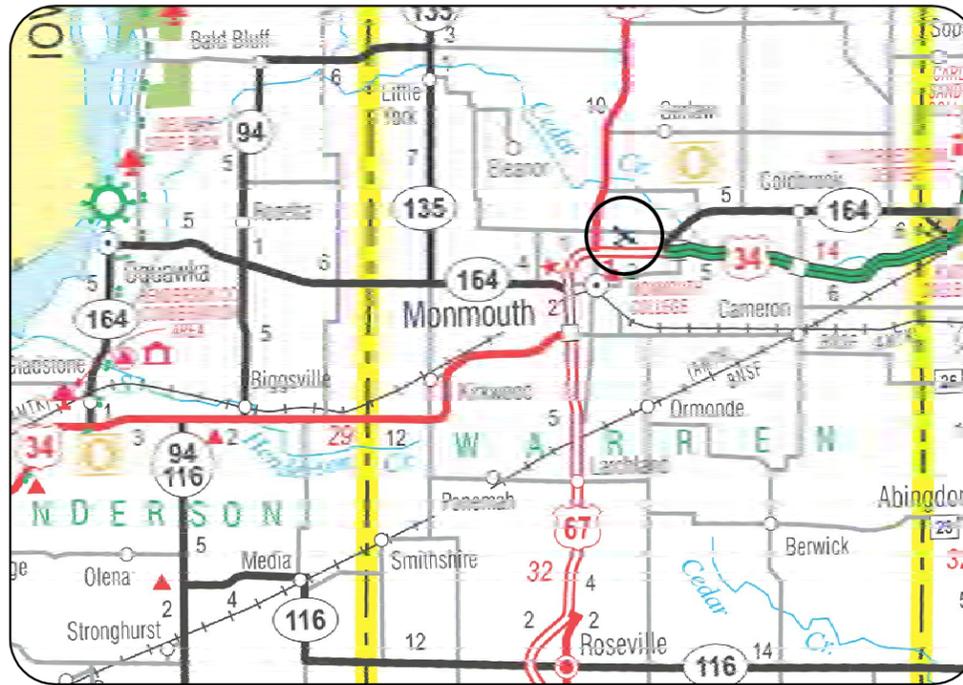


CONSTRUCTION PLANS FOR MONMOUTH MUNICIPAL AIRPORT MONMOUTH, WARREN COUNTY, ILLINOIS INSTALL AIRFIELD LIGHTING AND NAVAIDS

SCOPE OF WORK

BASE BID: THIS WORK SHALL CONSIST OF THE REMOVAL AND REPLACEMENT OF THE MEDIUM INTENSITY LIGHTING SYSTEMS ON RUNWAY 2-20 AND THE ASSOCIATED TAXIWAYS. THE WORK ALSO INCLUDES REMOVAL OF THE EXISTING VASI SYSTEMS ON RUNWAY 2-20 AND INSTALLATION OF A PAPI SYSTEM ON RUNWAY END 20, INSTALLATION OF AN L-807 LIGHTED WIND CONE, AND ASSOCIATED CABLING, DUCTS AND VAULT WORK.

ADDITIVE ALTERNATE NO. 1: THIS WORK SHALL INCLUDE THE INSTALLATION OF A PAPI SYSTEM ON RUNWAY END 2, AND THE ASSOCIATED CABLING.



LOCATION

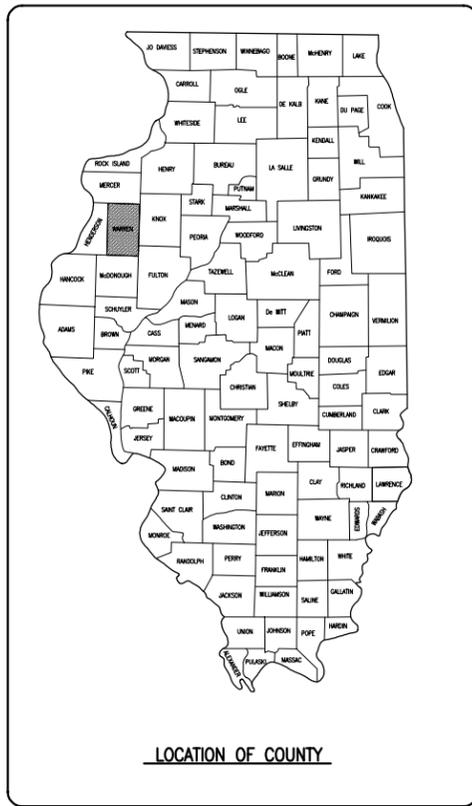


COVERING ELECTRICAL DESIGN

PLANS PREPARED BY:
HANSON
Hanson Professional Services Inc.
ELECTRICAL ENGINEER
Submitted by: *Kevin N. Lightfoot* ENG'R
Date Submitted: **APRIL 16, 2010**
Lic. Exp. Date: **NOVEMBER 30, 2011**

PLANS PREPARED BY:
HANSON
Hanson Professional Services Inc.
CIVIL ENGINEER
Submitted by: *Robert A. Waller* ENG'R
Date Submitted: **APRIL 16, 2010**
Lic. Exp. Date: **NOVEMBER 30, 2011**

CITY OF MONMOUTH, ILLINOIS
Approved: *Paul Davis* MAYOR
Date: **3/5/10**
Approved: *E.S. Ham* CITY MGR.
Date: **3/5/10**



LOCATION OF COUNTY

ILL. PROJ.: C66-4000
A.I.P. PROJ.: 3-17-0069-B3
LATITUDE: 40° 55' 47"
LONGITUDE: 90° 37' 52"
ELEVATION: 753.0' M.S.L.
DATE: APRIL 16, 2010

REVISION	DATE

MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS

A.I.P. PROJ.: 3-17-0069-B3
IL PROJ.: C66-4000

FILE PROJECT NO.	FILE NAME	SCALE	DATE	LAYOUT	DRAWN	REVIEWED
09A0010	R-001CVR.DWG	N/A	04/16/10	KNL	MLH	CAH

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Offices Nationwide

INSTALL AIRFIELD
LIGHTING AND NAVAIDS
COVER SHEET

MAY 12, 2010 10:18 AM HARR01115
I:\AIRPORTS\MONMOUTH\09A0010\CADD\AIRPORT\SHEET\R-001CVR.DWG

SCOPE OF WORK

THIS PROJECT CONSISTS OF THE REMOVAL AND REPLACEMENT OF THE MEDIUM INTENSITY LIGHTING SYSTEMS ON RUNWAY 2-20 AND THE ASSOCIATED TAXIWAYS. THIS PROJECT INCLUDES REMOVAL OF THE EXISTING VASI SYSTEMS ON RUNWAY 2-20 AND REPLACING THEM WITH PAPI SYSTEMS, INSTALLATION OF AN L-807 LIGHTED WIND CONE, AND ASSOCIATED CABLING, DUCTS AND VAULT WORK.

PROPOSED SAFETY PLAN

ALL PROVISIONS OF THE LATEST EDITION OF FAA ADVISORY CIRCULAR 150/5370-2, "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION" APPLY TO THIS CONTRACT, EXCEPT AS MODIFIED BY THIS SAFETY PLAN, OR AS MODIFIED BY THE AIRPORT MANAGEMENT AT THE PRE-CONSTRUCTION CONFERENCE OR DURING THE COURSE OF THE CONTRACT.

GENERAL - THE MONMOUTH MUNICIPAL AIRPORT IS COMPRISED OF ONE PAVED RUNWAY. THE PROPOSED CONSTRUCTION WILL NECESSITATE CLOSING RUNWAY 2-20 WHENEVER THE CONTRACTOR IS WORKING WITHIN 200' OF THE RUNWAY CENTERLINE. ONCE THE CONTRACTOR BEGINS WORKING ON THE RUNWAY LIGHTING CIRCUIT HE WILL BE ALLOWED TO CLOSE AND NOT RE-OPEN THE RUNWAY UNTIL HE HALTS WORK FOR THE WEEKEND. AT THAT TIME THE CONTRACTOR WILL SMOOTH GRADE ALL AREAS WITHIN THE SAFETY AREA TO THE SATISFACTION OF THE RESIDENT ENGINEER, INSURE ALL LIGHTING CIRCUITS ARE WORKING 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 BE REQUIRED TO SUBMIT TO THE RESIDENT ENGINEER, FOR APPROVAL BY THE AIRPORT MANAGEMENT, A SCHEDULE OF CONSTRUCTION ACTIVITIES, TO INCLUDE A SCHEDULE OF RUNWAY AND TAXIWAY CLOSURES PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO ALLOW SUFFICIENT TIME PRIOR TO THE ENDING OF THE CLOSURE TIME FOR CURING OF PLACED MATERIALS AND CLEAN UP OF THE WORK AREA.

THE CONTRACTOR IS REQUIRED TO NOTIFY THE AIRPORT MANAGER, THROUGH THE RESIDENT ENGINEER, A MINIMUM OF 7 DAYS PRIOR TO THE START OF CONSTRUCTION. THIS WILL ALLOW THE AIRPORT MANAGER SUFFICIENT TIME TO ISSUE ALL NECESSARY NOTAMS. THE CONTRACTOR IS REQUIRED TO PROVIDE A MINIMUM OF 24 HOUR NOTICE TO THE AIRPORT MANAGER PRIOR TO CLOSING A RUNWAY.

THE CONTRACTOR IS REQUIRED TO IMPLEMENT A PRACTICAL AND EFFECTIVE STAGING PLAN THAT WILL MINIMIZE DISRUPTION TO NORMAL AIRPORT ACTIVITY WHILE NOT COMPROMISING SAFETY OF PERSONNEL OR THE QUALITY OF THE PROJECT.

THE AIRPORT MANAGEMENT, OR DESIGNATED REPRESENTATIVE, WILL ISSUE ALL NOTICES TO AIRMAN (NOTAM) RELATED TO OPENING AND CLOSING PAVEMENTS THROUGHOUT THE PROJECT.

BARRICADES AND TRAFFIC CONES

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

HEIGHT OF CONSTRUCTION EQUIPMENT

THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 15 FEET. THE TALLEST EQUIPMENT IS EXPECTED TO BE A CONCRETE TRUCK.

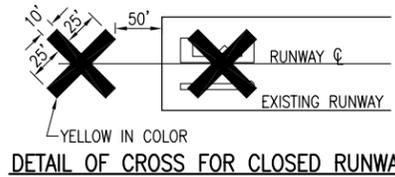
HAUL ROUTE AND EQUIPMENT PARKING/MATERIAL STORAGE AREA

THE CONTRACTOR WILL USE THE DESIGNATED HAUL ROUTE AND EQUIPMENT PARKING/MATERIAL STORAGE AREA AS SHOWN ON THIS SHEET. THE PROPOSED PARKING/MATERIAL STORAGE AREA WILL BE NO GREATER THAN 125' X 100'. THE EQUIPMENT PARKING/MATERIAL STORAGE AREA SHALL BE NO CLOSER THAN 220' FROM THE RUNWAY CENTERLINE, AND NO EQUIPMENT GREATER THAN 14' IN HEIGHT SHALL REMAIN IN THIS AREA. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE PROPOSED HAUL ROUTE AND STAGING AREA THROUGHOUT THE COURSE OF THE PROJECT. ANY AREAS DAMAGED OUTSIDE OF THESE AREAS WILL BE REPAIRED BY THE CONTRACTOR AND AT THE CONTRACTOR'S OWN EXPENSE. AT THE CONCLUSION OF THE PROJECT THE CONTRACTOR WILL RESTORE THE HAUL ROUTE AND STAGING AREA TO ITS PRE-CONSTRUCTION STATE. RESTORATION OF THE HAUL ROUTE AND STAGING AREA WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

CONTROL POINT DATA				
NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	NGS MONUMENT - MONPORT AZ MK	1551521.9430	2167894.7780	752.06
2	CP# 3 - 5/8" IRON PIN	1552261.5030	2168172.3390	N/A
3	CP# 4 - 5/8" IRON PIN	1551738.6910	2168281.5670	N/A
4	CHISELED □ ON NW CORNER OF CONC. PAD	---	---	751.35
5	CHISELED X ON CENTER CAP BOLT OF HYDRANT	---	---	750.51

CRITICAL POINT

LATITUDE - 40° 55' 39.69"
 LONGITUDE - 90° 37' 53.31"
 ELEVATION - 750.4'



TEMPORARY RUNWAY CLOSURE NOTE

FAA CRITERIA REQUIRES A RUNWAY BE CLOSED IF CONSTRUCTION ACTIVITIES OR PERSONNEL ARE WITHIN 200 FT OF A RUNWAY CENTERLINE.

COST OF CONSTRUCTING, PLACING, MAINTAINING AND REMOVING CROSSES WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. ALL RUNWAY CLOSURES WILL BE IN ACCORDANCE WITH ALL FAA ADVISORY CIRCULARS THAT RELATE TO RUNWAY CLOSURES DURING CONSTRUCTION OPERATIONS. THE RUNWAY CLOSURE PROCEDURES SHALL BE REVIEWED BY THE AIRPORT MANAGER AND COORDINATED WITH THE RESIDENT ENGINEER. THE CROSSES WILL BE YELLOW IN COLOR AND SHALL BE MADE OF A SUITABLE MATERIAL, AS APPROVED BY THE RESIDENT ENGINEER AND REVIEWED BY THE AIRPORT MANAGER. THE CROSSES WILL BE PLACED OVER THE NUMERALS OR OFF EACH END OF THE RUNWAY AND SECURED IN A MANNER APPROVED BY THE AIRPORT 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.

RUNWAY CLOSURE PROCEDURES:

- CONTACT THE AIRPORT MANAGEMENT OR ASSIGNED REPRESENTATIVE.
- ISSUANCE OF NOTAM BY THE AIRPORT MANAGEMENT OR ASSIGNED REPRESENTATIVE.
- PLACEMENT OF CROSSES (SEE DETAIL THIS SHEET).
- PLACEMENT OF LIGHTED BARRICADES AND CONES.

ONLY AT THE TIME THAT ALL OF THE ABOVE ARE COMPLETED MAY ANY CONSTRUCTION OPERATIONS WITHIN 200 FT. OF THE AFFECTED RUNWAY CENTERLINE BEGIN.

RUNWAY RE-OPENING PROCEDURES:

- REMOVE CROSSES.
- REMOVE LIGHTED BARRICADES AND CONES.
- NOTIFY THE AIRPORT MANAGEMENT OR REPRESENTATIVE TO CANCEL THE NOTAM.
- CANCELLATION OF THE NOTAM.

A CLOSED RUNWAY WILL NOT BE RE-OPENED UNTIL ALL EQUIPMENT AND WORK ARE FURTHER THAN 200 FT. FROM THE AFFECTED RUNWAY CENTERLINE.

150-ENGINEER'S FIELD OFFICE

THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE FURNISHED, MAINTAINED, AND REMOVED IN ACCORDANCE WITH ITEM AR150510 "ENGINEER'S FIELD OFFICE" OF THE STANDARD SPECIFICATIONS.

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.

CONTRACTOR RESPONSIBILITIES

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 IS REQUIRED TO LIMIT THE USE OF CONSTRUCTION EQUIPMENT ON THE EXISTING PAVEMENTS. ONLY EQUIPMENT NEEDED TO COMPLETE THE SPECIFIC WORK ON THE EXISTING PAVEMENT WILL BE PERMITTED. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING PAVEMENTS CAUSED BY HIS PERSONNEL OR EQUIPMENT.

NO OPEN HOLES OR TRENCHES WILL BE ALLOWED WITHIN 200' OF AN ACTIVE RUNWAY, WITHIN 40' OF AN ACTIVE TAXIWAY OR TAXILANE, NOR WILL EITHER HOLES OR OPEN TRENCHES BE ALLOWED TO REMAIN EXPOSED OR OPEN OVERNIGHT.

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

RADIO CONTROL - THE CONTRACTOR WILL BE REQUIRED TO BE IN TWO-WAY RADIO CONTACT (122.80 MHZ.) WITH THE AIRPORT UNICOM WHENEVER HIS PERSONNEL ARE ON THE AIRPORT PROPERTY. THIS WILL ALLOW THE CONTRACTOR TO RESPOND TO AN AERONAUTIC EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.

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. ALL ACCESS GATES WILL BE CLOSED AT ALL TIMES WHEN NOT IN USE. IF CONTINUOUS HAULING IS REQUIRED, THEN THE GATE ACCESS WILL BE MONITORED TO PREVENT A BREACH FROM OUTSIDE, NON-CONSTRUCTION RELATED TRAFFIC.

AIRCRAFT OPERATION LINE

THE AIRCRAFT OPERATION LINE PARALLELS THE RUNWAY AT A DISTANCE OF 200' FROM THE RUNWAY'S CENTERLINE. THE CONTRACTOR WILL LOCATE THIS LINE AT THE START OF CONSTRUCTION AND WILL PLACE A FRANGIBLE MARKER EVERY 150' ALONG IT. THIS LINE WILL BE THE LIMITS THAT ALL CONTRACTOR PERSONNEL MAY VENTURE WHEN A RUNWAY IS NOT CLOSED. THE CONTRACTOR WILL MAINTAIN THE LINE FOR RUNWAYS AND REMOVE THE MARKERS AT THE CONCLUSION OF THE PROJECT.

EROSION CONTROL

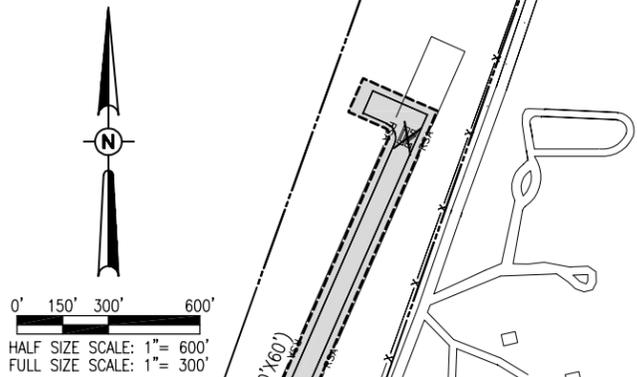
THIS PROJECT WILL NOT DISTURB MORE THAN 1 ACRE OF LAND, THEREFORE A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS NOT REQUIRED.

UTILITY NOTE

THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND AGENCIES WHICH HAVE LINES OR CONDUITS IN THE PROPOSED WORK AREA. ALL LINES AND CONDUITS SHALL BE LOCATED AND IDENTIFIED FOR DEPTH BEFORE ANY EXCAVATION BEGINS. THE CONTRACTOR WILL CALL J.U.L.I.E. (1-800-892-0123) TO ACCOMPLISH THE ABOVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY ALL UNDERGROUND NON-JULIE UTILITIES LOCATED WITHIN THE PROPOSED CONSTRUCTION LIMITS. THESE UNDERGROUND IMPROVEMENTS WILL BE LOCATED AT THE CONTRACTOR'S OWN EXPENSE PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.

J.U.L.I.E. INFORMATION

COUNTY WARREN
 CITY MONMOUTH
 TOWNSHIP MONMOUTH
 SECTION NO. 20
 ADDRESS MONMOUTH MUNICIPAL AIRPORT
 1300 N. 11TH STREET
 MONMOUTH, ILLINOIS 61462



LEGEND

- EXISTING IMPROVEMENTS
- EXISTING AIRPORT BUILDINGS
- EXISTING BUILDINGS
- PROPOSED IMPROVEMENTS
- PROPOSED HAUL ROUTE
- PROPOSED EQUIPMENT PARKING/MATERIAL STORAGE AREA
- CONTROL POINT
- PROPOSED BARRICADES
- EXISTING FENCE
- AIRPORT PROPERTY LINE

REVISION	DATE

MONMOUTH MUNICIPAL AIRPORT
 MONMOUTH, ILLINOIS

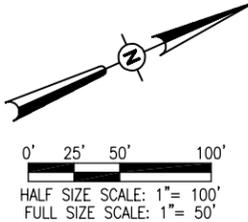
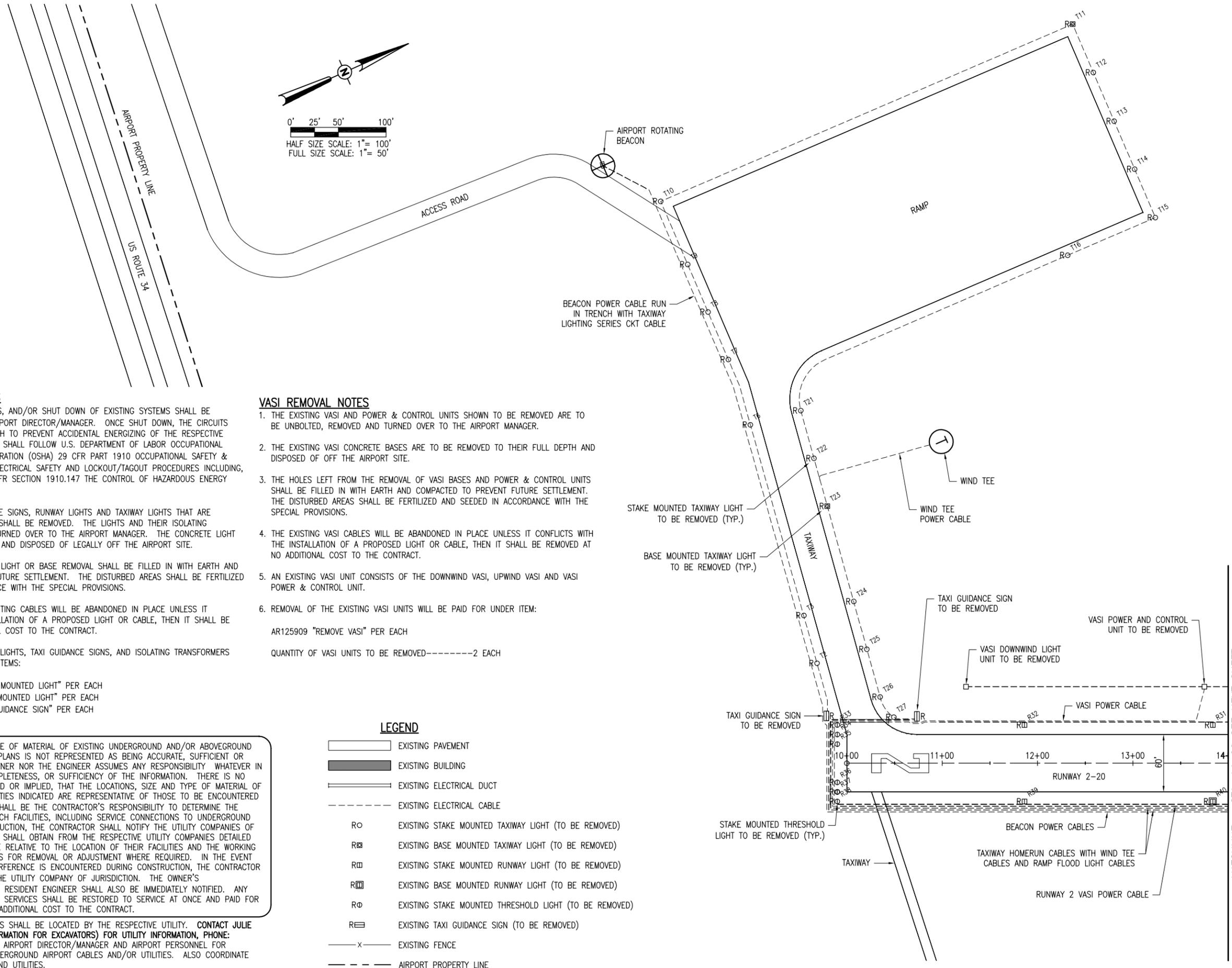
IL PROJ.: 03/16/10
 A.I.P. PROJ.: 3-17-0089-B3
 IL PROJ.: C66-4000

HE Project No.	File Name	Scale	Date	LAYOUT	MLH	MLH	CAH
09A00110	R-0035FY.DWG	1"=300'	04/16/10		02/10/10	02/10/10	03/16/10

HANSON
 Copyright: Hanson Professional Services Inc. 2010
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 1525 South Sixth Street
 Springfield, Illinois 62703-2986
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 www.hanson-hnc.com
 Offices: Nationwide

INSTALL AIRFIELD LIGHTING AND NAVAIDS
 PROPOSED SAFETY PLAN

MAY 04, 2010 10:31 AM HARR01115
 I:\AIRPORTS\MONMOUTH\09A00110\CADD\AIRPORT\SHEET\R-0035FY.DWG



LIGHT 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. ALL EXISTING TAXI GUIDANCE SIGNS, RUNWAY LIGHTS AND TAXIWAY LIGHTS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED. THE LIGHTS AND THEIR ISOLATING TRANSFORMER SHALL BE TURNED OVER TO THE AIRPORT MANAGER. THE CONCRETE LIGHT BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE.
3. THE HOLE LEFT FROM THE LIGHT OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
4. THE EXISTING AIRFIELD LIGHTING CABLES WILL BE ABANDONED IN PLACE UNLESS IT CONFLICTS WITH THE INSTALLATION OF A PROPOSED LIGHT OR CABLE, THEN IT SHALL BE REMOVED AT NO ADDITIONAL COST TO THE CONTRACT.
5. REMOVAL OF THE EXISTING LIGHTS, TAXI GUIDANCE SIGNS, AND ISOLATING TRANSFORMERS WILL BE PAID FOR UNDER ITEMS:
 AR125901 "REMOVE STAKE MOUNTED LIGHT" PER EACH
 AR125902 "REMOVE BASE MOUNTED LIGHT" PER EACH
 AR125904 "REMOVE TAXI GUIDANCE SIGN" PER EACH

VASI REMOVAL NOTES

1. THE EXISTING VASI AND POWER & CONTROL UNITS SHOWN TO BE REMOVED ARE TO BE UNBOLTED, REMOVED AND TURNED OVER TO THE AIRPORT MANAGER.
2. THE EXISTING VASI CONCRETE BASES ARE TO BE REMOVED TO THEIR FULL DEPTH AND DISPOSED OF OFF THE AIRPORT SITE.
3. 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 SPECIAL PROVISIONS.
4. THE EXISTING VASI CABLES WILL BE ABANDONED IN PLACE UNLESS IT CONFLICTS WITH THE INSTALLATION OF A PROPOSED LIGHT OR CABLE, THEN IT SHALL BE REMOVED AT NO ADDITIONAL COST TO THE CONTRACT.
5. AN EXISTING VASI UNIT CONSISTS OF THE DOWNWIND VASI, UPWIND VASI AND VASI POWER & CONTROL UNIT.
6. 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

LEGEND

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

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 AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVE GROUND UTILITIES.

