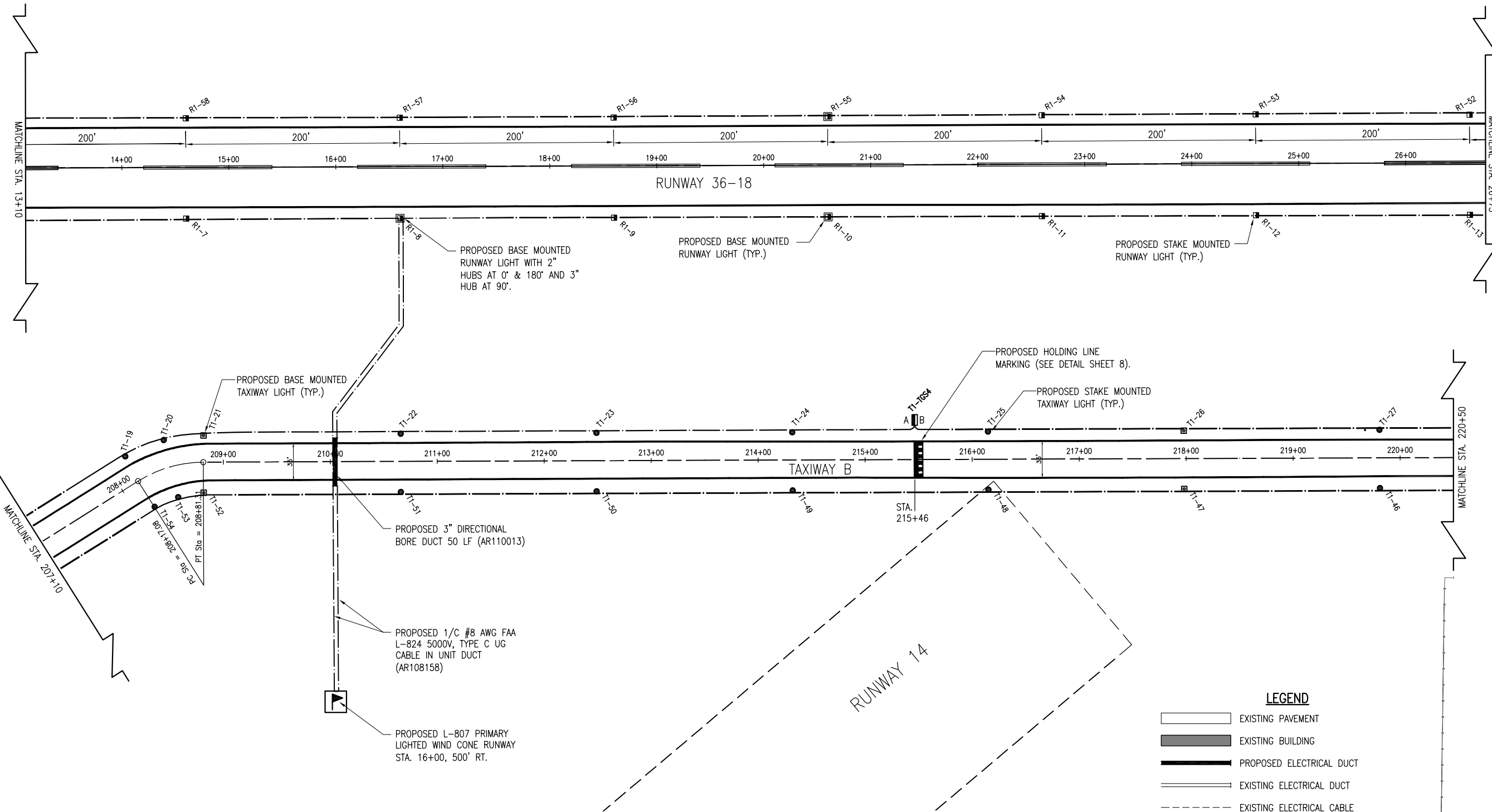
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**CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS**

**PROPOSED ELECTRICAL PLAN  
STA. 5+00 TO STA. 13+10**

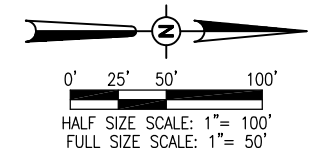
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**LEGEND**

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED STAKE MOUNTED TAXIWAY LIGHT
- PROPOSED BASE MOUNTED TAXIWAY LIGHT
- PROPOSED STAKE MOUNTED RUNWAY LIGHT
- PROPOSED BASE MOUNTED RUNWAY LIGHT
- PROPOSED STAKE MOUNTED THRESHOLD LIGHT
- PROPOSED BASE MOUNTED THRESHOLD LIGHT
- PROPOSED TAXI GUIDANCE SIGN



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REVISION	DATE	UPDATE PER	IDA REVIEW
	03/09/12		

**SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS**

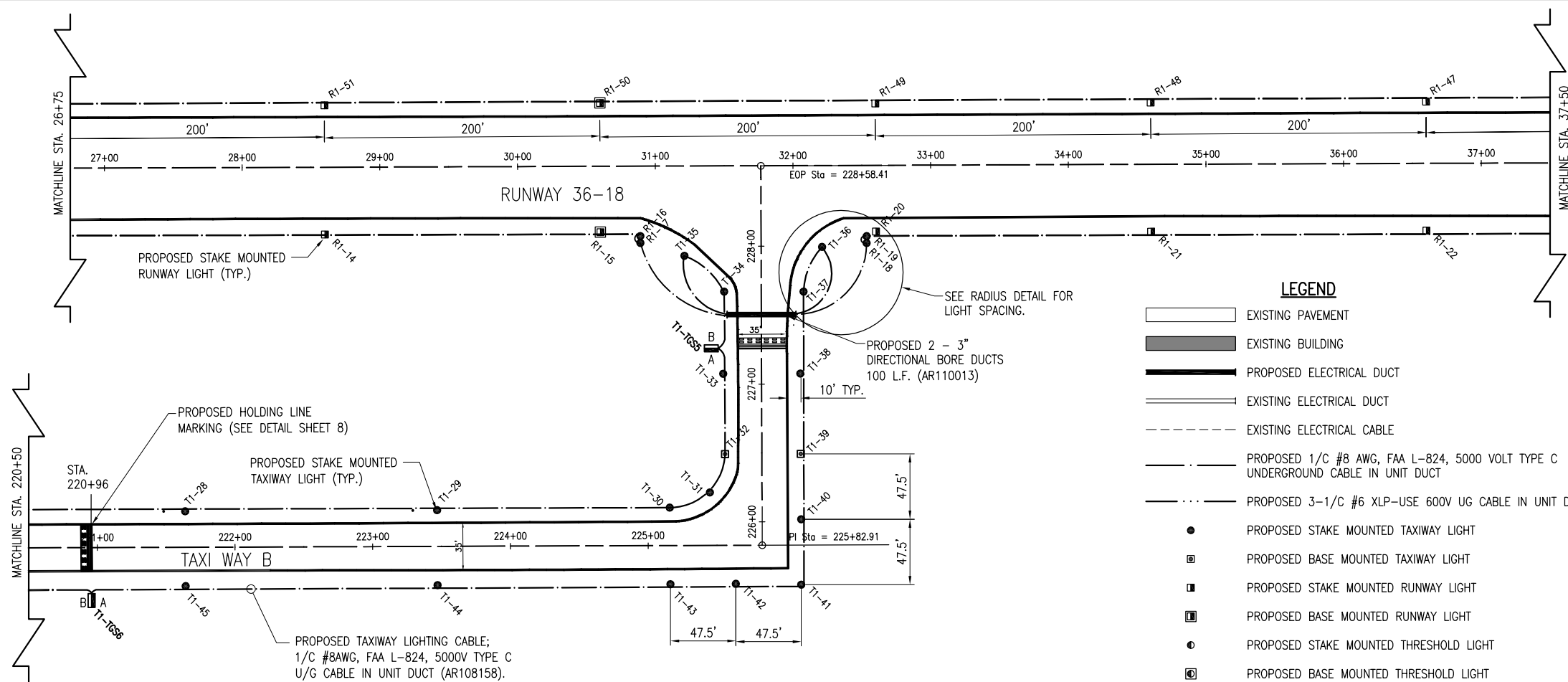
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IL PROJ.: 2H0-4149

Hanson Proj. No. 10A0047			
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Scale 02/18/12			
LAYOUT KNL 02/06/12			
DRAWN CWS 02/07/12			
REVIEWED CAH/KNL 02/23/12			

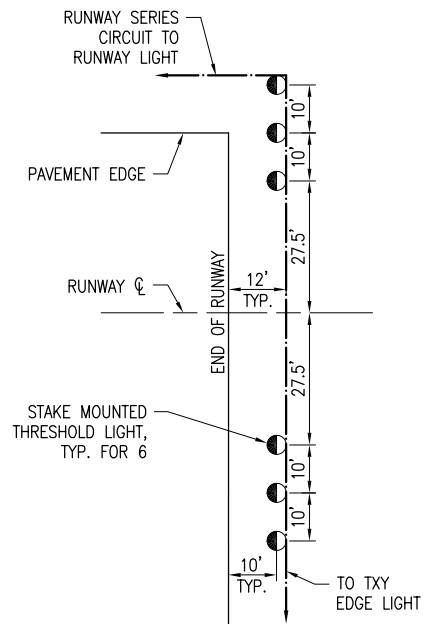
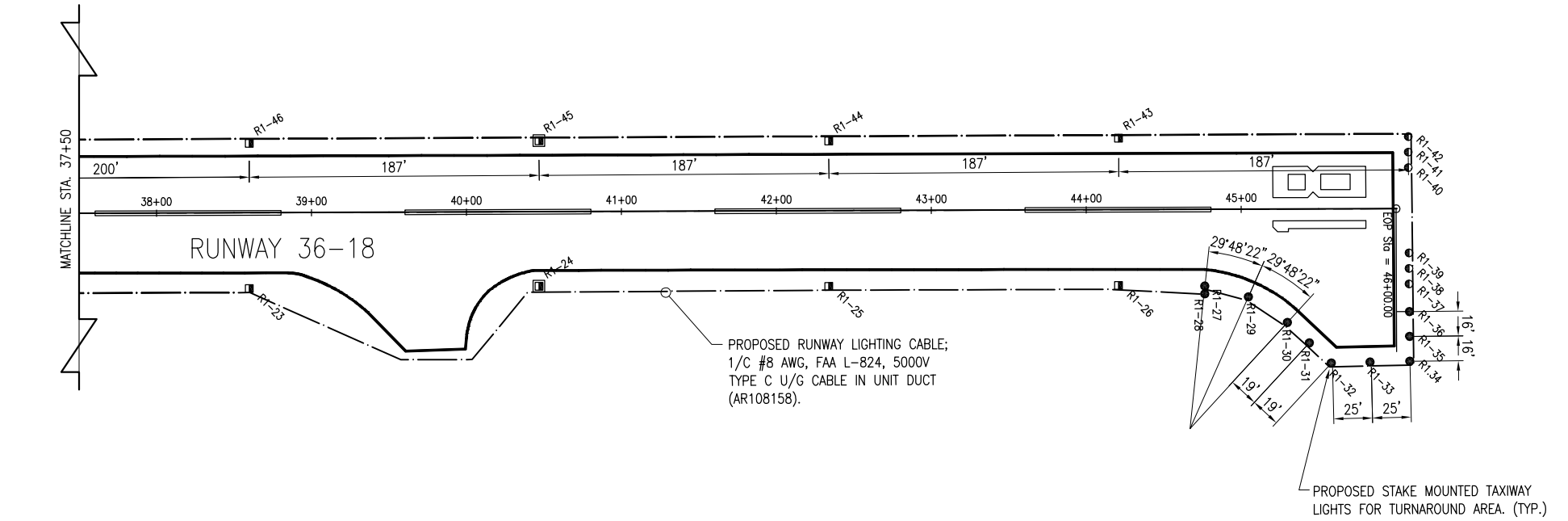
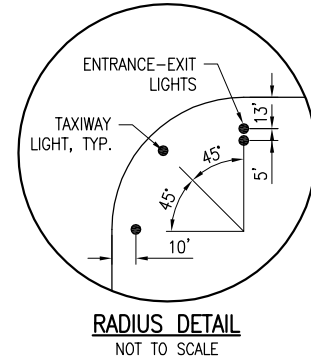
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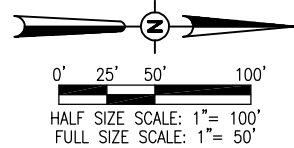
**PROPOSED ELECTRICAL PLAN  
STA. 13+10 TO STA. 26+75**



- LEGEND**
- EXISTING PAVEMENT
  - EXISTING BUILDING
  - PROPOSED ELECTRICAL DUCT
  - EXISTING ELECTRICAL DUCT
  - EXISTING ELECTRICAL CABLE
  - PROPOSED 1/2" #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
  - PROPOSED 3-1/2" #6 XLP-USE 600V UG CABLE IN UNIT DUCT
  - PROPOSED STAKE MOUNTED TAXIWAY LIGHT
  - PROPOSED BASE MOUNTED TAXIWAY LIGHT
  - PROPOSED STAKE MOUNTED RUNWAY LIGHT
  - PROPOSED BASE MOUNTED RUNWAY LIGHT
  - PROPOSED STAKE MOUNTED THRESHOLD LIGHT
  - PROPOSED BASE MOUNTED THRESHOLD LIGHT
  - PROPOSED TAXI GUIDANCE SIGN



**PROPOSED RUNWAY END 18 THRESHOLD LIGHT DETAIL**  
NOT TO SCALE



REVISION	DATE	UPDATE PER	IDA REVIEW
03/09/12			

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

IL PROJ.: 2H0-4149 A.I.P. PROJ.: 3-17-0093-B11

Hanson Proj. No.	10A0047
Filename	AS_SHOWN
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REVIEWED	CAH/KNL 02/23/12

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PROPOSED ELECTRICAL PLAN  
STA. 26+75 TO STA. 46+00

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LIGHT LOCATIONS

Table with columns: LIGHT NUMBERS, STATION, OFFSET, LIGHT NUMBERS, STATION, OFFSET. Lists light locations for runways and taxiways.

TAXI GUIDANCE SIGN SCHEDULE

Table with columns: SIGN NUMBERS, LOCATION, SIDE A, SIDE B. Lists sign schedules for various taxiway intersections.

TAXI GUIDANCE SIGN LEGEND

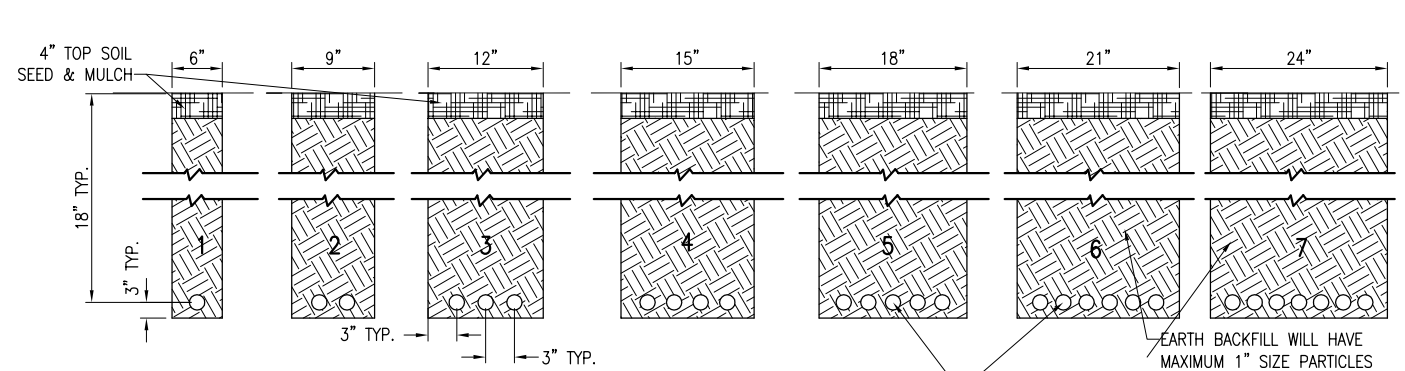
- Legend items: B (Type L-858L location sign), 18-36 (Type L-858R mandatory instruction sign), ← RAMP (Type L-858Y direction sign), BLANK (Blank sign).

TAXI GUIDANCE SIGN NOTES

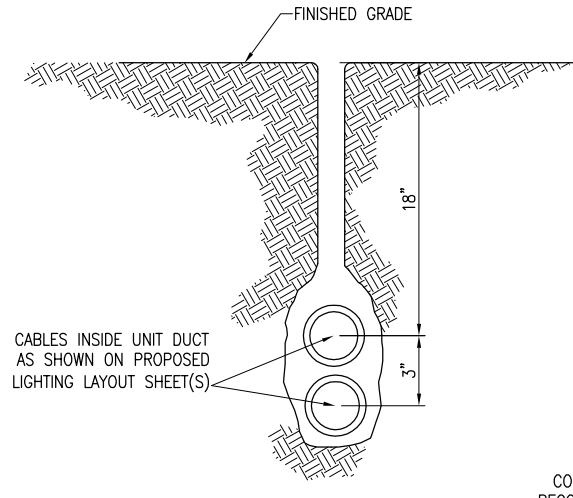
1. THE PROPOSED TAXI GUIDANCE SIGNS SHALL CONFORM TO ADVISORY CIRCULAR 150/5345 44J (OR LATEST ISSUE IN FORCE) AND BE FAA-APPROVED FOR TYPE L-858Y DIRECTION, DESTINATION, AND BOUNDARY SIGNS...

Project information sidebar including: SHELVY COUNTY AIRPORT SHELBYVILLE, ILLINOIS, project number 3-17-0093-B11, revision table, drawing title CONSTRUCT VAULT, LIGHT TAXIWAY & INSTALL NAVAIDS, and sheet number 13 of 39 sheets.

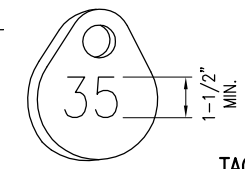




**NOTES:**  
 DETAIL NUMBERS INDICATE NO. OF CABLES.  
 TRENCHES WITH MORE THAN SEVEN CABLES SHALL BE INCREASED 3" IN WIDTH FOR EACH ADDITIONAL CABLE; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.  
 DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
 ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.

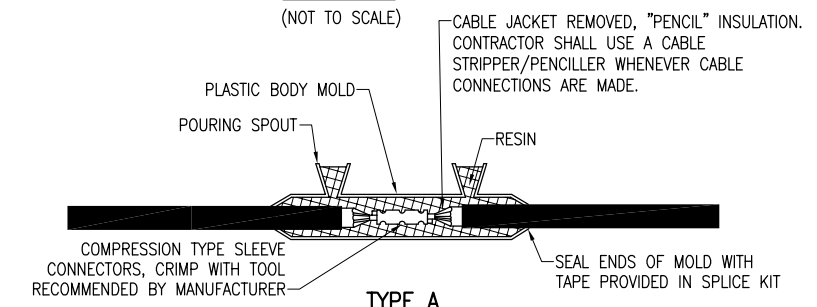


**PLOWED CABLE**  
(NOT TO SCALE)



**TAG DETAIL**  
(NOT TO SCALE)

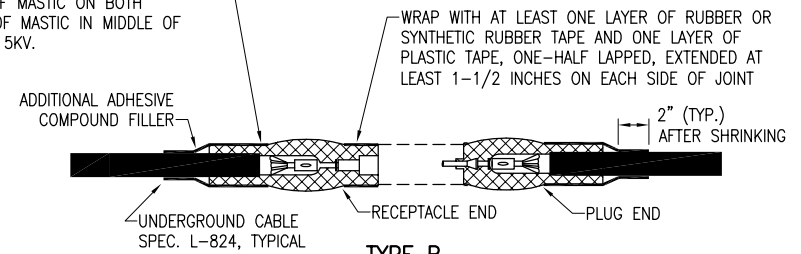
**NOTE:**  
 AFFIX NON-CORROSIVE TAG TO FIXTURE FACING RUNWAY WITH SET SCREW, WIRE TIE, OR METAL BAND. NUMERALS SHALL BE ENGRAVED FOR PERMANENT READABILITY.



**TYPE A**

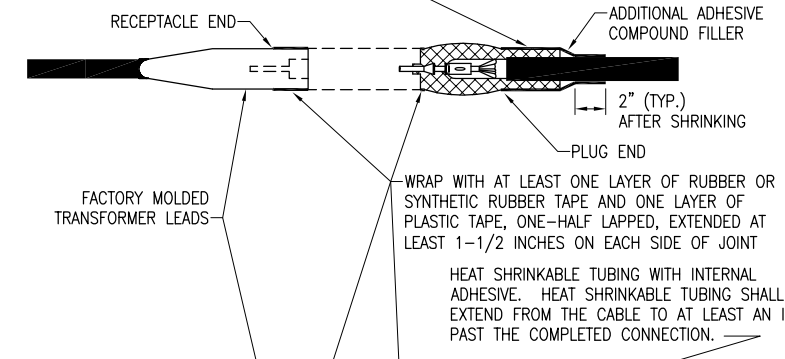
CONTINUOUS HEAT SHRINK TUBING PLACED OVER THE ENTIRE L-823 CONNECTOR(S) BOTH MALE AND FEMALE AT ALL 5KV JUNCTIONS. THE HEAT SHRINK TUBING SHALL BE APPROXIMATELY 18" IN LENGTH WITH 6 INCHES OF MASTIC ON BOTH ENDS AND VOID OF MASTIC IN MIDDLE OF TUBE RATED FOR 5KV.

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



**TYPE B**

FOR SPLICES AT JUNCTION OF HOMERUN WITH LOOP CIRCUIT AND FOR SPLICES IN HOMERUNS TO EXISTING CABLES  
 HEAT SHRINKABLE TUBING WITH INTERNAL ADHESIVE. HEAT SHRINKABLE TUBING SHALL EXTEND FROM THE CABLE TO AT LEAST AN INCH PAST THE COMPLETED CONNECTION.

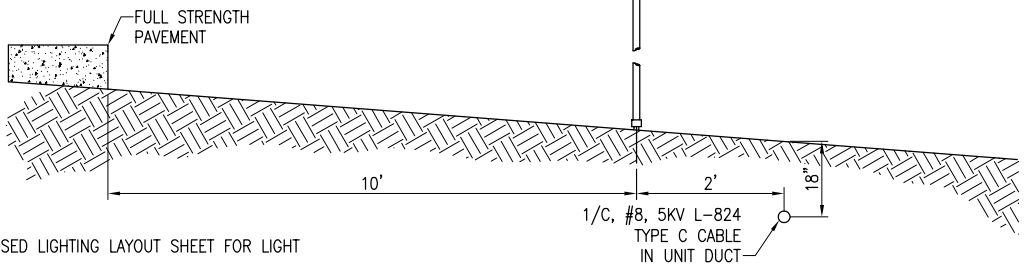


**TYPE C**

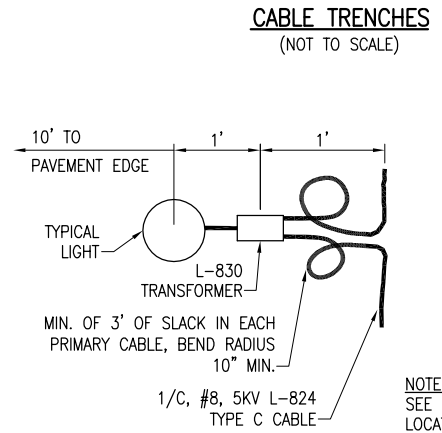
FOR SPLICES AT RUNWAY AND TAXIWAY LIGHTS  
 NOTES:  
 SEE PROPOSED LIGHTING LAYOUT SHEET(S) FOR SPLICE TYPE.  
 INSIDE DIAMETER OF CONNECTOR SHALL PROPERLY MATCH THE OUTSIDE DIAMETER OF CABLE.

