

# CONSTRUCTION PLANS

## FOR

# OLNEY-NOBLE AIRPORT

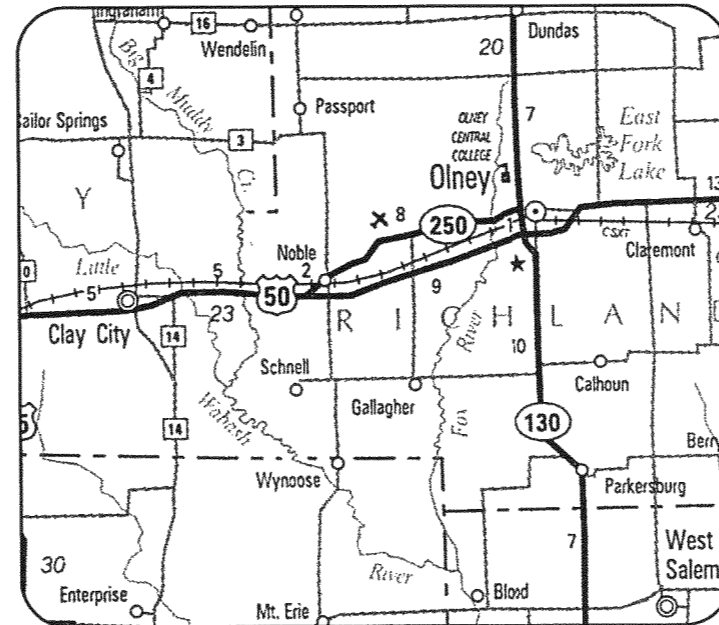
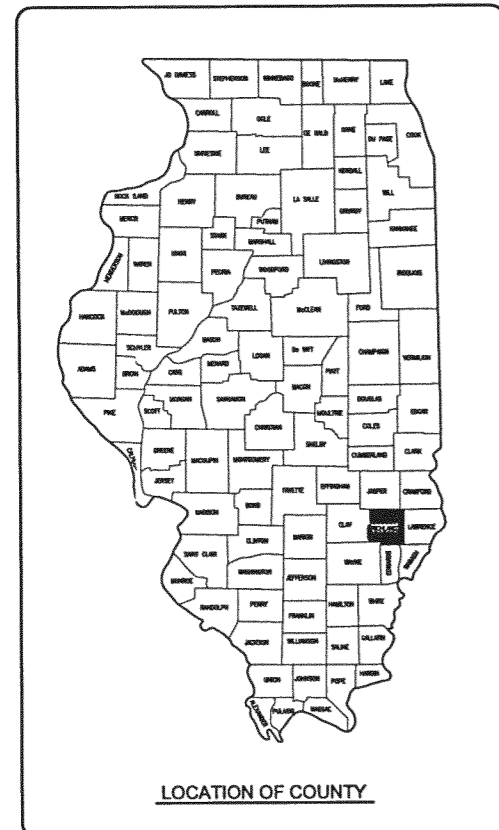
### NOBLE, RICHLAND COUNTY, ILLINOIS

## REPLACE VADIS, REILS, BEACON & VAULT

**SCOPE OF WORK**

BASE BID: THIS WORK SHALL CONSIST OF THE REMOVAL AND REPLACEMENT OF THE VASI SYSTEMS ON RUNWAY 11-29 APPROACHES, REPLACEMENT OF REILS, REPLACEMENT OF THE AIRPORT ROTATING BEACON WITH A REFURBISHED UNIT, AND ADDITION OF OBSTRUCTION LIGHTS ON THE EXISTING AIRPORT ROTATING BEACON TOWER. INCLUDED SHALL BE THE INSTALLATION OF A NEW AIRPORT ELECTRICAL VAULT WITH ASSOCIATED HANDHOLES, DUCTS, CABLING, AND THE INSTALLATION OF AN ELECTRIC GATE OPERATOR.

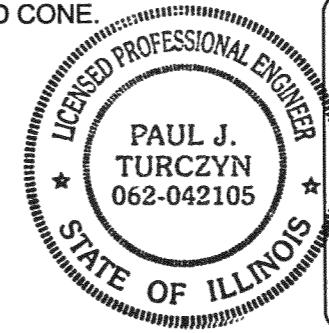
ADDITIVE ALTERNATE NO. 1: INSTALLATION OF A LIGHTED L-807 PRIMARY WIND CONE.



### LOCATION

ILL. PROJ.: OLY-4032  
A.I.P. PROJ.: 3-17-0076-B10

LATITUDE: 38° 44' 00"  
LONGITUDE: 88° 10' 33"  
ELEVATION: 481.0' M.S.L.  
DATE: DEC. 17, 2010



REVISED: JANUARY 28, 2011  
PLANS PREPARED BY:

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

Submitted by: *Paul J. Turczyn* ENG'R  
Date Submitted: JANUARY 31, 2011  
Lic. Exp. Date: NOVEMBER 30, 2011

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

Submitted by: *Charles A. Hagloch* ENG'R  
Date Submitted: JANUARY 31, 2011  
Lic. Exp. Date: NOVEMBER 30, 2011

**OLNEY-NOBLE AIRPORT AUTHORITY**

Approved: *[Signature]* CHAIRMAN  
Date: \_\_\_\_\_

Approved: *[Signature]* SECRETARY  
Date: \_\_\_\_\_

DATE	REVISION
01/28/11	Revised as per IDA review - CAH

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

Hanson Proj. No.	DATE	BY
10A0079D	08/26/10	PUT
10A0079D	08/27/10	ANC
10A0079D	08/27/10	KNL

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Offices Nationwide

REPLACE NAVAIDS  
AND VAULT

COVER SHEET

1

1 of 48 sheets

JAN 28, 2011 9:27 AM HAGLOCH.CHG (A.I.P. PROJ.: 3-17-0076-B10) SHEET R-001 (CVR.DWG)

DATE	REVISION
01/28/11	Revised as per IDA review - CAH

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AR101580	REFURBISH 36" BEACON	L.S.	1	
AR108158	1/C #8 5 KV UG CABLE IN UD	L.F.	1535	
AR108656	3/C #6 600V UG CABLE IN UD	L.F.	13125	
AR108800	CONTROL CABLE	L.F.	260	
AR109110	ERECT PREFABRICATED VAULT	L.S.	1	
AR109200	INSTALL ELECTRICAL EQUIPMENT	L.S.	1	
AR109600	L-821 CONTROL PANEL	EA.	1	
AR109901	REMOVE ELECTRICAL VAULT	L.S.	1	
AR110014	4" DIRECTIONAL BORE	L.F.	820	
AR110610	ELECTRICAL HANDHOLE	EA.	3	
AR125565	SPLICE CAN	EA.	2	
AR125610	REILS	PAIR	2	
AR125620	ABBREVIATED PAPI (L-881 SYSTEM)	EA.	2	
AR125907	REMOVE REILS	PAIR	2	
AR125909	REMOVE VASI	EA.	2	
AR150510	ENGINEER'S FIELD OFFICE	L.S.	1	
AR150520	MOBILIZATION	L.S.	1	
AR800467	GATE OPERATOR	EA.	1	
AR800590	4/C #6 600V UG CABLE IN UD	L.F.	790	
AR800591	UPGRADE AIRPORT ROTATING BEACON	L.S.	1	

SUMMARY OF QUANTITIES - ADDITIVE ALTERNATE NO. 1

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AS107712	L-807 WIND CONE-12' LIGHTED	EA.	1	
AS108656	3/C#6 600V UG CABLE IN UD	L.F.	230	

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5	EXISTING LIGHTING PLAN STA. 134+00 TO STA. 146+60
6	EXISTING LIGHTING PLAN STA. 13+07 TO STA. 16+00
7	PROPOSED LIGHTING PLAN STA. 105+60 TO STA. 119+00
8	PROPOSED LIGHTING PLAN STA. 119+00 TO STA. 133+00
9	PROPOSED LIGHTING PLAN STA. 133+00 TO STA. 146+60
10	PROPOSED LIGHTING PLAN TERMINAL AREA
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OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

Hanson Proj. No. 10A00790	Filename R-002E1.P.DWG	Scale NONE	Date 12/17/10
LAYOUT	PJT	08/26/10	
DRAWN	ANC	08/27/10	
REVIEWED	KNL	11/05/10	



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REPLACE NAVAIDS  
AND VAULT

SUMMARY OF QUANTITIES  
AND INDEX TO SHEETS

**UTILITY NOTE**

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

**HAUL ROUTE AND VEHICLE PARKING**

THE CONTRACTOR WILL BE ALLOWED TO USE THE EXISTING AIRPORT ENTRANCE ROAD AS HIS DESIGNATED HAUL ROUTE. HE WILL CONSTRUCT A PARKING AND STORAGE AREA ADJACENT TO THE AUTO PARKING LOT. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE PROPOSED PARKING AND STORAGE AREA THROUGHOUT THE COURSE OF THE PROJECT. ANY AREAS DAMAGED OUTSIDE OF THIS AREA WILL BE REPAIRED BY THE CONTRACTOR AND AT THE CONTRACTOR'S OWN EXPENSE. AT THE CONCLUSION OF THE PROJECT THE CONTRACTOR WILL GRADE, FERTILIZE, SEED AND MULCH THE PARKING AND STORAGE AREA AS NEEDED TO RESTORE IT TO ITS' ORIGINAL STATE. RESTORATION OF THE PARKING AND STORAGE AREA WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

**CONTRACTOR RESPONSIBILITIES**

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

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

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

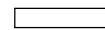
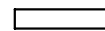

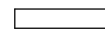
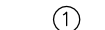

THE CONTRACTOR SHALL KEEP ONE RUNWAY OPEN AT ALL TIMES AND MAINTAIN CONTINUOUS TAXIWAY ACCESS TO ALL HANGARS AND ADMINISTRATIVE AREAS.

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

NO TRENCHES OR HOLES WILL REMAIN OPEN OVERNIGHT.

NO RUNWAY SHALL BE CLOSED OVERNIGHT, UNLESS ALLOWED BY THE SPECIAL PROVISIONS.

**LEGEND**

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

**SCOPE OF WORK**

THIS PROJECT CONSISTS OF THE CONSTRUCTION OF A NEW AIRPORT ELECTRICAL VAULT WITH NEW ELECTRICAL AND MECHANICAL EQUIPMENT. THIS PROJECT INCLUDES NEW ELECTRICAL SERVICE, THE REMOVAL OF THE EXISTING ELECTRICAL VAULT AND ELECTRICAL EQUIPMENT, AND INTERFACING/REPLACING CABLE TO EXISTING AIRFIELD LIGHTING SYSTEMS. EXISTING REILS AND VADI UNITS WILL BE REPLACED

**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 TO REPLACE THE BEACON AND TO SET THE NEW VAULT. THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT AT THE OTHER LOCATIONS WILL BE 25 FEET. THE TALLEST EQUIPMENT IS EXPECTED TO BE A CONCRETE TRUCK OR A LINE TRUCK.

THE CRANE'S BOOM WILL BE IN A LOWERED POSITION WHEN NOT IN USE. THE CRANE WILL ALSO HAVE A CHECKERED CONSTRUCTION FLAG MOUNTED ON IT.

**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.

**BARRICADES AND TRAFFIC CONES**

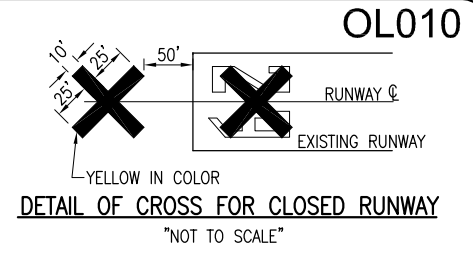
BARRICADES SHALL BE PLACED AND MAINTAINED IN SUCH A WAY AS TO PREVENT AIRCRAFT ACCESS TO THE PROPOSED WORK AREAS WHILE MAINTAINING AIRCRAFT ACCESS TO ACTIVE AIRFIELD PAVEMENTS. PAVEMENT CLOSURES SHALL BE SCHEDULED THROUGH AND WILL REQUIRE THE APPROVAL OF THE AIRPORT MANAGER. THE BARRICADES WILL BE EQUIPPED 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.

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

COUNTY \_\_\_\_\_ RICHLAND  
 CITY \_\_\_\_\_ OLNEY  
 TOWNSHIP \_\_\_\_\_ NOBLE  
 SECTION NO. \_\_\_\_\_ 2  
 ADDRESS \_\_\_\_\_ OLNEY-NOBLE AIRPORT  
 P.O. BOX 717  
 NOBLE, ILLINOIS 62450



**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.

**PROPOSED SAFETY PLAN**

GENERAL - THE OLNEY-NOBLE AIRPORT IS COMPRISED OF TWO RUNWAYS. THE PROPOSED CONSTRUCTION WILL NECESSITATE CLOSING BOTH RUNWAYS. ANY TIME THE CONTRACTOR IS WORKING WITHIN 200' OF A RUNWAY CENTERLINE THE RUNWAY WILL BE CLOSED. THE RUNWAY WILL BE CLOSED ONLY DURING THE CONSTRUCTION DAY (UNLESS ALLOWED BY THE SPECIAL PROVISIONS). AT THE END OF EACH CONSTRUCTION DAY THE CONTRACTOR WILL SMOOTH GRADE ALL AREAS WITHIN THE SAFETY AREA TO THE SATISFACTION OF THE RESIDENT ENGINEER AND RE-OPEN THE RUNWAY. ALL WORK INCLUDED IN OPENING AND CLOSING THE RUNWAY WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

THE CONTRACTOR WILL ALWAYS KEEP ONE RUNWAY OPEN EXCEPT FOR WHEN HE IS INSTALLING PAPI/REIL CABLES UNDER RUNWAY 3-21. THIS CONSTRUCTION WILL REQUIRE THE CLOSURE OF BOTH RUNWAYS. THE CONTRACTOR WILL EXPEDITE THIS CONSTRUCTION TO LIMIT THE LENGTH OF TIME RUNWAY 3-21 IS CLOSED.

WHEN THE CONTRACTOR IS CONSTRUCTING THE REIL AND PAPI CONCRETE FOUNDATIONS HE WILL BE ALLOWED TO KEEP THE RESPECTIVE RUNWAY CLOSED OVERNIGHT IN ORDER TO COMPLETE THE WORK THE NEXT DAY. THE CONTRACTOR WILL NOT KEEP BOTH RUNWAYS CLOSED OVERNIGHT AT THE SAME TIME. HE WILL NOT BE ALLOWED TO KEEP A RUNWAY CLOSED FOR TWO CONSECUTIVE NIGHTS.

THE CONTRACTOR WILL CLOSE A TAXIWAY WHENEVER HE IS WORKING WITHIN 80' OF THE TAXIWAY CENTERLINE. THE CONTRACTOR WILL USE BARRICADES TO CLOSE THE TAXIWAY.

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 (123.00 Mhz.) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE OLNEY-NOBLE AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTIC EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.

**150-ENGINEER'S FIELD OFFICE NOTES**

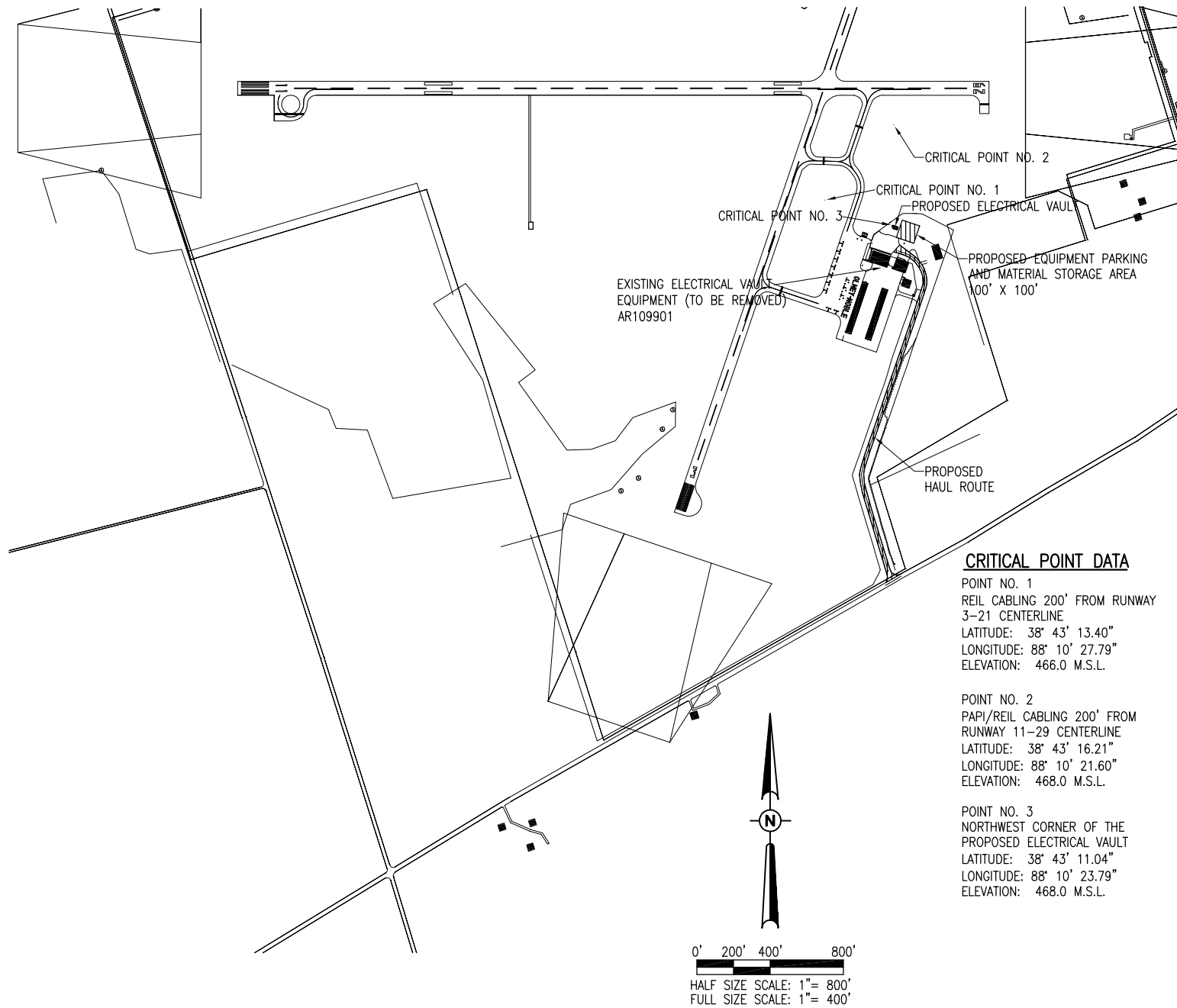
THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE FURNISHED, MAINTAINED, AND REMOVED IN ACCORDANCE WITH ITEM AR150510 "ENGINEER'S FIELD OFFICE" AS STATED ON PAGE 49 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS, ADOPTED NOVEMBER 2, 2009.

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 CELL 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.



**CRITICAL POINT DATA**

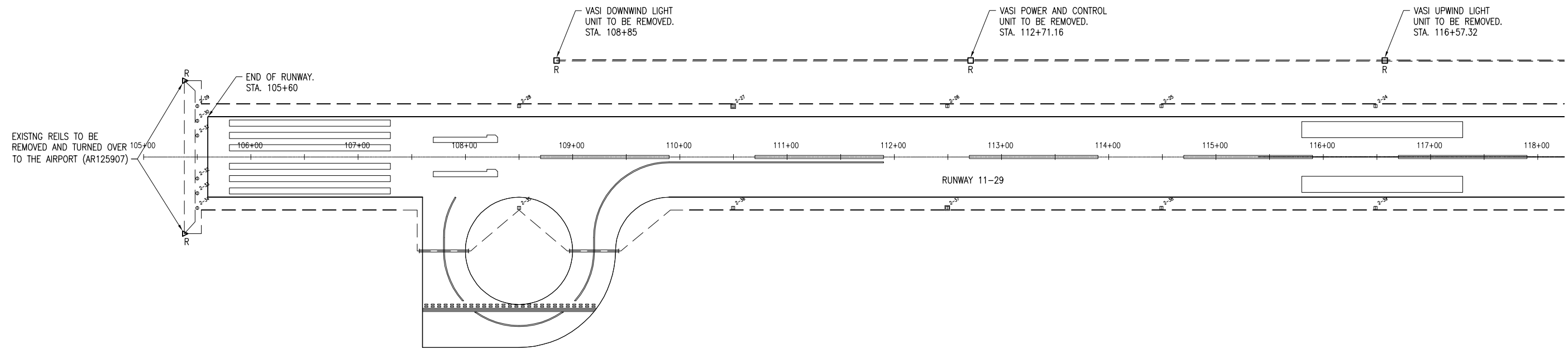
POINT NO. 1  
 REIL CABLING 200' FROM RUNWAY 3-21 CENTERLINE  
 LATITUDE: 38° 43' 13.40"  
 LONGITUDE: 88° 10' 27.79"  
 ELEVATION: 466.0 M.S.L.

POINT NO. 2  
 PAPI/REIL CABLING 200' FROM RUNWAY 11-29 CENTERLINE  
 LATITUDE: 38° 43' 16.21"  
 LONGITUDE: 88° 10' 21.60"  
 ELEVATION: 468.0 M.S.L.

POINT NO. 3  
 NORTHWEST CORNER OF THE PROPOSED ELECTRICAL VAULT  
 LATITUDE: 38° 43' 11.04"  
 LONGITUDE: 88° 10' 23.79"  
 ELEVATION: 468.0 M.S.L.

JAN 31, 2011 1:53 PM H46L000382  
 I:\AIRPORTS\OLNEY\10400790\CADD\ELEC\SHEET\R-003SF.DWG

REVISION		<b>OLNEY-NOBLE AIRPORT NOBLE, ILLINOIS</b>	A.I.P. PROJ.: 3-17-0076-B10
DATE			
Hanson Proj. No. 10400790	Filename R-003SF.DWG	Scale 1" = 400'	Date 12/17/10
LAYOUT	PJT	08/26/10	08/27/10
DRAWN	ANC	08/27/10	09/08/10
REVIEWED	KNL		
<b>HANSON</b> Professional Services Inc. 2011 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2986 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide		<b>REPLACE NAVAIDS AND VAULT</b>	
<b>PROPOSED SAFETY PLAN</b>		<b>3</b>	
X of 48 sheets			



EXISTING REILS TO BE REMOVED AND TURNED OVER TO THE AIRPORT (AR125907)

**LEGEND**

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- EXISTING REIL (TO BE REMOVED)
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING FENCE
- AIRPORT PROPERTY LINE

**REIL REMOVAL NOTES**

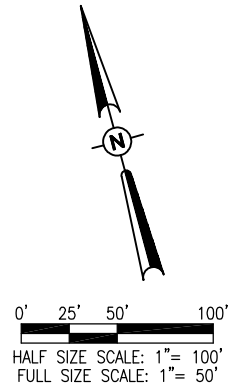
1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR / MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. POWER FOR REIL SYSTEM SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO REMOVING THE REILS. BASED ON FIELD DATA REILS ARE UNDERSTOOD TO BE POWERED BY THE RUNWAY LIGHTING SERIES CIRCUIT. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS PROVIDE FAA APPROVED L-823 CABLE SPLICES AND #8 AWG FAA L-824, 5000 VOLT, TYPE C CABLE AND RECONNECT RUNWAY LIGHTING SERIES CIRCUIT AFTER REMOVAL OF THE REILS.
3. THE EXISTING REIL CONCRETE BASES ARE TO BE REMOVED TO THEIR FULL DEPTH AND DISPOSED OF OFF THE AIRPORT.
4. THE HOLES LEFT FROM THE REMOVAL OF REIL BASES SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
5. REMOVAL OF REILS WILL BE PAID FOR UNDER ITEM: AR125907 "REMOVE REILS" PER PAIR.

**VASI 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. THE EXISTING VASI AND POWER & CONTROL UNITS SHOWN TO BE REMOVED ARE TO BE UNBOLTED, REMOVED AND TURNED OVER TO THE AIRPORT MANAGER.
3. THE EXISTING VASI CONCRETE BASES ARE TO BE REMOVED TO THEIR FULL DEPTH AND DISPOSED OF OFF THE AIRPORT.
4. THE HOLES LEFT FROM THE REMOVAL OF VASI BASES AND POWER & CONTROL UNITS SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
5. THE EXISTING VASI CABLES WILL BE ABANDONED IN PLACE UNLESS IT CONFLICTS WITH THE INSTALLATION OF A PROPOSED LIGHT OF CABLE, THEN IT SHALL BE REMOVED AT NO ADDITIONAL COST TO THE CONTRACT.
6. AN EXISTING VASI UNIT CONSISTS OF THE DOWNWIND VASI, UPWIND VASI AND VASI POWER & CONTROL UNIT.
7. REMOVAL OF THE EXISTING VASI UNITS WILL BE PAID FOR UNDER ITEM: AR125909 "REMOVE VASI" PER EACH QUANTITY OF VASI UNITS TO BE REMOVED -----2 EACH.

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

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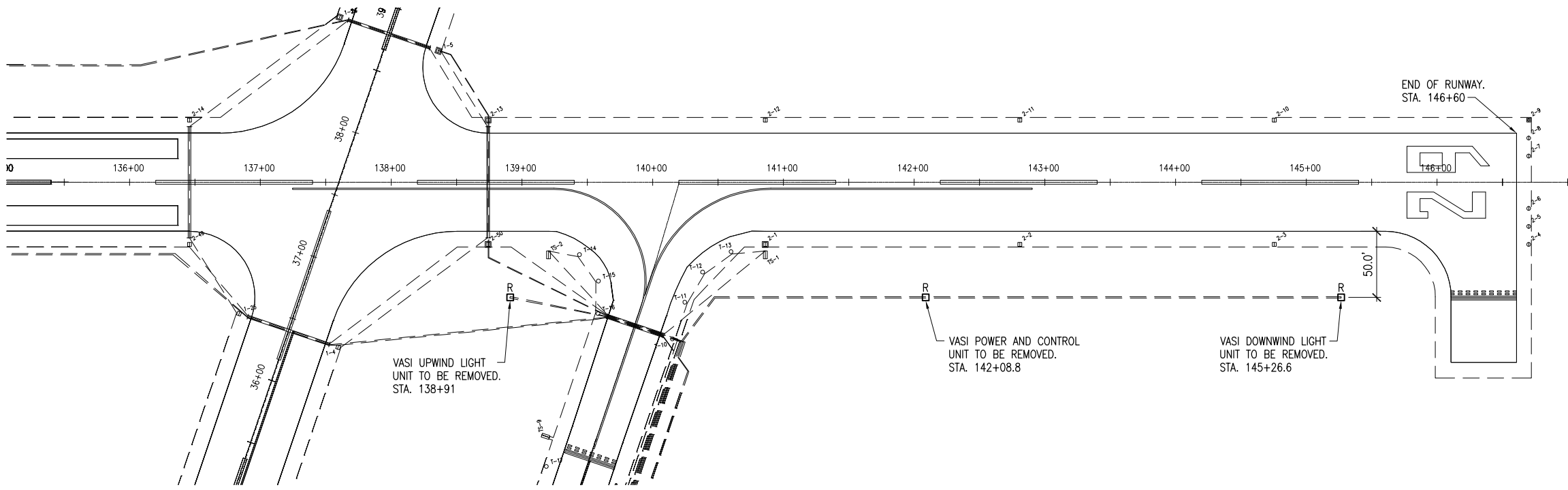
REVISION	DATE	DESCRIPTION
01/26/11		Revised as per IDA review - CAH

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS  
A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

Hanson Proj. No. 10A00790	Filename EC1010M.DWG	Scale 1" = 50'	Date 12/17/10
LAYOUT	PJT	08/26/10	
DRAWN	ANC	09/02/10	
REVIEWED	KNL	11/05/10	

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**VASI REMOVAL NOTES**

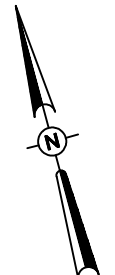
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AR125909 "REMOVE VASI" PER EACH  
QUANTITY OF VASI UNITS TO BE REMOVED -----2 EACH.

**LEGEND**

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- EXISTING REIL (TO BE REMOVED)
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED THRESHOLD LIGHT
- EXISTING TAXI GUIDANCE SIGN
- EXISTING FENCE
- AIRPORT PROPERTY LINE

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

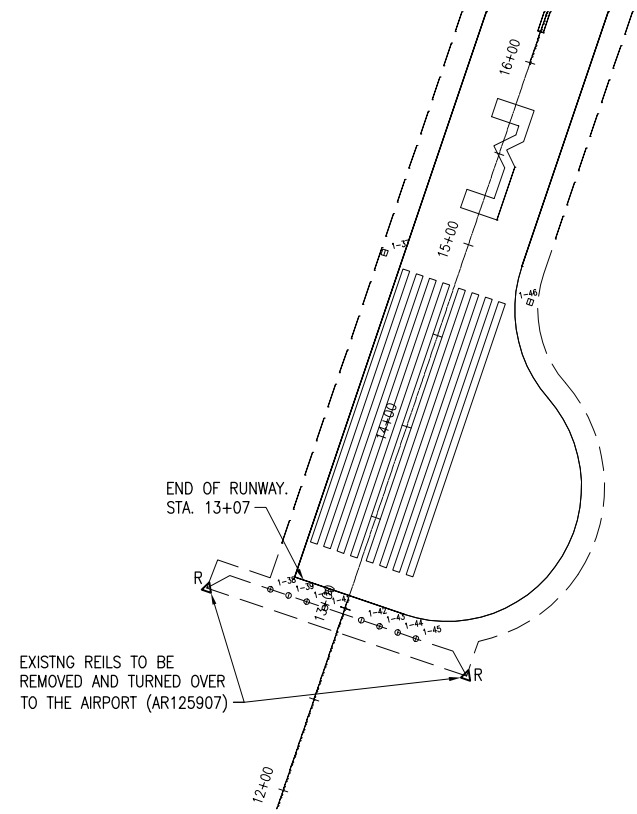
DATE	REVISION
01/28/11	Revised as per IDA review - CAH

OLNEY-NOBLE AIRPORT  
 NOBLE, ILLINOIS  
 ILL. PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10

Hanson Proj. No. 10A00790	File Name EC102DM.DWG	Scale 1" = 50'	Date 12/17/10
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REVIEWED	KNL	11/05/10	

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**REIL REMOVAL NOTES**

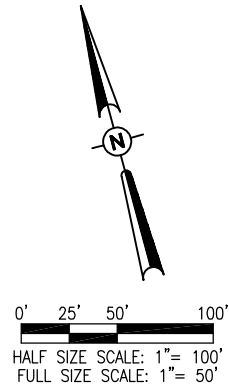
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2. POWER FOR REIL SYSTEM SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO REMOVING THE REILS. BASED ON FIELD DATA REILS ARE UNDERSTOOD TO BE POWERED BY THE RUNWAY LIGHTING SERIES CIRCUIT. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS PROVIDE FAA APPROVED L-823 CABLE SPLICES AND #8 AWG FAA L-824, 5000 VOLT, TYPE C CABLE AND RECONNECT RUNWAY LIGHTING SERIES CIRCUIT AFTER REMOVAL OF THE REILS.
3. THE EXISTING REIL CONCRETE BASES ARE TO BE REMOVED TO THEIR FULL DEPTH AND DISPOSED OF OFF THE AIRPORT.
4. THE HOLES LEFT FROM THE REMOVAL OF REIL BASES SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
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**LEGEND**

	EXISTING PAVEMENT
	EXISTING BUILDING
	EXISTING ELECTRICAL DUCT
	EXISTING ELECTRICAL CABLE
	EXISTING REIL (TO BE REMOVED)
	EXISTING STAKE MOUNTED RUNWAY LIGHT
	EXISTING BASE MOUNTED RUNWAY LIGHT
	EXISTING STAKE MOUNTED THRESHOLD LIGHT
	EXISTING FENCE
	AIRPORT PROPERTY LINE

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**OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS**

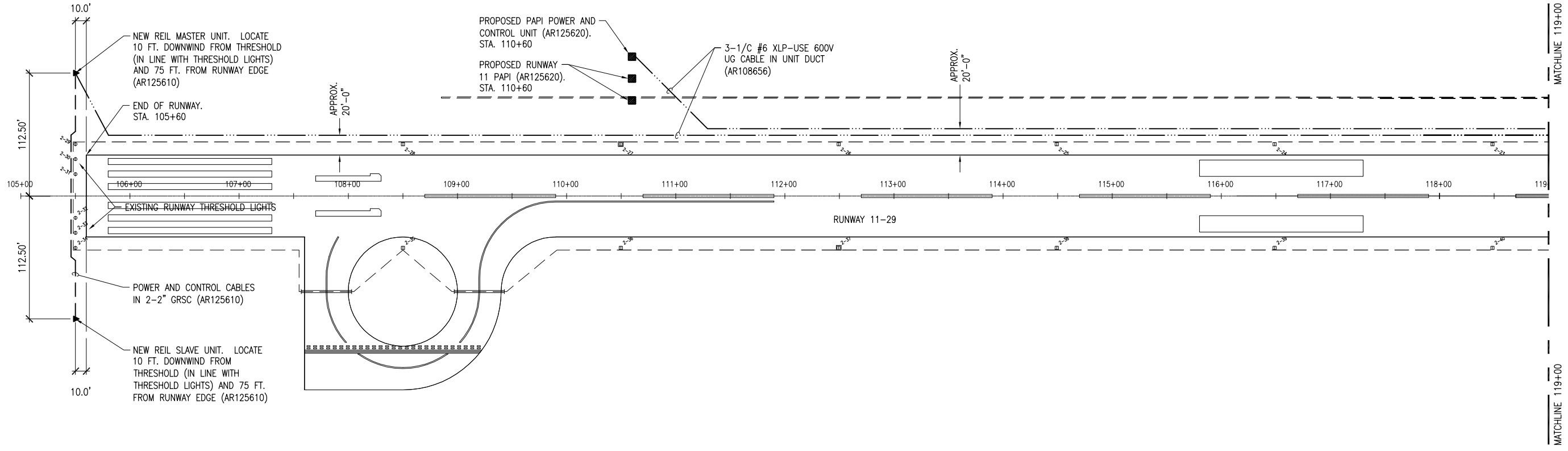
A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

Hanson Proj. No. 10A00790	Filename: EC103DM.DWG	Scale: 1" = 50'	Date: 12/17/10
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AND VAULT**

EXISTING LIGHTING PLAN  
STA. 13+07 TO STA. 16+00



REVISION	DATE

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

IL PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10

Hanson Proj. No. 10A00790	EC1011NW.DWG	Scale 1" = 50'	Date 12/17/10
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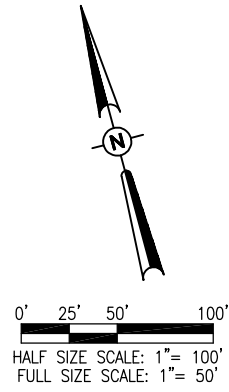
PROPOSED LIGHTING PLAN  
STA. 105+00 TO STA. 119+00

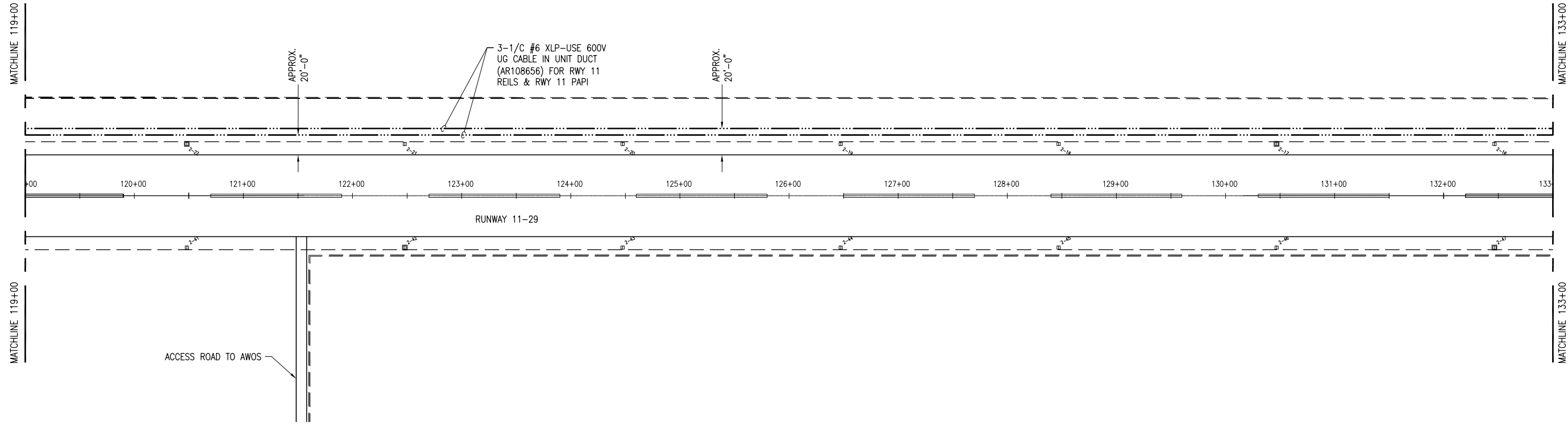
**LEGEND**

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED ELECTRICAL CABLE
- PROPOSED REIL
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN

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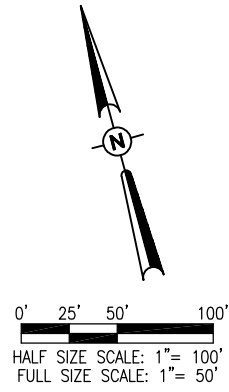


**LEGEND**

- EXISTING PAVEMENT
- EXISTING BUILDING
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- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
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- PROPOSED 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED ELECTRICAL CABLE
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DATE	REVISION

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

IL PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10

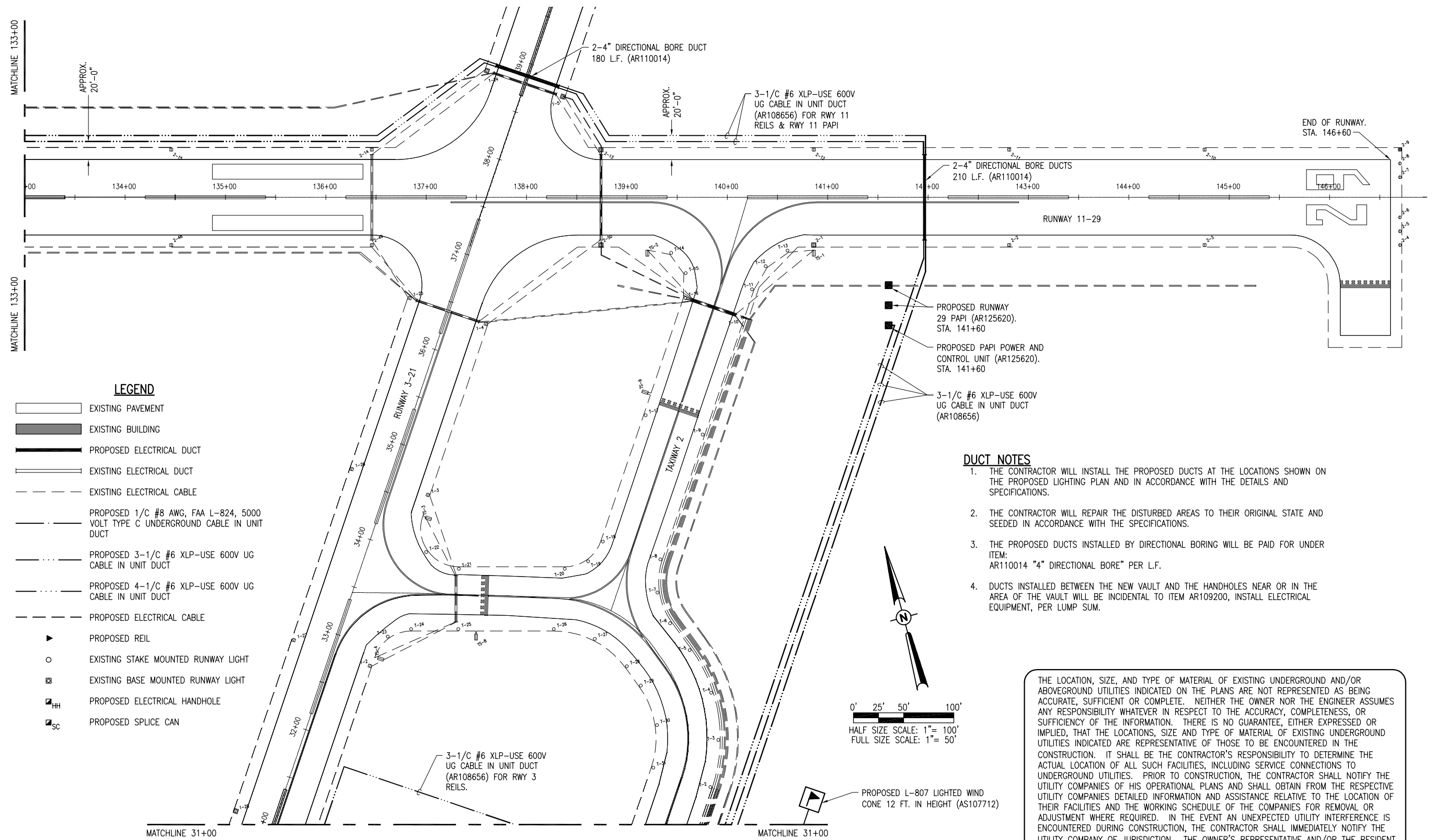
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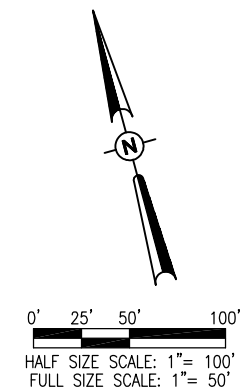




- LEGEND**
- EXISTING PAVEMENT
  - EXISTING BUILDING
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  - PROPOSED ELECTRICAL CABLE
  - PROPOSED REIL
  - EXISTING STAKE MOUNTED RUNWAY LIGHT
  - EXISTING BASE MOUNTED RUNWAY LIGHT
  - PROPOSED ELECTRICAL HANDHOLE
  - PROPOSED SPLICE CAN

**DUCT NOTES**

1. THE CONTRACTOR WILL INSTALL THE PROPOSED DUCTS AT THE LOCATIONS SHOWN ON THE PROPOSED LIGHTING PLAN AND IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS.
2. THE CONTRACTOR WILL REPAIR THE DISTURBED AREAS TO THEIR ORIGINAL STATE AND SEEDED IN ACCORDANCE WITH THE SPECIFICATIONS.
3. THE PROPOSED DUCTS INSTALLED BY DIRECTIONAL BORING WILL BE PAID FOR UNDER ITEM: AR110014 "4" DIRECTIONAL BORE" PER L.F.
4. DUCTS INSTALLED BETWEEN THE NEW VAULT AND THE HANDHOLES NEAR OR IN THE AREA OF THE VAULT WILL BE INCIDENTAL TO ITEM AR109200, INSTALL ELECTRICAL EQUIPMENT, PER LUMP SUM.