MATCHLINE - STA. 14+00 SEE NEXT SHEET

REVISION	DATE

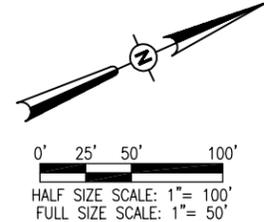
MONMOUTH MUNICIPAL AIRPORT
 MONMOUTH, ILLINOIS
 A.I.P. PROJ.: 3-17-0069-B3
 C66-4000

HE Project No. 09A0010	02/08/10
Filename R-111.DWG	MLH
Scale 1"=50'	MLH
Date 04/16/10	KNL
LAYOUT	REVIEWED
DRAWN	

HANSON
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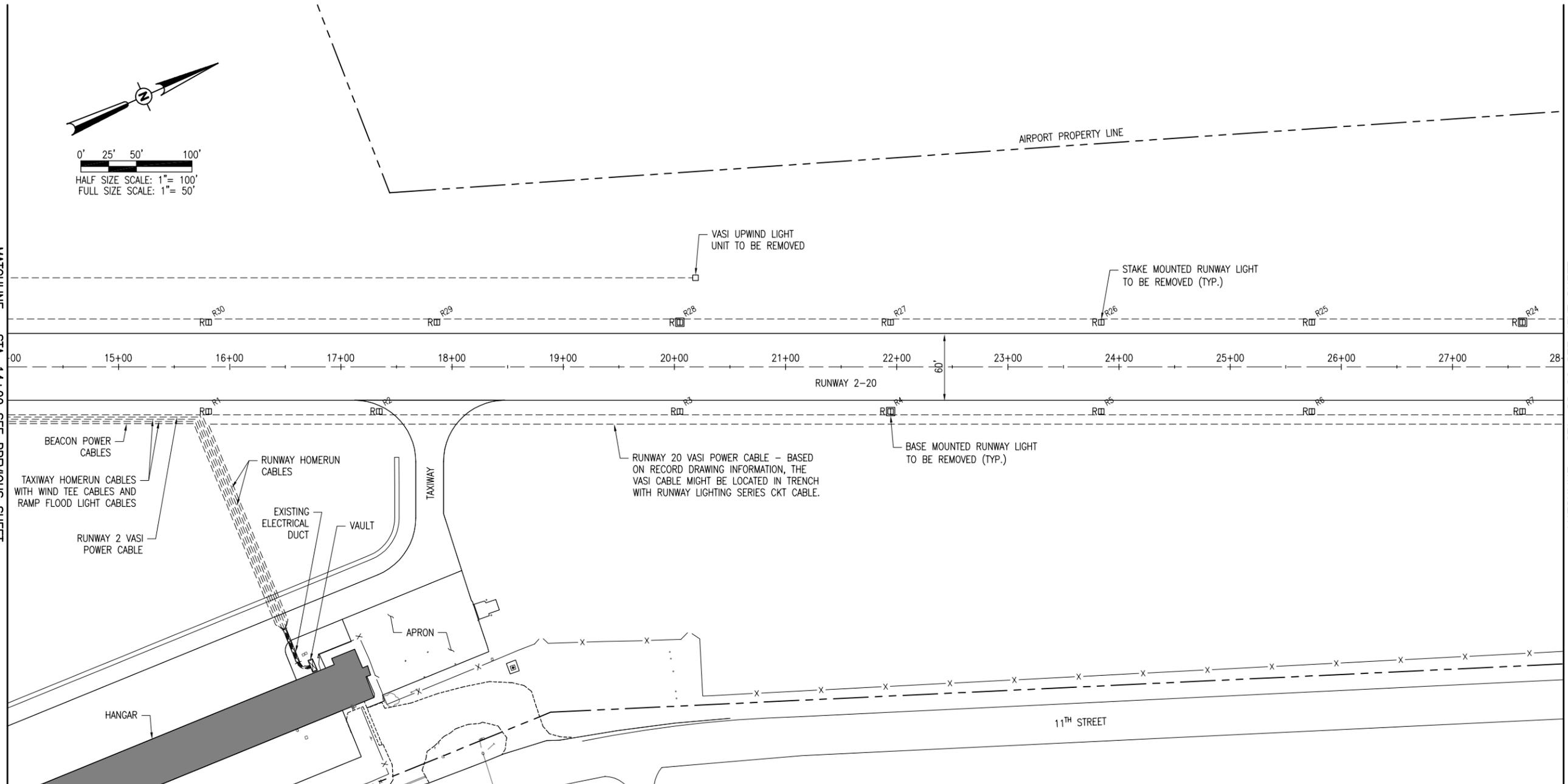
INSTALL AIRFIELD LIGHTING AND NAVAIDS
 EXISTING LIGHTING PLAN - RUNWAY 2 AND TAXIWAY

MAY 04, 2010 10:31 AM HARR01115 I:\AIRPORTS\MONMOUTH\09A0010\CADD\AIRPORT\SHEET\R-111.DWG



MATCHLINE - STA. 14+00 SEE PREVIOUS SHEET

MATCHLINE - STA. 28+00 SEE NEXT SHEET



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

ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. **CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123.** CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVE GROUND UTILITIES.

LEGEND

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

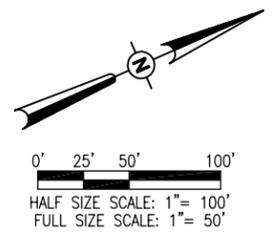
DATE	REVISION

MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS
A.I.P. PROJ.: 3-17-0069-B3
C66-4000

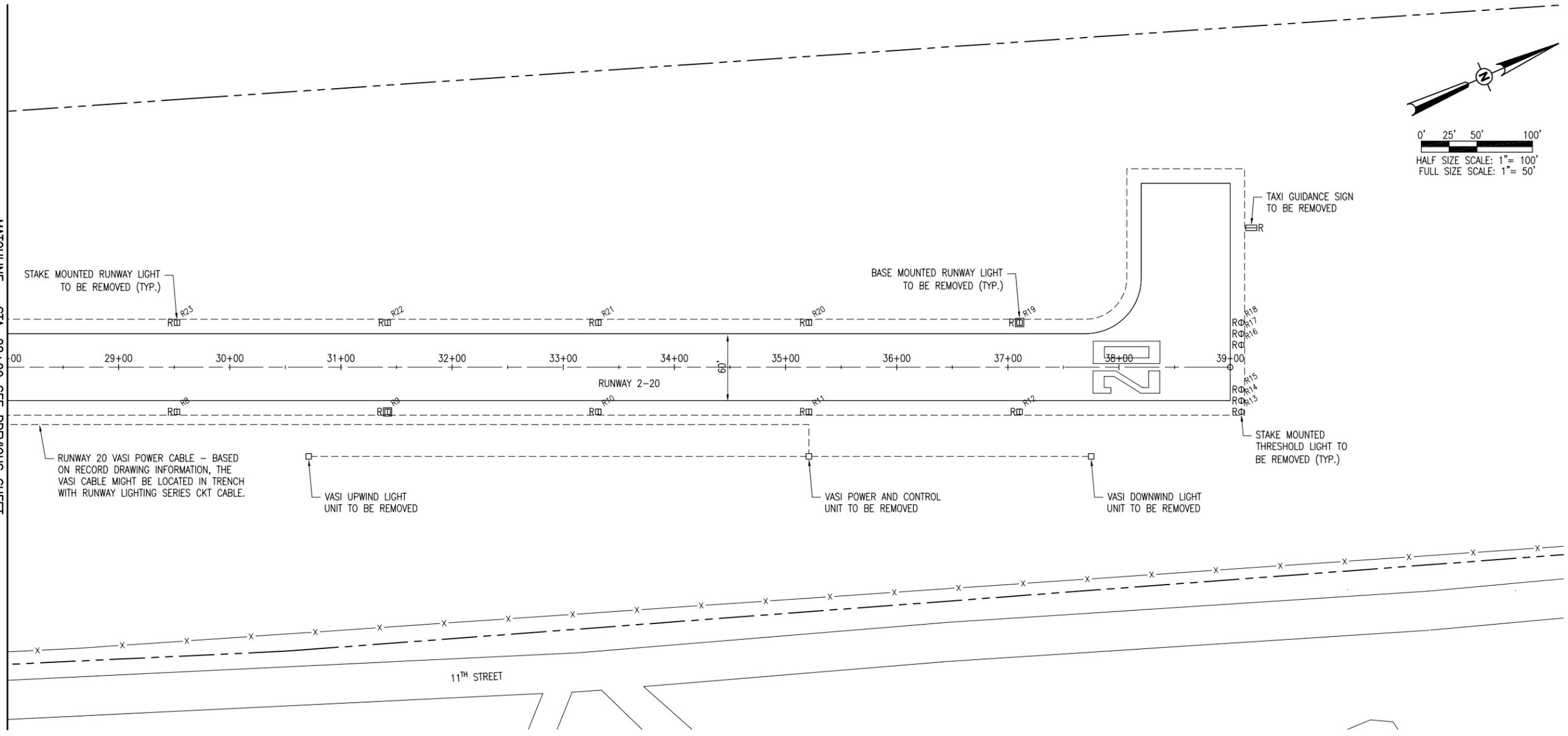
HE Project No. 09A0010	02/08/10
Filename R-112.DWG	MLH
Scale 1"=50'	MLH
Date 04/16/10	KNL
LAYOUT	
DRAWN	
REVIEWED	

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INSTALL AIRFIELD
LIGHTING AND NAVAIDS
EXISTING LIGHTING PLAN -
RUNWAY 2-20



MATCHLINE - STA. 28+00 SEE PREVIOUS SHEET



DATE	REVISION

**MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS**

A.I.P. PROJ.: 3-17-0069-B3
IL. PROJ.: C66-4000

HE Project No. 09A0010	02/08/10
Filename R-113.DWG	MLH
Scale 1"=50'	MLH
Date 04/16/10	KNL
LAYOUT	02/08/10
DRAWN	02/08/10
REVIEWED	02/10/10

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**INSTALL AIRFIELD
LIGHTING AND NAVAIDS**

**EXISTING LIGHTING PLAN -
RUNWAY 20**

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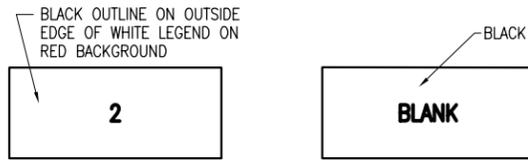
ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. **CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123.** CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVE GROUND UTILITIES.

LEGEND

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

LEGEND

-  EXISTING PAVEMENT
-  EXISTING BUILDING
-  PROPOSED ELECTRICAL DUCT
-  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 STAKE MOUNTED TAXIWAY LIGHT
-  PROPOSED BASE MOUNTED TAXIWAY LIGHT
-  PROPOSED STAKE MOUNTED RUNWAY LIGHT
-  PROPOSED BASE MOUNTED RUNWAY LIGHT
-  PROPOSED STAKE MOUNTED THRESHOLD LIGHT
-  PROPOSED BASE MOUNTED THRESHOLD LIGHT
-  PROPOSED TAXI GUIDANCE SIGN
-  PROPOSED ELECTRICAL HANDHOLE
-  PROPOSED SPLICE CAN



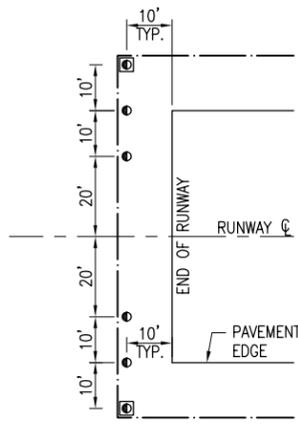
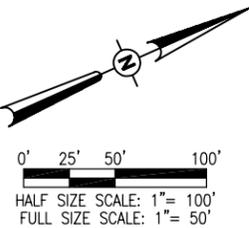
TAXI GUIDANCE SIGN DETAIL "T1-TGS3"
"NOT TO SCALE"

TAXI GUIDANCE SIGN NOTES

1. ALL PROPOSED TAXI GUIDANCE SIGNS WILL BE LOCATED AS SHOWN ON THIS SHEET.
2. ALL PROPOSED TAXI GUIDANCE SIGNS WILL BE LOCATED SUCH THAT THE CLOSEST SIDE OF THE SIGN IS 15' FROM THE PAVEMENT EDGE, UNLESS SHOWN OTHERWISE.
3. TAXI GUIDANCE SIGNS SHALL READ AS DETAILED ON THIS SHEET.
4. THE PROPOSED TAXI GUIDANCE SIGNS WILL BE PAID FOR UNDER THE FOLLOWING ITEMS:
AR125441 "TAXI GUIDANCE SIGN, 1 CHARACTER" PER EACH
AR125442 "TAXI GUIDANCE SIGN, 2 CHARACTER" PER EACH
AR125444 "TAXI GUIDANCE SIGN, 4 CHARACTER" PER EACH

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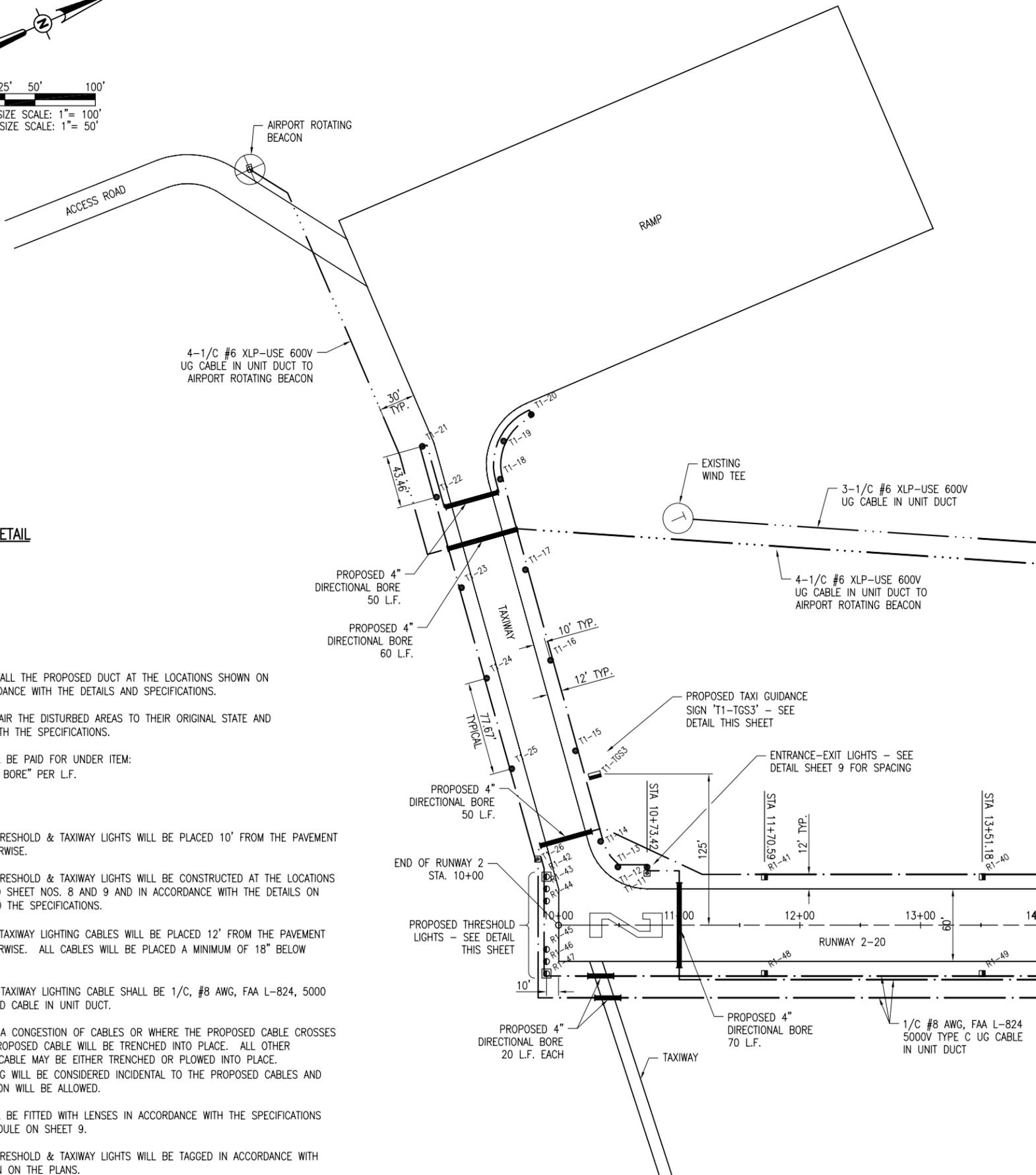
PROPOSED THRESHOLD LIGHT DETAIL
NOT TO SCALE

DUCT NOTES

1. THE CONTRACTOR WILL INSTALL THE PROPOSED DUCT AT THE LOCATIONS SHOWN ON THIS SHEET 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 WILL BE PAID FOR UNDER ITEM:
AR110014 "4" DIRECTIONAL BORE" PER L.F.

LIGHTING NOTES

1. ALL PROPOSED RUNWAY, THRESHOLD & TAXIWAY LIGHTS WILL BE PLACED 10' FROM THE PAVEMENT EDGE UNLESS SHOWN OTHERWISE.
2. ALL PROPOSED RUNWAY, THRESHOLD & TAXIWAY LIGHTS WILL BE CONSTRUCTED AT THE LOCATIONS SHOWN ON THIS SHEET AND SHEET NOS. 8 AND 9 AND IN ACCORDANCE WITH THE DETAILS ON SHEET NOS. 13 & 14 AND THE SPECIFICATIONS.
3. ALL PROPOSED RUNWAY & TAXIWAY LIGHTING CABLES WILL BE PLACED 12' FROM THE PAVEMENT EDGE UNLESS SHOWN OTHERWISE. ALL CABLES WILL BE PLACED A MINIMUM OF 18" BELOW FINISH GRADE.
4. THE PROPOSED RUNWAY & TAXIWAY LIGHTING CABLE SHALL BE 1/C, #8 AWG, FAA L-824, 5000 VOLT. TYPE C UNDERGROUND CABLE IN UNIT DUCT.
5. IN AREAS WHERE THERE IS A CONGESTION OF CABLES OR WHERE THE PROPOSED CABLE CROSSES AN EXISTING CABLE, THE PROPOSED CABLE WILL BE TRENCHED INTO PLACE. ALL OTHER LOCATIONS THE PROPOSED CABLE MAY BE EITHER TRENCHED OR PLOWED INTO PLACE. TRENCHING AND/OR PLOWING WILL BE CONSIDERED INCIDENTAL TO THE PROPOSED CABLES AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
6. THE PROPOSED LIGHTS WILL BE FITTED WITH LENSES IN ACCORDANCE WITH THE SPECIFICATIONS AND THE LIGHT LENS SCHEDULE ON SHEET 9.
7. ALL PROPOSED RUNWAY, THRESHOLD & TAXIWAY LIGHTS WILL BE TAGGED IN ACCORDANCE WITH THE LIGHT NUMBERS SHOWN ON THE PLANS.



MATCHLINE - STA. 14+00 SEE NEXT SHEET

REVISION	DATE

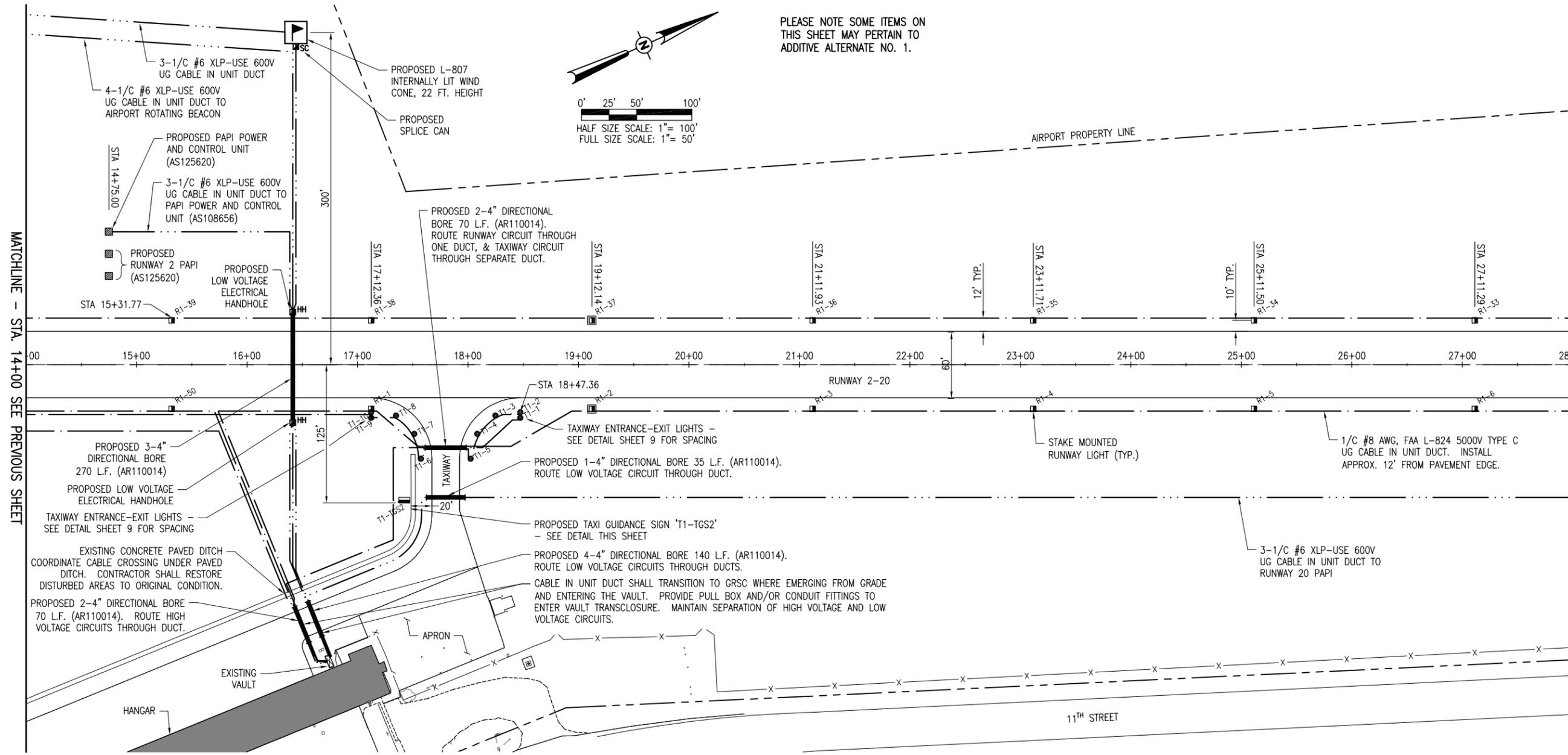
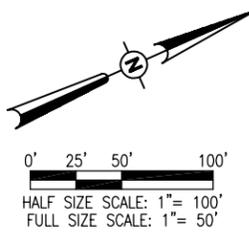
**MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS**
A.I.P. PROJ.: 3-17-0069-B3
IL PROJ.: C66-4000

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**INSTALL AIRFIELD
LIGHTING AND NAVAIDS**
PROPOSED LIGHTING PLAN -
RUNWAY 2 AND TAXIWAY

PLEASE NOTE SOME ITEMS ON THIS SHEET MAY PERTAIN TO ADDITIVE ALTERNATE NO. 1.



