

CONSTRUCTION PLANS - NOVEMBER 20, 2015

**REMOVE THE EXISTING ELECTRICAL VAULT AND
CONSTRUCT A NEW ELECTRICAL VAULT; REMOVE
THE EXISTING PLASI UNITS AND INSTALL NEW PAPI**

**CITY OF MT. STERLING
MT. STERLING MUNICIPAL AIRPORT (I63)
MT. STERLING, BROWN COUNTY, ILLINOIS**

**IDA PROJECT NO. I63 - 4325
SBG PROJECT NO. 3-17-SBGP-XX**

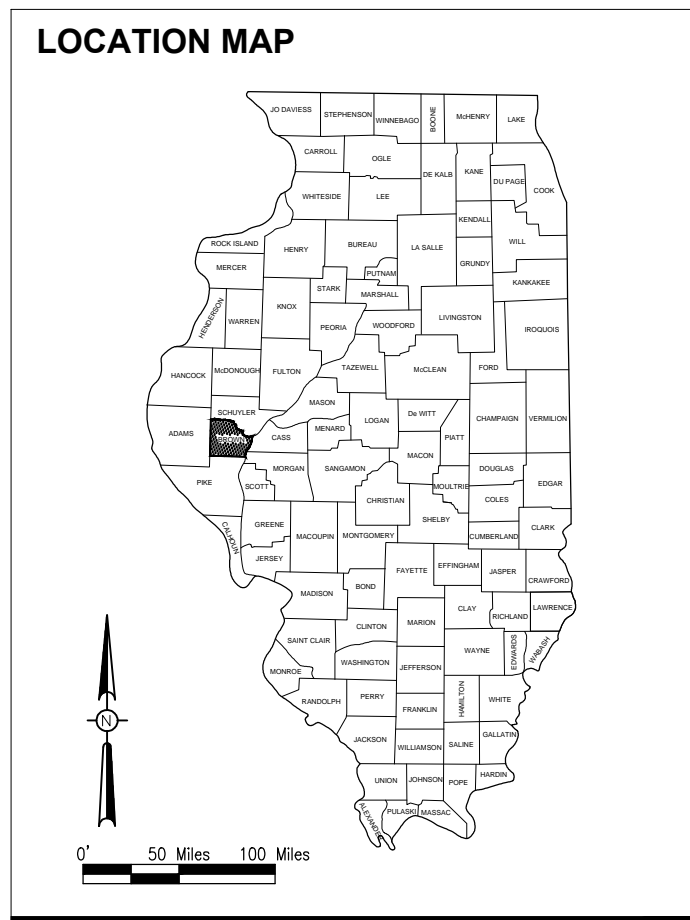
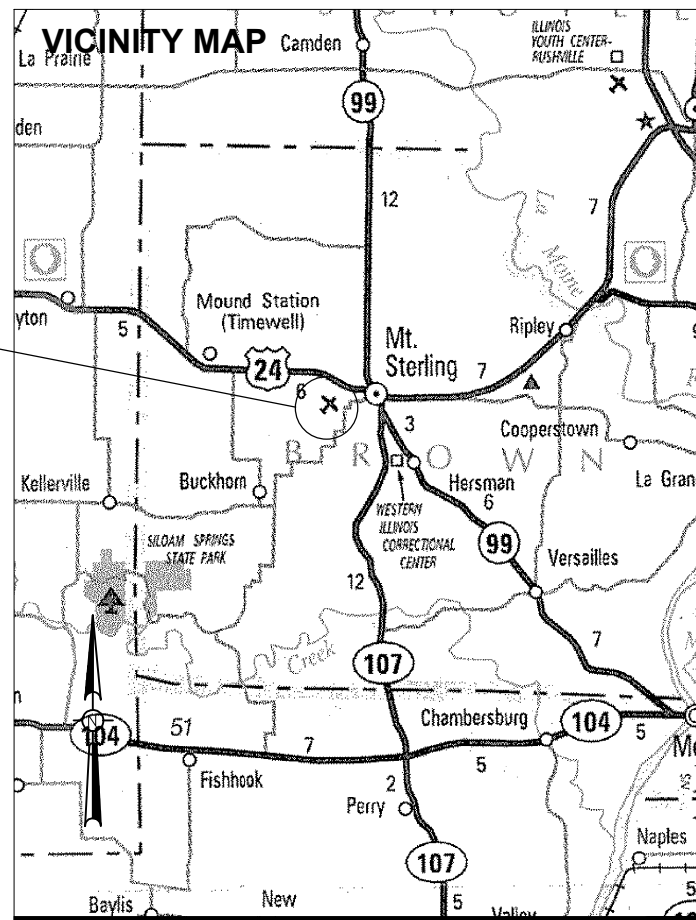
MT. STERLING MUNICIPAL AIRPORT

SCOPE OF WORK

THIS PROJECT CONSISTS OF REMOVING THE EXISTING ELECTRICAL VAULT AND CONSTRUCTION OF A NEW ELECTRICAL VAULT, REMOVING EXISTING PLASI UNITS AND INSTALLING TWO L-880 PAPI SYSTEMS ON RUNWAY 18-36, AND THE ASSOCIATED CABLING, DUCT WORK, HANDHOLES, MANHOLES AND VAULT WORK.

NOTICE TO CONTRACTORS AND BIDDERS

THESE CONSTRUCTION PLANS RELY UPON THE SPECIAL PROVISIONS AND THE SPECIFICATIONS TO PROVIDE FOR A COMPLETE DESCRIPTION OF THE WORK AND CONSTRUCTION REQUIREMENTS. THE PLANS SHALL ONLY BE USED IN COMBINATION WITH ALL CONTRACT DOCUMENTS.



| No. | Issue/Description | Sheets Changed | Date | By |
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COVERING ELECTRICAL DESIGN

Kevin N. Lightfoot
Kevin N. Lightfoot, P.E.
Electrical Engineer
Lic. Exp. 11/30/2017

KEVIN N. LIGHTFOOT
062-047643
LICENSED PROFESSIONAL ENGINEER
STATE OF ILLINOIS
11/20/2015

COVERING CIVIL DESIGN

Charles A. Hagloch
Charles A. Hagloch, P.E.
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Lic. Exp. 11/30/2017

CHARLES A. HAGLOCH
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LICENSED PROFESSIONAL ENGINEER
STATE OF ILLINOIS
11/23/2015

CITY OF MT. STERLING
145 West Main Street
Mt. Sterling, Illinois 62053

Paul Walker
Paul Walker
Airport Manager
11/23/15

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| BENCHMARK DATA | | | | |
|----------------|--|--------------|--------------|--------|
| NO. | DESCRIPTION | NORTHING | EASTING | ELEV. |
| 1 | IDOT DISK - MT. STERLING 1994 | 1212035.3047 | 2118150.0524 | 731.48 |
| 2 | CHISELED "□" ON SW COR. SIDEWALK ALONG S. SIDE OF HANGAR | 1210799.0479 | 2118933.3224 | 729.66 |
| 3 | IDOT DISK - MT. STERLING AZ 1994 | 1208233.8714 | 2118062.3211 | 720.53 |

| CRITICAL POINT DATA | | | | | | |
|---------------------|---------------|----------------|----------------|--------------------|--------------|-------------------|
| POINT NO. | DESCRIPTION | LATITUDE | LONGITUDE | GROUND ELEV. (MSL) | HEIGHT (AGL) | TOTAL ELEV. (MSL) |
| 1 | CONST. EQUIP. | 39° 59' 17.41" | 90° 48' 06.64" | 726.2' | 25' | 751.2' |
| 2 | CONST. EQUIP. | 39° 59' 19.07" | 90° 48' 13.05" | 723.8' | 25' | 748.8' |

SCOPE OF WORK

THIS PROJECT CONSISTS OF THE REMOVAL OF THE EXISTING ELECTRICAL VAULT AND CONSTRUCTION OF A NEW ELECTRICAL VAULT. IT ALSO CONSISTS OF THE REMOVAL OF THE EXISTING PLASI UNITS ON RUNWAY 18-36 AND THE INSTALLATION OF NEW PAPI UNITS ON RUNWAY 18-36.

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.

UTILITY NOTE

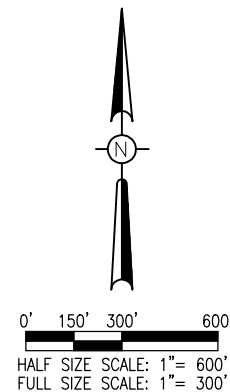
THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY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

CONTRACTOR RESPONSIBILITIES

1. THE CONTRACTOR AND HIS EMPLOYEES WILL BE RESTRICTED TO THE WORK AREA AND ALL OTHER AREAS OF THE AIRPORT ARE "OFF LIMITS" TO THEM.
2. THE CONTRACTOR SHALL KEEP RUNWAY 18-36 AND THE ACCESS TAXIWAYS OPEN AS MUCH AS POSSIBLE. TAXIWAY BRAVO CLOSURES SHALL NOT EXCEED 72 HOURS CONTINUOUS.
3. WHEN THE CONTRACTOR IS WORKING WITHIN 125' OF RUNWAY 18-36 CENTERLINE HE WILL CLOSE THE RUNWAY AND ACCESS TAXIWAYS (THUS CLOSING THE AIRPORT). THE CONTRACTOR WILL COORDINATE ALL RUNWAY CLOSURES WITH THE AIRPORT MANAGER.
4. THE RUNWAY WILL BE CLOSED ONLY FOR THE CONSTRUCTION DAY AND WILL BE RE-OPENED AT THE END OF THE CONSTRUCTION DAY. THE RUNWAY AND ACCESS TAXIWAY LIGHTING CIRCUITS WILL BE ACTIVE AS WELL.

LEGEND

- EXISTING IMPROVEMENTS
- PROPOSED IMPROVEMENTS
- EXISTING BUILDINGS
- PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
- PROPOSED BENCHMARK
- PROPOSED BARRICADES WHEN RUNWAY 18-36 IS CLOSED
- PROPOSED BARRICADES WHEN TAXIWAY "B" IS CLOSED
- PROPOSED AIRCRAFT OPERATION LINE



HAUL ROUTE AND VEHICLE PARKING

1. THE CONTRACTOR WILL BE ALLOWED TO USE THE EXISTING AIRPORT ENTRANCE ROAD, AUTO PARKING LOT, APRON, TAXIWAYS AND RUNWAY 18-36 AS HIS ACCESS THROUGHOUT THE DURATION OF THIS PROJECT. THERE IS A DOUBLE SWING GATE BETWEEN THE AUTO PARKING LOT AND THE AIRCRAFT PARKING APRON. THIS ACCESS GATE WILL REMAIN CLOSED.
2. THE CONTRACTOR WILL USE THE EXISTING AGGREGATE ROAD AS HIS ACCESS TO THE PROPOSED EQUIPMENT PARKING AND MATERIAL STORAGE AREA. THERE IS AN EXISTING DOUBLE SWING GATE ACROSS THE AGGREGATE ROAD AND THIS GATE WILL REMAIN CLOSED.
3. THE CONTRACTOR WILL FURNISH HIS OWN PAD LOCK FOR BOTH ACCESS GATES AND WILL INTERLOCK HIS PAD LOCK WITH THE EXISTING AIRPORT PAD LOCK TO ALLOW EITHER THE CONTRACTOR OR AIRPORT PERSONNEL ACCESS THROUGH THE GATE.
4. THE CONTRACTOR AND THE RESIDENT ENGINEER WILL WALK THE PROPOSED HAUL ROUTE PRIOR TO THE START OF CONSTRUCTION TO NOTE ANY DEFICIENCIES. ANY DAMAGE TO THE HAUL ROUTE WILL BE REPAIRED BY THE CONTRACTOR AT THE END OF THE PROJECT AT NO ADDITIONAL COST TO THE PROJECT.
5. THE CONTRACTOR WILL BE ALLOWED TO CONSTRUCT A 100' X 100' EQUIPMENT PARKING AND MATERIAL STORAGE AREA AS SHOWN ON THIS SHEET. THE CONTRACTOR WILL MAINTAIN THIS AREA THROUGHOUT THE PROJECT DURATION AND RETURN IT TO ITS ORIGINAL CONDITION AT THE END OF THE PROJECT.
6. THE CONTRACTOR'S EMPLOYEES WILL PARK THEIR PERSONAL VEHICLES IN THE EXISTING AIRPORT AUTO PARKING LOT. NO EMPLOYEE VEHICLES WILL BE ALLOWED BEYOND THE EXISTING AIRPORT AUTO PARKING LOT..

PROPOSED SAFETY PLAN

1. GENERAL - THE ROBERT F. TRACY MUNICIPAL AIRPORT IS COMPRISED OF ONE RUNWAY. RUNWAY 18-36 WILL BE CLOSED WHENEVER THE CONTRACTOR IS WORKING WITHIN 125' OF THE RUNWAY CENTERLINE.
2. 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.
3. RADIO CONTROL - THE CONTRACTOR WILL BE REQUIRED TO BE IN TWO-WAY RADIO CONTACT (122.80 Mhz.) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTIC EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.

HEIGHT OF CONSTRUCTION EQUIPMENT

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

NOTE

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

EROSION CONTROL

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

AIRCRAFT OPERATION LINE

THE AIRCRAFT OPERATION LINE PARALLELS THE RUNWAY AT A DISTANCE OF 125' FROM RUNWAY 18-36 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 THE RUNWAY IS NOT CLOSED. THE CONTRACTOR WILL MAINTAIN THIS LINE FOR RUNWAY 18-36 AND REMOVE THE MARKERS AT THE CONCLUSION OF THE PROJECT.