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

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JAN 28, 2011 11:33 AM HAGL000382 E:\AIRPORTS\OLNEY\0400790\0400\ELEC\SHEET\EC103NW.DWG

REVISION	DATE

**OLNEY-NOBLE AIRPORT**  
NOBLE, ILLINOIS

IL PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10

Hanson Proj. No. 10A00790	Filename EC103NW.DWG	Scale 1" = 50'	Date 12/17/10
LAYOUT	PJT	08/26/10	
DRAWN	ANC	09/02/10	
REVIEWED	KNL	11/05/10	

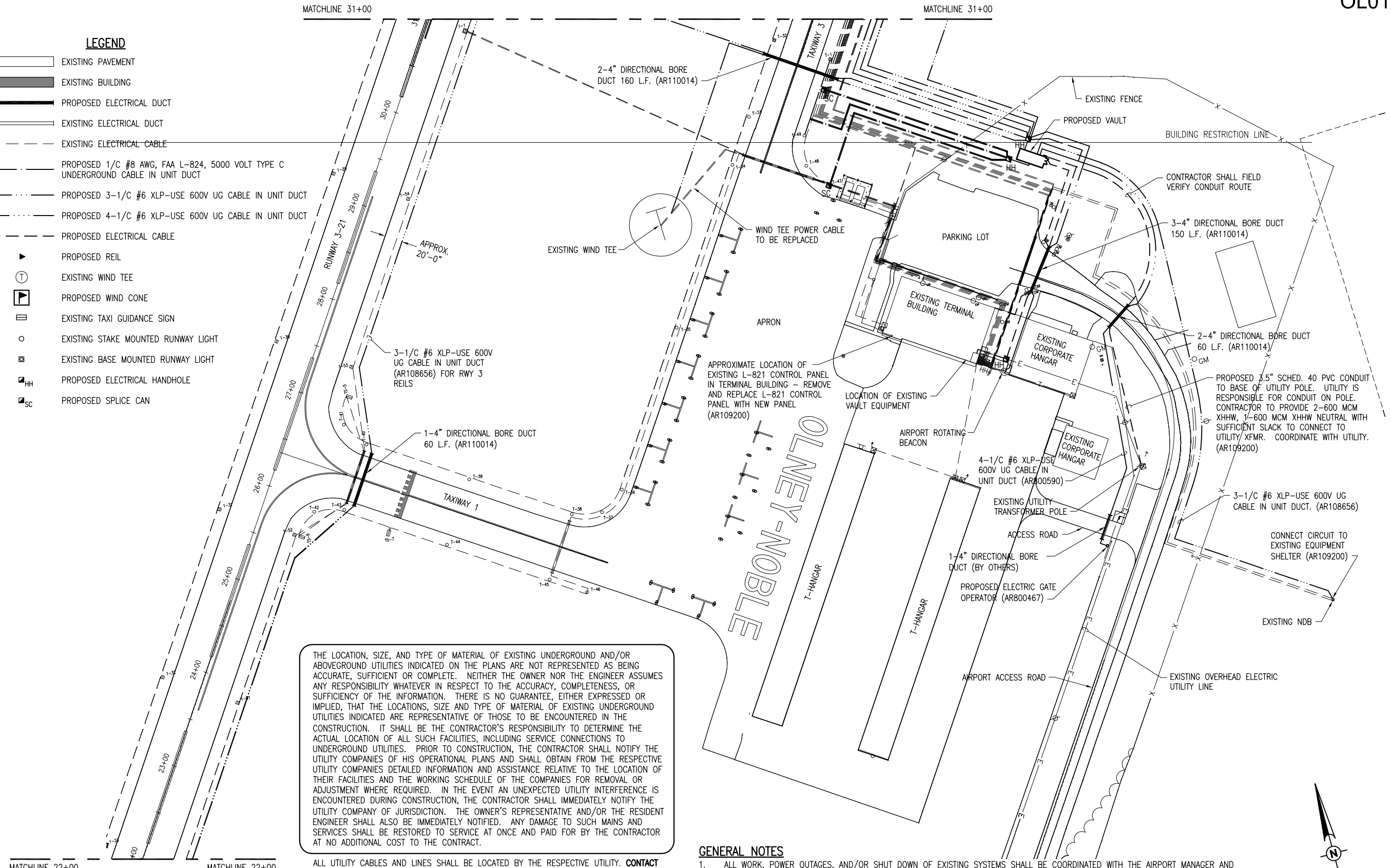
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**REPLACE NAVAIDS AND VAULT**

PROPOSED LIGHTING PLAN  
STA. 133+00 TO STA. 146+60

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED ELECTRICAL CABLE
- PROPOSED REIL
- EXISTING WIND TEE
- PROPOSED WIND CONE
- EXISTING TAXI GUIDANCE SIGN
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN

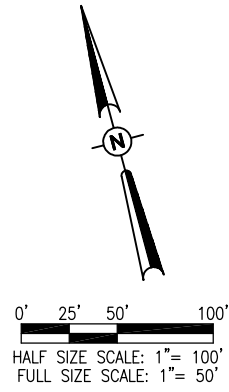


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GENERAL NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND THE RESPECTIVE FAA PERSONNEL. 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 COORDINATE ELECTRICAL SERVICE WORK WITH THE AIRPORT MANAGER AND SERVING ELECTRIC UTILITY COMPANY; AMEREN CIPS PHONE: 1-888-789-2477 AND AMEREN CIPS ENGINEERING ATTN. MR. BRAD BEARD, PHONE: 618-393-5635.
3. REPLACEMENT OF EXISTING SERVICE WITH A NEW ELECTRIC SERVICE AND THE REPLACEMENT FEEDER TO THE TERMINAL BUILDING WILL BE PAID FOR UNDER ITEM AR109200 INSTALL ELECTRICAL EQUIPMENT LUMP SUM.



REVISION	DATE	DESCRIPTION
01/28/11		Revised as per IDA review - CAH

**OLNEY-NOBLE AIRPORT**  
NOBLE, ILLINOIS

IL PROJ.: OLY-4032  
A.I.P. PROJ.: 3-17-0076-B10

Hanson Proj. No. 10A00790	EC104NW.DWG	Scale 1" = 50'	Date 12/17/10
LAYOUT	PJT	08/26/10	
DRAWN	ANC	09/02/10	
REVIEWED	KNL	11/05/10	

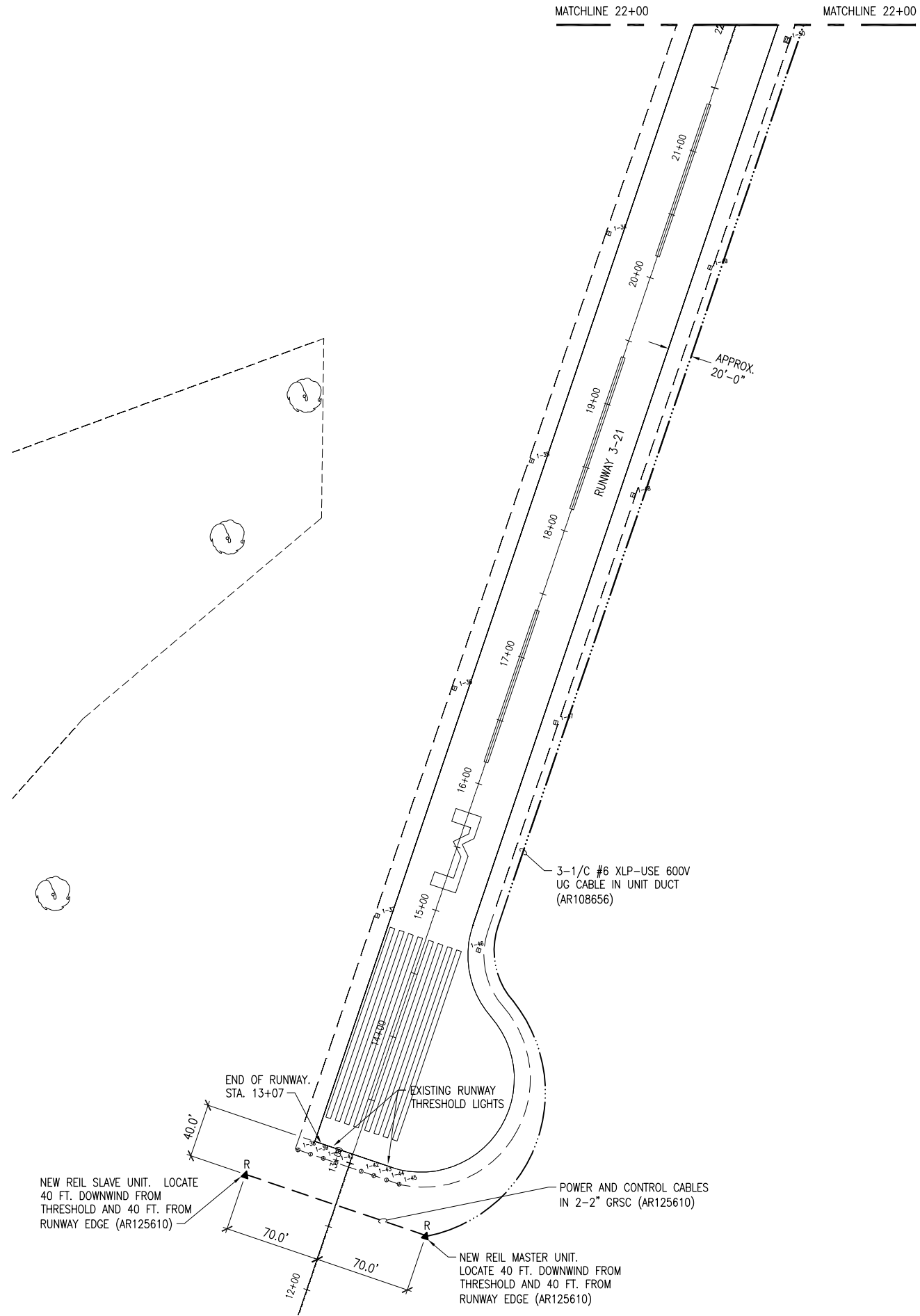
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REPLACE NAVAIDS AND VAULT

PROPOSED LIGHTING PLAN TERMINAL AREA

JAN 31, 2011 10:36 AM HAGL000382  
E:\AIRPORTS\OLNEY\10A00790\CA00\ELEC\SHEET\EC104NW.DWG

JAN 28, 2011 10:03 AM H:\GL000382  
 E:\AIRPORTS\OLNEY\0400790\CADD\ELEC\SHEET\EC105NW.DWG

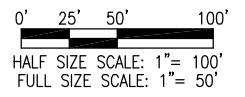
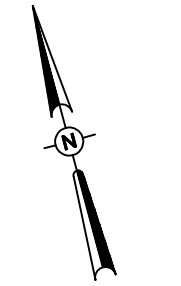


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**LEGEND**

- 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 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED ELECTRICAL CABLE
- PROPOSED REIL
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN



REVISION	DATE

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

IL PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10

Hanson Proj. No. 10A00790	
Filename EC105NW.DWG	
Scale 1" = 50'	
Date 12/17/10	
LAYOUT	PJT 08/26/10
DRAWN	ANC 09/02/10
REVIEWED	KNL 11/05/10

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REPLACE NAVAIDS AND VAULT

PROPOSED LIGHTING PLAN  
STA. 13+07 TO STA. 22+00

Hanson Proj. No. 10A00790			
Filename EC106AW.DWG			
Scale 1" = 20'			
Date 12/17/10			
LAYOUT	PJT	08/26/10	
DRAWN	ANC	09/02/10	
REVIEWED	KNL	11/05/10	

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REPLACE NAVAIDS  
AND VAULT

PROPOSED LIGHTING PLAN  
ENLARGED VAULT AREA

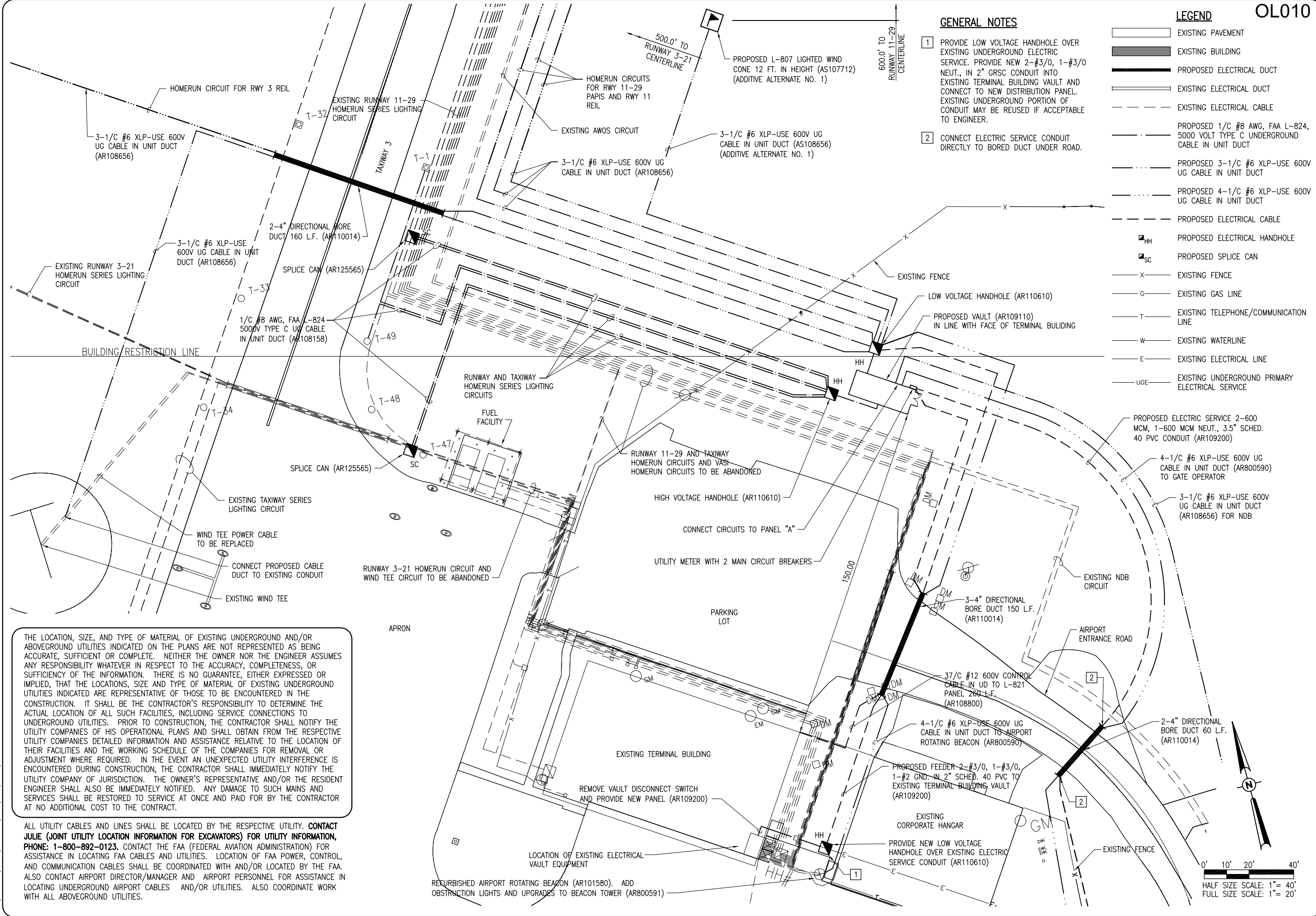
OL010

**LEGEND**

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED ELECTRICAL CABLE
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN
- EXISTING FENCE
- EXISTING GAS LINE
- EXISTING TELEPHONE/COMMUNICATION LINE
- EXISTING WATERLINE
- EXISTING ELECTRICAL LINE
- EXISTING UNDERGROUND PRIMARY ELECTRICAL SERVICE
- PROPOSED ELECTRIC SERVICE 2-600 MCM, 1-600 MCM NEUT., 3.5" SCHED. 40 PVC CONDUIT (AR109200)
- 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT (AR800590) TO GATE OPERATOR
- 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT (AR108656) FOR NDB
- EXISTING NDB CIRCUIT
- 2-4" DIRECTIONAL BORE DUCT 60 L.F. (AR110014)

**GENERAL NOTES**

- 1 PROVIDE LOW VOLTAGE HANDHOLE OVER EXISTING UNDERGROUND ELECTRIC SERVICE. PROVIDE NEW 2-#3/0, 1-#3/0 NEUT., IN 2" GRSC CONDUIT INTO EXISTING TERMINAL BUILDING VAULT AND CONNECT TO NEW DISTRIBUTION PANEL. EXISTING UNDERGROUND PORTION OF CONDUIT MAY BE REUSED IF ACCEPTABLE TO ENGINEER.
- 2 CONNECT ELECTRIC SERVICE CONDUIT DIRECTLY TO BORED DUCT UNDER ROAD.



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JAN 31, 2011 1:58 PM H4GL000382  
E:\AIRPORTS\OLNEY\10A00790\CADD\ELECT\106AW.DWG

REVISION	01/28/11	Revised as per IDA review - CAH
DATE		

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

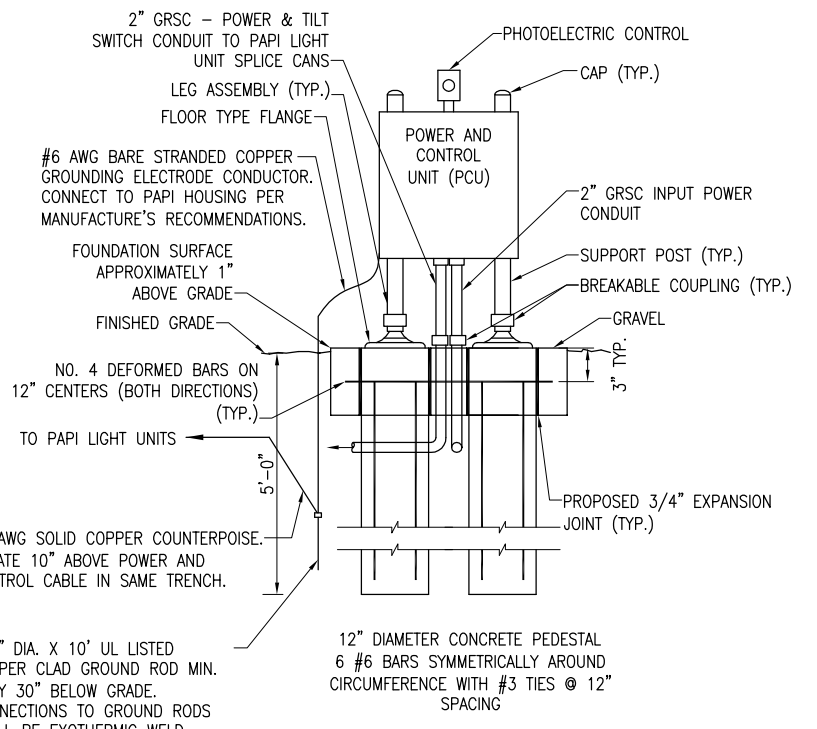
A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

Hanson Proj. No. 10A00790	Filename R-544ELE.DWG	Scale NOT TO SCALE	Date 12/17/10	LAYOUT CAH 08/26/10	DRAWN ANK 08/26/10	REVIEWED KNL 11/05/10
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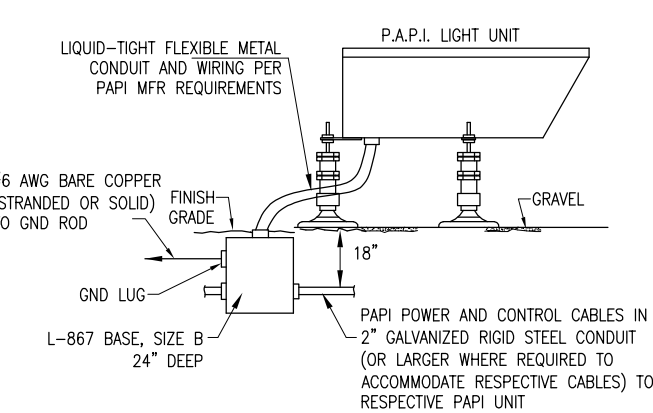
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REPLACE NAVALDS AND VAULT

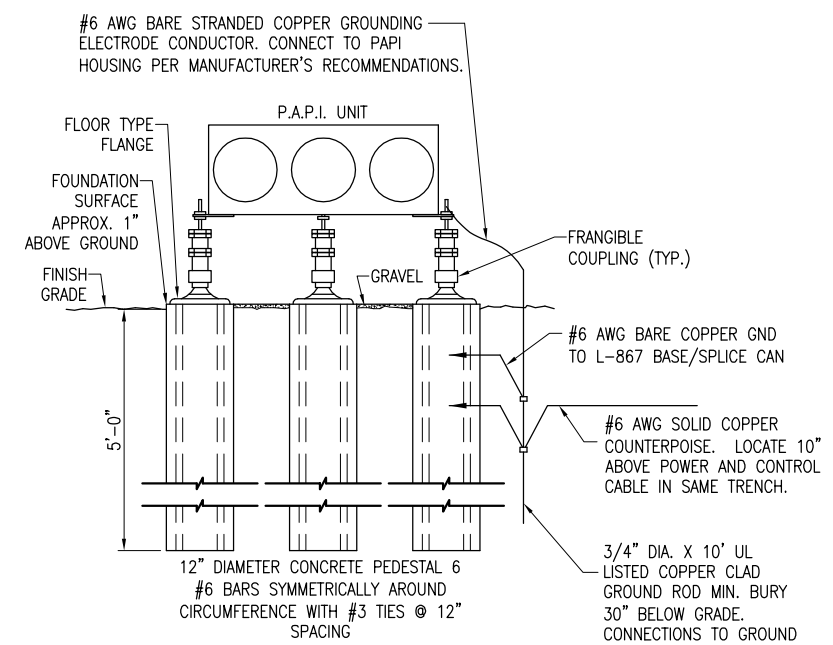
PROPOSED PAPI DETAILS AND NOTES RUNWAY END 11



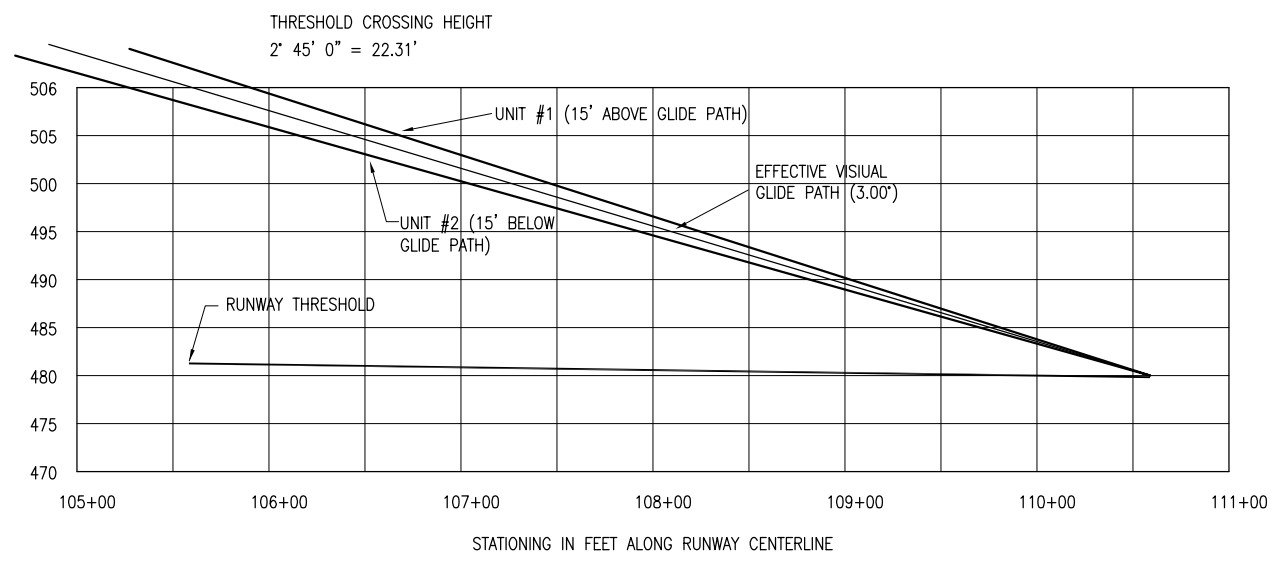
**FRONT ELEVATION  
POWER AND CONTROL UNIT**  
"NOT TO SCALE"



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

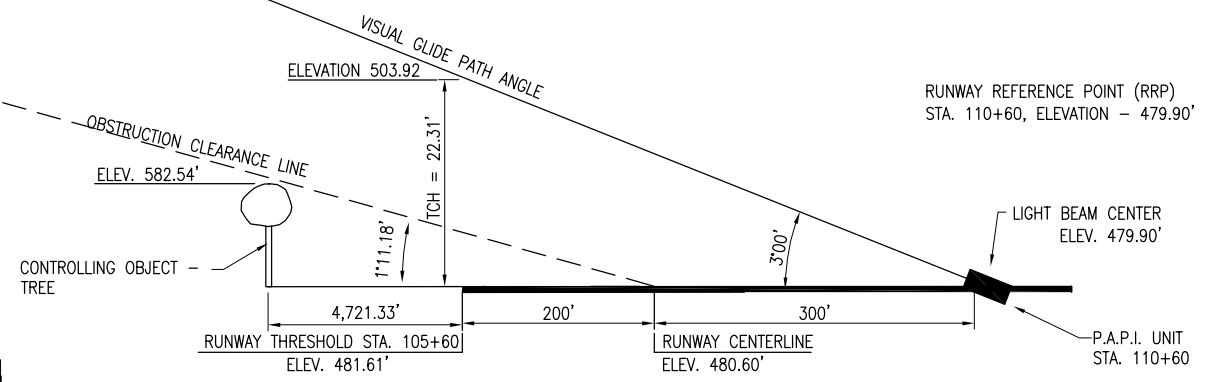


**FRONT ELEVATION  
P.A.P.I. LIGHT UNIT**  
"NOT TO SCALE"



**RUNWAY CENTERLINE PROFILE**

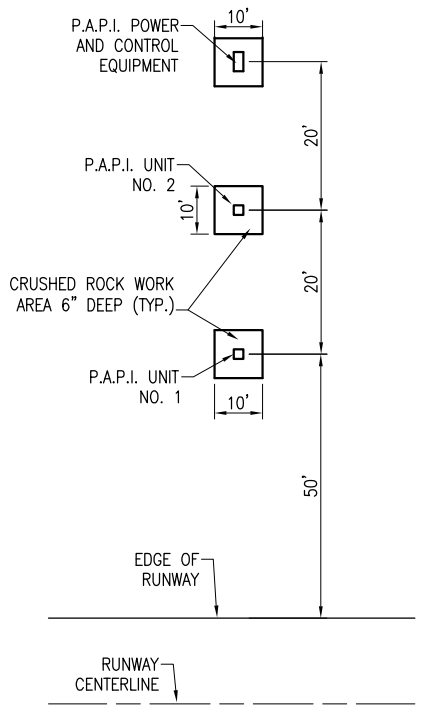
PAPI DATA-RUNWAY END 11			
	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P AND C UNIT
DISTANCE FROM RUNWAY Q	87.5'	107.5'	127.5'
AIMING ANGLE	3°15'	2°45'	N/A
APPROXIMATE GROUND ELEVATION	477.7'	477.1'	477.0'
P.A.P.I. UNIT APERTURE ELEVATION	479.90'	479.90'	N/A



**P.A.P.I. AIMING DIAGRAM 11 END**  
"NOT TO SCALE"

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

- THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON SHEET NO. 7.
- THE PROPOSED CONCRETE PEDESTALS WILL BE AS DETAILED ON THIS SHEET. THE NUMBER OF PEDESTALS CONSTRUCTED FOR EACH PAPI UNIT WILL DEPEND ON THE UNIT SELECTED BY THE CONTRACTOR FOR INSTALLATION.
- SIX (6") INCHES OF GRAVEL (209 - CRUSHED AGGREGATE BASE COURSE) ON TOP OF GEOTEXTILE FABRIC (MIRAFI 500X OR APPROVED EQUAL) WILL BE PLACED AROUND EACH PAPI UNIT AS SHOWN ON THIS SHEET TO HALT VEGETATION GROWTH. THE GRAVEL AND GEOTEXTILE FABRIC WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE PROPOSED PAPI UNIT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- EACH PAPI UNIT WILL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 479.90.
- THE PROPOSED POWER CABLE TO THE PAPI SYSTEM WILL BE 3-1/C NO. 6, 600V., TYPE XLP-USE UNDERGROUND CABLE IN UNIT DUCT. THIS CABLE WILL BE PLOWED OR TRENCHED IN PLACE AT A MINIMUM DEPTH OF 18" BELOW FINISH GRADE.
- THE PAPI INSTALLATION WILL BE PAID FOR UNDER ITEM: AR125620 ABBREVIATED PAPI (L-881 SYSTEM) PER EACH.
- THE POWER CABLE WILL BE PAID FOR UNDER ITEM: AR108656 3/C #6 600V UG. CABLE IN UD PER LIN. FT.



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

JAN 31, 2011 2:19 PM HAGL000382  
E:\AIRPORTS\OLNEY\10A00790\CAVD\ELC\11 SHEET\R-544ELE.DWG

REVISION	01/28/11	Revised as per IDA review - CAH
DATE		

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

A.I.P. PROJ.: 3-17-0076-B10

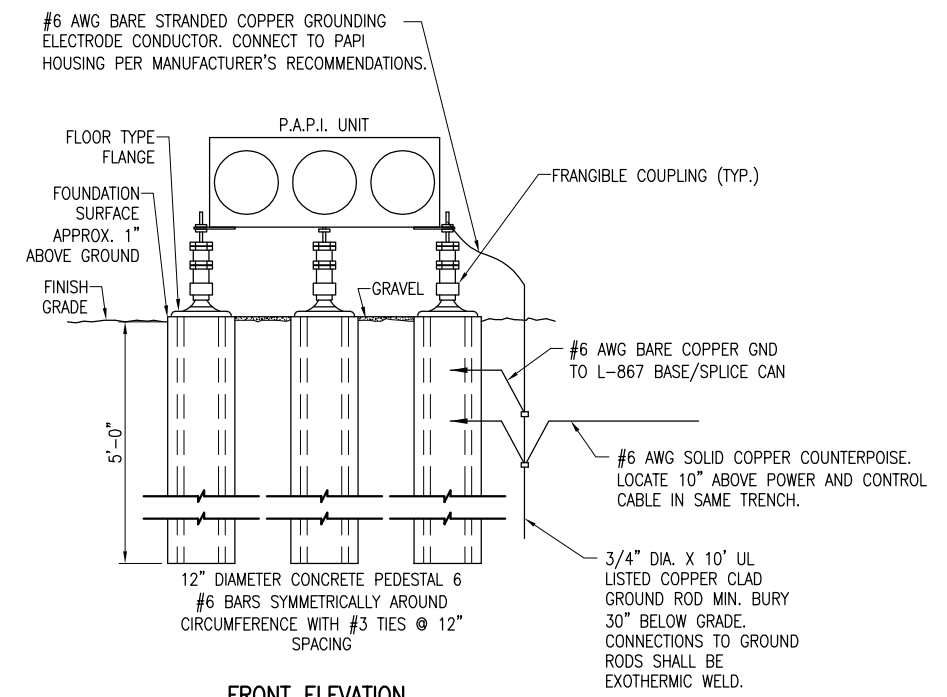
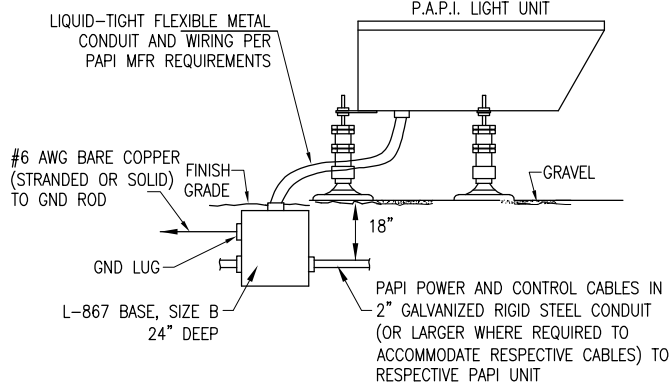
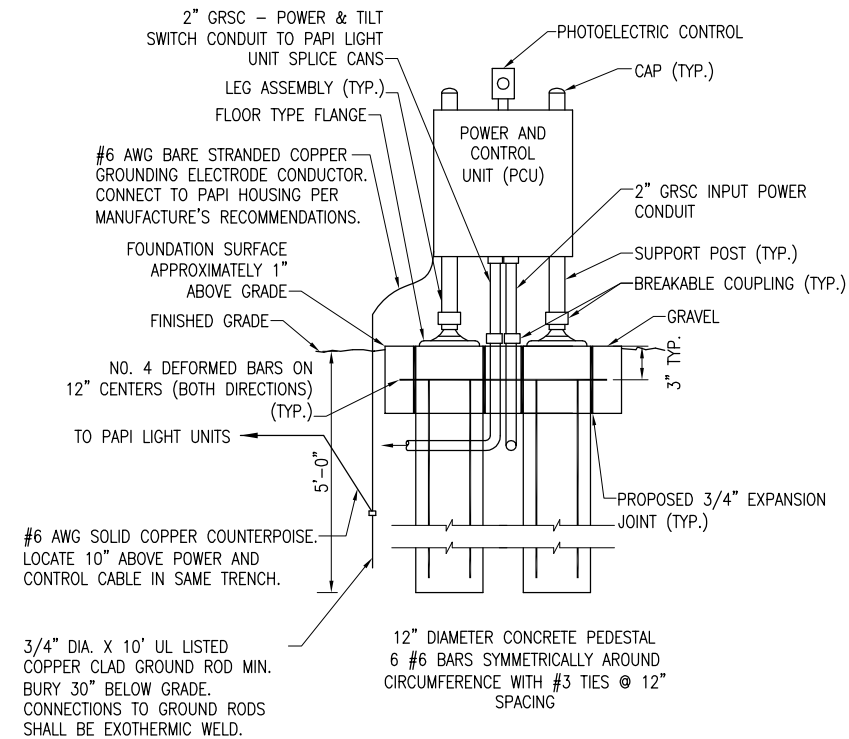
IL PROJ.: OLY-4032

Hanson Proj. No.	10A00790
Filename	R-545ELE.DWG
Scale	NOT TO SCALE
Date	12/17/10
LAYOUT	CAH 08/26/10
DRAWN	ANC 08/26/10
REVIEWED	KNL 11/05/10

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REPLACE NAVAIDS  
AND VAULT

PROPOSED PAPI DETAILS  
AND NOTES RUNWAY END 29



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

THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON SHEET NO. 9.

THE PROPOSED CONCRETE PEDESTALS WILL BE AS DETAILED ON THIS SHEET. THE NUMBER OF PEDESTALS CONSTRUCTED FOR EACH PAPI UNIT WILL DEPEND ON THE UNIT SELECTED BY THE CONTRACTOR FOR INSTALLATION.

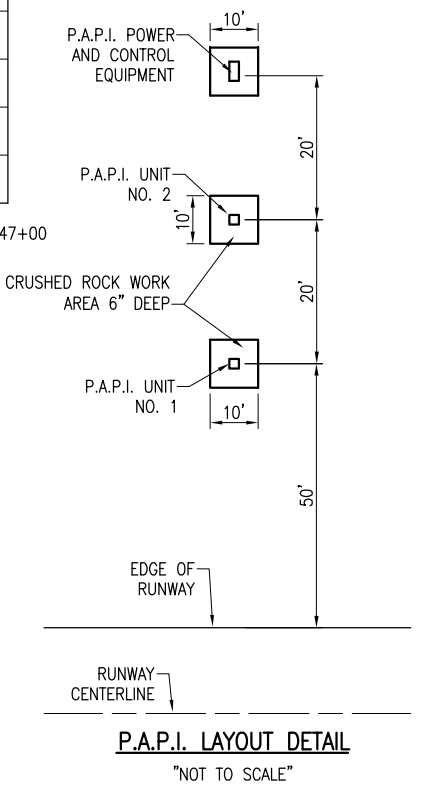
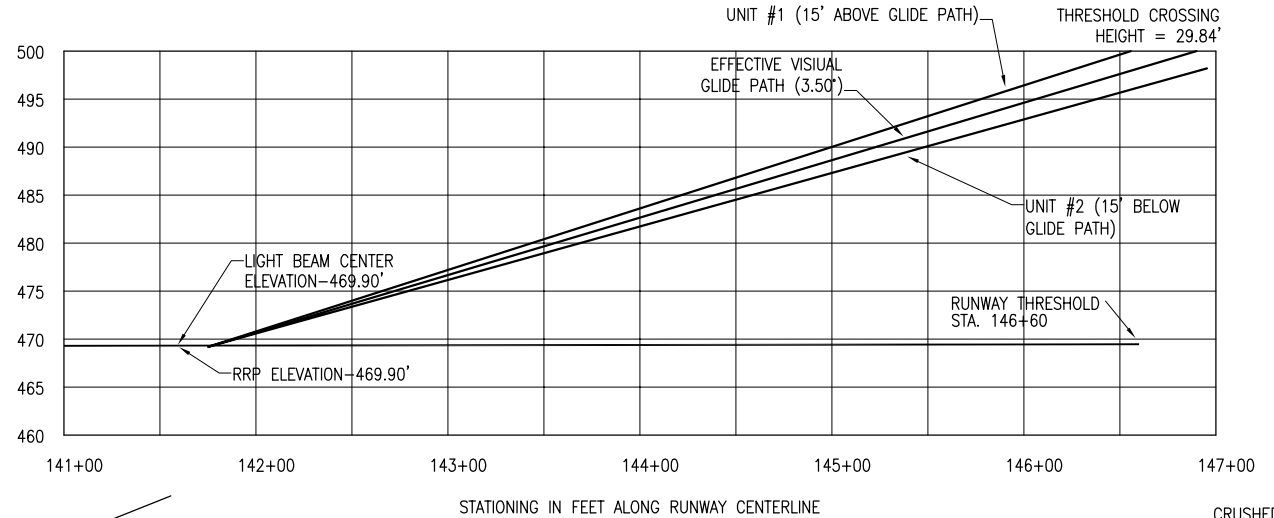
SIX (6") INCHES OF GRAVEL (209 - CRUSHED AGGREGATE BASE COURSE) ON TOP OF GEOTEXTILE FABRIC (MIRAFI 500X OR APPROVED EQUAL) WILL BE PLACED AROUND EACH PAPI UNIT AS SHOWN ON THIS SHEET TO HALT VEGETATION GROWTH. THE GRAVEL AND GEOTEXTILE FABRIC WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE PROPOSED PAPI UNIT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

EACH PAPI UNIT WILL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 469.90'.

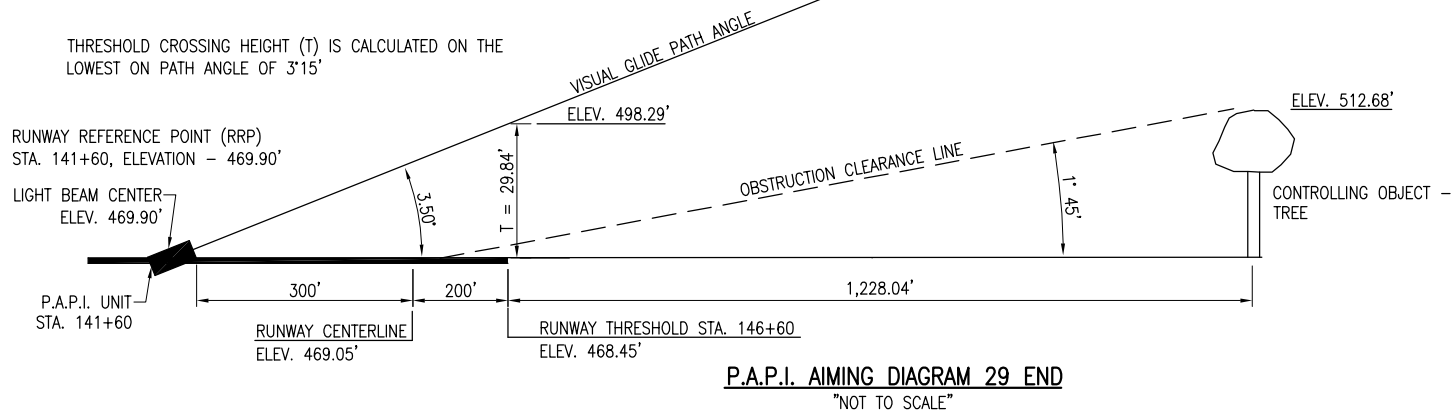
THE PROPOSED POWER CABLE TO THE PAPI SYSTEM WILL BE 3-1/C NO. 6, 600V., TYPE XLP-USE UNDERGROUND CABLE IN UNIT DUCT. THIS CABLE WILL BE TRENCHED IN PLACE AT A MINIMUM DEPTH OF 18" BELOW FINISH GRADE.