MATCHLINE - STA. 14+00 SEE PREVIOUS SHEET

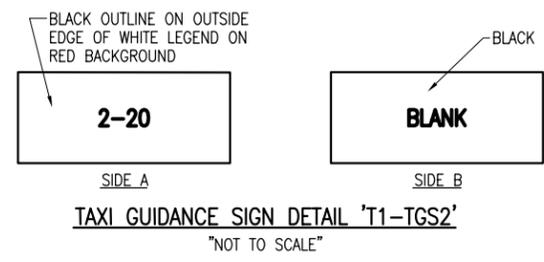
MATCHLINE - STA. 28+00 SEE NEXT SHEET

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED ELECTRICAL DUCT
- 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
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- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN

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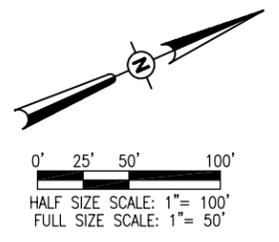
MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS
A.I.P. PROJ.: 3-17-0089-B3
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HE Project No. 09A0010	02/05/10
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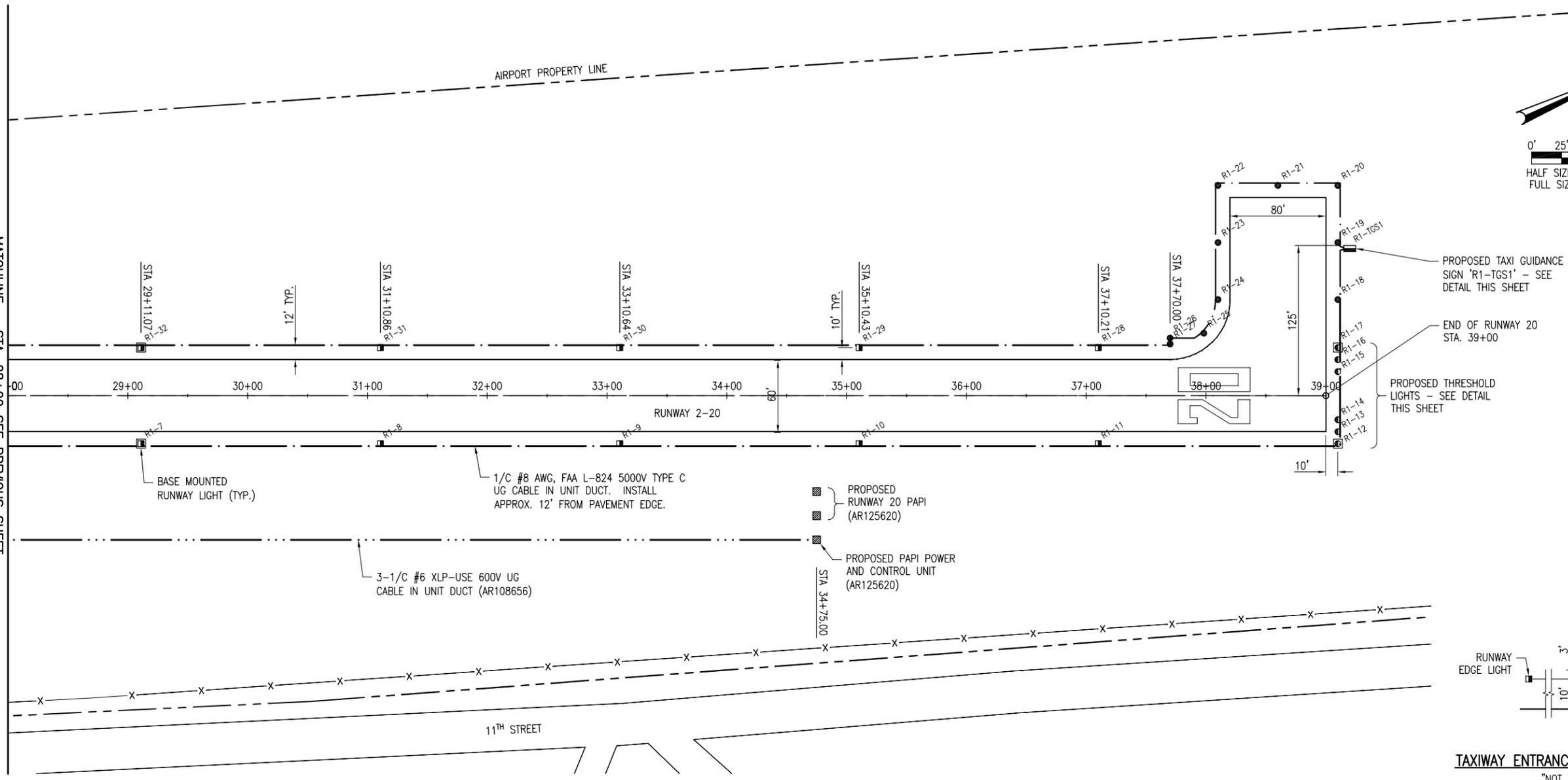
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INSTALL AIRFIELD LIGHTING AND NAVAIDS
PROPOSED LIGHTING PLAN - RUNWAY 2-20

MAY 04, 2010 10:32 AM HARR01115 I:\AIRPORTS\MONMOUTH\09A0010\CADD\AIRPORT\SHEET\R-122.DWG



MATCHLINE - STA. 28+00 SEE PREVIOUS SHEET



PROPOSED TAXI GUIDANCE SIGN 'R1-TGS1' - SEE DETAIL THIS SHEET

END OF RUNWAY 20 STA. 39+00

PROPOSED THRESHOLD LIGHTS - SEE DETAIL THIS SHEET

BASE MOUNTED RUNWAY LIGHT (TYP.)

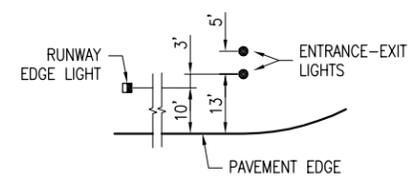
1/C #8 AWG, FAA L-824 5000V TYPE C UG CABLE IN UNIT DUCT. INSTALL APPROX. 12' FROM PAVEMENT EDGE.

PROPOSED RUNWAY 20 PAPI (AR125620)

PROPOSED PAPI POWER AND CONTROL UNIT (AR125620)

3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT (AR108656)

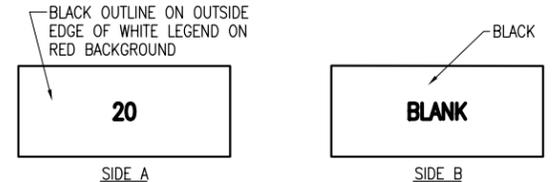
STA 34+75.00



TAXIWAY ENTRANCE-EXIT LIGHT DETAIL
"NOT TO SCALE"
NOTE: LIGHTING CABLE NOT SHOWN FOR CLARITY.

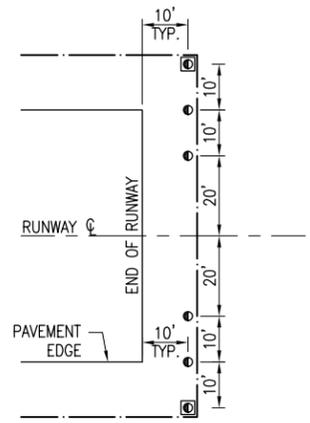
LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED ELECTRICAL DUCT
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
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- PROPOSED BASE MOUNTED THRESHOLD LIGHT
- PROPOSED TAXI GUIDANCE SIGN
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED SPLICE CAN



TAXI GUIDANCE SIGN DETAIL 'R1-TGS1'
"NOT TO SCALE"

LIGHT LENS SCHEDULE		
LIGHT NUMBERS	LENS	ORIENTATION
R1-1 TO R1-11	CLEAR WHITE	---
R1-12 TO R1-17	RED/GREEN	RED SIDE FACING SOUTH (TOWARD THRESHOLD)
R1-18 TO R1-27	BLUE	---
R1-28 TO R1-41	CLEAR WHITE	---
R1-42 TO R1-47	RED/GREEN	RED SIDE FACING NORTH (TOWARD THRESHOLD)
R1-48 TO R1-50	CLEAR WHITE	---
T1-1 TO T1-26	BLUE	---



PROPOSED THRESHOLD LIGHT DETAIL
NOT TO SCALE

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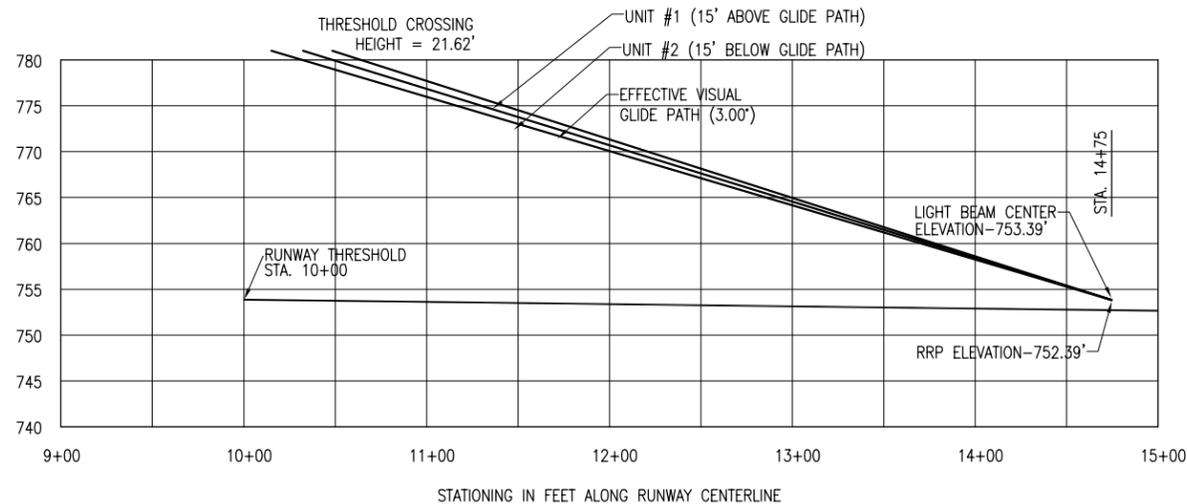
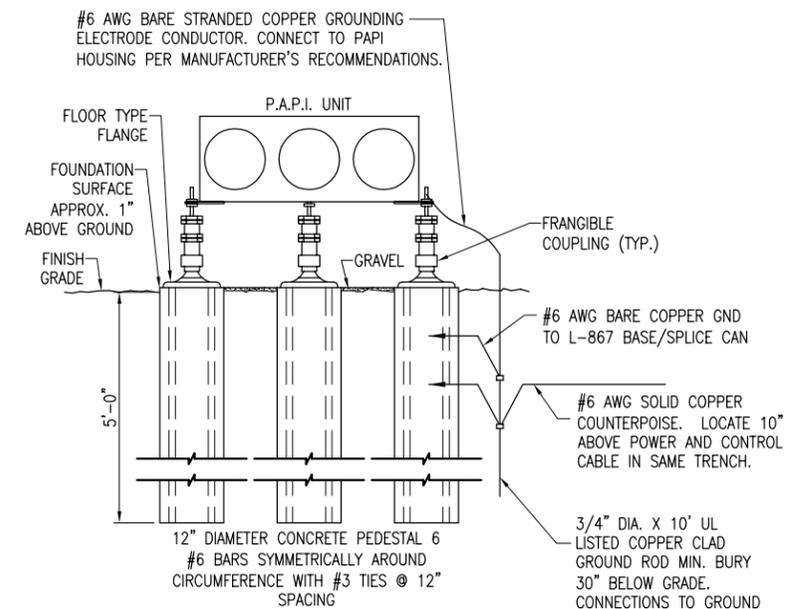
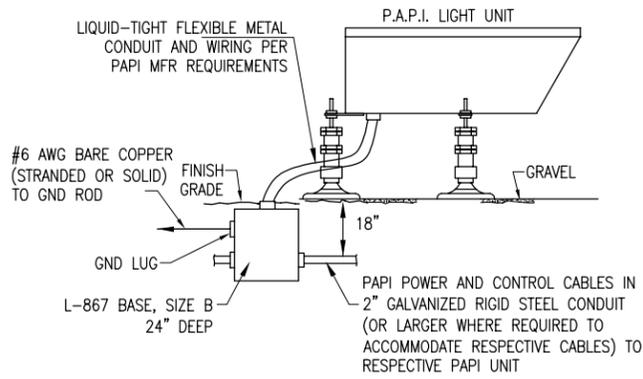
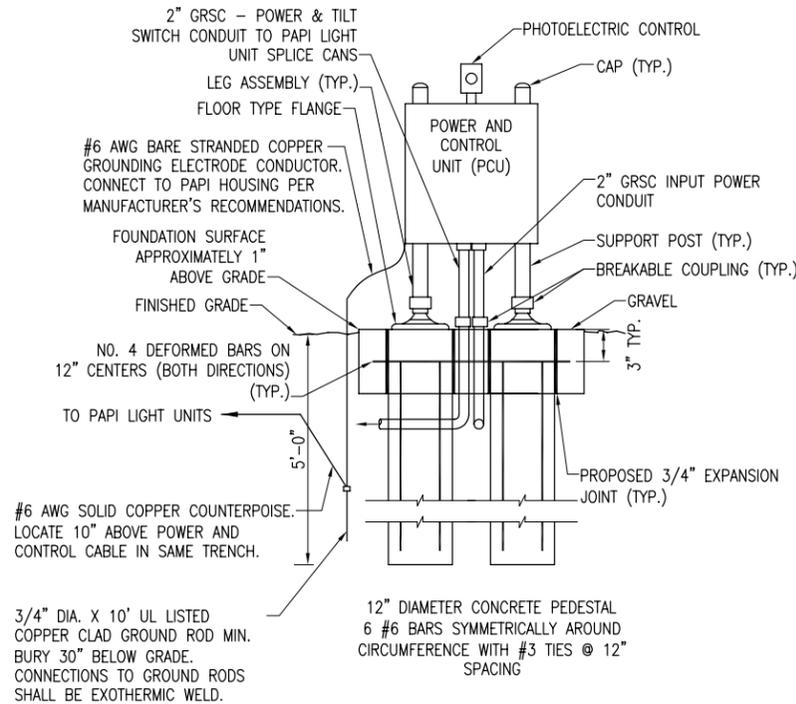
A.I.P. PROJ.: 3-17-0069-B3
IL. PROJ.: C66-4000

HE Project No. 09A0010	MLH 02/05/10
Filename R-123.DWG	MLH 02/19/10
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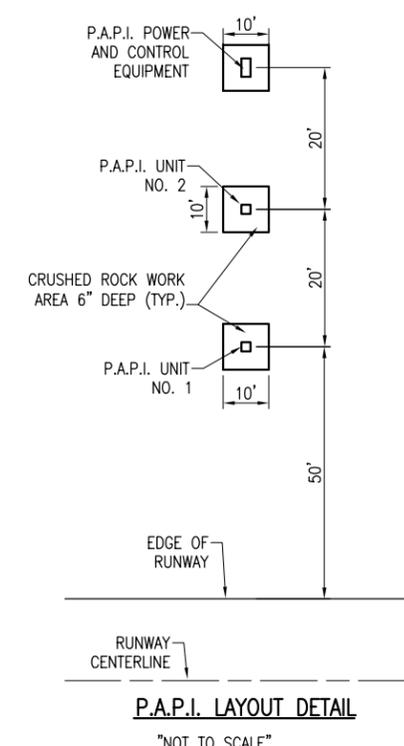
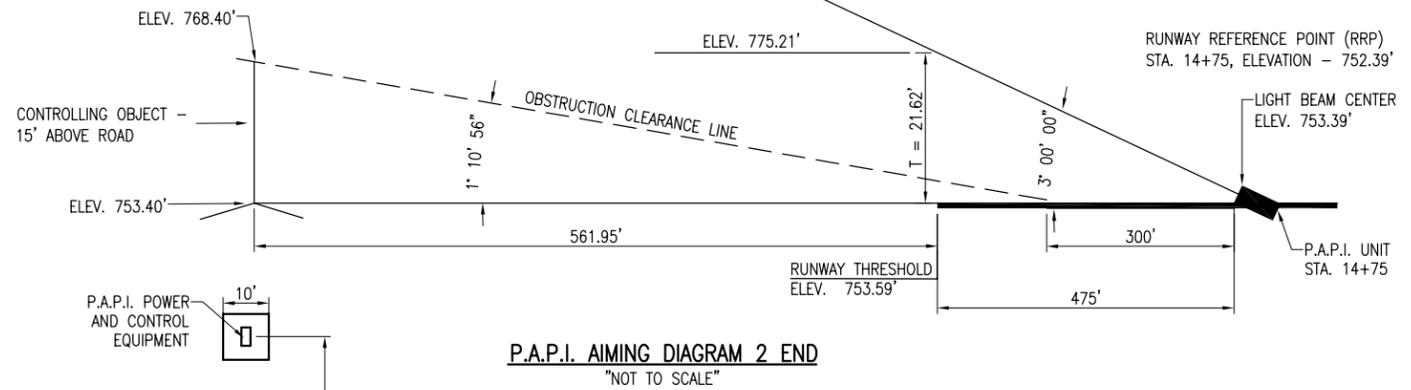
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**INSTALL AIRFIELD
LIGHTING AND NAVAIDS**

PROPOSED LIGHTING PLAN -
RUNWAY 20



P.A.P.I. DATA - RUNWAY END 2			
	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P AND C UNIT
DISTANCE FROM RUNWAY C	80'	100'	120'
AIMING ANGLE	3°15'	2°45'	N/A
APPROXIMATE GROUND ELEVATION	751.8'	751.8'	751.8'
P.A.P.I. UNIT APERTURE ELEVATION	753.39'	753.39'	N/A



P.A.P.I. NOTES

THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON SHEET NO. 8.

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 ON TOP OF BLACK PLASTIC WILL BE PLACED UNDER EACH PAPI UNIT TO HALT VEGETATION GROWTH.

EACH PAPI UNIT WILL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 753.39.

THE PROPOSED POWER CABLE TO THE PAPI SYSTEM WILL BE 3-1/2 NO. 6, 600V., TYPE XLP-USE UNDERGROUND CABLE IN 1-1/4" 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: AS125620 ABBREVIATED PAPI (L-881 SYSTEM) PER EACH.

THE POWER CABLE WILL BE PAID FOR UNDER ITEM: AS108656 3/C #6 600V UG. CABLE IN UD PER LIN. FT.

TO PROVIDE ADDITIONAL SNOW DEPTH, THE CENTER OF THE LIGHT BEAM WILL BE SET ONE FOOT ABOVE THE RUNWAY CENTERLINE ELEVATION AT THE RUNWAY REFERENCE POINT.

PLEASE NOTE ITEMS ON THIS SHEET PERTAIN TO ADDITIVE ALTERNATE NO. 1.

REVISION	DATE

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MONMOUTH, ILLINOIS

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IL PROJ.: C66-4000

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INSTALL AIRFIELD LIGHTING AND NAVAIDS

PROPOSED PAPI DETAILS AND NOTES RUNWAY END 2

MAY 12, 2010 10:19 AM HARR01115
I:\AIRPORTS\MONMOUTH\09A0010\CADD\AIRPORT\SHEET\R-544ELE.DWG

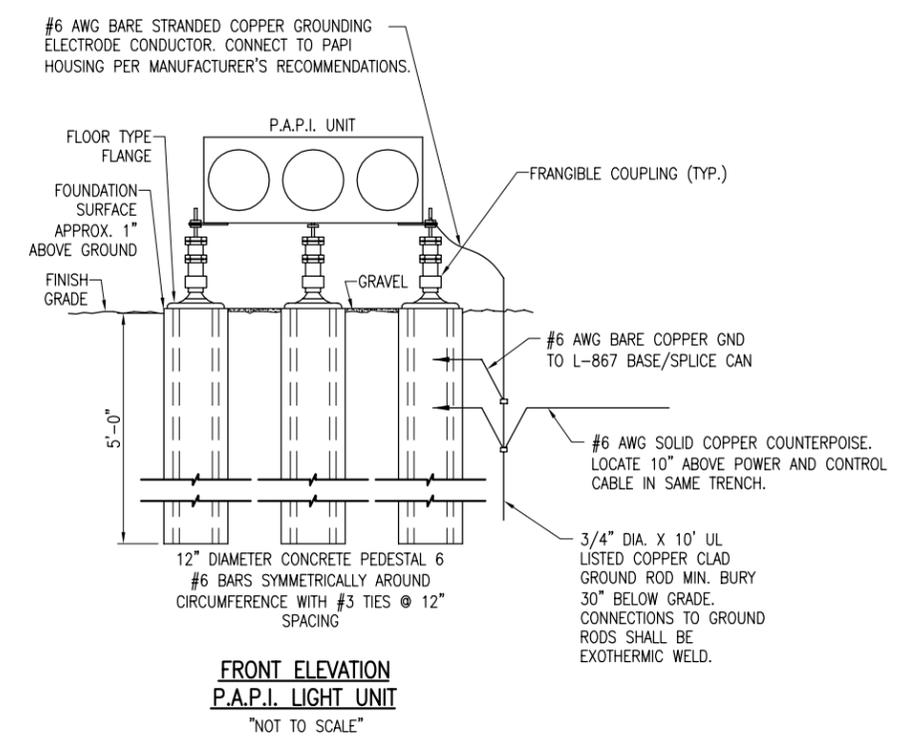
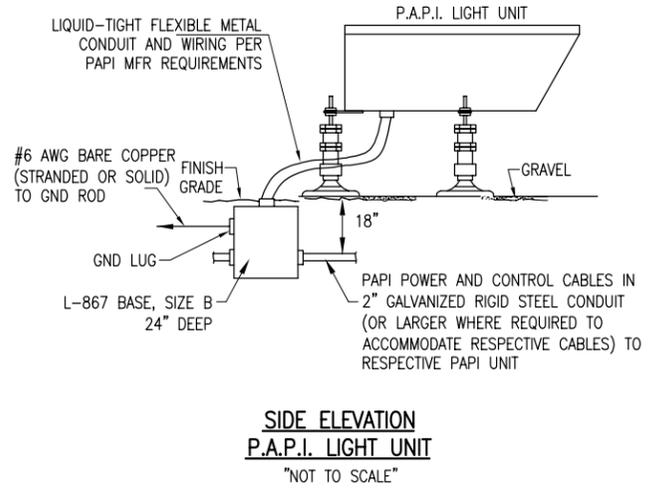
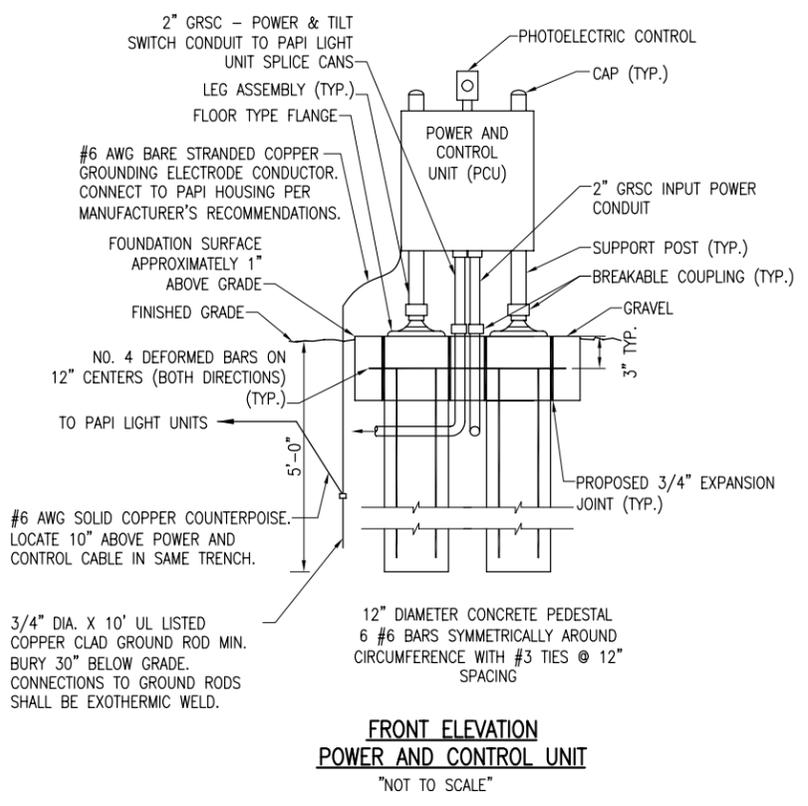
REVISION	
DATE	
MONMOUTH MUNICIPAL AIRPORT MONMOUTH, ILLINOIS	
A.I.P. PROJ.: 3-17-0089-B3	