J.U.L.I.E. INFORMATION

COUNTY _____ BROWN
 CITY _____ MT. STERLING
 TOWNSHIP _____ LEE
 SECTION NO. _____ 12 & 13
 ADDRESS _____ ROBERT F. TRACY MUNICIPAL AIRPORT
 145 W. MAIN STREET
 MT. STERLING, ILLINOIS 62353-1296



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 Professional Service Corporation
 #184-001084

MT. STERLING MUNICIPAL
 AIRPORT

145 WEST MAIN STREET
 MT. STERLING, IL 62353

**REMOVE AND
 REPLACE THE VADI
 UNITS ON RUNWAY
 18-36; REPLACE
 ELECTRICAL VAULT**

IDA No: I63-4325
 SBG NO: 3-17-SBGP-XX

Contract No. MS008

| NO. | DATE | DESCRIPTION | | |
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ISSUE: NOVEMBER 20, 2015
 PROJECT NO: 13A0076D
 CAD FILE: G-003-SFY.DWG
 DESIGN BY: CAH
 DRAWN BY: CAH
 REVIEWED BY: KNL 10/14/2015

SHEET TITLE

**PROPOSED SAFETY
 PLAN**

SAFETY NOTES

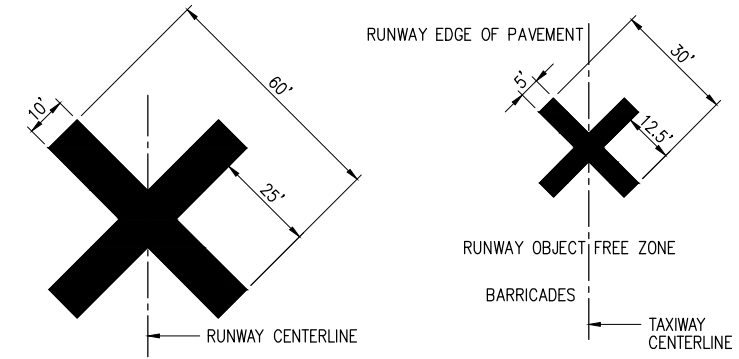
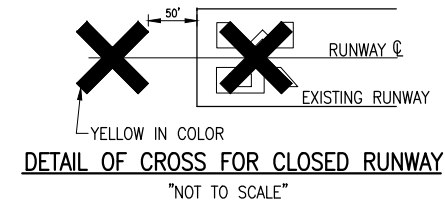
- FOLLOWING ARE THE CONSTRUCTION SAFETY PROCEDURES THAT THE CONTRACTOR SHALL FOLLOW THROUGHOUT THIS PROJECT. ADDITIONAL REQUIREMENTS ARE SHOWN ON THE SAFETY AND PHASING NOTES AND DETAILS SHEET.
- ALL PROVISIONS OF THE LATEST EDITION OF FAA ADVISORY CIRCULAR AC 150/5370-2 (CURRENT EDITION), "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION", APPLY TO THIS CONTRACT, EXCEPT AS MODIFIED BY THIS SAFETY PLAN, OR AS MODIFIED BY THE OWNER THROUGH THE RESIDENT ENGINEER AT THE PRECONSTRUCTION CONFERENCE, OR DURING THE COURSE OF THE CONTRACT.
- THE CONTRACTORS SHALL MINIMIZE DISRUPTION OF STANDARD OPERATING PROCEDURES FOR AERONAUTICAL ACTIVITY BY REMAINING WITHIN THE PRESCRIBED STAGING, CONSTRUCTION, AND PHASING AREAS PRESENTED ON THE PROJECT SAFETY AND PHASING PLANS.
- NO UNAUTHORIZED PERSONNEL SHALL ENTER ANY AREA OF THE AIRPORT THAT COULD POTENTIALLY BE HAZARDOUS. THE ENGINEER, ENGINEER'S REPRESENTATIVE AND/OR AIRPORT MANAGER RESERVE THE RIGHT TO SUSPEND OPERATIONS IN ORDER TO MAINTAIN SAFETY AT THE AIRPORT.
- CONTRACTOR EQUIPMENT, VEHICLES, AND PROJECT MATERIALS SHALL BE STORED AT THE EQUIPMENT PARKING AND MATERIAL STORAGE AREA SHOWN ON THE PROPOSED SAFETY PLAN, EXCEPT AS OTHERWISE PROVIDED FOR AT THE PRECONSTRUCTION CONFERENCE.
- ALL CONSTRUCTION EQUIPMENT OPERATING IN THE PRESCRIBED CONSTRUCTION AREA IS REQUIRED TO DISPLAY A CHECKERBOARD FLAG PROPERLY LOCATED AND/OR A ROTATING BEACON (STROBE) AS SPECIFIED IN AC 150/5210-5, "PAINTING, MARKING, AND LIGHTING OF VEHICLES USED ON AN AIRPORT" LATEST EDITION.
- NO CONSTRUCTION MATERIAL STOCKPILES SHALL BE LOCATED WITHIN 200' OF RUNWAY 18-36 CENTERLINE WHEN ACTIVE, WITHIN 66' OF AN ACTIVE TAXIWAY CENTERLINE, WITHIN 58' OF AN ACTIVE TAXI LANE CENTERLINE, OR PENETRATE A PART 77 IMAGINARY SURFACE (PROVIDED BY THE ENGINEER) EXTENDING OUT AND UPWARDS FROM ALL SIDES OF AN ACTIVE RUNWAY.
- CLOSED AIRFIELD CONSTRUCTION AREAS, OPEN TRENCHES, AND STOCKPILED MATERIALS AT THE CONSTRUCTION SITE SHALL BE PROMINENTLY MARKED WITH LIGHTED BARRICADES WITH STEADY BURNING OR FLASHING RED LIGHTS AS SPECIFIED IN 150/5370-2, "OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION, LATEST EDITION. LIGHTED BARRICADES MUST BE NO TALLER THAN 24" (EXCLUSIVE OF SUPPLEMENTARY LIGHTS) ON THE TAXIWAYS AND COMPLY WITH ADVISORY CIRCULAR 150/5370-2, LATEST EDITION. CONTRACTOR SHALL NIGHT CHECK BARRICADES DAILY FOR PROPER OPERATION.
- NO OPEN TRENCHES WITHIN 200' OF RUNWAY 18-36 CENTERLINE WHEN ACTIVE, WITHIN 66' OF AN ACTIVE TAXIWAY CENTERLINE, OR WITHIN 58' OF AN ACTIVE TAXI LANE CENTERLINE, WILL BE PERMITTED. OTHER TRENCHES SHALL BE MAINTAINED SAFE, I.E., BARRICADED OR COVERED WITH STEEL PLATES IN ALL OTHER AREAS.
- OPEN TRENCHES, EXCAVATIONS, AND STOCKPILED MATERIALS AT THE CONSTRUCTION SITE SHOULD BE PROMINENTLY MARKED WITH ORANGE FLAGS AND LIGHTED WITH FLASHING YELLOW LIGHTS DURING HOURS OF RESTRICTED VISIBILITY AND/OR DARKNESS.
- NO OPEN FLAME WELDING OR TORCH CUTTING OPERATION IS PERMITTED UNLESS ADEQUATE FIRE AND SAFETY PRECAUTIONS ARE PROVIDED AND HAVE BEEN APPROVED BY THE AIRPORT MANAGER. NO FLARE POTS ARE ALLOWED ON THE PROJECT.
- SOIL, DEBRIS, AND LOOSE MATERIAL DROPPED OR TRUCKED ONTO AIRPORT ROADS, TAXIWAYS, AND SOD SURFACES, OR WHICH CAN BE BLOWN ONTO SUCH SURFACES, SHALL BE IMMEDIATELY SWEEPED, PICKED UP AND REMOVED, OR PLACED INTO CLOSED CONTAINERS. ANY DAMAGE TO AIRPORT PROPERTY SHALL BE REPAIRED IMMEDIATELY AT NO COST TO THE OWNER.
- EACH CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAINTAINING AIRPORT LIGHTING AND NAVIGATIONAL ELECTRICAL SYSTEMS DURING CONSTRUCTION. A CONTACT PERSON AND TELEPHONE NUMBER FOR 24 HOUR EMERGENCY IMMEDIATE REPAIR SHALL BE SUBMITTED TO THE AIRPORT MANAGER AND ENGINEER. HAUL ROUTES CROSSING PAVEMENT, DRAINAGE, MISCELLANEOUS. STRUCTURES AND/OR AIRFIELD CABLES SHALL BE PROTECTED FROM DAMAGE.
- ALL AIRCRAFT AND AIRPORT OPERATIONS HAVE THE RIGHT-OF-WAY. CONTRACTOR TO YIELD TO VEHICLES AND REMAIN CLEAR AT ALL TIMES.
- CONTRACTOR SHALL PLACE, SECURE, AND MAINTAIN LIGHTED BARRICADES AND CLOSURE CROSSES WHEN A RUNWAY/TAXIWAY/APRON IS CLOSED OR AS REQUIRED BY THE PLANS AND DESIGNATED BY THE ENGINEER.
- CONTRACTOR SHALL MARK HAZARDOUS AREA WITH STEADY-BURNING OR FLASHING RED AND YELLOW LIGHTS DURING PERIODS OF LOW VISIBILITY AS REQUIRED.
- THE CONTRACTOR SHALL PERIODICALLY PERFORM ONSITE INSPECTIONS THROUGHOUT THE DURATION OF THE PROJECT WITH THE IMMEDIATE REMEDY OF ANY DIFFERENCES, WHETHER CAUSED BY NEGLIGENCE, OVERSIGHT, OR PROJECT SCOPE CHANGE.
- CONTRACTOR SHALL MOVE MAINTENANCE OF TRAFFIC COMPONENTS AT THE DIRECTION OF THE AIRPORT MANAGER AND/OR THE RESIDENT ENGINEER/RESIDENT TECHNICIAN AT NO ADDITIONAL COST.
- CONTRACTOR SHALL NOT REMOVE THE BARRICADES WITHOUT THE APPROVAL BY THE AIRPORT MANAGER AND/OR RESIDENT ENGINEER/RESIDENT TECHNICIAN.
- CONTRACTOR SHALL MAINTAIN FLASHERS, SIGNS AND/OR BARRICADES AS REQUIRED BY THE PLANS, CITY OR COUNTY REGULATIONS OR CONTRACTOR ACTIVITIES. CONTRACTOR SHALL OBTAIN ANY AND ALL REQUIRED LOCAL PERMITS UNLESS SPECIFIED OTHERWISE.
- THE CONTRACTOR SHALL UTILIZE WATER AND/OR CHEMICALS APPROVED BY THE ENGINEER AS NECESSARY TO CONTROL DUST.
- CONSTRUCTION EQUIPMENT OR CONSTRUCTION ACTIVITY WILL NOT BE PERMITTED WITHIN THE RUNWAY SAFETY AREA OF ANY ACTIVE RUNWAY CENTERLINE OR WITHIN THE OBJECT FREE AREA OF AN ACTIVE TAXIWAY OR APRON.
- UNLESS SPECIFIED OTHERWISE, COST FOR THE ABOVE IS TO BE CONSIDERED INCIDENTAL TO THE PROJECT. SEPARATE PAYMENT SHALL NOT BE MADE.

GENERAL NOTES

- THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, AND TRANSPORTATION NECESSARY TO CONSTRUCT ALL ELEMENTS OF THE PROJECT AS DESCRIBED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS.
- THE RULES, REGULATIONS, AND SPECIFICATIONS NOTED HEREIN SHALL BE CONSIDERED AS MINIMUM REQUIREMENTS. THEY SHALL NOT PROHIBIT THE CONTRACTOR FROM FURNISHING AND INSTALLING HIGHER GRADES OF MATERIAL THAN ARE SPECIFIED HEREIN.
- THE CONSTRUCTION ENTRANCES AS SHOWN ON THE PROPOSED SAFETY PLAN SHALL BE USED FOR THE PROJECT. ACCESS TO THE PROJECT FOR ALL HAULING OF MATERIALS AND EQUIPMENT SHALL BE RESTRICTED TO THE DESIGNATED CONSTRUCTION ENTRANCES AND HAUL ROUTES. ACCESS TO THE WORK AREAS SHALL BE COORDINATED WITH THE RESIDENT ENGINEER/RESIDENT TECHNICIAN AND AIRPORT MANAGEMENT.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT, PRESERVE AND REPAIR THE EXISTING AIRFIELD AND ROADWAY PAVEMENTS AT ALL TIMES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING ELECTRICAL, DRAINAGE, AND PAVEMENT STRUCTURES AT NO ADDITIONAL COST TO THE CONTRACT.
- CONTRACTOR IS REQUIRED TO PROVIDE THEIR OWN RESTROOM FACILITIES.
- UNLESS OTHERWISE NOTED, ALL DISTURBED AREAS OUTSIDE OF THE PROPOSED CONSTRUCTION LIMITS SHALL BE GRADED, SEEDED AND/OR HYDROMULCH SEEDED AT NO ADDITIONAL COST TO THE CONTRACT.
- ALL WASTE MATERIAL SHALL BE HAULED FROM THE AIRPORT AND PROPERLY DISPOSED OF UNLESS OTHERWISE SPECIFIED HEREIN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMITS FOR HAULING ON PUBLIC ROADS, AS APPLICABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY DAMAGES TO ANY PAVEMENTS (PUBLIC OR PRIVATE) CAUSED BY HIS/HER CONSTRUCTION EQUIPMENT OR PERSONNEL.
- THE OWNER SHALL HAVE THE RIGHT OF FIRST REFUSAL FOR ALL SALVAGEABLE MATERIAL REMOVED ON THE PROJECT.
- THE CONTRACTOR SHALL PROVIDE ONE SET OF REDLINED AS-BUILT DRAWINGS TO THE RESIDENT ENGINEER/RESIDENT TECHNICIAN AT THE COMPLETION OF THE PROJECT.
- CONTRACTOR SHALL NOTE THAT ALL AREAS WITHIN THE AIRPORT PROPERTY LINE AND OUTSIDE THE CONSTRUCTION LIMITS MAY BE USED FOR AGRICULTURAL PURPOSES. THE CONSTRUCTION LIMITS SHALL BE RESTRICTED TO AREAS THAT ARE ABSOLUTELY NECESSARY TO DISTURB TO COMPLETE THE REQUIRED WORK ITEMS. LIMITS SHALL BE COORDINATED WITH THE RESIDENT ENGINEER PRIOR TO BEGINNING ANY WORK. ALL AREAS WHICH HAVE BEEN FARMED AND OR DESIGNATED TO BE FARMED AFTER THE PROJECT COMPLETION, AND HAVE BEEN DISTURBED BY CONSTRUCTION ACTIVITY, SHALL BE CHISEL PLOWED (36" MAX.) OR OTHERWISE SCARIFIED TO RETURN THE AREA TO A REASONABLE TILLABLE CONDITION (IF SO PERMITTED BY THE AIRPORT MANAGER.)
- CONTRACTOR SHALL RESTORE TO ORIGINAL CONDITION ALL GRASS, STONE, OR PAVEMENT DISTURBED BY CONTRACTOR'S CONSTRUCTION OPERATIONS, AND CONSTRUCTION ACCESS ROUTES. DISTURBED AREAS WILL BE REPAIRED, GRADED, MULCHED AND SEEDED UNLESS OTHERWISE NOTED. STAGING AREA AND SITE ACCESS RESTORATION SHALL BE INCLUDED IN THE COST OF THE PROJECT.
- THE PROJECT PAY ITEMS ARE INTENDED TO BE INCLUSIVE OF ALL WORK TO BE PERFORMED AS SHOWN IN THESE PLANS. ALL INCIDENTAL WORK REQUIRED TO COMPLETE THE PROJECT TO THE SATISFACTION OF THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE IS TO BE INCLUDED IN THE COSTS OF PERFORMING THESE ITEMS.
- APPROXIMATE LOCATIONS OF UNDERGROUND UTILITIES ARE SHOWN THROUGHOUT THESE PLANS. THE CONTRACTOR SHALL DETERMINE EXACT LOCATIONS AND PROTECT THESE UTILITIES DURING CONSTRUCTION. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL COORDINATE WITH THE PROPER PERSONS FOR THE PURPOSE OF LOCATING AND PROTECTING EXISTING UNDERGROUND UTILITIES.
- THE CONTRACTOR MUST AT ALL TIMES MAINTAIN PROPER DRAINAGE FOR ALL AREAS AFFECTED BY HIS WORK.