THE PAPI INSTALLATION WILL BE PAID FOR UNDER ITEM: AR125620 ABBREVIATED PAPI (L-881 SYSTEM) PER EACH.

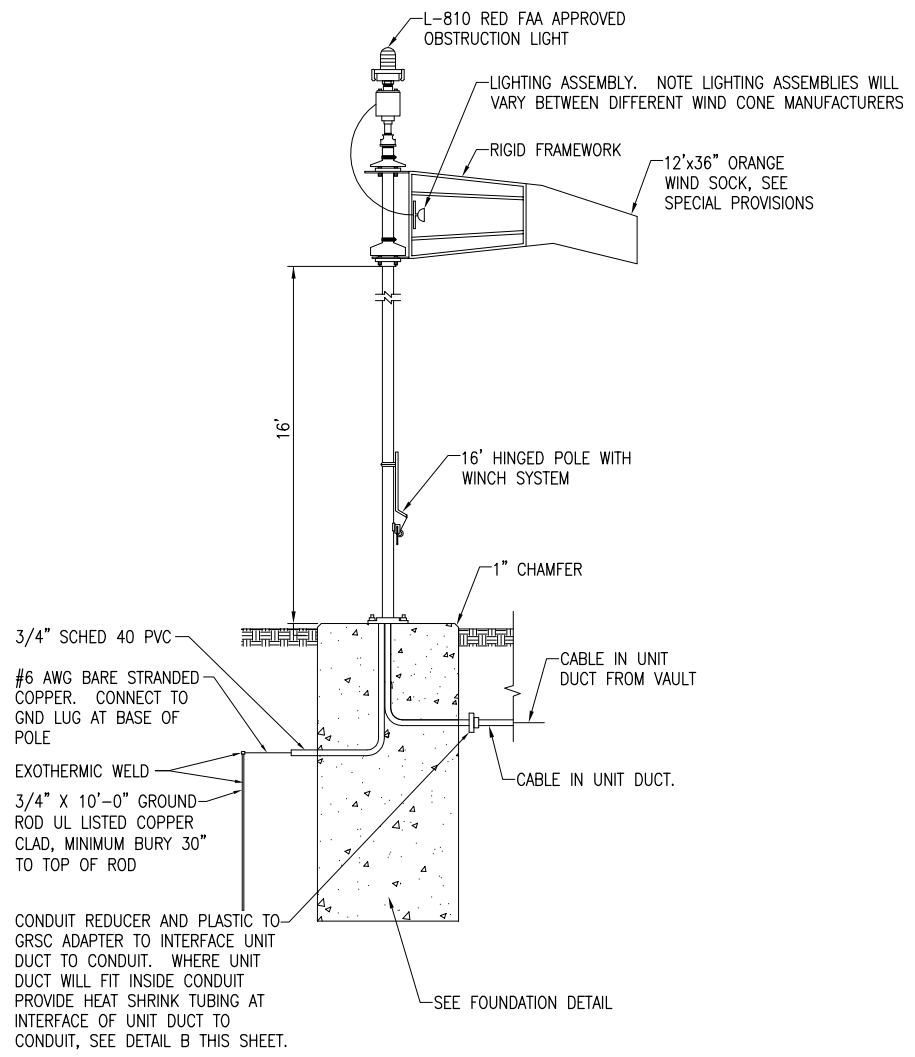
THE POWER CABLE WILL BE PAID FOR UNDER ITEM: AR108656 3/C #6 600V UG. CABLE IN UD PER LIN. FT.



	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P AND C UNIT
DISTANCE FROM RUNWAY CL	87.5'	107.5'	127.5'
AIMING ANGLE	3°45'	3°15'	N/A
APPROXIMATE GROUND ELEVATION	467.8'	467.5'	468.8'
P.A.P.I. UNIT APERTURE ELEVATION	469.90'	469.90'	N/A

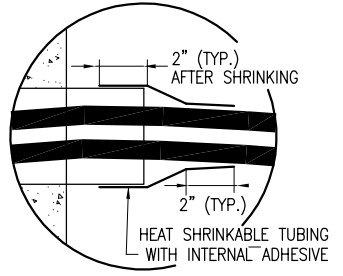


FEB 04, 2011 11:44 AM HAGL000382 I:\AIRPORTS\OLNEY\0A00790\CADD\ELC\SHEET\R-545ELE.DWG

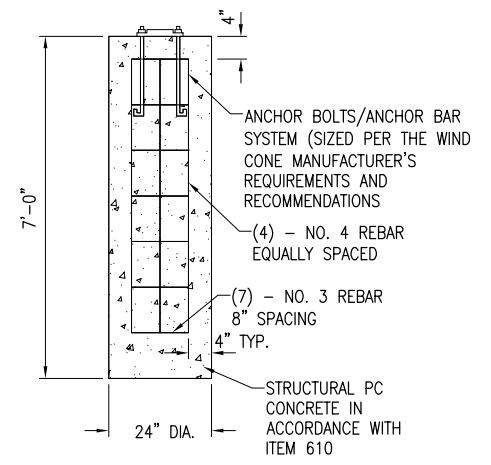


**LIGHTED L-807 WIND CONE**  
NOT TO SCALE

- NOTES**
1. WIND CONE SHALL BE FAA APPROVED L-807, LIGHTED, SIZE 2 WITH ORANGE WIND SOCK, 120 VAC, & WITH L-810 RED OBSTRUCTION LIGHT, SEE SPECIAL PROVISION SPECS.
  2. L-807 WIND CONE-12' LIGHTED WILL BE PAID FOR UNDER ITEM AS107712.
  3. REBAR SHALL BE MANUFACTURED FROM 100% DOMESTIC STEEL.



**DETAIL B**  
NOT TO SCALE



**FOUNDATION DETAIL**  
NOT TO SCALE

**ITEM AS107712 L-807 WIND CONE-12' LIGHTED IS UNDER ADDITIVE ALTERNATE NO. 1.**

JAN 28, 2011 11:40 AM H4GL000382  
E:\AIRPORTS\OLNEY\0400790\CA00\VELEC\SHEET\E-502.DWG

DATE	REVISION
01/28/11	Revised as per IDA review - CAH

**OLNEY-NOBLE AIRPORT**  
**NOBLE, ILLINOIS**

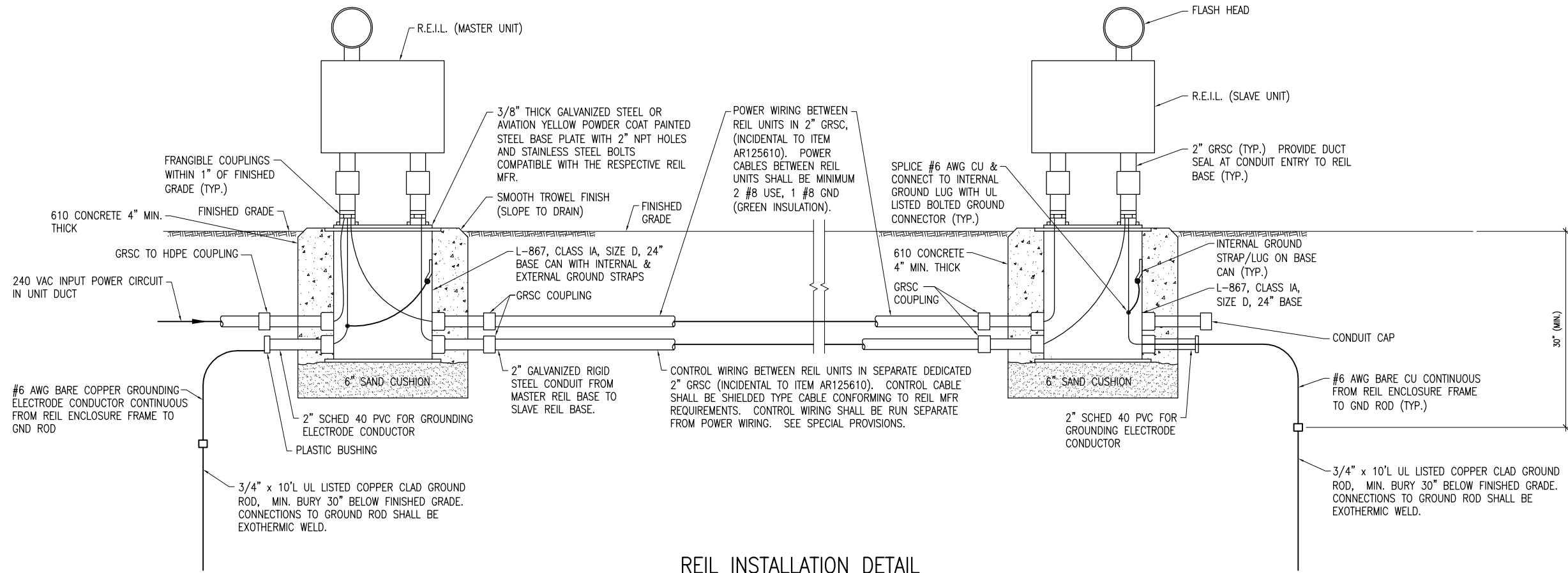
IL PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10

Hanson Proj. No. 10A00790	09/01/10
Filename E-502.DWG	PJT
Scale AS SHOWN	09/02/10
Date 12/17/10	ANIC
LAYOUT	PJT/KNL 11/05/10
DRAWN	ANIC
REVIEWED	PJT/KNL

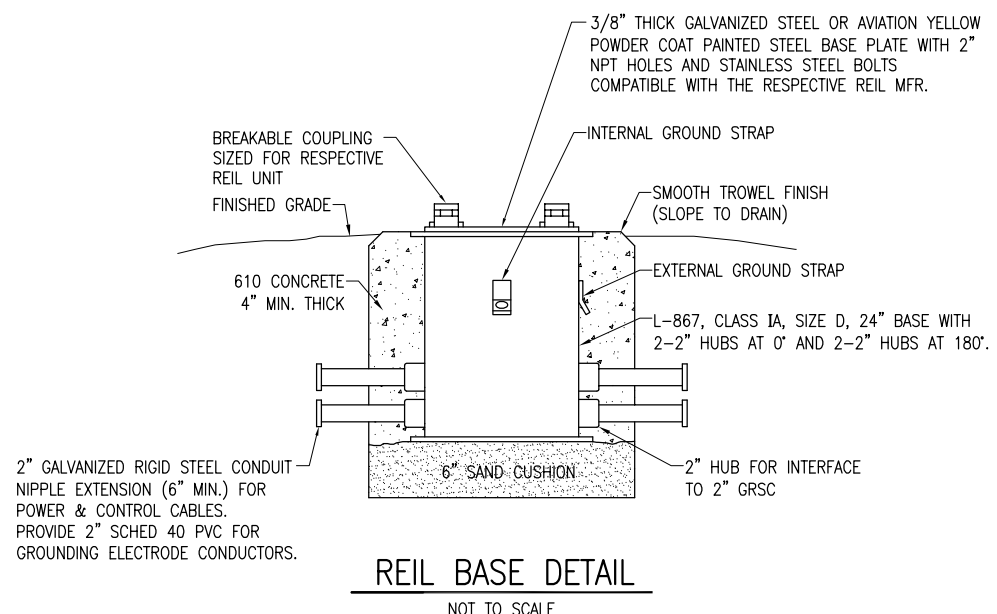
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**REPLACE NAVAIDS AND VAULT**

L-807 WIND CONE DETAIL



**REIL INSTALLATION DETAIL**  
NOT TO SCALE



**REIL BASE DETAIL**  
NOT TO SCALE

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

**REIL INSTALLATION NOTES**

- REILS SHALL BE FAA APPROVED TYPE L-849V, STYLE A (UNIDIRECTIONAL, HIGH INTENSITY, ONE BRIGHTNESS STEP), 240 VAC, 60 HZ INPUT POWER. SEE SPECIAL PROVISION SPECIFICATIONS FOR ADDITIONAL REIL REQUIREMENTS.
- REILS SHALL BE AIMED AT ANGLE 10 DEGREES VERTICALLY AND TOED OUT 15 DEGREES FROM THE LINE PARALLEL TO THE RUNWAY CENTERLINE.
- REILS WILL BE PAID FOR UNDER ITEM AR125610 "REILS" PER PAIR.
- ANY AND ALL TRENCHES AND DISTURBED AREAS WILL BE BACKFILLED AND RESTORED TO A SMOOTH GRADE AND SEEDED TO THE SATISFACTION OF THE ENGINEER. ALL TRENCH SETTLEMENT SHALL BE CORRECTED FOR A PERIOD OF ONE YEAR. RESTORATION, GRADING, SEEDING, AND MULCHING OF AREAS DISTURBED DURING THE REIL INSTALLATION AND ASSOCIATED CABLE WILL BE INCIDENTAL TO ITEM AR125610 REILS.
- GROUNDING FOR REILS. GROUNDING FOR REILS SHALL CONFORM TO THE RESPECTIVE REIL MANUFACTURER'S INSTALLATION INSTRUCTIONS, AS DETAILED ON THE PLANS, AND AS SPECIFIED HEREIN. THE POWER CIRCUIT TO MASTER REIL UNIT, AND EACH SLAVE UNIT, SHALL INCLUDE AN EQUIPMENT GROUND WIRE OF THE SAME SIZE AND TYPE AS THE POWER CONDUCTORS. FURNISH AND INSTALL A 3/4-INCH DIAMETER BY 10-FOOT LONG COPPER CLAD GROUND ROD AT EACH REIL UNIT. GROUND RODS SHALL BE BURIED 30" MINIMUM BELOW GRADE. BOND EACH REIL UNIT HOUSING AND THE REIL BASE CAN TO THE RESPECTIVE GROUND ROD IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WITH A #6 AWG BARE SOLID OR STRANDED (PER REIL MANUFACTURER REQUIREMENTS) COPPER GROUNDING ELECTRODE CONDUCTOR. ALL CONNECTIONS TO GROUND RODS SHALL BE EXOTHERMIC WELD AS MANUFACTURED BY CADWELD, THERMOWELD, OR ULTRAWELD. CONNECTIONS TO REIL UNIT FRAMES SHALL BE AS RECOMMENDED BY THE MANUFACTURER OR WITH UL LISTED GROUNDING CONNECTORS. PROVIDE MULTI TERMINAL EQUIPMENT GROUND BAR OR INDIVIDUAL GROUND LUGS TO TERMINATE EACH GROUND WIRE IN EACH REIL UNIT.

REVISION	DATE

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS  
A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

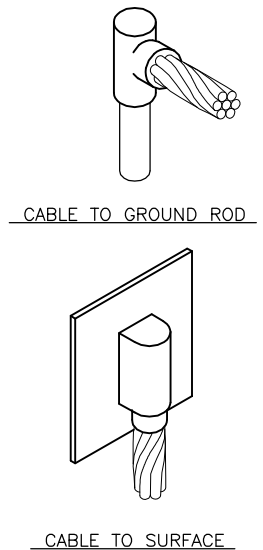
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Filename E-503.DWG	
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REPLACE NAVAIDS AND VAULT  
REIL INSTALLATION DETAILS

JAN 28, 2011 11:41 AM HANGL000382  
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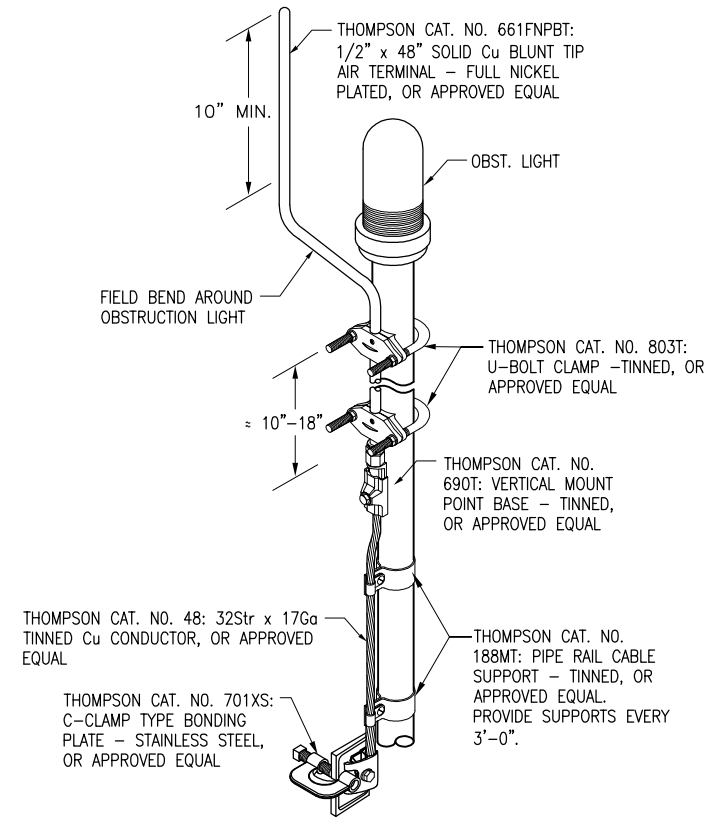




DETAIL NOTES

- 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.

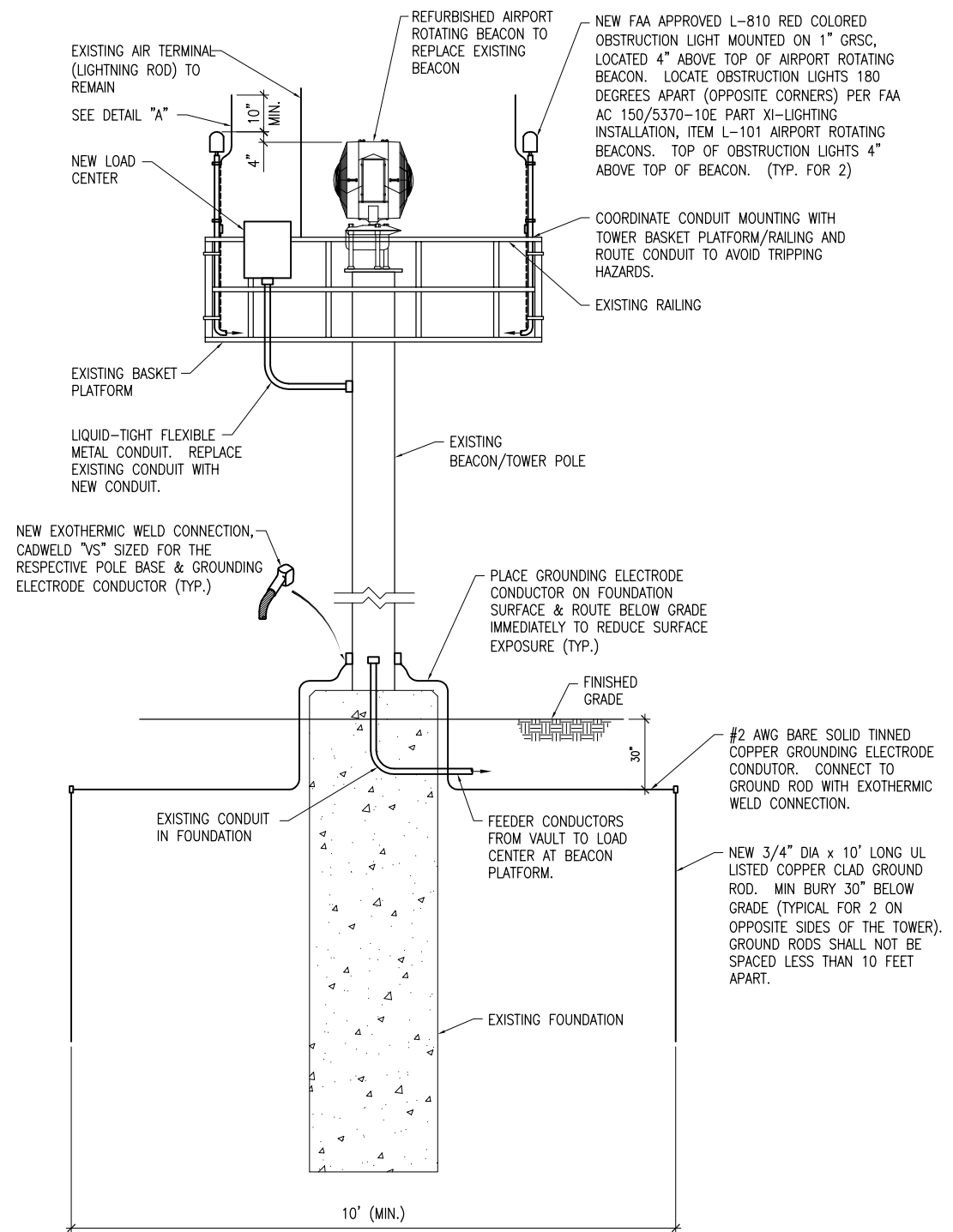
EXOTHERMIC WELD DETAILS  
NOT TO SCALE



DETAIL A  
NOT TO SCALE

NOTES

- REFERENCES TO THOMPSON ARE THOMPSON LIGHTNING PROTECTION INC., 901 SIBLEY MEMORIAL HWY, ST. PAUL, MN 55188, PHONE: 651-455-7661, 800-777-1230, FAX: 651-455-2545.
- VERIFY LIGHTNING PROTECTION COMPONENTS AND CATALOG NUMBERS WITH THE RESPECTIVE LIGHTNING PROTECTION EQUIPMENT MANUFACTURER.



LIGHTNING PROTECTION DETAIL  
FOR AIRPORT ROTATING BEACON  
NOT TO SCALE

REMOVAL & REPLACEMENT OF EXISTING AIRPORT ROTATING BEACON WILL BE PAID FOR UNDER ITEM AR101580 REFURBISH 36" BEACON PER EACH. ALL OTHER WORK SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER ITEM AR800591 - UPGRADE AIRPORT ROTATING BEACON - PER L.S.

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

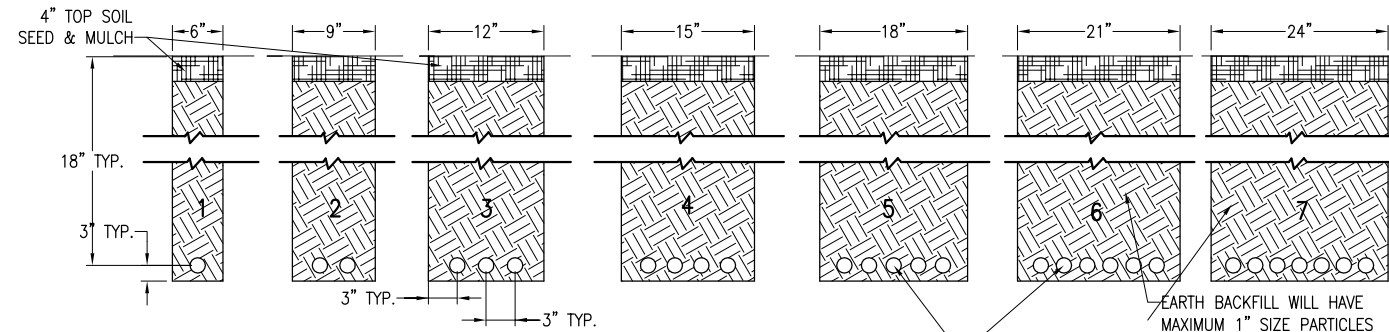
GND S/N

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

NOTES

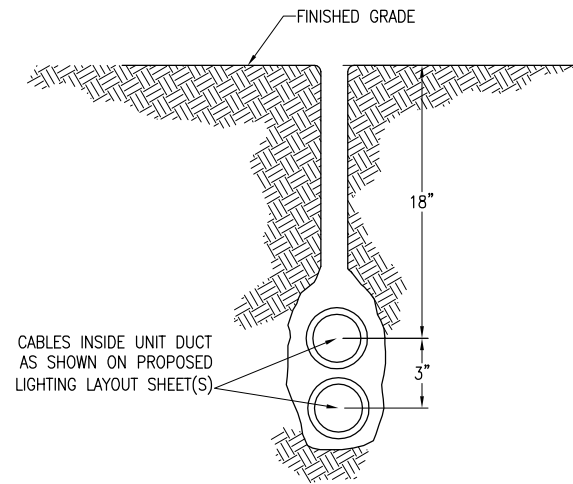
- INCLUDE EQUIPT GROUND BAR KIT.
- ALL BREAKERS SHALL HAVE 10,000 AIC RATING AT 120/240 VAC.
- PHASE "A" SHALL BE SWITCHED THROUGH A LIGHTING CONTACTOR AT THE VAULT. PHASE "B" SHALL BE UNSWITCHED.
- INCLUDE ENGRAVED PHENOLIC LEGEND PLATE LABELED ARB PANEL, 120/240 VAC, 1PH, 3W, FED FROM VAULT.
- SURGE PROTECTORS SHALL BE SUITABLE FOR 120VAC, 1PH, 2W PLUS GROUND, 30KA (MINIMUM) SURGE CURRENT RATING, JOSLYN MODEL 1260-21 OR 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	
OLNEY-NOBLE AIRPORT NOBLE, ILLINOIS	
A.I.P. PROJ.: 3-17-0076-B10	
IL PROJ.: OLY-4032	
Hanson Proj. No. 10A00790	
Filename E-504.DWG	
Scale AS SHOWN	
Date 12/17/10	
LAYOUT	09/01/10
DRAWN	ANC
REVIEWED	PJT/KNL
	11/05/10
<p>Hanson Professional Services Inc. 2011 1525 South Sixth Street Springfield, Illinois 62703-2986 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide</p>	
REPLACE NAVAIDS AND VAULT	LIGHTNING PROTECTION DETAILS FOR BEACON
17	
17 of 48 sheets	

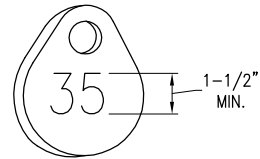


**NOTES:**  
 DETAIL NUMBERS INDICATE NO. OF CABLES.  
 TRENCHES WITH MORE THAN SEVEN CABLES SHALL BE INCREASED 3" IN WIDTH FOR EACH ADDITIONAL CABLE; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.  
 DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS.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

**CABLE TRENCHES**  
 NOT TO SCALE

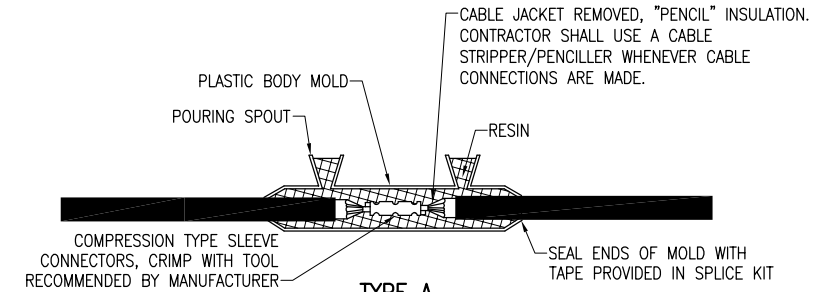


**PLOWED CABLE**  
 NOT TO SCALE

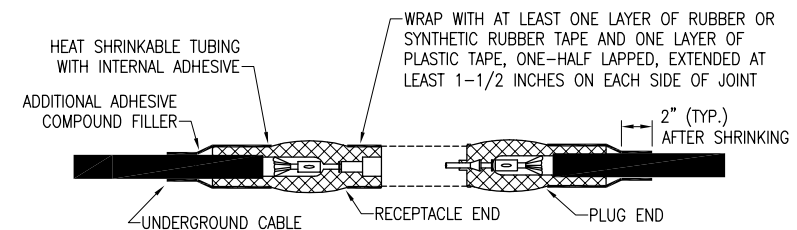


**TAG DETAIL**  
 NOT TO SCALE

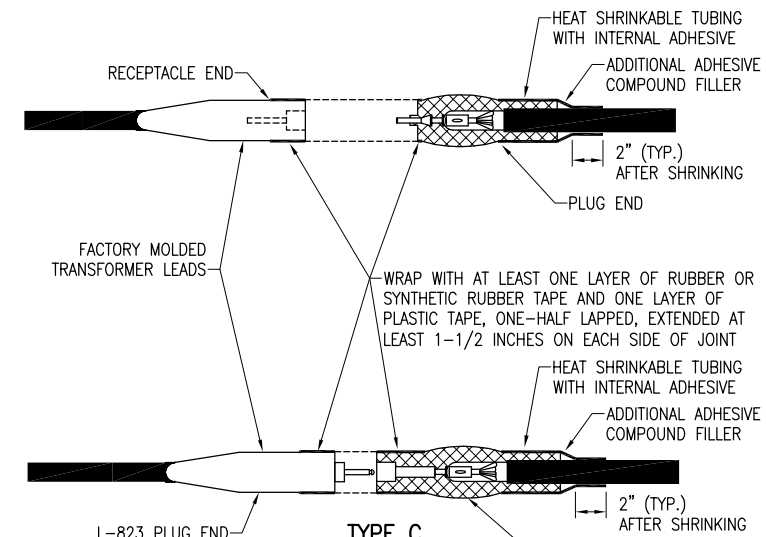
**NOTE:**  
 AFFIX NON-CORROSIVE TAG TO FIXTURE FACING RUNWAY WITH SET SCREW, WIRE TIE, OR METAL BAND. NUMERALS SHALL BE ENGRAVED FOR PERMANENT READABILITY.



**TYPE A**  
 FOR SPLICES IN LOW VOLTAGE CABLE (600V) HOMERUNS FOR EXTENSIONS TO EXISTING LOW VOLTAGE CABLES ONLY



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



**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

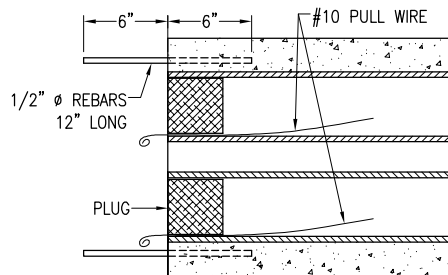
REVISION	DATE

OLNEY-NOBLE AIRPORT  
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 A.I.P. PROJ.: 3-17-0076-B10  
 IL PROJ.: OLY-4032

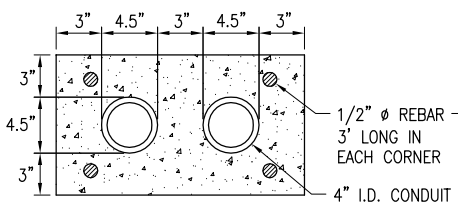
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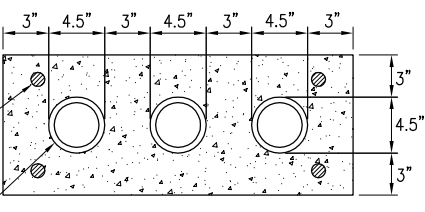
REPLACE NAVAIDS  
 AND VAULT  
 ELECTRICAL DETAILS  
 SHEET 1



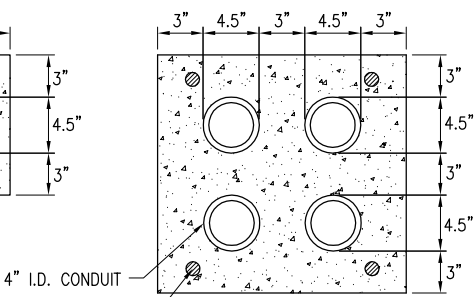
TYPICAL SECTION  
NOT TO SCALE



2-DUCT BANK  
NOT TO SCALE



3-DUCT BANK  
NOT TO SCALE



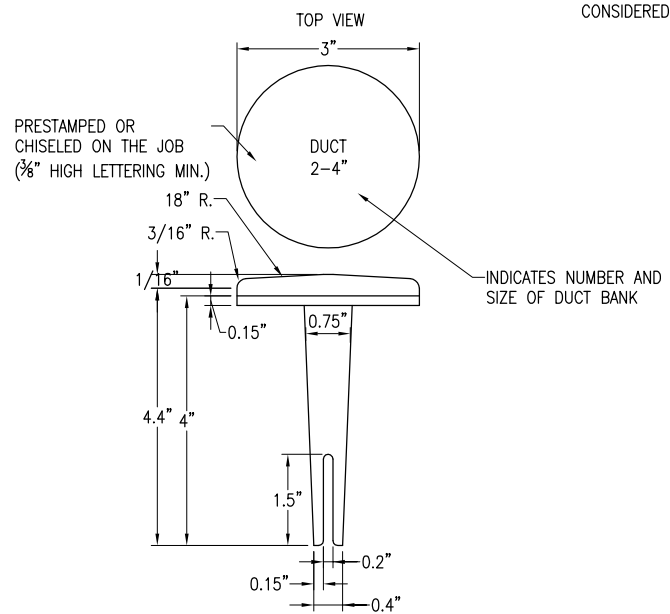
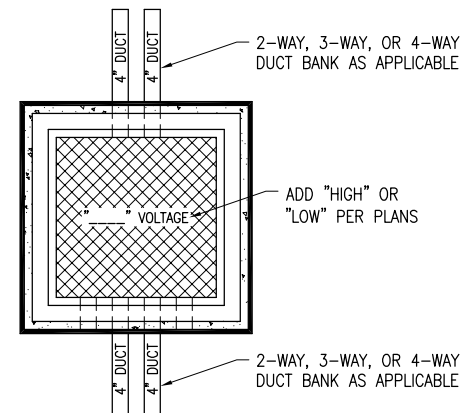
4-DUCT BANK  
NOT TO SCALE

DUCT BANK NOTES:

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

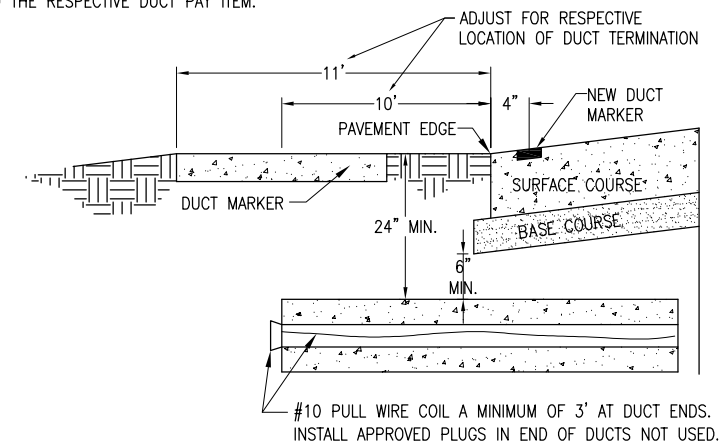
CABLE & DUCT MARKER NOTES:

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

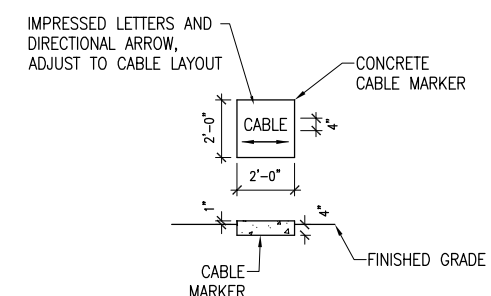


BITUMINOUS PAVEMENT DUCT MARKERS  
NOT TO SCALE

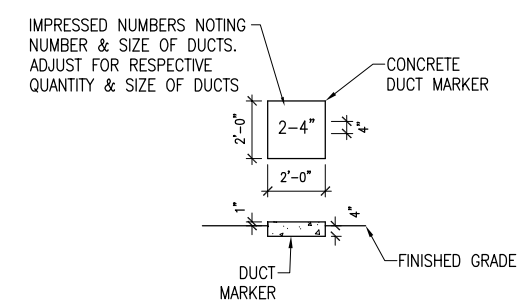
NOTE:  
TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE.



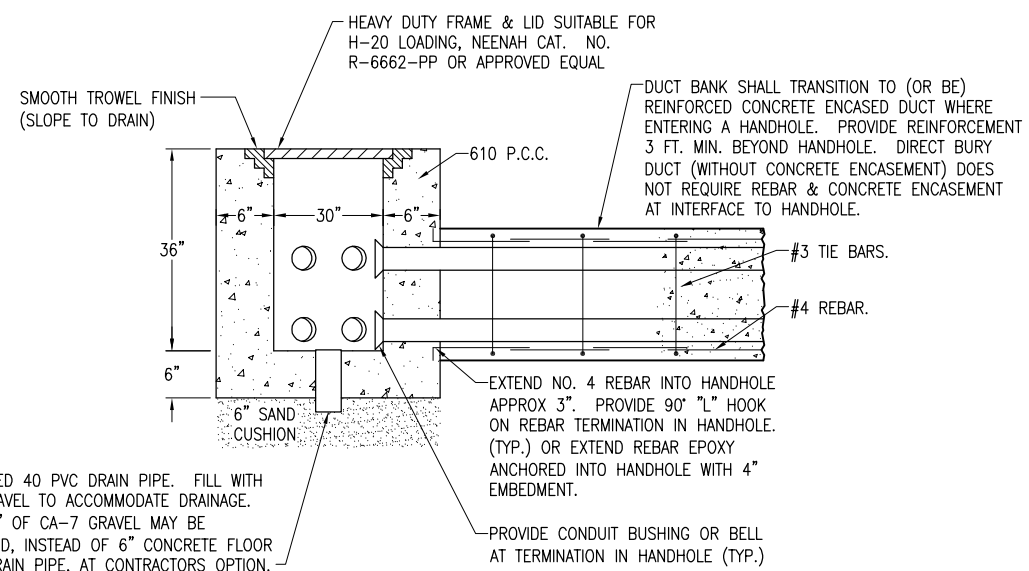
UNDERGROUND ELECTRICAL DUCT  
NOT TO SCALE



TURF CABLE MARKERS  
NOT TO SCALE



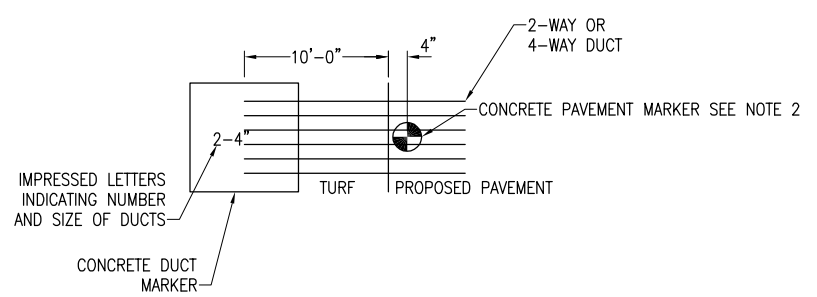
TURF DUCT MARKERS  
NOT TO SCALE



ELECTRICAL HANDHOLE  
NOT TO SCALE

NOTES:

1. LIDS FOR LOW VOLTAGE HANDHOLES SHALL BE LABELED "LOW VOLTAGE". LIDS FOR HIGH VOLTAGE HANDHOLES SHALL BE LABELED "HIGH VOLTAGE". COORDINATE LETTERING WITH MFR.
2. HANDHOLES MAY BE CAST IN PLACE OR PRECAST. PRECAST MANUFACTURERS MUST BE ON IDOT (ILLINOIS DEPT. OF TRANSPORTATION) APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS.
3. HANDHOLES WILL BE PAID FOR UNDER ITEM AR110610 ELECTRICAL HANDHOLE PER EACH. SEE SPECIAL PROVISIONS.
4. ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, CABLE IN UNIT DUCT, AND / OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE HANDHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.