HE Project No.	09A0010
Filename	R-545ELE.DWG
Scale	NOT TO SCALE
Date	04/16/10
LAYOUT	CAH
DRAWN	CAH
REVIEWED	RAW
	02/25/10
	02/25/10
	03/16/10

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INSTALL AIRFIELD LIGHTING AND NAVAIDS

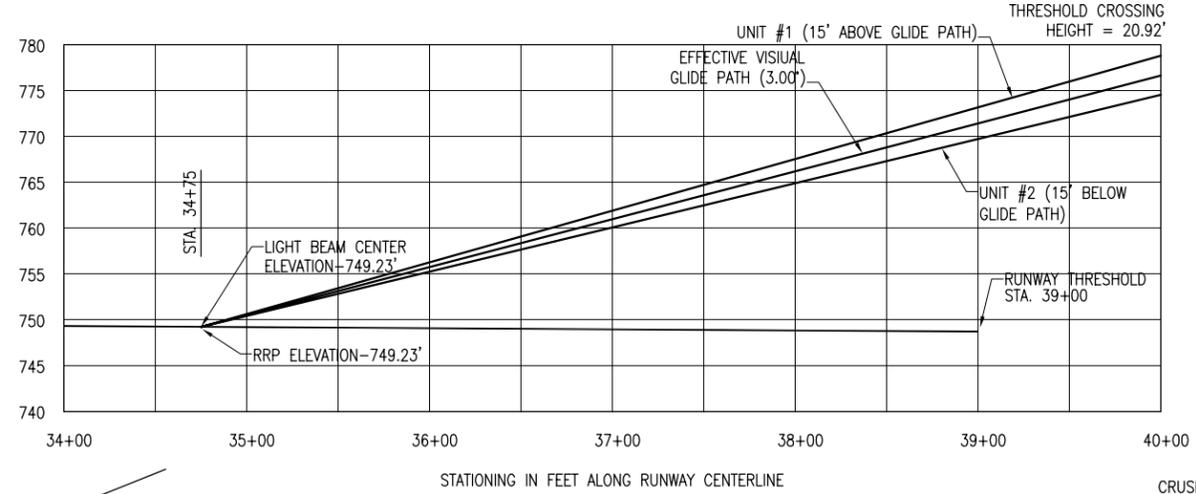
PROPOSED PAPI DETAILS AND NOTES RUNWAY END 20



P.A.P.I. NOTES

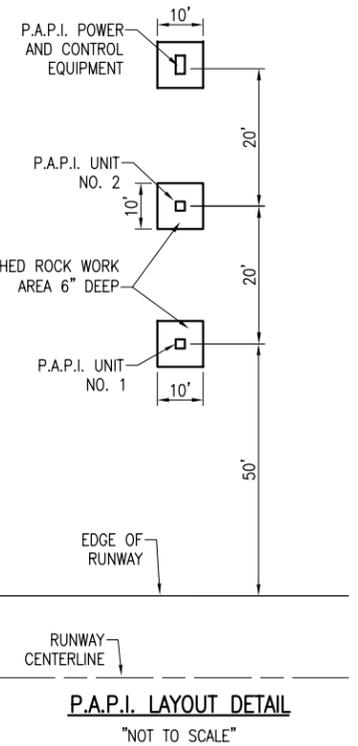
- THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON SHEET NO. 9.
- THE PROPOSED CONCRETE PEDESTALS WILL BE AS DETAILED ON THIS SHEET. THE NUMBER OF PEDESTALS CONSTRUCTED FOR EACH PAPI UNIT WILL DEPEND ON THE UNIT SELECTED BY THE CONTRACTOR FOR INSTALLATION.
- SIX (6") INCHES OF GRAVEL ON TOP OF BLACK PLASTIC WILL BE PLACED UNDER EACH PAPI UNIT TO HALT VEGETATION GROWTH.
- EACH PAPI UNIT WILL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 749.23'.
- THE PROPOSED POWER CABLE TO THE PAPI SYSTEM WILL BE 3-1/C NO. 6, 600V., TYPE XLP-USE UNDERGROUND CABLE IN 1-1/4" 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.

THRESHOLD CROSSING HEIGHT (T) IS CALCULATED ON THE LOWEST ON PATH ANGLE OF 2°45'

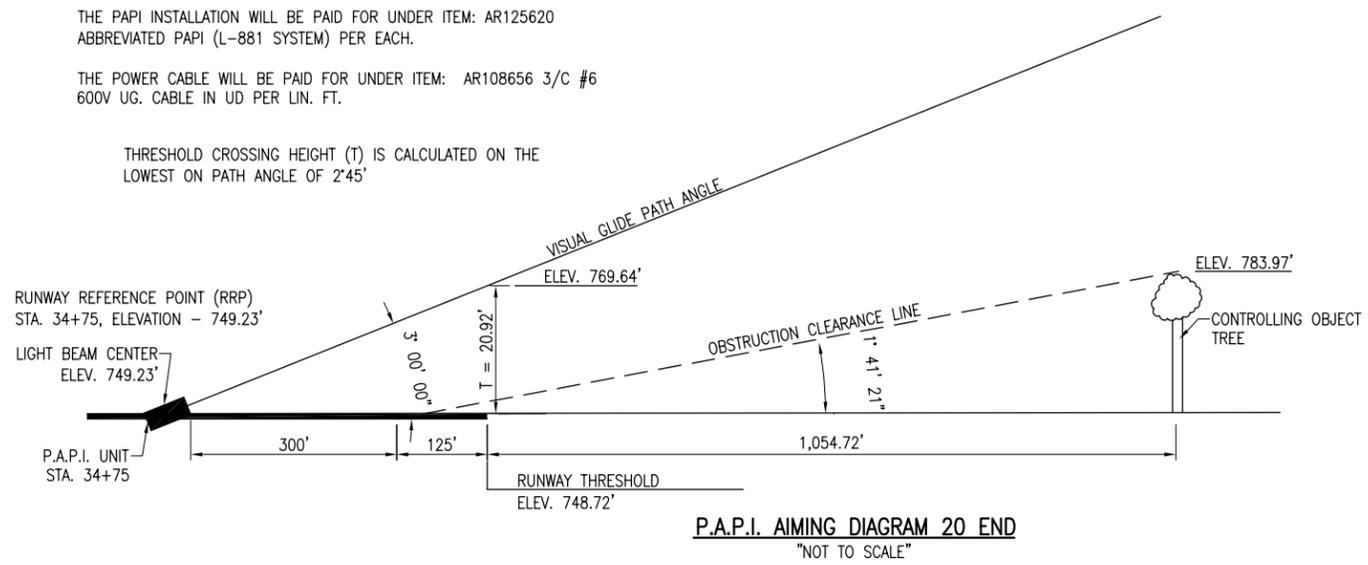


RUNWAY CENTERLINE PROFILE

	P.A.P.I. UNIT #1	P.A.P.I. UNIT #2	P AND C UNIT
DISTANCE FROM RUNWAY CL	80'	100'	120'
AIMING ANGLE	3°15'	2°45'	N/A
APPROXIMATE GROUND ELEVATION	745.4'	744.3'	743.3'
P.A.P.I. UNIT APERTURE ELEVATION	749.23'	749.23'	N/A

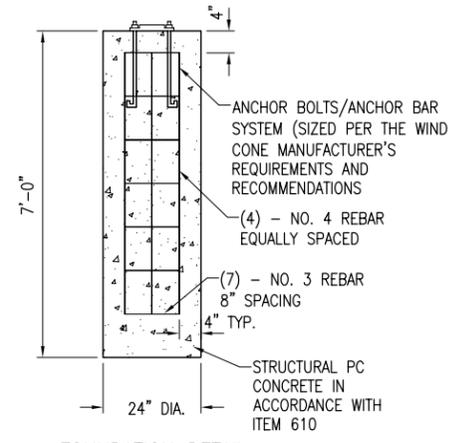
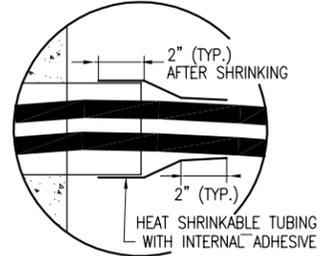
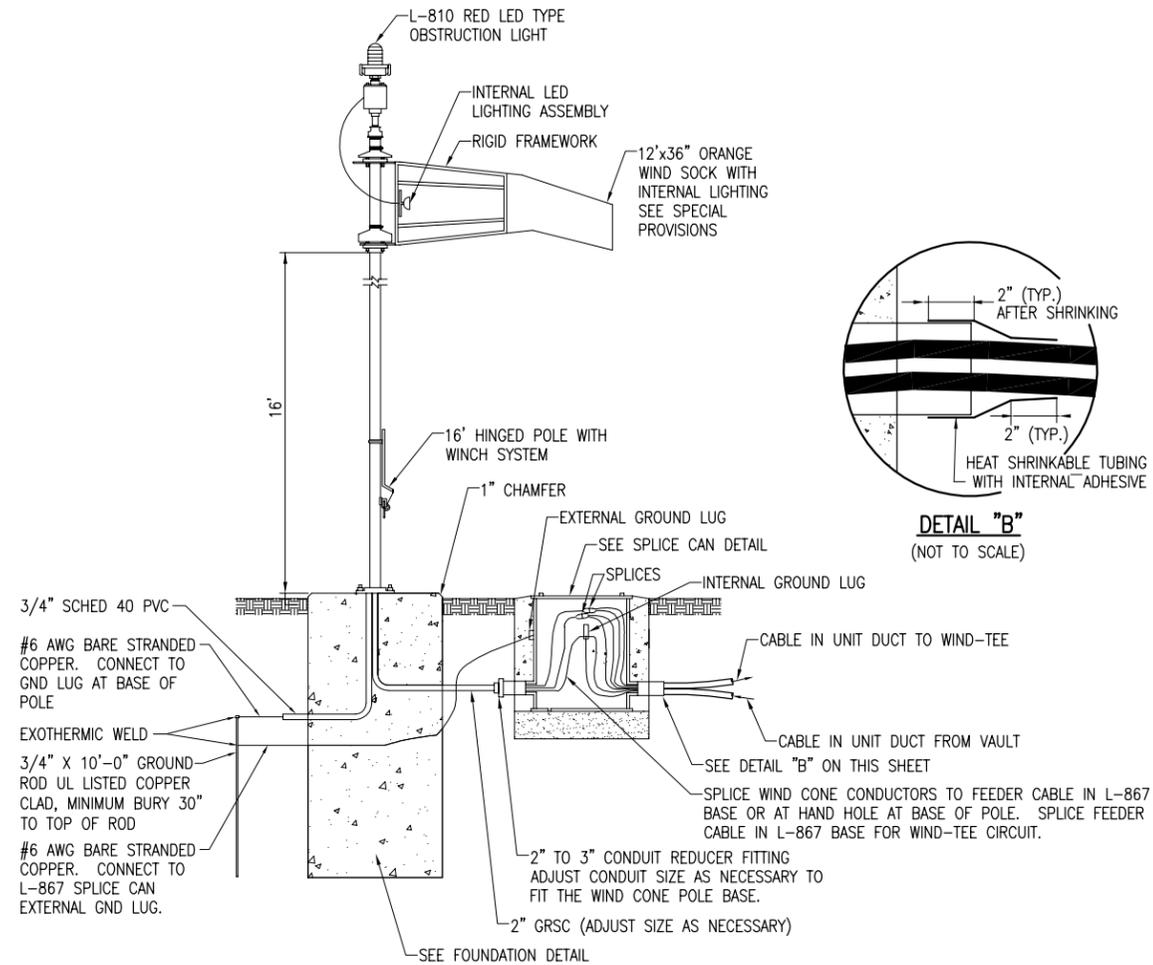


P.A.P.I. LAYOUT DETAIL
"NOT TO SCALE"



P.A.P.I. AIMING DIAGRAM 20 END
"NOT TO SCALE"

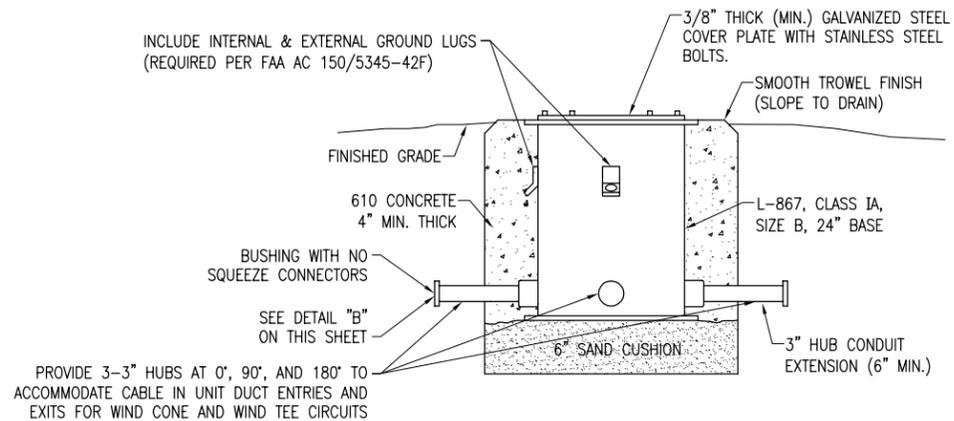
MAY 04, 2010 10:32 AM HARR01115
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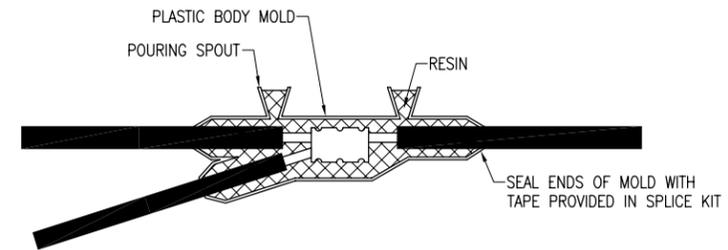
INTERNALLY LIGHTED L-807 WIND CONE
"NOT TO SCALE"

NOTES

1. WIND CONE SHALL BE FAA APPROVED L-807, STYLE 1B INTERNAL LED (LIGHT EMITTING DIODE) LIGHTED, SIZE 2 WITH ORANGE WIND SOCK, 120 VAC, & WITH L-810 RED LED TYPE OBSTRUCTION LIGHT, SEE SPECIAL PROVISION SPECS.
2. L-807 WIND CONE 12' INTERNALLY LIT WILL BE PAID FOR UNDER ITEM AR107812.
3. SPLICE CAN WILL BE PAID FOR SEPARATELY UNDER ITEM AR125565.



SPLICE CAN DETAIL FOR WIND CONE/WIND-TEE
(NOT TO SCALE)



UNDERGROUND TAP SPLICE

FOR TAP SPLICES IN LOW VOLTAGE (600V) CABLE. SPLICES SHALL BE RATED AND LISTED SUITABLE FOR DIRECT BURIAL LOCATIONS. FOR SPLICES UP TO #2 AWG CONDUCTOR, SPLICES SHALL BE 3M SCOTCHCAST 82-B1 POWER CABLE TAP SPLICE KIT OR APPROVED EQUAL.

DATE	REVISION

MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS

A.I.P. PROJ.: 3-17-0069-B3

IL PROJ.: C66-4000

HE Project No. 09A0010	02/08/10
Filename E-505.DWG	02/12/10
Scale AS SHOWN	03/16/10
Date 04/16/10	
LAYOUT KNL	
DRAWN MLH	
REVIEWED KNL/RAW	

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INSTALL AIRFIELD
LIGHTING AND NAVAIDS

L-807 WIND CONE DETAIL

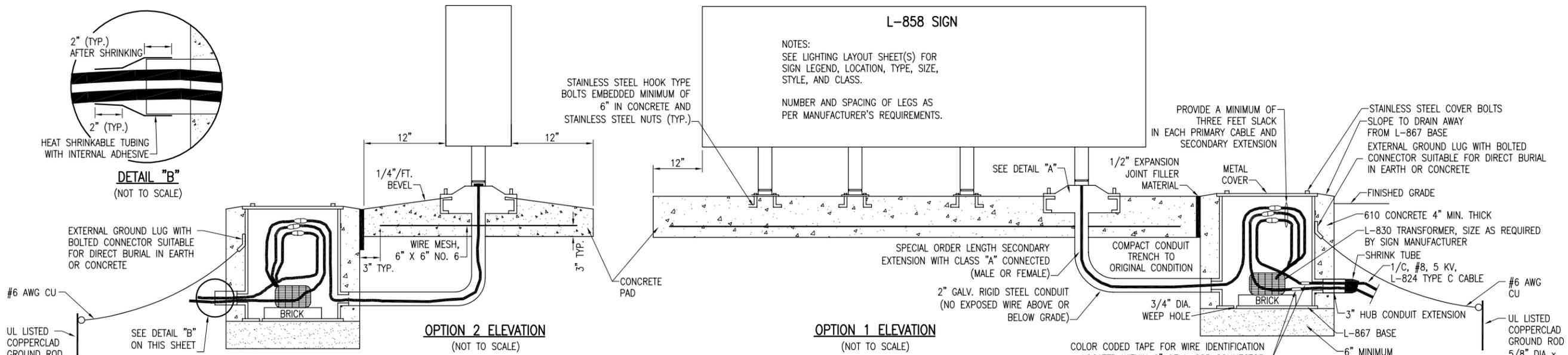
REVISION	DATE

MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS
A.I.P. PROJ.: 3-17-0089-B3

HE Project No. 09A0010	File Name R-541ELE.DWG	Scale AS SHOWN	Date 04/16/10
LAYOUT	KNL	02/03/10	02/05/10
DRAWN	MLH	02/05/10	03/16/10
REVIEWED	KNL/RAW	03/16/10	IL PROJ.: C66-4000

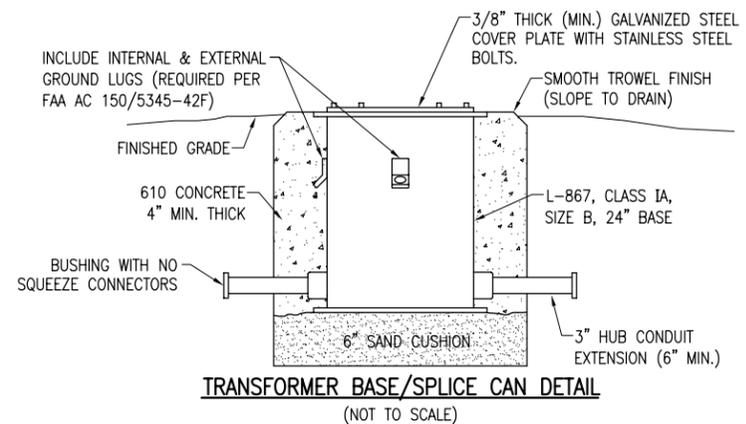
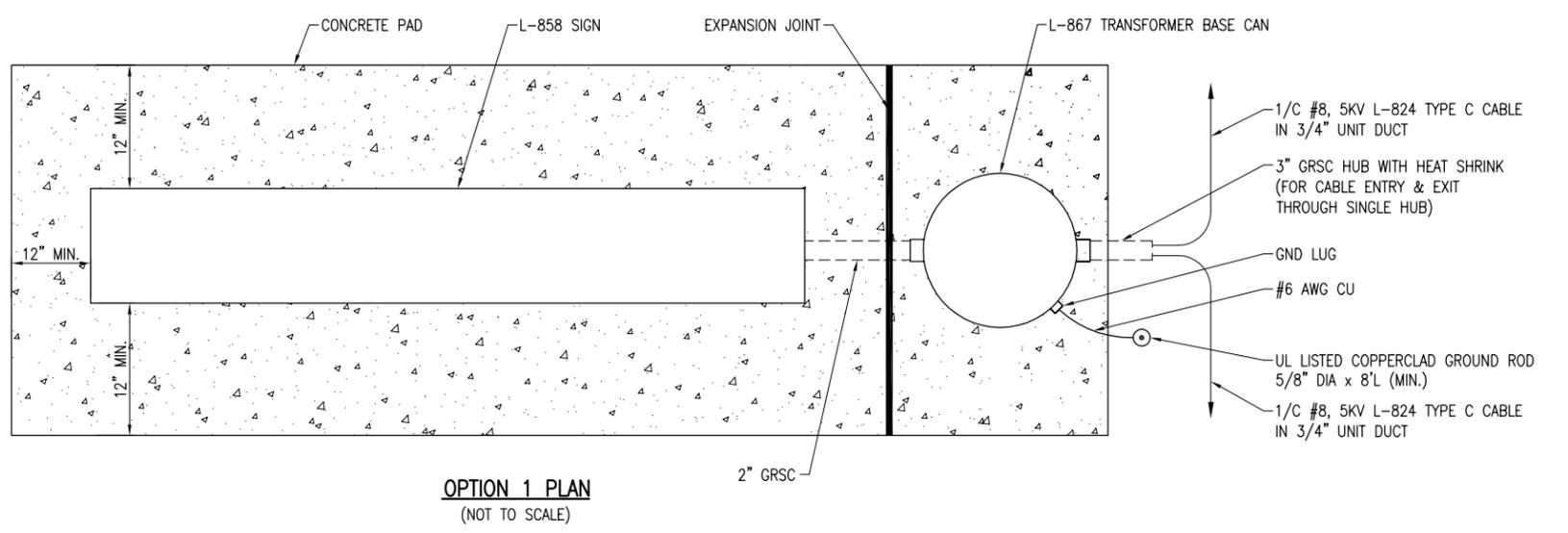
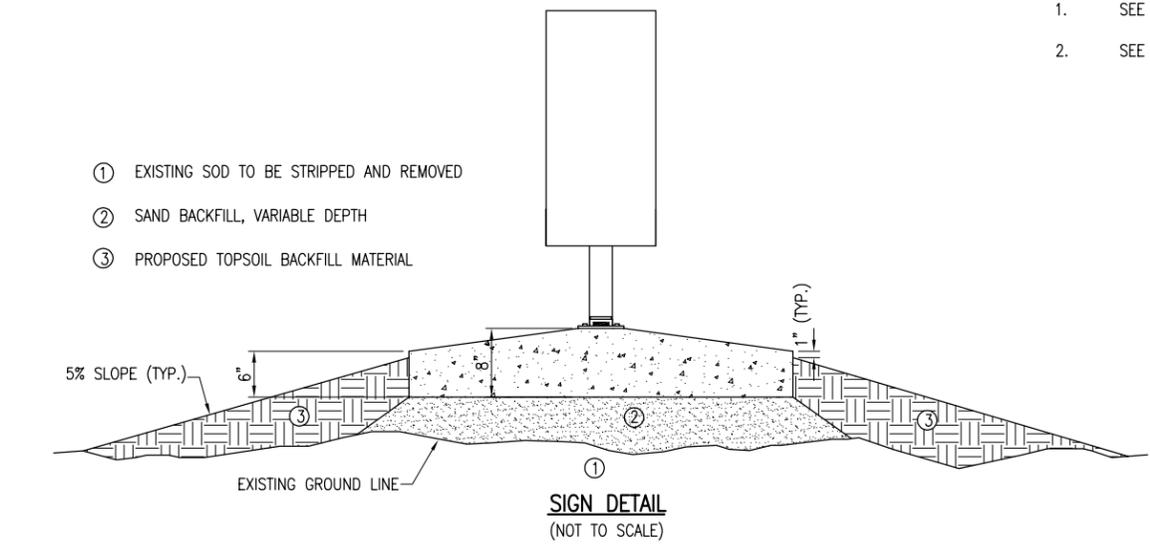
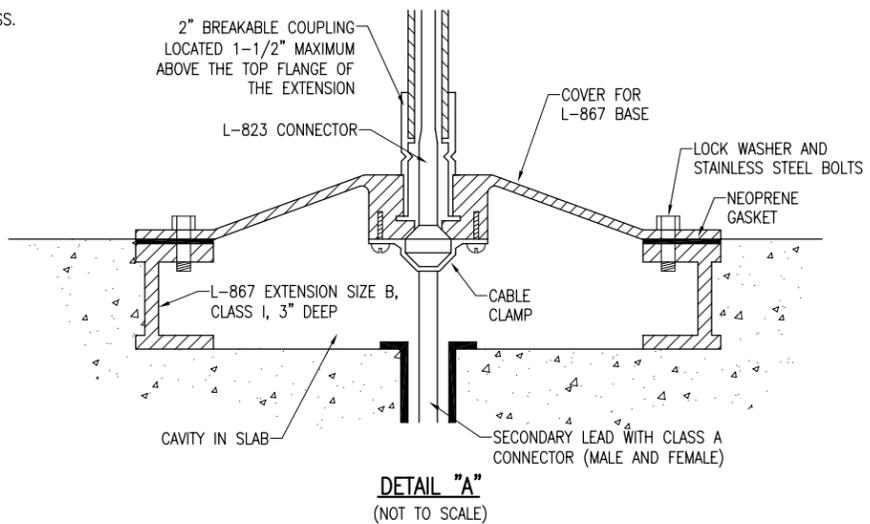
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INSTALL AIRFIELD LIGHTING AND NAVAIDS
PROPOSED ELECTRICAL DETAILS SHEET 1