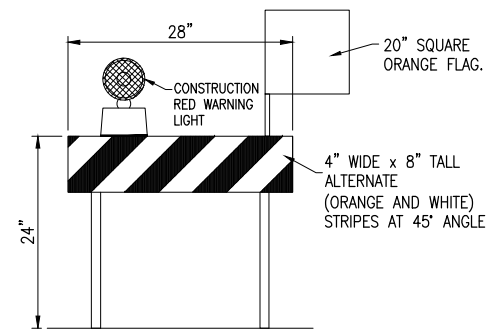
BARRICADE NOTES

- ALL CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE ILLINOIS SUPPLEMENT (LATEST EDITION) AND THE FAA ADVISORY CIRCULARS (LATEST EDITION) UNLESS NOTED OTHERWISE. THE FAA OR MORE STRINGENT SPECIFICATIONS SHALL GOVERN.
- MODIFIED TYPE II BARRICADES SHALL BE SPACED END TO END THE WIDTH OF THE PAVEMENT IN 4' INCREMENTS. BARRICADES ARE TO BE SET BACK 66' FROM THE ACTIVE TAXIWAY CENTERLINE OR AS SHOWN ON THE PLANS.
- CONSTRUCTION RED WARNING LIGHT: THESE ARE PORTABLE, LENS DIRECTED, ENCLOSED LIGHTS. THE COLOR OF THE LIGHT EMITTED SHALL BE RED. THEY MAY BE USED IN EITHER A STEADY BURN (TYPE C) OR LOW INTENSITY FLASHING MODE (TYPE A) UNLESS NOTED OTHERWISE.
- THE LIGHTING SHALL BE MAINTAINED IN OPERATION DURING THE HOURS OF DARKNESS BETWEEN 1/2 HOUR AFTER SUNSET AND 1/2 HOUR BEFORE SUNRISE AND WHEN CONDITIONS EXIST WHICH TEND TO OBSCURE VISION.
- BARRICADES SHALL BE SECURED TO THE GROUND BY APPROVED METHODS TO PREVENT MOVEMENT BY PROP WASH, JET BLAST OR OTHER WIND CURRENTS.
- THE ONLY COLOR COMBINATION ON TYPE II BARRICADES IS ORANGE AND WHITE. THE ORANGE STRIPES SHALL BE ENCAPSULATED LENS REFLECTIVE SHEETING. THE WHITE STRIPES SHALL BE EITHER ENCAPSULATED OR ENCLOSED LENS REFLECTIVE SHEETING AND MUST BE IN ACCEPTABLE CONDITION.
- COST FOR PROVIDING, PLACING, MAINTAINING, AND REMOVING BARRICADES SHALL BE INCLUDED IN THE COST OF THE OTHER CONTRACT ITEMS.



NOTE:

- TEMPORARY "CLOSED RUNWAY" AND "CLOSED TAXIWAY" MARKINGS SHALL BE "AVIATION YELLOW"
- TEMPORARY "CLOSED RUNWAY" MARKINGS SHALL BE CONSTRUCTED OF PLYWOOD, DOUBLE-LAYERED SNOW FENCE OR APPROVED FABRIC AND SHALL BE SECURED TO PAVEMENT BY SANDBAGS OR OTHER APPROVED METHOD.
- TEMPORARY "CLOSED RUNWAY" MARKINGS SHALL BE PLACED OVER THE RUNWAY DESIGNATION NUMBERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE TEMPORARY "CLOSED RUNWAY" MARKINGS FOR THE SOD STRIP WILL BE PLACED ON THE SOD STRIP AT THE RUNWAY END INDICATORS.
- TEMPORARY "CLOSED TAXIWAY" MARKINGS SHALL BE CONSTRUCTED USING TEMPORARY PAINT SUCH AS SEYMOUR TEMPORARY MARKER, PART NO. 20-636, OR AN EQUIVALENT PAINT EASILY REMOVED WITH WATER WITHOUT DEFACING THE PAVEMENT.
- TEMPORARY "CLOSED TAXIWAY" MARKINGS SHALL BE PLACED WHEN THE RUNWAY IS OPEN AND THE TAXIWAY IS CLOSED MORE THAN 72 HOURS. FOR THIS PROJECT TAXIWAY BRAVO CLOSURES SHALL NOT EXCEED 72 HOURS CONTINUOUS.
- THE PROPOSED CROSSES WILL BE PLACED EACH DAY THE RUNWAY OR TAXIWAY IS CLOSED AND REMOVED WHEN THE RUNWAY OR TAXIWAY IS RE-OPENED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE PLACEMENT AND REMOVAL OF THE CROSSES. "CLOSED RUNWAY" AND "CLOSED TAXIWAY" MARKINGS SHALL NOT BE A PAY ITEM AND SHALL BE INCIDENTAL TO OTHER CONTRACT BID ITEMS.



Offices Nationwide
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1525 S. 6th Street
Springfield, IL 62568
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Illinois Licensed
Professional Service Corporation
#184-001084

MT. STERLING MUNICIPAL
AIRPORT

145 WEST MAIN STREET
MT. STERLING, IL 62353

**REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT**

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

| NO. | DATE | DESCRIPTION | | |
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ISSUE: NOVEMBER 20, 2015

PROJECT NO: 13A0076D

CAD FILE: G-003-SFY.DWG

DESIGN BY: CAH

DRAWN BY: CAH

REVIEWED BY: KNL 10/14/2015

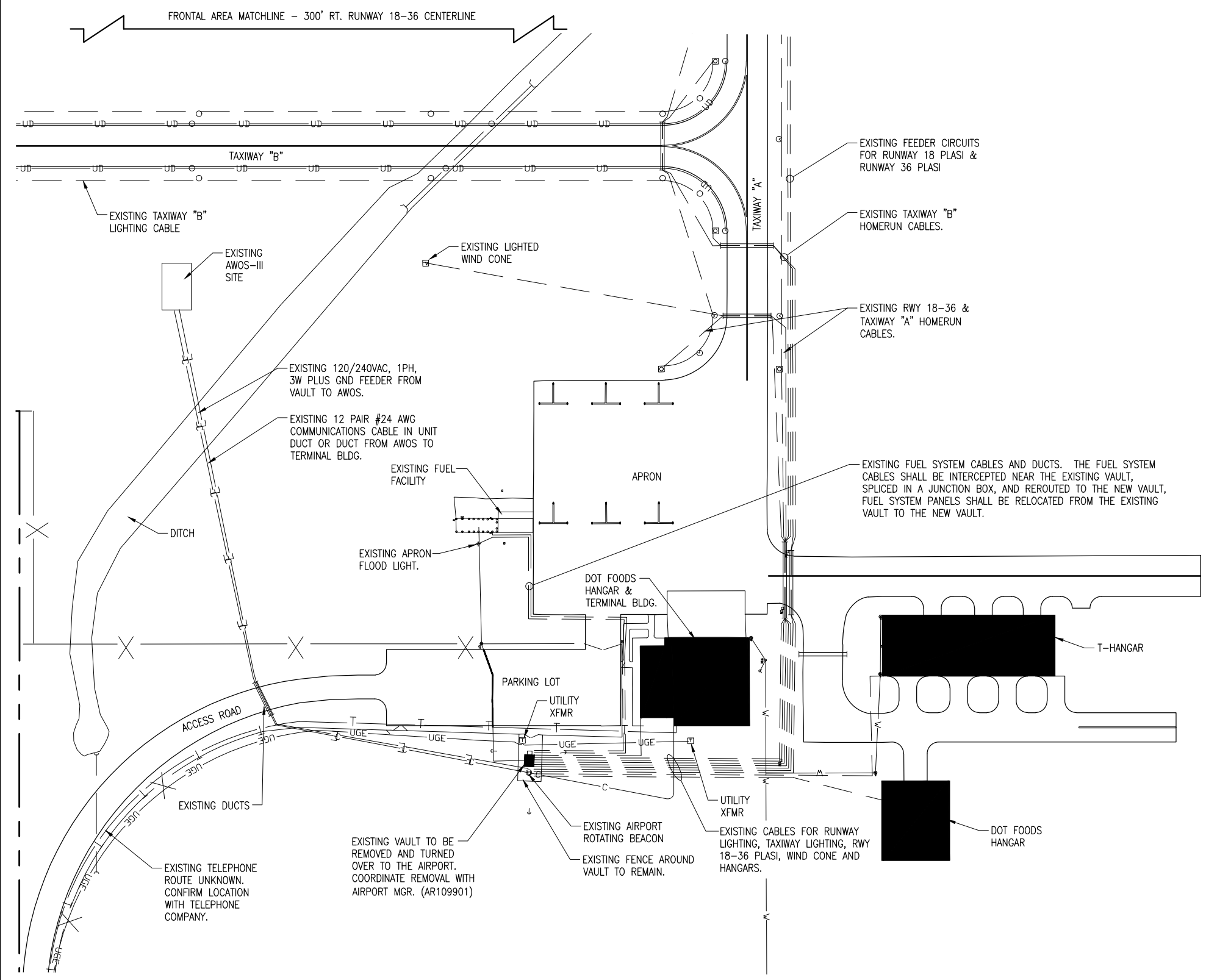
SHEET TITLE

**PROPOSED SAFETY
PLAN NOTES**

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

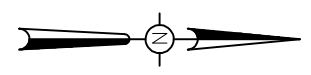
ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. **CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123.** CONTACT THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. LOCATION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

IN THE EVENT THAT THE AWOS COMMUNICATIONS CABLE IS CUT AND REQUIRES SPLICING TO REPAIR CONTACT THE AWOS MANUFACTURER TO CONFIRM ACCEPTABLE SPLICE CONNECTIONS. THE VAISALA FIELD SERVICE ENGINEER IS JERRAD FENNERN, VAISALA INC., MINNEAPOLIS OPERATIONS, 1230 EAGAN INDUSTRIAL ROAD, SUITE 103, EAGAN, MN. 55121, PHONE: 612-238-2848, MOBILE PHONE: 612-940-2791.



LEGEND

- EXISTING IMPROVEMENTS
- EXISTING BUILDINGS
- EXISTING SWALE/DRAINAGE
- EXISTING TELEPHONE
- EXISTING FENCE
- EXISTING WATER
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING ELECTRIC
- EXISTING AWOS COMMUNICATIONS CABLE IN UNIT DUCT
- EXISTING UNDER DRAIN
- EXISTING DUCT
- EXISTING UTILITY TRANSFORMER



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

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

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ISSUE: NOVEMBER 20, 2015

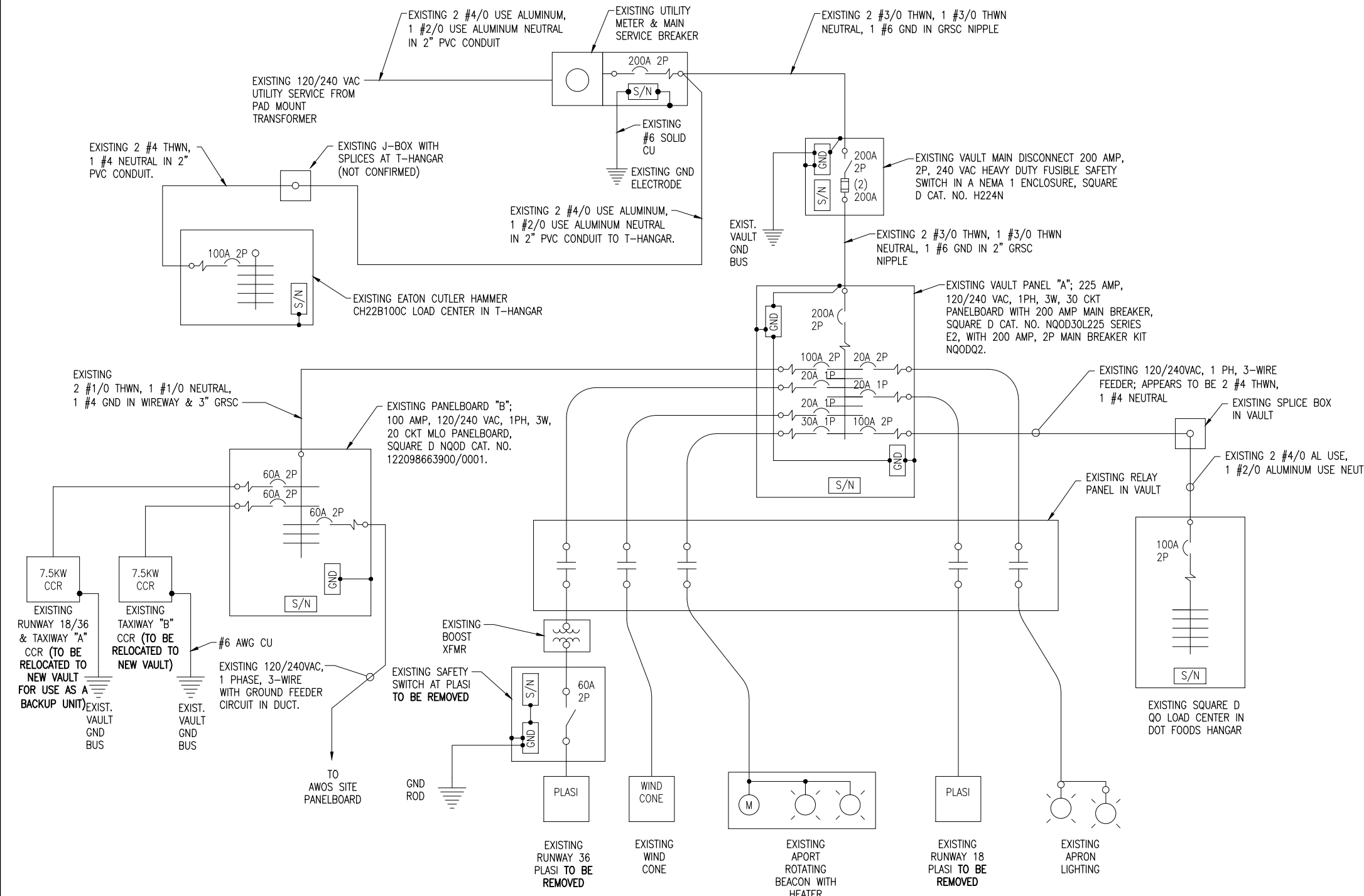
PROJECT NO: 13A0076D
CAD FILE: E-101-SITE.DWG
DESIGN BY: KNL 03/04/2015
DRAWN BY: CWS 03/04/2015
REVIEWED BY: CAH 10/20/2015

SHEET TITLE

EXISTING ELECTRICAL VAULT SITE PLAN

NOTES:

- CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE EXISTING CONDITIONS.
- ALL POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING AIRFIELD LIGHTING OR OTHER 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 & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2F (OR MOST CURRENT ISSUE) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
- CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.
- NOTE THE T-HANGAR AND DOT FOODS HANGAR HAVE APPARENT NEC NATIONAL ELECTRICAL CODE VIOLATIONS WHICH MIGHT CAUSE UNSAFE WORKING CONDITIONS. APPARENT NEC VIOLATIONS INCLUDE, BUT ARE NOT LIMITED TO, NO GROUNDING ELECTRODE CONNECTIONS TO MAIN DISCONNECTS, POWER SOURCES NOT IDENTIFIED, MISSING EQUIPMENT GROUNDS, UNDERSIZED WIRING, POWER CIRCUITS RUN IN PLASTIC CONDUIT AT HANGAR INTERIOR, AND NEUTRAL CONDUCTORS NOT RUN WITH 120 VAC BRANCH CIRCUITS. CONTRACTOR WILL NEED TO EXERCISE CAUTION WHEN WORKING IN THESE FACILITIES.
- THE RESPECTIVE PERSONNEL PERFORMING AIRFIELD LIGHTING WORK, VAULT WORK, AND/OR TEST SHALL BE FAMILIAR WITH, AND QUALIFIED TO WORK ON, 5000 VOLT AIRFIELD LIGHTING SERIES CIRCUITS, CONSTANT CURRENT REGULATORS AND ASSOCIATED AIRPORT ELECTRICAL VAULT EQUIPMENT.
- MEGGER TEST AND RECORD EXISTING SERIES CIRCUITS PRIOR TO CABLE WORK AND AGAIN AFTER AIRFIELD LIGHTING MODIFICATIONS, VAULT WORK, ADDITIONS, AND/OR UPGRADES HAVE BEEN COMPLETED. ALSO TEST AND RECORD SERIES CIRCUIT LOOP RESISTANCE.
- EACH CCR SHALL BE TESTED FOR PROPER OPERATION BEFORE REMOVAL WORK, RELOCATIONS, AND/OR ADDITIONS AND AFTER THE NEW VAULT AND NEW CABLE INSTALLATIONS HAVE BEEN COMPLETED.
- SEE "ELECTRICAL LEGEND AND ABBREVIATIONS" SHEET FOR GENERAL NOTES AND REQUIREMENTS.
- ALL EXISTING AIRFIELD LIGHTING SYSTEMS, NAVAIDS, APRON LIGHTING, AND/OR OTHER AIRPORT FACILITIES (THAT ARE NOT SCHEDULED FOR REMOVAL OR REPLACEMENT) SHALL BE OPERABLE DURING NIGHTFALL WHEN THE RUNWAY IS OPEN FOR OPERATION UNLESS OTHERWISE APPROVED BY THE AIRPORT MANAGER AND/OR OTHERWISE DETAILED HEREIN. CONTRACTOR SHALL PROVIDE ALL TEMPORARY WORK AS NECESSARY TO MAINTAIN OPERATION OF THE AIRFIELD LIGHTING SYSTEMS AT NIGHTFALL. CONTRACTOR SHALL COORDINATE TRANSFER OF EXISTING AIRFIELD CIRCUITS TO MINIMIZE DOWNTIME.
- THE EXISTING FUEL FACILITY EQUIPMENT PANELS LOCATED IN THE VAULT SHALL BE RELOCATED TO THE NEW VAULT. PERSONNEL DESIGNATED TO RELOCATE THE RESPECTIVE FUEL SYSTEM EQUIPMENT PANELS SHALL BE QUALIFIED AND FAMILIAR WITH THE RESPECTIVE FUEL FACILITY SYSTEM EQUIPMENT. THE FUEL SYSTEM SERVICE REP FOR THE MT. STERLING AIRPORT IS ILLINOIS OIL MARKETING EQUIPMENT, 850 BRENKMAN DRIVE, PEKIN, IL 61554 PHONE: (309) 347-1819.
- EQUIPMENT DESIGNATED FOR REMOVAL SHALL BE TURNED OVER TO THE AIRPORT. IN THE EVENT THE AIRPORT DOES NOT WANT THE RESPECTIVE EQUIPMENT, THE CONTRACTOR SHALL DISPOSE OF IT OFF SITE AT NO ADDITIONAL COST TO THE CONTRACT.
- REMOVAL OF EXISTING VAULT AND EQUIPMENT WILL BE PAID FOR UNDER ITEM AR109901, REMOVE ELECTRICAL VAULT, PER LUMP SUM.



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

**REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT**

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

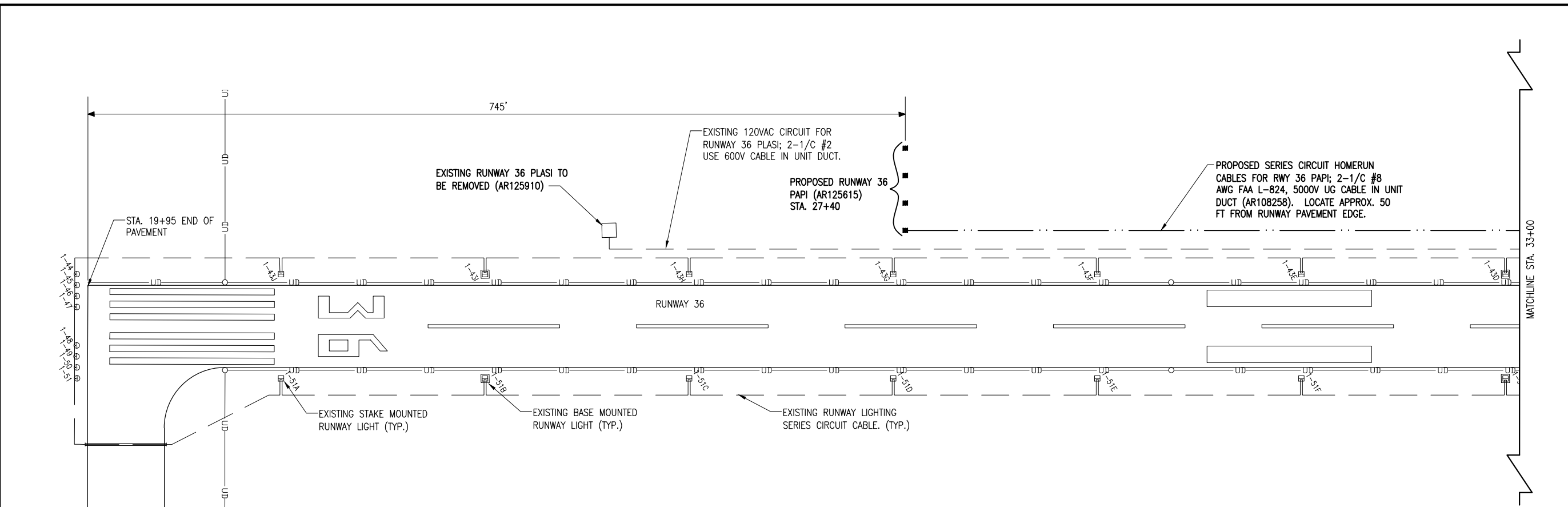
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DRAWN BY: CWS 02/26/2015
REVIEWED BY: CAH 10/20/2015

SHEET TITLE

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



PLASI REMOVAL NOTES

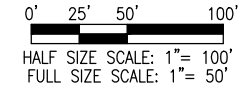
1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. CONTRACTOR SHALL EXAMINE THE SITE AND FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING PLASI UNITS.
3. WHEN A RUNWAY IS CLOSED, THE RESPECTIVE RUNWAY LIGHTING AND NAVAIDS FOR THAT RUNWAY SHALL BE SHUT OFF.
4. EXISTING PLASI UNITS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED AND SHALL BE TURNED OVER TO THE AIRPORT. THE CONCRETE FOUNDATIONS/BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE.
5. THE HOLE LEFT FROM THE FOUNDATION OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE EARTH MATERIAL WILL COME FROM OFF-SITE AND WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE PLASI REMOVAL. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND/OR SPECIAL PROVISIONS.
6. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH PLASI REMOVALS SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, AND ABANDONED IN PLACE ELSEWHERE. CONTRACTOR MAY REMOVE EXISTING CABLES DESIGNATED TO BE ABANDONED, AND SHALL HAVE THE SALVAGE RIGHTS TO THOSE CABLES, AT NO ADDITIONAL COST TO THE CONTRACT.
7. POWER FOR THE PLASI SYSTEMS ON EACH RUNWAY SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO DISCONNECTING AND REMOVING THE RESPECTIVE PLASI SYSTEM. POWER FOR THE EXISTING PLASI SYSTEMS LOCATED ON RUNWAY 18-36 IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM RESPECTIVE POWER SOURCE FOR EACH PLASI SYSTEM.
8. REMOVAL OF PLASI WILL BE PAID FOR UNDER ITEM AR125910 "REMOVE PLASI" PER EACH.
9. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

PAPI AND AIRFIELD WORK INSTALLATION NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. IN AREAS WHERE THERE IS A CONGESTION OF CABLES OR WHERE THE PROPOSED CABLE CROSSES AN EXISTING CABLE, THE CONTRACTOR IS REQUIRED TO HAND DIG THE TRENCH NECESSARY FOR THE PROPOSED CABLE. AT OTHER LOCATIONS, THE PROPOSED CABLE MAY BE TRENCHED OR PLOWED INTO PLACE. HAND DIGGING, TRENCHING AND/OR PLOWING WILL BE CONSIDERED INCIDENTAL TO THE PROPOSED CABLES AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
3. THE CONTRACTOR SHALL SECURE, IDENTIFY AND PLACE ALL TEMPORARY EXPOSED WIRING IN CONDUIT, DUCT OR UNIT DUCT TO PREVENT ELECTROCUTION AND FIRE IGNITION SOURCES AS PER THE REQUIREMENTS OF FAA AC 150/5370-2F, PART 218, PARAGRAPH C. ALL LABOR, MATERIALS, AND TIME NECESSARY TO COMPLY WITH THIS REQUIREMENT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
4. HOMERUN CABLES FOR A RESPECTIVE CIRCUIT THAT ARE INSTALLED IN CONDUIT OR DUCT SHALL BE RUN TOGETHER IN THE SAME RACEWAY OR DUCT.
5. EXISTING AIRFIELD LIGHTING CABLES, NAVAID CABLES, AND/OR OTHER FEEDER CABLES (SCHEDULED FOR REPLACEMENT) IN AREAS OF NEW WORK SHALL BE DISCONNECTED & REMOVED WHERE IN CONFLICT WITH NEW CONSTRUCTION IN OTHER AREAS CABLES MAY BE ABANDONED IN PLACE.
6. THE CONTRACTOR IS REQUIRED TO FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE NEW WORK, WITH EARTH MATERIAL. THE AREAS SHALL BE COMPACTED TO PREVENT FUTURE SETTLEMENT AND FERTILIZED, SEEDED, AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908 RESPECTIVELY. THIS WORK WILL BE CONSIDERED AS AN INCIDENTAL ITEM AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
7. IN THE EVENT THAT OTHER CONSTRUCTION PROJECTS ARE IN PROGRESS AT THE AIRPORT AT THE SAME TIME AS THIS PROJECT, THE CONTRACTOR WILL BE REQUIRED TO COOPERATE WITH ALL OTHER CONTRACTORS AND THE AIRPORT MANAGER IN THE COORDINATION OF THE WORK,
8. HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5,000 VOLT SERIES CIRCUITS AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
9. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

LEGEND

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLES
- EXISTING ELECTRICAL
- EXISTING GAS
- EXISTING TELEPHONE
- EXISTING FENCE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 2-1/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 DUCT
- EXISTING SWALE / DRAINAGE
- EXISTING UNDERDRAIN
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY THRESHOLD LIGHT
- EXISTING PAPI
- EXISTING DUCT MARKER
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING TAXI GUIDANCE SIGN
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED ELECTRICAL MANHOLE



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

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

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

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PROJECT NO: 13A0076D
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REVIEWED BY: CAH 10/20/2015

SHEET TITLE

ELECTRICAL SITE PLAN STA. 19+95 TO STA. 33+00

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
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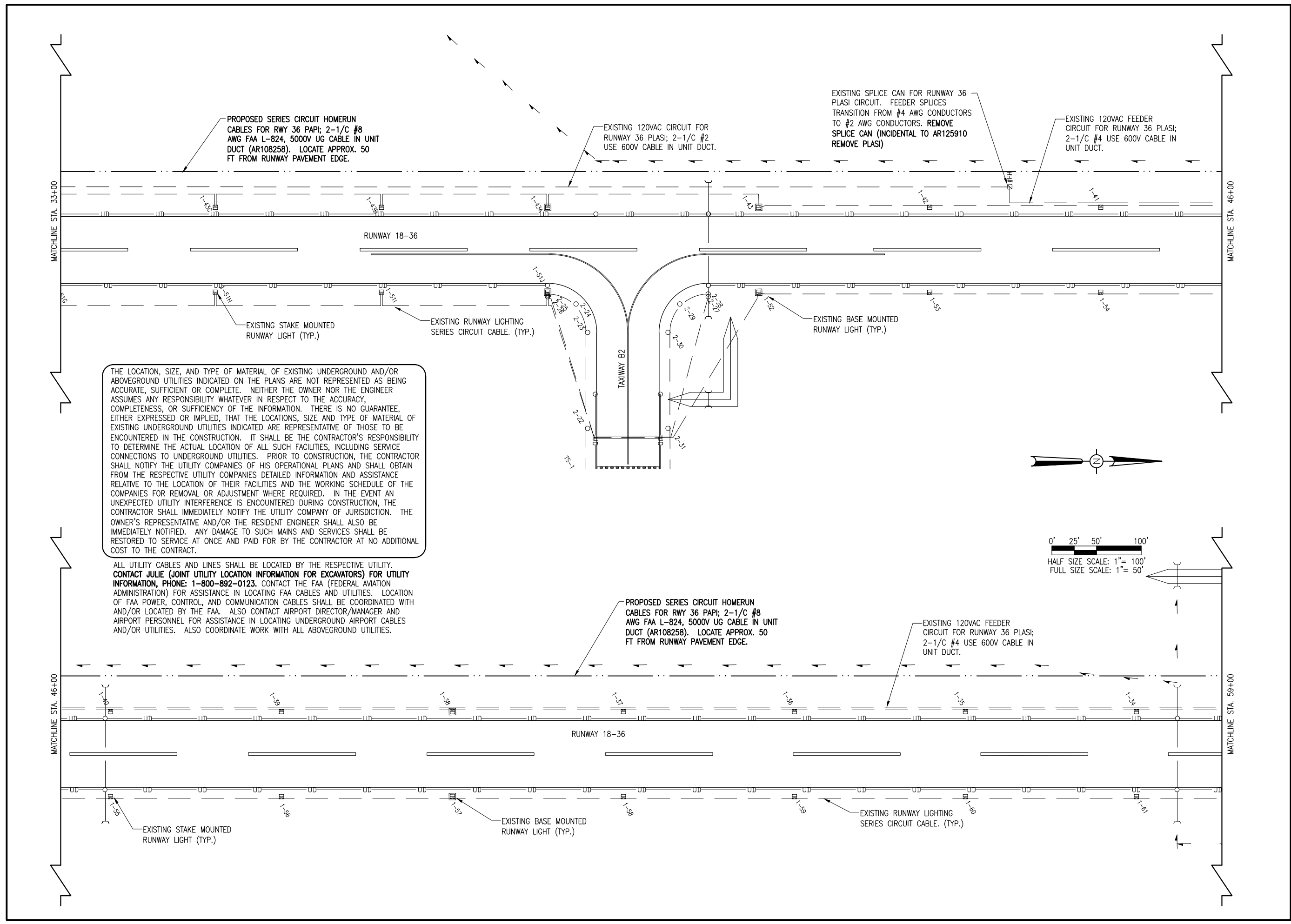
ISSUE: NOVEMBER 20, 2015