**CABLE SPLICES**  
(NOT TO SCALE)

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

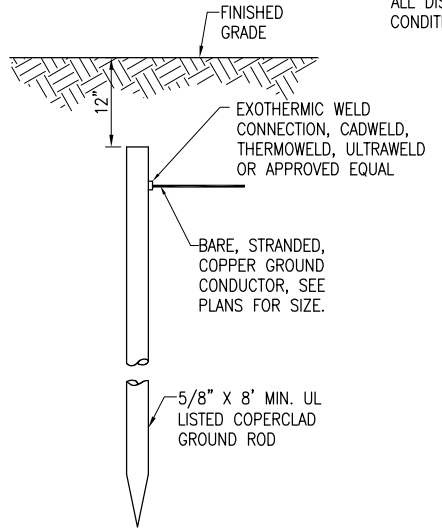


**PROFILE VIEW**



**PLAN VIEW**

**LIGHT AND CABLE INSTALLATION DETAIL**  
(NOT TO SCALE)



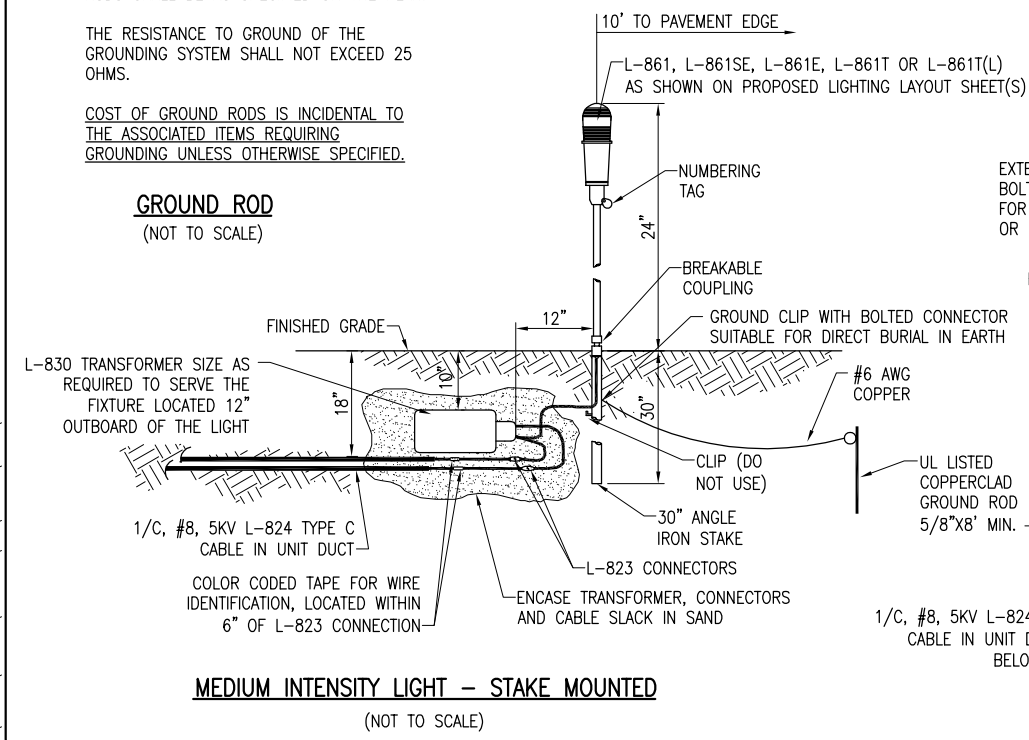
**CABLE TRENCHES**  
(NOT TO SCALE)

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

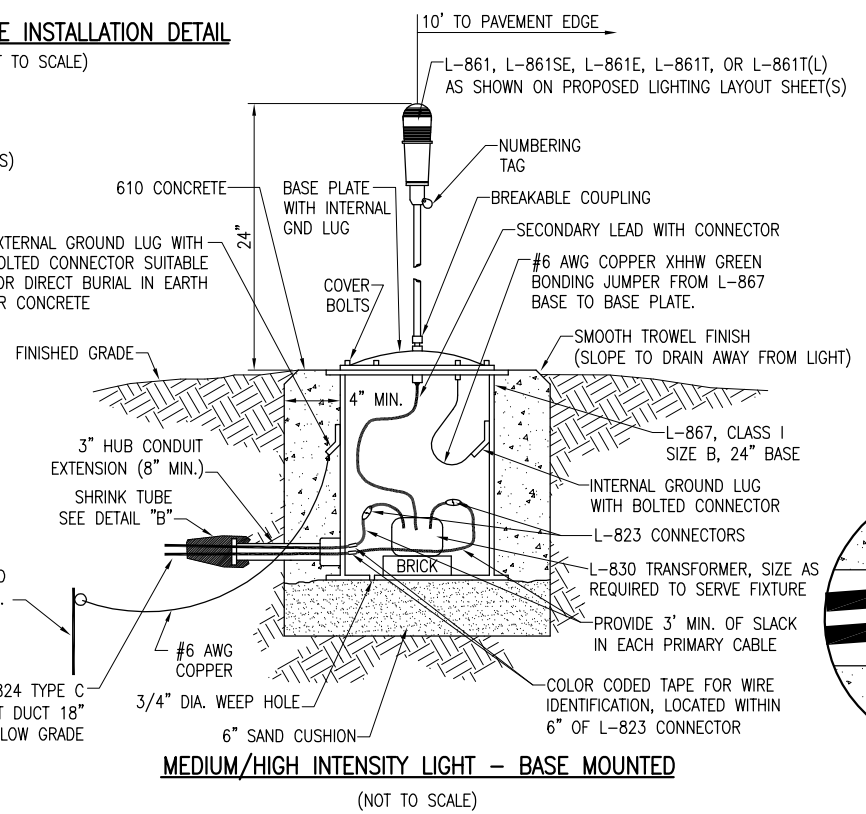
THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.

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

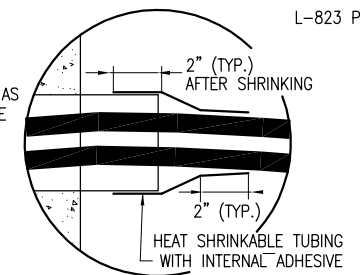
**GROUND ROD**  
(NOT TO SCALE)



**MEDIUM INTENSITY LIGHT - STAKE MOUNTED**  
(NOT TO SCALE)



**MEDIUM/HIGH INTENSITY LIGHT - BASE MOUNTED**  
(NOT TO SCALE)



**DETAIL "B"**  
(NOT TO SCALE)

REVISION	DATE	UPDATE PER	FAA PGL 12-2 & EB67D

SHELBY COUNTY AIRPORT  
 SHELBYVILLE, ILLINOIS  
 A.I.P. PROJ.: 3-17-0093-B11  
 ILL. PROJ.: 2HO-4149

Hanson Proj. No.	10A00047
Filename	NOT TO SCALE
Scale	02/18/12
Date	
LAYOUT	KNL 12/09/11
DRAWN	CWS 01/18/12
REVIEWED	KNL/CAH 02/23/12

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CONSTRUCT VAULT,  
 LIGHT TAXIWAY &  
 INSTALL NAVAIDS  
 ELECTRICAL DETAILS  
 SHEET 1

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REVISION	DATE

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

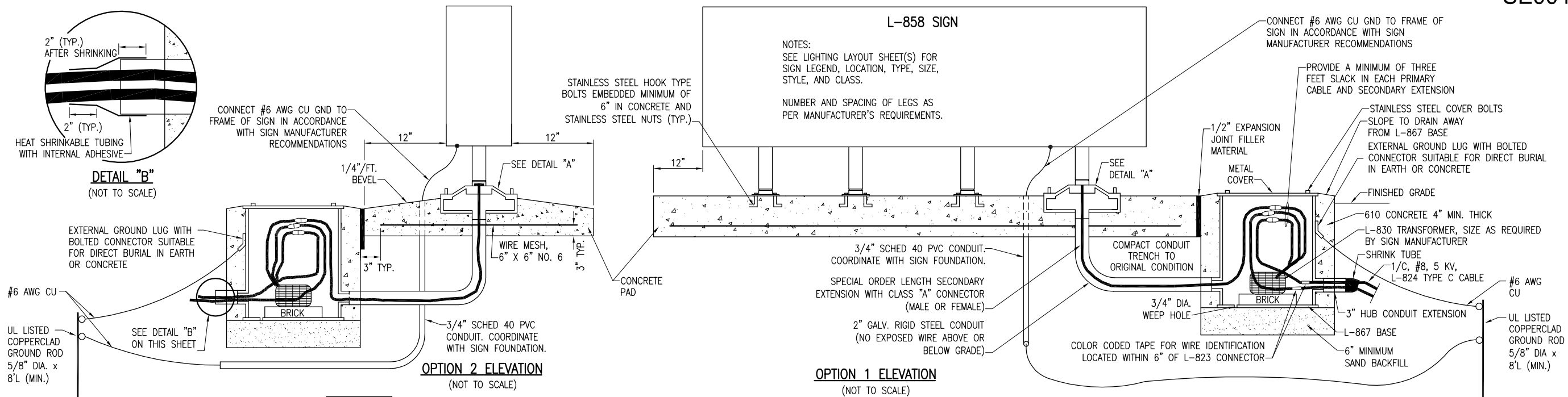
IL PROJ.: 2HO-4149  
A.I.P. PROJ.: 3-17-0093-B11

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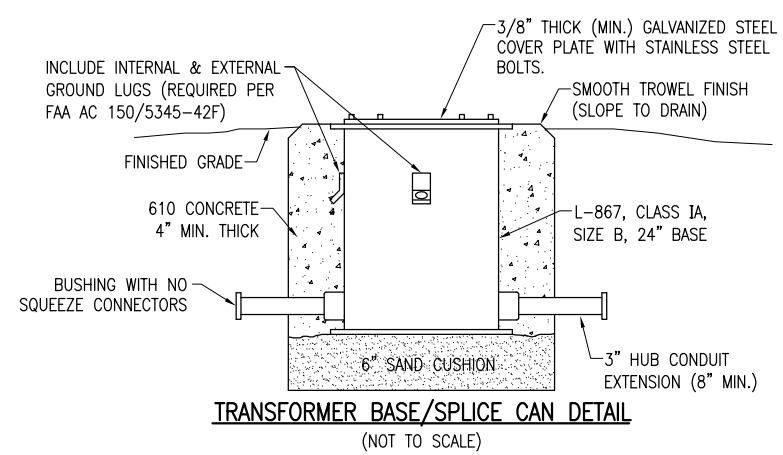
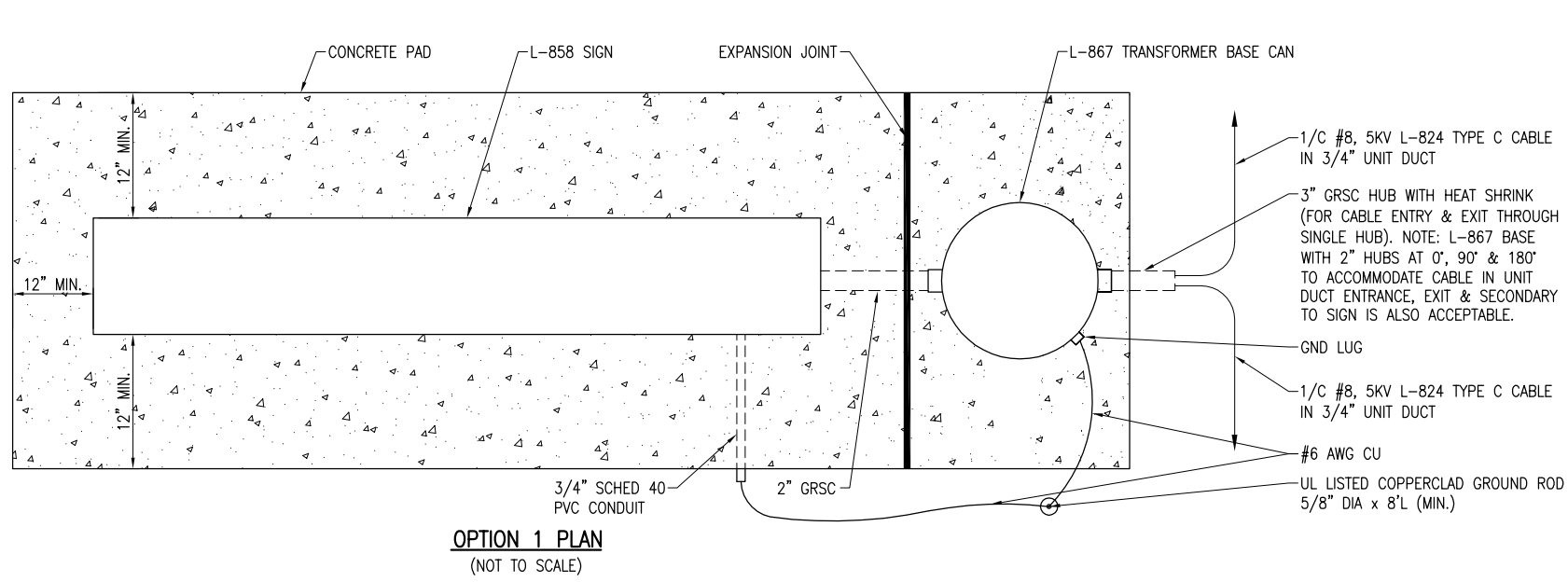
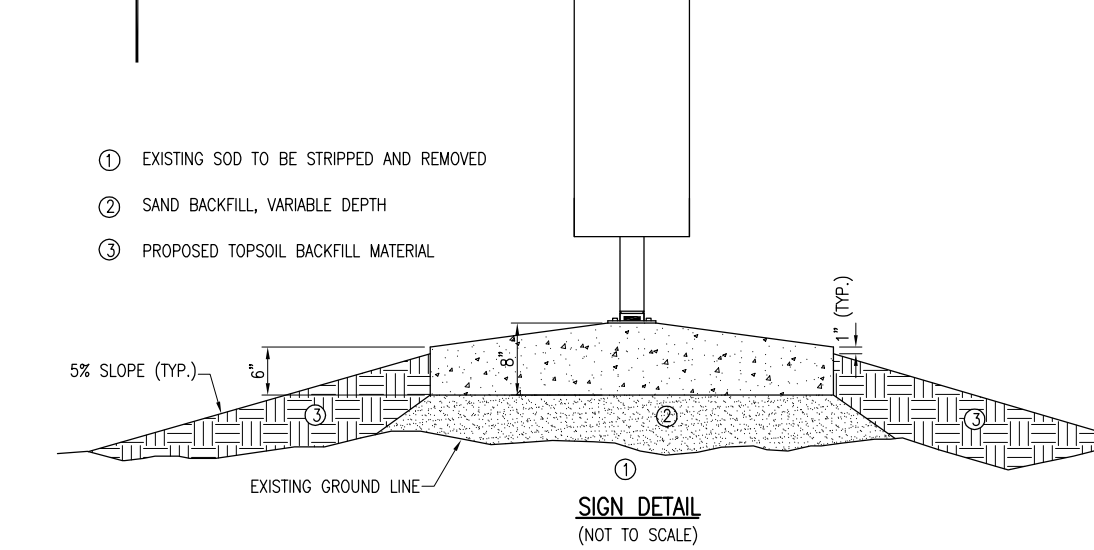
ELECTRICAL DETAILS  
SHEET 3



**GENERAL NOTES:**

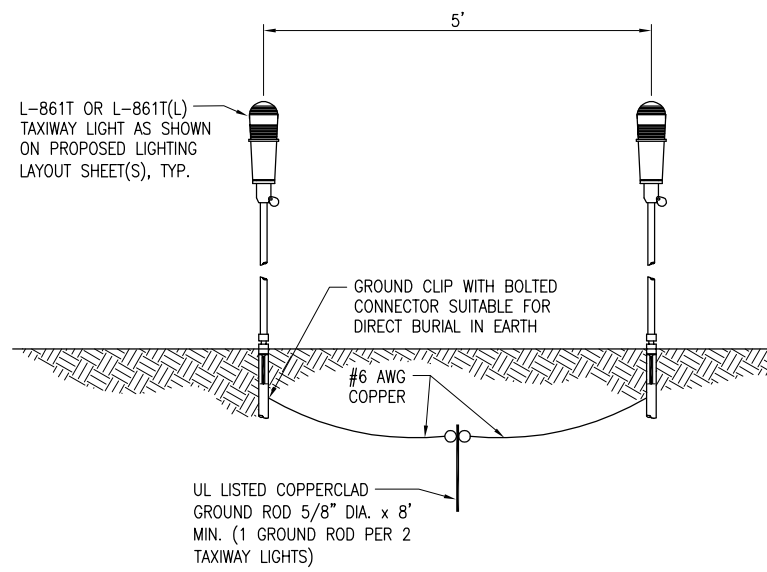
- SEE LIGHTING LAYOUT SHEET FOR SIGN LEGEND, LOCATION, TYPE, SIZE, STYLE, AND CLASS.
- SEE ELECTRICAL NOTES SHEETS.

PER FAA AC 150/5340-30F DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, A LIGHT BASE GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH STAKE MOUNTED LIGHT AND EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. THE LIGHT BASE GROUND SHALL BE A #6 AWG BARE COPPER CONDUCTOR CONNECTED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 3/8-INCH DIAMETER BY 8-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD. ALSO BOND THE SIGN FRAME TO THE GROUND ROD WITH A #6 AWG BARE COPPER CONDUCTOR.

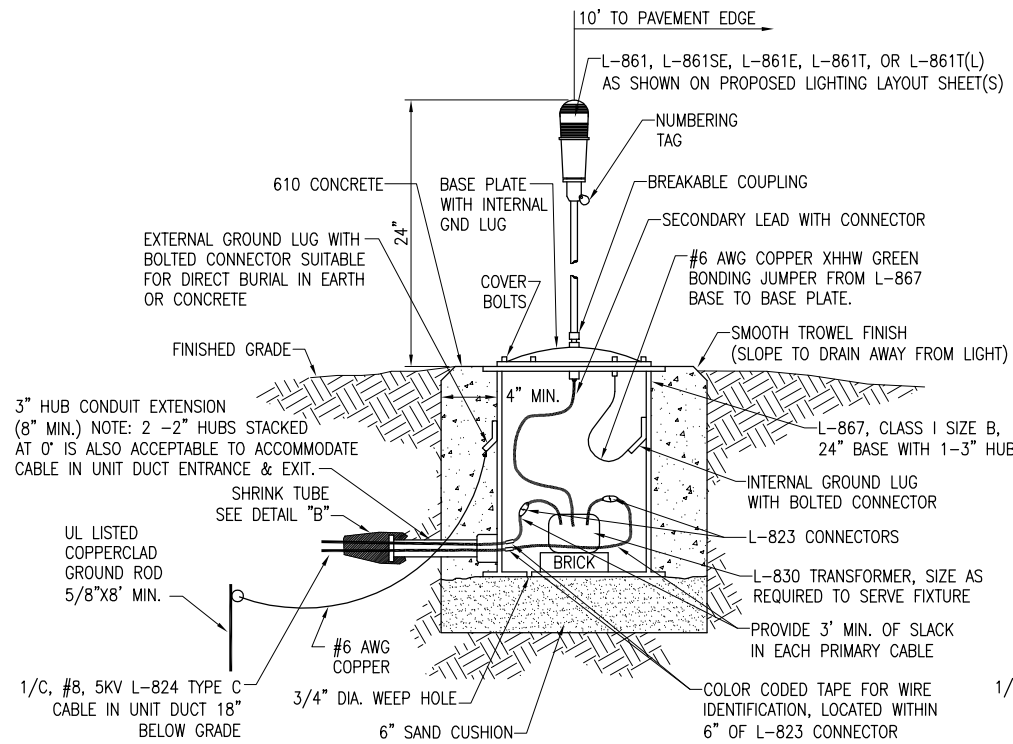


**NOTE:**  
FOR THE PURPOSE OF ENHANCING SAFETY, EACH BASE MUST HAVE INSTALLED, BY THE MANUFACTURER, AN INTERNAL AND EXTERNAL GROUND STRAP THAT IS AVAILABLE FOR THE PURPOSE OF ATTACHING A GROUND LUG THAT IS CONNECTED TO AN EARTH GROUND OR A SAFETY GROUND CONDUCTOR INSTALLED WITH THE RESPECTIVE CIRCUIT.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

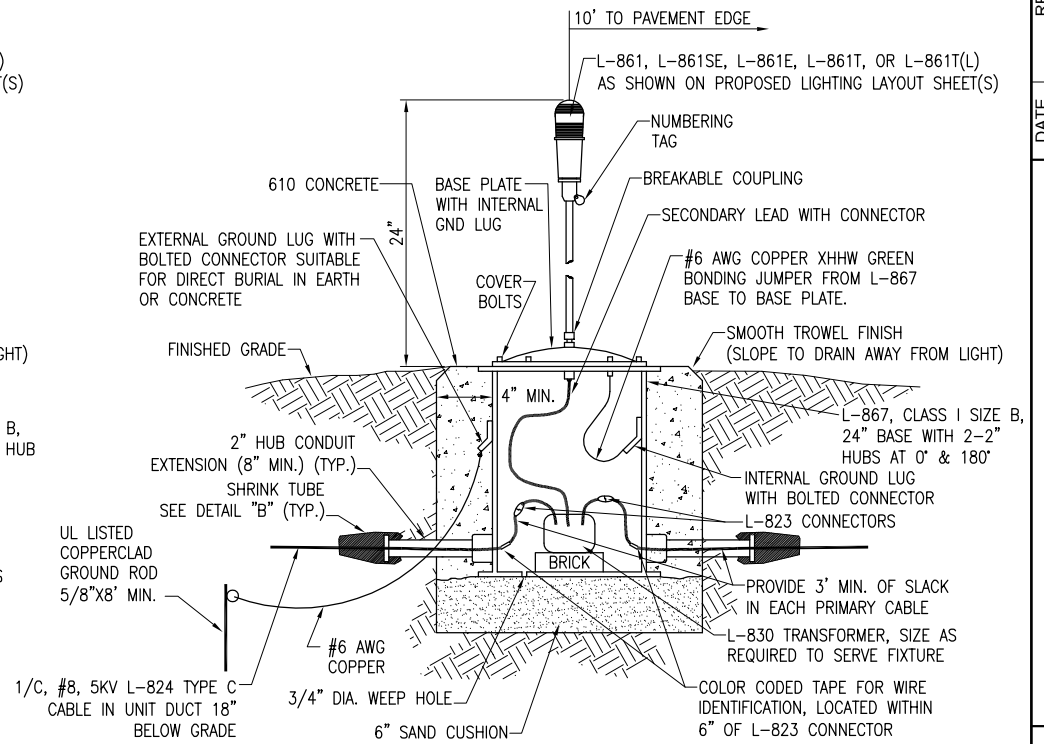




**GROUNDING DETAIL FOR ADJACENT TAXIWAY LIGHTS**  
(NOT TO SCALE)



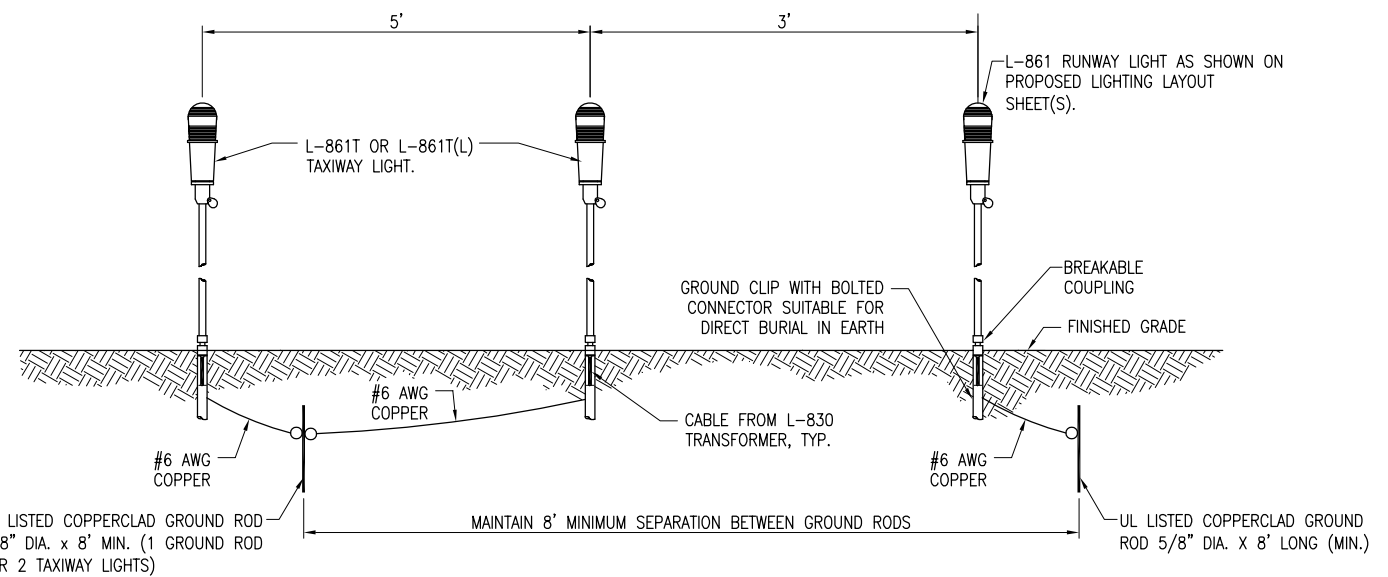
**MEDIUM/HIGH INTENSITY LIGHT - BASE MOUNTED OPTION 1**  
(NOT TO SCALE)



**MEDIUM/HIGH INTENSITY LIGHT - BASE MOUNTED OPTION 2**  
(NOT TO SCALE)

**NOTES**

- 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 150/5340-30F DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, CHAPTER 12, PART 12.6; A GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. THE PURPOSE OF THE LIGHT BASE GROUND IS TO PROVIDE A DEGREE OF PROTECTION FOR MAINTENANCE PERSONNEL FROM POSSIBLE CONTACT WITH AN ENERGIZED LIGHT BASE OR MOUNTING STAKE THAT MAY RESULT FROM A SHORTED POWER CABLE OR ISOLATION TRANSFORMER. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. A LIGHT BASE GROUND SHALL ALSO BE INSTALLED AT EACH STAKE MOUNTED LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AND CONNECTED TO THE METAL FRAME OF EACH TAXI GUIDANCE SIGN AS DETAILED ON THE PLANS AND IN ACCORDANCE WITH THE RESPECTIVE TAXI GUIDANCE SIGN MANUFACTURER RECOMMENDATIONS. THE LIGHT BASE GROUND SHALL BE A #6 AWG BARE COPPER CONDUCTOR BONDED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 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
- FOR BASE MOUNTED LIGHT FIXTURES THE LIGHT FIXTURE MUST BE BONDED TO THE LIGHT BASE INTERNAL GROUND LUG VIA A #6 AWG STRANDED COPPER WIRE RATED FOR 600 VOLTS WITH GREEN XHHW OR USE INSULATION. THE GROUND WIRE LENGTH MUST BE SUFFICIENT TO ALLOW THE REMOVAL OF THE LIGHT FIXTURE FROM THE LIGHT BASE FOR ROUTINE MAINTENANCE. SEE THE LIGHT FIXTURE MANUFACTURER'S INSTRUCTIONS FOR PROPER METHODS OF ATTACHING A BONDING WIRE.
- FOR TAXIWAY LIGHTS THAT ARE SPACED WITH LESS THAN 10 FEET OF SEPARATION BETWEEN THEM PROVIDE ONE 5/8-INCH DIAMETER BY 8-FOOT LONG GROUND ROD PER TWO ADJACENT TAXIWAY LIGHTS.
- STEEL USED TO MANUFACTURE GROUND RODS SHALL BE 100% DOMESTIC STEEL.