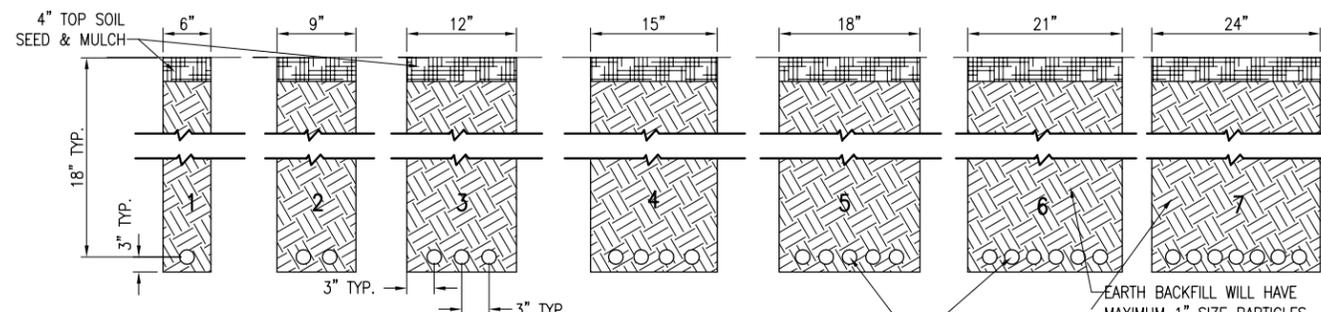
- GENERAL NOTES:**
- SEE LIGHTING LAYOUT SHEET FOR SIGN LEGEND, LOCATION, TYPE, SIZE, STYLE, AND CLASS.
 - SEE ELECTRICAL NOTES SHEETS 16 & 17.

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

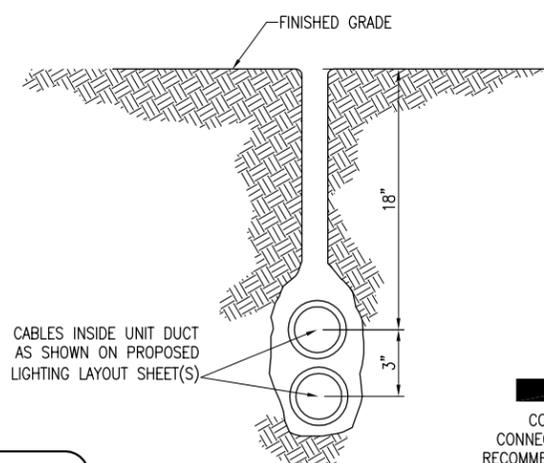


NOTE:
FOR THE PURPOSE OF ENHANCING SAFETY, EACH BASE MUST HAVE INSTALLED, BY THE MANUFACTURER, AN INTERNAL AND EXTERNAL GROUND STRAP THAT IS AVAILABLE FOR THE PURPOSE OF ATTACHING A GROUND LUG THAT IS CONNECTED TO AN EARTH GROUND OR A SAFETY GROUND CONDUCTOR INSTALLED WITH THE RESPECTIVE CIRCUIT. FOR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

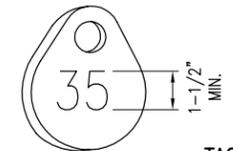
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NOTES:
 DETAIL NUMBERS INDICATE NO. OF CABLES.
 TRENCHES WITH MORE THAN SEVEN CABLES SHALL BE INCREASED 3" IN WIDTH FOR EACH ADDITIONAL CABLE; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.
 DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE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

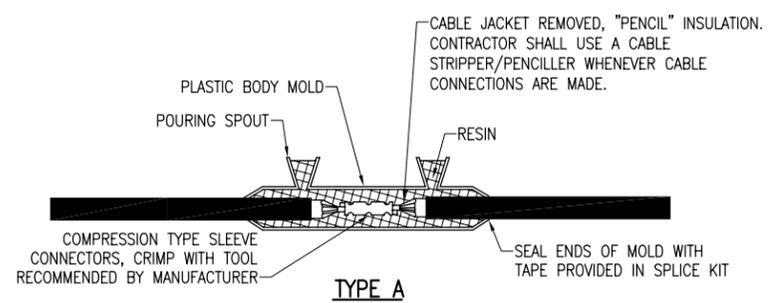


PLOWED CABLE
(NOT TO SCALE)



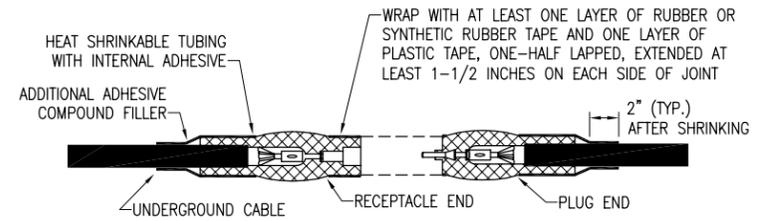
TAG DETAIL
(NOT TO SCALE)

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



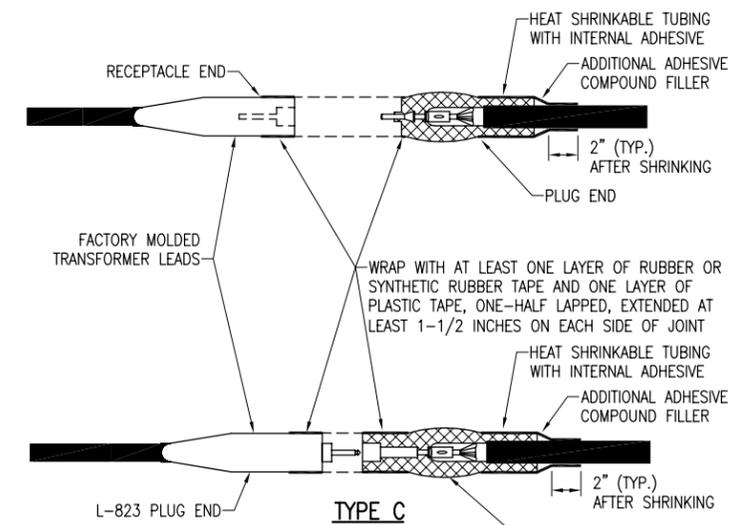
TYPE A

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

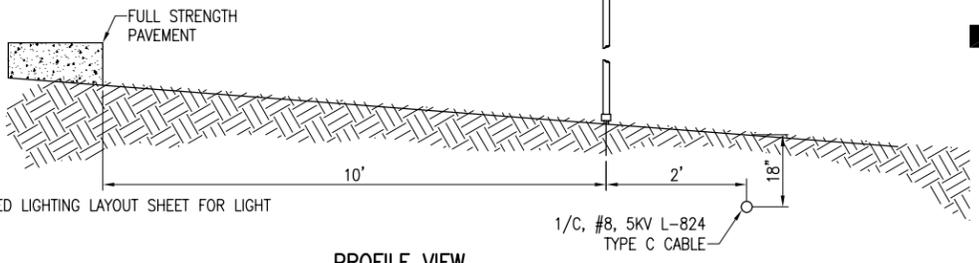
FOR SPLICES AT RUNWAY AND TAXIWAY LIGHTS

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)

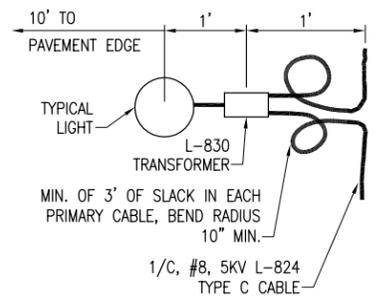
PER FAA AC 150/5340-30D DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, A SAFETY GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. A SAFETY GROUND SHALL BE INSTALLED AT EACH STAKE MOUNTED LIGHT AND EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI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

NOTES:
 SEE PROPOSED LIGHTING LAYOUT SHEET FOR LIGHT LOCATIONS.

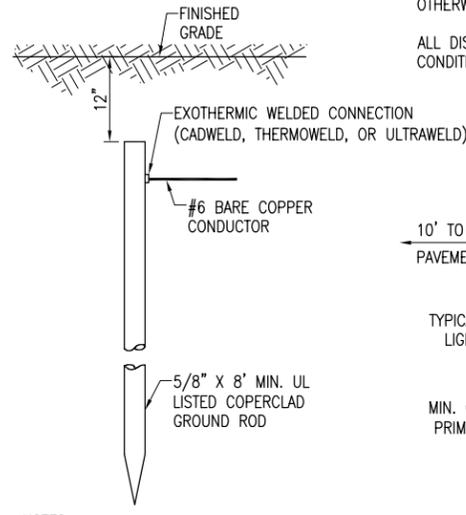


PROFILE VIEW

LIGHT AND CABLE INSTALLATION DETAIL
(NOT TO SCALE)



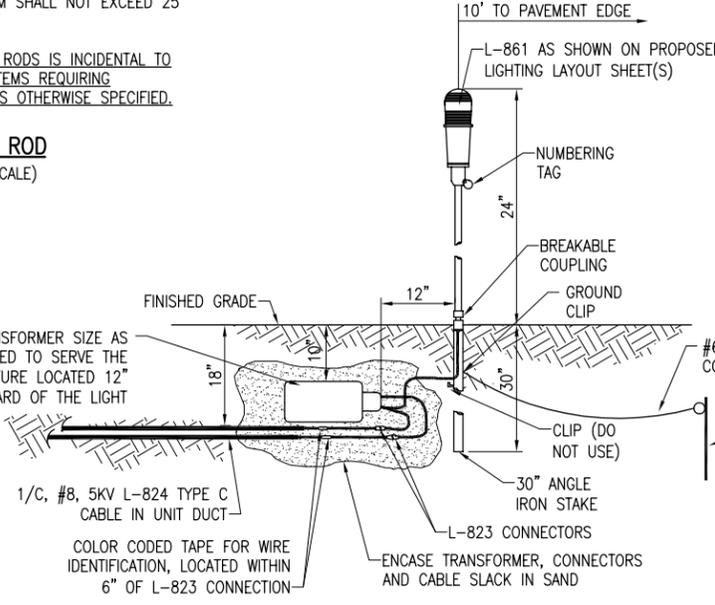
PLAN VIEW



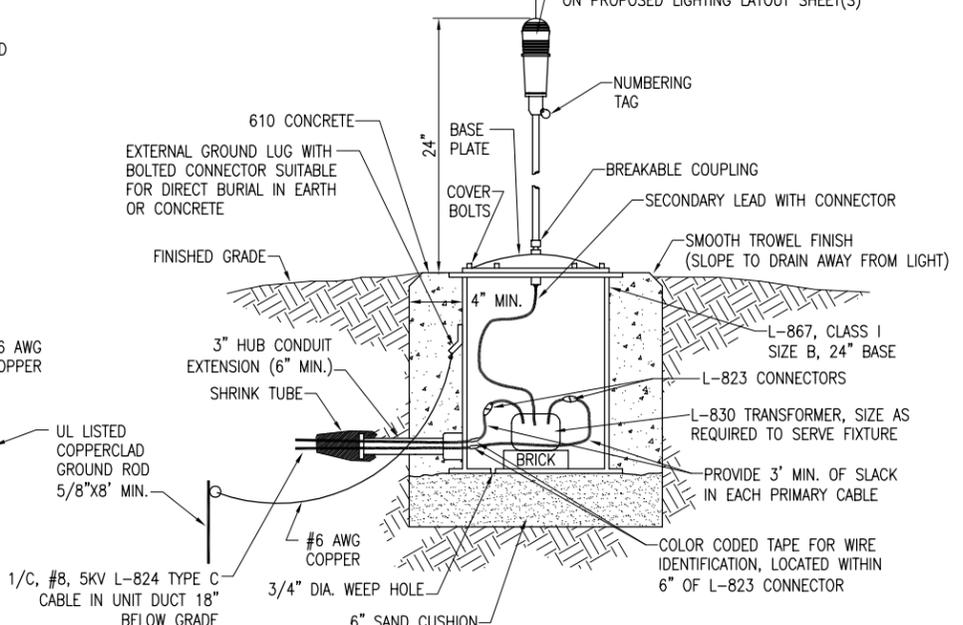
CABLE TRENCHES
(NOT TO SCALE)

NOTES:
 TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
 THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.
 COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.

GROUND ROD
(NOT TO SCALE)



MEDIUM INTENSITY LIGHT - STAKE MOUNTED
(NOT TO SCALE)



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

REVISION	DATE

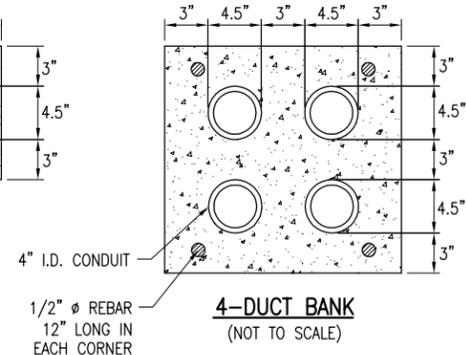
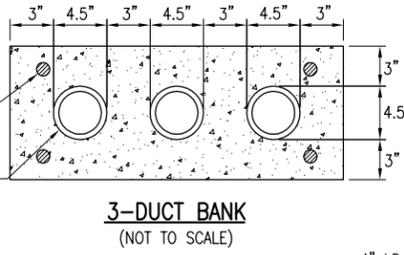
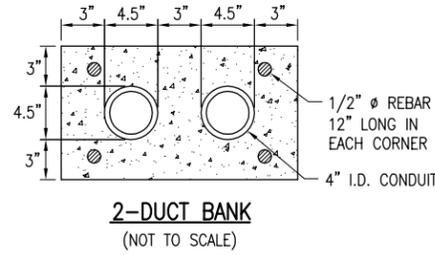
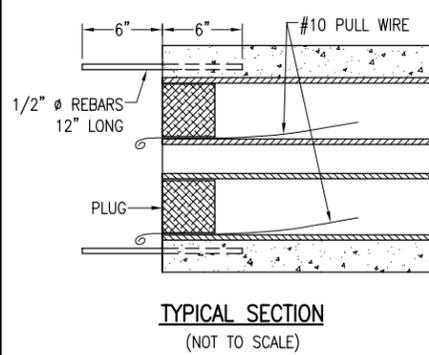
MONMOUTH MUNICIPAL AIRPORT
 MONMOUTH, ILLINOIS
 A.I.P. PROJ.: 3-17-0089-B3
 I.L. PROJ.: C66-4000

HE Project No. 09A0010	HE Project Name R-542ELE.DWG	Scale AS SHOWN	Date 04/16/10
LAYOUT	KNL	02/03/10	02/05/10
DRAWN	MLH	02/05/10	02/05/10
REVIEWED	KNL/RAW	03/16/10	03/16/10

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INSTALL AIRFIELD LIGHTING AND NAVAIDS
 PROPOSED ELECTRICAL DETAILS SHEET 2

MAY 04, 2010 10:34 AM HARR01115
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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. DUCT BANKS TERMINATING IN MANHOLES DO NOT 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.

CABLE & DUCT MARKER NOTES:

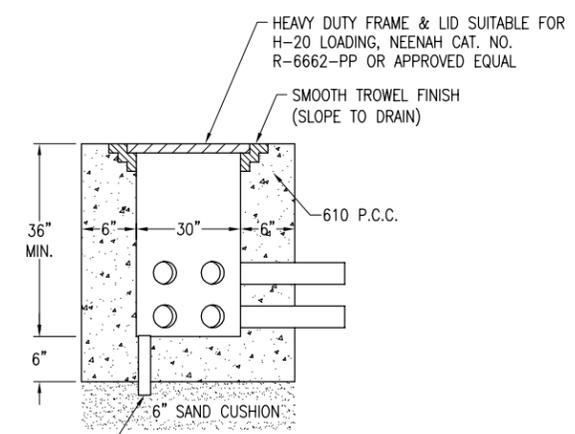
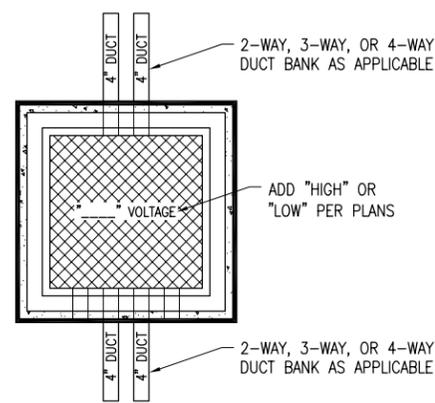
1. THE COST OF ALL TURF AND PAVEMENT DUCT MARKERS SHALL BE INCIDENTAL TO THE DUCT. THE COST OF ALL CABLE MARKERS SHALL BE INCIDENTAL TO THE CABLE.
2. BITUMINOUS PAVEMENT DUCT MARKER AND CONCRETE DUCT MARKER TO BE PROVIDED AT EACH END OF EACH DUCT AS SHOWN ON THE LOCATION PLAN. FOR CONCRETE PAVEMENT, 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.

TYPICAL SECTION
"NOT TO SCALE"

2-DUCT BANK
"NOT TO SCALE"

3-DUCT BANK
"NOT TO SCALE"

4-DUCT BANK
"NOT TO SCALE"

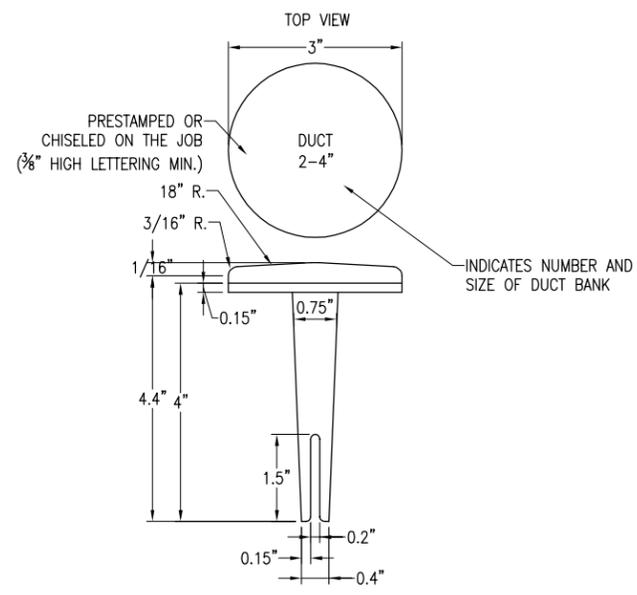


2" SCHED 40 PVC DRAIN PIPE.
NOTE 6" OF CA-7 GRAVEL MAY BE PROVIDED, INSTEAD OF 6" CONCRETE FLOOR WITH DRAIN PIPE, AT CONTRACTORS OPTION.

NOTES:

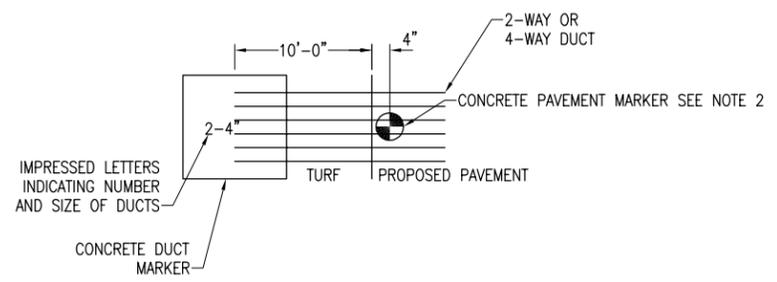
1. LIDS FOR LOW VOLTAGE HANDHOLES SHALL BE LABELED "LOW VOLTAGE". LIDS FOR HIGH VOLTAGE HANDHOLES SHALL BE LABELED "HIGH VOLTAGE". COORDINATE LETTERING WITH MFR.
2. HANDHOLES MAY BE CAST IN PLACE OR PRECAST. PRECAST MANUFACTURERS MUST BE ON IDOT (ILLINOIS DEPT. OF TRANSPORTATION) APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS.
3. HANDHOLES WILL BE PAID FOR UNDER ITEM AR110610 ELECTRICAL HANDHOLE PER EACH. SEE SPECIAL PROVISIONS.

ELECTRICAL HANDHOLE
"NOT TO SCALE"

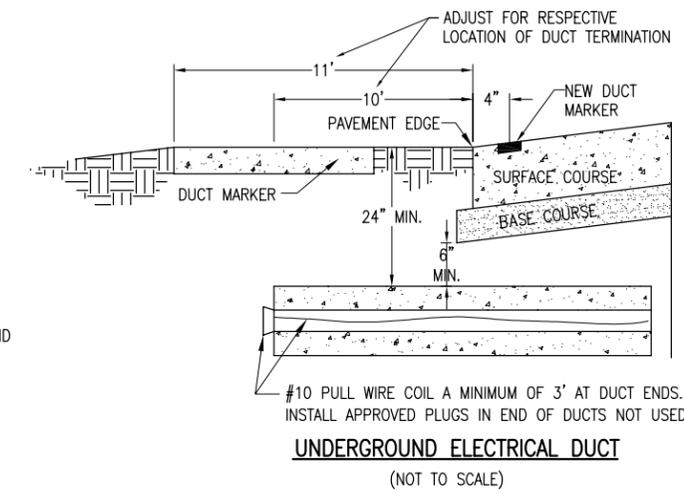


BITUMINOUS PAVEMENT DUCT MARKERS
"NOT TO SCALE"

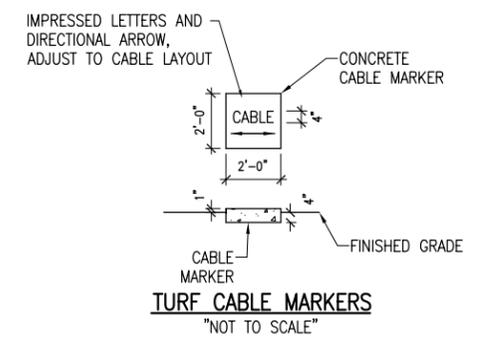
NOTE:
TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE.