DUCT MARKER DETAIL  
NOT TO SCALE

REVISION	DATE

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

Hanson Proj. No. 10A00790	FILENAME E-506.DWG	Scale AS SHOWN	Date 12/17/10
LAYOUT	PJT	09/01/10	
DRAWN	ANC	09/02/10	
REVIEWED	PJT/KNL	11/05/10	

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REPLACE NAVALDS  
AND VAULT

ELECTRICAL DETAILS  
SHEET 2

GENERAL NOTES

- 1. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
2. CONTRACTOR SHALL KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING CONSTRUCTION FOR USE AS A REFERENCE.
3. CONTRACTOR SHALL COORDINATE WORK AND ANY POWER OUTAGES AND/OR SHUT DOWN OF SYSTEMS WITH THE RESPECTIVE FACILITY OWNER PERSONNEL AND THE AIRPORT MANAGER/DIRECTOR. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
4. THE CONTRACTOR SHALL ASCERTAIN THAT ALL LIGHTING SYSTEM COMPONENTS FURNISHED BY HIM, INCLUDING FAA APPROVED EQUIPMENT, ARE COMPATIBLE IN ALL RESPECTS WITH EACH OTHER AND THE REMAINDER OF THE NEW/EXISTING SYSTEM. ANY NONCOMPATIBLE COMPONENTS FURNISHED BY THIS CONTRACTOR SHALL BE REPLACED BY HIM AT NO ADDITIONAL COST TO THE AIRPORT SPONSOR WITH A SIMILAR UNIT, APPROVED BY THE ENGINEER (DIFFERENT MODEL OR DIFFERENT MANUFACTURER) THAT IS COMPATIBLE WITH THE REMAINDER OF THE AIRPORT LIGHTING SYSTEM.
5. IN CASE THE CONTRACTOR ELECTS TO FURNISH AND INSTALL AIRPORT LIGHTING EQUIPMENT REQUIRING ADDITIONAL WIRING, TRANSFORMERS, ADAPTORS, MOUNTINGS, ETC., TO THOSE SHOWN ON THE DRAWINGS AND/OR LISTED IN THE SPECIFICATION, ANY COST FOR THESE ITEMS SHALL BE INCIDENTAL TO THE EQUIPMENT COST.
6. THE CONTRACTOR INSTALLED EQUIPMENT (INCLUDING FAA APPROVED) SHALL NOT GENERATE ANY ELECTROMAGNETIC INTERFERENCE IN THE EXISTING AND/OR NEW COMMUNICATIONS, WEATHER, AIR NAVIGATION, AND AIR TRAFFIC CONTROL EQUIPMENT. ANY EQUIPMENT GENERATING SUCH INTERFERENCE SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST WITH THE EQUIPMENT MEETING THE APPLICABLE SPECIFICATIONS AND NOT GENERATING ANY INTERFERENCE.
7. WHEN A SPECIFIC TYPE, STYLE, CLASS, ETC. OF FAA APPROVED EQUIPMENT IS SPECIFIED ONLY THAT TYPE, STYLE, CLASS, WILL BE ACCEPTABLE, EVEN THOUGH EQUIPMENT OF OTHER TYPES STYLES, CLASSES, ETC. MAY BE APPROVED.
8. ANY AND ALL INSTRUCTIONS FROM THE RESIDENT ENGINEER TO THE CONTRACTOR REGARDING CHANGES IN OR DEVIATIONS FROM THE PLANS AND SPECIFICATIONS SHALL BE IN WRITING WITH COPIES SENT TO THE AIRPORT SPONSOR AND THE ILLINOIS DEPARTMENT OF TRANSPORTATION, DIVISION OF AERONAUTICS. THE CONTRACTOR SHALL NOT ACCEPT ANY VERBAL INSTRUCTIONS FROM THE RESIDENT ENGINEER REGARDING ANY CHANGES FROM THE PLANS AND SPECIFICATIONS.
9. A MINIMUM OF THREE COPIES OF THE INSTRUCTION BOOK SHALL BE SUPPLIED WITH EACH DIFFERENT TYPE OF EQUIPMENT. THE BOOKS DESCRIBING A MORE SOPHISTICATED TYPE OF EQUIPMENT, SUCH AS REGULATORS, PAPI, REIL, ETC. AS A MINIMUM SHALL CONTAIN THE FOLLOWING:
A. A DETAILED DESCRIPTION OF THE OVERALL EQUIPMENT AND ITS INDIVIDUAL COMPONENTS.
B. THEORY OF OPERATION INCLUDING THE FUNCTION OF EACH COMPONENT.
C. INSTALLATION INSTRUCTION.
D. START-UP INSTRUCTIONS.
E. PREVENTATIVE MAINTENANCE REQUIREMENTS.
F. CHART FOR TROUBLE-SHOOTING.
G. COMPLETE POWER AND CONTROL DETAILED WIRING DIAGRAM(S), SHOWING EACH CONDUCTOR/CONNECTION/COMPONENT - "BLACK" BOXES ARE NOT ACCEPTABLE. THE DIAGRAM OF THE NARRATIVE SHALL SHOW VOLTAGE/CURRENTS/WAVE SHAPES AT STRATEGIC LOCATIONS TO BE USED WHEN CHECKING AND/OR TROUBLE-SHOOTING THE EQUIPMENT. WHEN THE EQUIPMENT HAS SEVERAL MODES OF OPERATION, SUCH AS SEVERAL BRIGHTNESS STEPS, THESE PARAMETERS SHALL BE INDICATED FOR ALL DIFFERENT MODES.
H. PARTS LIST WHICH WILL INCLUDE ALL MAJOR AND MINOR COMPONENTS SUCH AS RESISTORS, DIODES, ETC. IT SHALL INCLUDE A COMPLETE NOMENCLATURE OF EACH COMPONENT AND, IF APPLICABLE, THE NAME OF ITS MANUFACTURER AND THE CATALOG NUMBER.
I. SAFETY INSTRUCTIONS.

POWER AND CONTROL NOTES

- 1. PROVIDE LEGEND PLATES FOR ALL ELECTRICAL EQUIPMENT TO IDENTIFY FUNCTION, CIRCUIT VOLTAGE AND PHASE. WHERE THE EQUIPMENT CONTAINS FUSES, ALSO IDENTIFY THE FUSE OR FUSE LINK AMPERE RATING. WHERE THE EQUIPMENT DOES NOT HAVE SUFFICIENT AREA TO INSTALL LEGEND PLATES, THE LEGEND PLATES SHALL BE INSTALLED ON THE WALL NEXT TO THE UNIT. LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND UNLESS NOTED OTHERWISE. SECURE WITH WEATHERPROOF ADHESIVE AND MACHINE SCREWS. FURNISH ADDITIONAL LEGEND PLATES WHERE REQUIRED BY CODE, FOR ADDITIONAL EQUIPMENT, AS DETAILED HEREIN ON THE PLANS, AND AS NOTED IN THE SPECIAL PROVISION SPECIFICATIONS.
2. COLOR CODE ALL PHASE WIRING BY THE USE OF COLORED WIRE INSULATION AND/OR COLORED TAPE. WHERE TAPE IS USED, THE WIRE INSULATION SHALL BE BLACK. BLACK AND RED SHALL BE USED FOR PHASE CONDUCTORS ON 120/240VAC SINGLE-PHASE, THREE WIRE SYSTEMS AND BLACK, ORANGE (FOR HIGH LEG) AND BLUE SHALL BE USED FOR PHASE CONDUCTORS ON 240/120VAC THREE-PHASE, FOUR WIRE SYSTEMS. NEUTRAL CONDUCTORS, SIZE NO. 6 AWG OR SMALLER, SHALL BE IDENTIFIED BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH. NEUTRAL CONDUCTORS LARGER THAN NO. 6 AWG SHALL BE IDENTIFIED EITHER BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH OR BY THE USE OF WHITE TAPE AT ITS TERMINATIONS AND INSIDE ACCESSIBLE WIREWAYS. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR SIZES (AWG OR KCMIL).
3. ALL BRANCH CIRCUIT CONDUCTORS CONNECTED TO A PARTICULAR PHASE SHALL BE IDENTIFIED WITH THE SAME COLOR. THE COLOR CODING SHALL BE EXTENDED TO THE POINT OF UTILIZATION.
4. IN CONTROL WIRING THE SAME COLOR SHALL BE USED THROUGHOUT THE SYSTEM FOR THE SAME FUNCTION, SUCH AS 10%, 30%, 100% BRIGHTNESS CONTROL, ETC.
5. LOW VOLTAGE (600 V.) AND HIGH VOLTAGE (5000 V.) CONDUCTORS SHALL BE INSTALLED IN SEPARATE WIREWAYS.
6. NEATLY LACE WIRING IN DISTRIBUTION PANELS, WIREWAYS, SWITCHES AND JUNCTION/PULL BOXES.
7. THE MINIMUM SIZE OF PULL/JUNCTION BOXES, REGARDLESS OF THE QUANTITY AND SIZE OF THE CONDUCTORS SHOWN, SHALL BE AS FOLLOWS:
A. IN STRAIGHT PULLS THE LENGTH OF THE BOX SHALL NOT BE LESS THAN EIGHT TIMES THE TRADE DIAMETER OF THE LARGER CONDUIT. THE TOTAL AREA (INCLUDING THE CONDUIT CROSS-SECTIONAL AREA) OF A BOX END SHALL BE AT LEAST 3 TIMES GREATER THAN THE TOTAL TRADE CROSS-SECTIONAL AREA OF THE CONDUITS TERMINATING AT THE END.
B. IN ANGLE PULLS OR 'U' PULLS THE DISTANCE BETWEEN EACH CONDUIT ENTRY INSIDE THE BOX AND THE OPPOSITE WALL OF THE BOX SHALL NOT BE LESS THAN SIX (6) TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT. THIS DISTANCE SHALL BE INCREASED FOR ADDITIONAL ENTRIES BY THE AMOUNT OF THE SUM OF THE DIAMETERS OF ALL OTHER CONDUIT ENTRIES ON THE SAME WALL AS THE BOX. THE DISTANCE BETWEEN CONDUIT ENTRIES ENCLOSING THE SAME CONDUCTOR SHALL NOT BE LESS THAN SIX TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT.
8. A RUN OF CONDUIT BETWEEN TERMINATIONS AT EQUIPMENT ENCLOSURES, SQUARE DUCTS AND PULL/JUNCTION BOXES, SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL), INCLUDING THOSE BENDS LOCATED IMMEDIATELY AT THE TERMINATIONS, CAST, CONDUIT TYPE OUTLETS SHALL NOT BE TREATED AS PULL/JUNCTION BOXES.
9. EQUIPMENT CABINETS SHALL NOT BE USED AS PULL/JUNCTION BOXES. ONLY WIRING TERMINATING AT THE EQUIPMENT SHALL BE BROUGHT INTO THESE ENCLOSURES.
10. SPLICES AND JUNCTION POINTS SHALL BE PERMITTED ONLY IN JUNCTION BOXES, DUCTS EQUIPPED WITH REMOVABLE COVERS, AND AT EASILY ACCESSIBLE LOCATIONS.
11. CIRCUIT BREAKERS IN POWER DISTRIBUTION PANEL(S) SHALL BE THERMAL-MAGNETIC MOLDED CASE, PERMANENT TRIP WITH 100 AMPERE, MINIMUM FRAME.
12. DUAL LUGS SHALL BE USED WHERE TWO (2) WIRES, SIZE NO. 6 OR LARGER, ARE TO BE CONNECTED TO THE SAME TERMINAL.
13. ALL INTERIOR WALL MOUNTED EQUIPMENT ENCLOSURES SHALL BE MOUNTED ON HOT DIPPED GALVANIZED STEEL STRUT SUPPORT, OR STAINLESS STEEL STRUT SUPPORT, WITH CORROSION RESISTANT HARDWARE.
14. SUPPORT FOR EXTERIOR MOUNTED EQUIPMENT SHALL USE HOT DIPPED GALVANIZED STEEL STRUT SUPPORT OR STAINLESS STEEL STRUT SUPPORT WITH STAINLESS STEEL HARDWARE. PROVIDE ZINC RICH PAINT APPLIED TO FIELD CUTS OF GALVANIZED STEEL SUPPORT TO MINIMIZE THE POTENTIAL FOR CORROSION PER THE RESPECTIVE STRUT SUPPORT MANUFACTURER'S RECOMMENDATIONS.

- 15. CONDUITS FOR ELECTRIC SERVICE ENTRANCE AND FEEDERS SHALL BE AS DETAILED HEREIN ON THE PLANS. WHERE GALVANIZED RIGID STEEL CONDUIT IS SPECIFIED IT SHALL HAVE THREADED FITTINGS. SET SCREW TYPE FITTINGS WILL NOT BE ACCEPTABLE. CONDUITS FOR UNDERGROUND APPLICATIONS SHALL BE AS DETAILED HEREIN. CONDUITS FOR GROUNDING ELECTRODE CONDUCTORS OR INDIVIDUAL GROUNDING CONDUCTORS SHALL BE SCHEDULE 40 OR SCHEDULE 80 PVC.
16. PROVIDE LIQUID TIGHT FLEXIBLE METAL CONDUIT AT CONNECTIONS TO EQUIPMENT SUBJECT TO VIBRATION OR WHERE FLEXIBILITY IS REQUIRED. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING, SUNLIGHT RESISTANT, AND RESISTANT TO OIL, GASOLINE, AND GREASE. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO MOTORS, TRANSFORMERS, & CONSTANT CURRENT REGULATORS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. DO NOT INSTALL LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL LISTED. CONFIRM LIQUID-TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.
17. UNLESS OTHERWISE SHOWN, ALL EXPOSED CONDUITS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES WITH THE LINES OF THE STRUCTURE.
18. ALL STEEL CONDUITS, FITTINGS, NUTS, BOLTS, ETC. SHALL BE GALVANIZED.
19. USE CONDUIT BUSHINGS AT EACH CONDUIT TERMINATION. WHERE NO. 4 AWG OR LARGER UNDERGROUND WIRE IS INSTALLED, USE INSULATED BUSHINGS.
20. USE DOUBLE LOCK NUTS AT EACH CONDUIT TERMINATION.
21. WRAP ALL PRIMARY AND SECONDARY POWER TRANSFORMER CONNECTIONS WITH SUFFICIENT LAYERS OF INSULATING TAPE (3M SCOTCH 23 ALL-VOLTAGE SPLICING TAPE, 3M SCOTCH 130C LINERLESS RUBBER SPLICING TAPE, OR APPROVED EQUAL) AND COVER WITH VINYL ELECTRICAL TAPE (3M SCOTCH 88 VINYL ELECTRICAL TAPE OR APPROVED EQUAL) FOR FULL VALUE OF CABLE INSULATION VOLTAGE.
22. UNLESS OTHERWISE NOTED, ALL SINGLE CONDUCTOR CONTROL WIRING SHALL BE NO. 12 AWG. COPPER MINIMUM.
23. THE FOLLOWING SHALL APPLY TO RELAY/CONTACTOR PANELS/ENCLOSURES:
A. FOR INTERIOR LOCATIONS ALL COMPONENTS SHALL BE MOUNTED IN NEMA 12 (DUST TIGHT) ENCLOSURE(S) WITH VERTICALLY HINGED COVERS. FOR EXTERIOR/OUTDOOR LOCATIONS ALL COMPONENTS SHALL BE MOUNTED IN NEMA 4X STAINLESS STEEL ENCLOSURE(S) WITH VERTICALLY HINGED COVERS. ALL CONDUIT ENTRIES INTO NEMA 4, 4X ENCLOSURES SHALL HAVE NEMA 4 HUBS LISTED SUITABLE FOR THE RESPECTIVE ENCLOSURE TO MAINTAIN THE NEMA 4, 4X RATING OF THE ENCLOSURE.
B. THE ENCLOSURE(S) SHALL HAVE AMPLE SPACE FOR THE CIRCUIT COMPONENTS, TERMINAL BLOCKS AND INCOMING AND INTERNAL WIRING.
C. ALL CONTROL CONDUCTOR TERMINATIONS SHALL BE OF THE OPEN-EYE CONNECTOR/SCREW TYPE. SOLDERED CLOSED-EYE TERMINATIONS, OR TERMINATIONS WITHOUT CONNECTORS ARE NOT ACCEPTABLE.
D. WHEN THE ENCLOSURE COVER IS OPENED, ALL CIRCUIT COMPONENTS, WIRING AND TERMINALS SHALL BE EXPOSED AND ACCESSIBLE WITHOUT REMOVAL OF ANY PANELS, COVERS, ETC., EXCEPT THOSE COVERING HIGH VOLTAGE COMPONENTS.
E. ACCESS TO, OR REMOVAL OF A CIRCUIT COMPONENT OR TERMINAL BLOCK WILL NOT REQUIRE THE REMOVAL OF ANY OTHER CIRCUIT COMPONENT OR TERMINAL BLOCK.
F. EACH CIRCUIT COMPONENT SHALL BE CLEARLY IDENTIFIED INDICATING ITS CORRESPONDING NUMBER SHOWN ON THE DRAWINGS AND ITS FUNCTION.
G. A COMPLETE WIRING DIAGRAM SHALL BE MOUNTED ON THE INSIDE OF THE COVER. THE DIAGRAM SHALL REPRESENT EACH CONDUCTOR BY A SEPARATE LINE.
H. THE DIAGRAM SHALL IDENTIFY EACH CIRCUIT COMPONENT AN NUMBERING AND COLOR OF EACH TERMINAL CONDUCTOR AND TERMINAL.
I. ALL WIRING SHALL BE NEATLY TRAINED AND LACED.
J. MINIMUM WIRE SIZE SHALL BE NO. 12 AWG.
24. FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH METER SOCKET, SERVICE DISCONNECT, SAFETY SWITCH, CUTOUT, PANELBOARD, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION".

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REVISION, DATE, OLNEY-NOBLE AIRPORT NOBLE, ILLINOIS, REPLACE NAVAIDS AND VAULT ELECTRICAL NOTES SHEET 1, 20 OF 48 SHEETS, HANSON PROFESSIONAL SERVICES INC., 1525 SOUTH SIXTH STREET, SPRINGFIELD, ILLINOIS 62703-2986, PH: (217) 788-2450 FAX: (217) 788-2903 WWW.HANSON-INC.COM OFFICES NATIONWIDE, HANSON PROJ. No. 10A000790, Filename: E-001.DWG, Scale: AS SHOWN, Date: 12/17/10, LAYOUT PJT 09/01/10, DRAWN ANJ 09/02/10, REVIEWED PJT/KNL 11/05/10, IL PROJ.: OLY-4032, A.I.P. PROJ.: 3-17-0076-B10

AIRFIELD LIGHTING NOTES

- 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.
- NO COMPONENTS OF PRIMARY CIRCUIT SUCH AS CABLE, CONNECTORS AND TRANSFORMERS SHALL BE BROUGHT ABOVE GROUND AT EDGE LIGHTS, SIGNS, REIL, PAPI, ETC.
- 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.
- 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 SHEET NO. 18.
- 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 SHEET NO. 18.
- L-823 TYPE II, TWO-CONDUCTOR SECONDARY CONNECTORS SHALL BE CLASS 'A' (FACTORY MOLDED).
- 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.
- ELECTRICAL INSULATING GREASE SHALL BE APPLIED WITHIN THE L-823, SECONDARY, TWO CONDUCTOR CONNECTORS TO PREVENT WATER ENTRANCE. THESE CONNECTORS SHALL NOT BE TAPED.
- 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.
- 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.
- 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.
- L-867 BASES SHALL BE SIZE B, 24" DEEP, CLASS I, UNLESS OTHERWISE NOTED.
- 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.
- 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.
- 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.
- TOPS OF THE STAKES SUPPORTING LIGHT FIXTURES SHALL BE FLUSH WITH THE SURROUNDING GRADE.
- PLASTIC LIGHTING FIXTURE COMPONENTS, SUCH AS LAMP HEADS, STEMS, BREAKABLE COUPLINGS, BASE COVERS, BRACKETS, STAKES, SHALL NOT BE ACCEPTABLE.
- 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.
- 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.

- 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.
- GALVANIZED/PAINTED EQUIPMENT/COMPONENT SURFACES SHALL NOT BE DAMAGED BY DRILLING, FILING, ETC. DRAIN HOLES IN METAL TRANSFORMER HOUSINGS SHALL BE MADE BEFORE GALVANIZING.
- EDGE LIGHT NUMBERING TAGS SHALL BE FACING THE PAVEMENT.
- 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.
- 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.
- THERE SHALL BE NO SPLICES BETWEEN THE ISOLATION TRANSFORMERS. L-823 CONNECTORS ARE ALLOWED AT TRANSFORMER CONNECTIONS ONLY, UNLESS OTHERWISE SHOWN.
- APPLY AN OXIDE INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS AND BREAKAGE COUPLING THREADS.
- LOCATIONS OF ENDS OF ALL UNDERGROUND DUCTS SHALL BE IDENTIFIED BY DUCT MARKERS.
- WHERE A PARALLEL, CONSTANT VOLTAGE PAPI SYSTEM IS PROVIDED, THE "T" SPLICES SHALL BE OF THE CAST TYPE.
- CONCRETE USED FOR SLABS, FOOTINGS, BACKFILL AROUND TRANSFORMER HOUSINGS, MARKINGS, ETC. SHALL BE 3500 PSI, AIR-ENTRAINED.
- 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.
- THE LOCATION, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS IS NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. **CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123.** CONTACT THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. LOCATION OF FAA POWER, CONTROL AND COMMUNICATION CABLES SHALL BE COORDINATED WITH AND/OR LOCATED BY THE FAA. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVE GROUND UTILITIES.
- WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.

GROUNDING NOTES FOR AIRFIELD LIGHTING

- GROUNDING FOR RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS SHALL BE AS DETAILED ON THE PLANS AND AS SPECIFIED HEREIN. PER FAA AC 150/5340-30E DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, CHAPTER 12, PART 12.6; A GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. THE PURPOSE OF THE LIGHT BASE GROUND IS TO PROVIDE A DEGREE OF PROTECTION FOR MAINTENANCE PERSONNEL FROM POSSIBLE CONTACT WITH AN ENERGIZED LIGHT BASE OR MOUNTING STAKE THAT MAY RESULT FROM A SHORTED POWER CABLE OR ISOLATION TRANSFORMER. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. A LIGHT BASE GROUND SHALL ALSO BE INSTALLED AT EACH STAKE MOUNTED LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AND BONDED TO THE METAL FRAME OF EACH TAXI GUIDANCE SIGN AS DETAILED ON THE PLANS AND IN ACCORDANCE WITH THE RESPECTIVE TAXI GUIDANCE SIGN MANUFACTURER RECOMMENDATIONS. THE LIGHT BASE GROUND SHALL BE A #6 AWG BARE COPPER CONDUCTOR BONDED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 5/8-INCH DIAMETER BY 8-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD. CONNECTIONS TO GROUND LUGS ON THE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE SHALL BE WITH A UL LISTED GROUNDING CONNECTOR. CONNECTIONS TO GROUND RODS SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE: 800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE: 918-663-1440), ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE: 800-842-7437), OR APPROVED EQUAL. EXOTHERMIC WELD CONNECTIONS SHALL BE INSTALLED IN CONFORMANCE WITH THE RESPECTIVE MANUFACTURER'S DIRECTIONS USING MOLDS AS REQUIRED FOR EACH RESPECTIVE APPLICATION. BOLTED CONNECTIONS WILL NOT BE PERMITTED AT GROUND RODS. TOP OF GROUND RODS SHALL BE BURIED 12 INCHES MINIMUM BELOW GRADE, UNLESS SPECIFIED OTHERWISE HEREIN, FOR RESPECTIVE APPLICATIONS.
- CLEAN ALL METAL SURFACES BEFORE MAKING GROUND CONNECTIONS. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL PER 2008 NATIONAL ELECTRICAL CODE ARTICLE 250-12.
- PER FAA 150/5340-30E THE RESISTANCE TO GROUND OF THE RESPECTIVE MOUNTING STAKE OR LIGHT BASE (WITH GROUND ROD CONNECTED) MUST BE 25 OHMS OR LESS.

REIL GROUNDING NOTE

- GROUNDING FOR REILS SHALL CONFORM TO THE RESPECTIVE REIL MANUFACTURER'S INSTALLATION INSTRUCTIONS, AS DETAILED ON THE PLANS, AND AS SPECIFIED HEREIN. THE POWER CIRCUIT TO MASTER REIL UNIT, AND EACH SLAVE UNIT, SHALL INCLUDE AN EQUIPMENT GROUND WIRE OF THE SAME SIZE AND TYPE AS THE PAHSE CONDUCTORS. FURNISH AND INSTALL A 3/4-INCH DIAMETER BY 10-FOOT LONG COPPER CLAD GROUND ROD AT EACH REIL UNIT. GROUND RODS SHALL BE BURIED 30" MINIMUM BELOW GRADE. BOND EACH REIL UNIT HOUSING AND THE REIL BASE CAN TO THE RESPECTIVE GROUND ROD IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WITH A #6 AWG BARE SOLID OR STRANDED (PER REIL MANUFACTURER REQUIREMENTS) COPPER GROUNDING ELECTRODE CONDUCTOR. ALL CONNECTIONS TO GROUND RODS SHALL BE EXOTHERMIC WELD AS MANUFACTURED BY CADWELD, THERMOWELD, OR ULTRAWELD. CONNECTIONS TO REIL UNIT FRAMES SHALL BE AS RECOMMENDED BY THE MANUFACTURER OR WITH UL LISTED GROUNDING CONNECTORS. PROVIDE MULTI TERMINAL EQUIPMENT GROUND BAR OR INDIVIDUAL GROUND LUGS TO TERMINATE EACH GROUND WIRE IN EACH REIL UNIT.

GROUNDING FOR PAPI'S.

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

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DATE	

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS

IL PROJ.: OLY-4032  
A.I.P. PROJ.: 3-17-0076-B10

Hanson Proj. No. 10A00790	
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REPLACE NAVAIDS AND VAULT

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

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

AIRPORT EQUIPMENT/FACILITY ABBREVIATIONS	
ASOS	AUTOMATED SURFACE OBSERVING SYSTEM
ATCT	AIR TRAFFIC CONTROL TOWER
AWOS	AUTOMATED WEATHER OBSERVING SYSTEM
CCR	CONSTANT CURRENT REGULATOR
DME	DISTANCE MEASURING EQUIPMENT
FAR	FEDERAL AVIATION REGULATION
GS	GUIDE 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.

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DATE				
<b>OLNEY-NOBLE AIRPORT</b> <b>NOBLE, ILLINOIS</b>				
A.I.P. PROJ.: 3-17-0076-B10 IL PROJ.: OLY-4032				
Hanson Proj. No.	10A00790	LAYOUT	PJT	09/01/10
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REPLACE NAVAIDS AND VAULT		ELECTRICAL LEGEND AND ABBREVIATIONS		
<span style="font-size: 24pt; font-weight: bold;">22</span> 22 of 48 sheets				

NOTES

- ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER.
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS TO CONFIRM POWER AND CONTROL CIRCUITS.
- 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).
- EXISTING AIRFIELD CIRCUITS SHALL BE LOCATED, IDENTIFIED, DISCONNECTED, REROUTED & RECONNECTED TO THE NEW VAULT AS DETAILED HEREIN. 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.
- CCR DENOTES CONSTANT CURRENT REGULATOR.
- EXISTING RUNWAY REGULATORS SHALL BE RELOCATED TO THE NEW VAULT FOR USE AS BACKUP/SPARE UNITS. EXISTING TAXIWAY REGULATOR SHALL BE DISCONNECTED & RELOCATED TO STORAGE.
- EXISTING VASI SYSTEMS SHALL BE REMOVED AND REPLACED WITH PAPI SYSTEMS.
- EXISTING AIRPORT ROTATING BEACON SHALL BE REPLACED WITH A REFURBISHED BEACON.

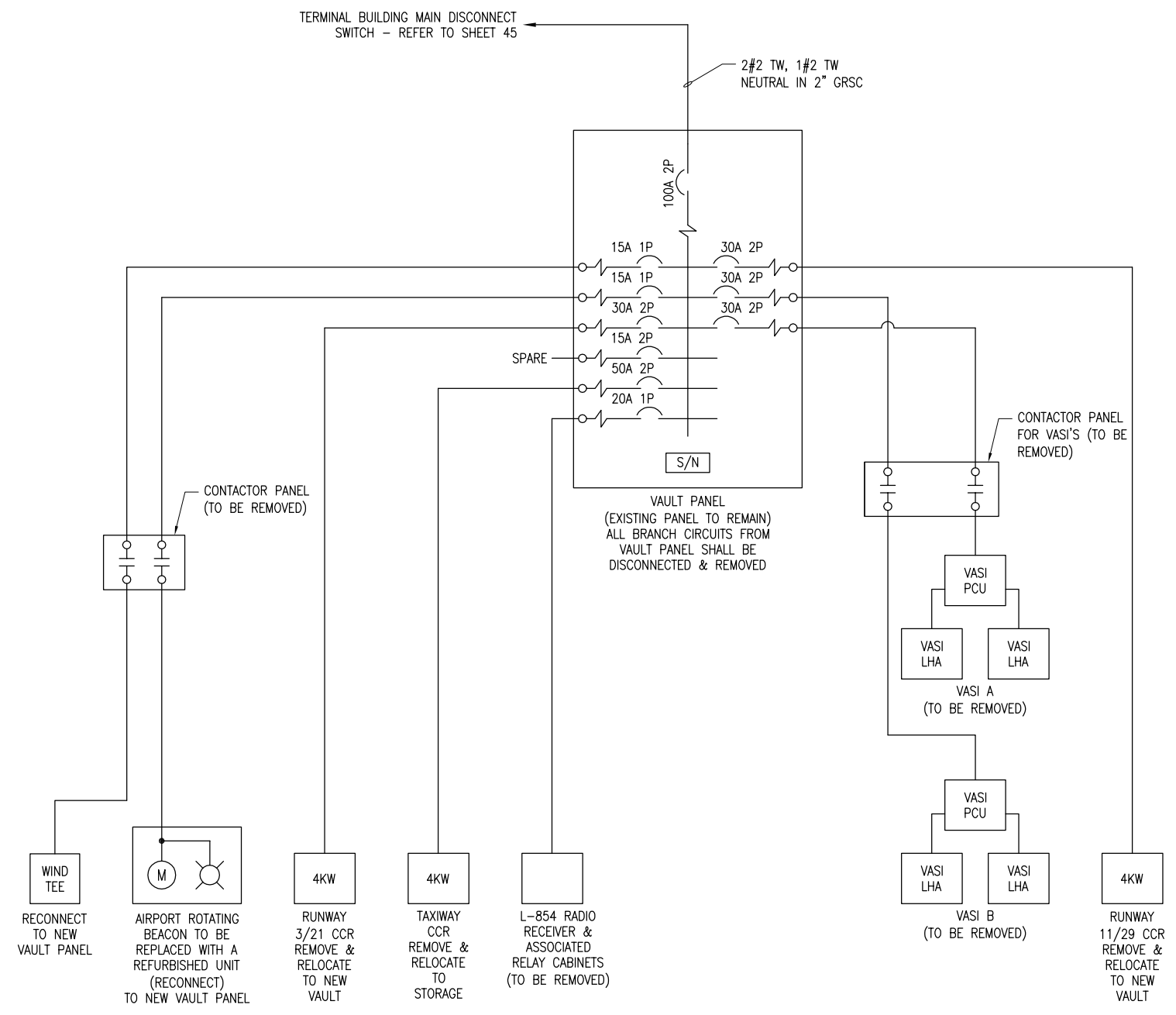
EXISTING VAULT PANEL			
CKT #	DUTY	SIZE	CKT #
1	WIND CONE	15A 1P	2
3	BEACON	15A 1P	4
5	REGULATOR RNWY 3/21	30A 2P	6
7		2P	8
9	SPARE	15A 2P	10
11		2P	12
13	TAXIWAY CCR	50A 2P	14
15		2P	16
17	BLANK		18
19	RADIO CONTROL RUNWAY LIGHTS	20A 1P	20

S/N

CUTLER HAMMER CH20CM100, 100 AMP, 120/240 VAC, 1PH, 3W, 20 CKT. LOAD CENTER WITH 100A, 2P MAIN BREAKER SUITABLE FOR USE AS SERVICE EQUIPMENT.

NOTES

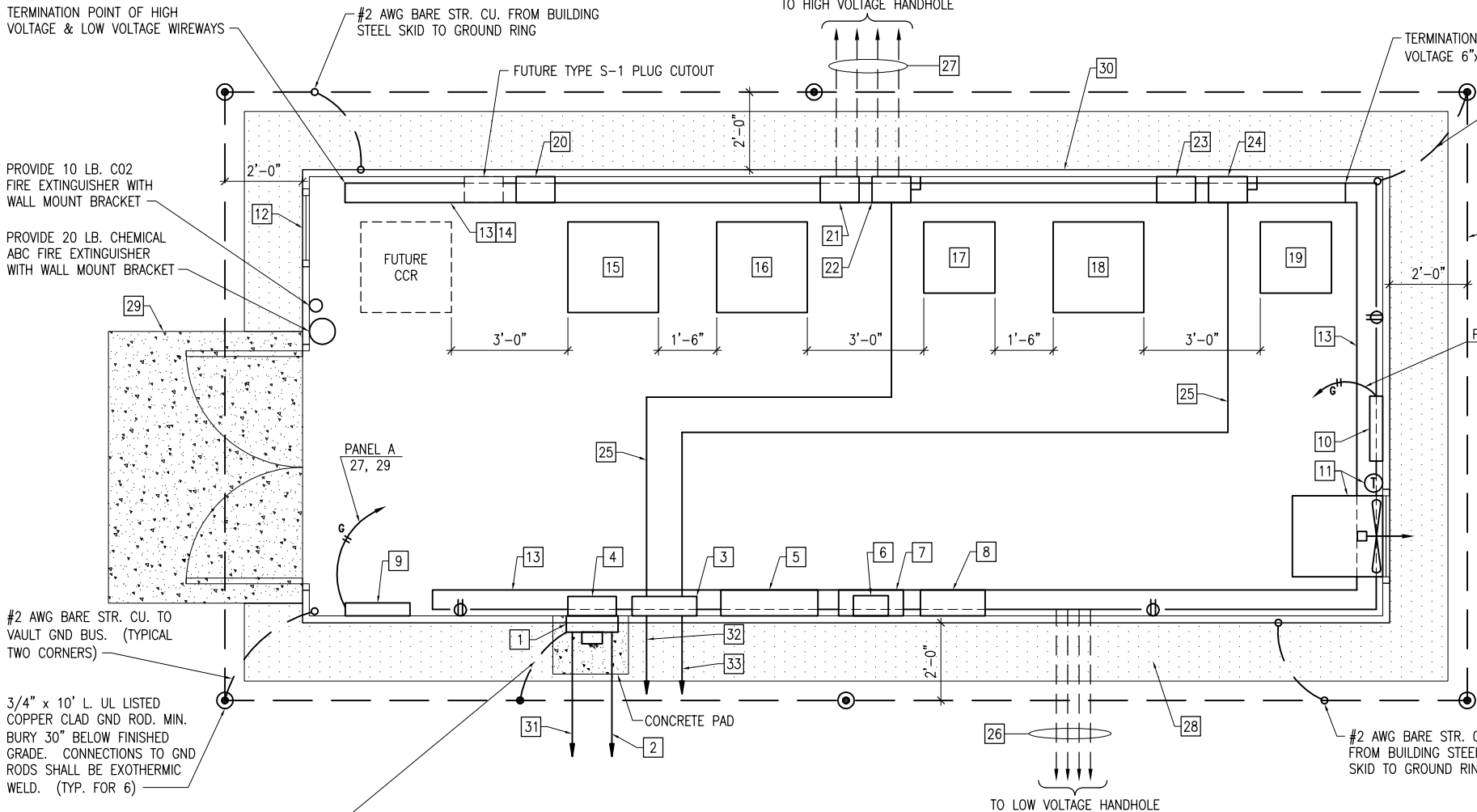
- USE CUTLER HAMMER TYPES CH, CH2100, OR CH2100H SAFETY BREAKERS.



EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT EQUIPMENT

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REVISION		DATE		
<b>OLNEY-NOBLE AIRPORT NOBLE, ILLINOIS</b>				
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23				
23 of 48 sheets				



**VAULT ELECTRICAL EQUIPMENT PLAN**  
 SCALE 1/2"=1'-0"  
 1 0 2 4 FEET

**VAULT BUILDING NOTES**

THE PROPOSED ELECTRICAL VAULT BUILDING SHALL CONSIST OF A PRE-FRABRICATED, PRE-ENGINEERED EQUIPMENT ENCLOSURE BUILDING WITH A CONCRETE FLOOR, STEEL SKID STRUCTURE AND FOUNDATION PIERS OR WITH CONCRETE SLAB FOUNDATION.

THE PROPOSED ELECTRICAL VAULT BUILDING SHALL HAVE A NOMINAL 12 FOOT WIDE EXTERIOR (INTERIOR WIDTH SHALL NOT BE LESS THAN 11 FEET, ADJUST EXTERIOR WIDTH AS APPLICABLE) BY NOMINAL 29 FEET IN LENGTH (INTERIOR LENGTH SHALL NOT BE LESS THAN 27 FEET, ADJUST EXTERIOR LENGTH AS APPLICABLE) BY NOMINAL 9 FEET HIGH INTERIOR (FLOOR TO CEILING).

**GENERAL NOTES**

- 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 CONTROL WIRING SCHEMATIC" AND "TAXIWAY LIGHTING CONTROL WIRING SCHEMATIC" FOR CCR CONTROL WIRING REQUIREMENTS. PROVIDE 5 FEET MINIMUM CLEAR WORKING SPACE IN FRONT OF EACH CCR AND EACH SERIES PLUG CUTOUT.
- CONSTANT CURRENT REGULATORS AND THEIR RESPECTIVE SERIES PLUG CUTOUTS SHALL BE CLEARLY LABELED TO IDENTIFY THE RESPECTIVE REGULATOR DESIGNATION, AND RUNWAY OR TAXIWAY SERVED.
- SEE ELEVATION VIEWS FOR ADDITIONAL INFORMATION ON PROPOSED EQUIPMENT LAYOUTS.
- COORDINATE CONDUIT & SLEEVE ENTRANCES THROUGH FLOOR SLAB AND WALLS.
- PROVIDE PVC COATED GRSC CONDUIT FOR FEEDERS/CIRCUITS ABOVE GRADE AND 2 FT. BELOW GRADE AND THEN TRANSITION TO SCHED. 40 PVC C. UNLESS OTHERWISE NOTED.