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SHEET TITLE

ELECTRICAL SITE PLAN STA. 33+00 TO STA. 59+00

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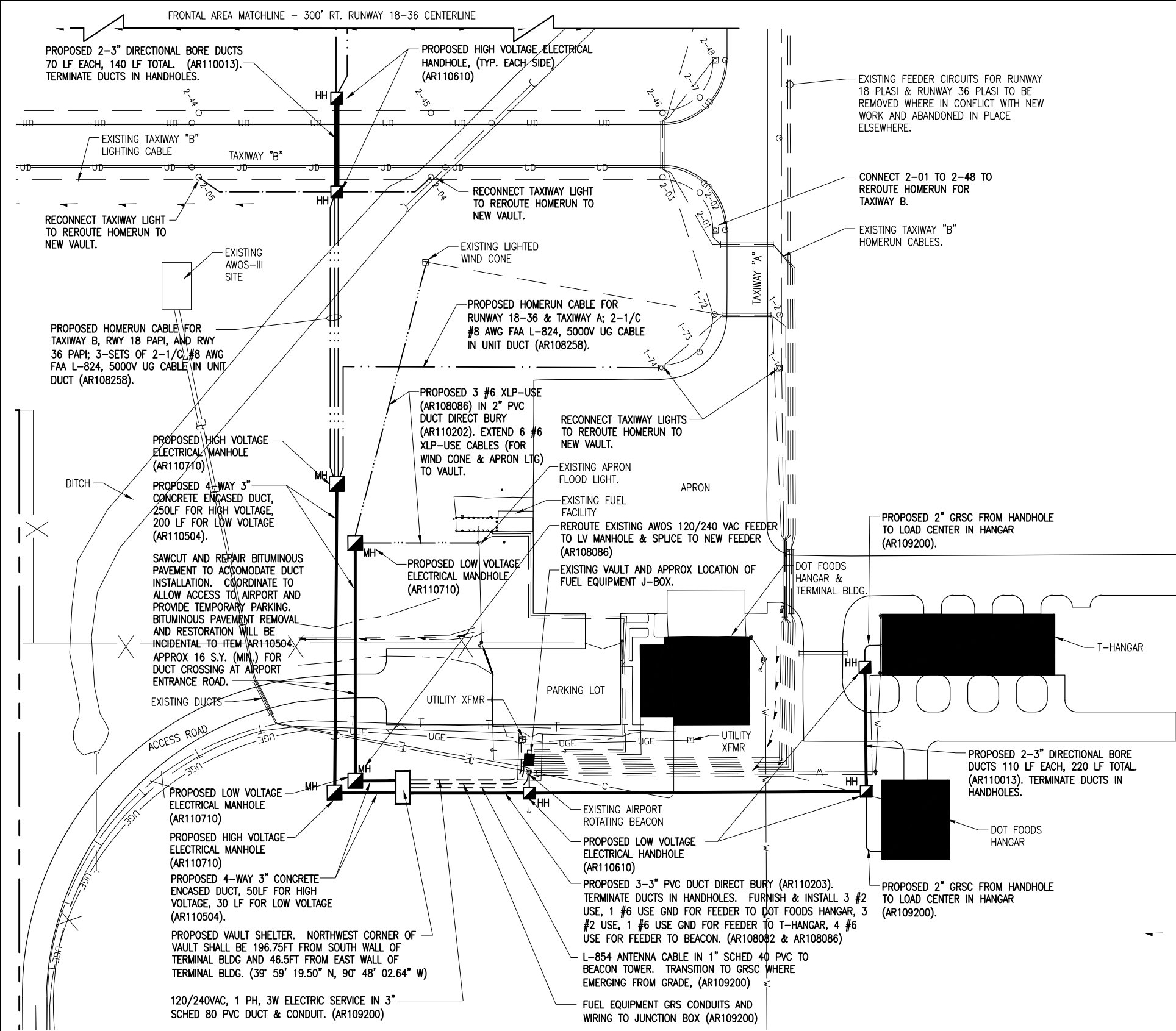


THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY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

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

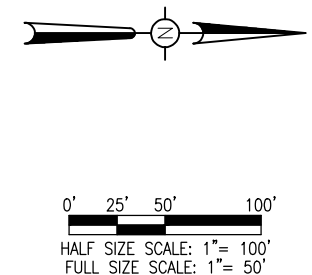
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LEGEND

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING ELECTRICAL CABLES
- EXISTING ELECTRICAL
- EXISTING AWOS COMMUNICATIONS CABLE IN UNIT DUCT
- EXISTING GAS
- EXISTING TELEPHONE
- EXISTING FENCE
- EXISTING WATER
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 2-1/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 DUCT
- EXISTING SWALE / DRAINAGE
- EXISTING UNDERDRAIN
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY THRESHOLD LIGHT
- EXISTING PAPI
- EXISTING DUCT MARKER
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING TAXI GUIDANCE SIGN
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED ELECTRICAL MANHOLE

- NOTES:**
- HOMERUN CABLES FOR A RESPECTIVE CIRCUIT THAT ARE INSTALLED IN CONDUIT OR DUCT SHALL BE RUN TOGETHER IN THE SAME RACEWAY OR DUCT.
 - ANY AND ALL DISTURBED PAVEMENT AREAS WILL BE RESTORED TO ORIGINAL OR BETTER CONDITION. RESTORATION OF PAVEMENT AREAS DISTURBED DURING THE INSTALLATION OF THE PROPOSED DUCTS WILL BE INCIDENTAL TO THE RESPECTIVE PAY ITEM FOR WHICH THE DUCT IS INSTALLED. THE RESTORATION OF PAVEMENT WILL BE COMPLETED IN ACCORDANCE WITH ITEM 610 FOR SIDEWALKS AND CONCRETE PAVEMENT AND ITEM 401 (INCLUDING ITEM AR401910) FOR BITUMINOUS PAVEMENT, BUT WILL BE INCIDENTAL TO THE RESPECTIVE PAY ITEM FOR WHICH THE DUCT IS INSTALLED.
 - CONDUITS FOR ITEM AR110504 4-WAY CONCRETE SHALL BE 3" I.D. (MINIMUM).



REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

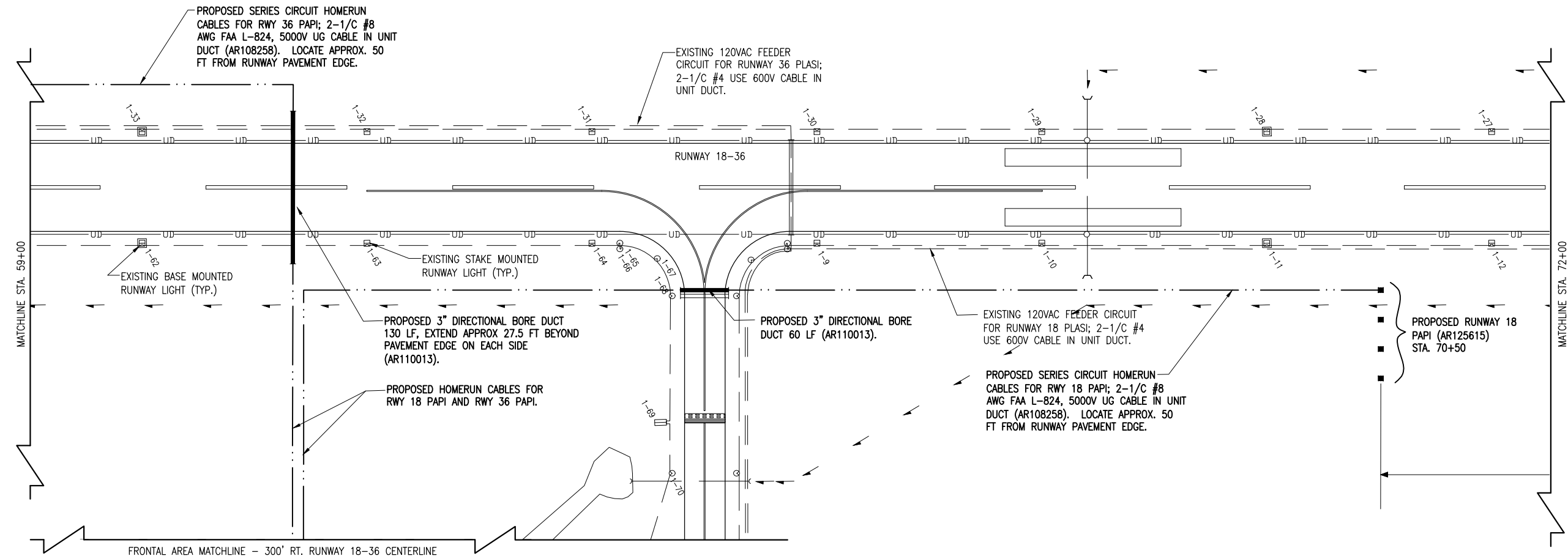
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ISSUE: NOVEMBER 20, 2015

PROJECT NO: 13A0076D
CAD FILE: E-401-SITE.DWG
DESIGN BY: KNL 03/04/2015
DRAWN BY: CWS 03/05/2015
REVIEWED BY: CAH 10/20/2015

SHEET TITLE

ELECTRICAL PLAN; HOMERUNS AND PROPOSED VAULT



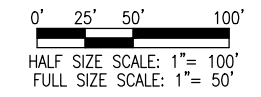
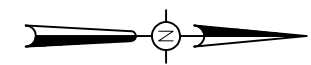
FRONTAL AREA MATCHLINE - 300' RT. RUNWAY 18-36 CENTERLINE

PAPI AND AIRFIELD WORK INSTALLATION NOTES

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- IN AREAS WHERE THERE IS A CONGESTION OF CABLES OR WHERE THE PROPOSED CABLE CROSSES AN EXISTING CABLE, THE CONTRACTOR IS REQUIRED TO HAND DIG THE TRENCH NECESSARY FOR THE PROPOSED CABLE. AT OTHER LOCATIONS, THE PROPOSED CABLE MAY BE TRENCHED OR PLOWED INTO PLACE. HAND DIGGING, TRENCHING AND/OR PLOWING WILL BE CONSIDERED INCIDENTAL TO THE PROPOSED CABLES AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- THE CONTRACTOR SHALL SECURE, IDENTIFY AND PLACE ALL TEMPORARY EXPOSED WIRING IN CONDUIT, DUCT OR UNIT DUCT TO PREVENT ELECTROCUTION AND FIRE IGNITION SOURCES AS PER THE REQUIREMENTS OF FAA AC 150/5370-2F, PART 218, PARAGRAPH C. ALL LABOR, MATERIALS, AND TIME NECESSARY TO COMPLY WITH THIS REQUIREMENT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- HOMERUN CABLES FOR A RESPECTIVE CIRCUIT THAT ARE INSTALLED IN CONDUIT OR DUCT SHALL BE RUN TOGETHER IN THE SAME RACEWAY OR DUCT.
- EXISTING AIRFIELD LIGHTING CABLES, NAVAID CABLES, AND / OR OTHER FEEDER CABLES (SCHEDULED FOR REPLACEMENT) IN AREAS OF NEW WORK SHALL BE DISCONNECTED & REMOVED WHERE IN CONFLICT WITH NEW CONSTRUCTION IN OTHER AREAS CABLES MAY BE ABANDONED IN PLACE.
- THE CONTRACTOR IS REQUIRED TO FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE NEW WORK, WITH EARTH MATERIAL. THE AREAS SHALL BE COMPACTED TO PREVENT FUTURE SETTLEMENT AND FERTILIZED, SEED, AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908 RESPECTIVELY. THIS WORK WILL BE CONSIDERED AS AN INCIDENTAL ITEM AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- IN THE EVENT THAT OTHER CONSTRUCTION PROJECTS ARE IN PROGRESS AT THE AIRPORT AT THE SAME TIME AS THIS PROJECT, THE CONTRACTOR WILL BE REQUIRED TO COOPERATE WITH ALL OTHER CONTRACTORS AND THE AIRPORT MANAGER IN THE COORDINATION OF THE WORK,
- HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
- NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

LEGEND

- EXISTING PAVEMENT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLES
- EXISTING ELECTRICAL
- EXISTING GAS
- EXISTING TELEPHONE
- EXISTING FENCE
- PROPOSED 1/C #8 AWG, FAA L-824, 5000 VOLT TYPE C UNDERGROUND CABLE IN UNIT DUCT
- PROPOSED 2-1/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 DUCT
- EXISTING SWALE / DRAINAGE
- EXISTING UNDERDRAIN
- EXISTING STAKE MOUNTED RUNWAY LIGHT
- EXISTING BASE MOUNTED RUNWAY LIGHT
- EXISTING STAKE MOUNTED RUNWAY THRESHOLD LIGHT
- EXISTING PAPI
- EXISTING DUCT MARKER
- EXISTING STAKE MOUNTED TAXIWAY LIGHT
- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING TAXI GUIDANCE SIGN
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED ELECTRICAL MANHOLE



REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

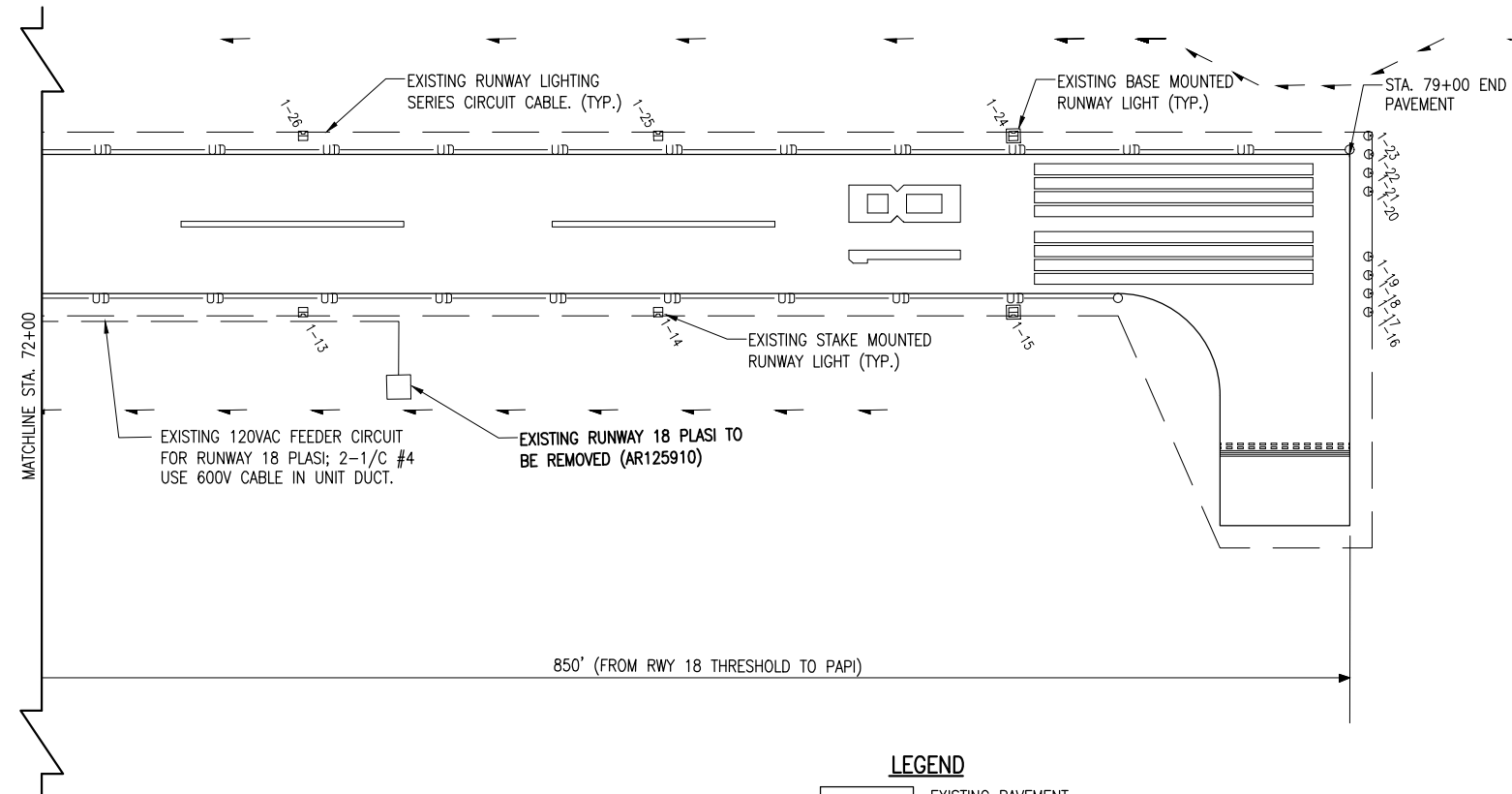
Contract No. MS008

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ISSUE: NOVEMBER 20, 2015
PROJECT NO: 13A0076D
CAD FILE: E-401-SITE.DWG
DESIGN BY: KNL 03/04/2015
DRAWN BY: CWS 03/05/2015
REVIEWED BY: CAH 10/20/2015

SHEET TITLE

ELECTRICAL SITE
PLAN STA. 59+00 TO
STA. 72+00



LEGEND

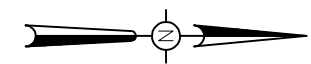
- EXISTING PAVEMENT
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- EXISTING BASE MOUNTED TAXIWAY LIGHT
- EXISTING TAXI GUIDANCE SIGN
- PROPOSED ELECTRICAL HANDHOLE
- PROPOSED ELECTRICAL MANHOLE

PLASI REMOVAL NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. CONTRACTOR SHALL EXAMINE THE SITE AND FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING PLASI UNITS.
3. WHEN A RUNWAY IS CLOSED, THE RESPECTIVE RUNWAY LIGHTING AND NAVAIDS FOR THAT RUNWAY SHALL BE SHUT OFF.
4. EXISTING PLASI UNITS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED AND SHALL BE TURNED OVER TO THE AIRPORT. THE CONCRETE FOUNDATIONS/BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE.
5. THE HOLE LEFT FROM THE FOUNDATION OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE EARTH MATERIAL WILL COME FROM OFF-SITE AND WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE PLASI REMOVAL. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND/OR SPECIAL PROVISIONS.
6. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH PLASI REMOVALS SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, AND ABANDONED IN PLACE ELSEWHERE. CONTRACTOR MAY REMOVE EXISTING CABLES DESIGNATED TO BE ABANDONED, AND SHALL HAVE THE SALVAGE RIGHTS TO THOSE CABLES, AT NO ADDITIONAL COST TO THE CONTRACT.
7. POWER FOR THE PLASI SYSTEMS ON EACH RUNWAY SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO DISCONNECTING AND REMOVING THE RESPECTIVE PLASI SYSTEM. POWER FOR THE EXISTING PLASI SYSTEMS LOCATED ON RUNWAY 18-36 IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM RESPECTIVE POWER SOURCE FOR EACH PLASI SYSTEM.
8. REMOVAL OF PLASI WILL BE PAID FOR UNDER ITEM AR125910 "REMOVE PLASI" PER EACH.
9. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

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

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

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

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ISSUE: NOVEMBER 20, 2015

PROJECT NO: 13A0076D

CAD FILE: E-401-SITE.DWG

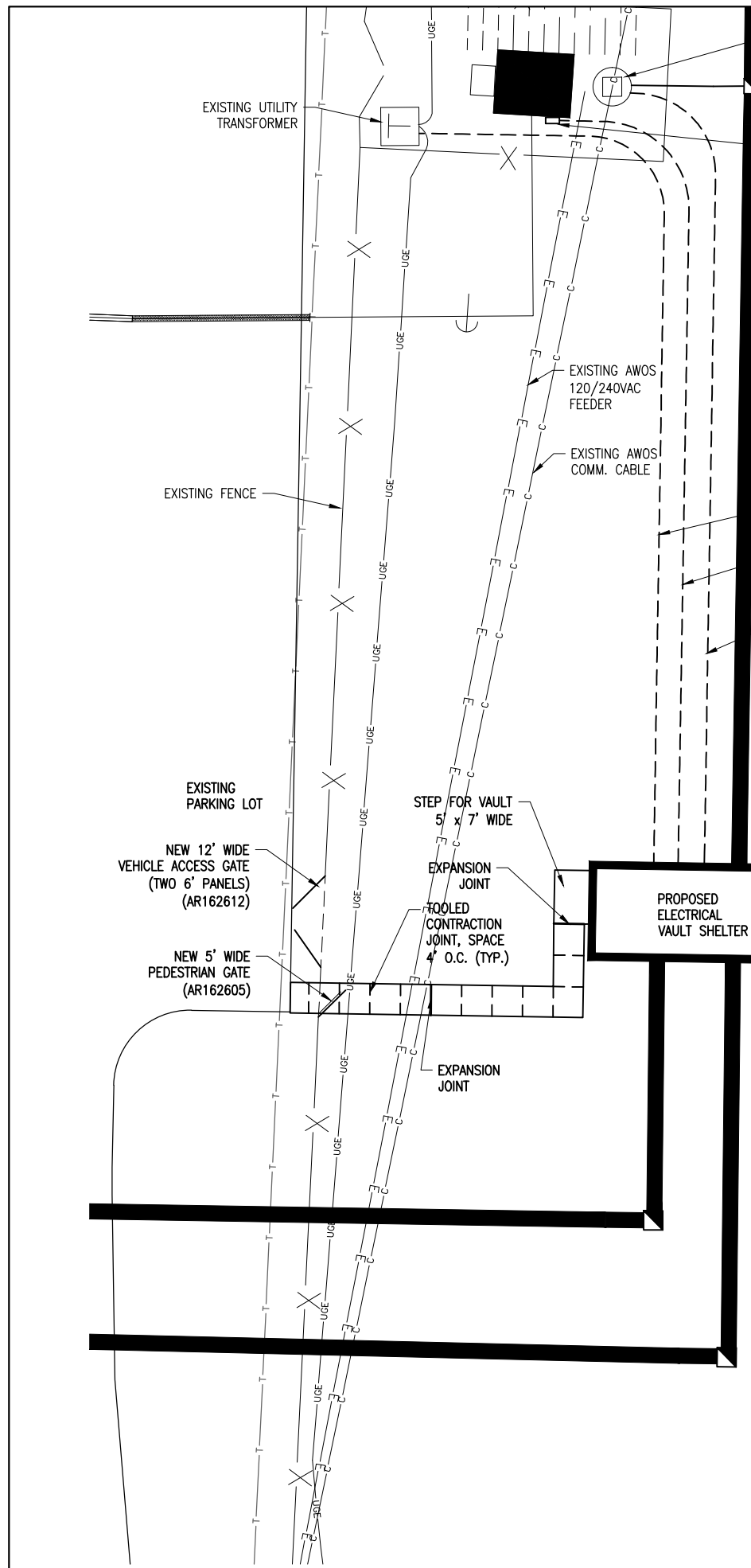
DESIGN BY: KNL 03/04/2015

DRAWN BY: CWS 03/05/2015

REVIEWED BY: CAH 10/20/2015

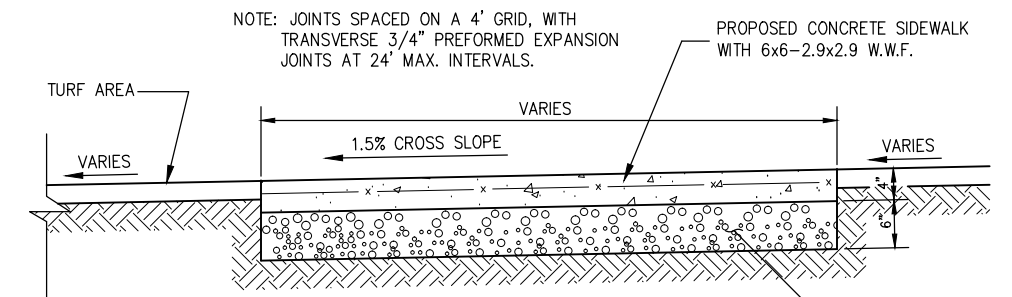
SHEET TITLE

ELECTRICAL SITE
PLAN STA. 72+00 TO
STA. 79+50

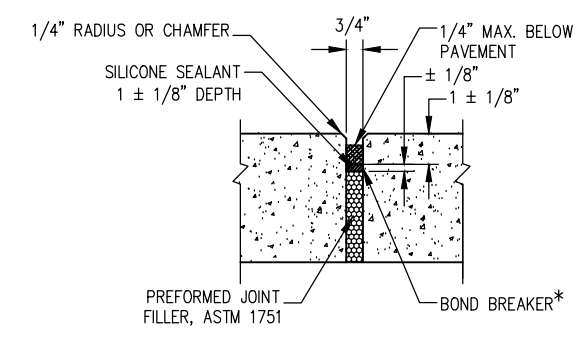
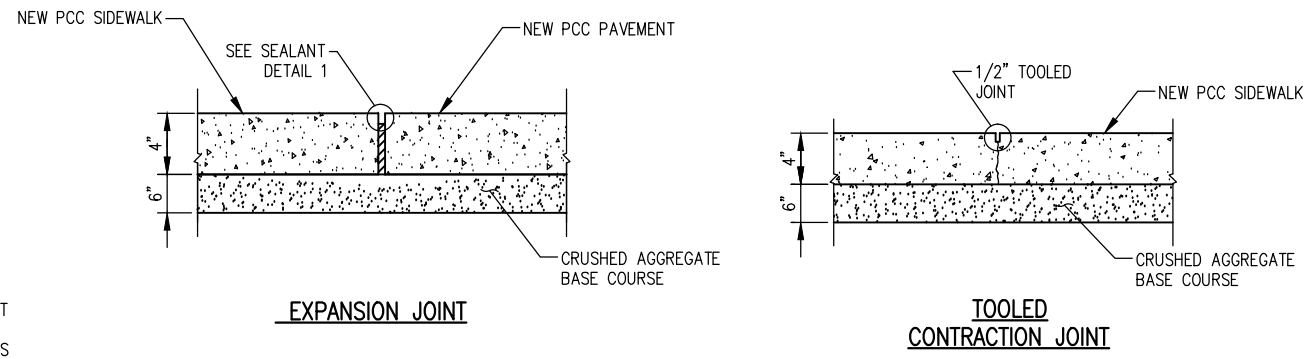


- NOTES**
1. PROVIDE 4' WIDE SIDEWALK FROM VAULT ENTRY TO PARKING LOT. INTERFACE TO EXISTING PARKING LOT PAVEMENT.
 2. CONCRETE FOR SIDEWALK SHALL BE IN ACCORDANCE WITH ITEM 610 STRUCTURAL PORTLAND CEMENT CONCRETE.
 3. SIDEWALK SHALL BE INCIDENTAL TO ITEM AR109110 ERECT PREFABRICATED VAULT, AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
 4. PROVIDE 5' PEDESTRIAN GATE FOR ACCESS TO VAULT. COORDINATE LOCATION WITH NEW SIDE WALK. SEE S.P. SPECS FOR DETAILS.
 5. PROVIDE 12' WIDE SWING GATE FOR VEHICLE ACCESS TO VAULT. 12' WIDE SWING GATE SHALL HAVE TWO 6' WIDE PANELS/GATES THAT MEET IN MIDDLE OF OPENING. SEE S.P. SPECS FOR DETAILS.
 6. COORDINATE FENCE REMOVAL AND GATE INSTALLATION WITH INSTALLATION OF NEW VAULT SHELTER. REMOVE ADEQUATE LENGTH OF FENCE TO ACCOMMODATE VAULT INSTALLATION. RESTORE FENCE AFTER VAULT SHELTER IS SET. ALL FENCE RESTORATION WILL BE INCIDENTAL TO INSTALLATION OF THE VAULT.

- LEGEND**
- EXISTING PAVEMENT
 - EXISTING ELECTRICAL DUCT
 - PROPOSED ELECTRICAL DUCT
 - EXISTING ELECTRICAL CABLES
 - EXISTING ELECTRICAL
 - EXISTING GAS
 - EXISTING TELEPHONE
 - EXISTING FENCE
 - EXISTING ELECTRIC UTILITY PRIMARY
 - EXISTING AWOS COMMUNICATIONS CABLE IN UNIT DUCT
 - EXISTING SWALE / DRAINAGE
 - EXISTING UNDERDRAIN
 - EXISTING STAKE MOUNTED RUNWAY LIGHT
 - EXISTING BASE MOUNTED RUNWAY LIGHT
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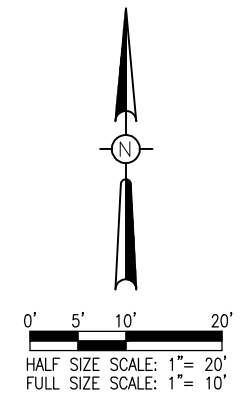


NOTES
3/4" PREFORMED JOINT FILLER TO BE USED IN ALL LOCATIONS WHERE SIDEWALK IS ADJACENT TO EXISTING PAVEMENT.



* POLYETHYLENE OR POLYESTER TAPE (3 MIL. MIN.) OR MARKING TAPE, RUBBER TAPE, 1/8" WIDER THAN WIDTH OF JOINT.

JOINT SEALER SHALL MEET THE REQUIREMENTS OF ASTM D 6690-STANDARD SPECIFICATION FOR JOINT AND CRACK SEALANTS, HOT APPLIED, FOR CONCRETE AND ASPHALT PAVEMENT.



REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

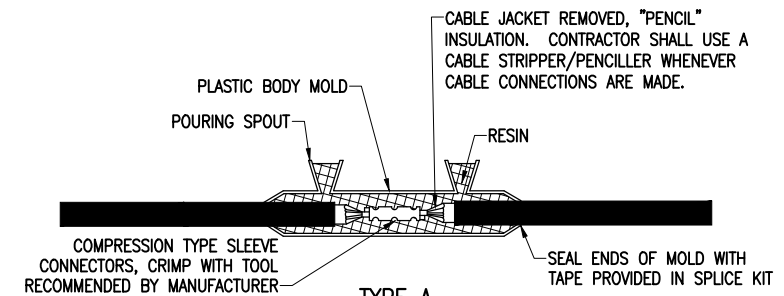
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ISSUE: NOVEMBER 20, 2015
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DESIGN BY: KNL 10/09/2015
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REVIEWED BY: CAH 10/20/2015

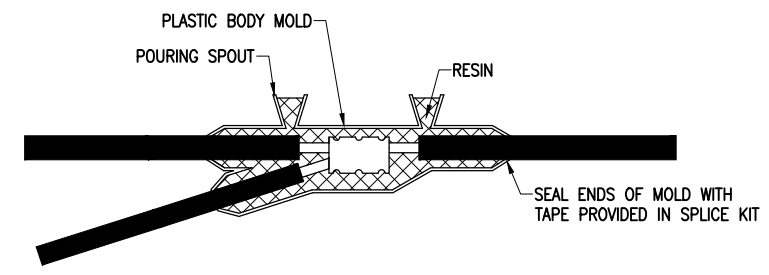
SHEET TITLE

SIDEWALK JOINTING
PLAN AND DETAILS



TYPE A

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



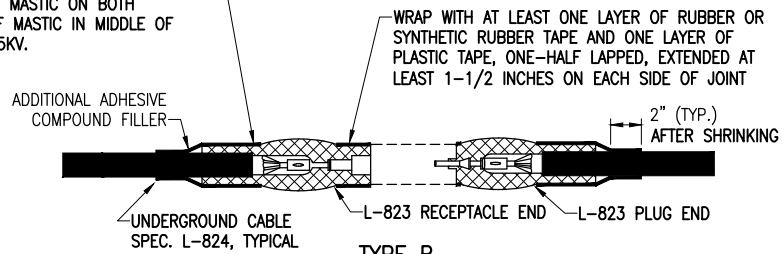
LOW VOLTAGE UNDERGROUND TAP SPLICE

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.

NOTES:

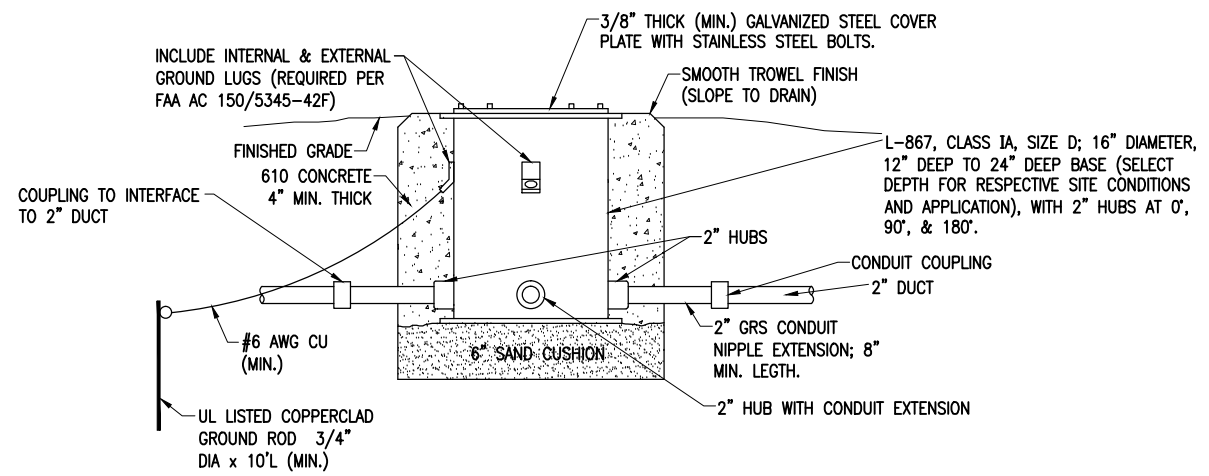
- SPLICE DETAILS ARE PROVIDED FOR NEW WORK AND TO ASSIST IN REPAIRS OF ACCIDENTAL OR UNEXPECTED INTERRUPTIONS AND/OR CUTS TO AIRFIELD LIGHTING CABLES.
- CONTRACTOR SHALL KEEP ON HAND A MINIMUM OF 10 SETS OF SPLICE KITS FOR L-823 CONNECTORS AND A MINIMUM OF 10 SETS OF TYPE A LOW VOLTAGE SPLICE KITS TO ACCOMMODATE REPAIRS.
- EVERY AIRFIELD LIGHTING CABLE SPLICE SHALL BE QUALIFIED IN MAKING CABLE SPLICES AND TERMINATIONS ON CABLES RATED AT AND/OR ABOVE 5,000 VOLTS AC.
- WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.
- INSIDE DIAMETER OF RESPECTIVE CABLE CONNECTOR SHALL PROPERLY MATCH OUTSIDE DIAMETER OF CABLE.
- WRAP ALL PRIMARY AND SECONDARY POWER 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.
- PROVIDE CABLE TAGS TO IDENTIFY THE RESPECTIVE CIRCUITS ALL POINTS OF ACCESS INCLUDING L-867 BASES, L-868 BASES, HANDHOLES, MANHOLES, JUNCTION BOXES, AND WIREWAYS.

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



TYPE B

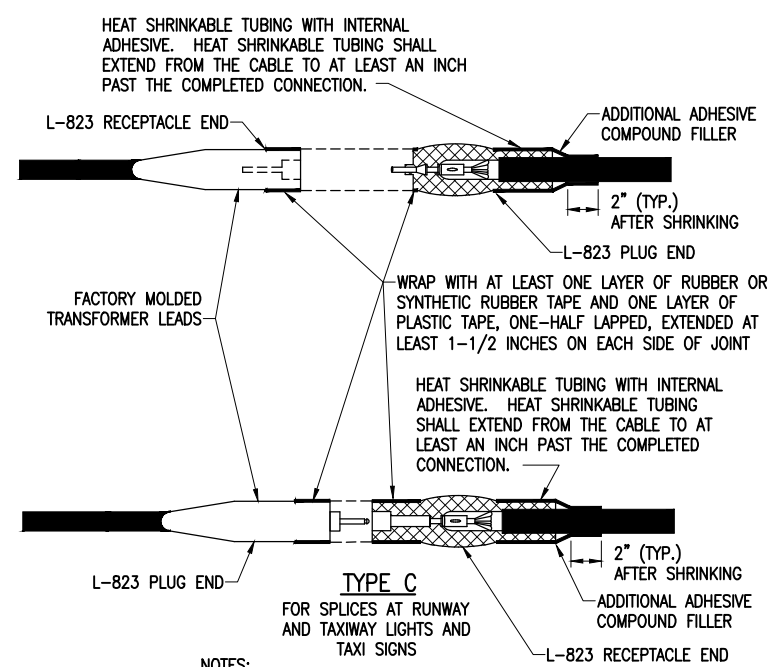
FOR SPLICES AT JUNCTION OF HOMERUN WITH LOOP CIRCUIT AND FOR SPLICES IN HOMERUNS TO EXISTING CABLES



SPLICE CAN DETAIL
(NOT TO SCALE)

NOTES FOR SPLICE CAN DETAIL:

- SPLICE CANS SHALL CONFORM TO THE REQUIREMENTS OF FAA AC 150/5345-42F, OR MOST CURRENT ISSUE IN FORCE, FOR TYPE L-867, CLASS IA, SIZE D, (16 IN. NOMINAL DIAMETER), AND 24 IN. DEEP AND/OR AS DETAILED ON THE PLANS. EACH SPLICE CAN SHALL INCLUDE INTERNAL AND EXTERNAL GROUND LUGS TO ACCOMMODATE THE RESPECTIVE APPLICATIONS. SPLICE CANS AND/OR JUNCTION CANS SHALL HAVE GALVANIZED STEEL COVERS, 3/8-INCH THICK (MINIMUM), WITH STAINLESS STEEL BOLTS.
- 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 150/5345-42G.
- APPLY AN OXIDE-INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS, AND ALL PLACES WHERE METAL COMES INTO CONTACT WITH METAL.
- THE CONCRETE USED IN THE CONSTRUCTION OF THE BASES FOR THE AIRFIELD LIGHTING CANS SHALL BE IN ACCORDANCE WITH ITEM 610 STRUCTURAL PORTLAND CEMENT CONCRETE.



TYPE C

FOR SPLICES AT RUNWAY AND TAXIWAY LIGHTS AND TAXI SIGNS

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

CABLE SPLICES
(NOT TO SCALE)

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

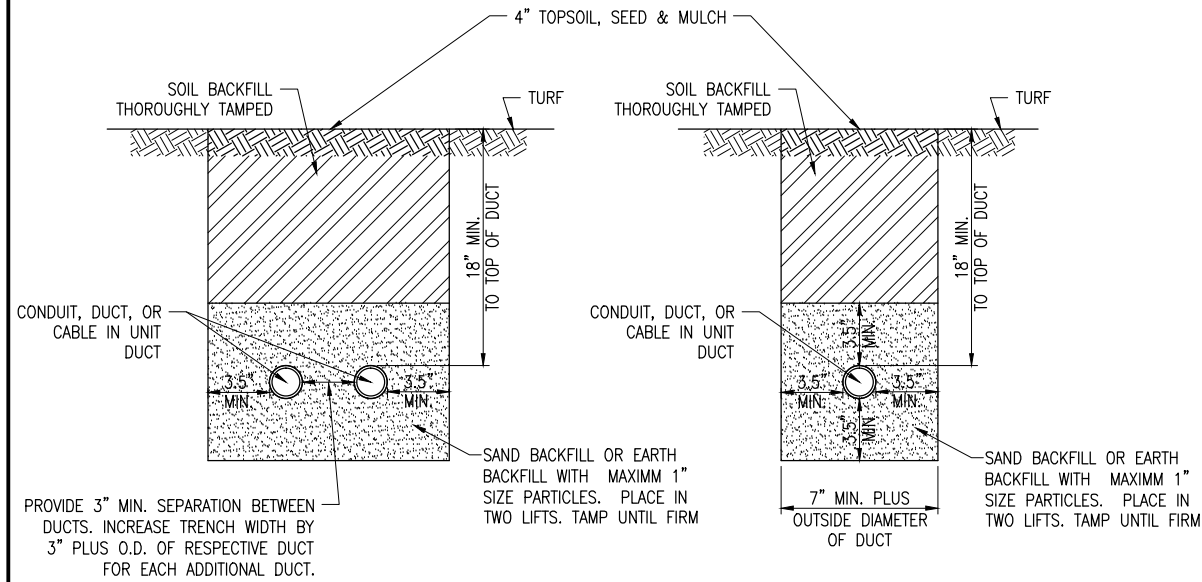
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DRAWN BY: CWS 02/26/2015
REVIEWED BY: CAH 10/20/2015

SHEET TITLE

AIRFIELD LIGHTING
CABLE SPLICE
DETAILS

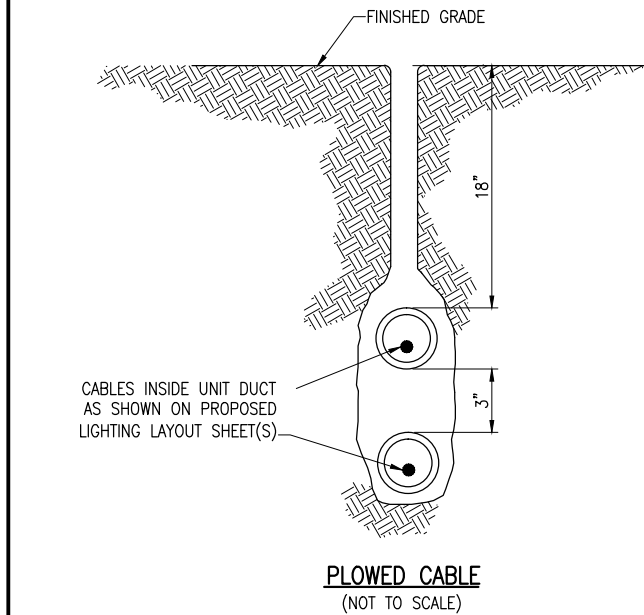


CONDUIT IN TRENCH – NON-PAVEMENT AREAS

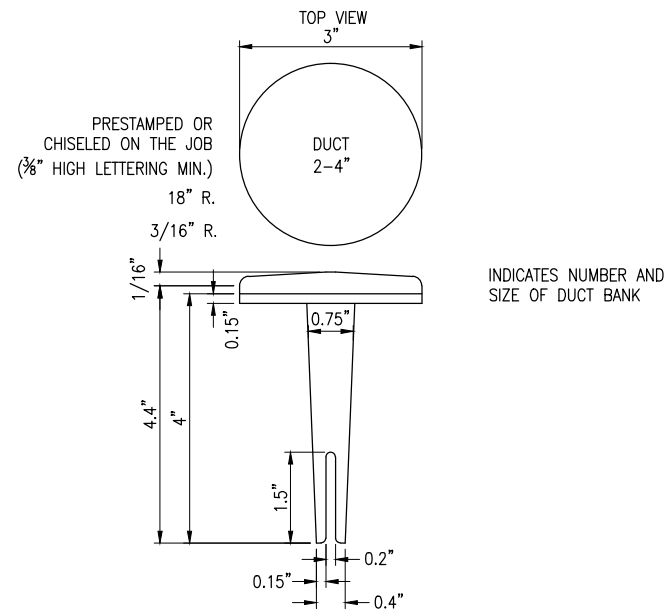
"NOT TO SCALE"

NOTES:

- DIMENSIONS FOR COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
- TRENCHES WITH MORE THAN TWO DUCTS OR CABLE IN UNIT DUCTS SHALL BE INCREASED 3" IN WIDTH PLUS DIAMETER OF RESPECTIVE DUCT FOR EACH ADDITIONAL CONDUIT, DUCT, OR CABLE IN UNIT DUCT; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.
- DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS. MINIMUM COVER REQUIREMENTS FOR CABLES AND DUCTS AT AIRPORT RUNWAYS AND ADJACENT AREAS WHERE TRESPASSING IS PROHIBITED IS 18 INCHES PER NEC 300.5 AND 300.50. COVER IS DEFINED AS THE SHORTEST DISTANCE IN INCHES MEASURED BETWEEN A POINT ON THE TOP SURFACE OF ANY DIRECT-BURIED CONDUCTOR, CABLE, CONDUIT, OR OTHER RACEWAY AND THE TOP SURFACE OF FINISHED GRADE, CONCRETE OR SIMILAR COVER.
- HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
- CONDUITS, DUCT, CABLE, AND/OR CABLE IN UNIT DUCT INTERFACE TO HANDHOLES, MANHOLES, SPLICE CANS, OR OTHER JUNCTION STRUCTURES WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE CABLE PAY ITEM OR RESPECTIVE DUCT PAY ITEM.
- ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.