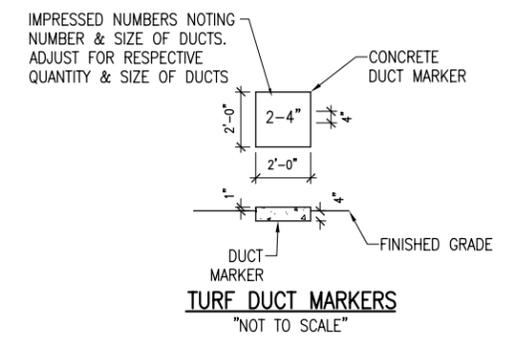
DUCT MARKER DETAIL
"NOT TO SCALE"



UNDERGROUND ELECTRICAL DUCT
"NOT TO SCALE"



TURF CABLE MARKERS
"NOT TO SCALE"



TURF DUCT MARKERS
"NOT TO SCALE"

REVISION	
DATE	

MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS

A.I.P. PROJ.: 3-17-0089-B3

IL PROJ.: C66-4000

HE Project No.	09A0010
Filename	R-543ELE.DWG
Scale	AS SHOWN
Date	04/16/10
LAYOUT	KNL 02/03/10
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INSTALL AIRFIELD
LIGHTING AND NAVAIDS

PROPOSED ELECTRICAL
DETAILS SHEET 3

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 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 FAA FIELD OFFICE (ADO/AFO). 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".

REVISION	
DATE	

**MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS**

A.I.P. PROJ.: 3-17-0069-B3
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**INSTALL AIRFIELD
LIGHTING AND NAVAIDS**

PROPOSED
ELECTRICAL NOTES
SHEET 1

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AIRFIELD LIGHTING NOTES

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

20. ENTRANCES INTO L-867 BASES SHALL HAVE CONDUIT COUPLINGS OR REDUCERS TO INTERFACE UNIT DUCT/CONDUIT TO L-867 BASE HUBS, OR SHALL BE SEALED WITH HEAT SHRINK AS SHOWN IN DETAIL "B" ON SHEET NO. 8.
21. GALVANIZED/PAINTED EQUIPMENT/COMPONENT SURFACES SHALL NOT BE DAMAGED BY DRILLING, FILING, ETC. DRAIN HOLES IN METAL TRANSFORMER HOUSINGS SHALL BE MADE BEFORE GALVANIZING.
22. EDGE LIGHT NUMBERING TAGS SHALL BE FACING THE PAVEMENT.
23. CABLE/SPLICE/DUCT MARKERS SHALL BE PRECAST CONCRETE OF THE SIZE SHOWN. LETTERS/NUMBERS/ARROWS FOR THE LEGEND TO BE IMPRESSED INTO THE TOPS OF THE MARKERS SHALL BE PRE-ASSEMBLED AND SECURED IN THE MOLD BEFORE THE CONCRETE IS POURED. LEGEND INSCRIBED BY HAND IN WET CONCRETE SHALL NOT BE ACCEPTABLE.
24. ALL UNDERGROUND CABLE RUNS SHALL BE IDENTIFIED BY CABLE MARKERS AT 200 FEET MAXIMUM SPACING, WITH AN ADDITIONAL MARKER AT EACH CHANGE OF DIRECTION OF THE CABLE RUN. CABLE MARKERS SHALL BE INSTALLED IMMEDIATELY ABOVE THE CABLES.
25. THERE SHALL BE NO SPLICES BETWEEN THE ISOLATION TRANSFORMERS. L-823 CONNECTORS ARE ALLOWED AT TRANSFORMER CONNECTIONS ONLY, UNLESS OTHERWISE SHOWN.
26. APPLY AN OXIDE INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS AND BREAKAGE COUPLING THREADS.
27. LOCATIONS OF ENDS OF ALL UNDERGROUND DUCTS SHALL BE IDENTIFIED BY DUCT MARKERS.
28. WHERE A PARALLEL, CONSTANT VOLTAGE PAPI SYSTEM IS PROVIDED, THE "T" SPLICES SHALL BE OF THE CAST TYPE.
29. CONCRETE USED FOR SLABS, FOOTINGS, BACKFILL AROUND TRANSFORMER HOUSINGS, MARKINGS, ETC. SHALL BE 3500 PSI, AIR-ENTRAINED.
30. ALL POWER AND CONTROL CABLES IN MAN/HAND HOLES SHALL BE TAGGED. USE EMBOSSED COPPER STRIPS TO BE ATTACHED AT BOTH ENDS TO THE CABLE BY THE USE OF PLASTIC STRAPS. MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A MAN/HAND HOLE-ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT.
31. THE LOCATION, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS IS NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. **CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123.** CONTACT THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. LOCATION OF FAA POWER, CONTROL AND COMMUNICATION CABLES SHALL BE COORDINATED WITH AND/OR LOCATED BY THE FAA. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVE GROUND UTILITIES.
32. WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.

GROUNDING NOTES FOR AIRFIELD LIGHTING

1. GROUNDING FOR RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS SHALL BE AS DETAILED ON THE PLANS AND AS SPECIFIED HEREIN. PER FAA AC 150/5340-30D DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, CHAPTER 12, PART 12.6; A SAFETY GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. THE PURPOSE OF THE SAFETY GROUND IS TO PROTECT PERSONNEL FROM POSSIBLE CONTACT WITH AN ENERGIZED LIGHT BASE OR MOUNTING STAKE AS THE RESULT OF A SHORTED CABLE OR ISOLATION TRANSFORMER. A SAFETY GROUND SHALL BE INSTALLED AT EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. A SAFETY GROUND SHALL ALSO BE INSTALLED AT EACH STAKE MOUNTED LIGHT FIXTURE. THE SAFETY GROUND SHALL BE A #6 AWG BARE COPPER CONDUCTOR CONNECTED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 5/8-INCH DIAMETER BY 8-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD. 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) OR ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE: 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. TOP OF GROUND RODS SHALL BE BURIED 12 INCHES MINIMUM BELOW GRADE, UNLESS SPECIFIED OTHERWISE HEREIN, FOR RESPECTIVE APPLICATIONS.
2. CLEAN ALL METAL SURFACES BEFORE MAKING GROUND CONNECTIONS. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL PER 2008 NATIONAL ELECTRICAL CODE ARTICLE 250-12.
3. PER FAA 150/5340-30D THE RESISTANCE TO GROUND OF THE RESPECTIVE MOUNTING STAKE OR LIGHT BASE (WITH GROUND ROD CONNECTED) MUST BE 25 OHMS OR LESS.

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**MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS**

A.I.P. PROJ.: 3-17-0069-B3
IL. PROJ.: C66-4000

HE Project No. 09A0010	02/03/10
Title E-003.DWG	02/05/10
Scale N/A	
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**INSTALL AIRFIELD
LIGHTING AND NAVAIDS**

PROPOSED
ELECTRICAL NOTES
SHEET 2

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

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

ELECTRICAL ABBREVIATIONS	
A.F.F.	ABOVE FINISHED FLOOR
A, AMP	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CR	CONTROL RELAY
CU	COPPER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EP	EXPLOSION PROOF
ES	EMERGENCY STOP
ETL	INTERTEK - ELECTRICAL TESTING LABS
ETM	ELAPSE TIME METER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRSC	GALVANIZED RIGID STEEL CONDUIT
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
J	JUNCTION BOX
KVA	KILOVOLT AMPERE(S)
KW	KILOWATTS
LC	LIGHTING CONTACTOR
LTFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT (UL LISTED)
LTG	LIGHTING
LP	LIGHTING PANEL
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCM	THOUSAND CIRCUAR MIL
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OHE	OVERHEAD ELECTRIC
OL	OVERLOAD

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

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

NOTES:

- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- ALL VAULT WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- COLOR CODE PHASE AND NEUTRAL CONDUCTOR INSULATION FOR NO. 6 AWG OR SMALLER. PROVIDE COLORED INSULATION OR COLORED MARKING TAPE FOR PHASE AND NEUTRAL CONDUCTORS FOR NO. 4 AWG AND LARGER. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR AWG AND/OR KCMIL TO COMPLY WITH NEC 250.119. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION FOR NO. 6 AWG AND SMALLER TO MEET THE REQUIREMENTS OF NEC 200.6. STANDARD COLORS FOR POWER WIRING AND BRANCH CIRCUITS SHALL BE AS FOLLOWS:

120/240 VAC, 1 PHASE, 3 WIRE

PHASE A	BLACK
PHASE B	RED
NEUTRAL	WHITE
GROUND	GREEN
- SEE RESPECTIVE SITE PLANS FOR SITE LEGEND INFORMATION.
- LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED.

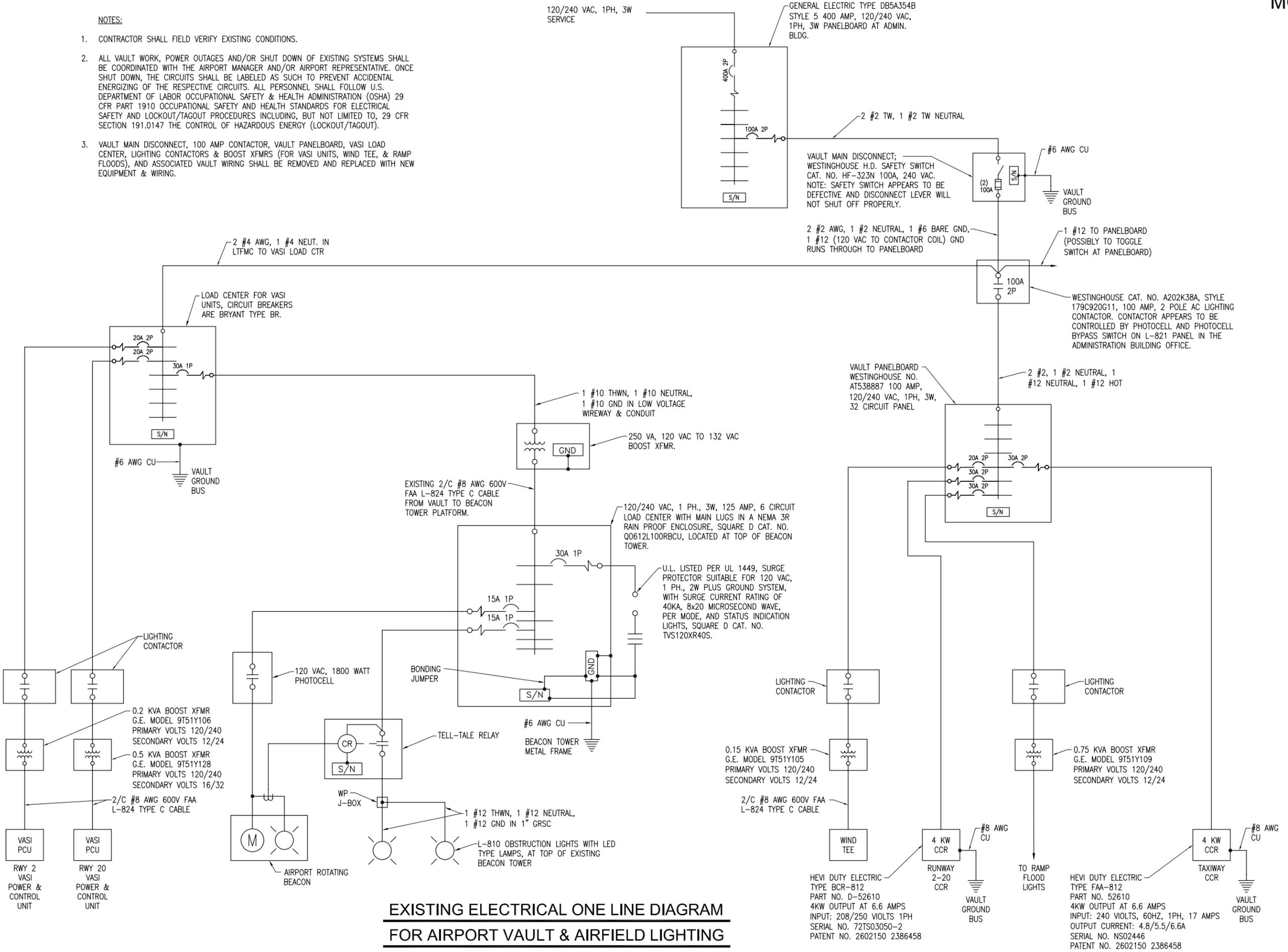
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MONMOUTH MUNICIPAL AIRPORT MONMOUTH, ILLINOIS	
I.E. Project No. 09A0010 File Name: E-001.DWG Scale: N/A Date: 04/16/10	
LAYOUT	02/03/10
DRAWN	02/05/10
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INSTALL AIRFIELD LIGHTING AND NAVAIDS ELECTRICAL LEGEND AND ABBREVIATIONS	
18 18 of 28 sheets	

NOTES:

- 1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS.
- 2. ALL VAULT WORK, POWER OUTAGES AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND/OR AIRPORT REPRESENTATIVE. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 191.0147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- 3. VAULT MAIN DISCONNECT, 100 AMP CONTACTOR, VAULT PANELBOARD, VASI LOAD CENTER, LIGHTING CONTACTORS & BOOST XFMRs (FOR VASI UNITS, WIND TEE, & RAMP FLOODS), AND ASSOCIATED VAULT WIRING SHALL BE REMOVED AND REPLACED WITH NEW EQUIPMENT & WIRING.

120/240 VAC, 1PH, 3W SERVICE

GENERAL ELECTRIC TYPE DB5A354B STYLE 5 400 AMP, 120/240 VAC, 1PH, 3W PANELBOARD AT ADMIN. BLDG.



EXISTING ELECTRICAL ONE LINE DIAGRAM FOR AIRPORT VAULT & AIRFIELD LIGHTING

REVISION
DATE

MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS

A.I.P. PROJ.: 3-17-0089-B3

HE Project No. 09A0010
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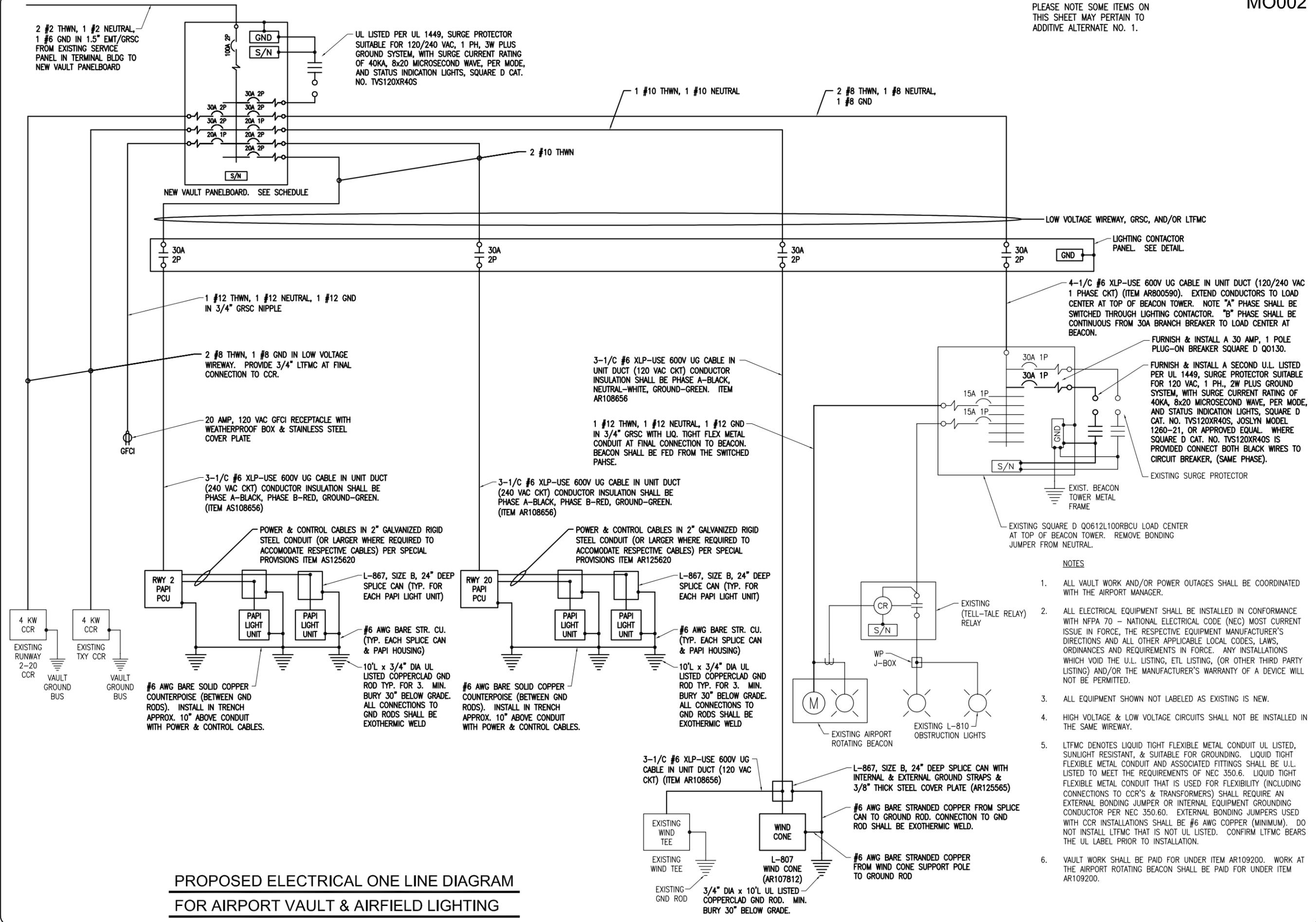
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INSTALL AIRFIELD LIGHTING AND NAVAIDS

EXISTING ELECTRICAL ONE-LINE FOR VAULT AND AIRFIELD

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PLEASE NOTE SOME ITEMS ON THIS SHEET MAY PERTAIN TO ADDITIVE ALTERNATE NO. 1.



**PROPOSED ELECTRICAL ONE LINE DIAGRAM
FOR AIRPORT VAULT & AIRFIELD LIGHTING**

- NOTES**
1. ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER.
 2. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
 3. ALL EQUIPMENT SHOWN NOT LABELED AS EXISTING IS NEW.
 4. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY.
 5. LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.
 6. VAULT WORK SHALL BE PAID FOR UNDER ITEM AR109200. WORK AT THE AIRPORT ROTATING BEACON SHALL BE PAID FOR UNDER ITEM AR109200.

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MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS

HE Project No.	09A0010
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INSTALL AIRFIELD
LIGHTING AND NAVAIDS

PROPOSED ELECTRICAL
ONE LINE FOR VAULT AND
AIRFIELD

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A.I.P. PROJ.: 3-17-0069-B3

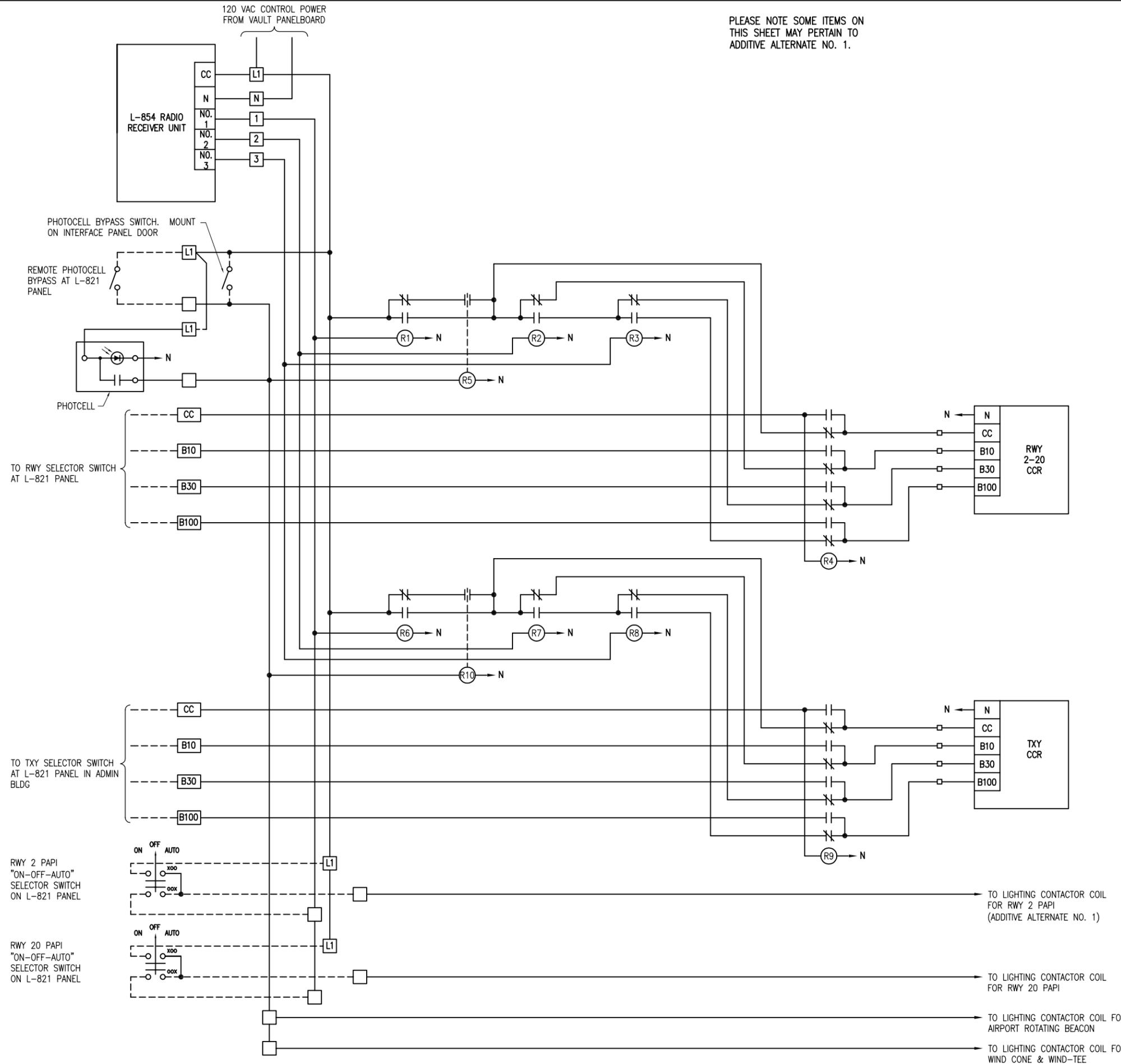
IL PROJ.: C66-4000

PLEASE NOTE SOME ITEMS ON THIS SHEET MAY PERTAIN TO ADDITIVE ALTERNATE NO. 1.