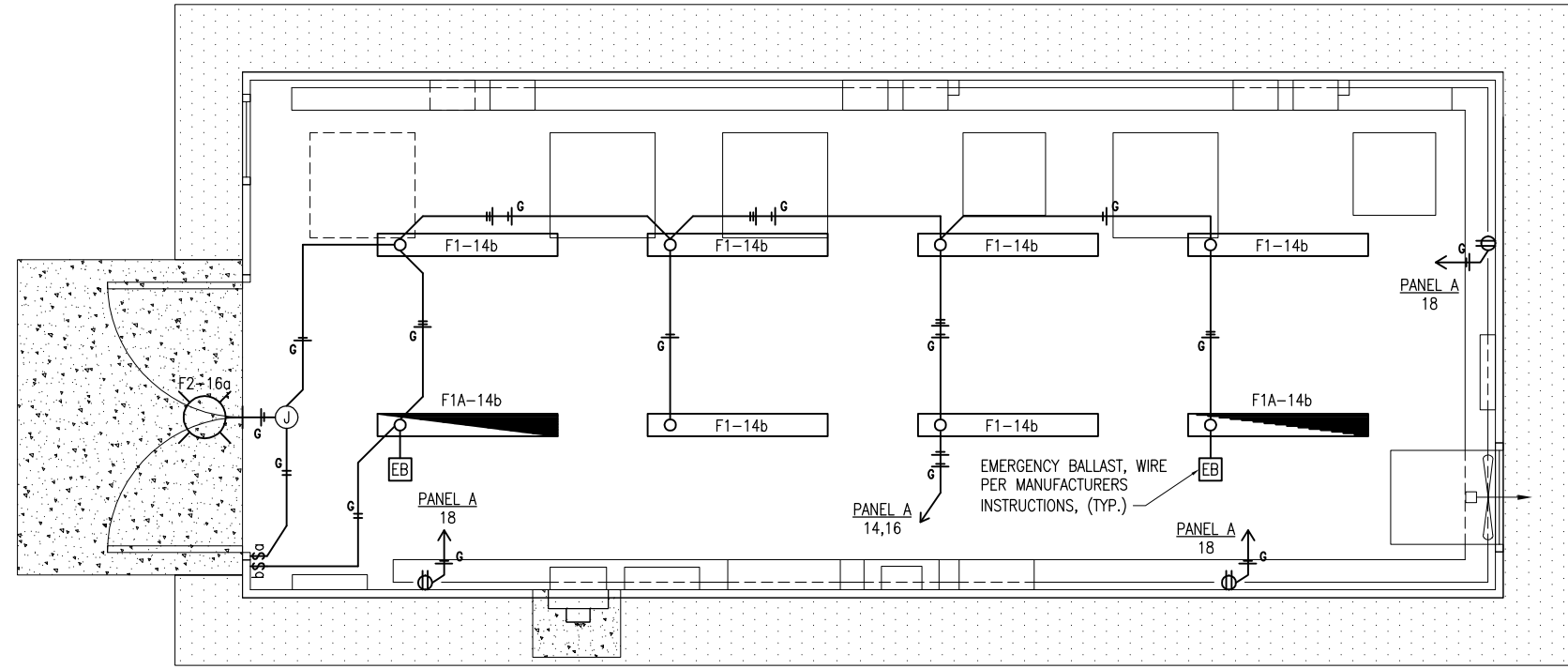
**KEYED NOTES**

- 1 ELECTRIC UTILITY METER WITH SUPPORT HARDWARE PER SERVING ELECTRIC UTILITY COMPANY REQUIREMENTS.
- 2 UTILITY SERVICE CONDUCTORS IN 3 1/2" SCHED. 40 PVC C. FROM UTILITY TRANSFORMER POLE TO METER BASE. CONTRACTOR SHALL FURNISH AND INSTALL SERVICE CONDUCTORS AND CONDUIT FROM METER BASE TO SERVICE PANEL. SEE "NEW VAULT ELECTRICAL ONE LINE DIAGRAM".
- 3 VAULT MAIN DISTRIBUTION PANEL A. SEE SCHEDULE.
- 4 AC SURGE PROTECTOR/TVSS
- 5 LIGHTING CONTACTOR PANEL. SEE "LIGHTING CONTACTOR PANEL DETAIL".
- 6 L-854 RADIO CONTROL UNIT. EXTEND RADIO ANTENNA CABLE IN 3/4" GRSC AND MOUNT ANTENNA ABOVE ROOF PEAK OF VAULT FOR PROPER OPERATION. PROVIDE SCHED 40 PVC NIPPLE AT ENTRY TO VAULT FOR ISOLATION. BOND EXTERIOR METAL CONDUIT TO GND RING WITH PIPE CLAMP AND #2 AWG BARE CU BONDING CONDUCTOR.
- 7 RADIO RELAY INTERFACE PANEL WITH PHOTOCCELL BYPASS SWITCH FOR AIRFIELD LIGHTING SYSTEM. SEE "AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC" FOR WIRING REQUIREMENTS. MOUNT PHOTOCCELL ABOVE ROOF LEVEL. FIELD VERIFY LOCATION FOR PROPER CONTROL AND OPERATION. PROVIDE SCHED 40 PVC NIPPLE AT ENTRY TO VAULT FOR ISOLATION. BOND EXTERIOR METAL CONDUIT TO GND RING WITH PIPE CLAMP AND #2 AWG CU BONDING CONDUCTOR.
- 8 RADIO RELAY INTERFACE PANEL FOR TAXIWAY LIGHTING SYSTEM. SEE "TAXIWAY LIGHTING CONTROL WIRING SCHEMATIC" FOR WIRING REQUIREMENTS.
- 9 ELECTRIC WALL HEATER EH-1, 4000 WATT, 240 VAC, 1 PHASE, SUITABLE FOR SURFACE MOUNTING WITH INTEGRAL THERMOSTAT, Q-MARK MODEL CWH3404, OR EQUAL. HEATER SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT, & THE "BUY AMERICAN ACT". LOCATED HEATER SUCH THAT IT IS NOT LESS THAN 8" FROM ADJACENT WALLS OR EQUIPMENT.
- 10 ELECTRIC WALL HEATER EH-2 4000 WATT, 240 VAC, 1 PHASE, SUITABLE FOR SURFACE MOUNTING WITH INTEGRAL THERMOSTAT, Q-MARK MODEL CWH3404 OR APPROVED EQUAL. HEATER SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT, & "BUY AMERICAN ACT". BOTTOM OF HEATER SHALL BE 8" (MIN.) ABOVE THE UPPER ELECTRICAL WIREWAY. COORDINATE WITH CCR INSTALLATION & FAN INSTALLATION. LOCATE HEATER ON WALL SUCH THAT IT IS NOT DIRECTLY BEHIND CCR. LOCATE HEATER SUCH THAT IT IS NOT LESS THAN 8" FROM ADJACENT WALLS OR EQUIPMENT.
- 11 EXHAUST FAN EF-1, 3100 CFM (MINIMUM) AT .25" STATIC PRESSURE WITH 1/3 HP (MINIMUM), 120 VAC MOTOR, COOK MODEL 20S10D, OR APPROVED EQUAL. INCLUDE WALL HOUSING WITH GUARD, HEAVY DUTY BACK DRAFT DAMPER, ALUMINUM WEATHER-HOOD PAINTED TO MATCH BUILDING EXTERIOR, STAINLESS STEEL INSECT SCREEN, AND FRACTIONAL HP ELECTRICAL DISCONNECT. INSTALL FAN AS HIGH AS POSSIBLE. PROVIDE 120 VAC THERMOSTAT, AT 48" AFF. SEE EXHAUST FAN CONTROL SCHEMATIC FOR WIRING REQUIREMENTS. FAN SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT, & THE "BUY AMERICAN ACT".
- 12 INTAKE LOUVER L-1, 24" WIDE BY 48" HIGH INTAKE LOUVER WITH STAINLESS STEEL INSECT SCREEN, FLANGED FRAME, 120 VAC LOW LEAK MOTORIZED DAMPER WITH LIMIT SWITCH, KYNAR FINISH MATCHING BUILDING EXTERIOR, RUSKIN MODEL ELF375DX, OR APPROVED EQUAL. SEE EXHAUST FAN CONTROL SCHEMATIC FOR WIRING REQUIREMENTS. LOUVER / DAMPER SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT, & THE "BUY AMERICAN ACT".
- 13 6" BY 6" LOW VOLTAGE WIREWAY. LABEL "LOW VOLTAGE" EVERY 6 FEET. INSTALL ABOVE HIGH VOLTAGE WIREWAY.
- 14 6" BY 6" HIGH VOLTAGE WIREWAY. LABEL "HIGH VOLTAGE" EVERY 6 FEET. INSTALL BELOW LOW VOLTAGE WIREWAY.
- 15 NEW 7.5 KW REGULATOR FOR TAXIWAY CIRCUIT (CCR). SEE GENERAL NOTE 1.
- 16 NEW 7.5 KW REGULATOR FOR RUNWAY 11-29 (CCR). SEE GENERAL NOTE 1.
- 17 RELOCATED HEVI-DUTY ELECTRIC TYPE CCR3B FAA L-828 10E PART #6436300T200, 4 KW REGULATOR FOR BACKUP/SPARE FOR RUNWAY 11-29 (CCR). SEE GENERAL NOTE 1.
- 18 NEW 7.5 KW REGULATOR FOR RUNWAY 3-21 (CCR). SEE GENERAL NOTE 1.
- 19 RELOCATED HEVI-DUTY ELECTRIC TYPE FAA L-812 PART #D52610, 4 KW REGULATOR FOR RUNWAY 3-21 (CCR). SEE GENERAL NOTE 1.
- 20 TAXIWAY CIRCUIT SERIES PLUG CUTOUT (TYPE S-1) WITH ENCLOSURE.
- 21 TRANSFER PAIR SERIES PLUG CUTOUTS (TYPE S-1) WITH ENCLOSURE, FOR RUNWAY 11-29.
- 22 60 AMP, 240 VAC, 2P DOUBLE THROW FUSIBLE SAFETY SWITCH FOR RUNWAY 11-29 CCR'S.
- 23 TRANSFER PAIR SERIES PLUG CUTOUTS (TYPE S-1) WITH ENCLOSURE, FOR RUNWAY 3-21.
- 24 60 AMP, 240 VAC, 2P DOUBLE THROW FUSIBLE SAFETY SWITCH FOR RUNWAY 3-21 CCR'S.
- 25 2#6 THWN, 1#8 GND IN 1" GRSC
- 26 4-3" PVC COATED GRSC CONDUITS AND 4-3" PVC COATED GRSC ELBOWS AT VAULT FROM LOW VOLTAGE WIREWAY TO LOW VOLTAGE HANDHOLE.
- 27 4-3" PVC COATED GRSC CONDUITS AND 4-3" PVC COATED GRSC ELBOWS AT VAULT FROM HIGH VOLTAGE WIREWAY TO HIGH VOLTAGE HANDHOLE.
- 28 VEGETATION BARRIER CONSISTING OF A MIN. 6" PEA GRAVEL SURFACE OVER FILTER OR LANDSCAPING FABRIC. PROPOSED SURFACE TREATMENT WILL COVER ENTIRE AREA BENEATH VAULT STRUCTURE AS WELL AS 18" AROUND THE PERIMETER OF THE BUILDING EDGE. THE STONE AND FABRIC AS WELL AS ANY EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS TASK WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE PROPOSED ELECTRICAL VAULT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- 29 ENTRANCE PAD CONSTRUCTED OF 6" MIN. CONCRETE SLAB W/ 6X6-W5XW5 WELDED WIRE FABRIC ON A COMPACTED SUBGRADE. MINIMUM DIMENSIONS OF PAD WILL BE 7'Wx5'Dx6"H, SLOPED AT A MIN. OF 0.5"/FT AWAY FROM THE VAULT ENTRANCE. THE CONCRETE PAD WILL BE PLACED AT LEAST 3" INTO THE EXISTING GRADE. STEP INTO VAULT BUILDING WILL NOT EXCEED 7". PCC USED TO CONSTRUCT THE PAD WILL CONFORM TO ITEM 610. ALL MATERIALS, LABOR AND EQUIPMENT USED TO CONSTRUCT THE PAD INCLUDING ANY GRADING REQUIRED WILL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE PROPOSED ELECTRICAL VAULT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- 30 THE NUMBER, SIZE, DEPTH, REINFORCEMENT, AND LOCATION OF THE PROPOSED CONCRETE PIERS WILL BE COORDINATED WITH THE MANUFACTURER OF THE PROPOSED ELECTRICAL VAULT BUILDING. THE TOP OF THE PROPOSED PIERS WILL BE AT LEAST 4" ABOVE THE EXISTING GRADE.
- 31 FEEDER CIRCUIT CONDUCTORS IN 2" SCHED. 40 PVC C. TO EXISTING TERMINAL BUILDING VAULT.
- 32 BRANCH CIRCUIT CONDUCTORS IN 1 1/4" SCHED. 40 PVC C. TO FENCE GATE OPERATOR.
- 33 BRANCH CIRCUIT CONDUCTORS IN 1 1/4" SCHED. 40 PVC C. TO EXISTING NDB.

REVISION	DATE	01/28/11	Revised as per IDA review - CAH
<b>OLNEY-NOBLE AIRPORT NOBLE, ILLINOIS</b>			
A.I.P. PROJ.: 3-17-0076-B10 IL PROJ.: OLY-4032			
Hanson Proj. No.	10A00790	Drawn	AS SHOWN
Filename	EE101.DWG	Date	12/17/10
Scale	AS SHOWN	LAYOUT	PJT 08/26/10
		DRAWN	ANC 08/27/10
		REVIEWED	KNL 11/05/10
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<b>REPLACE NAVAIDS AND VAULT</b>		<b>PROPOSED AIRPORT VAULT EQUIPMENT PLAN</b>	
<b>24</b> 24 of 48 sheets			

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- NOTES**
- 20 AMP BRANCH CIRCUITS FOR LIGHTING AND RECEPTACLES SHALL USE #12 AWG THWN (MIN.)
  - LIGHT FIXTURES SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWINGS SUBMITTAL.
  - ADJUST RECEPTACLE LOCATIONS WHERE NECESSARY TO ACCOMMODATE EQUIPMENT LAYOUT.
  - TEST EMERGENCY LIGHTING AND CONFIRM PROPER OPERATION WITH RESIDENT ENGINEER.

**Vault Lighting and Receptacle Plan**  
 SCALE 1/2"=1'-0"  
 1 0 2 4 FEET

LIGHTING FIXTURE SCHEDULE						
FIXT. TYPE	DESCRIPTION	MANUFACTURER AND CATALOG NO.	LAMPS/WATTS	VOLTS	MOUNTING	REMARKS
F1	4 FT. WET LOCATION LISTED ENCLOSED AND GASKETED INDUSTRIAL FLUORESCENT LIGHT FIXTURE. IMPACT RESISTANT, UV RESISTANT, REINFORCED POLYESTER FIBERGLASS HOUSING, HIGH IMPACT ACRYLIC DIFFUSER, RAPID START, COLD WEATHER 0 DEG. F. ELECTRONIC BALLAST WITH LESS THAN OR EQUAL TO 10% THD	LITHONIA: DMW-2-32-AR-120-CW-GEB10RS-WFL-USPOM, OR APPROVED EQUAL	2-32W T8 4100K 59 TOTAL INPUT WATTS	120	SURFACE TO HARD CEILING	PROVIDE WET LOCATION FITTINGS INSTALLED IN TOP OF FIXTURE
F1A	SAME AS F1 EXCEPT PROVIDE AN EMERGENCY BALLAST CAPABLE OF OPERATING 2 LAMPS FOR 90 MINUTES AT 1100-1200 TOTAL LUMENS, BODINE #B50ST. NOTE: CONFIRM WITH LIGHT FIXTURE MFR. IF BALLAST WILL HAVE TO BE REMOTE MOUNTED NEAR FIXTURE AS INDICATED ON THE PLANS.	LITHONIA: DMW-2-32-AR-120-CW-GEB10RS-WFL-USPOM, OR APPROVED EQUAL	2-32W T8 4100K 59 TOTAL INPUT WATTS	120	SURFACE TO HARD CEILING	PROVIDE WET LOCATION FITTINGS INSTALLED IN TOP OF FIXTURE
F2	COMPACT FLUORESCENT WALL-PAK, ONE PIECE INJECTION MOLDED UV STABILIZED POLYCARBONATE HOUSING. HIGH PERFORMANCE SPECULAR ANODIZED SEGMENTED REFLECTOR, ONE PIECE HIGH TEMPERATURE SILICONE GASKET, MEDIUM BRONZE FINISH. HIGH POWER FACTOR ELECTRONIC BALLAST WITH LESS THAN OR EQUAL TO 10% THD, UL LISTED FOR WET LOCATIONS	LITHONIA: TWA-42TRT-120-SF-CR-DMB-LPI-USPOM, OR APPROVED EQUAL	1-42W TRT 4100K 47 TOTAL INPUT WATTS	120	SURFACE TO WALL ABOVE EXTERIOR DOOR APPROX. 4" ABOVE TOP OF DOOR FRAME	CONNECT TO WALL SWITCH LOCATED ON THE INSIDE OF THE BUILDING

REVISION	DATE

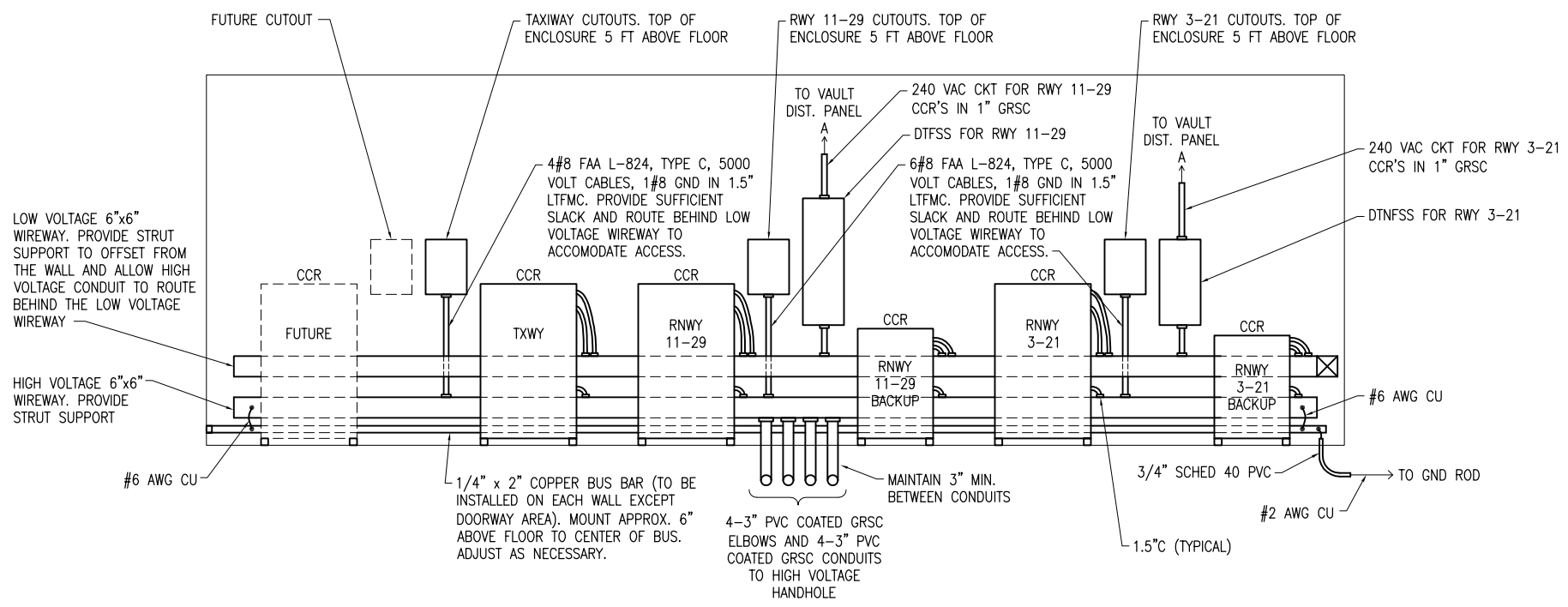
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 NOBLE, ILLINOIS  
 IL PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10

Hanson Proj. No. 10A00790	Filename EL101.DWG	Scale AS SHOWN	Date 12/17/10
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DRAWN	ANC	08/27/10	
REVIEWED	KNL	11/05/10	

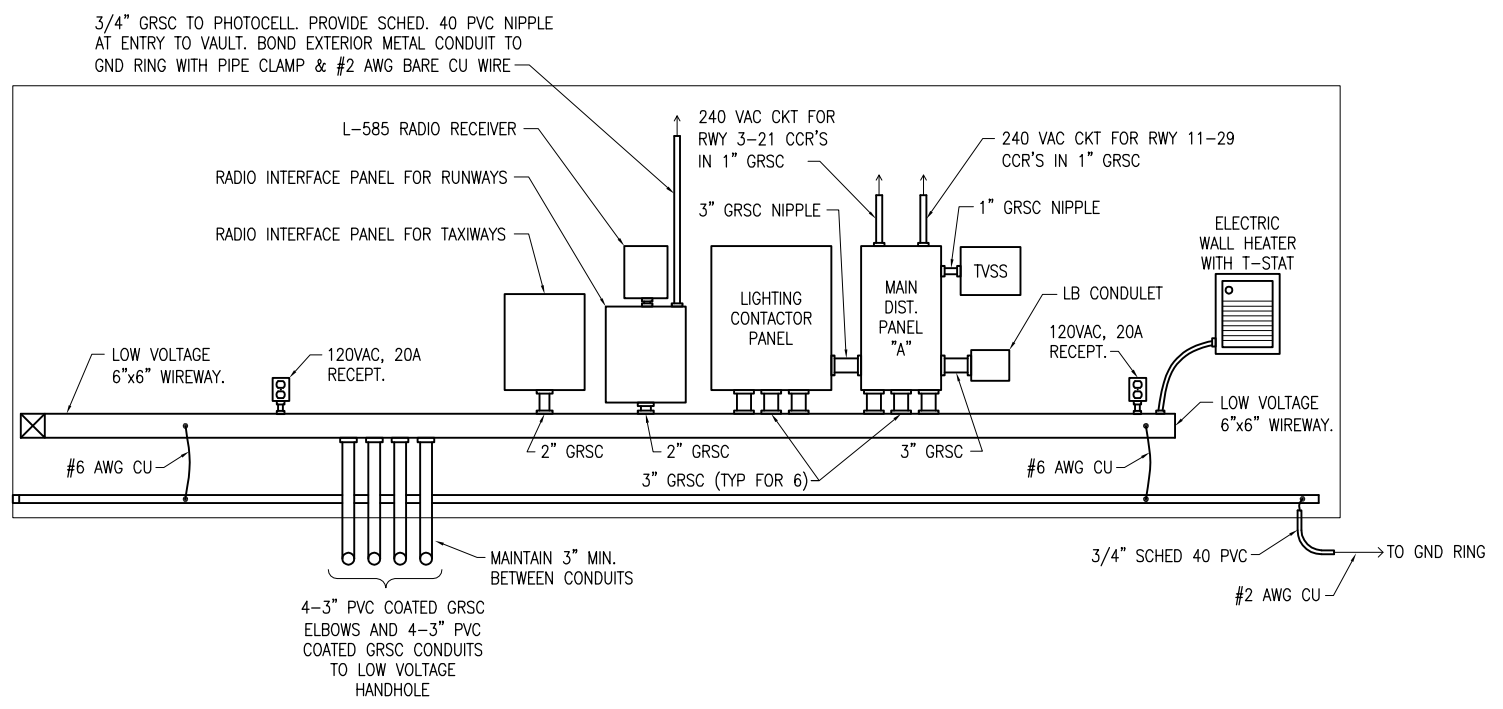
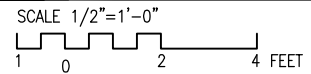
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REPLACE NAVAIDS AND VAULT  
 PROPOSED AIRPORT VAULT LIGHTING AND RECEPTACLE PLAN

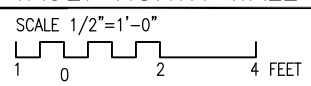
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VAULT SOUTH WALL ELEVATION



VAULT NORTH WALL ELEVATION



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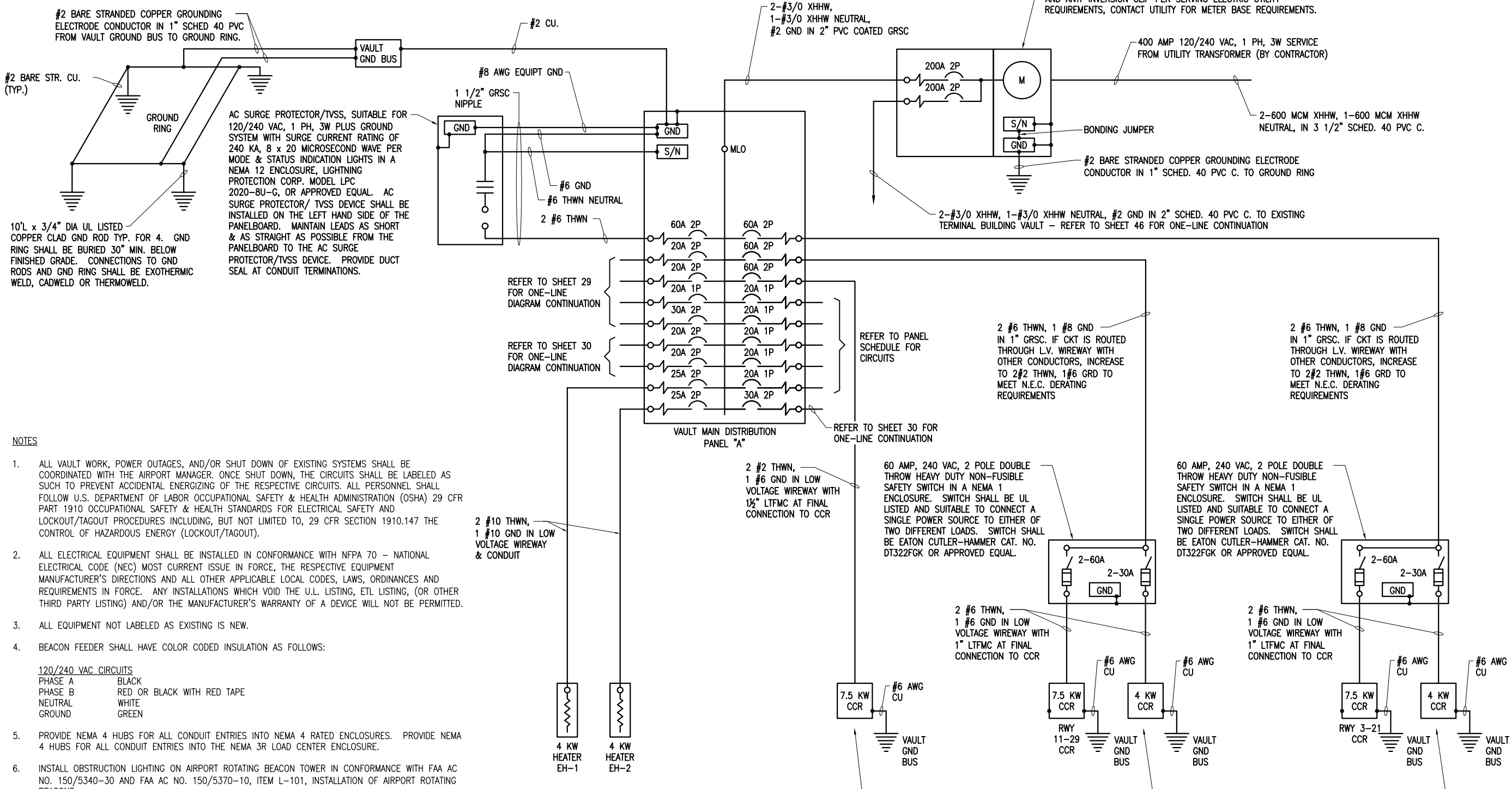
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 NOBLE, ILLINOIS  
 ILL. PROJ.: OLY-4032  
 A.I.P. PROJ.: 3-17-0076-B10

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Hanson Proj. No. 10A00790	12/17/10	AS SHOWN	KNL
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REPLACE NAVAIDS  
 AND VAULT  
 PROPOSED AIRPORT VAULT  
 WALL ELEVATIONS (SHEET 1)



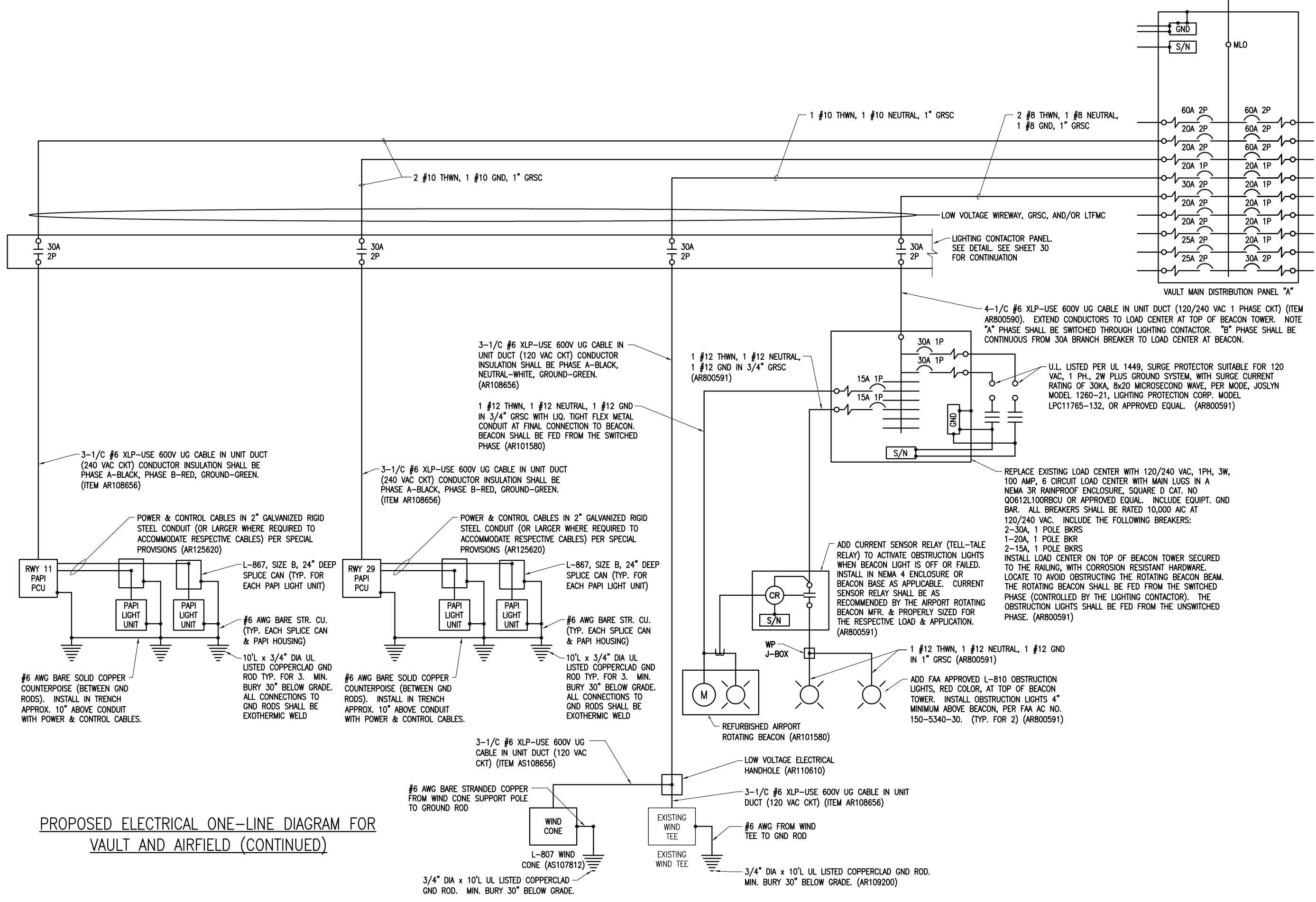


- NOTES**
- ALL VAULT WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
  - ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
  - ALL EQUIPMENT NOT LABELED AS EXISTING IS NEW.
  - BEACON FEEDER SHALL HAVE COLOR CODED INSULATION AS FOLLOWS:  

120/240 VAC CIRCUITS	
PHASE A	BLACK
PHASE B	RED OR BLACK WITH RED TAPE
NEUTRAL	WHITE
GROUND	GREEN
  - PROVIDE NEMA 4 HUBS FOR ALL CONDUIT ENTRIES INTO NEMA 4 RATED ENCLOSURES. PROVIDE NEMA 4 HUBS FOR ALL CONDUIT ENTRIES INTO THE NEMA 3R LOAD CENTER ENCLOSURE.
  - INSTALL OBSTRUCTION LIGHTING ON AIRPORT ROTATING BEACON TOWER IN CONFORMANCE WITH FAA AC NO. 150/5340-30 AND FAA AC NO. 150/5370-10, ITEM L-101, INSTALLATION OF AIRPORT ROTATING BEACONS.
  - ALL CONDUCTORS/WIRING SHALL BE COPPER.
  - CONTRACTOR SHALL CONFIRM POWER REQUIREMENTS WITH THE ACTUAL NAMEPLATE ON EACH CONSTANT CURRENT REGULATOR (OR OTHER RESPECTIVE EQUIPMENT) AND ADJUST CIRCUIT BREAKER, WIRE SIZES & CONDUIT SIZES TO CONFORM WITH NEC & MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE. WIRE SIZES SHOWN ON THE PLANS ARE MINIMUM.
  - HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, JUNCTION BOX, OR RACEWAY.
  - LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.

**PROPOSED ELECTRICAL ONE-LINE DIAGRAM  
FOR VAULT AND AIRFIELD**

REVISION					
DATE					
<b>OLNEY-NOBLE AIRPORT NOBLE, ILLINOIS</b>					
A.I.P. PROJ.: 3-17-0076-B10					
IL PROJ.: OLY-4032					
Hanson Proj. No.	10A00790	PJT	09/01/10	REVIEWED	PJT/KNL
Filename	E-602.DWG	AS SHOWN	12/17/10	DATE	
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<b>REPLACE NAVAIDS AND VAULT</b>					
<b>PROPOSED ELECTRICAL ONE-LINE FOR VAULT AND AIRFIELD (SHEET 1)</b>					
<b>28</b>					
28 of 48 sheets					



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

REVISION	
DATE	

OLNEY-NOBLE AIRPORT  
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A.I.P. PROJ.: 3-17-0076-B10

IL PROJ.: OLY-4032

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REVIEWED P/JT/KNL	11/05/10

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PROPOSED ELECTRICAL ONE-LINE FOR VAULT AND AIRFIELD (SHEET 2)

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NOBLE, ILLINOIS

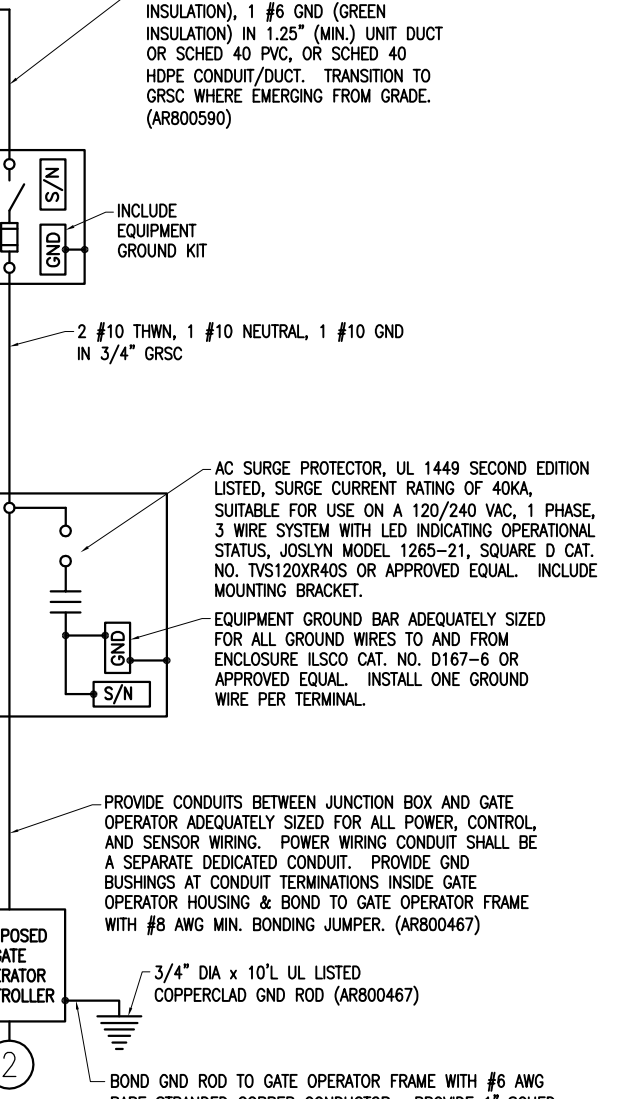
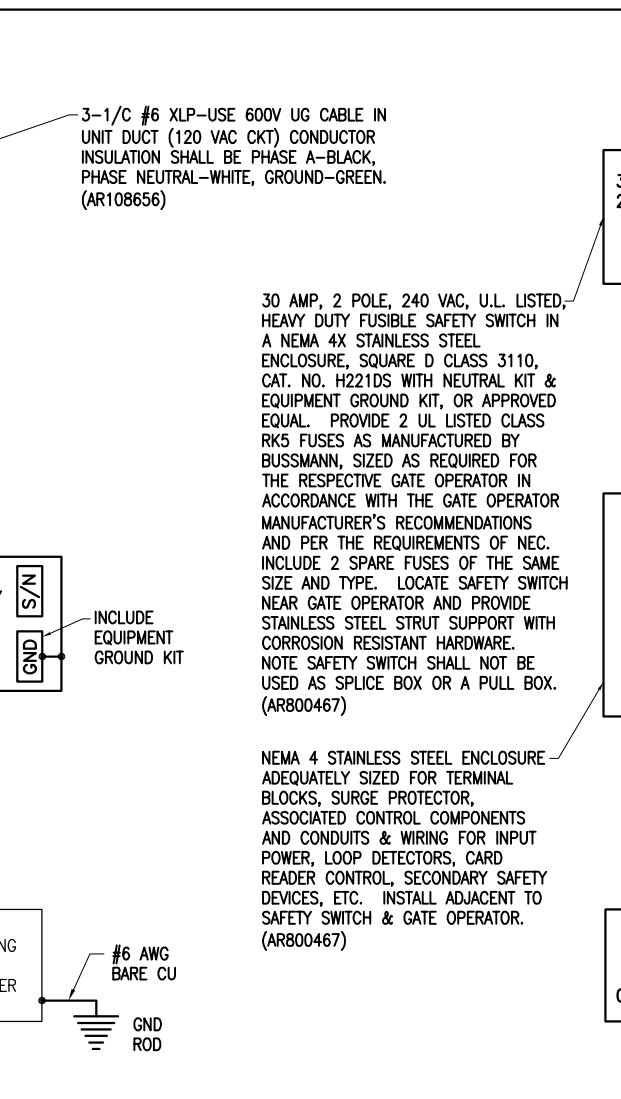
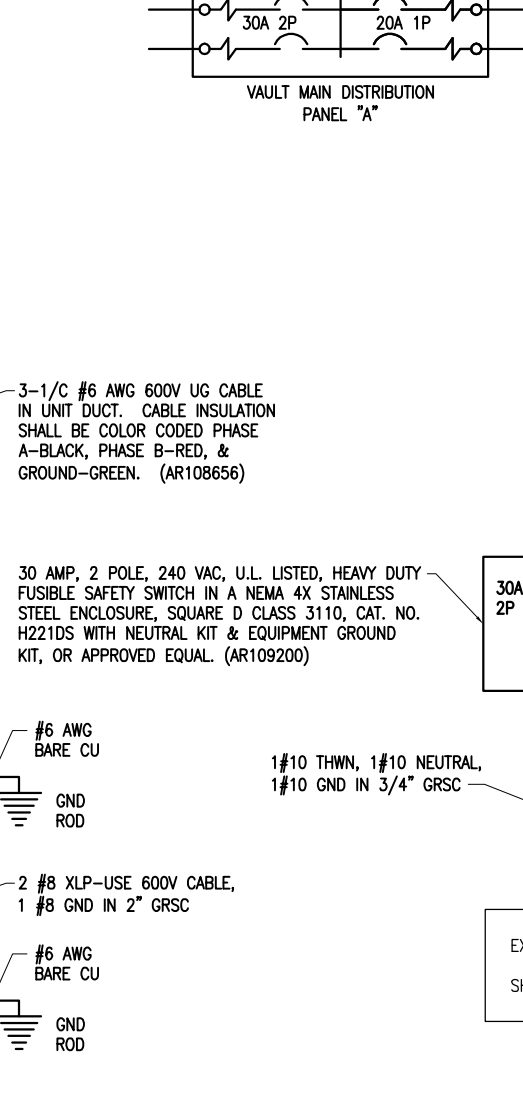
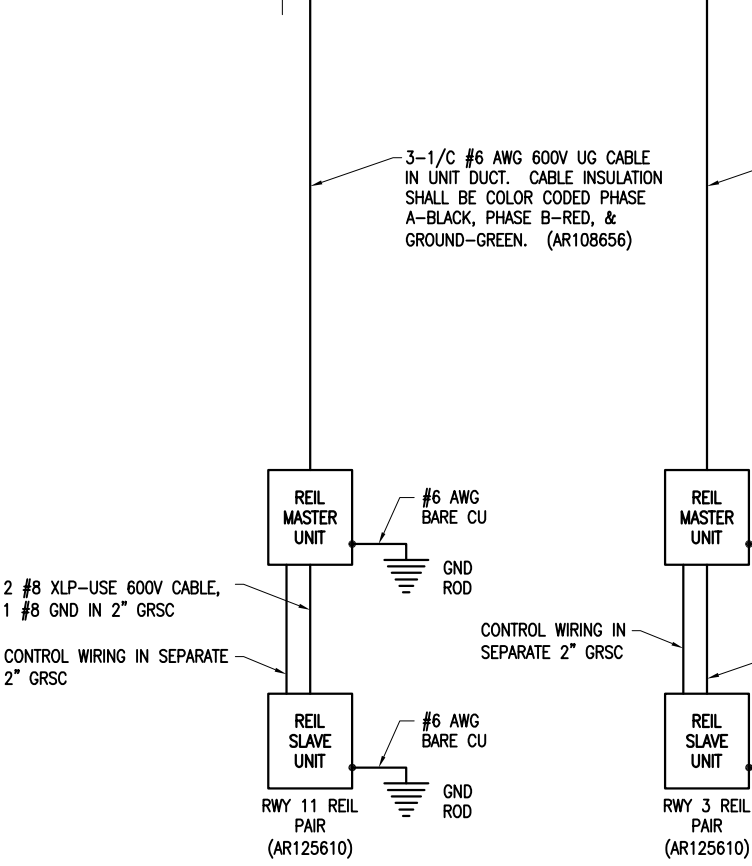
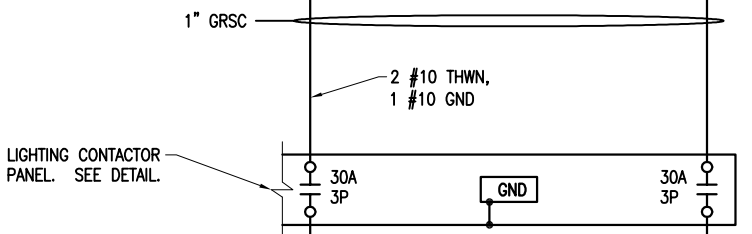
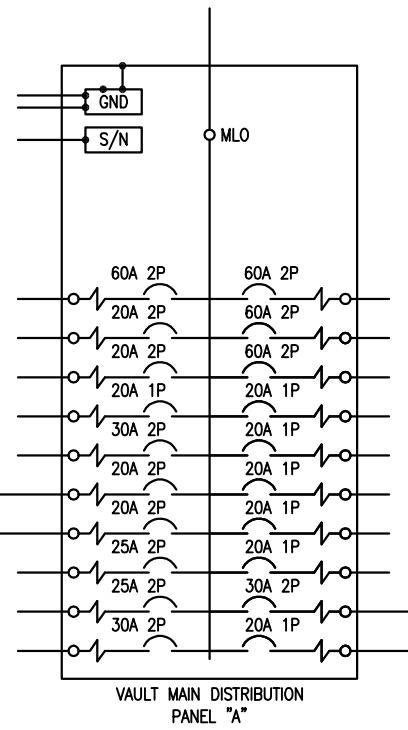
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REPLACE NAVAIDS  
AND VAULT

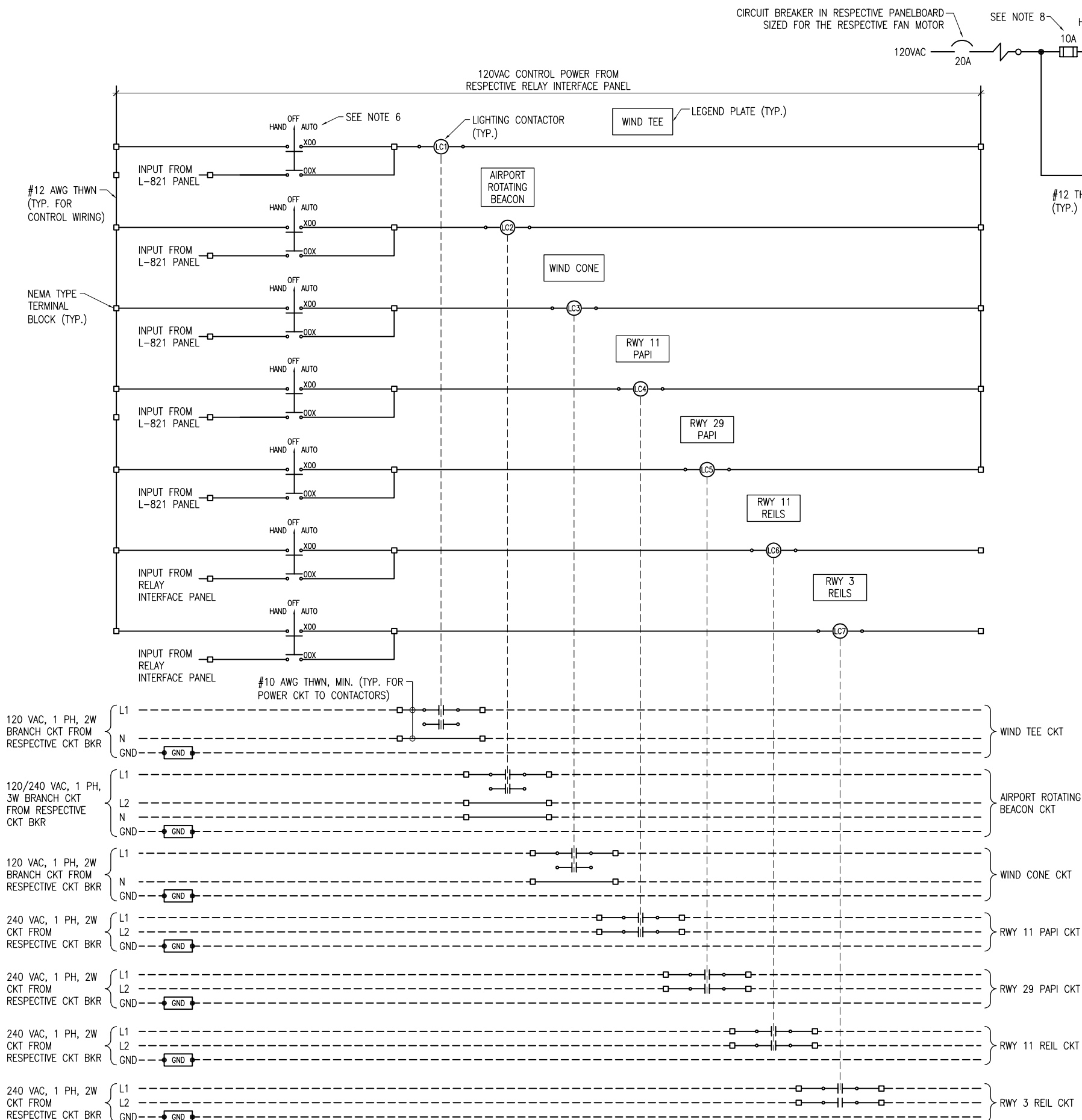
PROPOSED ELECTRICAL  
ONE-LINE FOR VAULT AND  
AIRFIELD (SHEET 3)



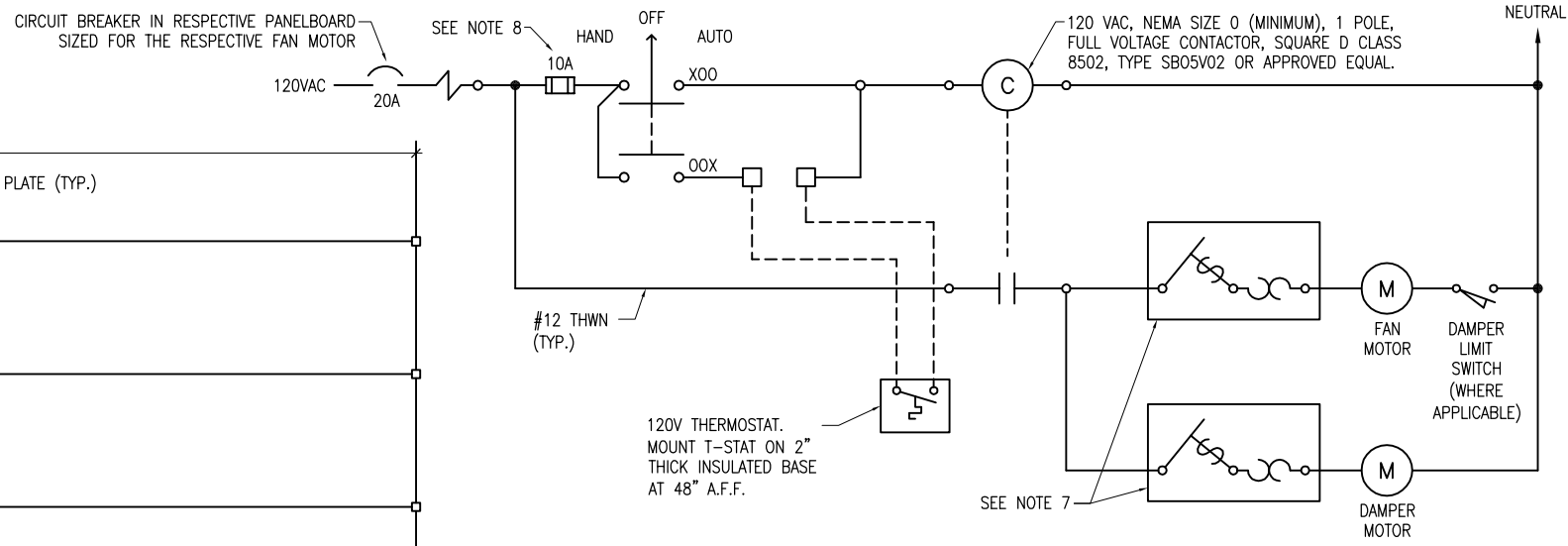
PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR  
VAULT AND AIRFIELD (CONTINUED)

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CONTROL PANEL FOR AIRFIELD NAVAIDS SCHEMATIC



EXHAUST FAN CONTROL 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").
  - PROVIDE FRACTIONAL HORSEPOWER MOTOR MANUAL STARTER, SQUARE D MANUAL STARTER WITH HANDLE/GUARD/LOCK OFF, IN NEMA 4 ENCLOSURE CLASS 2510, TYPE FG5 OR APPROVED EQUAL FOR FAN MOTOR & DAMPER MOTOR. INCLUDE MELTING ALLOY TYPE THERMAL OVERLOADS SIZED AS REQUIRED TO PROTECT THE RESPECTIVE MOTOR. 120 VAC MOTORS SHALL HAVE SINGLE POLE STARTERS.
  - 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.