**GROUNDING DETAIL FOR ADJACENT RUNWAY AND TAXIWAY LIGHTS**  
(NOT TO SCALE)

REVISION	DATE	UPDATE PER	FAA PGL 12-2 & EB67D

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS  
A.I.P. PROJ.: 3-17-0093-B11  
ILL. PROJ.: 2H0-4149

Hanson Proj. No.	10A00047
Filename	NOT TO SCALE
Scale	02/18/12
Date	02/17/12
LAYOUT	KNL
DRAWN	CWS
REVIEWED	CAH/KNL
	02/23/12

**HANSON**  
Professional Services Inc. 2012  
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Ph: (217) 788-2450 Fax: (217) 788-2503  
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Offices Nationwide

CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS  
ELECTRICAL DETAILS  
SHEET 4

MAR 09, 2012 1:49 PM KINC00394  
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REVISION  
DATE 3/8/12 UPDATED PER IDA REVIEW

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

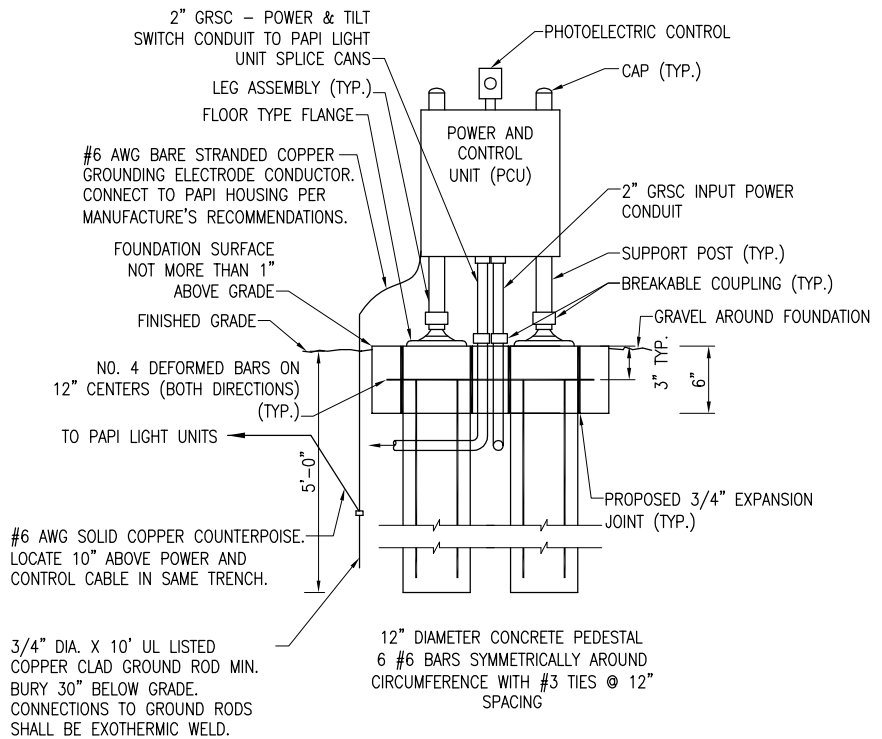
A.I.P. PROJ.: 3-17-0093-B11

Hanson Proj. No. 10A00047  
Filename AS SHOWN  
Scale 02/18/12  
Date 02/02/12  
LAYOUT CAH  
DRAWN CWS  
REVIEWED KNL/CAH 02/23/12

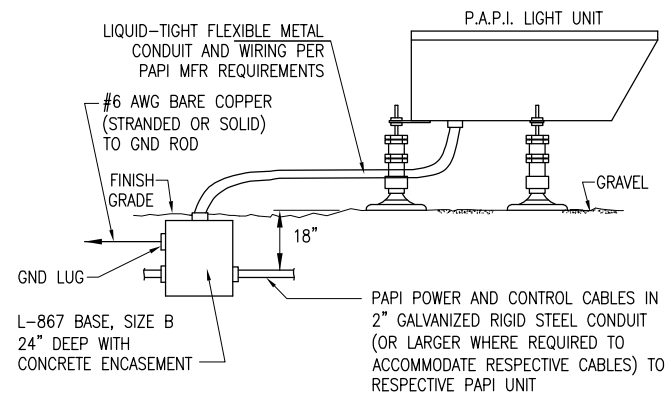
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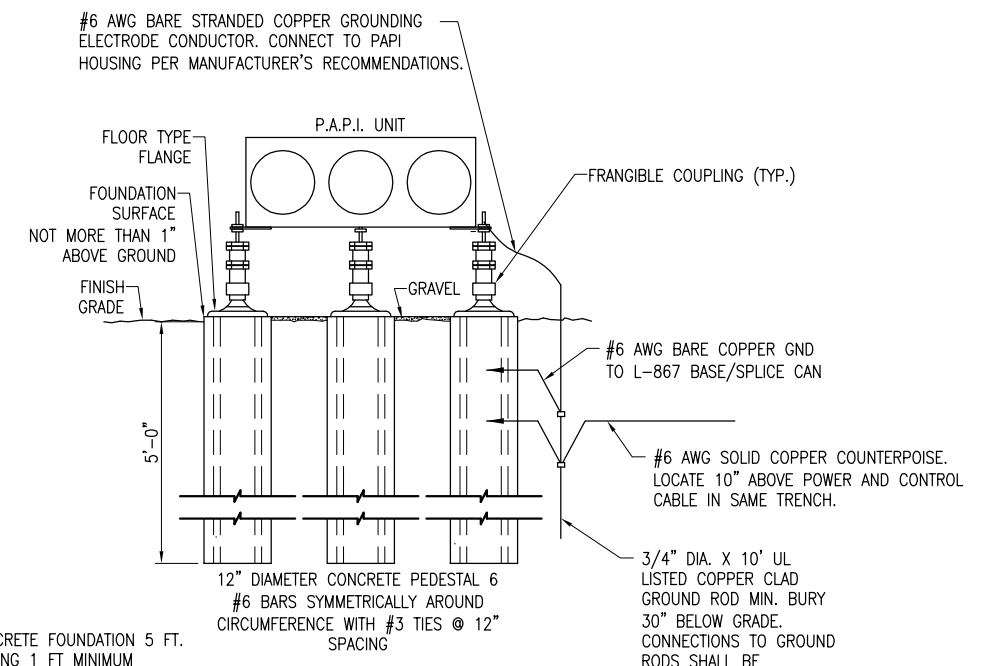
PROPOSED PAPI DETAILS AND  
NOTES RUNWAY 36



**FRONT ELEVATION  
POWER AND CONTROL UNIT**  
"NOT TO SCALE"



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

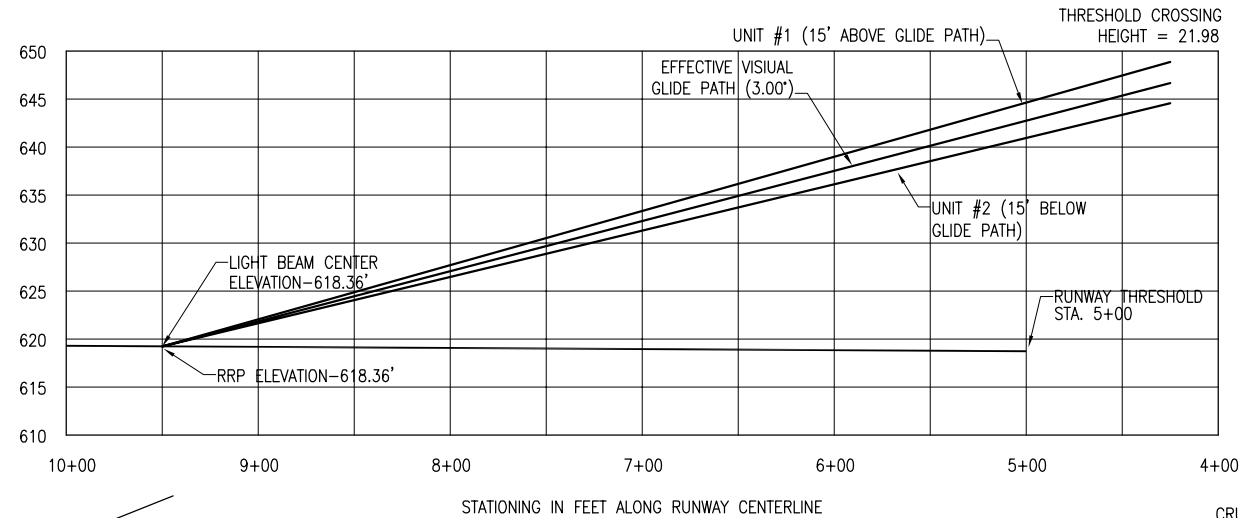


**FRONT ELEVATION  
P.A.P.I. LIGHT UNIT**  
"NOT TO SCALE"

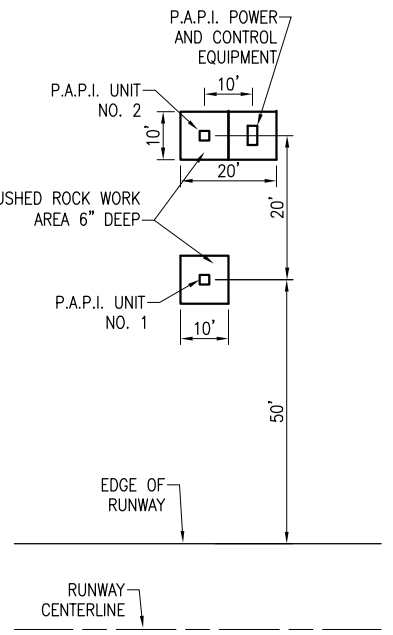
NOTE: A CONCRETE FOUNDATION 5 FT. DEEP EXTENDING 1 FT. MINIMUM AROUND THE LIGHT BOX IS AN ACCEPTABLE ALTERNATIVE TO 3 OR 4 PIERS.

**P.A.P.I. NOTES**

1. THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON THE PROPOSED ELECTRICAL PLANS.
2. THE PROPOSED CONCRETE PEDESTALS WILL BE AS DETAILED ON THIS SHEET AND/OR IN CONFORMANCE WITH THE PAPI MANUFACTURER'S DIRECTIONS, 5 FEET MIN. BELOW FINISHED GRADE. THE NUMBER OF PEDESTALS CONSTRUCTED FOR EACH PAPI UNIT WILL DEPEND ON THE UNIT SELECTED BY THE CONTRACTOR FOR INSTALLATION.
3. SIX (6") INCHES OF GRAVEL ON TOP OF BLACK PLASTIC WILL BE PLACED UNDER EACH PAPI UNIT TO HALT VEGETATION GROWTH.
4. EACH PAPI UNIT WILL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 618.36'.
5. THE PROPOSED POWER CABLE TO THE PAPI SYSTEM WILL BE 3-1/2" NO. 6, 600V., TYPE XLP-USE UNDERGROUND CABLE IN 1.25" UNIT DUCT. THIS CABLE WILL BE TRENCHED IN PLACE AT A MINIMUM DEPTH OF 18" BELOW FINISH GRADE.
6. THE PAPI INSTALLATION WILL BE PAID FOR UNDER ITEM: AR125620 ABBREVIATED PAPI (L-881 SYSTEM) PER EACH.
7. THE POWER CABLE WILL BE PAID FOR UNDER ITEM: AR108656 3/C #6 600V UG. CABLE IN UD PER LIN. FT.

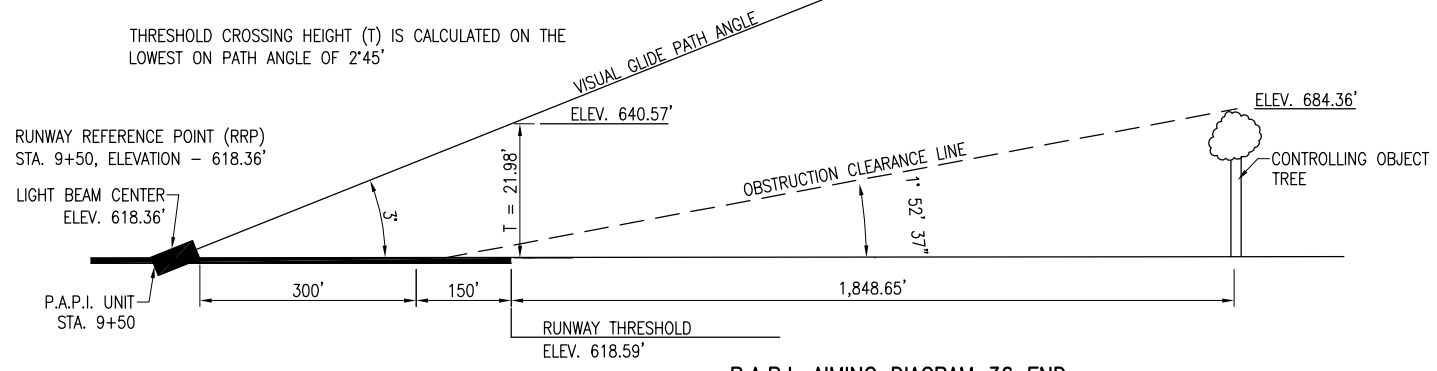


**RUNWAY CENTERLINE PROFILE**



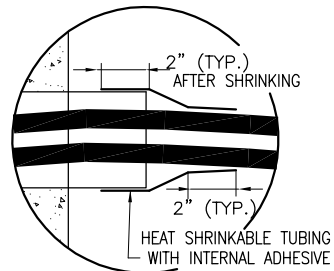
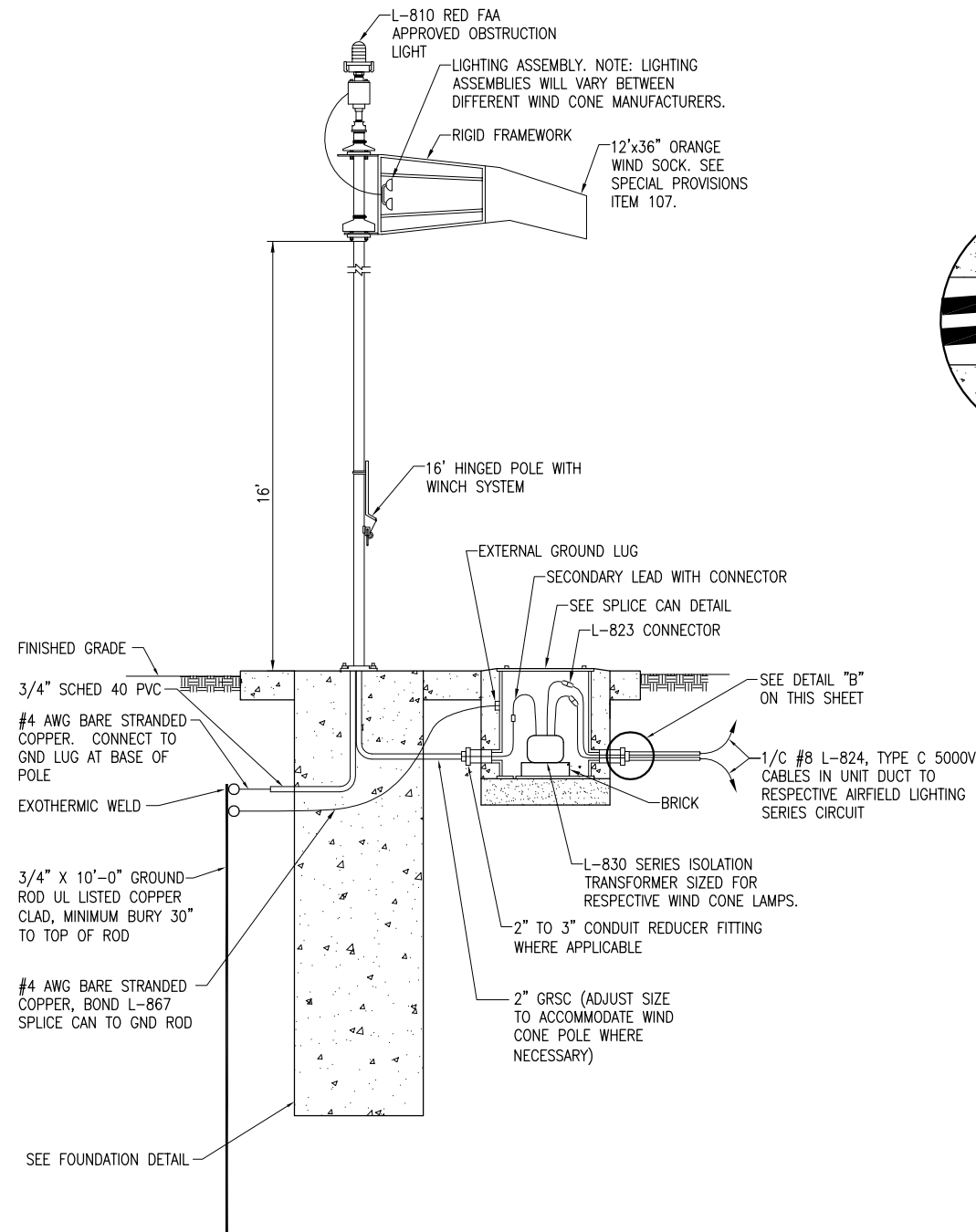
**P.A.P.I. LAYOUT DETAIL**  
"NOT TO SCALE"

PAPI DATA-RUNWAY END 36			
	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P AND C UNIT
DISTANCE FROM RUNWAY CL	87.5'	107.5'	107.5'
AIMING ANGLE	3°15'	2°45'	N/A
APPROXIMATE GROUND ELEVATION	616.4'	616.0'	616.0'
P.A.P.I. UNIT APERTURE ELEVATION	618.36'	618.36'	N/A

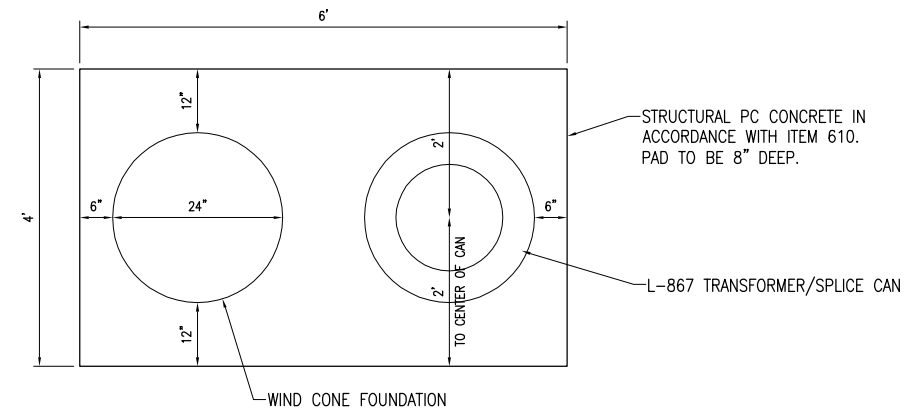


**P.A.P.I. AIMING DIAGRAM 36 END**  
"NOT TO SCALE"

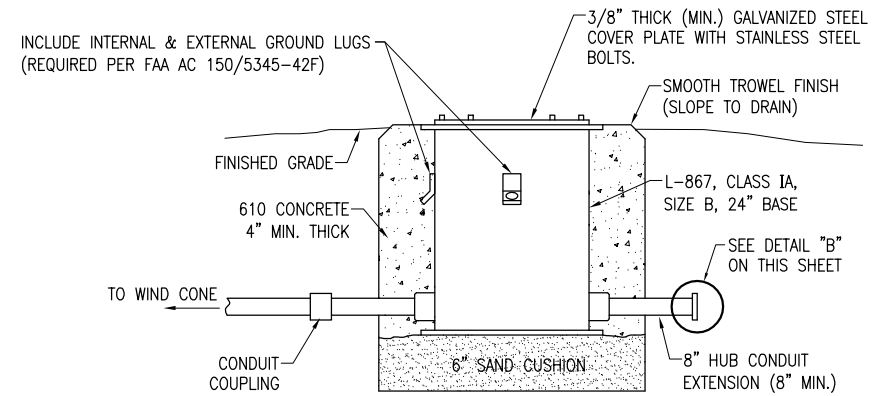
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**DETAIL "B"**  
(NOT TO SCALE)

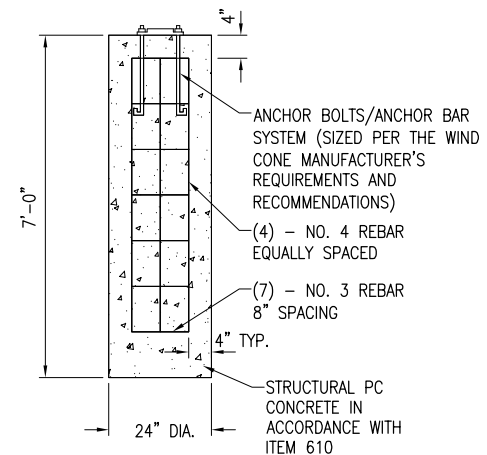


**CONCRETE PAD PLAN VIEW**  
(NOT TO SCALE)



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

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



**FOUNDATION DETAIL**  
"NOT TO SCALE"

**NOTES**

1. WIND CONE SHALL INCLUDE CONSTANT-BRIGHTNESS SERIES CIRCUIT POWER ADAPTER.
2. THE RUNWAY 18-36 LIGHTING SERIES CIRCUIT IS POWERED BY AN L-828 CLASS 1 - 6.6 AMP OUTPUT CURRENT, STYLE 1-3 BRIGHTNESS STEPS CONSTANT CURRENT REGULATOR. COORDINATE WITH THE RESPECTIVE WIND CONE MANUFACTURER TO PROVIDE A COMPATIBLE AND PROPERLY SIZED SERIES ISOLATION TRANSFORMER.
3. THE EXISTING CONSTANT CURRENT REGULATOR POWERING THE SERIES CIRCUIT FOR THE WIND CONE HAS BEEN SIZED FOR THE RESPECTIVE RUNWAY LIGHTING LOADS AND A WIND CONE THAT HAS A LOAD OF LESS THAN 200VA AND DOES NOT REQUIRE A SERIES ISOLATION TRANSFORMER LARGER THAN A 300 WATT RATING. IN THE EVENT THAT A WIND CONE IS PROPOSED THAT EXCEEDS THIS RATING, THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT THE RESPECTIVE CONSTANT CURRENT REGULATOR IS PROPERLY SIZED FOR THE TOTAL SERIES CIRCUIT LOAD. WHERE A WIND CONE IS PROPOSED THAT REQUIRES LOADS THAT EXCEED THE RATING OF THE EXISTING CONSTANT CURRENT REGULATOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADJUSTMENTS INCLUDING PROVIDING A LARGER CONSTANT CURRENT REGULATOR AND ALL ASSOCIATED CIRCUIT BREAKERS, CONDUITS, WIRING AND VAULT WORK AS APPLICABLE TO ACCOMMODATE THE RESPECTIVE SERIES CIRCUIT LOAD WITH THE WIND CONE.
4. L-807 OR L-807(L) WIND CONE WILL BE PAID FOR UNDER ITEM AR107812 L-807 WC-12' INTERNALLY LIT PER EACH. SPLICE CANS FOR WIND CONE SERIES CIRCUIT TRANSFORMER WILL BE INCIDENTAL TO THE RESPECTIVE WIND CONE PAY ITEM.
5. REBAR SHALL BE MANUFACTURED FROM 100% DOMESTIC STEEL.