NOTES:

- RELAY INTERFACE CONTROL PANEL SHALL BE MANUFACTURED BY THE SAME MANUFACTURER FURNISHING THE L-821 CONTROL PANEL FOR THE ADMINISTRATION BUILDING TO ENSURE COMPATIBILITY. CONTROLS SHALL FUNCTION AS DESCRIBED HEREIN ON THE PLANS. PANEL SHALL BE IN A NEMA 12 ENCLOSURE. DRILL HOLE IN BOTTOM OF ENCLOSURE TO ALLOW CONDENSATION TO ESCAPE.
- EXTERNAL CONTROL CABLE SHALL BE NO. 12 AWG COPPER, 600 VOLT CABLE. ALL PANEL INTERIOR CONTROL CABLE SHALL BE MINIMUM 16 AWG, COPPER, 600 VOLT CABLE.
- IN THE AUTOMATIC MODE OF OPERATION THE RUNWAY 2-20 CIRCUIT AND TAXIWAY CIRCUIT WILL BE CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO RECEIVER UNIT IN THE FOLLOWING MANNER:
PHOTOCELL -10% BRIGHTNESS
3 CLICKS -10% BRIGHTNESS
5 CLICKS -30% BRIGHTNESS
7 CLICKS -100% BRIGHTNESS
- IN THE AUTOMATIC MODE OF OPERATION THE WIND CONE, WIND-TEE, & AIRPORT ROTATING BEACON WILL BE CONTROLLED BY THE PHOTOCELL AND ACTIVATED AT NIGHTFALL OR DARKNESS.
- IN THE AUTOMATIC MODE OF OPERATION THE PAPI UNITS WILL BE CONTROLLED BY THE L-854 RADIO RECEIVER IN THE FOLLOWING MANNER:
3 CLICKS -ON
5 CLICKS -REMAIN ON
7 CLICKS -REMAIN ON
- THE L-821 CONTROL PANEL SHALL PROVIDE MANUAL CONTROL FOR THE RUNWAY AND TAXIWAY LIGHTING. THE L-821 PANEL SHALL INCLUDE A PHOTOCELL BYPASS SWITCH. THE L-821 PANEL SHALL ALSO INCLUDE "ON-OFF-AUTO" CONTROLS TO ACTIVATE EACH PAPI.
- EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT AND EACH CONTROL CIRCUIT.
- INTERFACE PANEL SHALL INCLUDE AN EQUIPMENT GROUND BAR WITH A MINIMUM OF 8 TERMINALS, ILSCO D167-8 OR EQUAL.
- CONTROL RELAYS SHALL HAVE 10 AMP CONTACT RATINGS AT 240 VAC WITH 120 VAC COILS. PROVIDE 2 SPARE RELAYS FOR EACH TYPE USED IN THE RELAY INTERFACE PANEL.
- TERMINALS IN THE RELAY INTERFACE PANEL SHALL BE NEMA RATED TERMINAL BLOCKS. IEC RATED TERMINAL BLOCKS ARE NOT ACCEPTABLE.
- ESTABLISH A COLOR CODING FOR THE CONTROL WIRING TO EACH CONSTANT CURRENT REGULATOR AND BE CONSISTENT FOR ALL REGULATORS.
EXAMPLE:

3-STEP	
NEUTRAL	-WHITE
CC	-RED
10%	-ORANGE
30%	-YELLOW
100%	-BLUE
EQUIPT. GND	-GREEN
- L-854 RADIO RECEIVER IS EXISTING.
- EXISTING CONSTANT CURRENT REGULATORS HAVE SEPARATE CONTROL INPUTS FOR "CC" AND "B10".



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MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS
A.I.P. PROJ.: 3-17-0089-B3
IL PROJ.: C66-4000

HE Project No.	09A0010	DATE	02/09/10
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INSTALL AIRFIELD LIGHTING AND NAVAIDS
 AIRFIELD LIGHTING CONTROL SCHEMATIC

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REVISION	DATE

MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS
A.I.P. PROJ.: 3-17-0089-B3

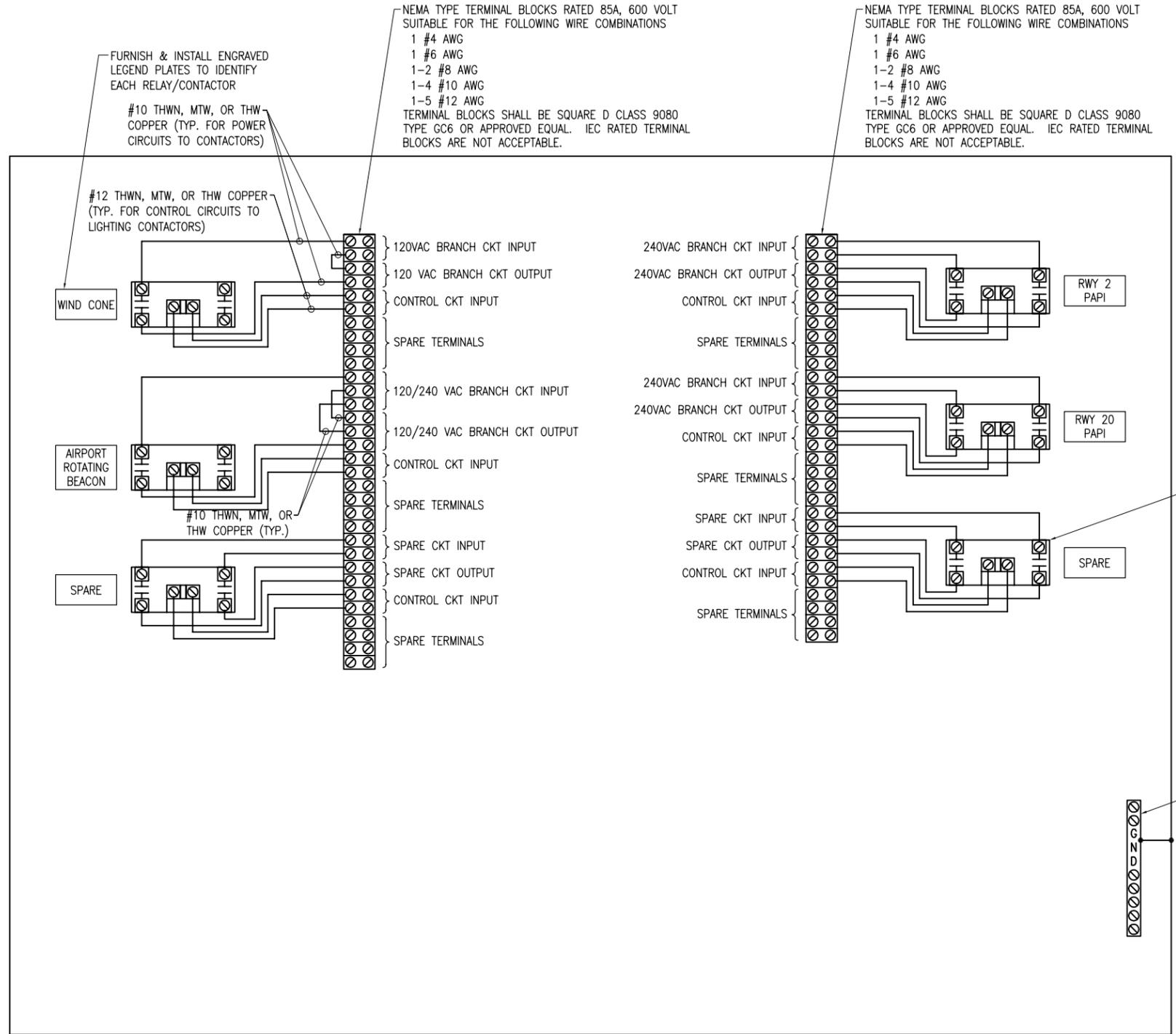
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INSTALL AIRFIELD LIGHTING AND NAVAIDS
LIGHTING CONTACTOR PANEL DETAIL

NOTES

- 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
- INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
- FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
- THE AIRPORT ROTATING BEACON CIRCUIT SHALL HAVE PHASE "A" SWITCHED THROUGH THE LIGHTING CONTACTOR. PHASE "B" SHALL BE UNSWITCHED FROM THE POWER SOURCE TO THE LOAD CENTER AT THE AIRPORT ROTATING BEACON.
- PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
- SEE "AIRFIELD LIGHTING CONTROL SCHEMATIC SCHEMATIC" SHEET FOR ADDITIONAL INFORMATION ON WIRING.
- INCLUDE LEGEND PLATE LABELED "NOTICE LIGHTING CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME".
- 120/240 VAC PHASE "A" CONDUCTORS SHALL HAVE BLACK COLORED INSULATION. 120/240 VAC PHASE "B" CONDUCTORS SHALL HAVE RED COLORED INSULATION. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION. INSULATED EQUIPMENT GROUND WIRES SHALL HAVE GREEN COLORED INSULATION.
- CONTROL PANEL FOR AIRFIELD NAVAIDS SHALL BE MANUFACTURED BY A UL 508 INDUSTRIAL CONTROL PANEL BUILDER OR AN FAA APPROVED L-821 PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH "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.



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

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

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

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

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

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

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

CONTROL PANEL FOR AIRFIELD NAVAIDS

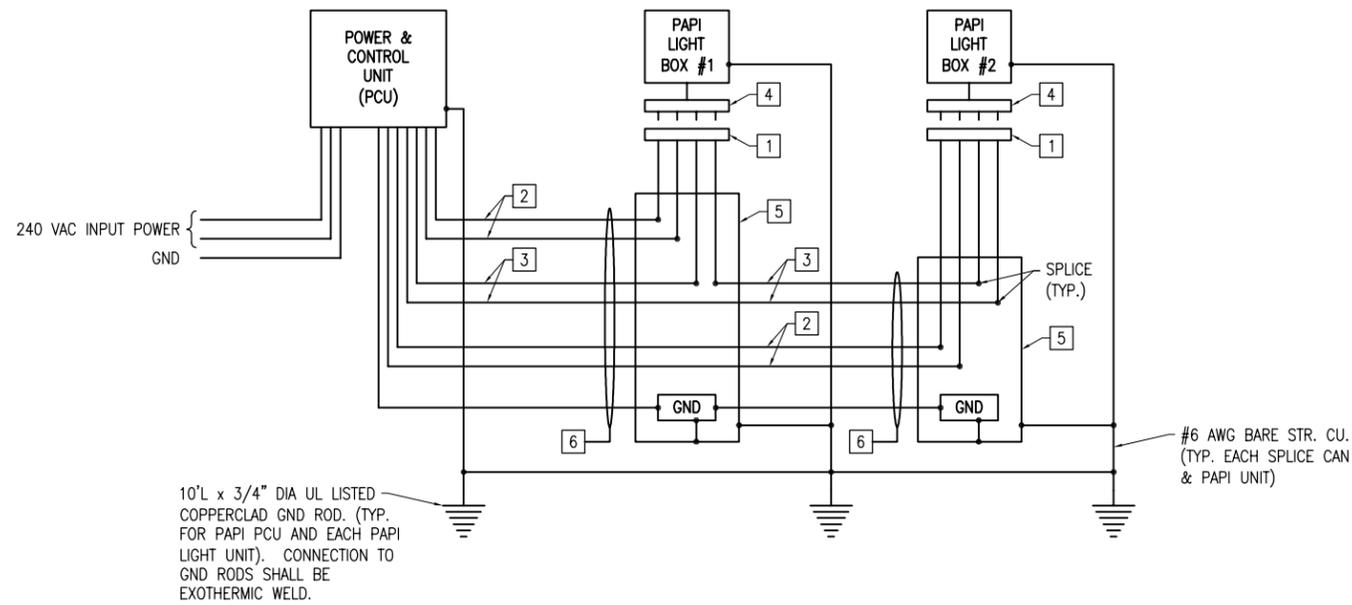
PLEASE NOTE SOME ITEMS ON THIS SHEET MAY PERTAIN TO ADDITIVE ALTERNATE NO. 1.

NOTES

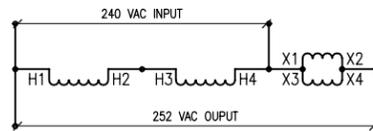
1. PAPI FIELD WIRING CONNECTION DIAGRAM IS BASED ON A CROUSE-HINDS PART NO 881A3A-1, L-881 STYLE A (VOLTAGE POWERED) PAPI WITH 3 LAMPS PER LIGHT BOX, & INFORMATION PROVIDED BY CROUSE-HINDS FIELD SERVICE SUPPORT CENTER. WIRING REQUIREMENTS VARY FOR DIFFERENT PAPI MANUFACTURERS AND DIFFERENT PAPI MODEL 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.



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



NOTES:

1. WIRING DIAGRAM SHOWN IS TYPICAL FOR MULTIPLE 120 x 240 VAC PRIMARY, 12/24 VAC SECONDARY BUCK-BOOST TRANSFORMERS FROM VARIOUS MANUFACTURERS. WIRING MIGHT VARY BETWEEN DIFFERENT MANUFACTURERS. CONFIRM WIRING WITH RESPECTIVE TRANSFORMER MFR.
2. PROVIDE BOOST TRANSFORMER AT VAULT WHERE VOLTAGE DROP FROM VAULT TO RESPECTIVE PAPI POWER AND CONTROL UNIT EXCEEDS 5% (12 VOLTS FOR 240 VAC NOMINAL SUPPLY). BOOST TRANSFORMER IS NOT REQUIRED WHERE PAPI PCU HAS INPUT POWER TRANSFORMER TAP ADJUSTMENTS SUITABLE FOR RESPECTIVE INPUT VOLTAGE AND CABLE LOSSES.
3. BOOST TRANSFORMERS SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE "BUY AMERICAN ACT".

240 VAC TO 252 VAC BOOST TRANSFORMER CONNECTION DIAGRAM
120 x 240 VAC PRIMARY, 12/24 VAC SECONDARY TRANSFORMER

REVISION	
DATE	

MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS

A.I.P. PROJ.: 3-17-0089-B3

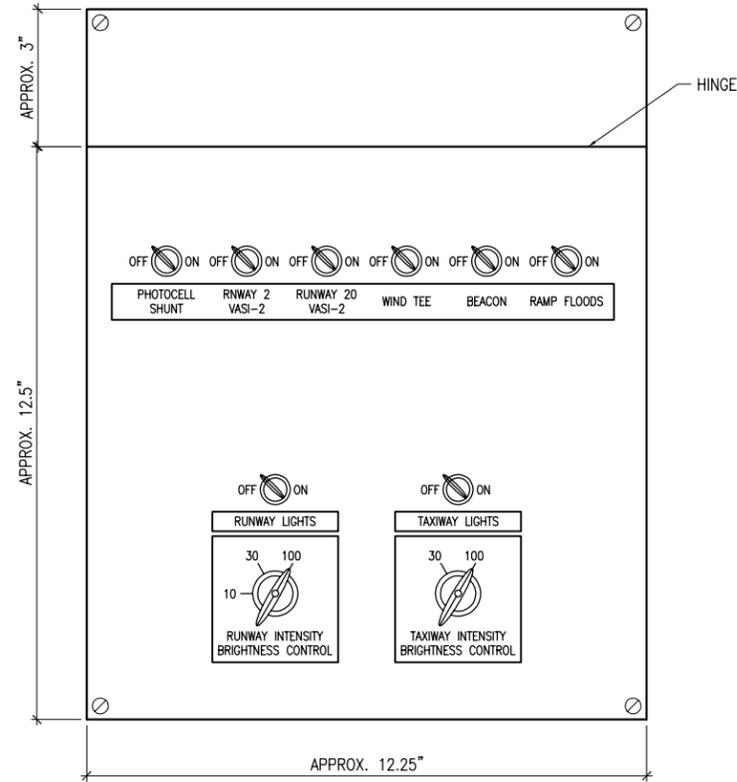
IL PROJ.: C66-4000

HE Project No.	09A0010
Filename	E-603.DWG
Scale	NONE
Date	04/16/10
LAYOUT	KNL 02/03/10
DRAWN	MW 02/03/10
REVIEWED	KNL/RAW 03/16/10

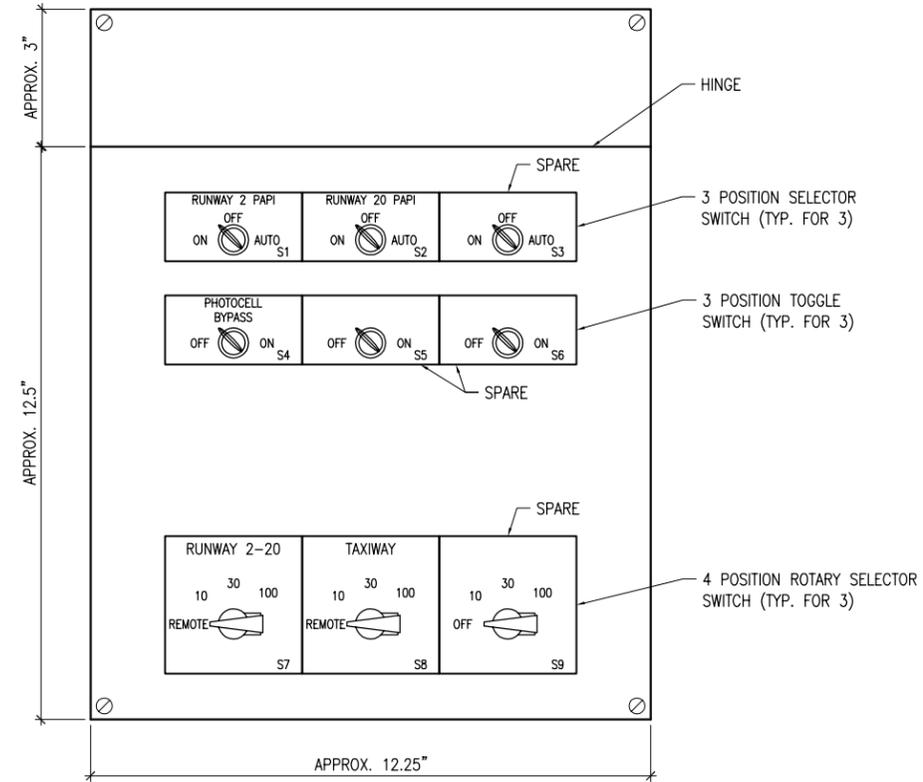
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INSTALL AIRFIELD
LIGHTING AND NAVAIDS

PAPI FIELD WIRING
CONNECTIONS



EXISTING L-821 PANEL



NEW L-821 PANEL

NOTES

1. THE NEW L-821 CONTROL PANEL SHALL REPLACE THE EXISTING L-821 CONTROL PANEL LOCATED IN THE ADMINISTRATION BUILDING. THE EXISTING L-821 PANEL IS AN FAA SPEC TYPE I (CONVENTIONAL PANEL), CLASS W (WALL MOUNT), STYLE 1 (UNLIGHTED), MODE 1. THE EXISTING L-821 PANEL DIMENSIONS ARE APPROXIMATELY 12.25" WIDE BY 15.5" HIGH. DEPTH OF ENCLOSURE WILL NEED TO BE MEASURED. CONTRACTOR SHALL FIELD VERIFY EXISTING DIMENSIONS TO CONFIRM.
2. THE NEW L-821 CONTROL PANEL SHALL BE COMPATIBLE WITH THE EXISTING WALL OPENING OR CONTRACTOR SHALL MODIFY WALL PANEL OPENING TO BE COMPATIBLE WITH THE NEW L-821 CONTROL PANEL. THE NEW L-821 CONTROL PANEL SHALL BE TYPE I (CONVENTIONAL PANEL), CLASS W (WALL 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/SIEMENS, 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 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 ADMINISTRATION BUILDING WILL BE PAID FOR UNDER ITEM AR109600 L-821 CONTROL PANEL PER EACH. REMOVAL OF EXISTING L-821 PANEL, REMOVAL OF EXISTING RELAY INTERFACE PANEL, REMOVAL OF EXISTING CONTROL WIRING, INTERFACE TO EXISTING L-854 RADIO RECEIVER, 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 ADMINISTRATION BUILDING WILL BE PAID FOR UNDER ITEM AR109600.

DATE	REVISION

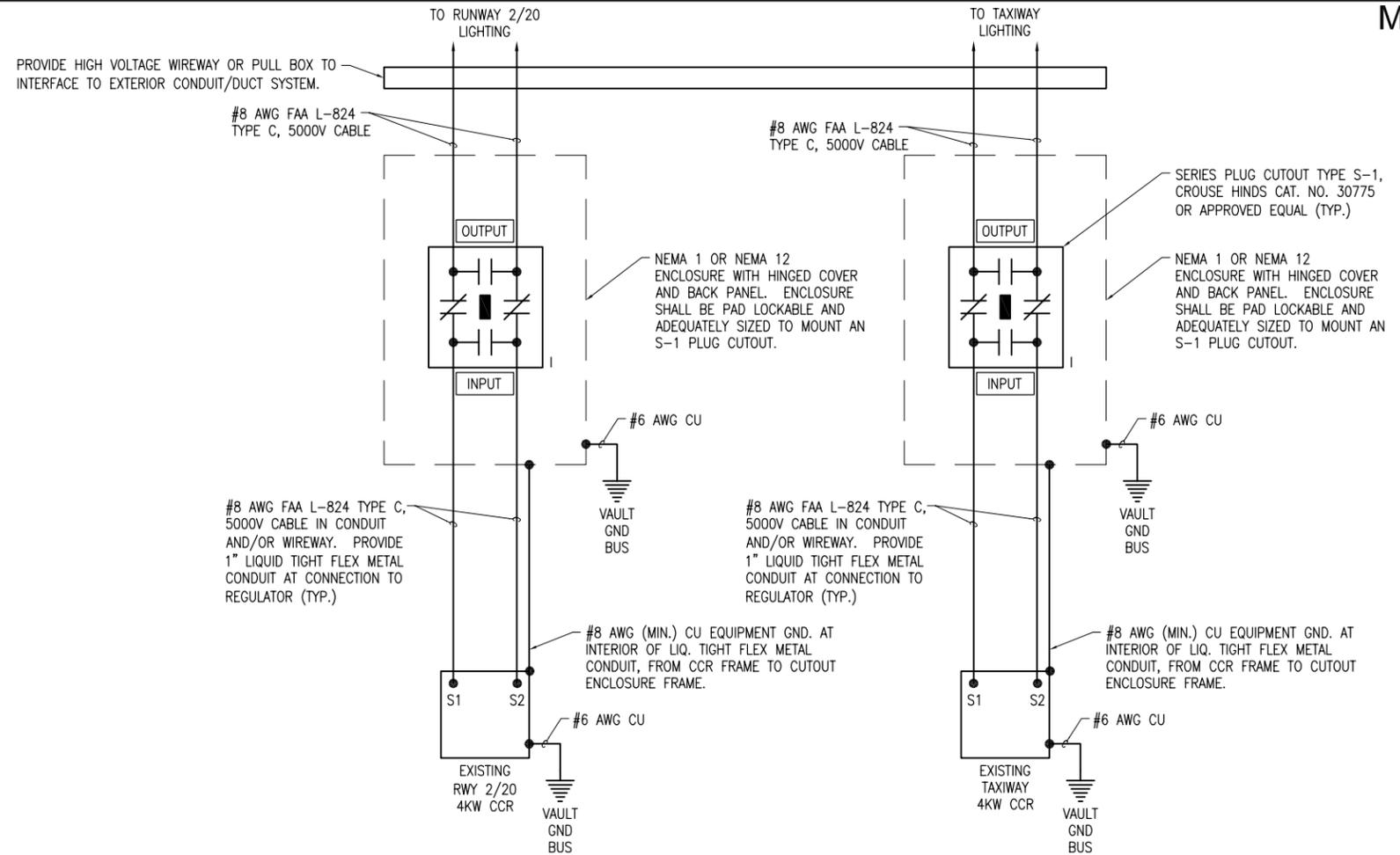
MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS
A.I.P. PROJ.: 3-17-0069-B3
IL PROJ.: C56-4000

HE Project No. 09A0010	02/03/10
Filename E-501.DWG	02/03/10
Scale NONE	
Date 04/16/10	
LAYOUT KNL	
DRAWN MW	
REVIEWED KNL/RAW	

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INSTALL AIRFIELD LIGHTING AND NAVAIDS
L-821 CONTROL PANEL

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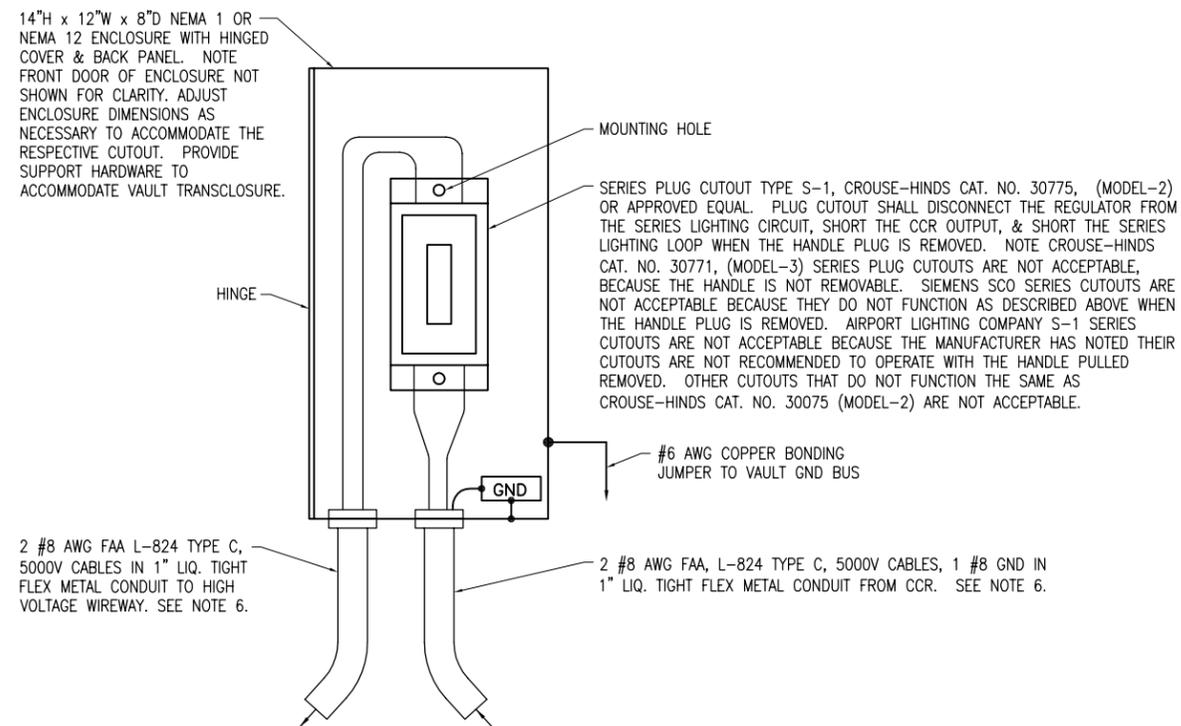
HIGH VOLTAGE WIRING SCHEMATIC

NOTES

1. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CONSTANT CURRENT REGULATOR NOTING THE REGULATOR DESIGNATION, THE RUNWAY OR TAXIWAY SERVED AND THE POWER SOURCE AND CIRCUIT NUMBER.
2. EACH PLUG CUTOUT CABINET SHALL BE FURNISHED WITH A PHENOLIC ENGRAVED LEGEND PLATE THAT IDENTIFIES THE RESPECTIVE CIRCUIT OR REGULATOR.
3. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CUTOUT TO IDENTIFY THE RESPECTIVE CUTOUT INPUT CONNECTION AND THE RESPECTIVE CUTOUT OUTPUT CONNECTION.
4. PROVIDE ADEQUATE WORKING SPACE IN FRONT OF EACH CUTOUT ENCLOSURE TO MEET NEC CLEARANCE REQUIREMENTS.
5. PROVIDE WARNING SIGNS ON VAULT TRANSCLOSURE DOORS LABELED "DANGER - HIGH VOLTAGE - KEEP OUT" PER THE REQUIREMENTS OF NEC 110.34 (C).
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 INSTALLATION.