OL010

REVISION	DATE

OLNEY-NOBLE AIRPORT  
 NOBLE, ILLINOIS  
 ILL. PROJ.: OLY-4032  
 A.I.P. PROJ.: 3-17-0076-B10

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REPLACE NAVAIDS  
 AND VAULT  
 LIGHTING CONTACTOR  
 SCHEMATIC

REVISION	
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A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

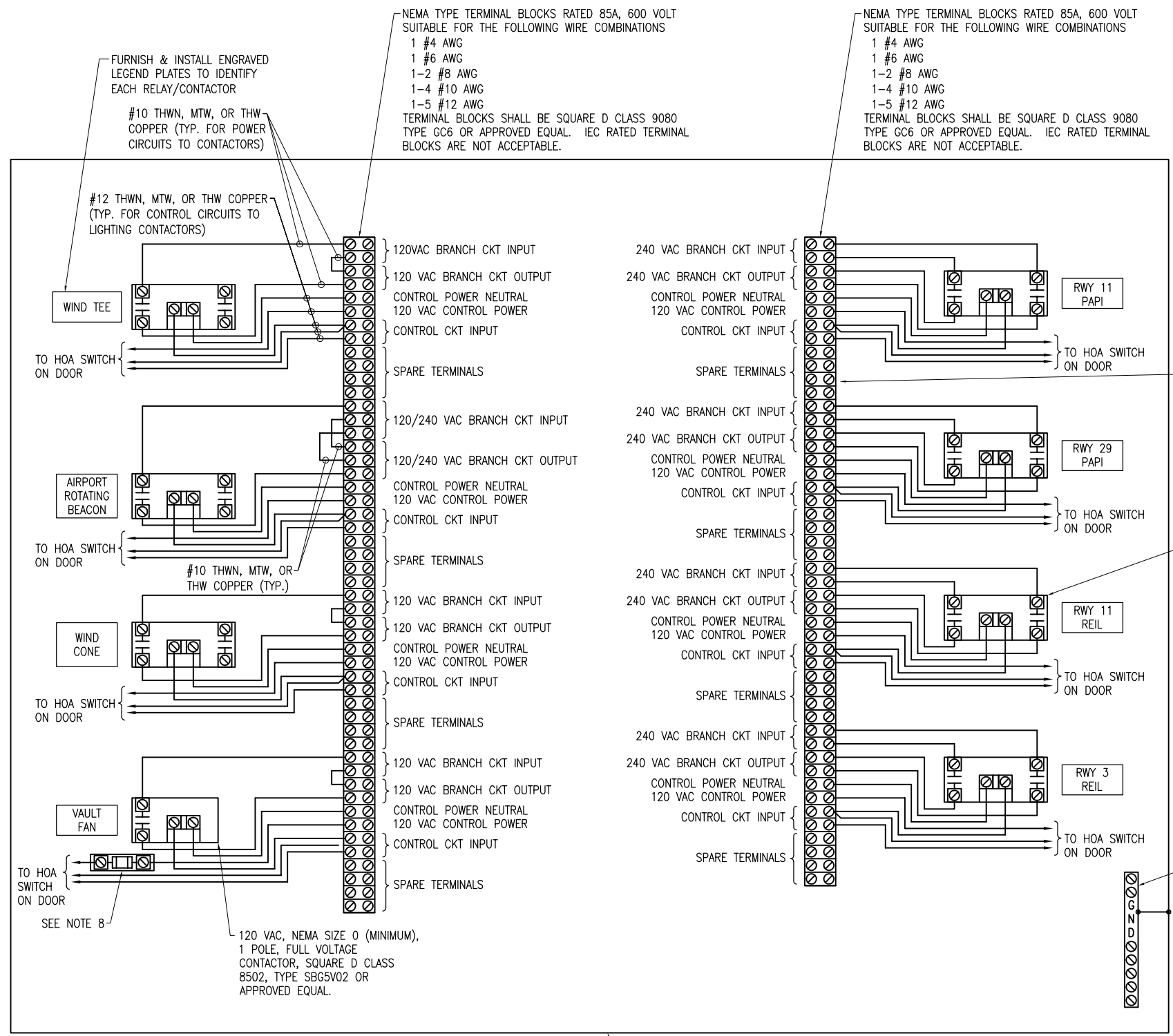
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REPLACE NAVAIDS  
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LIGHTING CONTACTOR PANEL  
DETAIL

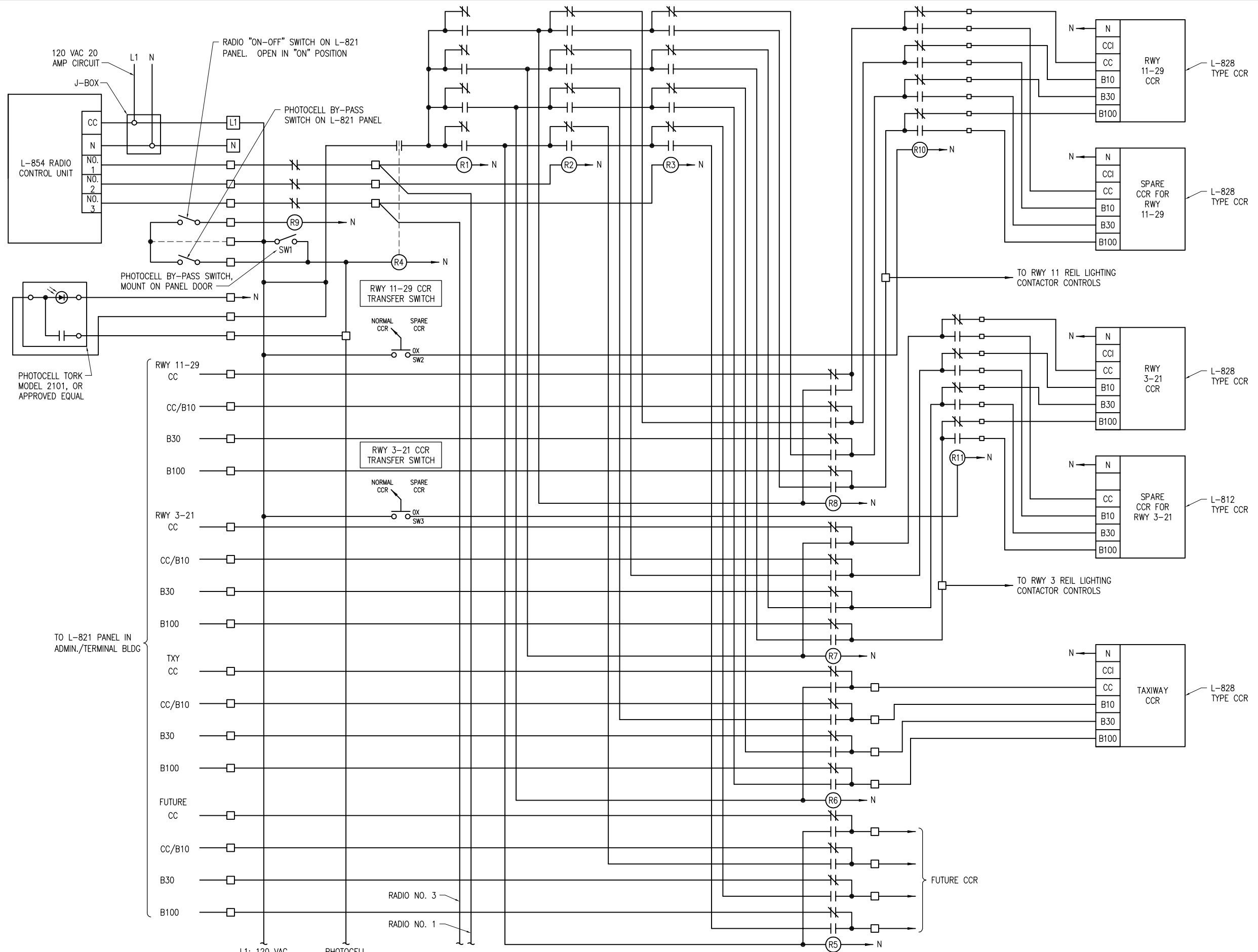
NOTES

- 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 "EXHAUST FAN CONTROL SCHEMATIC" FOR ADDITIONAL INFORMATION ON WIRING. ALSO SEE "AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC" AND "L-821 PANEL CONTROL WIRING SCHEMATIC". COORDINATE WIRING WITH L-821 PANEL MANUFACTURER.
- FUSING FOR FAN CIRCUIT 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.
- 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 & VAULT FAN SHALL BE MANUFACTURED BY A UL 508 INDUSTRIAL CONTROL PANEL BUILDER OR AN FAA APPROVED L-821 PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT AND THE "BUY AMERICAN ACT". GUS BERTHOLD ELECTRIC (1900 WEST CARROLL AVENUE, CHICAGO, IL 60612, PHONE: 312-243-5767) IS AN APPROVED UL 508 INDUSTRIAL CONTROL PANEL BUILDER.



CONTROL PANEL FOR AIRFIELD NAVAIDS AND VAULT FAN





AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC

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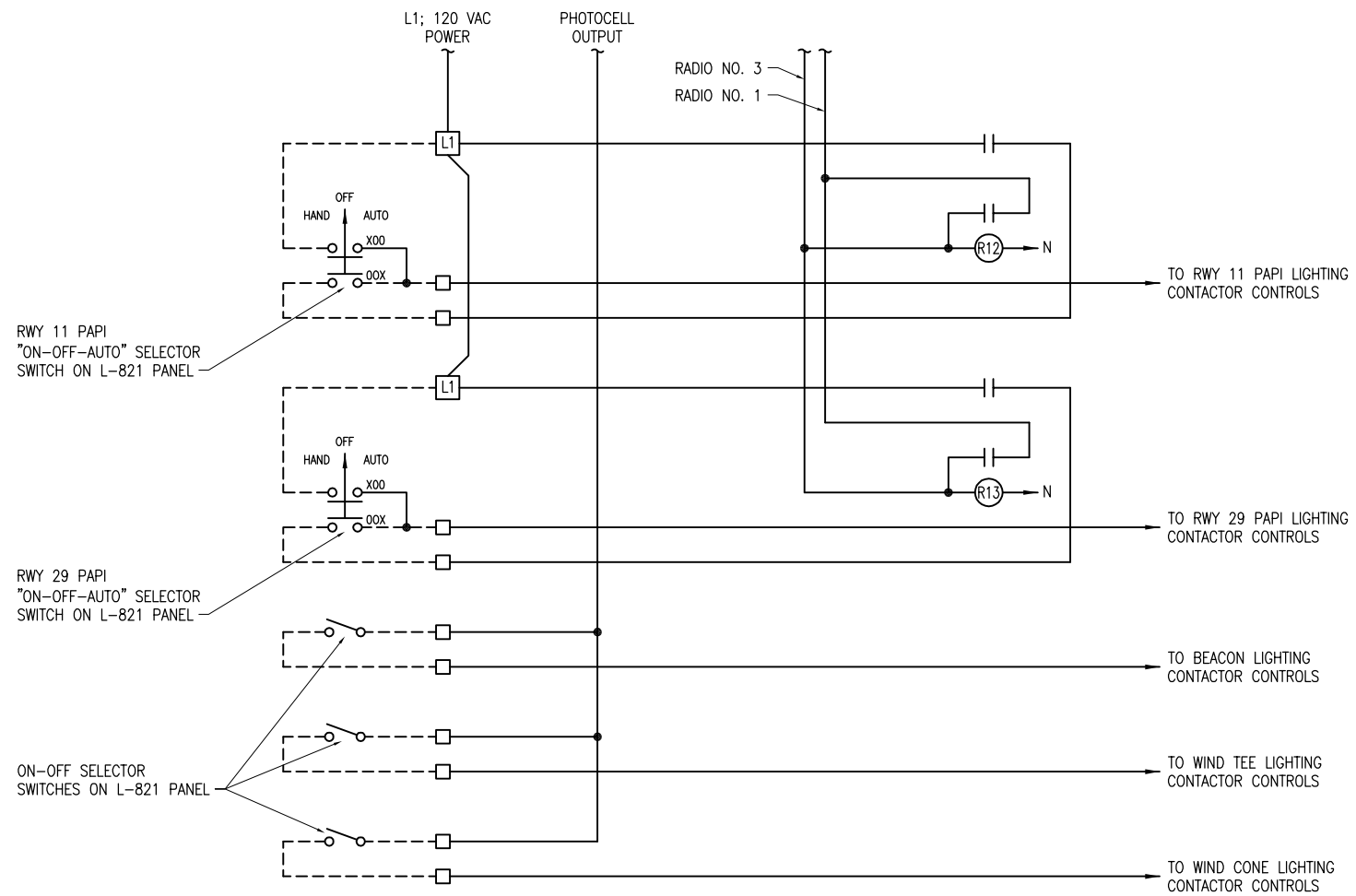
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Hanson Proj. No. 10A00790	Filename E-606.DWG	Scale AS SHOWN	Date 12/17/10
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REPLACE NAVAIDS  
AND VAULT

AIRFIELD LIGHTING CONTROL  
WIRING SCHEMATIC



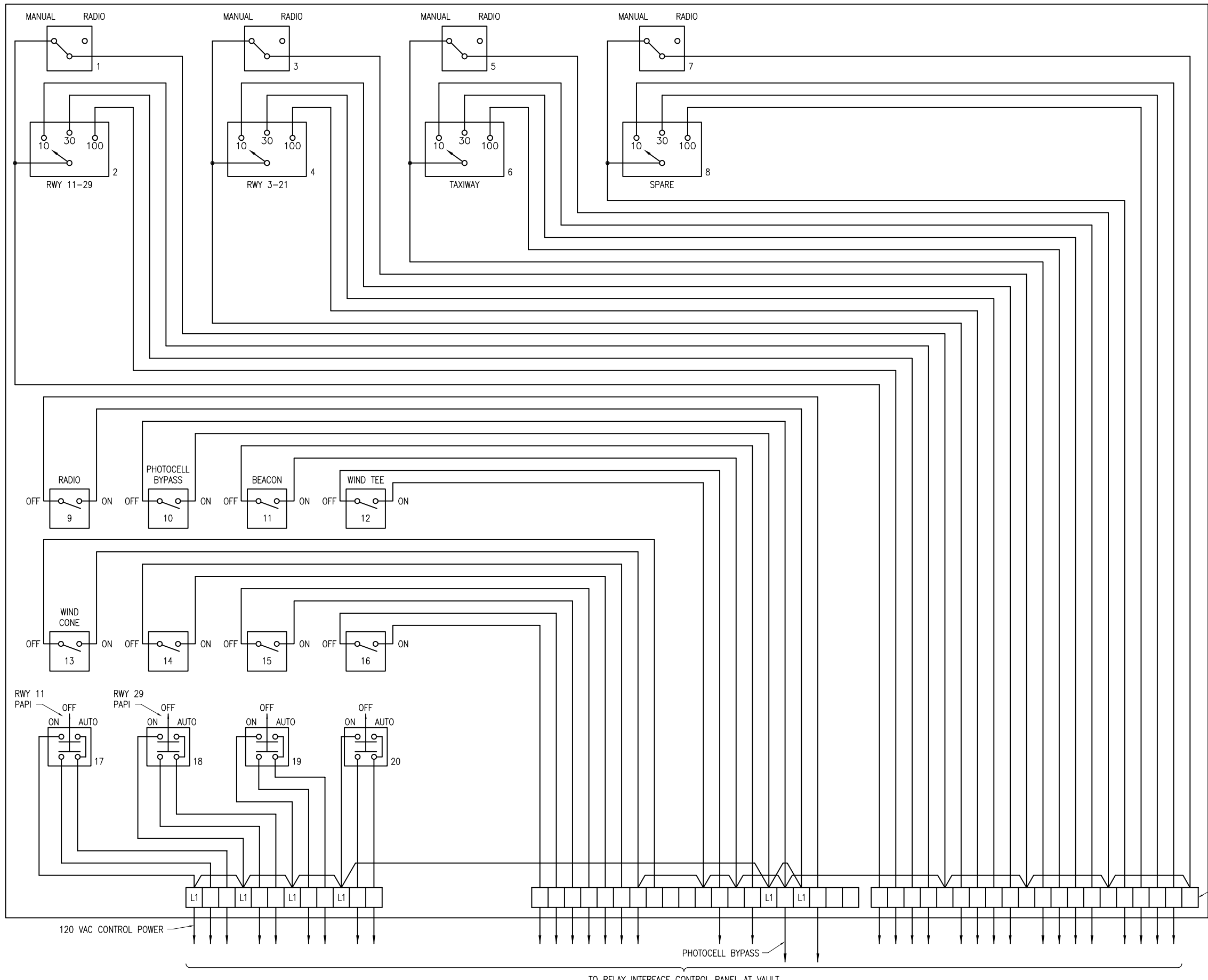
AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC (CONTINUED)

NOTES:

- RELAY INTERFACE CONTROL PANEL SHALL BE MANUFACTURED BY AN FAA APPROVED L-821 PANEL BUILDER AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT AND THE "BUY AMERICAN ACT". RELAY INTERFACE CONTROL PANEL AND L-821 PANEL FOR TERMINAL BUILDING SHALL BE PROVIDED BY THE SAME MANUFACTURER TO ENSURE COMPATIBILITY.
- RELAY INTERFACE CONTROL 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.
- 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.
- THE RUNWAY/TAXIWAY CIRCUITS WILL BE CONTROLLED BY PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER: PHOTOCELL OR PHOTOCELL BYPASS SHALL ACTIVATE RADIO CONTROL OR MANUAL CONTROL. REMOTE MANUAL CONTROL FOR INDIVIDUAL CCR'S SHALL BE ACTIVATED BY THE L-821 PANEL AT THE TERMINAL BUILDING. MANUAL CONTROL SHALL ALLOW PRE-SET LIGHTING LEVELS AT 10%, 30%, OR 100% BRIGHTNESS. RADIO CONTROL SHALL OVER-RIDE MANUAL CONTROL SETTINGS. RADIO CONTROL SETTINGS SHALL BE AS FOLLOWS:  
 3 CLICKS - 10% BRIGHTNESS  
 5 CLICKS - 30% BRIGHTNESS  
 7 CLICKS - 100% BRIGHTNESS
- IN THE AUTOMATIC MODE OF OPERATION THE WIND TEE, WIND CONE, AND AIRPORT ROTATING BEACON SHALL BE ACTIVATED BY THE PHOTOCELL OR PHOTOCELL BYPASS SWITCHES.
- IN THE AUTOMATIC MODE OF OPERATION THE RUNWAY 11-29 PAPI UNITS WILL BE CONTROLLED BY THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:  
 3 CLICKS - OFF  
 5 CLICKS - OFF  
 7 CLICKS - ON  
 3 CLICKS AFTER 7 CLICKS - REMAIN ON  
 5 CLICKS AFTER 7 CLICKS - REMAIN ON  
 PAPI'S TO SHUT OFF WHEN L-854 RADIO TIMER SHUTS OFF.
- EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT & EACH CONTROL CIRCUIT.
- INCLUDE PHOTOCELL BYPASS SWITCH, ON RELAY INTERFACE CONTROL PANEL.
- INCLUDE EQUIPMENT GROUND BAR IN RELAY INTERFACE CONTROL PANEL, 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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<b>OLNEY-NOBLE AIRPORT</b> <b>NOBLE, ILLINOIS</b>	
IL PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10	
Hanson Proj. No. 10A0079D Filename E-607.DWG Scale AS SHOWN Date 12/17/10	LAYOUT KNL 09/01/10 DRAWN ANC 09/02/10 REVIEWED KNL 09/05/10
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REPLACE NAVAIDS AND VAULT AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC (CONTINUED)	
<b>34</b> 34 of 48 sheets	



L-821 PANEL AT TERMINAL BUILDING

TERMINAL NUMBERING BY L-821 PANEL, MANUFACTURER TO MATCH NUMBERING FOR CORRESPONDING TERMINALS AT RELAY INTERFACE CONTROL PANEL. TERMINAL BLOCKS SHALL BE NEMA RATED TERMINALS. IEC RATED TERMINALS ARE NOT ACCEPTABLE.

L-821 PANEL CONTROL WIRING SCHEMATIC

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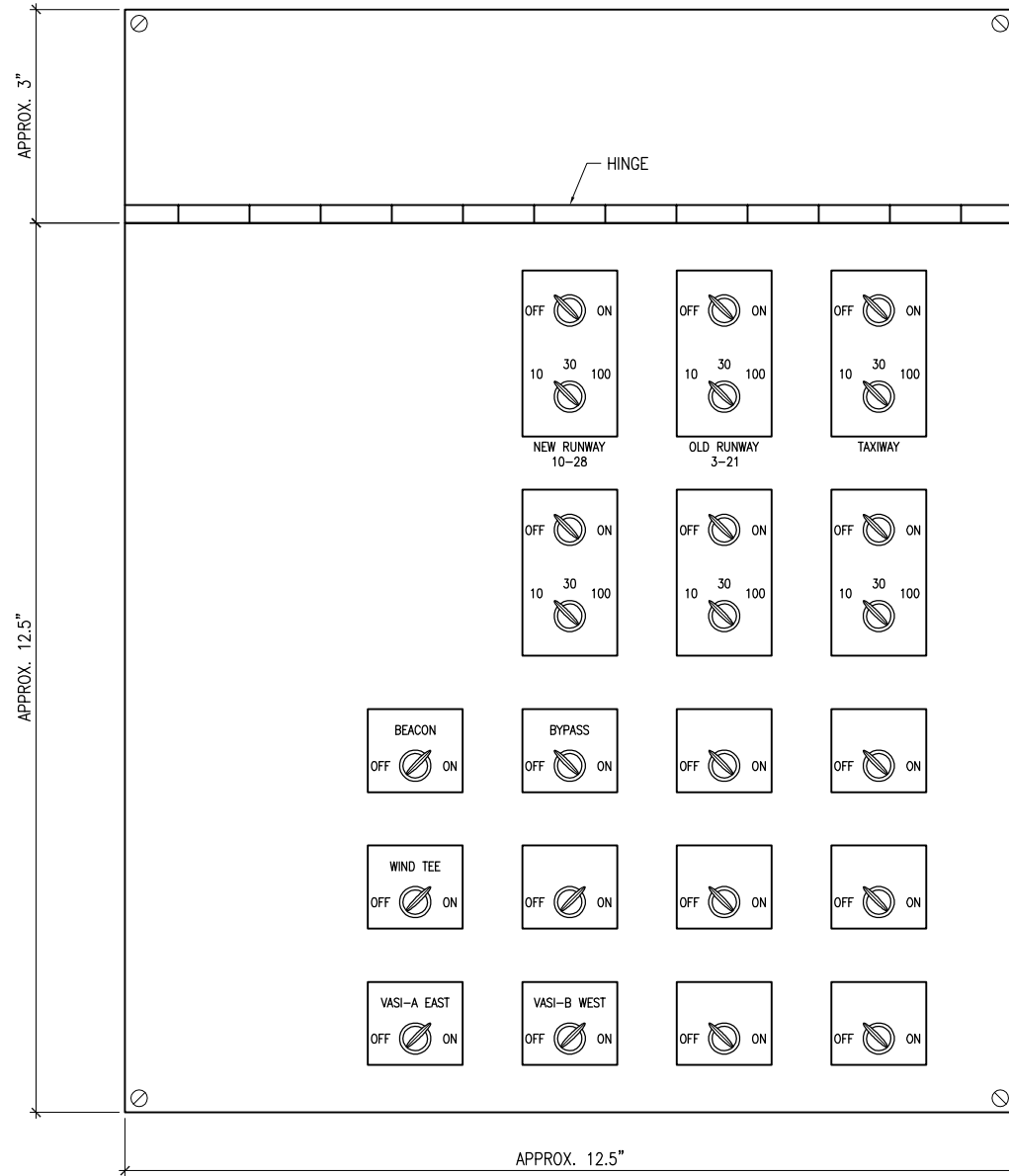
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 NOBLE, ILLINOIS  
 IL PROJ.: OLX-4032  
 A.I.P. PROJ.: 3-17-0076-B10

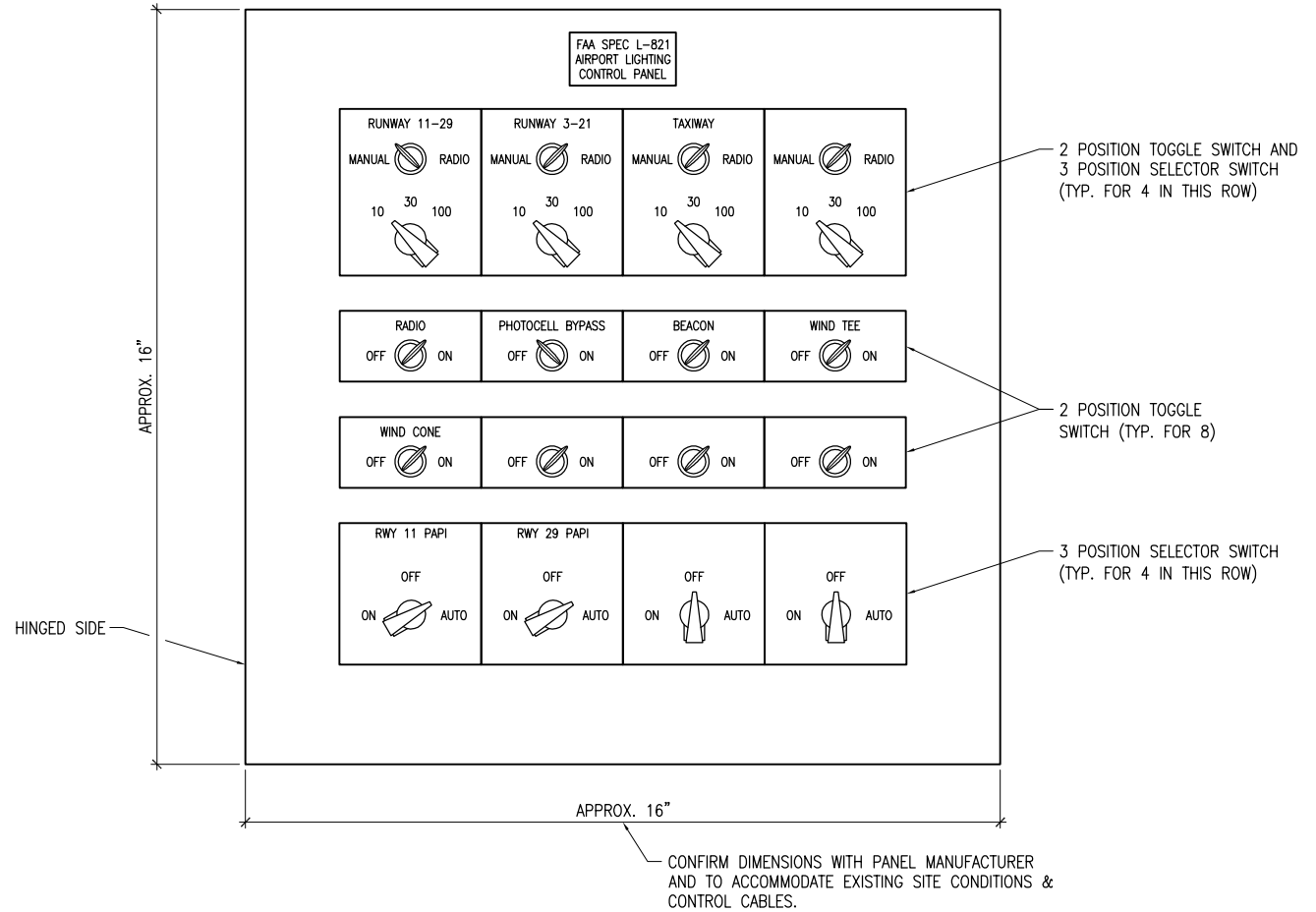
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REPLACE NAVAIDS  
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 L-821 PANEL CONTROL  
 WIRING SCHEMATIC



**EXISTING L-821 CONTROL PANEL**  
NOT TO SCALE



**NEW L-821 CONTROL PANEL**  
NOT TO SCALE

**NOTES**

1. THE NEW L-821 CONTROL PANEL SHALL REPLACE THE EXISTING L-821 CONTROL PANEL LOCATED IN THE TERMINAL BUILDING. THE EXISTING L-821 PANEL IS AN FAA SPEC TYPE I (CONVENTIONAL PANEL), CLASS S (SURFACE MOUNT), STYLE 1 (UNLIGHTED), MODE 1. THE EXISTING PANEL IS LOCATED INSIDE A CABINET.
2. THE NEW L-821 CONTROL PANEL SHALL BE COMPATIBLE WITH THE CABINET AT THE TERMINAL BUILDING. CONTRACTOR SHALL COORDINATE DIMENSIONS OF THE NEW L-821 CONTROL PANEL TO BE COMPATIBLE WITH THE RESPECTIVE CABINET. THE NEW PANEL IS TO BE MOUNTED IN VERTICAL POSITION. INCLUDE HINGED COVER. THE NEW L-821 CONTROL PANEL SHALL BE TYPE I (CONVENTIONAL PANEL), CLASS S (SURFACE MOUNT), STYLE 1 (UNLIGHTED), MODE 1 CONFORMING TO FAA A/C 150/5345-3F, AS DETAILED ON THIS SHEET, AND PER THE SPECIAL PROVISION SPECIFICATIONS. THE NEW L-821 CONTROL PANEL SHALL BE MANUFACTURED BY AN FAA-APPROVED L-821 CONTROL PANEL MANUFACTURER; ADB AIRFIELD SOLUTIONS, INC., 977 GAHANNA PARKWAY, COLUMBUS, OHIO 43230, PHONE: (614)-861-1304 OR (800)-545-4157, FAX (614)-864-2069, OR AN EQUIVALENT FAA APPROVED L-821 CONTROL PANEL MANUFACTURER.
3. NEW L-821 PANEL FOR TERMINAL BUILDING AND RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL SHALL BE PROVIDED BY THE SAME MANUFACTURER TO ENSURE COMPATIBILITY. SHOP DRAWINGS SHALL INCLUDE PANEL LAYOUT & WIRING DIAGRAMS WITH TERMINAL BLOCK NUMBER DESIGNATIONS.
4. L-821 CONTROL PANEL FOR THE ATCT WILL BE PAID FOR UNDER ITEM AR109600 L-821 CONTROL PANEL PER EACH. CONTROL WIRING AND ASSOCIATED CONDUITS, RACEWAYS, SUPPORTS, TERMINAL PANEL(S), JUNCTION BOXES, PULL BOXES, LABOR, TOOLS, COORDINATION AND INCIDENTALS REQUIRED TO COMPLETE THE WORK IN THE TERMINAL BUILDING WILL BE PAID FOR UNDER ITEM AR109600.
5. TERMINAL BLOCKS SHALL BE NEMA RATED TERMINALS. IEC RATED TERMINAL BLOCKS ARE NOT ACCEPTABLE.

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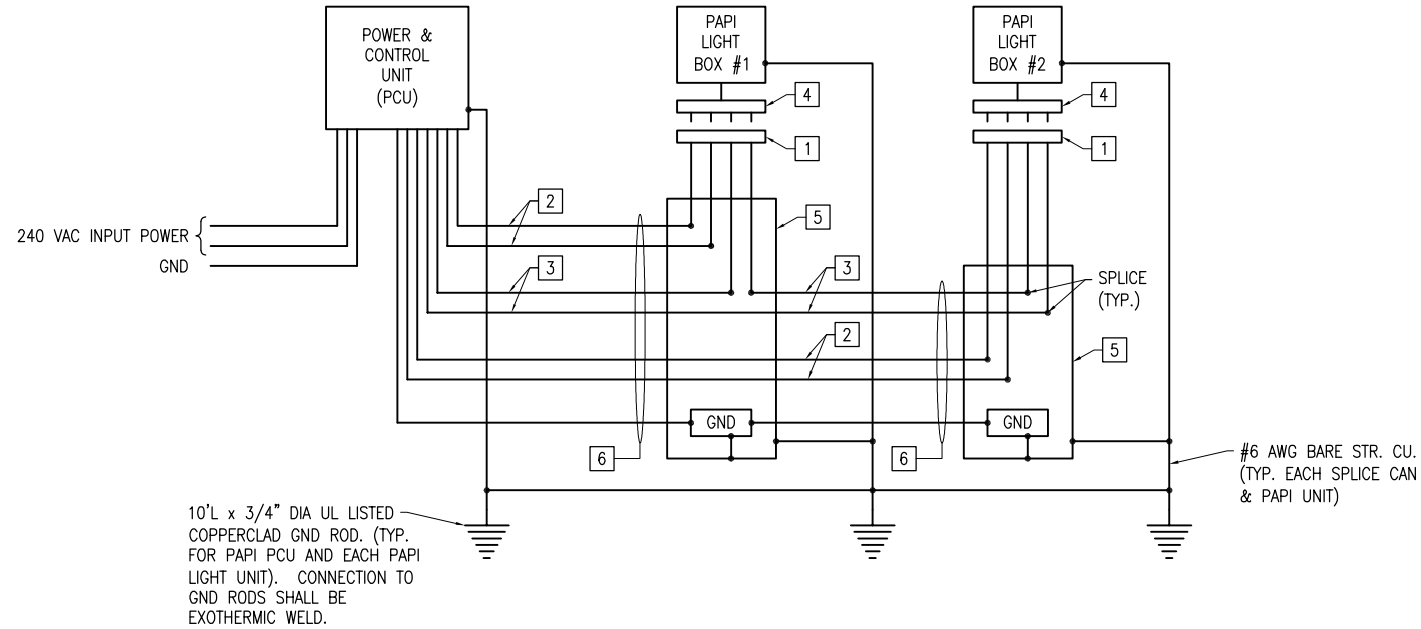
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**REPLACE NAVAIDS AND VAULT**

L-821 CONTROL PANEL



**PAPI FIELD WIRING CONNECTIONS**  
**(FOR CROUSE-HINDS 881A3A-1 PAPI)**

NOT TO SCALE

**NOTES**

1. PAPI FIELD WIRING CONNECTION DIAGRAM IS BASED ON A CROUSE-HINDS PART NO 881A3A-1, L-881 STYLE A (VOLTAGE POWERED) PAPI WITH 3 LAMPS PER LIGHT BOX, & INFORMATION PROVIDED BY CROUSE-HINDS FIELD SERVICE SUPPORT CENTER. WIRING REQUIREMENTS VARY FOR DIFFERENT PAPI MANUFACTURERS AND DIFFERENT PAPI MODEL NUMBERS BY THE SAME MANUFACTURER. CONTRACTOR SHALL CONFIRM WIRING REQUIREMENTS WITH THE RESPECTIVE PAPI MANUFACTURER AND ADJUST TO MEET MANUFACTURER INSTRUCTIONS AND RECOMMENDATIONS. POWER WIRING REQUIREMENTS SHOWN ARE MINIMUM, FOR THE RESPECTIVE PAPI SYSTEM.
2. INCLUDE #8 AWG COPPER (MINIMUM) EQUIPMENT GROUND WIRE IN CONDUIT WITH POWER & CONTROL WIRING BETWEEN THE POWER & CONTROL UNIT & THE PAPI LIGHT BOXES.
3. CONDUIT BETWEEN PAPI PCU AND SPLICE CANS AT PAPI LIGHT UNITS SHALL BE GALVANIZED RIGID STEEL CONDUIT.