**INTERNALLY LIGHTED L-807 WIND CONE**  
"NOT TO SCALE"

REVISION	DATE	DESCRIPTION
03/08/12	03/08/12	UPDATE PER FAA PGL 12-2 & EB67D

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

IL PROJ.: 2HO-4149  
A.I.P. PROJ.: 3-17-0093-B11

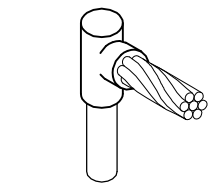
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LAYOUT	KNL	12/09/11	
DRAWN	CWS	01/18/12	
REVIEWED	KNL/CAH		

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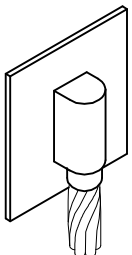
CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS

L-807 WIND CONE  
ELEVATION DETAIL

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CABLE TO GROUND ROD



CABLE TO SURFACE

DETAIL NOTES

- 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.
- VERIFY EXOTHERMIC MOLDS ARE SUITABLE FOR USE WITH THE RESPECTIVE TYPE (SOLID OR STRANDED) & SIZE CONDUCTOR.

EXOTHERMIC WELD DETAILS

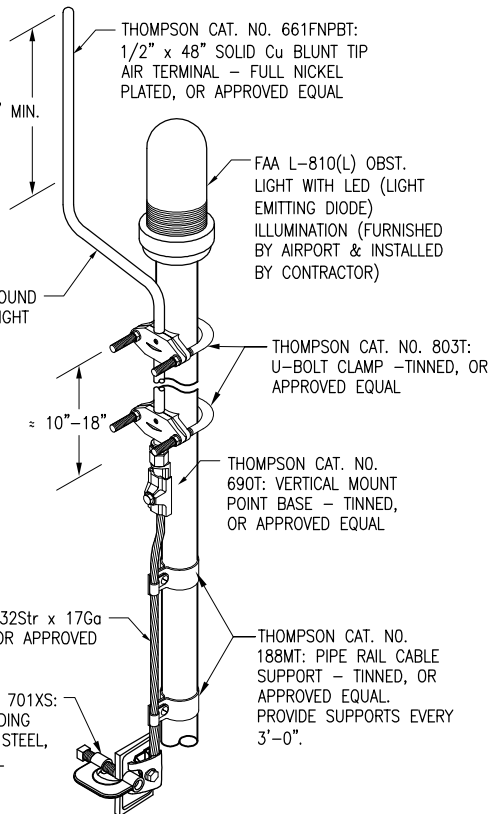
NOT TO SCALE

THOMPSON CAT. NO. 48: 32Str x 17Ga TINNED Cu CONDUCTOR, OR APPROVED EQUAL

THOMPSON CAT. NO. 701XS: C-CLAMP TYPE BONDING PLATE - STAINLESS STEEL, OR APPROVED EQUAL

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.
- CLEAN ALL CONNECTIONS TO EXPOSE BARE METAL.



DETAIL A

NOT TO SCALE

WHERE EXISTING AIR TERMINAL (LIGHTNING ROD) IS INSTALLED, IT SHALL REMAIN IN PLACE

SEE DETAIL "A"

NEW LOAD CENTER

EXISTING BASKET PLATFORM

LIQUID-TIGHT FLEXIBLE METAL CONDUIT. REPLACE EXISTING CONDUIT WITH NEW CONDUIT.

J-BOX OR CONDUIT FITTING

REFURBISHED AIRPORT ROTATING BEACON

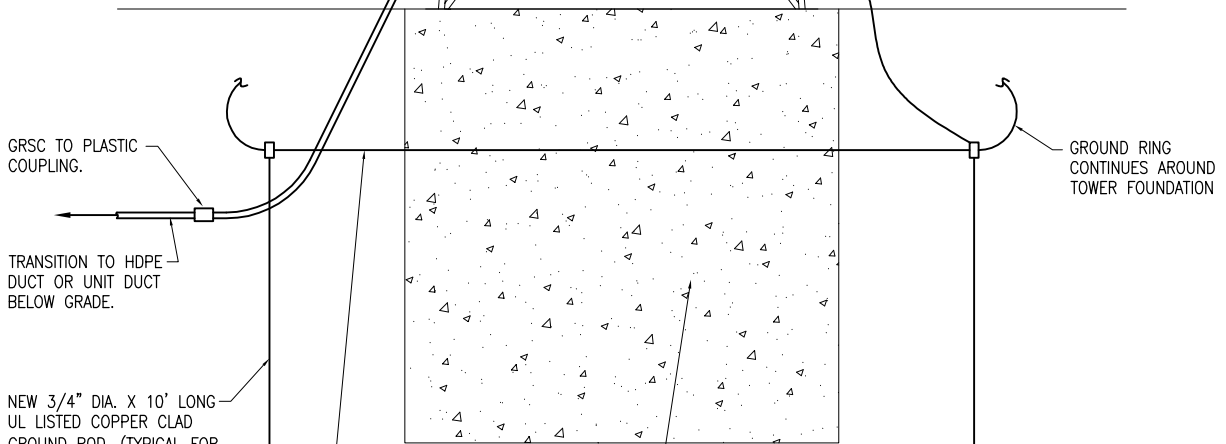
NEW FAA APPROVED L-810(L) RED COLORED OBSTRUCTION LIGHT WITH LED (LIGHT EMITTING DIODE) TYPE ILLUMINATION (FURNISHED BY AIRPORT AND INSTALLED BY CONTRACTOR) MOUNTED ON 1" GRSC, LOCATED 4" ABOVE TOP OF AIRPORT ROTATING BEACON. LOCATE OBSTRUCTION LIGHTS 180 DEGREES APART (OPPOSITE CORNERS) PER FAA AC 150/5370-10F PART XI-LIGHTING INSTALLATION, ITEM L-101 AIRPORT ROTATING BEACONS. TOP OF OBSTRUCTION LIGHTS 4" ABOVE TOP OF BEACON. (TYP. FOR 2)

COORDINATE CONDUIT MOUNTING WITH TOWER BASKET PLATFORM/RAILING AND ROUTE CONDUIT TO AVOID TRIPPING HAZARDS.

EXISTING RAILING

2#8 XLP-USE 1#8 NEUTRAL 1#8 GND IN 1.25" GRSC FROM VAULT TO BEACON LOAD CENTER.

#1/0 AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR. BOND TO TOWER FRAME AT OPPOSITE CORNERS (2 LOCATIONS) WITH EXOTHERMIC WELD



GRSC TO PLASTIC COUPLING.

TRANSITION TO HDPE DUCT OR UNIT DUCT BELOW GRADE.

NEW 3/4" DIA. X 10' LONG UL LISTED COPPER CLAD GROUND ROD. (TYPICAL FOR 4) LOCATE GROUND RODS AT EACH CORNER OF TOWER FOUNDATION. GROUND RODS SHALL NOT BE SPACED LESS THAN 10 FEET APART.

#1/0 BARE CU GROUND RING 30" MIN. BELOW GRADE.

EXISTING TOWER FOUNDATION

GROUND RING CONTINUES AROUND TOWER FOUNDATION

LIGHTNING PROTECTION DETAIL FOR AIRPORT ROTATING BEACON

NOT TO SCALE

AIRPORT ROTATING BEACON LOAD CENTER SCHEDULE

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



100 AMP, 120/240 VAC, 1 PHASE, 3 WIRE, 12 CIRCUIT LOAD CENTER WITH MAIN LUGS IN A NEMA 3R RAIN PROOF ENCLOSURE, SQUARE D CAT. NO. Q0112L125GRB WITH EQUIPMENT GROUND BAR KIT OR APPROVED EQUAL. CONFIRM LOAD CENTER IS MADE IN THE USA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT.

NOTES

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

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

IL PROJ.: 2H0-4149 A.I.P. PROJ.: 3-17-0093-B11

PROJ. NO.	DATE	SCALE	BY	CHKD
10A00047	02/18/12	NOT TO SCALE	KNL	CWS
E-507.DWG			KNL/CAH	KNL/CAH

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CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS  
AIRPORT ROTATING  
BEACON UPGRADE  
DETAILS AND NOTES



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 WHATSOEVER IN RESPECT TO ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. CONTACT J.U.L.I.E. FOR UTILITY INFORMATION AT 1-800-892-0123. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVEGROUND UTILITIES.
32. WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.

GROUNDING NOTES FOR AIRFIELD LIGHTING

- 1. GROUNDING FOR RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS SHALL BE AS DETAILED ON THE PLANS AND AS SPECIFIED HEREIN. PER FAA AC 150/5340-30F DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, CHAPTER 12, PART 12.6; A GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. THE PURPOSE OF THE LIGHT BASE GROUND IS TO PROVIDE A DEGREE OF PROTECTION FOR MAINTENANCE PERSONNEL FROM POSSIBLE CONTACT WITH AN ENERGIZED LIGHT BASE OR MOUNTING STAKE THAT MAY RESULT FROM A SHORTED POWER CABLE OR ISOLATION TRANSFORMER. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. A LIGHT BASE GROUND SHALL ALSO BE INSTALLED AT EACH STAKE MOUNTED LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AND CONNECTED TO THE METAL FRAME OF EACH TAXI GUIDANCE SIGN AS DETAILED ON THE PLANS AND IN ACCORDANCE WITH THE RESPECTIVE TAXI GUIDANCE SIGN MANUFACTURER RECOMMENDATIONS. THE LIGHT BASE GROUND SHALL BE A #6 AWG BARE COPPER CONDUCTOR BONDED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 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. FOR BASE MOUNTED LIGHT FIXTURES THE LIGHT FIXTURE MUST BE BONDED TO THE LIGHT BASE INTERNAL GROUND LUG VIA A #6 AWG STRANDED COPPER WIRE RATED FOR 600 VOLTS WITH GREEN XHHW OR USE INSULATION. THE GROUND WIRE LENGTH MUST BE SUFFICIENT TO ALLOW THE REMOVAL OF THE LIGHT FIXTURE FROM THE LIGHT BASE FOR ROUTINE MAINTENANCE. SEE THE LIGHT FIXTURE MANUFACTURER'S INSTRUCTIONS FOR PROPER METHODS OF ATTACHING A BONDING WIRE.
3. CLEAN ALL METAL SURFACES BEFORE MAKING GROUND CONNECTIONS. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL PER 2011 NATIONAL ELECTRICAL CODE ARTICLE 250-12.
4. PER FAA 150/5340-30F 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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SHELBY COUNTY AIRPORT SHELBYVILLE, ILLINOIS IL PROJ.: 2HO-4149 A.I.P. PROJ.: 3-17-0093-B11

Table with 2 columns: HANSON Proj. No., Scale, Date. Rows: 10A0047, NOT TO SCALE, 02/18/12. Includes LAYOUT, DRAWN, REVIEWED, KNL, CWS, KNL/CAH.

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CONSTRUCT VAULT, LIGHT TAXIWAY & INSTALL NAVAIDS ELECTRICAL NOTES SHEET 2



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

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

ELECTRICAL 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
LTFMC	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
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OHE	OVERHEAD ELECTRIC
OL	OVERLOAD

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

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

**NOTES:**

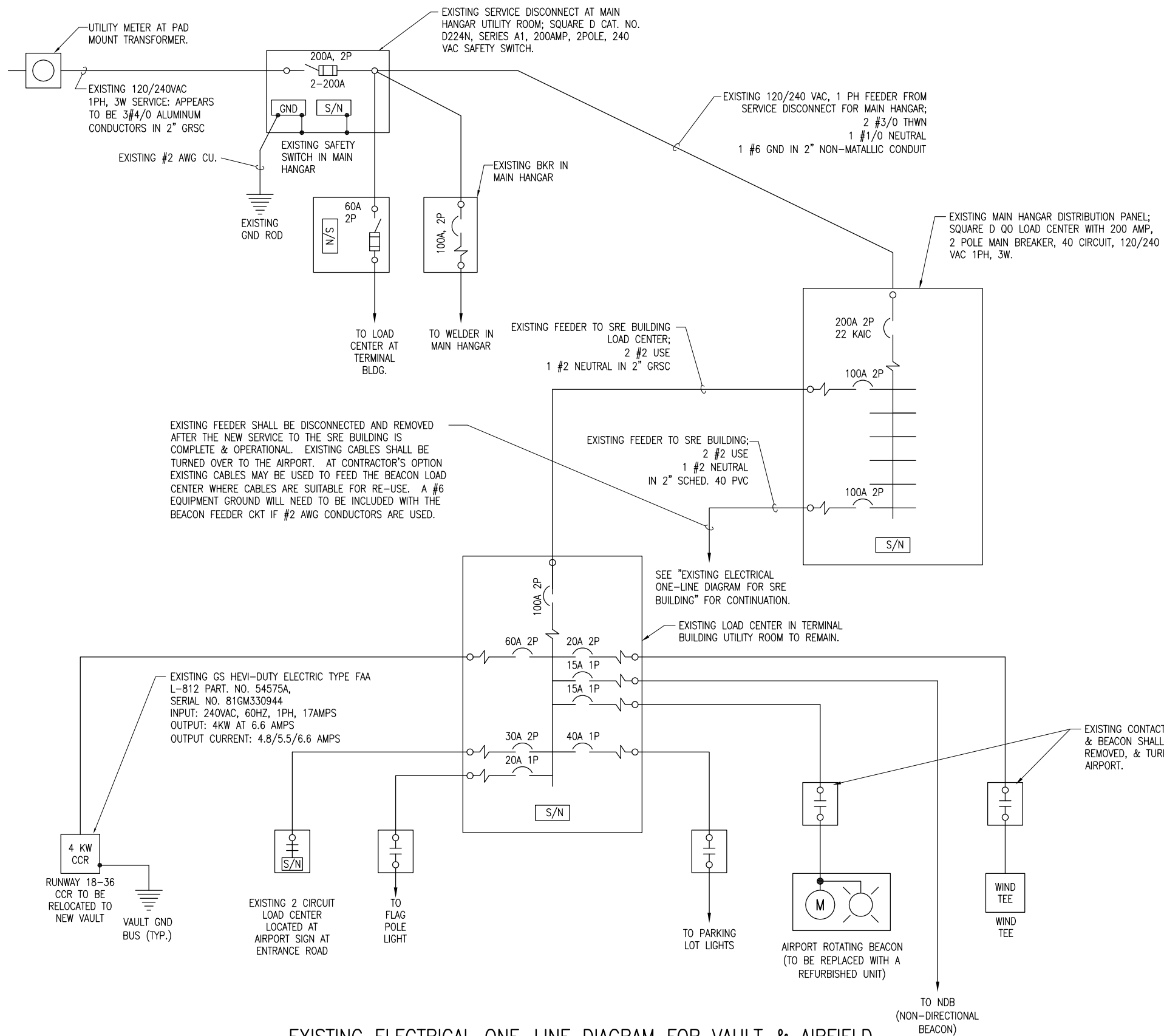
- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- ALL 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).
- COLOR CODE PHASE AND NEUTRAL CONDUCTOR INSULATION FOR NO. 6 AWG OR SMALLER. PROVIDE COLORED INSULATION OR COLORED MARKING TAPE FOR PHASE AND NEUTRAL CONDUCTORS FOR NO. 4 AWG AND LARGER. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR AWG AND/OR KCMIL TO COMPLY WITH NEC 250.119. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION FOR NO. 6 AWG AND SMALLER TO MEET THE REQUIREMENTS OF NEC 200.6. STANDARD COLORS FOR POWER WIRING AND BRANCH CIRCUITS SHALL BE AS FOLLOWS:  
  

120/240 VAC, 1 PHASE, 3 WIRE	
PHASE A	BLACK
PHASE B	RED
NEUTRAL	WHITE
GROUND	GREEN
- SEE RESPECTIVE SITE PLANS FOR SITE LEGEND INFORMATION.
- LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.
- ALL ENCLOSURES RATED NEMA 4, 4X SHALL HAVE WATERTIGHT HUBS AT CONDUIT ENTRANCES U.L. LISTED NEMA 4, 4X FOR THE RESPECTIVE ENCLOSURE, TO MAINTAIN THE NEMA 4, 4X RATING.
- HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, OR HANDHOLE.

REVISION	DATE						
SHELBY COUNTY AIRPORT SHELBYVILLE, ILLINOIS							
A.I.P. PROJ.: 3-17-0093-B11 IL PROJ.: 2HO-4149							
Hanson Proj. No. 10A00047		Elevation		NOT TO SCALE		Date 02/18/12	
LAYOUT		KWL		12/09/11		CNS	
DRAWN		CWS		01/18/12		REVIEWED	
KNL/CAH		02/23/12					
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CONSTRUCT VAULT, LIGHT TAXIWAY & INSTALL NAVAIDS				ELECTRICAL LEGEND AND ABBREVIATIONS			
23							
23 of 39 sheets							

NOTES

1. ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER.
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.
6. WHEN THE RUNWAY 18-36 LIGHTING IS SHUT DOWN THE RESPECTIVE AIRFIELD NAVAIDS (INCLUDING THE BEACON, WIND-TEE, & PLASI) SHALL ALSO BE SHUT OFF.



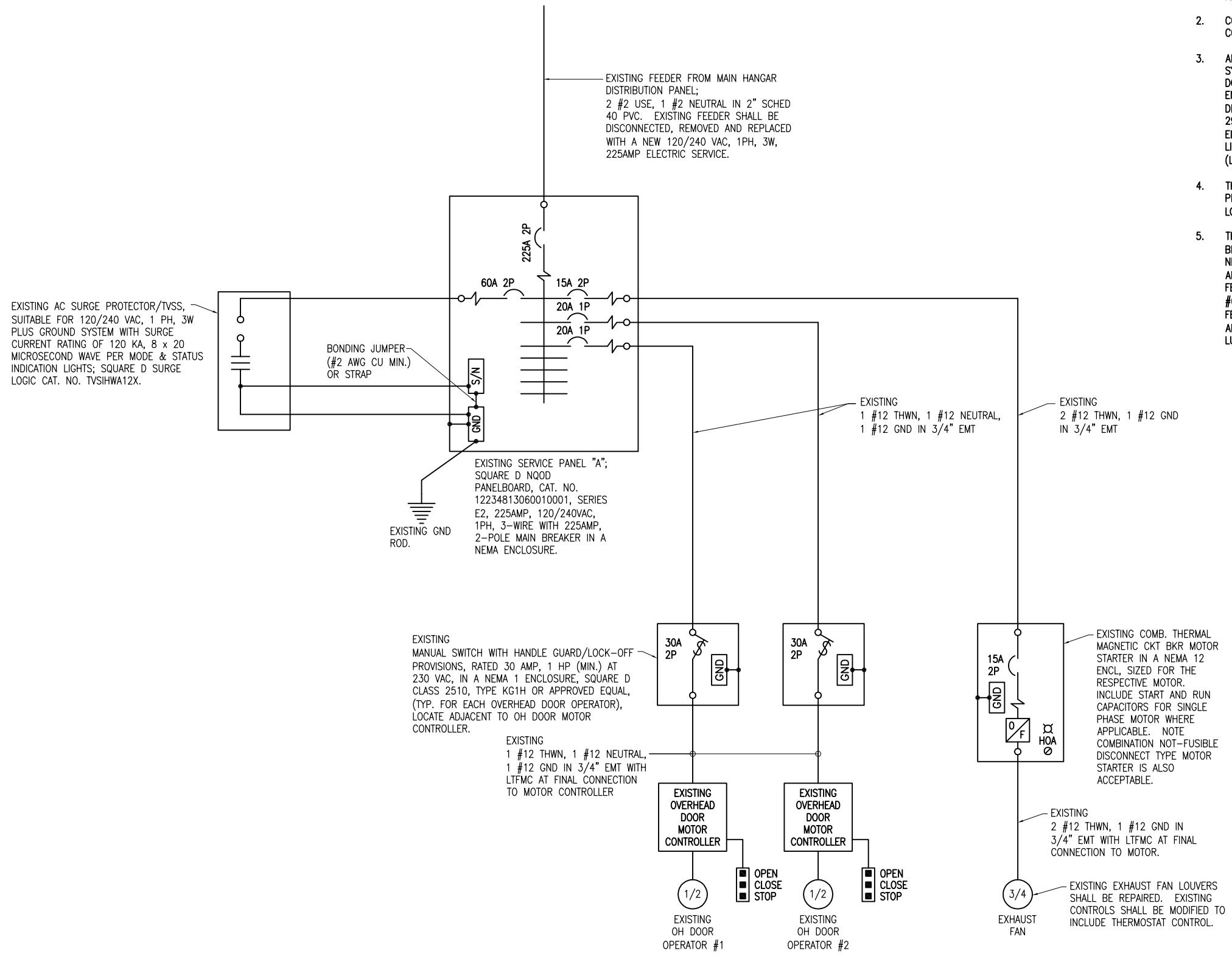
EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT & AIRFIELD

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REVISION		DATE	
<p><b>SHELBY COUNTY AIRPORT</b> SHELBYVILLE, ILLINOIS</p> <p style="font-size: small;">A.I.P. PROJ.: 3-17-0093-B11 IL PROJ.: 2H0-4149</p>			
Hanson Proj. No. 10A0047	Filename E-601.DWG	Scale AS SHOWN	Date 02/18/12
DRAWN	KWL	CNS	12/18/11
REVIEWED	KNL/CAH	CWS	01/23/12
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<p><b>CONSTRUCT VAULT, LIGHT TAXIWAY &amp; INSTALL NAVAIDS</b></p> <p style="font-size: small;">EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT</p>			
<p style="font-size: 2em; font-weight: bold;">24</p> <p style="font-size: x-small;">24 of 39 sheets</p>			

NOTES

1. ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER.
2. CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE AND 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. THE EXISTING LOUVERS/DAMPERS ON THE EXHAUST FAN DO NOT OPEN PROPERLY. CONTRACTOR SHALL REPAIR OR REPLACE THE EXHAUST FAN LOUVERS/DAMPERS TO PROVIDE PROPER OPERATION AND AIRFLOW.
5. THE EXISTING FEEDER FROM THE MAIN HANGAR DISTRIBUTION PANEL TO THE SRE BLDG PANEL "A" SHALL BE DISCONNECTED, REMOVED, AND REPLACED WITH A NEW ELECTRIC SERVICE. EXISTING CABLES SHALL BE TURNED OVER TO THE AIRPORT. AT THE CONTRACTOR/S OPTION EXISTING CABLES MAY BE USED TO FEED THE BEACON LOAD CENTER WHERE CABLES ARE SUITABLE FOR RE-USE, A #6 EQUIPMENT GROUND WIRE WILL NEED TO BE INCLUDED WITH THE BEACON FEEDER CKT IF #2 AWG CONDUCTORS ARE USED. FEEDER BKR SHALL BE 60 AMP, 2 POLE FOR #2 AWG CONDUCTORS TO ACCOMMODATE BREAKER TERMINAL LUG RANGE.



EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR SRE BUILDING

REVISION	
DATE	

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

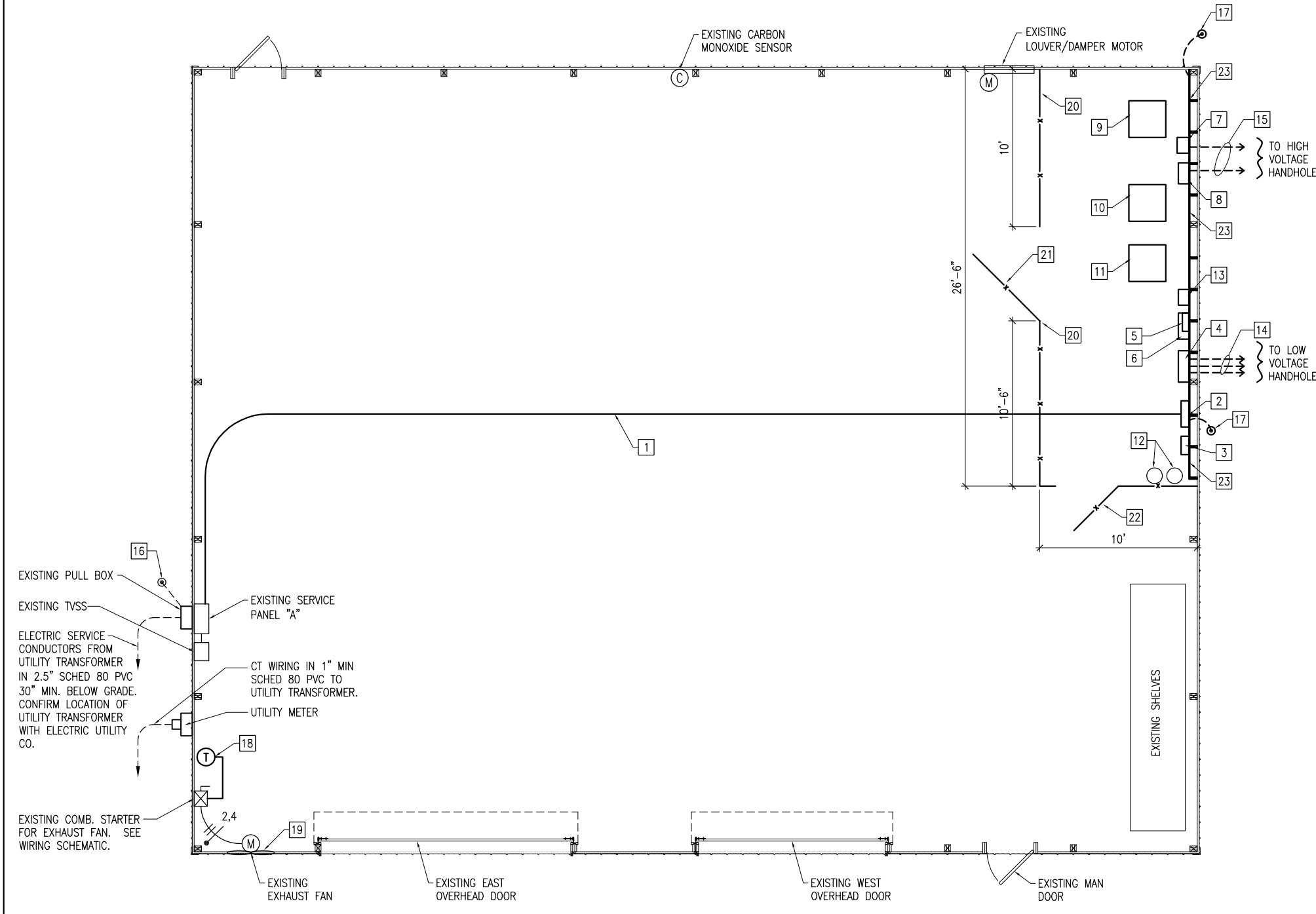
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Hanson Proj. No.	10A00047	
Filename	E-602.DWG	
Scale	NONE	
Date	02/18/12	
LAYOUT	KNL	12/15/11
DRAWN	CWS	01/23/12
REVIEWED	KNL/CAH	

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CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS  
EXISTING ELECTRICAL  
ONE LINE DIAGRAM  
FOR SRE BUILDING

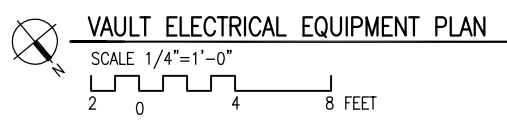
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- KEYED NOTES:**
- 1 150AMP, 120/240 VAC, 1 PH, 3W WITH GND FEEDER IN GRSC FROM SERVICE PANELBOARD "A" TO VAULT PANELBOARD "B", SEE "PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD".
  - 2 VAULT MAIN DISTRIBUTION PANELBOARD "B".
  - 3 AC SURGE PROTECTIVE DEVICE, SEE "PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD".
  - 4 LIGHTING CONTACTOR PANEL. SEE AIRFIELD LIGHTING WIRING SCHEMATIC AND LIGHTING CONTACTOR PANEL DETAIL.
  - 5 L-854 RADIO CONTROL UNIT. EXTEND GRSC & RADIO ANTENNA CABLE AND MOUNT ANTENNA ABOVE THE SRE BUILDING ROOF AS REQUIRED FOR PROPER OPERATION. BOND GRSC AT BLDG EXTERIOR TO GND ROD WITH #2 AWG BARE CU. PROVIDE 1" SCHED 40 PVC TO PROTECT GND WIRE. GRSC WITH ANTENNA CABLE SHALL TRANSITION TO SCHED 40 PVC AT ENTRY TO VAULT.
  - 6 RADIO RELAY INTERFACE PANEL WITH PHOTOCELL BYPASS SWITCH FOR AIRFIELD LIGHTING SYSTEM. SEE AIRFIELD LIGHTING WIRING SCHEMATIC FOR WIRING REQUIREMENTS. MOUNT PHOTOCELL AT BLDG EXTERIOR. FIELD VERIFY LOCATION FOR PROPER CONTROL AND OPERATION. BOND GRSC AT BLDG EXTERIOR TO GND ROD WITH #2 AWG BARE CU. PROVIDE 1" SCHED 40 PVC TO PROTECT GND WIRE. GRSC WITH PHOTOCELL CABLE SHALL TRANSITION TO SCHED 40 PVC AT ENTRY TO VAULT.
  - 7 60AMP, 240VAC, 2P DOUBLE THROW FUSIBLE SAFETY SWITCH FOR RUNWAY CCR'S.
  - 8 TRANSFER PAIR SERIES PLUG CUTOUTS (TYPE S-1) FOR RUNWAY LIGHTING WITH ENCLOSURE. SEE GENERAL NOTES 1 & 2.
  - 9 NEW RUNWAY 18-36 CONSTANT CURRENT REGULATOR. INCLUDE CONCRETE HOUSEKEEPING PAD. SEE GENERAL NOTE 1.
  - 10 BACKUP/SPARE CONSTANT CURRENT REGULATOR FOR RUNWAY 18-36 RELOCATED FROM EXISTING VAULT. INCLUDE CONCRETE HOUSEKEEPING PAD. SEE GENERAL NOTE 1.
  - 11 NEW TAXIWAY CONSTANT CURRENT REGULATOR. INCLUDE CONCRETE HOUSEKEEPING PAD. SEE GENERAL NOTE 1.
  - 12 FURNISH AND INSTALL A UL RATED, 10 POUND CARBON DIOXIDE FIRE EXTINGUISHER SUITABLE FOR USE ON CLASS C FIRES AND A 10 POUND CLASS 4A:80B:C DRY CHEMICAL ABC FIRE EXTINGUISHER SUITABLE FOR USE ON CLASS A,B,C FIRES, IN THE VAULT SHELTER PER NFPA 10 "PORTABLE FIRE EXTINGUISHERS" CLASS C ARE FOR FIRES THAT INVOLVE ENERGIZED ELECTRICAL EQUIPMENT. FIRE EXTINGUISHERS SHALL BE MADE IN THE UNITED STATES OF AMERICA TO COMPLY WITH BUY AMERICAN REQUIREMENT. FIRE EXTINGUISHER TYPE CO2 SHALL BE AMEREX MODEL 330, ANSUL SENTRY TO MODEL CD10A-1 OR APPROVED EQUAL. FIRE EXTINGUISHER DRY CHEMICAL TYPE. ABC SHALL BE AMEREX MODEL B456, OR APPROVED EQUAL. PROVIDE WALL MOUNTING BRACKET FOR EACH FIRE EXTINGUISHER. CONFIRM MODEL NUMBERS WITH THE RESPECTIVE FIRE EXTINGUISHER MANUFACTURER.
  - 13 SERIES PLUG CUTOUT (TYPE 2-1) FOR TAXIWAY LIGHTING WITH ENCLOSURE. SEE GENERAL NOTES 1 & 2.
  - 14 3-3" PVC COATED GRSC WITH PVC COATED GRSC ELBOWS FROM LOW VOLTAGE WIREWAY TO LOW VOLTAGE HANDHOLE. PROVIDE LB CONDULETS OR NEMA 4X STAINLESS STEEL PULL BOX AT INTERFACE TO BUILDING. LOCATE LOW VOLTAGE HANDHOLE APPROXIMATELY 20FT. FROM SRE BUILDING.
  - 15 2-3" PVC COATED GRSC WITH PVC COATED GRSC ELBOWS FROM HIGH VOLTAGE WIREWAY TO HIGH VOLTAGE HANDHOLE. PROVIDE LB CONDULETS OR NEMA 4X STAINLESS STEEL PULL BOX AT INTERFACE TO BUILDING. LOCATE HIGH VOLTAGE HANDHOLE APPROX 20FT. FROM SRE BUILDING.
  - 16 10'L x 3/4" DIA. UL LISTED COPPER CLAD GND ROD. CONNECTIONS TO GND RODS SHALL BE EXOTHERMIC WELD. EXISTING COPPER ROD MAY BE REUSED IN PLACE. PROVIDE #2 AWG BARE STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR IN 1" SCHED 80 PVC FROM UTILITY METER TO GND. ROD.
  - 17 3/4" DIA. x 20'L UL LISTED COPPER CLAD GND. ROD (2-3/4" DIA. x 10'L GND RODS COUPLED TOGETHER). TOP OF GND. ROD SHALL BE 30" BELOW GRADE. PROVIDE #2 STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR IN 1" SCHED 80 PVC., FROM VAULT GROUND BUS TO GND ROD. GRND RODS SHALL BE SPACED NOT LESS THAN ONE ROD LENGTH (20FT) APART.
  - 18 ADD LINE VOLTAGE THERMOSTAT FOR EXHAUST FAN CONTROL.
  - 19 REPAIR OR REPLACE EXISTING EXHAUST FAN LOUVER/DAMPER SYSTEM TO PROVIDE PROPER OPERATION.
  - 20 6FT HIGH CHAIN LINK FENCE WITH TOP RAIL. CORE DRILL INTO FLOOR TO SET FENCE POSTS IN CONCRETE, CHAIN LINK FENCE SHALL BE IN ACCORDANCE WITH ITEM 162 CHAIN-LINK FENCES AND AS DETAILED HEREIN. BOND FENCE TO VAULT GND BUS WITH #6 COPPER GND WIRE.
  - 21 6FT SWING GATE, 6FT HIGH.
  - 22 4FT SWING GATE, 6FT HIGH. COORDINATE LOCATION WITH SHELVES & SITE CONDITIONS. BOND EACH SIDE OF GATE TO VAULT GND BUS WITH #6 COPPER GND WIRE.
  - 23 3/4" THICK WEATHER PROOF TREATED PLYWOOD ATTACHED TO TREATED 2x6 WOOD STUDS 24" ON CENTER WITH TOP AND BOTTOM PLATE. FASTEN TO FLOOR SLAB WITH EXPANSION ANCHORS. TOP PLATE TO BE 8'-0" ABOVE FINISH FLOOR. PAINT ALL EXPOSED WOOD WITH 2 COATS OF WHITE OR GRAY ENAMEL PAINT. (VERIFY EXISTING BUILDING COLUMN SIZE)

**GENERAL NOTES:**

1. SEE "PROPOSED ELECTRICAL ONE-LINE FOR VAULT AND AIRFIELD" FOR LOW VOLTAGE INPUT POWER WIRING REQUIREMENTS TO CCR'S (CONSTANT CURRENT REGULATORS). SEE "HIGH VOLTAGE WIRING SCHEMATIC" FOR CCR OUTPUT WIRING REQUIREMENTS. SEE "AIRFIELD LIGHTING WIRING SCHEMATIC" FOR CCR CONTROL WIRING REQUIREMENTS. PROVIDE 5 FEET MINIMUM CLEAR WORKING SPACE IN FRONT OF EACH CCR AND EACH SERIES PLUG CUTOUT.
2. CONSTANT CURRENT REGULATORS AND THEIR RESPECTIVE SERIES PLUG CUTOUTS SHALL BE CLEARLY LABELED TO IDENTIFY THE RESPECTIVE REGULATOR DESIGNATION, RUNWAY OR TAXIWAY SERVED, POWER SOURCE OR CIRCUIT, AND VOLTAGE SYSTEM.
3. SEE ELEVATION VIEWS FOR ADDITIONAL INFORMATION ON PROPOSED EQUIPMENT LAYOUTS.
4. COORDINATE CONDUIT & SLEEVE ENTRANCES THROUGH WALLS.
5. COORDINATE EQUIPMENT & WIREWAY LAYOUT WITH EXISTING BUILDING CONSTRUCTION AND BUILDING COLUMNS.
6. COORDINATE EQUIPMENT LAYOUT AND MOUNTING WITH EXISTING BUILDING CONSTRUCTION AND BUILDING COLUMNS.



<p>REVISION</p> <p>DATE</p>	<p>FILE NO. 10A00047</p> <p>DATE 02/18/12</p> <p>SCALE AS SHOWN</p> <p>DATE 02/18/12</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>LAYOUT</td> <td>KNL</td> <td>02/06/12</td> </tr> <tr> <td>DRAWN</td> <td>CWS</td> <td>02/15/12</td> </tr> <tr> <td>REVIEWED</td> <td>CAH/KNL</td> <td>02/23/12</td> </tr> </table>	LAYOUT	KNL	02/06/12	DRAWN	CWS	02/15/12	REVIEWED	CAH/KNL	02/23/12
LAYOUT	KNL	02/06/12								
DRAWN	CWS	02/15/12								
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<p><b>CONSTRUCT VAULT, LIGHT TAXIWAY &amp; INSTALL NAVAIDS</b></p> <p>PROPOSED FLOOR PLAN FOR AIRPORT VAULT</p>										
<p><b>26</b></p> <p>26 of 39 sheets</p>										

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SHELBY COUNTY AIRPORT  
 SHELBYVILLE, ILLINOIS  
 A.I.P. PROJ.: 3-17-0093-B11  
 ILL PROJ.: 2H0-4149



**GENERAL NOTES**

**FABRIC** - THE FABRIC MAY BE WOVEN WITH EITHER ZINC COATED STEEL WIRE OR ALUMINUM-ALLOY WIRE IN A 2-INCH MESH. COATED WIRE AND ALUMINUM-ALLOY SHALL HAVE A DIAMETER OF 0.148 INCHES. THE FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS: (1) ZINC-COATED STEEL FABRIC SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 181, TYPE 1, CLASS D. (2) ALUMINUM-COATED STEEL FABRIC SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 181 TYPE II. THE UNIT WEIGHT OF THE COATING SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T 213. THE ALUMINUM-COATED STEEL FABRIC SHALL BE GIVEN A CLEAR ORGANIC COATING AFTER FABRICATION. (3) ALUMINUM-ALLOY FABRIC SHALL BE MADE FROM WIRE CONFORMING TO THE REQUIREMENTS OF AASHTO M 181 TYPE III.

**METAL POSTS** - METAL POSTS (LINE, CORNER, END, PULL AND GATE POSTS) SHALL BE THE SHAPES, DIMENSIONS, AND WEIGHT SHOWN IN THE TABLES. (1) STEEL PIPE, TYPE A, SHALL BE HOT-DIPPED GALVANIZED CONFORMING TO THE REQUIREMENTS OF ASTM F 1083. (2) STEEL PIPE, TYPE B, SHALL BE MANUFACTURED FROM COLD ROLLED ELECTRIC RESISTANCE WELDED, HEATED AND TEMPERED STEEL. THE STEEL STRIP USED IN THE MANUFACTURE OF THE PIPE SHALL CONFORM TO ASTM A 569 OR ASTM A 607. THE WALL THICKNESS SHALL NOT BE LESS THAN THAT SHOWN IN THE TABLE. THE PRODUCT OF THE YIELD STRENGTH AND SECTION MODULUS OF THE PIPE SHALL NOT BE LESS THAN THAT OF THE PIPE MEETING THE REQUIREMENTS OF ASTM F 1083. (3) STEEL PIPE, TYPE C, SHALL BE MANUFACTURED BY ROLLED FORMING ALUMINIZED STEEL TYPE 2 STRIP AND ELECTRIC RESISTANCE WELDING INTO TUBULAR FORM. THE OUTSIDE OF THE WELD AREA SHALL BE METALLIZED WITH COMMERCIAL PURE ALUMINUM TO A THICKNESS SUFFICIENT TO PROVIDE RESISTANCE TO CORROSION EQUAL TO THAT OF THE REMAINDER OF THE OUTSIDE OF THE TUBE. THE ALUMINUM COATING WEIGHT SHALL BE A MINIMUM OF 0.75 OUNCES PER SQUARE FOOT, TRIPLE SPOT TEST, 0.70 OUNCES PER SQUARE FOOT SINGLE SPOT TEST, AS MEASURED IN ACCORDANCE WITH ASTM A 428. THE STEEL STRIP USED IN THE MANUFACTURE OF THE PIPE SHALL CONFORM TO ASTM A 787 TYPE 1 AND SHALL HAVE A MINIMUM YIELD STRENGTH OF 50,000 P.S.I. THE WEIGHT OF THE PIPE SHALL NOT BE LESS THAN THAT SHOWN ON THE PLANS AND THE PRODUCT OF THE YIELD STRENGTH AND SECTION MODULUS OF THE PIPE SHALL NOT BE LESS THAN THAT OF PIPE MEETING THE REQUIREMENTS OF ASTM A 120. (4) STRUCTURAL SHAPES SHALL BE FABRICATED FROM STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M 281, GRADES A OR B. ROLLED FORMED SECTIONS SHALL BE FABRICATED FROM STEEL CONFORMING TO THE REQUIREMENTS OF ASTM A 570, GRADES 36 THRU 50, WITH A MAXIMUM TENSILE STRENGTH OF 80,000 POUNDS PER SQUARE INCH. ALL STRUCTURAL SHAPES AND ROLLED FORMED SECTIONS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 111, USING ZINC OF ANY GRADE CONFORMING TO THE REQUIREMENTS OF AASHTO M 120. THE ZINC COATING SHALL BE NOT LESS THAN 2.0 OUNCES PER SQUARE FOOT OF SURFACE. (5) SQUARE HOLLOW STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 500, GRADE B OR ASTM A 501. THE TUBING SHALL BE GALVANIZED INSIDE AND OUTSIDE IN ACCORDANCE WITH AASHTO M 111, USING ZINC OF ANY GRADE CONFORMING TO THE REQUIREMENT OF AASHTO M 120. THE ZINC COATING SHALL NOT BE LESS THAN 2.0 OUNCES PER SQUARE FOOT OF SURFACE. (6) ROLL FORMED STEEL "C" SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F 1043 OR ASTM F 1083, GROUP IIA, AND BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM F 1043, TYPE A.

**TOP RAILS** - THE TOP RAILS SHALL BE 1.625 INCH O.D., GALVANIZED OR ALUMINUM COATED PIPE HAVING A MINIMUM BENDING STRENGTH OF 202 LBS. AT THE CENTER OF A 10 FT. SPAN.

**BOTTOM TENSION WIRE** - THE BOTTOM TENSION WIRE SHALL BE #9 GAUGE GALVANIZED STEEL WIRE MEETING THE REQUIREMENTS OF AASHTO M 181, THE WIRE SHALL BE STRETCHED TIGHT WITH GALVANIZED TURNBUCKLES SPACED AT INTERVALS NOT MORE THAN 1,000 FEET. THE ZINC COATING SHALL BE NOT LESS THAN 12 OUNCES PER SQUARE FOOT OF SURFACE.

**HORIZONTAL BRACES** - THE BRACES SHALL BE "STANDARD WEIGHT" GALVANIZED STEEL PIPE MEETING THE SPECIFICATIONS FOR LINE POSTS AND SHALL BE THE SAME DIMENSIONS AND WEIGHT AS REQUIRED FOR THE TOP RAIL.

**TRUSS RODS** - THE TRUSS RODS SHALL BE 3/8" ROUND GALVANIZED STEEL ROD WITH GALVANIZED TURNBUCKLES. THE ZINC COATING SHALL BE NOT LESS THAN 1.2 OUNCES PER SQUARE FOOT OF SURFACE.

**GATE** - THE GATE TYPE AND SIZE SHALL CONFORM TO THE DETAILS SHOWN ON THE PLANS AND AS PROVIDED IN THE SPECIAL PROVISIONS.

**POST TOPS** - THE POST TOPS SHALL BE STEEL OR MALLEABLE IRON OR WROUGHT IRON OR APPROVED TYPE AND SHALL BE GALVANIZED. THE ZINC COATING SHALL BE NOT LESS THAN 1.2 OUNCES PER SQUARE FOOT OF SURFACE.

**STRETCHER BARS** - THE STRETCHER BARS SHALL BE FLAT GALVANIZED STEEL BARS NOT LESS THAN 1/4" X 3/4" AND THE STRETCHER BAR BANDS SHALL BE FLAT GALVANIZED STEEL BARS NOT LESS THAN 1/8" X 1" WITH A 3/8" DIAMETER GALVANIZED CARRIAGE BOLT. THE ZINC COATING SHALL BE NOT LESS THAN 1.2 OUNCES PER SQUARE FOOT OF SURFACE.

**FABRIC TIES** - THE FABRIC TIES SHALL BE HOG RINGS, OR ALUMINUM WIRE, OR GALVANIZED STEEL WIRE NOT LESS THAN #9 GAUGE. THE ZINC COATING SHALL BE NOT LESS THAN 1.2 OUNCES PER SQUARE FOOT OF SURFACE.

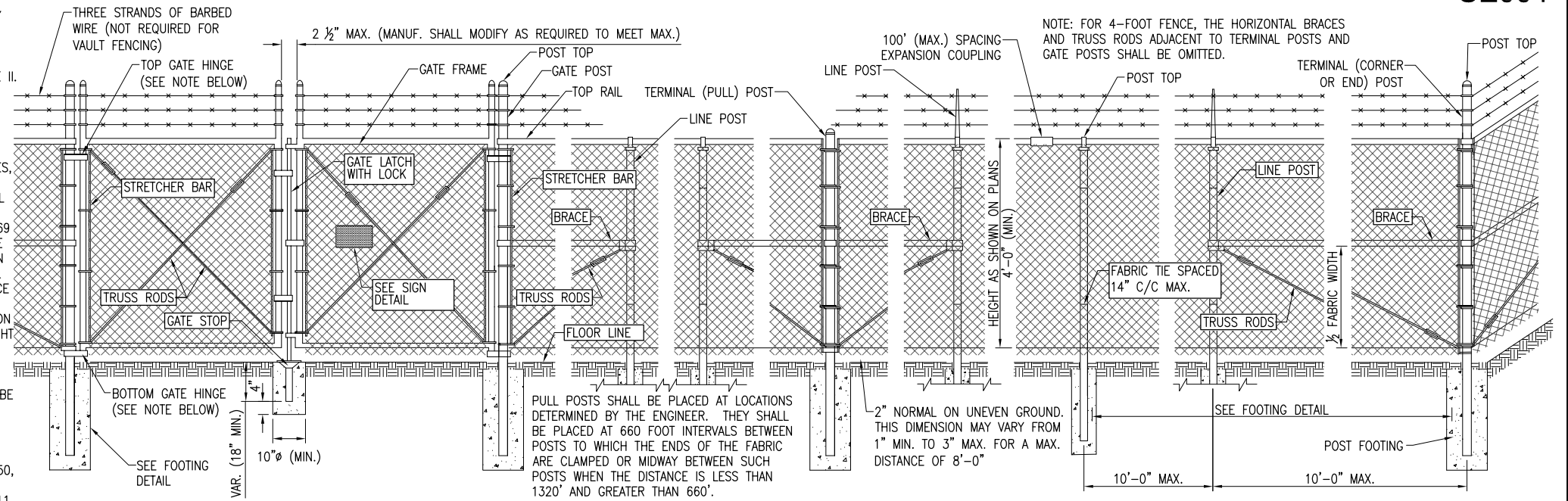
**FITTINGS** - THE PERTINENT FITTINGS FOR FENCE AND GATES SHALL BE STEEL OR MALLEABLE IRON OR WROUGHT IRON OR APPROVED TYPE AND SHALL BE GALVANIZED. THE ZINC COATING SHALL BE NOT LESS THAN 1.2 OUNCES PER SQUARE FOOT OF SURFACE IN ACCORDANCE WITH AASHTO M 232.

**STRUCTURAL P.C. CONCRETE** - THE STRUCTURAL P.C. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ITEM 610 OF THE STANDARD SPECIFICATIONS.

**BOLTS AND NUTS** - THE BOLTS AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 307 AND SHALL BE ZINC COATED IN ACCORDANCE WITH AASHTO M 232 OR M 298, CLASS 50.

**BARBED WIRE** - BARBED WIRE IS NOT REQUIRED FOR THE FENCE TO HOUSE THE VAULT EQUIPMENT.

**STEEL FOR FENCING MATERIALS** SHALL BE 100% DOMESTIC STEEL.



**VEHICLE GATE ARRANGEMENT**

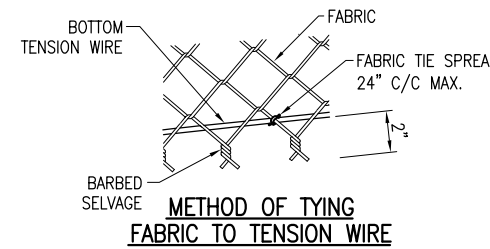
**PULL POST ARRANGEMENT**

**LINE POST ARRANGEMENT**

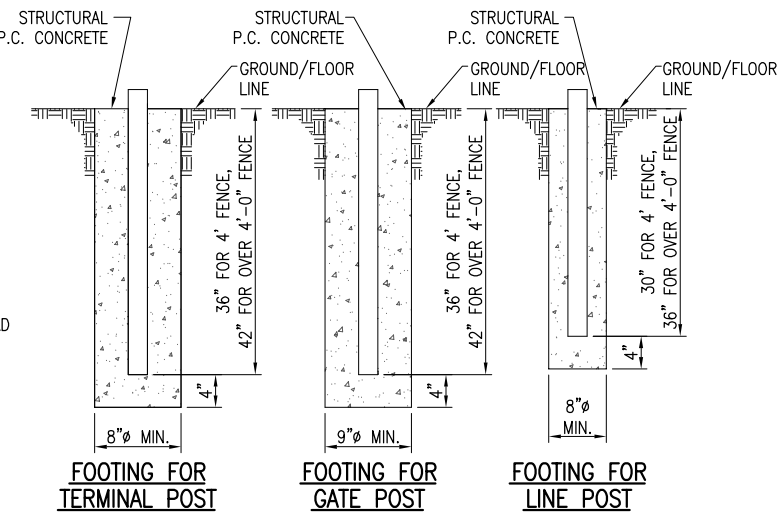
**CORNER OR END POST ARRANGEMENT**

6' FENCE-POST & BRACE TABLE		
DESCRIPTION	DIA. - INCH (O.D.)	WT. LBS./FT.
LINE POST	1.9	2.72
TERMINAL POST	2.375	3.65
END POST	2.375	3.65
CORNER POST	2.375	3.65
PULL POST	2.375	3.65
GATE POST	2.875	5.79
TOP RAIL	1.66	2.27

NOTE: ONLY ROUND POSTS WILL BE PERMITTED. TABLE ABOVE IS FOR SCHEDULE 40 PIPE. OTHER MATERIALS ARE ACCEPTABLE, IN ACCORDANCE WITH THE PARAGRAPH AT LEFT, AND SHALL BE OF EQUAL CAPACITY AND STRENGTH TO THAT SHOWN FOR SCHEDULE 40, BUT NOT NECESSARILY OF EQUAL DIMENSION DUE TO THE VARIOUS MATERIAL CHARACTERISTICS.