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

(TYPICAL FOR 2)

REVISION	DATE

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MONMOUTH, ILLINOIS

A.I.P. PROJ.: 3-17-0069-B3
C66-4000

HE Project No. 09A0010	HE Project Name E-605.DWG	Scale NONE	Date 04/16/10
LAYOUT	KNL	02/09/10	
DRAWN	MV	02/10/10	
REVIEWED	KNL/RAW	03/16/10	

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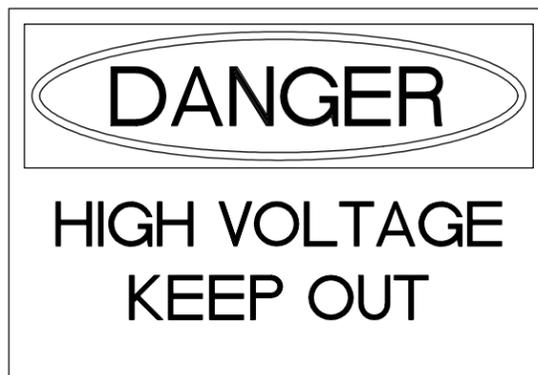
INSTALL AIRFIELD LIGHTING AND NAVAIDS
HIGH VOLTAGE WIRING SCHEMATIC

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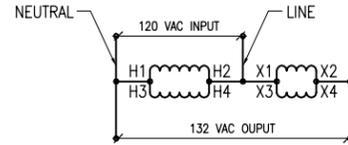
VAULT LEGEND PLATE SCHEDULE	
DEVICE	LABEL
VAULT PANELBOARD	VAULT PANEL 120/240 VAC, 1 PH, 3 W
RUNWAY 2-20 CCR	RUNWAY 2-20
TAXIWAY CCR	TAXIWAY
CUTOUT ENCLOSURE FOR RUNWAY 2-20	RUNWAY 2-20 CUTOUT
CUTOUT ENCLOSURE FOR TAXIWAY	TAXIWAY CUTOUT
EACH CUTOUT INPUT SIDE CONNECTION	INPUT
EACH CUTOUT OUTPUT SIDE CONNECTION	OUTPUT
EACH CUTOUT ENCLOSURE	CAUTION OPERATE CUTOUT WITH CCR SHUT OFF
RADIO INTERFACE PANEL FOR RUNWAYS & TAXIWAY	RADIO RELAY INTERFACE CONTROL PANEL
LIGHTING CONTACTOR PANEL	LIGHTING CONTACTOR PANEL FOR AIRFIELD LIGHTING & NAVAIDS
LIGHTING CONTACTOR PANEL	NOTICE LIGHTING 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

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.



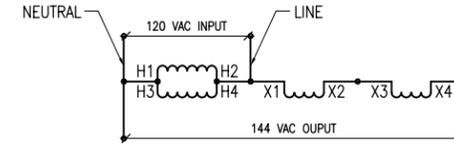
PROVIDE WARNING SIGNS ON VAULT TRANSCLOSURE EXTERIOR DOORS LABELED "DANGER - HIGH VOLTAGE - KEEP OUT" PER THE REQUIREMENTS OF NEC 110.34 (C). PROVIDE 4 SIGNS FOR VAULT TRANSCLOSURE.



NOTES:

1. WIRING DIAGRAM SHOWN IS TYPICAL FOR MULTIPLE 120 x 240 VAC PRIMARY, 12/24 VAC SECONDARY BUCK-BOOST TRANSFORMERS FROM VARIOUS MANUFACTURERS. WIRING MIGHT VARY BETWEEN DIFFERENT MANUFACTURERS. CONFIRM WIRING WITH RESPECTIVE TRANSFORMER MFR.
2. BOOST TRANSFORMERS SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE "BUY AMERICAN ACT".

**120 VAC TO 132 VAC BOOST TRANSFORMER
CONNECTION DIAGRAM FOR 120 x 240 VAC PRIMARY,
12/24 VAC SECONDARY TRANSFORMER**



NOTES:

1. WIRING DIAGRAM SHOWN IS TYPICAL FOR MULTIPLE 120 x 240 VAC PRIMARY, 12/24 VAC SECONDARY BUCK-BOOST TRANSFORMERS FROM VARIOUS MANUFACTURERS. WIRING MIGHT VARY BETWEEN DIFFERENT MANUFACTURERS. CONFIRM WIRING WITH RESPECTIVE TRANSFORMER MFR.
2. BOOST TRANSFORMERS SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE "BUY AMERICAN ACT".

**120 VAC TO 144 VAC BOOST TRANSFORMER
CONNECTION DIAGRAM FOR 120 x 240 VAC PRIMARY,
12/24 VAC SECONDARY TRANSFORMER**

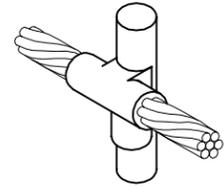
VAULT PANELBOARD SCHEDULE							
CKT #	DUTY	SIZE		SIZE	DUTY	CKT #	
1	MAIN BREAKER	100A 2P		30A 2P	TVSS	2	
3		---		---	---	---	4
5	RUNWAY CCR	30A 2P		30A 2P	AIRPORT ROTATING BEACON	6	
7		---		---	---	---	8
9	TAXIWAY CCR	30A 2P		20A 1P	WIND CONE & WIND TEE	10	
11		---		10A 1P	CONTROL CIRCUIT	12	
13	VAULT RECEPTACLE	20A 1P		20A 2P	RUNWAY 20 PAPI	14	
15	SPARE	20A 1P		---	---	---	16
17	SPARE	15A 1P		20A 2P	RUNWAY 2 PAPI	18	
19	BLANK	---		---	---	---	20
21	BLANK	---		---	BLANK	---	22
23	BLANK	---		---	BLANK	---	24
25	BLANK	---		---	BLANK	---	26
27	BLANK	---		---	BLANK	---	28
29	BLANK	---		---	BLANK	---	30

100 AMP, 120/240 VAC, 1 PHASE, 3 WIRE, 30 CIRCUIT PANELBOARD WITH MAIN LUGS IN A NEMA 1 ENCLOSURE. INCLUDE SEPARATE GROUND BAR KIT. ALL BRANCH BREAKERS SHALL BE BOLT-ON TYPE WITH 10,000 AIC AT 120/240 VAC. PANELBOARD SHALL BE SQUARE D CAT. NO. NQ30L1C OR APPROVED EQUAL.

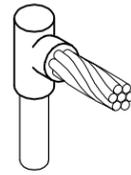
NOTES

1. PANELBOARD BUS SHALL BE COPPER. NEUTRAL BUS SHALL BE COPPER. EQUIPMENT GROUND BARS SHALL BE COPPER.
2. INCLUDE ENGRAVED PHENOLIC LEGEND PLATE LABELED "VAULT PANEL, 120/240 VAC, 1 PHASE, 3 WIRE, FED FROM ADMIN. BLDG SERVICE PANEL".
3. PROVIDE A 20 AMP, 120 VAC SPEC GRADE GFCI NEMA 5-20R RECEPTACLE WITH WEATHERPROOF BOX & STAINLESS STEEL COVER PLATE. INSTALL ADJACENT TO PANELBOARD.
4. PANELBOARD SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE "BUY AMERICAN ACT". PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWING SUBMITTAL.

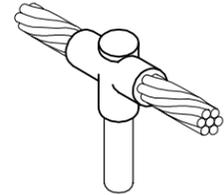
REVISION	
DATE	
MONMOUTH MUNICIPAL AIRPORT MONMOUTH, ILLINOIS	
A.I.P. PROJ.: 3-17-0069-B3	
I/E Project No. 09A0010 Filename: E-606.DWG Scale: NONE Date: 04/16/10	LAYOUT: KNL 02/09/10 DRAWN: MW 02/10/10 REVIEWED: KNL/RAW 03/16/10
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INSTALL AIRFIELD LIGHTING AND NAVAIDS	SCHEDULES AND TRANSFORMER WIRING DIAGRAMS
26	
26 of 28 sheets	



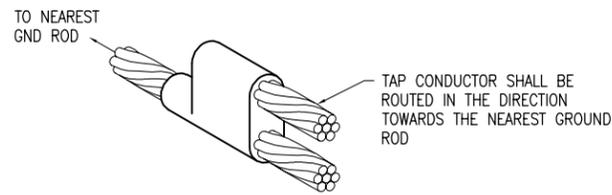
CABLE TO GROUND ROD



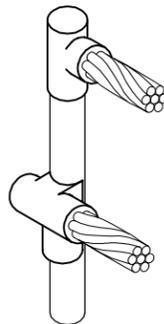
CABLE TO GROUND ROD



CABLE TO GROUND ROD



**CABLE TO CABLE
HORIZONTAL PARALLEL TAP**

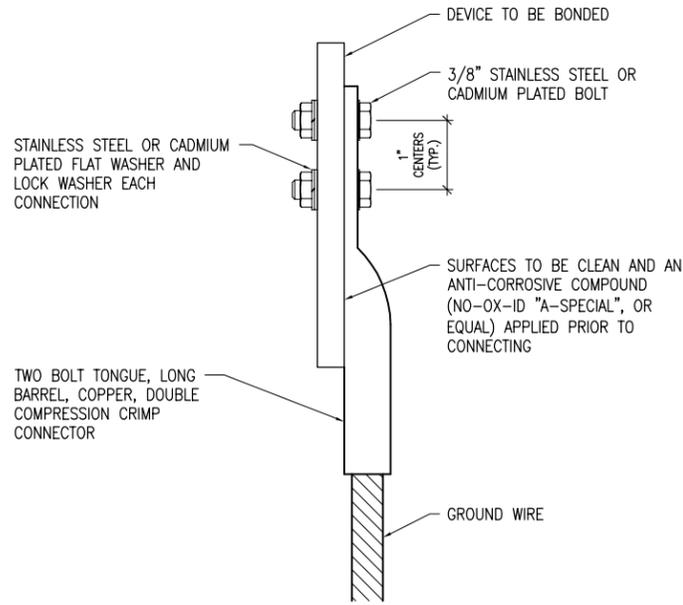


CABLES TO GROUND ROD

DETAIL NOTES

- ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, 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.
- FOR APPLICATIONS TO GALVANIZED STEEL OR PAINTED STEEL, REMOVE GALVANIZING AND/OR PAINT & CLEAN THE SURFACE TO EXPOSE BARE STEEL BEFORE MAKING EXOTHERMIC WELD CONNECTION.
- INDIVIDUAL GROUNDING ELECTRODE CONDUCTORS SHALL NOT BE INSTALLED IN METAL CONDUIT. INSTALL GROUNDING ELECTRODE CONDUCTORS IN SCHED 40 PVC CONDUIT AS REQUIRED IN FOUNDATIONS, FOR PROTECTION, WHERE ENTERING ENCLOSURES, ETC. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENCIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT.

EXOTHERMIC WELD DETAILS

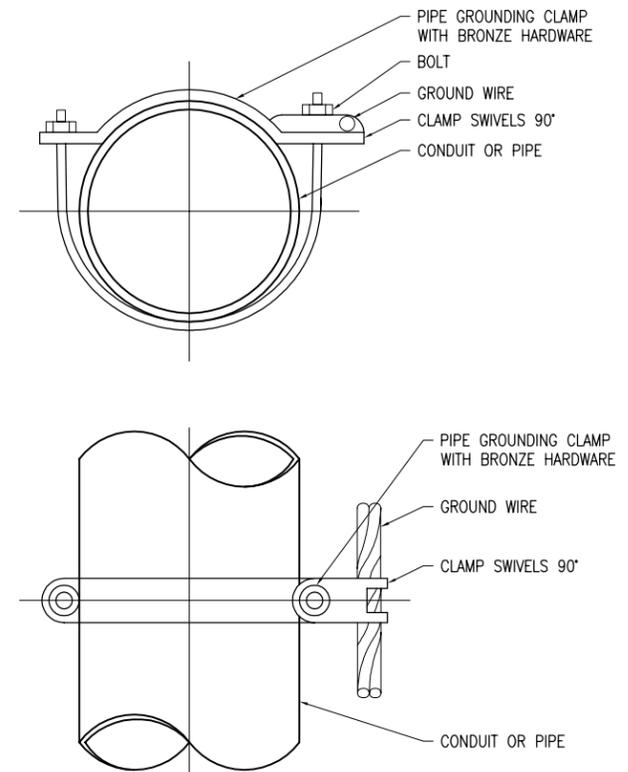


2 HOLE LONG BARREL COMPRESSION LUG TABLE			
WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1		
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159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

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

GROUNDING LUG CONNECTION DETAIL



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

NOTES

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

PIPE/CONDUIT GROUNDING CLAMP DETAIL

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HE Project No. 09A0010	02/03/10
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INSTALL AIRFIELD
LIGHTING AND NAVAIDS
GROUNDING DETAILS

GROUNDING NOTES

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70) IN FORCE AND FAA-STD-019e (LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING, AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT). THE RELIABILITY OF THE GROUNDING SYSTEM IS DEPENDENT ON CAREFUL, PROPER INSTALLATION AND CHOICE OF MATERIALS. IMPROPER PREPARATION OF SURFACES TO BE JOINED TO MAKE AN ELECTRICAL PATH, LOOSE JOINTS OR CORROSION CAN INTRODUCE IMPEDANCE THAT WILL SERIOUSLY IMPAIR THE ABILITY OF THE GROUND PATH TO PROTECT PERSONNEL AND EQUIPMENT AND TO ABSORB TRANSIENTS THAT CAN CAUSE NOISE IN COMMUNICATIONS CIRCUITS. THE FOLLOWING FUNCTIONS ARE PARTICULARLY IMPORTANT TO ENSURE A RELIABLE GROUND SYSTEM:
2. FURNISH AND INSTALL GROUND RODS AS DETAILED HEREIN. GROUND RODS FOR AIRFIELD LIGHTING (RUNWAY LIGHTING, TAXIWAY LIGHTING, TAXI GUIDANCE SIGNS, & DISTANCE REMAINING SIGNS) SHALL BE MINIMUM 5/8-IN. DIAMETER BY 8-FT LONG, UL-LISTED COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS FOR OTHER APPLICATIONS SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED, COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS SHALL BE SPACED OR AS DETAILED ON THE RESPECTIVE PLANS, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH APART. ALL CONNECTIONS TO GROUND RODS AND THE GROUND RING SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE 1-800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE 918-663-1440) OR ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE 1-800-842-7437). EXOTHERMIC WELD CONNECTIONS SHALL BE INSTALLED IN CONFORMANCE WITH THE RESPECTIVE MANUFACTURER'S DIRECTIONS USING MOLDS AS REQUIRED FOR EACH RESPECTIVE APPLICATION. BOLTED CONNECTIONS WILL NOT BE PERMITTED AT GROUND RODS OR AT BURIED GROUNDING ELECTRODE CONDUCTORS.
3. CONTRACTOR SHALL TEST EACH MADE ELECTRODE GROUND ROD/GROUND FIELD/GROUND RING WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUND FIELD SYSTEMS. IF GROUND RESISTANCE EXCEEDS 10 OHMS, CONTACT THE ENGINEER FOR FURTHER DIRECTION. COPIES OF GROUND FIELD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER, UPON REQUEST, FOR REVIEW AND RECORD PURPOSES.
4. ALL PRODUCTS ASSOCIATED WITH THE GROUNDING SYSTEM SHALL BE UL-LISTED AND LABELED.
5. ALL BOLTED OR MECHANICAL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND BEFORE JOINING, SANICHEM INC. "NO-OX-ID "A-SPECIAL" COMPOUND, BURNDY PENETROX E, OR EQUAL.
6. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2008 NATIONAL ELECTRICAL CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.
7. METALLIC RACEWAY FITTINGS SHALL BE MADE UP TIGHT TO PROVIDE A PERMANENT LOW IMPEDANCE PATH FOR ALL CIRCUITS. METAL CONDUIT TERMINATIONS IN ENCLOSURES SHALL BE BONDED TO THE ENCLOSURE WITH UL-LISTED FITTINGS SUITABLE FOR GROUNDING. PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPER FOR ALL METAL CONDUITS ENTERING SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPER FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT
8. ALL CONNECTIONS, LOCATED ABOVE GRADE, BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS SHALL BE MADE USING UL-LISTED DOUBLE COMPRESSION CRIMP TYPE CONNECTORS OR UL-LISTED BOLTED GROUND CONNECTORS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, THOMAS AND BETTS, OR EQUAL. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES IN UL STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
9. ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
10. PROVIDE ALL BOXES FOR PROPOSED OUTLETS, SWITCHES, CIRCUIT BREAKERS, ETC. WITH GROUNDING SCREWS. PROVIDE ALL PANELBOARD, SWITCHGEAR, ETC., ENCLOSURES WITH GROUNDING BARS WITH INDIVIDUAL SCREWS, LUGS, CLAMPS, ETC., FOR EACH OF THE GROUNDING CONDUCTORS THAT ENTER THEIR RESPECTIVE ENCLOSURES.
11. EACH NEW FEEDER CIRCUIT AND/OR BRANCH CIRCUIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. METAL RACEWAY OR CONDUIT SHALL NOT MEET THIS REQUIREMENT. THE EQUIPMENT GROUND WIRE FROM EQUIPMENT SHALL NOT BE SMALLER THAN ALLOWED BY 2008 NEC TABLE 250-122 "MINIMUM SIZE CONDUCTORS OR GROUNDING RACEWAY AND EQUIPMENT." WHEN CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT-GROUNDING CONDUCTORS SHALL BE ADJUSTED PROPORTIONATELY ACCORDING TO CIRCULAR MIL AREA. ALL EQUIPMENT GROUND WIRES SHALL BE COPPER, EITHER BARE OR INSULATED GREEN IN COLOR. WHERE THE EQUIPMENT GROUNDING CONDUCTORS ARE INSULATED, THEY SHALL BE IDENTIFIED BY THE COLOR GREEN, AND SHALL BE THE SAME INSULATION TYPE AS THE PHASE CONDUCTORS.
12. ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC., SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 2008 NEC 250-102. WHERE METAL CONDUITS TERMINATE IN AN ENCLOSURE (SUCH AS A MOTOR CONTROL CENTER, SWITCHBOARD, ETC) WHERE THERE IS NOT ELECTRICAL CONTINUITY WITH THE CONDUIT AND THE RESPECTIVE ENCLOSURE, PROVIDE A BONDING JUMPER FROM THE RESPECTIVE ENCLOSURE GROUND BUS TO THE CONDUIT SIZED PER 2008 NEC 250-102.
13. IT IS THE INTENT OF THIS SPECIFICATION THAT ALL MOTOR FRAMES, PUMP BASES ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.
14. PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUNDED NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
15. EACH AND ALL GROUNDED CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.
16. ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, OR EQUAL.
17. BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
18. BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.
19. INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY ENIRCLE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. USE NON-METALLIC REINFORCED FIBERGLASS STRUT SUPPORT. WHERE METAL CONDUIT CLAMPS ARE INSTALLED, USE NYLON BOLTS, NUTS, WASHERS AND SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT. THIS IS REQUIRED TO AVOID GIRDLING OF GROUND CONDUCTORS. GIRDLING OF A GROUND CONDUCTOR IS THE RESULT OF PLACING THE CONDUCTOR IN A RING OF MAGNETIC MATERIAL. THIS RING COULD BE A METALLIC CONDUIT, U-BOLT OR STRUT SUPPORT PIPE CLAMP, OR OTHER SUPPORT HARDWARE. THE RESULT OF GIRDLING GROUND CONDUCTORS SIGNIFICANTLY INCREASES THE INDUCTIVE IMPEDANCE OF THE GROUND CONDUCTOR. INDUCTIVE AND CAPACITIVE IMPEDANCE IS A TYPE OF RESISTANCE THAT OPPOSES THE FLOW OF ALTERNATING CURRENT. ANY INCREASE IN THE IMPEDANCE OF A GROUND CONDUCTOR REDUCES ITS ABILITY TO EFFECTIVELY MITIGATE RADIO FREQUENCY NOISE IN THE GROUND SYSTEM. THE CONDITION WHERE A GROUND CONDUCTOR IS GIRDLED DURING A LIGHTNING STRIKE RESULTS IN PHENOMENA KNOWN AS SURGE IMPEDANCE LOADING. SURGE IMPEDANCE LOADING IS A RESULT OF VOLTAGE AND CURRENT REACHING 500,000 VOLTS AND 10,000 AMPS FOR A SHORT DURATION. GIRDLING FURTHER INCREASES THE IMPEDANCE AT LIGHTNING FREQUENCIES OF 100 KILOHERTZ TO 100 MEGAHERTZ. AT THESE POWER AND FREQUENCY LEVELS ANY INCREASE IN THE IMPEDANCE OF THE GROUND CONDUCTOR MUST BE CONTROLLED. DURING LIGHTNING DISCHARGE CONDITIONS A LOW INDUCTIVE IMPEDANCE PATH IS MORE IMPORTANT THAN A LOW DC RESISTANCE PATH.
20. IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2008 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
21. WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.

REVISION	
DATE	

**MONMOUTH MUNICIPAL AIRPORT
MONMOUTH, ILLINOIS**

A.I.P. PROJ.: 3-17-0069-B3
IL PROJ.: C66-4000

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Date 04/16/10	
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DRAWN	MLH
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**INSTALL AIRFIELD
LIGHTING AND NAVAIDS**

GROUNDING NOTES

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