**KEYED NOTES**

- 1 CONSOLIDATING HARNESS, 4 #14 AWG LEADS AS FURNISHED OR REQUIRED BY PAPI MFR.
- 2 OUTGOING POWER FEED FROM POWER & CONTROL UNIT TO THE TWO PAPI LIGHT BOXES (#1 & #2), #8 AWG XLP-USE OR THWN (MIN.)
- 3 TILT SWITCH WIRING #14 AWG XLP-USE OR THWN (MIN.) CONFIRM WIRING WITH PAPI MFR & ADJUST AS APPLICABLE.
- 4 PLUG WITH CABLE ASSEMBLY AS FURNISHED OR REQUIRED BY PAPI MFR.
- 5 L-867, CLASS IA, SIZE B (MINIMUM), 24" DEEP SPLICE CAN. INCLUDE INTERNAL AND EXTERNAL GROUND STRAPS.
- 6 2" MINIMUM GALVANIZED RIGID STEEL CONDUIT BETWEEN PAPI PCU AND L-867 SPLICE CANS AT PAPI LIGHT UNITS.

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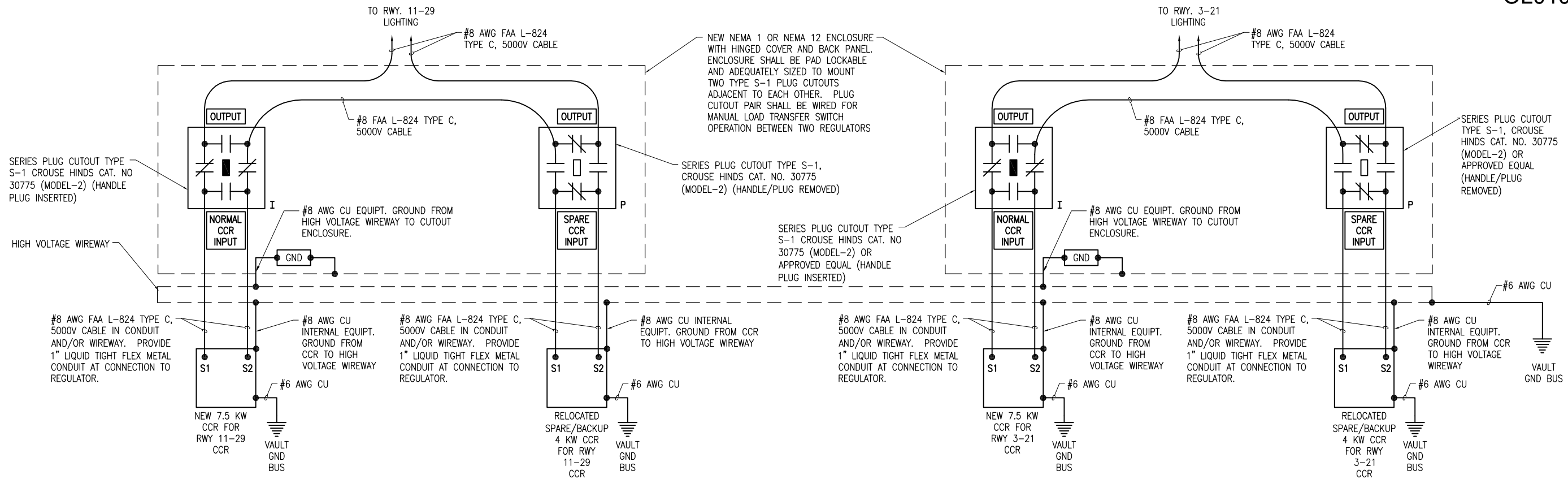
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**REPLACE NAVAIDS AND VAULT**

**PAPI FIELD WIRING CONNECTIONS**



**HIGH VOLTAGE WIRING SCHEMATIC FOR RUNWAYS**

NOT TO SCALE

**NOTES**

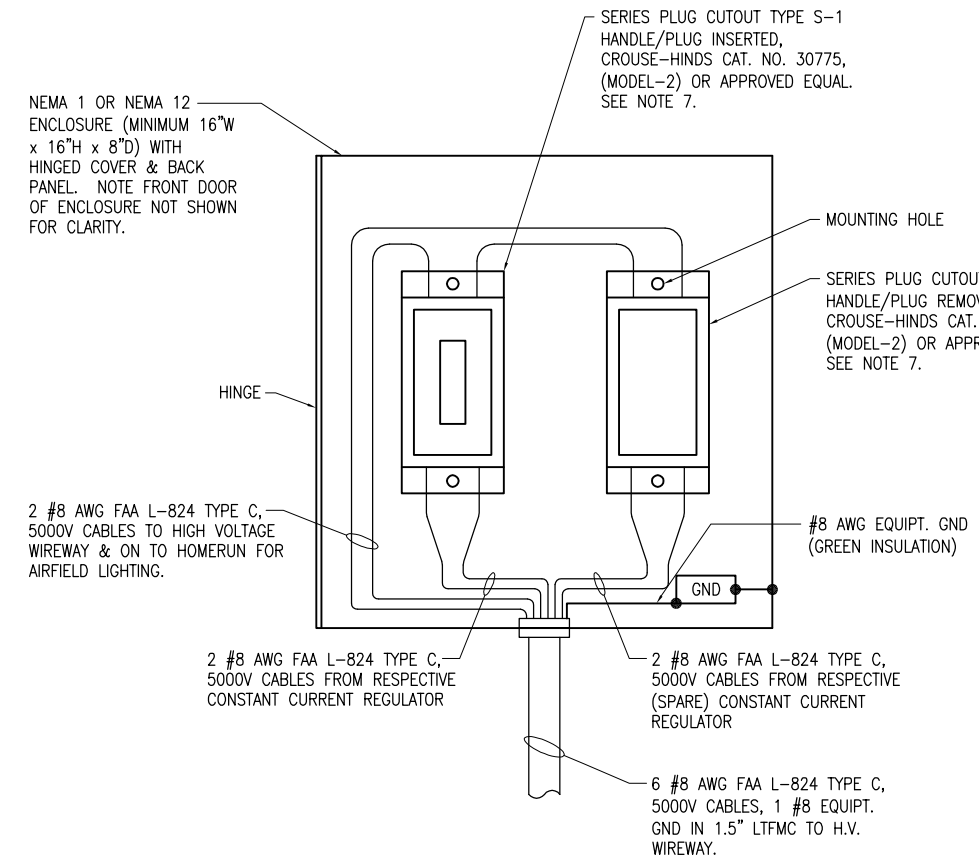
1. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CONSTANT CURRENT REGULATOR (EXISTING & NEW) NOTING THE RUNWAY AND/OR TAXIWAY SERVED.
2. EACH PLUG CUTOUT CABINET SHALL BE FURNISHED WITH A PHENOLIC ENGRAVED LEGEND PLATE THAT IDENTIFIES THE RESPECTIVE RUNWAY OR TAXIWAY CIRCUIT OR REGULATOR. INCLUDE AN ADDITIONAL LEGEND PLATE LABELED "CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF".
3. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR THE CUTOUTS TO IDENTIFY THE RESPECTIVE REGULATOR OUTPUT CONNECTION AND THE RESPECTIVE CIRCUIT LOAD CONNECTION.
4. BOND EACH REGULATOR FRAME TO VAULT GROUND BUS WITH A DEDICATED #6 AWG COPPER BONDING JUMPER.
5. PROVIDE ADEQUATE WORKING SPACE IN FRONT OF EACH CUTOUT ENCLOSURE TO MEET NEC CLEARANCE REQUIREMENTS.
6. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING AND SUNLIGHT RESISTANT. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL LISTED. CONFIRM LIQUID TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.
7. SERIES PLUG CUTOUTS SHALL BE RATED SUITABLE FOR NORMAL OPERATION WITH HANDLE REMOVED OR HANDLE INSERTED. 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. OTHER CUTOUTS THAT DO NOT FUNCTION THE SAME AS CROUSE-HINDS CAT. NO. 30775 (MODEL-2) ARE NOT ACCEPTABLE.
8. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, JUNCTION BOX, OR RACEWAY.

**LEGEND**

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

**SERIES PLUG CUTOUT MOUNTING DETAIL FOR RUNWAY CIRCUIT**

NOT TO SCALE  
(TYPICAL FOR 2)



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REPLACE NAVAIDS  
AND VAULT

HIGH VOLTAGE WIRING  
SCHEMATIC FOR RUNWAYS

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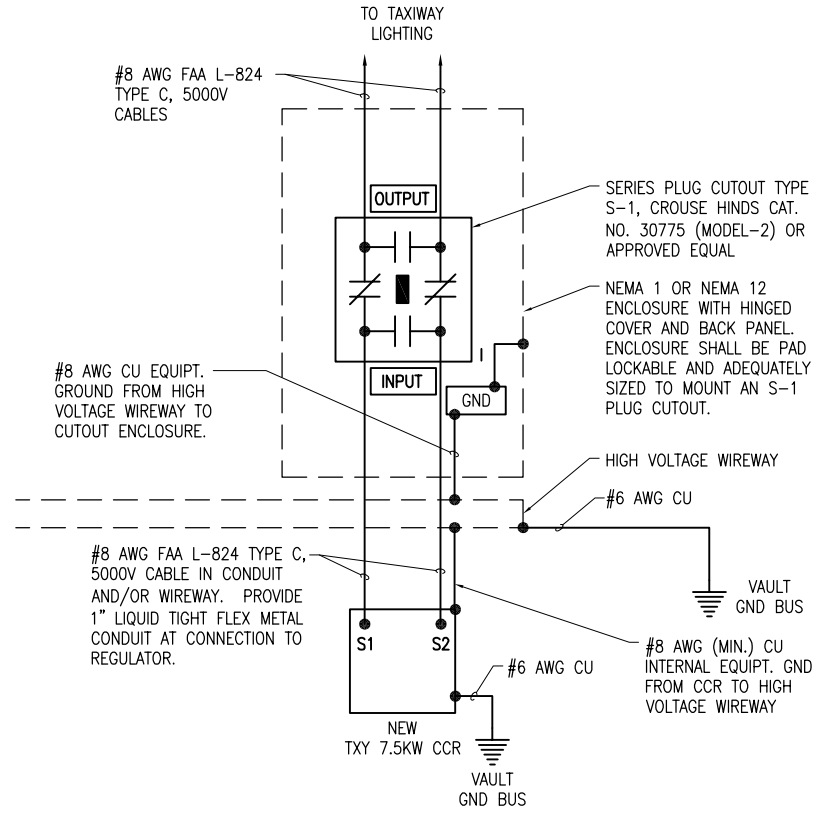
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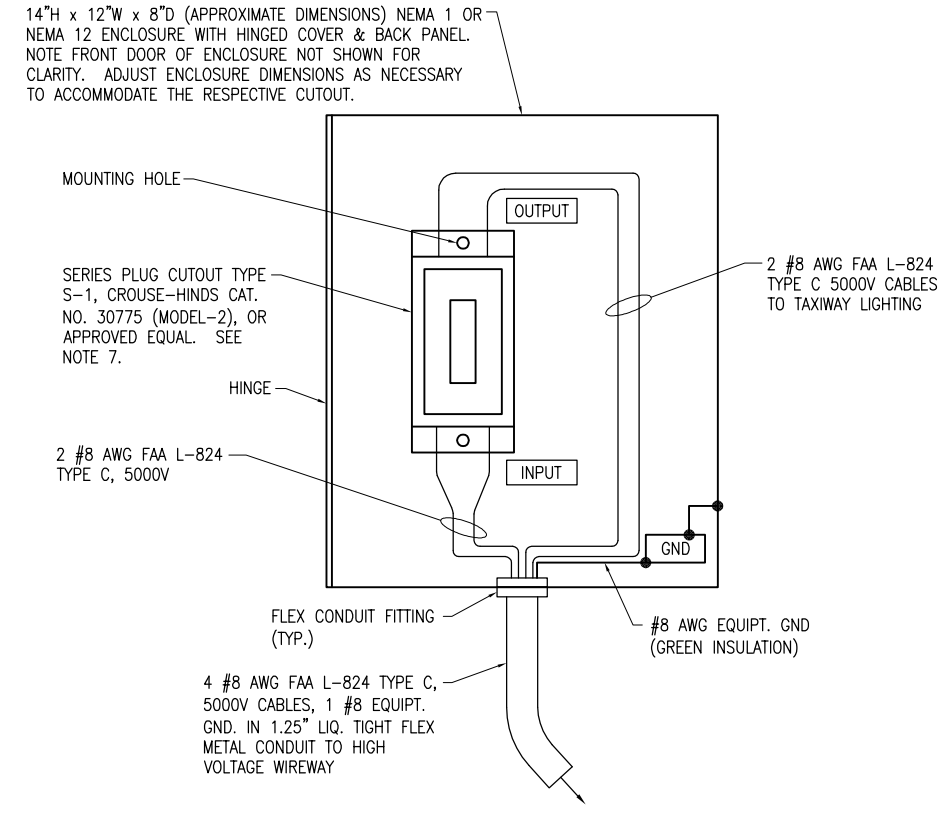
**REPLACE NAVAIDS  
AND VAULT**

HIGH VOLTAGE WIRING  
SCHEMATIC FOR TAXIWAYS

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**HIGH VOLTAGE WIRING SCHEMATIC FOR TAXIWAY**  
NOT TO SCALE



**SERIES PLUG CUTOUT MOUNTING DETAIL  
FOR TAXIWAY CIRCUIT**  
NOT TO SCALE

**NOTES**

- PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CONSTANT CURRENT REGULATOR (EXISTING & NEW) NOTING THE RUNWAY AND/OR TAXIWAY SERVED.
- 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".
- PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR THE CUTOUTS TO IDENTIFY THE RESPECTIVE REGULATOR OUTPUT CONNECTION AND THE RESPECTIVE CIRCUIT LOAD CONNECTION.
- BOND REGULATOR FRAME TO VAULT GROUND BUS WITH A DEDICATED #6 AWG BONDING JUMPER.
- PROVIDE ADEQUATE WORKING SPACE IN FRONT OF EACH CUTOUT ENCLOSURE TO MEET NEC CLEARANCE REQUIREMENTS.
- LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING AND SUNLIGHT RESISTANT. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL LISTED. CONFIRM LIQUID TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.
- CROUSE-HINDS CAT. NO. 30771, (MODEL-3) SERIES PLUG CUTOUTS ARE NOT ACCEPTABLE, BECAUSE THE HANDLE IS NOT REMOVABLE. ADB SIEMENS SCO SERIES CUTOUTS ARE NOT ACCEPTABLE BECAUSE THEY DO NOT FUNCTION THE SAME AS THE CROUSE-HINDS 30775 CUTOUT. AIRPORT LIGHTING CO. PART NO. S1 CUTOUTS ARE NOT ACCEPTABLE BECAUSE THEY HAVE BEEN OBSERVED TO NOT FUNCTION THE SAME AS THE CROUSE-HINDS 30775 CUTOUT WHEN THE HANDLE IS REMOVED, AND THE MFR DOES NOT RECOMMEND OPERATION OF THE CUTOUT WITH THE HANDLE REMOVED. OTHER CUTOUTS THAT DO NOT FUNCTION THE SAME AS CROUSE-HINDS CAT. NO. 30775 (MODEL-2) ARE NOT ACCEPTABLE.
- 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

LEGEND PLATE SCHEDULE	
DEVICE	LABEL
Vault Main Distribution Panelboard "A"	Main Distribution Panel "A" 120/240 VAC, 1 PH, 3W
Main Breaker in Vault Main Distribution Panel A	SERVICE DISCONNECT
Runway 11-29 CCR	RUNWAY 11-29
Spare Runway 11-29 CCR	SPARE FOR RUNWAY 11-29
Runway 3-21 CCR	RUNWAY 3-21
Spare Runway 3-21 CCR	SPARE FOR RUNWAY 3-21
Taxiway CCR	TAXIWAYS 1, 2 & 3
Cutout Enclosure for Runway 11-29	RUNWAY 11-29 CUTOUT
Cutout Enclosure for Runway 3-21	RUNWAY 3-21 CUTOUT
Each Cutout Enclosure (2 Legend Plates)	CAUTION OPERATE CUTOUPS WITH CCR SHUT OFF
Normal Cutout Input Side Connection for Runway 11-29	NORMAL CCR INPUT
Spare Cutout Input Side Connection for Runway 11-29	SPARE CCR INPUT
Normal Cutout Input Side 3-21	NORMAL CCR INPUT
Spare Cutout Input Side Connection for Runway 3-21	SPARE CCR INPUT
Cutout Enclosure for Taxiways	TAXIWAYS 1, 2 & 3 CUTOUT
Taxiway Cutout Input Side Connection	INPUT
Each Cutout (Runways & Taxiway) Output Side Connection (5 Legend Plates)	OUTPUT

LEGEND PLATE SCHEDULE CONTINUED	
DEVICE	LABEL
RADIO RELAY INTERFACE PANEL	RADIO RELAY INTERFACE PANEL
MANUAL TRANSFER SWITCH FOR RUNWAY 11-29 NORMAL CCR AND SPARE/BACKUP CCR	TRANSFER SWITCH FOR RUNWAY 11-29 CONSTANT CURRENT REGULATORS
MANUAL TRANSFER SWITCH FOR RUNWAY 11-29 NORMAL CCR AND SPARE/BACKUP CCR - NORMAL SWITCH POSITION	NORMAL CCR
MANUAL TRANSFER SWITCH FOR RUNWAY 11-29 NORMAL CCR AND SPARE/BACKUP CCR - BACKUP SWITCH POSITION	SPARE/BACKUP CCR
MANUAL TRANSFER SWITCH FOR RUNWAY 3-21 NORMAL CCR AND SPARE/BACKUP CCR	TRANSFER SWITCH FOR RUNWAY 3-21 CONSTANT CURRENT REGULATORS
MANUAL TRANSFER SWITCH FOR RUNWAY 3-21 NORMAL CCR AND SPARE/BACKUP CCR - NORMAL SWITCH POSITION	NORMAL CCR
MANUAL TRANSFER SWITCH FOR RUNWAY 3-21 NORMAL CCR AND SPARE/BACKUP CCR - BACKUP SWITCH POSITION	SPARE/BACKUP CCR
CONTROL PANEL FOR AIRFIELD NAVAIDS AND VAULT FAN	CONTACTOR PANEL FOR AIRFIELD NAVAIDS, ENTRANCE ROAD LIGHTS & VAULT FAN
CONTACTOR PANEL FOR AIRFIELD NAVAIDS AND VAULT FAN	NOTICE CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME
LOW VOLTAGE WIREWAY (PROVIDE 4 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND)	LOW VOLTAGE
HIGH VOLTAGE WIREWAY (PROVIDE 4 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND)	HIGH VOLTAGE
VAULT GROUND BUS (PROVIDE 4 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

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

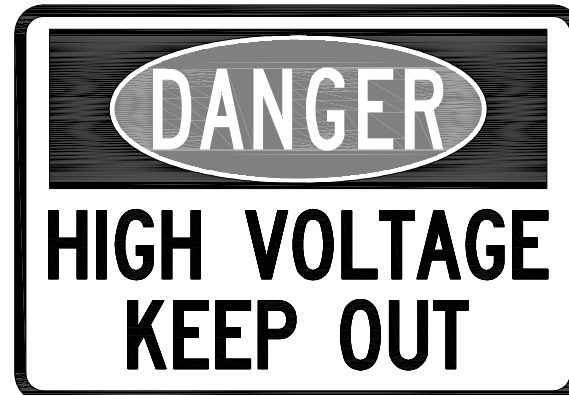
FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH SAFETY SWITCH, PANELBOARD, LOAD CENTER, CUTOUT, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION". LABELS SHALL BE HAZARD COMMUNICATION SYSTEMS, LLC (190 OLD MILFORD RD.,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

- DIRECTIONS TO TRANSFER RUNWAY 11-29 LIGHTING FROM NORMAL CCR TO SPARE/BACKUP CCR.
1. SHUT OFF INPUT POWER (CIRCUIT BREAKER) TO BOTH RWY 11-29 CCR'S & TURN CCR SELECTOR SWITCHES TO OFF.
  2. OPERATE MANUAL TRANSFER SWITCH FOR RWY 11-29 AND MOVE HANDLE FROM "NORMAL" POSITION TO "SPARE/BACKUP" POSITION.
  3. PULL CUTOUT HANDLE FROM NORMAL CCR UNIT & INSERT INTO SPARE CCR CUTOUT.
  4. GO TO RADIO RELAY INTERFACE PANEL & TURN "RWY 11-29 CCR TRANSFER" SELECTOR SWITCH FROM "NORMAL" TO "SPARE" POSITION.
  5. TURN ON INPUT POWER (CIRCUIT BREAKER) TO SPARE RWY 11-29 CCR.
  6. TURN SELECTOR SWITCH ON SPARE CCR TO "REMOTE" POSITION.

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

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

**CCR TRANSFER PROCEDURE PLACARD DETAIL**  
NOT TO SCALE



"DANGER - HIGH VOLTAGE KEEP OUT" SIGN

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



"DANGER - HIGH VOLTAGE" SIGN

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

REVISION	DATE

**OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS**

A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

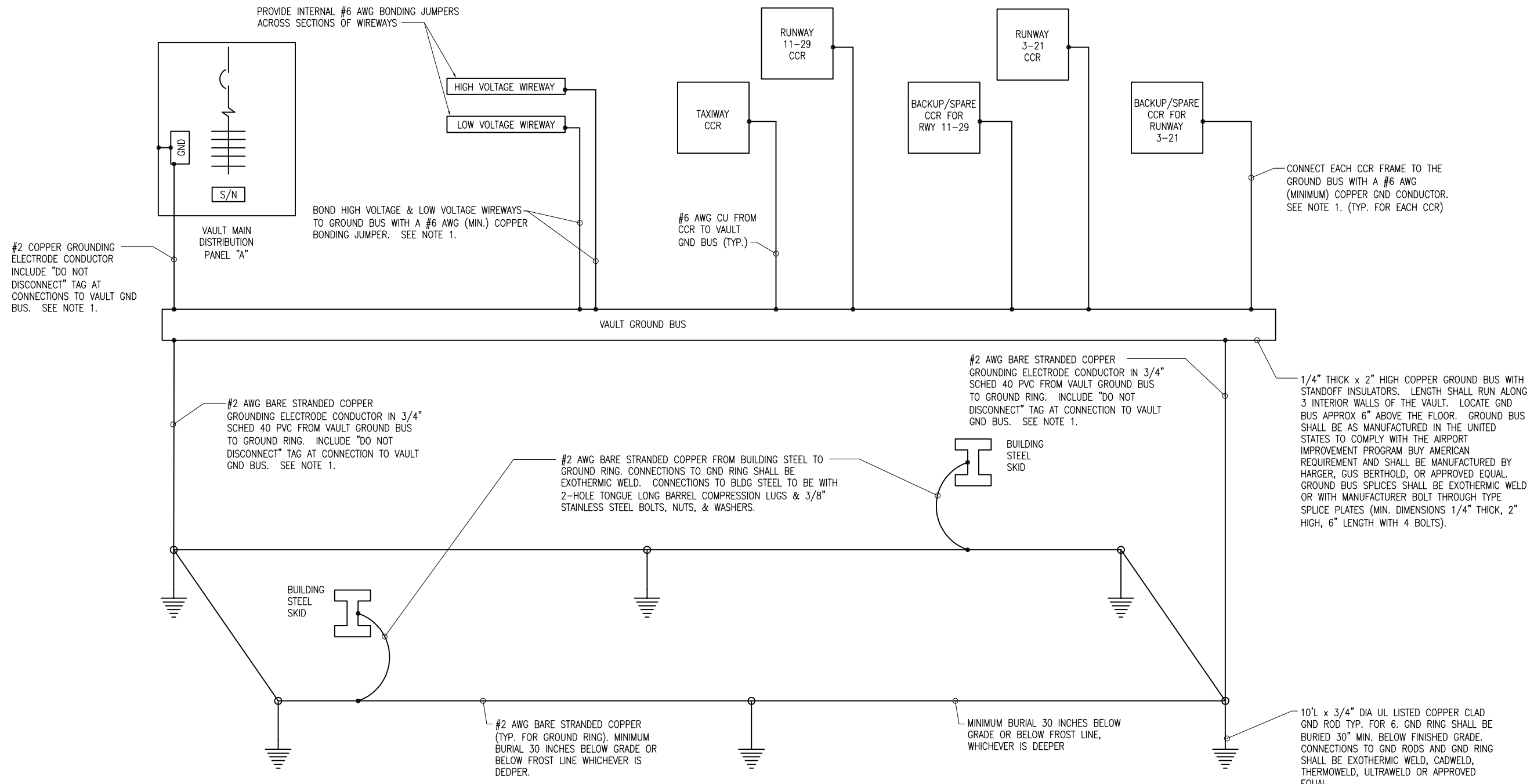
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LAYOUT	PJT	09/01/10	09/02/10
DRAWN	ANC	09/02/10	11/05/10
REVIEWED	PJT/KNL	11/05/10	

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REPLACE NAVAIDS AND VAULT

LEGEND PLATE SCHEDULES





**VAULT GROUND BUS RISER**  
NOT TO SCALE

- NOTES**
1. CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2-HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR WITH 3/8" STAINLESS STEEL BOLTS, NUTS, & WASHERS.
  2. ALL INSULATED GROUND WIRES SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR AWG AND KCMIL.
  3. ALL WORK SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER ITEM AR109200 "INSTALL ELECTRICAL EQUIPMENT" PER LUMP SUM.

REVISION	DATE

**OLNEY-NOBLE AIRPORT**  
NOBLE, ILLINOIS

IL PROJ.: OLY-4032  
A.I.P. PROJ.: 3-17-0076-B10

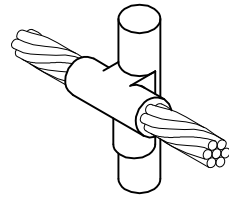
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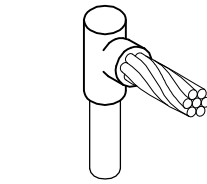
**REPLACE NAVAIDS AND VAULT**

**VAULT GROUND BUS RISER**

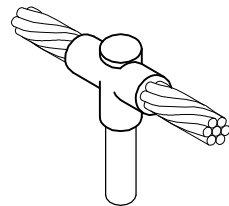
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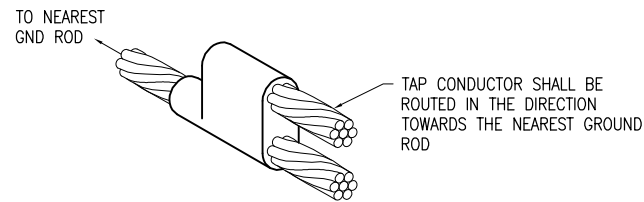
CABLE TO GROUND ROD



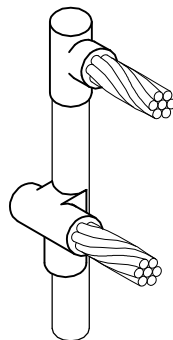
CABLE TO GROUND ROD



CABLE TO GROUND ROD



CABLE TO CABLE  
HORIZONTAL PARALLEL TAP



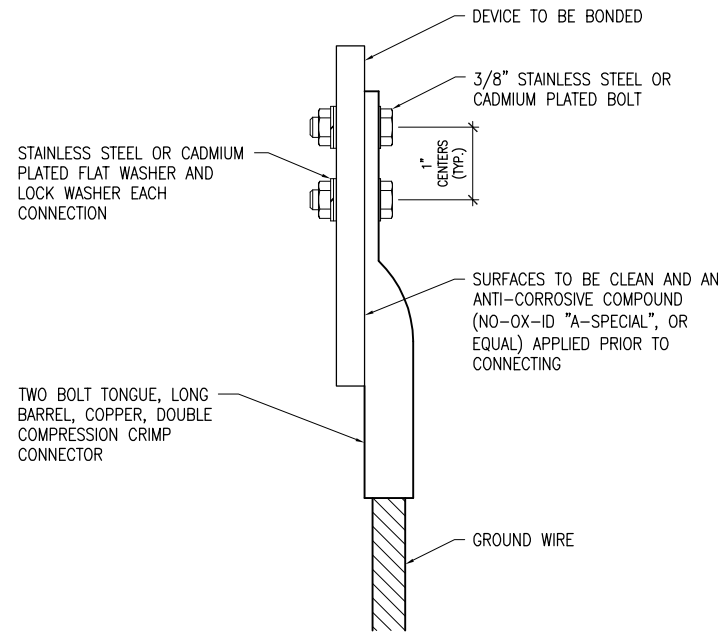
CABLES TO GROUND ROD

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

NOT TO SCALE



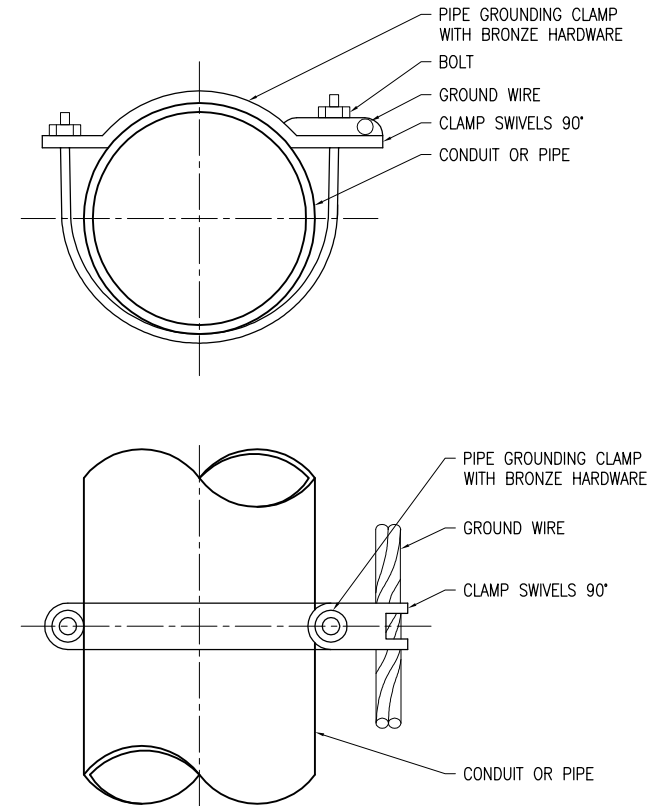
2 HOLE LONG BARREL COMPRESSION LUG TABLE			
WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1		
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159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

NOTES

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

GROUNDING LUG CONNECTION DETAIL

NOT TO SCALE



PIPE GROUNDING CLAMP TABLE	
BURNDY CAT. NO.	PIPE SIZE
GAR3902-BU	1/2" - 1"
GAR3903-BU	1 1/4" - 2"
GAR3904-BU	2 1/2" - 3 1/2"
GAR3905-BU	4" - 5"
GAR3906-BU	6"

NOTES

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

PIPE/CONDUIT GROUNDING CLAMP DETAIL

NOT TO SCALE

REVISION	DATE

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS  
A.I.P. PROJ.: 3-17-0076-B10  
IL PROJ.: OLY-4032

Hanson Proj. No. 10A00790	09/01/10
Filename E-507.DWG	PJT
Scale AS SHOWN	ANC
Date 12/17/10	09/02/10
LAYOUT	REVIEWED
DRAWN	PJT/KNL
11/05/10	

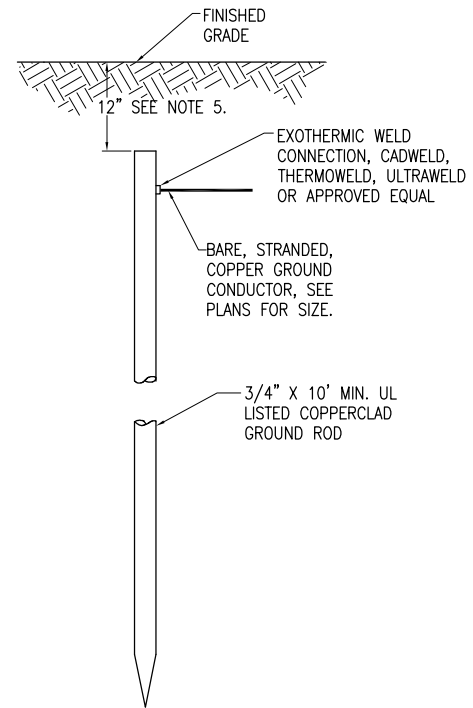
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REPLACE NAVAIDS  
AND VAULT

GROUNDING DETAILS

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). 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 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 2008 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 2008 NEC TABLE 250-122 "MINIMUM SIZE CONDUCTORS OR GROUNDING RACEWAY AND EQUIPMENT." WHEN CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT-GROUNDING CONDUCTORS SHALL BE ADJUSTED PROPORTIONATELY ACCORDING TO CIRCULAR MIL AREA. ALL EQUIPMENT GROUND WIRES SHALL BE COPPER, EITHER BARE OR INSULATED GREEN IN COLOR. WHERE THE EQUIPMENT GROUNDING CONDUCTORS ARE INSULATED, THEY SHALL BE IDENTIFIED BY THE COLOR GREEN, AND SHALL BE THE SAME INSULATION TYPE AS THE PHASE CONDUCTORS.
- ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC., SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 2008 NEC 250-102. WHERE METAL CONDUITS TERMINATE IN AN ENCLOSURE (SUCH AS A MOTOR CONTROL CENTER, SWITCHBOARD, ETC) WHERE THERE IS NOT ELECTRICAL CONTINUITY WITH THE CONDUIT AND THE RESPECTIVE ENCLOSURE, PROVIDE A BONDING JUMPER FROM THE RESPECTIVE ENCLOSURE GROUND BUS TO THE CONDUIT SIZED PER 2008 NEC 250-102.
- 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 GROUND 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 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 ENIRCLE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. USE NON-METALLIC REINFORCED FIBERGLASS STRUT SUPPORT. WHERE METAL CONDUIT CLAMPS ARE INSTALLED, USE NYLON BOLTS, NUTS, WASHERS AND SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCLICLING THE CONDUIT. THIS IS REQUIRED TO AVOID GIRDLING OF GROUND CONDUCTORS. GIRDLING OF A GROUND CONDUCTOR IS THE RESULT OF PLACING THE CONDUCTOR IN A RING OF MAGNETIC MATERIAL. THIS RING COULD BE A METALLIC CONDUIT, U-BOLT OR STRUT SUPPORT PIPE CLAMP, OR OTHER SUPPORT HARDWARE. THE RESULT OF GIRDLING GROUND CONDUCTORS SIGNIFICANTLY INCREASES THE INDUCTIVE IMPEDANCE OF THE GROUND CONDUCTOR. INDUCTIVE AND CAPACITIVE IMPEDANCE IS A TYPE OF RESISTANCE THAT OPPOSES THE FLOW OF ALTERNATING CURRENT. ANY INCREASE IN THE IMPEDANCE OF A GROUND CONDUCTOR REDUCES ITS ABILITY TO EFFECTIVELY MITIGATE RADIO FREQUENCY NOISE IN THE GROUND SYSTEM. THE CONDITION WHERE A GROUND CONDUCTOR IS GIRDLED DURING A LIGHTNING STRIKE RESULTS IN PHENOMENA KNOWN AS SURGE IMPEDANCE LOADING. SURGE IMPEDANCE LOADING IS A RESULT OF VOLTAGE AND CURRENT REACHING 500,000 VOLTS AND 10,000 AMPS FOR A SHORT DURATION. GIRDLING FURTHER INCREASES THE IMPEDANCE AT LIGHTNING FREQUENCIES OF 100 KILOHERTZ TO 100 MEGAHERTZ. AT THESE POWER AND FREQUENCY LEVELS ANY INCREASE IN THE IMPEDANCE OF THE GROUND CONDUCTOR MUST BE CONTROLLED. DURING LIGHTNING DISCHARGE CONDITIONS A LOW INDUCTIVE IMPEDANCE PATH IS MORE IMPORTANT THAN A LOW DC RESISTANCE PATH.
- IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2008 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- 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 MANUFACTURER GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.



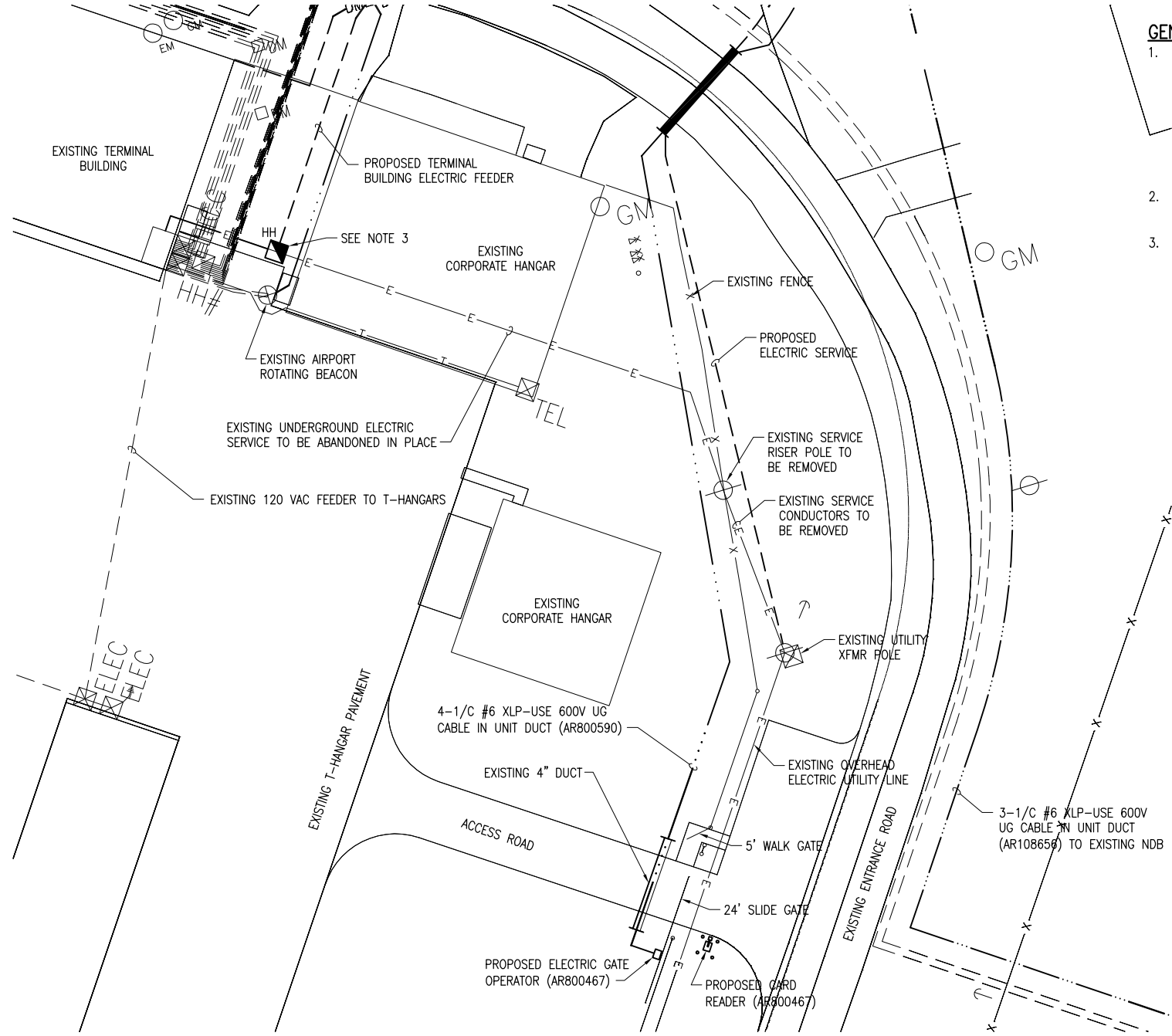
10 FT. GROUND ROD  
NOT TO SCALE

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 HIGH VOLTAGE HANDHOLE, AND WIND CONE 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 RING CONDUCTORS SHALL BE 30" MINIMUM BELOW GRADE OR BELOW FROST LINE WHICHEVER IS DEEPER.