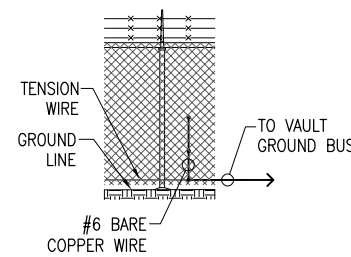
**METHOD OF TYING FABRIC TO TENSION WIRE**



**FOOTING FOR TERMINAL POST**

**FOOTING FOR GATE POST**

**FOOTING FOR LINE POST**

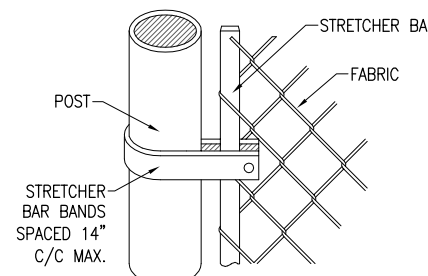


**STANDARD GROUND**

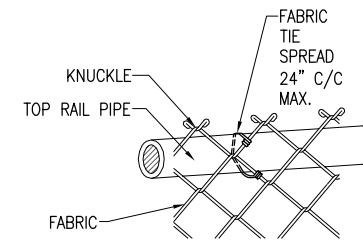
**PROTECTIVE ELECTRICAL GROUND**

**GENERAL NOTE:**

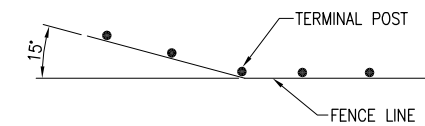
FENCE FOR THE VAULT SHALL BE GROUNDED. THERE SHALL BE A GROUND WITHIN 100 FT OF GATES IN EACH SECTION OF THE FENCE ADJACENT TO THE GATE. THE GROUND WIRE SHALL BE CONNECTED TO THE FABRIC AND TENSION WIRE WITH UL LISTED GROUNDING CONNECTORS OF CAST BRONZE BODY AND BRONZE OR STAINLESS STEEL BOLTS AND WASHERS. GROUNDING CONNECTORS SHALL BE SIZED AND SUITABLE FOR THE RESPECTIVE APPLICATION. CONNECTIONS TO VAULT GROUND BUS SHALL BE WITH 2 - HOLE TONGUE COMPRESSION LUGS WITH 3/8" STAINLESS BOLTS, NUTS, & WASHERS. THE GROUND WIRE USED TO BOND THE FENCE FABRIC AND TENSION WIRE TO THE GROUND BUS SHALL BE #6 AWG BARE COPPER CONDUCTOR.



**METHOD OF FASTENING STRETCHER BAR TO POST**



**METHOD OF TYING FABRIC TO PIPE**



WHERE THE FENCE LINE HAS A CHANGE IN DIRECTION OF 15° OR MORE, A TERMINAL POST SHALL BE PLACED AS SHOWN ABOVE. WHERE ANGLE IS LESS THAN 15° AND EXISTING CONDITIONS REQUIRE TERMINAL POST, THEY SHALL BE PLACED AS DIRECTED BY ENGINEER.

SE004

REVISION  
DATE  
SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS  
A.I.P. PROJ.: 3-17-0093-B11  
IL PROJ.: 2HO-4149

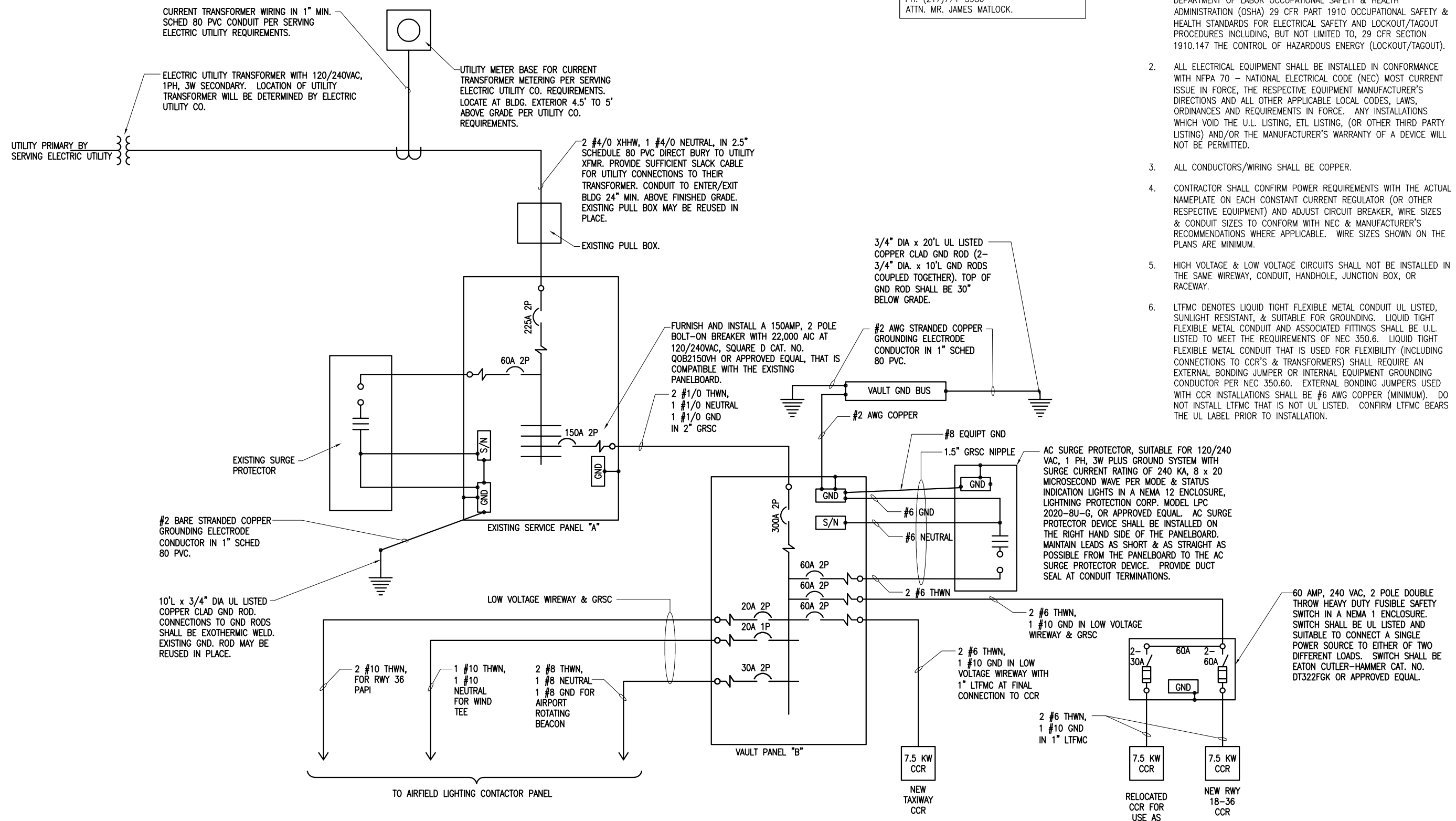
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Scale	02/18/12	
LAYOUT	KNL	02/16/12
DRAWN	CWS	02/20/12
REVIEWED	CAH/KNL	

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CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS  
PROPOSED FENCE DETAILS

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COORDINATE ELECTRIC SERVICE WITH THE SERVING ELECTRIC UTILITY; SHELBY ELECTRIC COOPERATIVE, ROUTE 128 & N. SIXTH STREET, SHELBYVILLE, IL 62565  
PH: (217)774-3986  
ATTN. MR. JAMES MATLOCK.

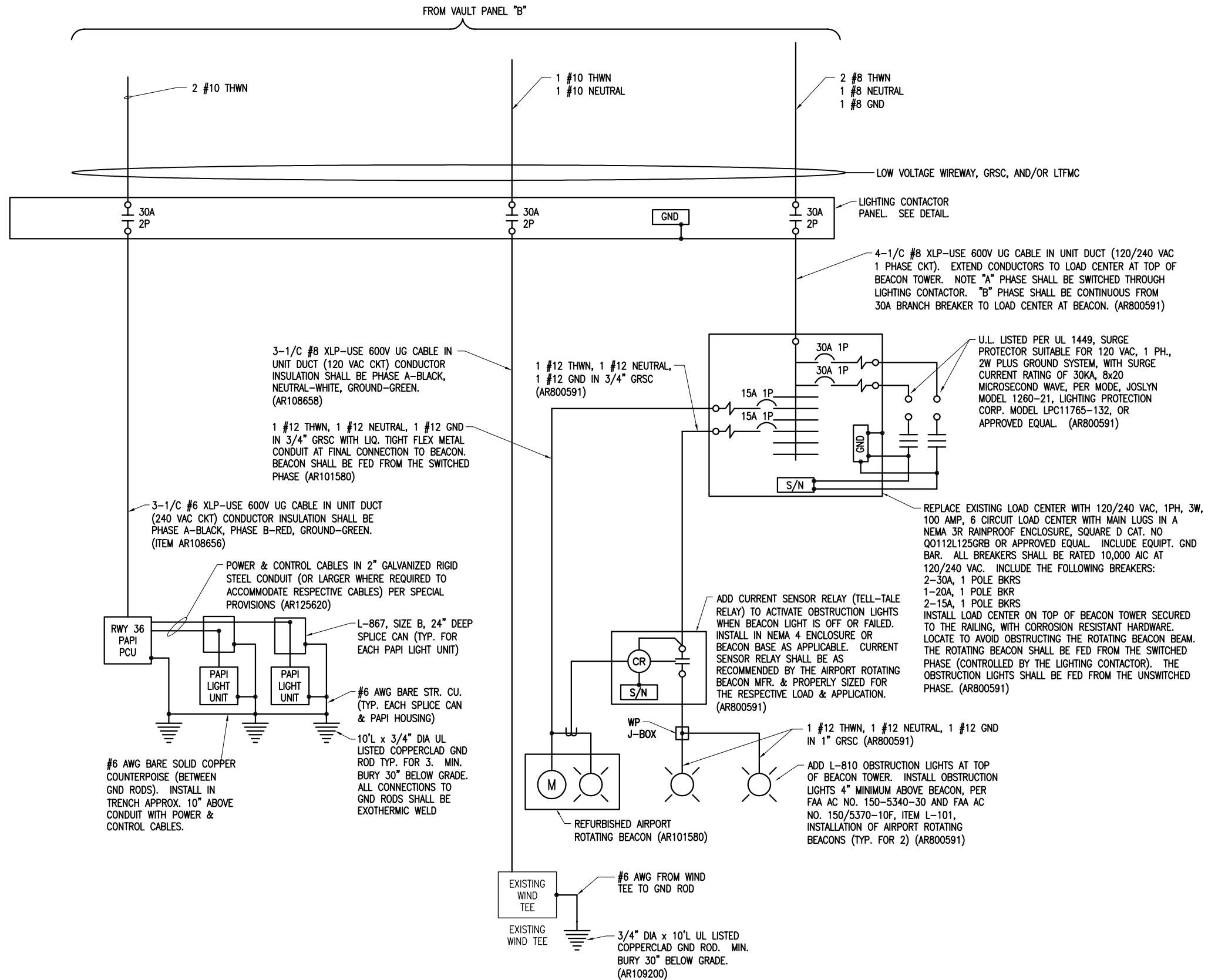
**NOTES**

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

PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD

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REVISION					
DATE					
SHELBY COUNTY AIRPORT SHELBYVILLE, ILLINOIS					
A.I.P. PROJ.: 3-17-0093-B11					
Hanson Proj. No.	10A0047	LAYOUT	KNL	12/16/11	
Filename	E-603.DWG	DRAWN	CWS	01/19/12	
Scale	NONE	REVIEWED	CAH/KNL	02/23/12	
Date	02/18/12				
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CONSTRUCT VAULT, LIGHT TAXIWAY & INSTALL NAVAIDS PROPOSED ELECTRICAL ONE-LINE FOR VAULT AND AIRFIELD (SHEET 1)					
29 29 of 39 sheets					



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

REVISION	DATE

SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

IL PROJ.: 2HO-4149

A.I.P. PROJ.: 3-17-0093-B11

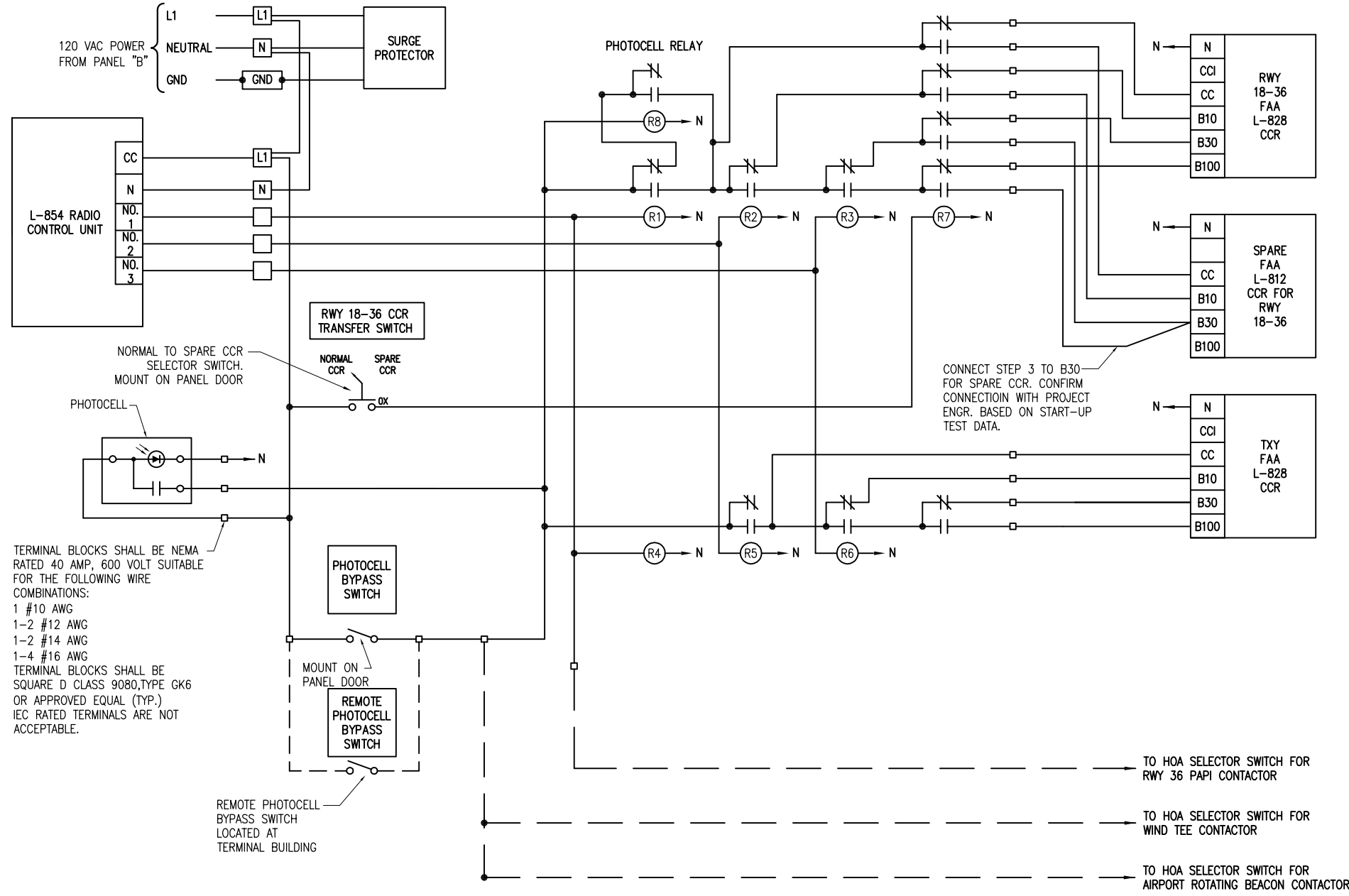
Hanson Proj. No. 10A0047	12/16/11
Filename E-604.DWG	CNS
Scale NONE	CAH/KNL
Date 02/18/12	REVIEWED
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CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS  
PROPOSED ELECTRICAL  
ONE-LINE FOR VAULT AND  
AIRFIELD (SHEET 2)

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TERMINAL BLOCKS SHALL BE NEMA RATED 40 AMP, 600 VOLT SUITABLE FOR THE FOLLOWING WIRE COMBINATIONS:  
 1 #10 AWG  
 1-2 #12 AWG  
 1-2 #14 AWG  
 1-4 #16 AWG  
 TERMINAL BLOCKS SHALL BE SQUARE D CLASS 9080, TYPE GK6 OR APPROVED EQUAL (TYP.)  
 IEC RATED TERMINALS ARE NOT ACCEPTABLE.

CONNECT STEP 3 TO B30 FOR SPARE CCR. CONFIRM CONNECTION WITH PROJECT ENGR. BASED ON START-UP TEST DATA.

TO HOA SELECTOR SWITCH FOR RWY 36 PAPI CONTACTOR  
 TO HOA SELECTOR SWITCH FOR WIND TEE CONTACTOR  
 TO HOA SELECTOR SWITCH FOR AIRPORT ROTATING BEACON CONTACTOR

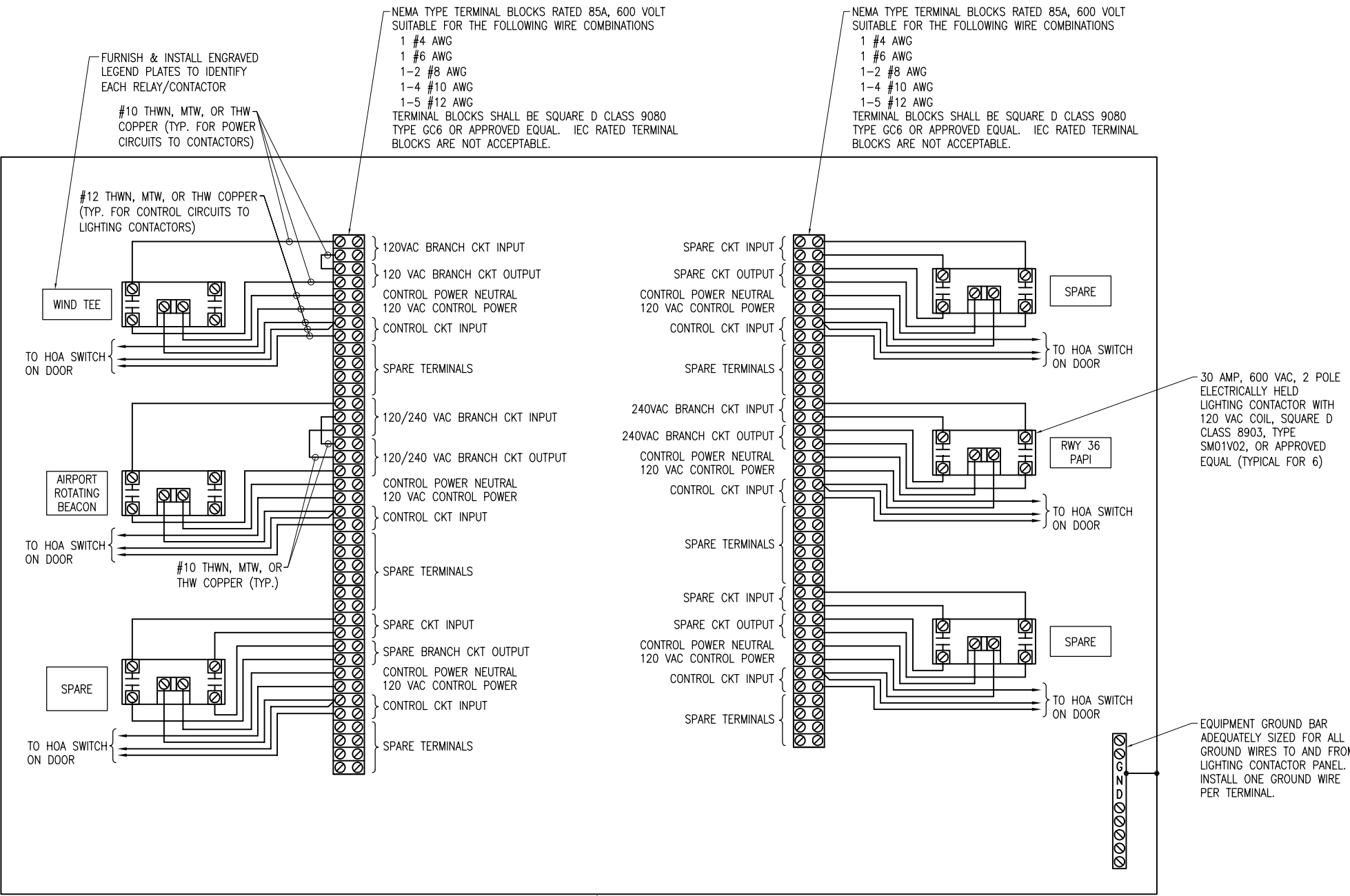
AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC

NOTES:

- RELAY INTERFACE CONTROL PANEL SHALL BE MANUFACTURED BY AN FAA APPROVED L-821 PANEL BUILDER OR A UL 508 INDUSTRIAL CONTROL PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT AND THE "BUY AMERICAN ACT". RELAY INTERFACE CONTROL PANEL SHALL BE SEPARATE PANEL. DO NOT COMBINE WITH LIGHTING CONTACTOR PANEL.
- PANEL SHALL BE IN A NEMA 12 ENCLOSURE WITH HINGED COVER. DRILL HOLE IN BOTTOM OF ENCLOSURE TO ALLOW CONDENSATION TO ESCAPE.
- EXTERNAL CONTROL CABLE SHALL BE NO. 12 AWG COPPER, 600 VOLT CABLE. ALL PANEL INTERIOR CONTROL CABLE SHALL BE MINIMUM 16 AWG, COPPER, 600 VOLT CABLE.
- IN THE AUTOMATIC MODE OF OPERATION THE RUNWAY 18-36 CONSTANT CURRENT REGULATORS (PRIMARY UNIT & SPARE UNIT) SHALL BE CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:  
 PHOTOCELL - 10% BRIGHTNESS & ACTIVATE RADIO CONTROL  
 5 CLICKS - 30% BRIGHTNESS  
 7 CLICKS - 100% BRIGHTNESS
- IN THE AUTOMATIC MODE OF OPERATION THE TAXIWAY CIRCUIT WILL BE CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:  
 PHOTOCELL -ACTIVATE RADIO CONTROL  
 3 CLICKS -10% BRIGHTNESS  
 5 CLICKS -30% BRIGHTNESS  
 7 CLICKS -100% BRIGHTNESS
- IN THE AUTOMATIC MODE OF OPERATION THE WIND TEE & AIRPORT ROTATING BEACON SHALL BE ACTIVATED BY THE PHOTOCELL OR PHOTOCELL BYPASS SWITCH.
- IN THE AUTOMATIC MODE OF OPERATION THE RWY 18-36 PAPI'S WILL BE CONTROLLED BY THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:  
 3 CLICKS - ON  
 5 CLICKS - REMAIN ON  
 7 CLICKS - REMAIN ON.
- EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT & EACH CONTROL CIRCUIT.
- INCLUDE PHOTOCELL BYPASS SWITCH.
- SURGE PROTECTOR SHALL BE UL LISTED PER UL 1449, SUITABLE FOR 120 VAC, 1PH, 2 WIRE PLUS GROUND SYSTEM WITH SURGE CURRENT RATING OF 40 KA (MIN.), 8x20 MICROSECOND WAVE, AND STATUS INDICATION LIGHTS IN A WEATHERPROOF HOUSING, JOSLYN MODEL 1260-21, OR APPROVED EQUAL. MAINTAIN LEADS AS SHORT & AS STRAIGHT AS POSSIBLE. INCLUDE MOUNTING BRACKET.
- INCLUDE EQUIPMENT GROUND BAR, ILSCO D167-12 OR EQUAL.
- CONTROL RELAYS SHALL HAVE 10 AMP CONTACT RATINGS AT 240 VAC WITH 120 VAC COILS. PROVIDE 3 SPARE RELAYS FOR EACH TYPE USED IN THE RELAY INTERFACE PANEL.
- COLOR CODING FOR THE CONTROL WIRING TO EACH CONSTANT CURRENT REGULATOR SHALL BE CONSISTENT FOR ALL REGULATORS. COLOR CODING SHALL BE AS FOLLOWS:  
 CC -RED  
 10% -ORANGE  
 30% -YELLOW  
 100% -BLUE  
 NEUTRAL -WHITE  
 EQUIPT. GND -GREEN  
 ALSO TAG THE CONTROL WIRES WITH THE RESPECTIVE DESIGNATION (CC, 10%, 30%, 100%)
- "N" DESIGNATES NEUTRAL CONNECTION OR NEUTRAL CONDUCTOR.
- CONTROL SYSTEM IS DESIGNED TO ACCOMMODATE L-828 CONSTANT CURRENT REGULATORS AND / OR L-812 CONSTANT CURRENT REGULATORS.

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REVISION	DATE	BY	APP'D
SHELBY COUNTY AIRPORT SHELBYVILLE, ILLINOIS			
Hanson Proj. No. 10A0047		IL PROJ.: 2HO-4149	
Filename: E-605.DWG	Scale: NONE	Drawn: CWS	12/15/11
Date: 02/18/12		Reviewed: CAH/KNL	02/23/12
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CONSTRUCT VAULT, LIGHT TAXIWAY & INSTALL NAVAIDS		AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC	
<span style="font-size: 24pt; font-weight: bold;">31</span> 31 of 39 sheets			



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

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

#12 THWN, MTW, OR THW COPPER (TYP. FOR CONTROL CIRCUITS TO LIGHTING CONTACTORS)

NEMA TYPE TERMINAL BLOCKS RATED 85A, 600 VOLT SUITABLE FOR THE FOLLOWING WIRE COMBINATIONS  
 1 #4 AWG  
 1 #6 AWG  
 1-2 #8 AWG  
 1-4 #10 AWG  
 1-5 #12 AWG  
 TERMINAL BLOCKS SHALL BE SQUARE D CLASS 9080 TYPE GC6 OR APPROVED EQUAL. IEC RATED TERMINAL BLOCKS ARE NOT ACCEPTABLE.

NEMA TYPE TERMINAL BLOCKS RATED 85A, 600 VOLT SUITABLE FOR THE FOLLOWING WIRE COMBINATIONS  
 1 #4 AWG  
 1 #6 AWG  
 1-2 #8 AWG  
 1-4 #10 AWG  
 1-5 #12 AWG  
 TERMINAL BLOCKS SHALL BE SQUARE D CLASS 9080 TYPE GC6 OR APPROVED EQUAL. IEC RATED TERMINAL BLOCKS ARE NOT ACCEPTABLE.

30 AMP, 600 VAC, 2 POLE ELECTRICALLY HELD LIGHTING CONTACTOR WITH 120 VAC COIL, SQUARE D CLASS 8903, TYPE SMO1V02, OR APPROVED EQUAL (TYPICAL FOR 6)

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

NEMA 12 ENCLOSURE WITH HINGED DOOR SIZED AS REQUIRED TO HOUSE LIGHTING CONTACTORS, TERMINAL BLOCKS, WIRING & INTERFACE TO EXISTING CONDUITS, MINIMUM 30"Hx24"Wx8"D AS MANUFACTURED BY HOFFMAN OR APPROVED EQUAL.

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. 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 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").
- SEE "LIGHTING CONTACTOR SCHEMATIC" AND FOR ADDITIONAL INFORMATION ON WIRING.
- INCLUDE LEGEND PLATE LABELED "NOTICE: CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME".
- 120/240 VAC PHASE "A" CONDUCTORS SHALL HAVE BLACK COLORED INSULATION. 120/240 VAC PHASE "B" CONDUCTORS SHALL HAVE RED COLORED INSULATION. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION. INSULATED EQUIPMENT GROUND WIRES SHALL HAVE GREEN COLORED INSULATION.
- CONTROL PANEL FOR AIRFIELD NAVAIDS SHALL BE MANUFACTURED BY A UL 508 INDUSTRIAL CONTROL PANEL BUILDER OR AN FAA APPROVED L-821 PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENT. GUS BERTHOLD ELECTRIC (1900 WEST CARROLL AVENUE, CHICAGO, IL 60612, PHONE: 312-243-5767) IS AN APPROVED UL 508 INDUSTRIAL CONTROL PANEL BUILDER.

REVISION	DATE

SHELBY COUNTY AIRPORT  
 SHELBYVILLE, ILLINOIS  
 I.L.P. PROJ.: 3-17-0093-B11  
 I.L. PROJ.: 2H0-4149

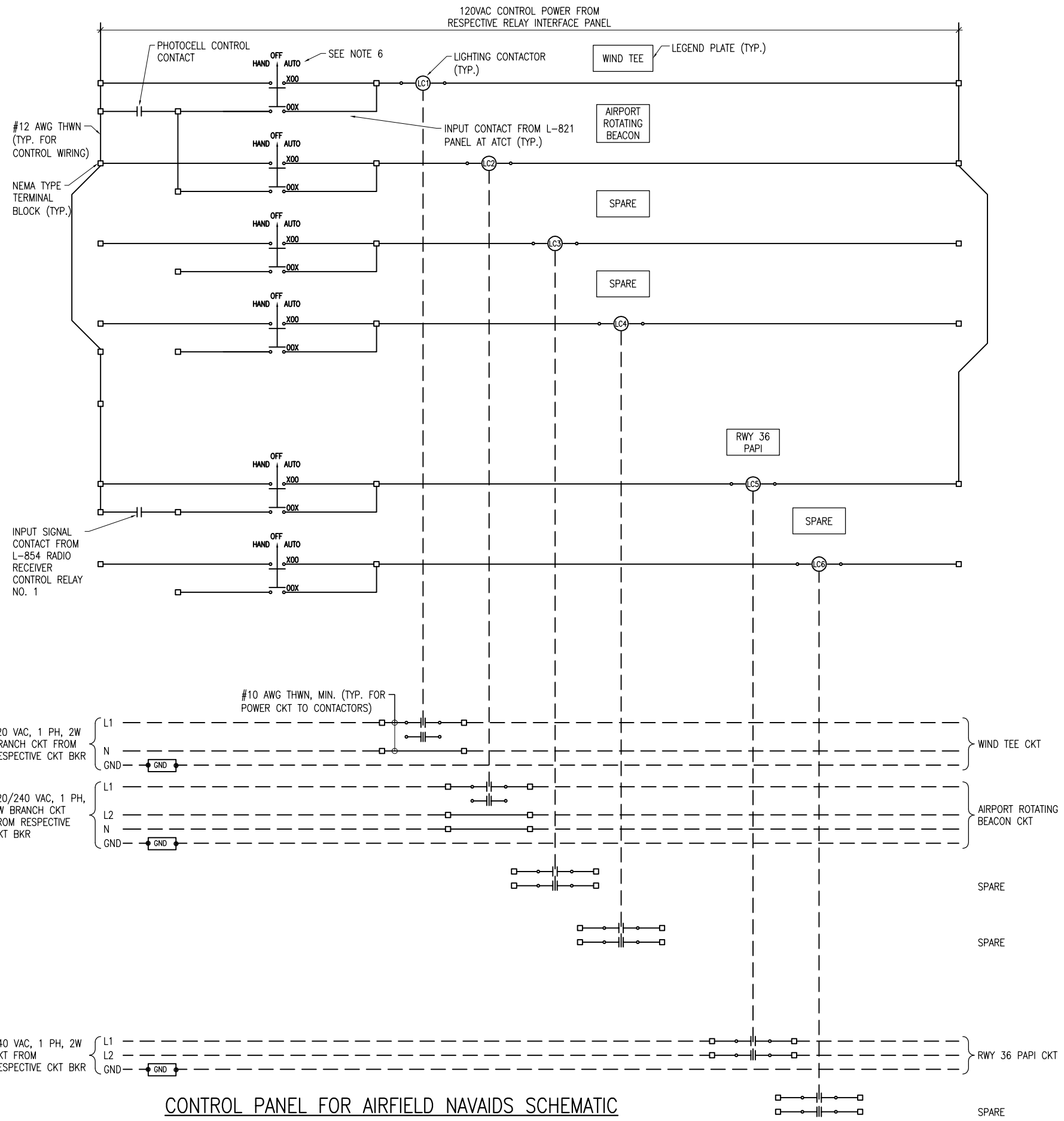
Hanson Proj. No.	10A0047
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LAYOUT	KNL 12/15/11
DRAWN	CWS 01/18/12
REVIEWED	KNL/CAH 02/23/12

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CONSTRUCT VAULT,  
 LIGHT TAXIWAY &  
 INSTALL NAVAIDS  
 LIGHTING CONTACTOR  
 PANEL DETAIL

CONTROL PANEL FOR AIRFIELD LIGHTING AND NAVAIDS

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CONTROL PANEL FOR AIRFIELD NAVAIDS SCHEMATIC

NOTES

- 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 25 AMP AND 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
- INPUT CONTROL 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").
- FUSING FOR CONTROL WIRING SHALL BE 10 AMP, 600 VAC, BUSSMANN CATALOG FNQ-R-10, OR APPROVED EQUAL, WITH FUSE BLOCKS, WITH BOX LUG TERMINALS, SIZED AS REQUIRED FOR THE RESPECTIVE APPLICATION. INCLUDE HARDWARE FOR MOUNTING. PROVIDE ONE BOX (5 MINIMUM QUANTITY) OF EACH TYPE AND SIZE OF FUSE, UPON COMPLETION OF THE JOB FOR USE AS SPARES.

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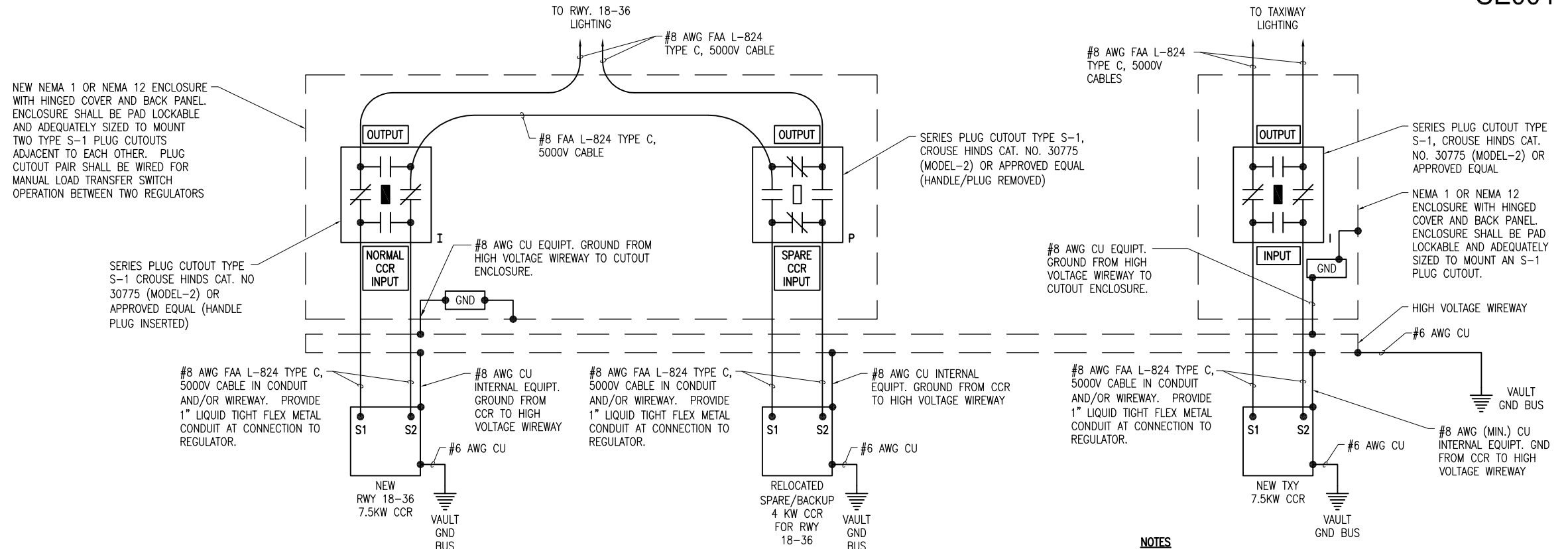
SHELBY COUNTY AIRPORT  
SHELBYVILLE, ILLINOIS

IL PROJ.: 2H0-4149 A.I.P. PROJ.: 3-17-0093-B11

Hanson Proj. No. 10A0047	12/15/11
Filename E-607.DWG	CNS
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CONSTRUCT VAULT,  
LIGHT TAXIWAY &  
INSTALL NAVAIDS  
LIGHTING CONTACTOR  
SCHEMATIC



HIGH VOLTAGE WIRING SCHEMATIC

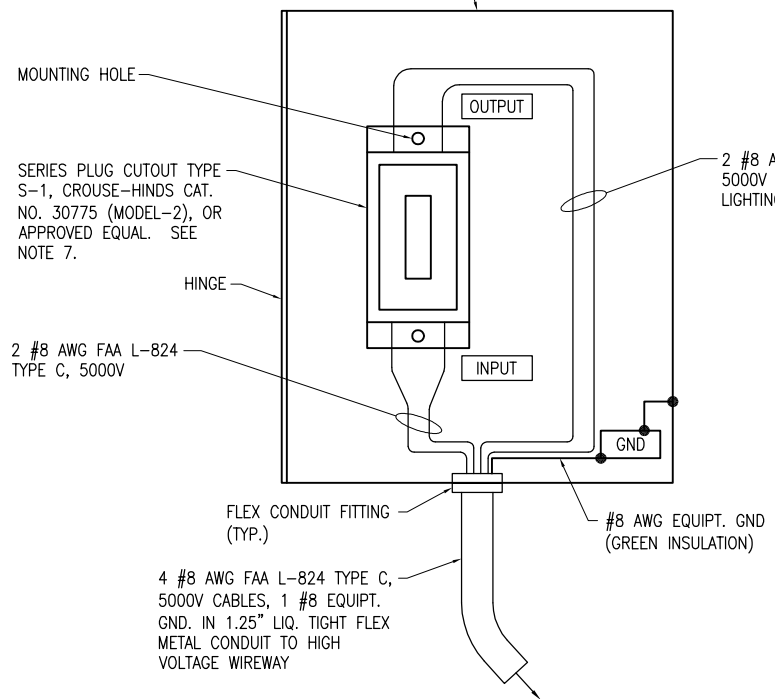
NOTES

- 1. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CONSTANT CURRENT REGULATOR (EXISTING & NEW) NOTING THE RUNWAY AND/OR TAXIWAY SERVED.
- 2. EACH PLUG CUTOUT CABINET SHALL BE FURNISHED WITH A PHENOLIC ENGRAVED LEGEND PLATE THAT IDENTIFIES THE RESPECTIVE RUNWAY OR TAXIWAY CIRCUIT OR REGULATOR. INCLUDE AN ADDITIONAL LEGEND PLATE LABELED "CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF".
- 3. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR THE CUTOUTS TO IDENTIFY THE RESPECTIVE REGULATOR OUTPUT CONNECTION AND THE RESPECTIVE CIRCUIT LOAD CONNECTION.
- 4. BOND REGULATOR FRAME TO VAULT GROUND BUS WITH A DEDICATED #6 AWG BONDING JUMPER.
- 5. PROVIDE ADEQUATE WORKING SPACE IN FRONT OF EACH CUTOUT ENCLOSURE TO MEET NEC CLEARANCE REQUIREMENTS.
- 6. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING AND SUNLIGHT RESISTANT. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL LISTED. CONFIRM LIQUID TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.
- 7. SERIES PLUG CUTOUTS SHALL BE TYPE S-1, RATED 5000 VOLTS, 20-AMP, AND SHALL COMPLY WITH FAA AC 150/5340-4C. SERIES PLUG CUTOUTS SHALL BE RATED SUITABLE FOR NORMAL OPERATION WITH HANDLE REMOVED OR HANDLE INSERTED. CUTOUTS SHALL DISCONNECT THE INPUT FROM THE OUTPUT, SHORT THE INPUT TERMINALS, AND SHORT THE OUTPUT TERMINALS WHEN THE HANDLE/PLUG IS REMOVED. CUTOUTS SHALL BE SUITABLE FOR MANUAL TRANSFER OPERATION (ONE SERIES CIRCUIT LOOP WITH THE CAPABILITY OF BEING POWERED FROM EITHER OF TWO CONSTANT CURRENT REGULATOR POWER SOURCES). SERIES PLUG CUTOUTS SHALL BE CROUSE-HINDS CAT. NO. 30775, OR APPROVED EQUAL. THE RESPECTIVE MANUFACTURER SHALL CERTIFY IN WRITING THAT THEIR CUTOUT IS SUITABLE AND RATED FOR THE RESPECTIVE APPLICATION.
- 8. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY.

LEGEND

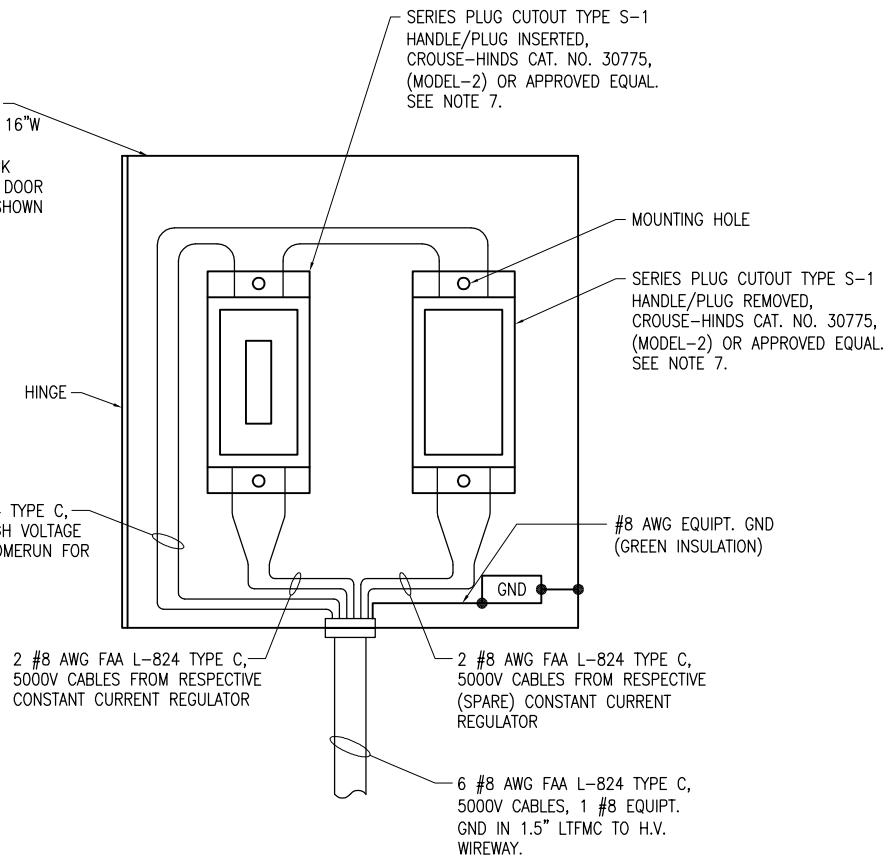
"I" DENOTES PLUG CUTOUT WITH PLUG INSERTED  
 "P" DENOTES PLUG CUTOUT WITH PLUG PULLED  
 "CCR" DENOTES CONSTANT CURRENT REGULATOR

14"H x 12"W x 8"D (APPROXIMATE DIMENSIONS) NEMA 1 OR NEMA 12 ENCLOSURE WITH HINGED COVER & BACK PANEL. NOTE FRONT DOOR OF ENCLOSURE NOT SHOWN FOR CLARITY. ADJUST ENCLOSURE DIMENSIONS AS NECESSARY TO ACCOMMODATE THE RESPECTIVE CUTOUT.



SERIES PLUG CUTOUT MOUNTING DETAIL  
 FOR TAXIWAY CIRCUIT  
 NOT TO SCALE

NEMA 1 OR NEMA 12 ENCLOSURE (MINIMUM 16"W x 16"W x 8"D) WITH HINGED COVER & BACK PANEL. NOTE FRONT DOOR OF ENCLOSURE NOT SHOWN FOR CLARITY.



SERIES PLUG CUTOUT MOUNTING DETAIL  
 FOR RUNWAY CIRCUIT  
 NOT TO SCALE

REVISION

DATE

SHELBY COUNTY AIRPORT  
 SHELBYVILLE, ILLINOIS

IL PROJ.: 2HO-4149 A.I.P. PROJ.: 3-17-0093-B11

Hanson Proj. No. 10A0047	12/14/11
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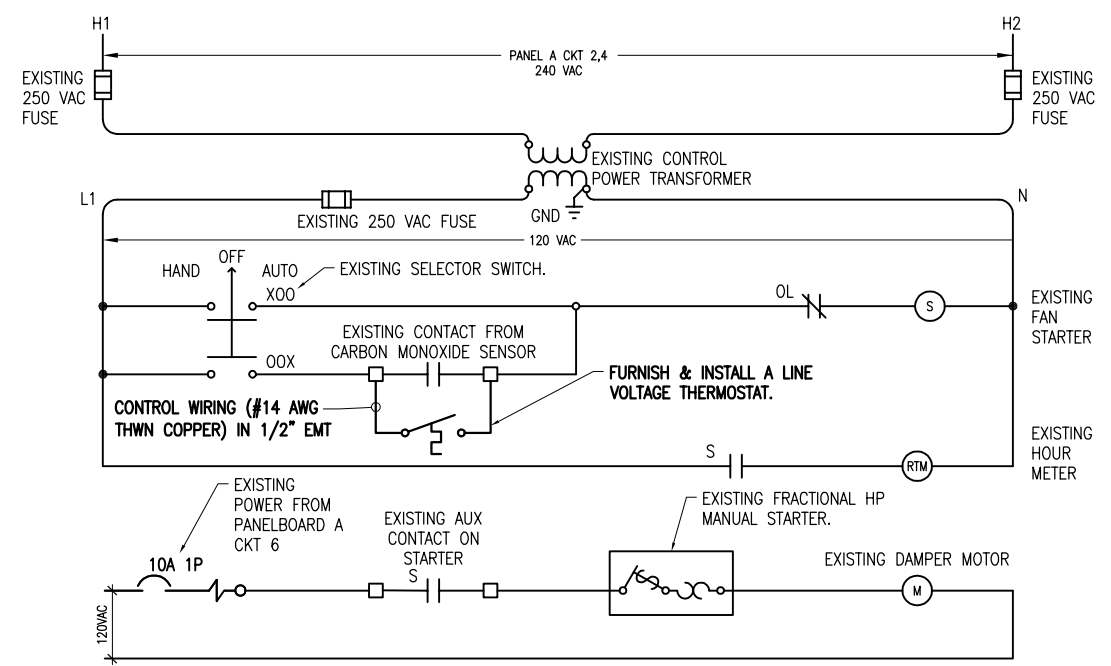
CONSTRUCT VAULT,  
 LIGHT TAXIWAY &  
 INSTALL NAVAIDS

HIGH VOLTAGE  
 WIRING SCHEMATIC

34

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**NOTES**

1. EXHAUST FAN & MOTOR STARTER FOR THE SRE BUILDING ARE EXISTING.
2. FURNISH AND INSTALL A LINE VOLTAGE THERMOSTAT WITH ASSOCIATED CONTROL WIRING CONDUIT, JUNCTION BOXES & MOUNTING HARDWARE.
3. EXHAUST FAN STARTER SHALL BE ACTIVATED BY A CONTACT ON THE EXISTING CARBON MONOXIDE SENSOR OR THE PROPOSED THERMOSTAT WHEN OPERATING IN THE AUTOMATIC MODE.

**EXHAUST FAN MOTOR STARTER CONTROL SCHEMATIC**

**VAULT MAIN DISTRIBUTION PANEL "B" SCHEDULE**

CKT #	DUTY	SIZE	SIZE	DUTY	CKT #
1	VAULT RECEPTACLE	20A 1P	60A	AC SURGE PROTECTOR	2
3	WIND TEE	20A 1P	2P		4
5	RUNWAY 36	20A	60A	RUNWAY 18-36 CCR	6
7	PAPI	2P	2P		8
9	AIRPORT ROTATING	20A	60A	TAXIWAY CCR	10
11	BEACON	2P	2P		12
13	L-854 RADIO & CONTROL POWER	10A 1P	60A	SPARE	14
15	SPARE	30A 1P	2P		16
17	SPARE	20A			18
19		2P			20
21	SPARE	20A 1P			22
23	SPARE	20A 1P			24
25	SPARE	15A 1P			26
27	BLANK				28
29	BLANK				30
31	BLANK				32
33	BLANK				34
35	BLANK				36
37	BLANK				38
39	BLANK				40
41	BLANK				42

225 AMP, 120/240 VAC, 1 PHASE, 3 WIRE, 42 CIRCUIT PANELBOARD WITH 150 AMP, 2 POLE MAIN BREAKER, RATED 10,000 AIC AT 240 VAC IN A NEMA 1 ENCLOSURE, UL LISTED SUITABLE FOR SERVICE ENTRANCE. INCLUDE COPPER GROUND BAR KITS. ALL FEEDER AND BRANCH BREAKERS SHALL BE BOLT-ON TYPE WITH 10,000 AIC RATING AT 120/240 VAC. PANELBOARD SHALL BE SQUARE D NQ SERIES OR APPROVED EQUAL.