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REVISION	DATE	01/28/11	Revised as per IDA review - CAH										
<p><b>OLNEY-NOBLE AIRPORT</b> <b>NOBLE, ILLINOIS</b></p> <p style="font-size: small;">A.I.P. PROJ.: 3-17-0076-B10 IL PROJ.: OLY-4032</p>													
Hanson Proj. No. 10A00790	Filename E-003.DWG	Scale AS SHOWN	Date 12/17/10	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: x-small;">LAYOUT</td> <td style="font-size: x-small;">PJT</td> <td style="font-size: x-small;">09/01/10</td> </tr> <tr> <td style="font-size: x-small;">DRAWN</td> <td style="font-size: x-small;">ANC</td> <td style="font-size: x-small;">09/02/10</td> </tr> <tr> <td style="font-size: x-small;">REVIEWED</td> <td style="font-size: x-small;">PJT/KNL</td> <td style="font-size: x-small;">11/05/10</td> </tr> </table>	LAYOUT	PJT	09/01/10	DRAWN	ANC	09/02/10	REVIEWED	PJT/KNL	11/05/10
LAYOUT	PJT	09/01/10											
DRAWN	ANC	09/02/10											
REVIEWED	PJT/KNL	11/05/10											
<p style="font-size: x-small;">© Copyright Hanson Professional Services Inc. 2011 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2986 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide</p>													
<p><b>REPLACE NAVAIDS AND VAULT</b></p>		<p><b>GROUNDING NOTES</b></p>											
<p style="font-size: 2em; font-weight: bold;">43</p> <p style="font-size: x-small;">43 of 48 sheets</p>													



**GENERAL NOTES**

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND THE RESPECTIVE FAA PERSONNEL. 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. PROVIDE NEMA 4 WATERTIGHT HUBS FOR ALL CONDUIT ENTRIES INTO NEMA 4, 4X ENCLOSURES TO MAINTAIN NEMA 4, 4X RATING.
3. PAVEMENT RESTORATION NOTE: ONCE THE PROPOSED ELECTRICAL HANDHOLE HAS BEEN INSTALLED ALONG WITH ALL ASSOCIATED CONDUITS THE CONTRACTOR SHALL RESTORE THE PAVEMENT THAT WAS DISTURBED DURING THE INSTALLATION OF THE ELECTRICAL HANDHOLE AND ELECTRICAL CONDUITS. THE CONTRACTOR SHALL BACKFILL THE HOLE WITH AN IDOT CA-14 OR CA-16 UP TO THE BOTTOM OF THE EXISTING BITUMINOUS PAVEMENT. THE CONTRACTOR SHALL THEN REPLACE THE BITUMINOUS PAVEMENT USING AN APPROVED IDOT BITUMINOUS SURFACING COURSE. THE PROPOSED BITUMINOUS SURFACE COURSE WILL BE PLACED IN LIFTS NOT EXCEEDING THREE INCHES IN DEPTH (COMPACTED). EACH LIFT SHALL BE COMPACTED TO THE SATISFACTION OF THE RESIDENT ENGINEER. THE SURFACE OF THE FINAL LIFT SHALL BE COMPACTED WITH A SMOOTH SURFACE AND FLUSH TO THE SURROUNDING PAVEMENT. THIS RESTORATIVE WORK SHALL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE INSTALLATION OF THE PROPOSED ELECTRICAL HANDHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

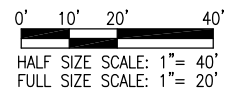
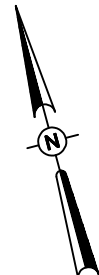
**LEGEND**

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- PROPOSED ELECTRICAL CABLE
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN
- EXISTING FENCE
- EXISTING GAS LINE
- EXISTING TELEPHONE/COMMUNICATION LINE
- EXISTING WATERLINE
- EXISTING ELECTRICAL LINE
- EXISTING UNDERGROUND PRIMARY ELECTRICAL SERVICE

**PROPOSED FENCE GATE OPERATOR**

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

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



REVISION	DATE	DESCRIPTION
01/28/11		Revised as per IDA review - CAH

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 Date: 12/17/10

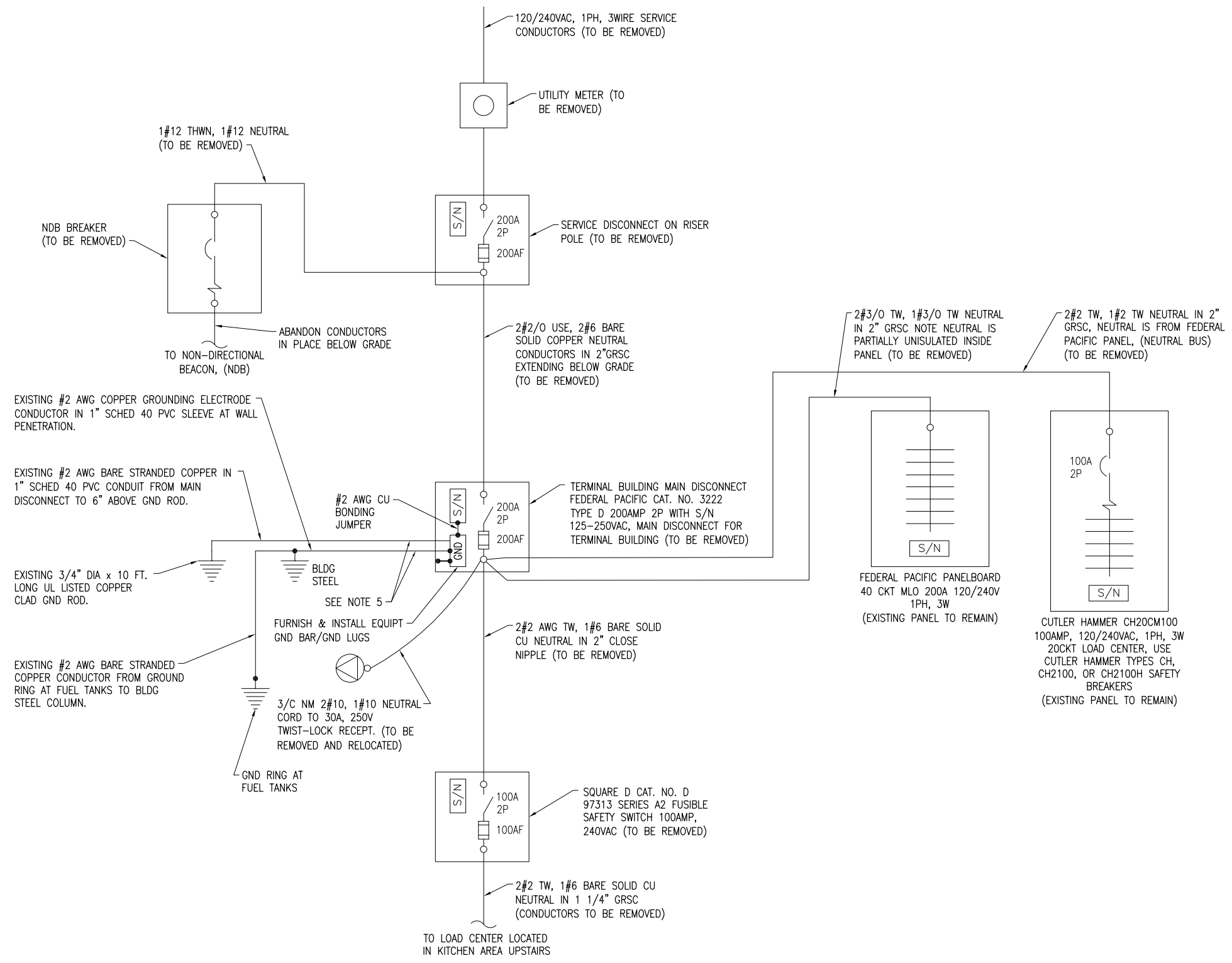
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DRAWN	ANC	09/02/10
REVIEWED	KNL	11/05/10

OLNEY-NOBLE AIRPORT  
 NOBLE, ILLINOIS  
 A.I.P. PROJ.: 3-17-0076-B10  
 IL PROJ.: OLY-4032

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REPLACE NAVAIDS  
 AND VAULT

T-HANGAR ACCESS ROAD  
 SITE PLAN



- NOTES**
1. SEE "ELECTRICAL LEGEND AND ABBREVIATIONS" SHEET FOR GENERAL NOTES AND REQUIREMENTS.
  2. NOTE THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM HAS APPARENT NEC VIOLATIONS WHICH MIGHT CAUSE UNSAFE WORKING CONDITIONS. APPARENT NEC VIOLATIONS INCLUDE, BUT ARE NOT LIMITED TO, BARE NEUTRALS, UNDERSIZED WIRING, IMPROPER GROUNDING OR NO GROUNDING, INCORRECT IDENTIFICATION OF CONDUCTORS, & INADEQUATE WORKING CLEARANCES. CONTRACTOR WILL NEED TO EXERCISE CAUTION WHEN WORKING ON THE ELECTRICAL SYSTEM OF THIS FACILITY.
  3. EXISTING SAFETY SWITCHES AND CIRCUIT BREAKER PANELS WERE OBSERVED TO CONTAIN WASP NESTS DURING FIELD SURVEYS. USE CAUTION WHEN WORKING IN THIS EQUIPMENT.
  4. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS.
  5. EXISTING GROUND ELECTRODE CONDUCTORS SHALL BE DISCONNECTED FROM EXISTING TERMINAL BUILDING MAIN DISCONNECT SWITCH AND RECONNECTED TO NEW DISTRIBUTION PANEL.

**EXISTING ELECTRICAL ONE-LINE DIAGRAM  
FOR TERMINAL BUILDING**

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REVISION	DATE

**OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS**

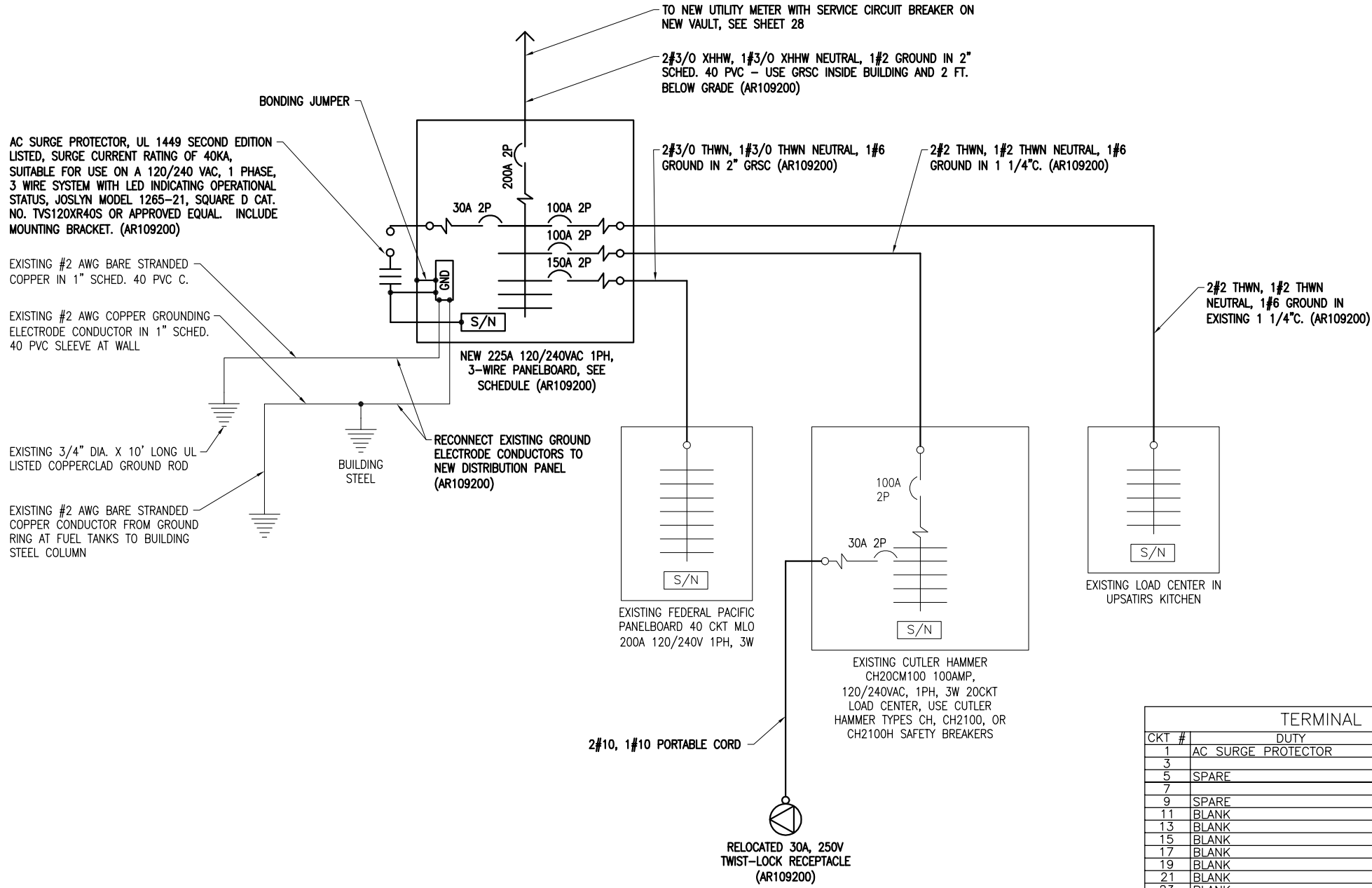
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IL PROJ.: OLY-4032

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**REPLACE NAVAIDS  
AND VAULT**

**T-HANGAR ACCESS ROAD  
EXISTING ELECTRICAL  
ONE-LINE**



- NOTES
- SEE "ELECTRICAL LEGEND AND ABBREVIATIONS" SHEET FOR GENERAL NOTES AND REQUIREMENTS.
  - ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70-NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
  - ALL EQUIPMENT SHOWN NOT LABELED AS EXISTING IS NEW.
  - ALL LOAD CENTER/PANELBOARD FEEDERS SHALL BE THWN INSULATION WITH PHASE A-BLACK, PHASE B-RED, NEUTRAL-WHITE, AND GROUND-GREEN.

PROPOSED ELECTRICAL ONE-LINE FOR TERMINAL BLDG

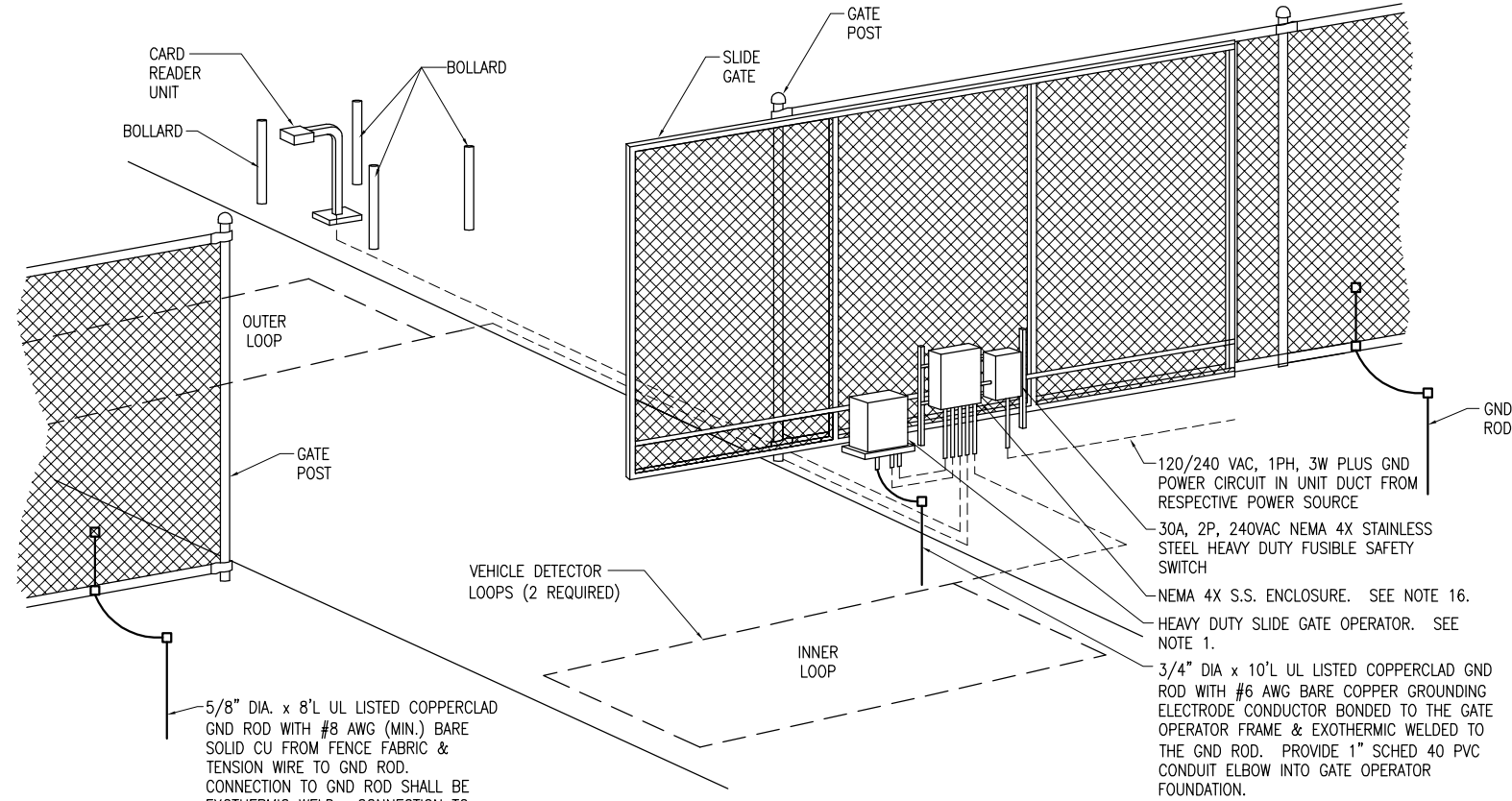
TERMINAL BUILDING SERVICE PANELBOARD SCHEDULE			
CKT #	DUTY	SIZE	CKT #
1	AC SURGE PROTECTOR	30A	2
3		2P	4
5	SPARE	30A	6
7		2P	8
9	SPARE	20A 1P	10
11	BLANK	---	12
13	BLANK	---	14
15	BLANK	---	16
17	BLANK	---	18
19	BLANK	---	20
21	BLANK	---	22
23	BLANK	---	24
25	BLANK	---	26
27	BLANK	---	28
29	BLANK	---	30

225 AMP, 120/240 VAC, 1 PHASE, 3 WIRE, 30 CIRCUIT PANELBOARD WITH A 200 AMP, 2 POLE MAIN BREAKER RATED 10,000 AIC AT 120/240 VAC AND FEED THROUGH LUGS IN A NEMA 1 ENCLOSURE WITH HINGED COVER, UL LISTED SUITABLE FOR SERVICE ENTRANCE, SQUARE D NQOB, OR APPROVED EQUAL. INCLUDE EQUIPT. GROUND BAR.

- NOTES
- PANELBOARD BUSSES SHALL BE COPPER. NEUTRAL SHALL BE COPPER. EQUIPMENT GROUND BAR SHALL BE COPPER.
  - ALL BRANCH CIRCUIT & FEEDER BREAKERS SHALL BE BOLT-ON TYPE WITH 10,000 AIC AT 120/240 VAC.
  - INCLUDE ENGRAVED, PHENOLIC OR PLASTIC LEGEND PLATE LABELED "VAULT MAIN DIST. PANEL, 120/240 VAC, 1PH, 3W". INCLUDE ADDITIONAL LEGEND PLATE FOR THE EXTERIOR VAULT MAIN BREAKER LABELED "VAULT MAIN DISCONNECT".
  - PANELBOARD SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWING SUBMITTAL.
  - INCLUDE WITH PANELBOARD A U.L. LISTED PER UL 1449, AC SURGE PROTECTOR SUITABLE FOR 120/240 VAC, 1 PH., 3W PLUS GROUND SYSTEM, WITH SURGE CURRENT RATING OF 40KA (MIN.), 8x20 MICROSECOND WAVE, PER MODE, AND STATUS INDICATION LIGHTS, JOSLYN MODEL 1265-21, SQUARE D CAT. NO. TVS120XR40S OR APPROVED EQUAL. MAINTAIN LEADS AS SHORT AND AS STRAIGHT AS POSSIBLE.

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DATE				
<b>OLNEY-NOBLE AIRPORT</b> <b>NOBLE, ILLINOIS</b>				
I.L. PROJ.: OLY-4032 A.I.P. PROJ.: 3-17-0076-B10				
Hanson Proj. No.	10400790	FILENAME	E-616.DWG	
Scale	AS SHOWN	Date	12/17/10	
LAYOUT	PJG	03/15/10		
DRAWN	PJG	03/15/10		
REVIEWED	KNL	11/05/10		
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REPLACE NAVAIDS AND VAULT		T-HANGAR ACCESS ROAD PROPOSED ELECTRICAL ONE-LINE		
<span style="font-size: 2em; font-weight: bold;">46</span> 46 of 48 sheets				

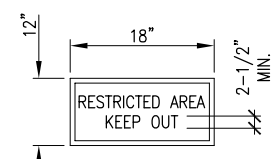


**VEHICLE DETECTOR LOOPS**

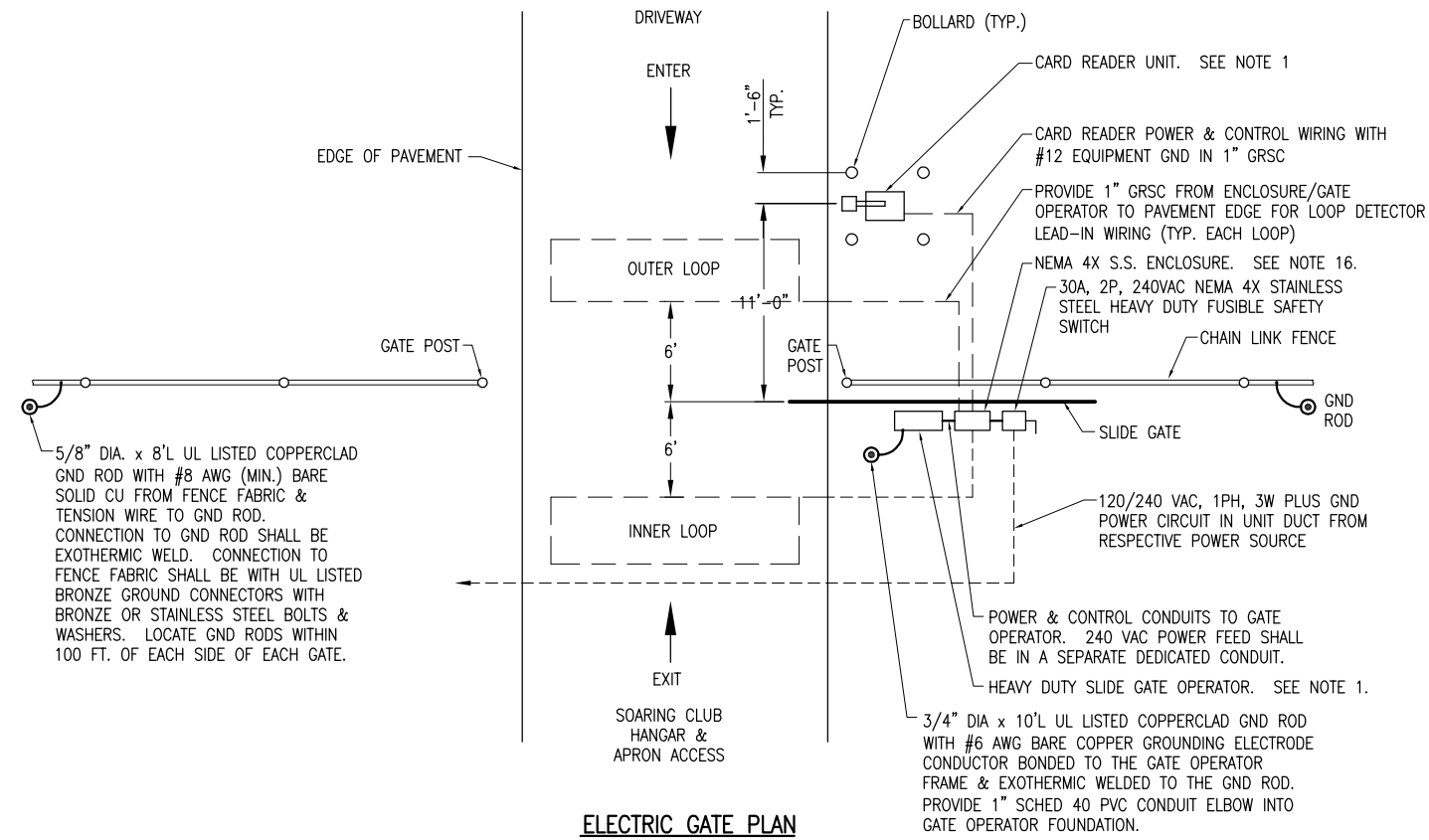
GATE SIZE	LOOP SIZE	NO. OF TURNS
8' TO 12'	4' X 6'	3 TURNS
12' TO 16'	4' X 10'	2 TURNS
16' TO 20'	6' X 14'	2 TURNS
20' TO 24'	6' X 18'	2 TURNS
24' TO 30'	6' X 22'	2 TURNS
30' TO 34'	6' X 26'	2 TURNS

5/8" DIA. x 8'L UL LISTED COPPERCLAD GND ROD WITH #8 AWG (MIN.) BARE SOLID CU FROM FENCE FABRIC & TENSION WIRE TO GND ROD. CONNECTION TO GND ROD SHALL BE EXOTHERMIC WELD. CONNECTION TO FENCE FABRIC SHALL BE WITH UL LISTED BRONZE GROUND CONNECTORS WITH BRONZE OR STAINLESS STEEL BOLTS & WASHERS. LOCATE GND RODS WITHIN 100 FT. OF EACH SIDE OF EACH GATE.

**ELECTRIC GATE DETAIL**  
"NOT TO SCALE"



**SIGN DETAIL**  
NOTE:  
0.08 GA. ALUMINUM ALLOY SHEET LETTERING COLOR SHALL BE RED. EACH GATE SHALL REQUIRE ONE SIGN. EVERY 100' OF FENCE SHALL REQUIRE ONE SIGN.



**ELECTRIC GATE PLAN**  
"NOT TO SCALE"

**NOTES:**

- SEE SPECIAL PROVISION SPECS FOR REQUIREMENTS ON RESPECTIVE GATE OPERATOR SYSTEM.
- ALL DIMENSIONS AND LAYOUT INFORMATION SHOWN SHOULD BE ADJUSTED AS RECOMMENDED BY THE MANUFACTURER. SEE RESPECTIVE SITE PLAN FOR GATE LOCATION.
- CONCRETE FOUNDATIONS SHALL BE PROVIDED FOR THE SLIDE GATE OPERATOR AND THE CARD READER CONTROL UNIT. FOUNDATION FOR THE GATE OPERATOR SHALL BE 48" (MIN.) IN DEPTH AND OF THE SIZE RECOMMENDED BY THE MANUFACTURER PLUS MOUNTING SPACE FOR SAFETY SWITCH & J-BOX. FOUNDATION FOR THE CARD READER ACCESS CONTROL UNIT SHALL BE 48" (MIN.) IN DEPTH, AS DETAILED HEREIN.
- 1" GRS CONDUIT WILL BE REQUIRED BETWEEN THE SLIDE GATE OPERATOR AND THE CARD READER ACCESS CONTROL UNIT AND BETWEEN THE SLIDE GATE OPERATOR AND THE DETECTOR LOOPS. THE MINIMUM BURYING DEPTH IS 24". ALL METAL CONDUITS ENTERING THE GATE OPERATOR SHALL BE BONDED TO THE GATE OPERATOR FRAME WITH A #8 AWG (MIN.) COPPER BONDING JUMPER. CONFIRM CONTROL WIRING REQUIREMENTS WITH THE RESPECTIVE GATE OPERATOR SALES AND SERVICE REPRESENTATIVE.
- THE GUARD/BOLLARD POSTS SHALL BE 4" DIA. STEEL (HEAVY WALL) PIPE, CONCRETE FILLED, AND SHALL EXTEND FROM THE TOP OF THE CARD CONTROL UNIT TO A DEPTH OF 48" BELOW THE GROUND LINE. THE CONCRETE FOOTER DIMENSION SHALL BE AS DETAILED HEREIN. GUARD/BOLLARD POSTS SHALL BE PAINTED WITH YELLOW COLORED ENAMEL FINISH.
- CONTRACTOR SHALL PROVIDE A DRIVE RAIL/CHAIN ASSEMBLY ON THE SLIDING GATE THAT IS FULLY COMPATIBLE WITH GATE OPERATOR BEING FURNISHED.
- AS PART OF THIS ITEM 250 CARDS AND 5 REMOTE TRANSMITTERS FOR EACH GATE SHALL BE PROVIDED BY THE CONTRACTOR. COORDINATE PROGRAMMING OF CARDS & TRANSMITTER FREQUENCIES WITH THE AIRPORT MANAGER.
- CONTRACTOR SHALL COORDINATE ANY POWER OUTAGES TO EXISTING EQUIPMENT WITH THE RESPECTIVE OWNER'S REPRESENTATIVE AND THE AIRPORT MANAGER.
- INCLUDE AC SURGE PROTECTOR FOR THE GATE OPERATOR, UL 1449 SECOND EDITION LISTED, SURGE CURRENT RATING OF 40KA, SUITABLE FOR USE ON A 120/240 VAC, 1 PHASE, 3 WIRE SYSTEM WITH LED INDICATION OPERATIONAL STATUS, JOSLYN MODEL 1265-21, SQUARE D CAT. NO. TVS120XR40S OR APPROVED EQUAL. INCLUDE MOUNTING BRACKET.
- CONCRETE USED FOR INSTALLING THE GATE OPERATOR, CARD READER, & FENCE SHALL MEET THE REQUIREMENTS OF STRUCTURAL PORTLAND CEMENT CONCRETE ITEM 610.
- 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 UL LISTING, ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- PROVIDE A WEATHERPROOF ENGRAVED PHENOLIC OR PLASTIC LEGEND PLATE FOR THE SAFETY SWITCH AT THE RESPECTIVE GATE OPERATOR NOTING THE GATE SERVED, VOLTAGE, AND RESPECTIVE POWER SOURCE CIRCUIT AND LOCATION.
- PAYMENT FOR EACH CARD READER, GATE OPERATOR, AND ALL ASSOCIATED CONTROL & SAFETY DEVICES SHALL BE ON A LUMP SUM BASIS AND SHALL BE FULL COMPENSATION FOR ALL MATERIALS, EQUIPMENT, CABLE IN CONDUIT, DUCT, OR UNIT DUCT, GROUNDING, LABOR, TOOLS, COORDINATION, TESTING, AND INCIDENTALS REQUIRED TO INSTALL THE GATE OPERATOR SYSTEM COMPLETE AND IN OPERATING CONDITION.
- CONTROL CIRCUIT WIRING SHALL NOT BE ROUTED THROUGH THE SAFETY SWITCH/DISCONNECT.
- LOCATE RECEIVER ANTENNA TO PROVIDE PROPER OPERATION FROM REMOTE TRANSMITTERS FROM A DISTANCE UP TO 75 FEET. INCLUDE CONDUITS & SUPPORT HARDWARE.
- ALL CONTROL POWER TRANSFORMERS, POWER SUPPLIES, RECEPTACLES, LOOP DETECTOR AMPLIFIERS, SECONDARY SAFETY DEVICE EQUIPMENT, AND ANY OTHER ASSOCIATED CONTROLS SHALL BE INSTALLED EITHER INSIDE THE GATE OPERATOR CONTROL PANEL OR INSIDE A SEPARATE NEMA 4 STAINLESS STEEL CONTROL PANEL ENCLOSURE. WHERE THE CONTROL EQUIPMENT IS TO BE INSTALLED INSIDE THE GATE OPERATOR CONTROL PANEL THE CONTRACTOR SHALL COORDINATE THIS WITH THE GATE OPERATOR MANUFACTURER AND THE RESPECTIVE GATE OPERATOR EQUIPMENT SUPPLIER. LOCATING THESE CONTROLS OUTSIDE OF GATE OPERATOR CONTROL PANEL BUT WITHIN THE GATE OPERATOR HOUSING WILL NOT MEET THIS REQUIREMENT.

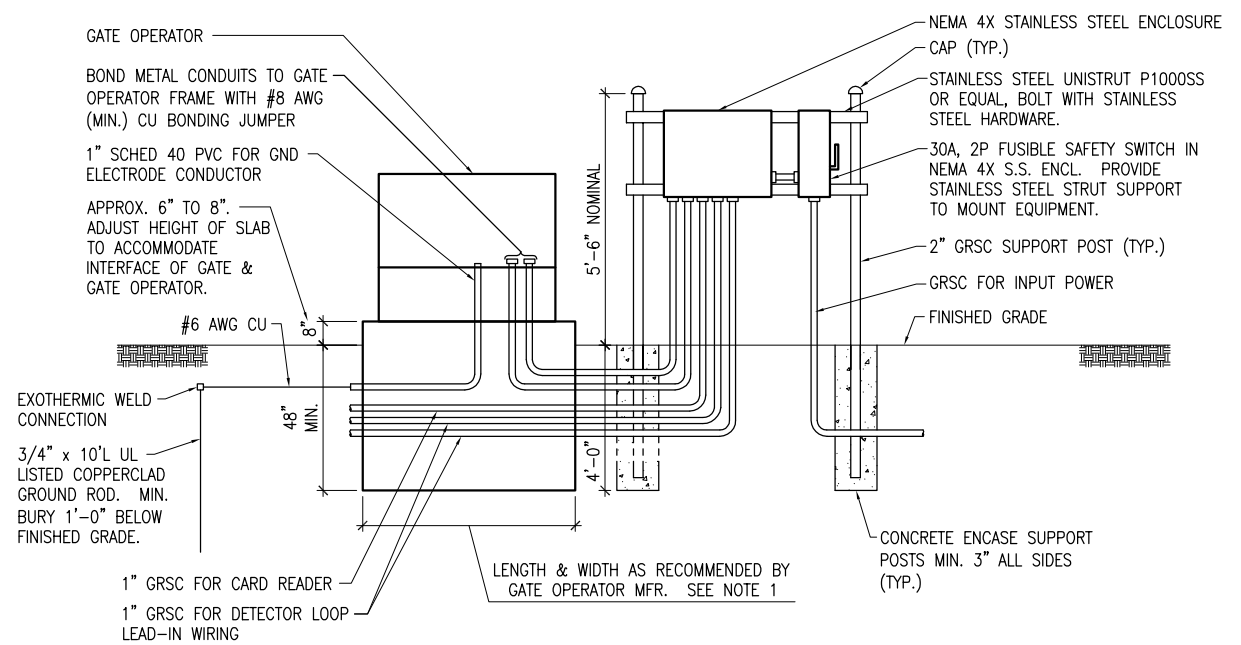
REVISION	DATE

OLNEY-NOBLE AIRPORT  
NOBLE, ILLINOIS  
A.I.P. PROJ.: 3-17-0076-B10  
ILL PROJ.: OLY-4032

Hanson Proj. No. 10A00790			
Filename E-508.DWG			
Scale AS SHOWN			
Date 12/17/10			
LAYOUT	PJG	3/15/10	
DRAWN	PJG	3/15/10	
REVIEWED	KNL	11/05/10	

**HANSON**  
Professional Services Inc. 2011  
Hanson Professional Services Inc.  
1525 South Sixth Street  
Springfield, Illinois 62703-2886  
Ph: (217) 788-2450 Fax: (217) 788-2503  
www.hanson-inc.com  
Offices Nationwide

REPLACE NAVAIDS AND VAULT  
T-HANGAR ACCESS ROAD  
PROPOSED ELECTRIC SLIDE  
GATE DETAILS

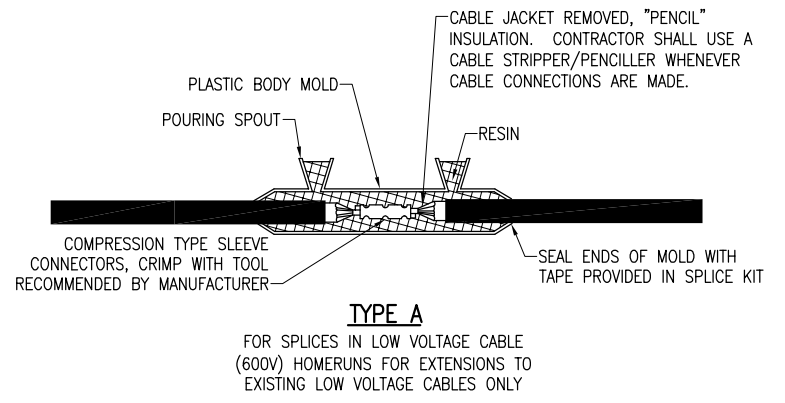


NOTES

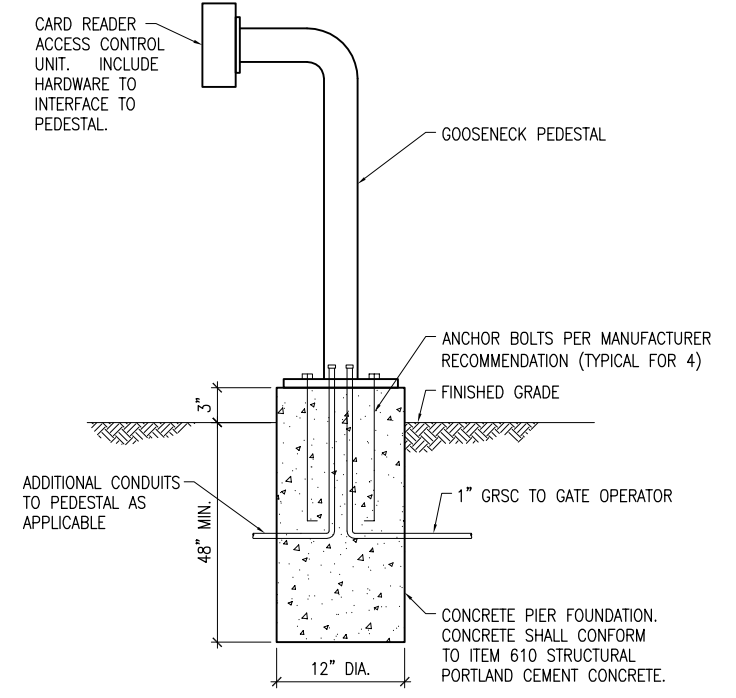
1. FOUNDATION FOR GATE OPERATOR SHALL BE 48" MIN. IN DEPTH AND OF THE LENGTH & WIDTH RECOMMENDED BY THE MANUFACTURER.
2. COORDINATE CONDUITS INTO FOUNDATION.
3. CONFIRM CONDUIT SIZES AND WIRING REQUIREMENTS WITH THE GATE OPERATOR MFR. ADJUST/INCREASE CONDUIT SIZES WHERE APPLICABLE. REQUIREMENTS VARY BETWEEN DIFFERENT MANUFACTURERS.
4. 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.

GATE OPERATOR FOUNDATION DETAIL

"NOT TO SCALE"



**TYPE A**  
FOR SPLICES IN LOW VOLTAGE CABLE (600V) HOMERUNS FOR EXTENSIONS TO EXISTING LOW VOLTAGE CABLES ONLY



NOTES

1. SEE SPECIAL PROVISION SPECS FOR REQUIREMENTS ON CARD READER ACCESS CONTROL UNIT.
2. INCLUDE #12 AWG EQUIPMENT GND WIRE TO CARD READER.
3. FACE OF CARD READER SHALL NOT EXTEND BEYOND BOLLARDS.

CARD READER ACCESS CONTROL UNIT PEDESTAL ELEVATION DETAIL

"NOT TO SCALE"

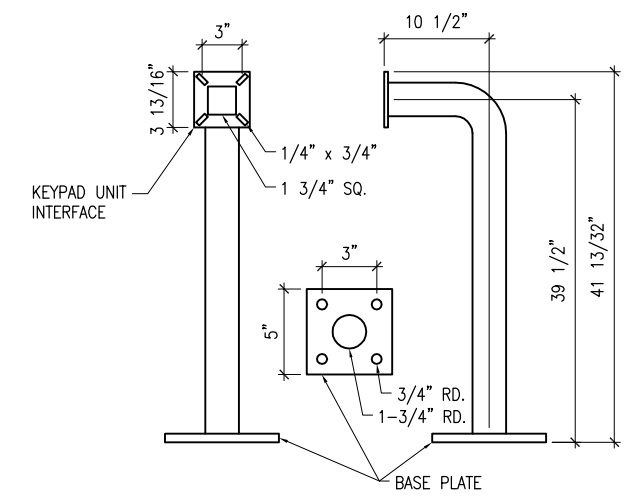


NOTES

1. WARNING SIGNS/PLACARDS AS DETAILED ABOVE OR SIMILAR, SHALL BE INSTALLED WHERE CLEARLY VISIBLE ON BOTH SIDES OF EACH ELECTRIC SLIDE GATE. WARNING SIGNS SHALL BE WEATHERPROOF, CORROSION RESISTANT METAL, AS DETAILED ABOVE, AND IN ACCORDANCE WITH THE RESPECTIVE GATE MANUFACTURER'S RECOMMENDATIONS, B&B ARMR PART NO. 0000-0017, HY-SECURITY PART NO. MX000882, OR EQUAL.

WARNING SIGN DETAIL

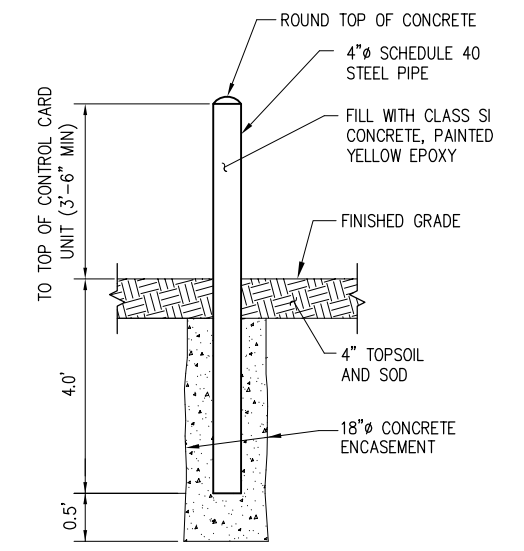
"NOT TO SCALE"



GOOSENECK PEDESTAL DETAIL

"NOT TO SCALE"

NOTE:  
GOOSENECK PEDESTAL SHALL BE AMERICAN ACCESS SYSTEMS, INC. (7079 SOUTH JORDAN RD., UNIT 6, ENGLEWOOD, CO 80112, PHONE: 800-541-5677, FAX 303-799-9756) MODEL 18-001 OR APPROVED EQUAL.



NOTES

1. THE EXPOSED PORTION OF THE BOLLARD SHALL BE PAINTED YELLOW EPOXY.
2. BOLLARD AND ASSOCIATED ITEMS ARE INCIDENTAL TO THE ELECTRIC SLIDING GATE.

BOLLARD DETAIL

"NOT TO SCALE"

REVISION	
DATE	

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