**NOTES**

1. PANELBOARD BUSES SHALL BE COPPER. NEUTRAL SHALL BE COPPER. EQUIPMENT GROUND BAR SHALL BE COPPER.
2. ALL BRANCH CIRCUIT & FEEDER BREAKERS SHALL BE BOLT-ON TYPE WITH 10,000 AIC AT 120/240 VAC.
3. INCLUDE ENGRAVED, PHENOLIC OR PLASTIC LEGEND PLATE LABELED "VAULT MAIN DIST. PANEL B, 120/240 VAC, 1PH, 3W". INCLUDE ADDITIONAL LEGEND PLATE FOR THE EXTERIOR VAULT MAIN BREAKER LABELED "VAULT MAIN DISCONNECT".
4. PANELBOARD SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENTS. PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWING SUBMITTAL.
5. CIRCUIT BREAKERS AND WIRING SHALL BE SIZED FOR THE ACTUAL EQUIPMENT FURNISHED IN CONFORMANCE WITH THE RESPECTIVE MANUFACTURER'S RECOMMENDATION AND N.E.C. CONTRACTOR SHALL ADJUST CIRCUIT BREAKER SIZES & WIRING WHERE APPLICABLE TO CONFORM WITH THE MANUFACTURER'S RECOMMENDATIONS AND N.E.C.

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REVISION		DATE		DATE	
<p><b>SHELBY COUNTY AIRPORT</b>  <b>SHELBYVILLE, ILLINOIS</b></p>					
<p>ILL. PROJ.: 210-4149                  A.I.P. PROJ.: 3-17-0093-B11</p>					
Hanson Proj. No. 10A0047	Filename E-611.DWG	Scale AS SHOWN	Date 02/18/12	LAYOUT KNL 02/20/12	DRAWN CWS 02/20/12
				REVIEWED CAH/KNL 02/23/12	
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<p><b>CONSTRUCT VAULT,                  LIGHT TAXIWAY &amp;                  INSTALL NAVAIDS</b></p>			<p><b>PANELBOARD SCHEDULE AND                  DETAILS</b></p>		
<p><b>35</b></p> <p style="font-size: x-small;">35 of 39 sheets</p>					

LEGEND PLATE SCHEDULE	
DEVICE	LABEL
MAIN DISTRIBUTION VAULT PANELBOARD "B"	VAULT PANEL "B" 120/240 VAC, 1 PH, 3W
MAIN BREAKER IN VAULT PANEL "B"	VAULT MAIN DISCONNECT
TAXIWAY CCR	TAXIWAY
RUNWAY 18-36 CCR	RUNWAY 18-36
BACKUP/SPARE CCR FOR RUNWAY 18-36	SPARE FOR RUNWAY 18-36
CUTOUT ENCLOSURE FOR TAXIWAY	TAXIWAY CUTOUT
TAXIWAY CUTOUT INPUT SIDE CONNECTION	INPUT
TAXIWAY CUTOUT OUTPUT SIDE CONNECTION	OUTPUT
CUTOUT ENCLOSURE FOR RUNWAY 18-36	RUNWAY 18-36 CUTOUTS
NORMAL CUTOUT INPUT SIDE CONNECTION FOR RUNWAY 18-36	NORMAL CCR INPUT
SPARE CUTOUT INPUT SIDE CONNECTION FOR RUNWAY 18-36	SPARE CCR INPUT
EACH CUTOUT (RUNWAY 18-36) OUTPUT SIDE CONNECTION (2 LEGEND PLATES)	OUTPUT

LEGEND PLATE SCHEDULE CONTINUED	
DEVICE	LABEL
EACH CUTOUT ENCLOSURE (2 LEGEND PLATES)	CAUTION OPERATE CUTOUTS WITH CCR'S SHUT OFF
RADIO RELAY INTERFACE PANEL	RADIO RELAY INTERFACE PANEL
MANUAL TRANSFER SWITCH FOR RUNWAY 18-36 NORMAL CCR AND SPARE/BACKUP CCR	TRANSFER SWITCH FOR RUNWAY 18-36 CONSTANT CURRENT REGULATORS
MANUAL TRANSFER SWITCH FOR RUNWAY 18-36 NORMAL CCR AND SPARE/BACKUP CCR - NORMAL SWITCH POSITION	NORMAL CCR
MANUAL TRANSFER SWITCH FOR RUNWAY 18-36 NORMAL CCR AND SPARE/BACKUP CCR - BACKUP SWITCH POSITION	SPARE/BACKUP CCR
CONTROL PANEL FOR AIRFIELD LIGHTING & NAVAIDS	CONTACTOR PANEL FOR AIRFIELD LIGHTING & NAVAIDS
CONTACTOR PANEL FOR AIRFIELD NAVAIDS AND VAULT FAN	NOTICE CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME
LOW VOLTAGE WIREWAY (PROVIDE 2 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND)	LOW VOLTAGE
HIGH VOLTAGE WIREWAY (PROVIDE 2 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND)	HIGH VOLTAGE
VAULT GROUND BUS (PROVIDE 2 LEGEND PLATES 1/2" HIGH WHITE LETTERS GREEN BACKGROUND; INSTALL ABOVE OR BELOW GROUND BUS)	VAULT GROUND BUS
GROUNDING ELECTRODE CONDUCTORS TERMINATED ON VAULT GROUND BUS. (PROVIDE 3 LEGEND PLATES & SECURE TO CONDUCTORS WITH NYLON STRING OR CABLE TIES)	DO NOT DISCONNECT
RWY 36 PAPI POWER AND CONTROL UNIT	RWY 36 PAPI 240VAC, FED FROM VAULT

DIRECTIONS TO TRANSFER RUNWAY 18-36 LIGHTING FROM NORMAL CCR TO SPARE/BACKUP CCR.

- SHUT OFF INPUT POWER (CIRCUIT BREAKER) TO BOTH RWY 18-36 CCR'S & TURN CCR SELECTOR SWITCHES TO OFF.
- OPERATE MANUAL TRANSFER SWITCH FOR RWY 18-36 AND MOVE HANDLE FROM "NORMAL" POSITION TO "SPARE/BACKUP" POSITION.
- PULL CUTOUT HANDLE FROM NORMAL CCR UNIT & INSERT INTO SPARE CCR CUTOUT.
- GO TO RADIO RELAY INTERFACE PANEL & TURN "RWY 18-36 CCR TRANSFER" SELECTOR SWITCH FROM "NORMAL" TO "SPARE" POSITION.
- TURN ON INPUT POWER (CIRCUIT BREAKER) TO SPARE RWY 18-36 CCR.
- TURN SELECTOR SWITCH ON SPARE CCR TO "REMOTE" POSITION.

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

**RUNWAY 18-36 CCR TRANSFER PROCEDURE  
PLACARD DETAIL**

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

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



"DANGER - HIGH VOLTAGE KEEP OUT" SIGN

PROVIDE WARNING SIGN ON VAULT EXTERIOR DOORS (GATES) LABELED "DANGER - HIGH VOLTAGE - KEEP OUT" PER THE REQUIREMENTS OF NEC 110.34 (C). PROVIDE MINIMUM OF 2 SIGNS (ONE ON EACH DOOR (GATE) TO THE VAULT). PROVIDE ALUMINUM PANEL BACKING FOR SIGN.



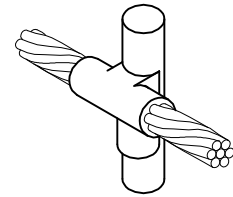
"DANGER - HIGH VOLTAGE" SIGN

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".

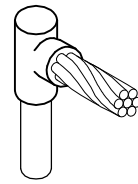
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	DATE								
SHELBY COUNTY AIRPORT SHELBYVILLE, ILLINOIS ILL. PROJ.: 2H0-4149      A.I.P. PROJ.: 3-17-0093-B11									
Hanson Proj. No.	10A0047	Filename	E-610.DWG	Scale	NONE	Date	02/18/12	LAYOUT	12/16/11
Drawn	CWS	Reviewed	KNL/CAH	Drawn	CWS	Reviewed	KNL/CAH	Drawn	01/18/12
© Copyright Hanson Professional Services Inc. 2012 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									
CONSTRUCT VAULT, LIGHT TAXIWAY & INSTALL NAVAIDS					LEGEND PLATE SCHEDULES				
<span style="font-size: 24pt; font-weight: bold;">36</span> 36 of 39 sheets									

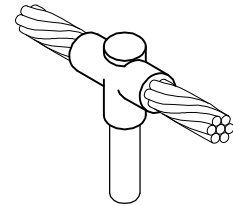




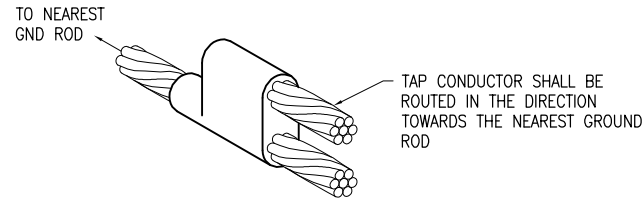
**CABLE TO GROUND ROD**



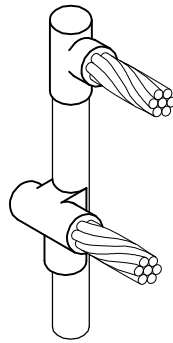
**CABLE TO GROUND ROD**



**CABLE TO GROUND ROD**



**CABLE TO CABLE HORIZONTAL PARALLEL TAP**

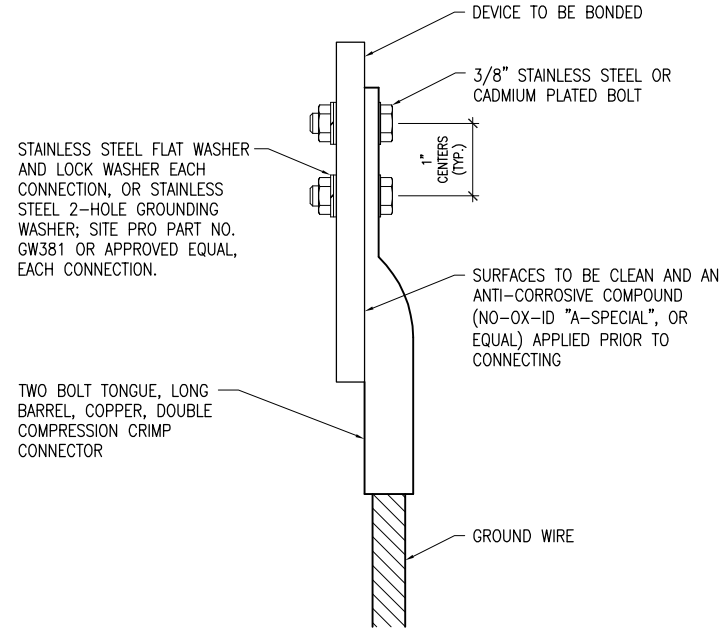


**CABLES TO GROUND ROD**

DETAIL NOTES

1. ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, OR THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.
2. FOR APPLICATIONS TO GALVANIZED STEEL OR PAINTED STEEL, REMOVE GALVANIZING AND/OR PAINT & CLEAN THE SURFACE TO EXPOSE BARE STEEL BEFORE MAKING EXOTHERMIC WELD CONNECTION.
3. INDIVIDUAL GROUNDING ELECTRODE CONDUCTORS SHALL NOT BE INSTALLED IN METAL CONDUIT. INSTALL GROUNDING ELECTRODE CONDUCTORS IN SCHED 40 PVC CONDUIT AS REQUIRED IN FOUNDATIONS, FOR PROTECTION, WHERE ENTERING ENCLOSURES, ETC. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENCIrcLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIrcLING THE CONDUIT.

EXOTHERMIC WELD DETAILS

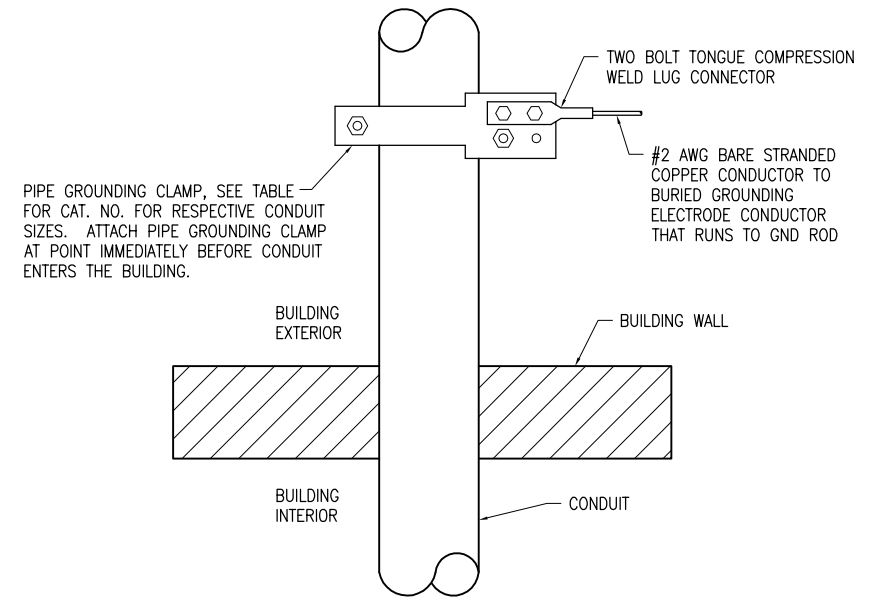


2 HOLE LONG BARREL COMPRESSION LUG TABLE			
WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1		
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159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

NOTES

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

GROUNDING LUG CONNECTION DETAIL



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

NOTES

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

EXTERIOR CONDUIT GROUNDING DETAIL

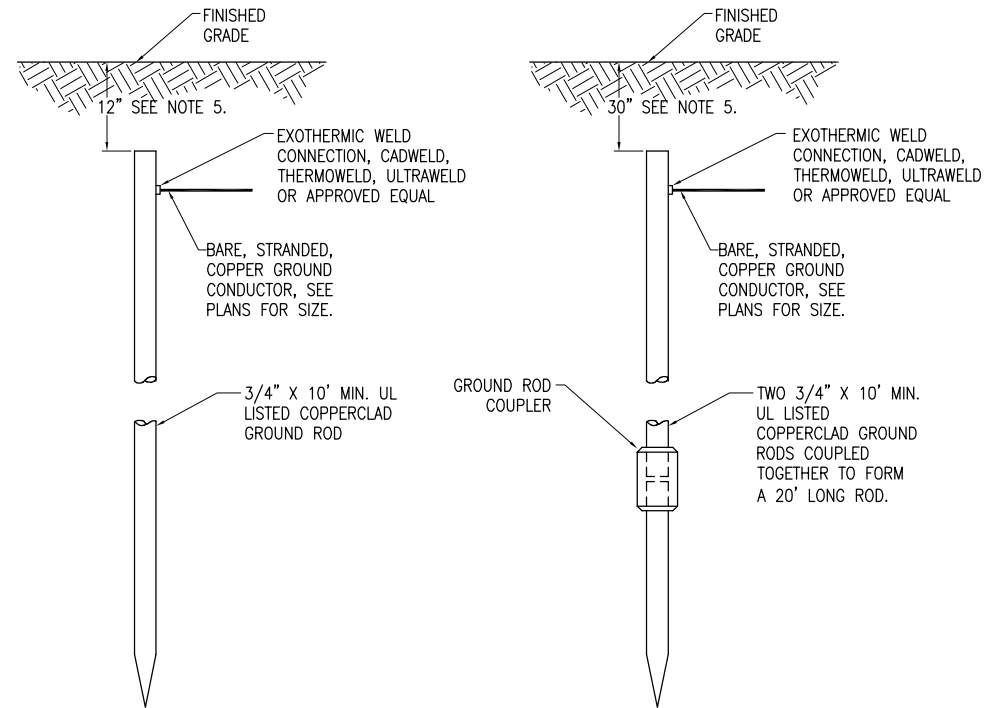
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<p><b>SHELBY COUNTY AIRPORT</b> SHELBYVILLE, ILLINOIS</p> <p style="font-size: small;">A.I.P. PROJ.: 3-17-0093-B11 IL PROJ.: 2HO-4149</p>		
Hanson Proj. No. 10A0047	Filename AS SHOWN	Scale 02/18/12
Date 02/18/12	LAYOUT KNL	12/16/11
DRAWN CWS	REVIEWED CAH/KNL	01/18/12
<p><b>HANSON</b> Professional Services Inc. 2012 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>CONSTRUCT VAULT, LIGHT TAXIWAY &amp; INSTALL NAVAIDS</p> <p style="text-align: right;">GROUNDING DETAILS</p>		
38		
38 of 39 sheets		

**GROUNDING NOTES**

- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70) IN FORCE AND FAA-STD-019a (LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING, AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT). THE RELIABILITY OF THE GROUNDING SYSTEM IS DEPENDENT ON CAREFUL, PROPER INSTALLATION AND CHOICE OF MATERIALS. IMPROPER PREPARATION OF SURFACES TO BE JOINED TO MAKE AN ELECTRICAL PATH, LOOSE JOINTS OR CORROSION CAN INTRODUCE IMPEDANCE THAT WILL SERIOUSLY IMPAIR THE ABILITY OF THE GROUND PATH TO PROTECT PERSONNEL AND EQUIPMENT AND TO ABSORB TRANSIENTS THAT CAN CAUSE NOISE IN COMMUNICATIONS CIRCUITS. THE FOLLOWING FUNCTIONS ARE PARTICULARLY IMPORTANT TO ENSURE A RELIABLE GROUND SYSTEM:
- FURNISH AND INSTALL GROUND RODS AS DETAILED HEREIN. GROUND RODS FOR AIRFIELD LIGHTING (RUNWAY LIGHTING, TAXIWAY LIGHTING, TAXI GUIDANCE SIGNS, & 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.
- 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 RESIDENT ENGINEER FOR FURTHER DIRECTION. COPIES OF GROUND FIELD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER, UPON REQUEST, FOR REVIEW AND RECORD PURPOSES.
- ALL PRODUCTS ASSOCIATED WITH THE GROUNDING SYSTEM SHALL BE UL-LISTED AND LABELED.
- ALL BOLTED OR MECHANICAL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND BEFORE JOINING, SANCHEM INC. "NO-OX-ID "A-SPECIAL" COMPOUND, BURNDY PENETROX E, OR EQUAL.
- METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2011 NATIONAL ELECTRICAL CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.
- METALLIC RACEWAY FITTINGS SHALL BE MADE UP TIGHT TO PROVIDE A PERMANENT LOW IMPEDANCE PATH FOR ALL CIRCUITS. METAL CONDUIT TERMINATIONS IN ENCLOSURES SHALL BE BONDED TO THE ENCLOSURE WITH UL-LISTED FITTINGS SUITABLE FOR GROUNDING. PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT
- ALL CONNECTIONS, LOCATED ABOVE GRADE, BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS SHALL BE MADE USING UL-LISTED DOUBLE COMPRESSION CRIMP TYPE CONNECTORS OR UL-LISTED BOLTED GROUND CONNECTORS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, THOMAS AND BETTS, OR EQUAL. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES IN UL STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
- ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
- PROVIDE ALL BOXES FOR PROPOSED OUTLETS, SWITCHES, CIRCUIT BREAKERS, ETC. WITH GROUNDING SCREWS. PROVIDE ALL PANELBOARD, SWITCHGEAR, ETC., ENCLOSURES WITH GROUNDING BARS WITH INDIVIDUAL SCREWS, LUGS, CLAMPS, ETC., FOR EACH OF THE GROUNDING CONDUCTORS THAT ENTER THEIR RESPECTIVE ENCLOSURES.
- EACH NEW FEEDER CIRCUIT AND/OR BRANCH CIRCUIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. METAL RACEWAY OR CONDUIT SHALL NOT MEET THIS REQUIREMENT. THE EQUIPMENT GROUND WIRE FROM EQUIPMENT SHALL NOT BE SMALLER THAN ALLOWED BY 2011 NEC TABLE 250-122 "MINIMUM SIZE CONDUCTORS OR GROUNDING RACEWAY AND EQUIPMENT." WHEN CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT-GROUNDING CONDUCTORS SHALL BE ADJUSTED PROPORTIONATELY ACCORDING TO CIRCULAR MIL AREA. ALL EQUIPMENT GROUND WIRES SHALL BE COPPER, EITHER BARE OR INSULATED GREEN IN COLOR. WHERE THE EQUIPMENT GROUNDING CONDUCTORS ARE INSULATED, THEY SHALL BE IDENTIFIED BY THE COLOR GREEN, AND SHALL BE THE SAME INSULATION TYPE AS THE PHASE CONDUCTORS.

- ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC., SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 2011 NEC 250-102. WHERE METAL CONDUITS TERMINATE IN AN ENCLOSURE (SUCH AS A MOTOR CONTROL CENTER, SWITCHBOARD, ETC) WHERE THERE IS NOT ELECTRICAL CONTINUITY WITH THE CONDUIT AND THE RESPECTIVE ENCLOSURE, PROVIDE A BONDING JUMPER FROM THE RESPECTIVE ENCLOSURE GROUND BUS TO THE CONDUIT SIZED PER 2011 NEC 250-102.
- IT IS THE INTENT OF THIS SPECIFICATION THAT ALL MOTOR FRAMES, PUMP BASES ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.
- PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUNDING NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
- EACH AND ALL GROUNDING CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.
- ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, OR APPROVED EQUAL.
- BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
- BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.
- INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY ENCIRCLE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. USE NON-METALLIC REINFORCED FIBERGLASS STRUT SUPPORT. WHERE METAL CONDUIT CLAMPS ARE INSTALLED, USE NYLON BOLTS, NUTS, WASHERS AND SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT. THIS IS REQUIRED TO AVOID GIRDLING OF GROUND CONDUCTORS. GIRDLING OF A GROUND CONDUCTOR IS THE RESULT OF PLACING THE CONDUCTOR IN A RING OF MAGNETIC MATERIAL. THIS RING COULD BE A METALLIC CONDUIT, U-BOLT OR STRUT SUPPORT PIPE CLAMP, OR OTHER SUPPORT HARDWARE. THE RESULT OF GIRDLING GROUND CONDUCTORS SIGNIFICANTLY INCREASES THE INDUCTIVE IMPEDANCE OF THE GROUND CONDUCTOR. INDUCTIVE AND CAPACITIVE IMPEDANCE IS A TYPE OF RESISTANCE THAT OPPOSES THE FLOW OF ALTERNATING CURRENT. ANY INCREASE IN THE IMPEDANCE OF A GROUND CONDUCTOR REDUCES ITS ABILITY TO EFFECTIVELY MITIGATE RADIO FREQUENCY NOISE IN THE GROUND SYSTEM. THE CONDITION WHERE A GROUND CONDUCTOR IS GIRDLING DURING A LIGHTNING STRIKE RESULTS IN PHENOMENA KNOWN AS SURGE IMPEDANCE LOADING. SURGE IMPEDANCE LOADING IS A RESULT OF VOLTAGE AND CURRENT REACHING 500,000 VOLTS AND 10,000 AMPS FOR A SHORT DURATION. GIRDLING FURTHER INCREASES THE IMPEDANCE AT LIGHTNING FREQUENCIES OF 100 KILOHERTZ TO 100 MEGAHERTZ. AT THESE POWER AND FREQUENCY LEVELS ANY INCREASE IN THE IMPEDANCE OF THE GROUND CONDUCTOR MUST BE CONTROLLED. DURING LIGHTNING DISCHARGE CONDITIONS A LOW INDUCTIVE IMPEDANCE PATH IS MORE IMPORTANT THAN A LOW DC RESISTANCE PATH.
- IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2011 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.
- GROUND RODS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. STEEL USED TO MANUFACTURE GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.



**10 FT. GROUND ROD**                      **20 FT. GROUND ROD**

**GROUND RODS**

(NOT TO SCALE)

NOTES

- TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
- THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.
- COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED. GROUND RODS FOR VAULT AND WIND TEE WILL BE CONSIDERED INCIDENTAL TO ITEM AR109200.
- GROUND RODS SHALL BE SPACED AS DETAILED ON THE PLANS AND SHALL NOT BE SPACED LESS THAN ONE ROD LENGTH APART.
- TOP OF GROUND RODS SHALL BE 12" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN. GROUND RODS FOR VAULT SHALL BE 30" MINIMUM BELOW GRADE TO TOP OF ROD.

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Hanson Proj. No.	10A00047	Revision	NONE	Date	02/18/12
Filename	E-004.DWG	Scale	NONE	Date	02/18/12
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CONSTRUCT VAULT, LIGHT TAXIWAY & INSTALL NAVAIDS			GROUNDING NOTES		
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