PLOWED CABLE
"NOT TO SCALE"

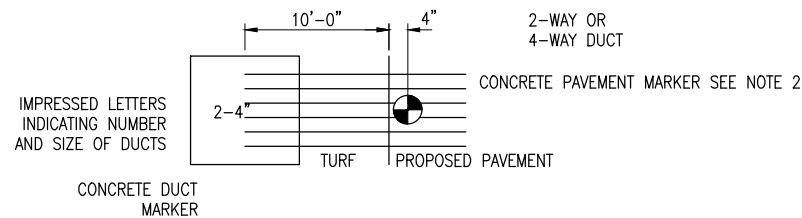


BITUMINOUS PAVEMENT DUCT MARKERS

"NOT TO SCALE"

NOTES:

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

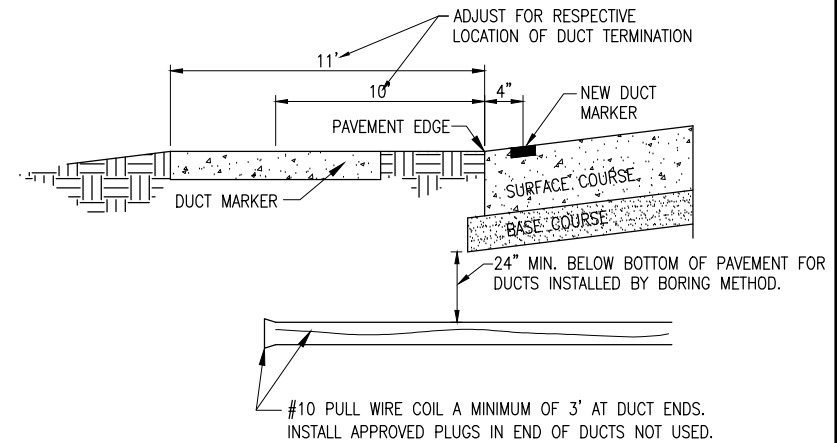


DUCT MARKER DETAIL

"NOT TO SCALE"

CABLE & DUCT MARKER NOTES:

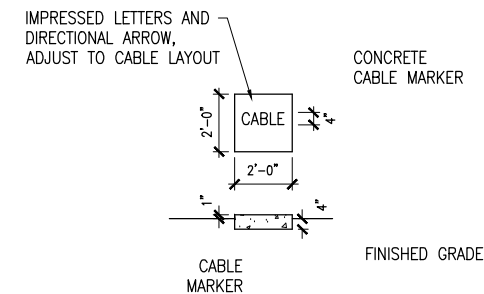
- THE COST OF ALL TURF AND PAVEMENT DUCT MARKERS SHALL BE INCIDENTAL TO THE DUCT. THE COST OF ALL CABLE MARKERS SHALL BE INCIDENTAL TO THE CABLE.
- BITUMINOUS PAVEMENT DUCT MARKER AND CONCRETE DUCT MARKER TO BE PROVIDED AT EACH END OF EACH DUCT AS SHOWN ON THE LOCATION PLAN. FOR CONCRETE PAVEMENT, THE LETTER "D" SHALL BE IMPRESSED IN THE PAVEMENT INSTEAD OF THE MARKER. THE LETTER SHALL BE FORMED AS DESCRIBED IN NOTE 4.
- CABLE MARKERS SHALL BE PLACED AT CHANGES OF DIRECTION AND APPROXIMATELY EVERY 200' ALONG CABLE RUNS.
- CONCRETE CABLE MARKERS AND DUCT MARKERS SHALL HAVE LETTERS 4" HIGH, 3" WIDE WITH WIDTH OF STROKE 1/2" AND 1/4" DEEP. ALL LETTERS, NUMBERS AND ARROWS TO BE IMPRESSED.
- EMPLOY THE FOLLOWING METHODS WHERE ADDITIONAL SPACE TO FIT LEGEND IS REQUIRED:
 - REDUCE LETTER SIZE TO 3" HIGH, 2" WIDE.
 - INCREASE THE MARKER SIZE TO 30" X 30".
 - PROVIDE ADDITIONAL MARKERS PLACED SIDE BY SIDE.



UNDERGROUND ELECTRICAL DUCT

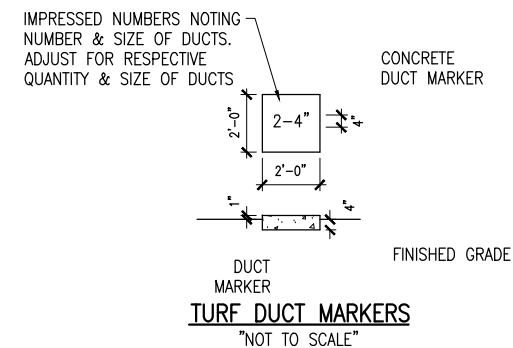
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NOTE: DUCTS INSTALLED BY BORING METHOD SHALL NOT DISTURB THE RESPECTIVE PAVEMENT SURFACE.



TURF CABLE MARKERS

"NOT TO SCALE"



TURF DUCT MARKERS

"NOT TO SCALE"

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

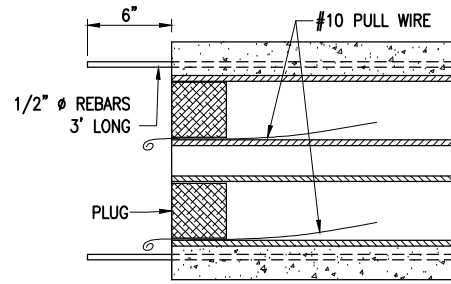
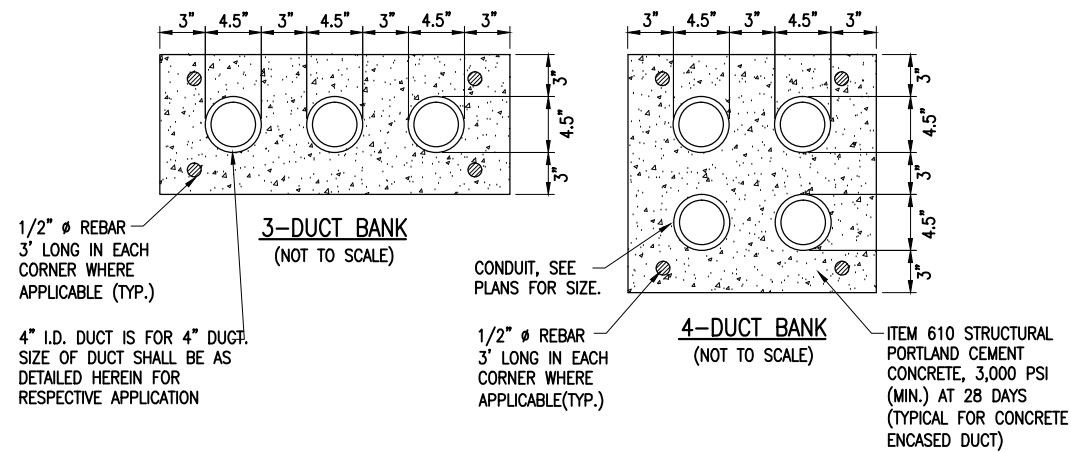
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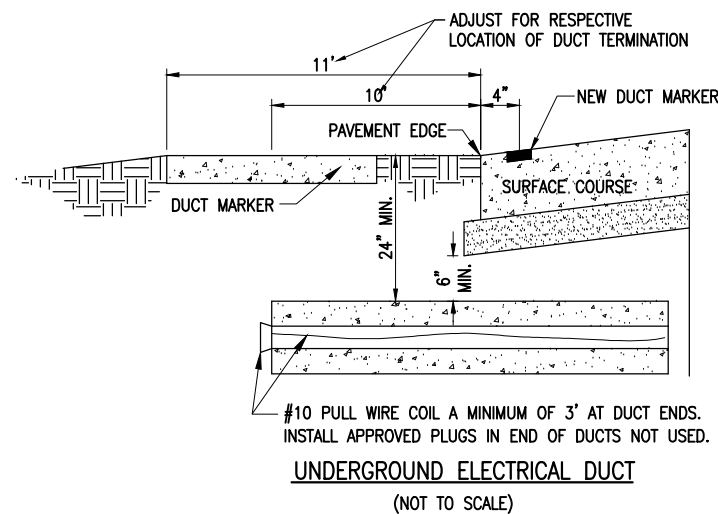
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CAD FILE: E-502-ELEC.DWG
DESIGN BY: KNL 02/25/2015
DRAWN BY: CWS 02/26/2015
REVIEWED BY: CAH 10/20/2015

SHEET TITLE

CONDUIT TRENCH
DETAILS



TYPICAL SECTION
(NOT TO SCALE)



UNDERGROUND ELECTRICAL DUCT
(NOT TO SCALE)

DUCT BANK NOTES:

- DIMENSIONS FOR CONCRETE COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
- INCLUDE DUCT SPACERS AS MANUFACTURED BY UNDERGROUND DEVICES INC., OR APPROVED EQUAL TO MAINTAIN PROPER SEPARATION OF CONDUITS.
- PROVIDE REBAR WHERE APPLICABLE TO ACCOMMODATE INTERFACE OF CONCRETE ENCASED DUCT BANKS TERMINATING IN HANDHOLE OR MANHOLE. PROVIDE REBAR REINFORCEMENT WHERE DUCT BANK IS LOCATED BELOW PAVEMENT. REBAR SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 706, GRADE 60, OR ASTM A615, GRADE 60.

DUCT INSTALLATION NOTES

- ALL ELECTRICAL EQUIPMENT AND MATERIALS 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, INTERTEK TESTING SERVICES VERIFICATION/ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- CONTRACTOR SHALL KEEP A COPY OF THE LATEST NEC IN FORCE ON SITE AT ALL TIMES DURING CONSTRUCTION FOR USE AS A REFERENCE.
- 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).
- 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 THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. ALSO CONTACT AIRPORT DIRECTOR/MANAGER AND AIRPORT PERSONNEL FOR ASSISTANCE IN LOCATING UNDERGROUND AIRPORT CABLES AND/OR UTILITIES. ALSO COORDINATE WORK WITH ALL ABOVEGROUND UTILITIES.
- ADJUSTMENTS TO DUCT BANK ROUTES MIGHT BE REQUIRED TO ACCOMMODATE EXISTING SITE CONDITIONS AND UNDERGROUND LINES AND UTILITIES. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL COORDINATE DUCT ROUTE ADJUSTMENTS WITH THE RESIDENT ENGINEER/ RESIDENT TECHNICIAN AND THE AIRPORT MANAGER.
- CONTRACTOR SHALL LOCATE AND MARK ALL EXISTING CABLES, LINES, OR UTILITIES WITHIN 10 FT OF PROPOSED EXCAVATING/TRENCHING AREA. ANY CABLES, LINES, AND UTILITIES FOUND INTERFERING WITH PROPOSED EXCAVATION OR CABLE/TRENCHING SHALL BE HAND DUG AND EXPOSED. ANY DAMAGED CABLES OR OTHER UTILITIES SHALL BE IMMEDIATELY REPAIRED TO THE SATISFACTION OF THE RESPECTIVE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE. THE RESIDENT ENGINEER/RESIDENT TECHNICIAN AND OWNER SHALL BE NOTIFIED IMMEDIATELY IF ANY CABLES OR OTHER UTILITIES ARE DAMAGED.
- PAYMENT FOR LOCATING AND MARKING UNDERGROUND UTILITIES AND CABLES WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT INSTALLATION.
- THE CONTRACTOR WILL DETERMINE IF THERE IS A CONFLICT BETWEEN THE INSTALLATION OF THE PROPOSED ELECTRICAL DUCTS AND ANY EXISTING UTILITIES. HE WILL MAKE ALL NECESSARY ADJUSTMENTS IN DEPTH OF INSTALLATION TO AVOID ANY AND ALL PROPOSED UNDERGROUND IMPROVEMENTS
- CONDUITS FOR DIRECT BURIAL OR CONCRETE ENCASED DUCT BANK SHALL BE SCHEDULE 40 PVC CONDUIT, UL-LISTED, RATED FOR 90°C CABLE—CONFORMING TO NEMA STANDARD TC-2 AND UL 651, LISTED SUITABLE FOR UNDERGROUND USE EITHER DIRECT-BURIED OR ENCASED IN CONCRETE, OR SCHEDULE 40 (MINIMUM) HDPE CONDUIT, UL LISTED, CONFORMING TO NEMA STANDARD TC-7 AND UL 651B AND LISTED SUITABLE FOR UNDERGROUND USE; EITHER DIRECT BURY OR ENCASED IN CONCRETE.
- CONDUITS FOR DIRECTIONAL BORING SHALL BE SCHEDULE 40 PVC CONDUIT OR SCHEDULE 80 PVC CONDUIT, UL-LISTED, RATED FOR 90°C CABLE—CONFORMING TO NEMA STANDARD TC-2 AND UL 651 AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION, SCHEDULE 80 HDPE CONDUIT, UL-LISTED, CONFORMING TO NEMA STANDARD TC-7 AND UL 651B AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION, OR WALL TYPE SDR 13.5 OR SDR 11 HDPE CONDUIT MANUFACTURED IN ACCORDANCE WITH ASTM D-3350 (SPECIFICATION OF POLYETHYLENE PLASTICS PIPE AND FITTINGS MATERIALS) AND ASTM F2160 (STANDARD SPECIFICATION FOR SOLID WALL, HIGH-DENSITY POLYETHYLENE CONDUIT BASED ON CONTROLLED OUTSIDE DIAMETER), AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION. PER NEC 300.5 (K), RACEWAYS INSTALLED USING DIRECTIONAL BORING EQUIPMENT SHALL BE APPROVED FOR THE PURPOSE.
- INSTALLATION OF CONDUIT AND DUCTS SHALL CONFORM TO ITEM 110 AIRPORT UNDERGROUND ELECTRICAL DUCT BANKS AND CONDUITS.
- DUCTS INSTALLED IN TRENCH SHALL BE INSTALLED 18 IN. MINIMUM BELOW GRADE IN TURF AREAS NOT SUBJECT TO FARMING. DUCTS LOCATED IN AREAS SUBJECT TO FARMING SHALL BE 42 IN. MINIMUM BELOW GRADE. MINIMUM DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 42" IN AREAS UNDER ROADWAYS. WHERE DETAILED ON THE PLANS OR WHERE REQUIRED TO AVOID OBSTRUCTIONS, DUCTS SHALL BE BURIED DEEPER.
- WHERE CONCRETE-ENCASED DUCT INTERFACES TO AN ELECTRICAL HANDHOLE OR MANHOLE, THE CONCRETE ENCASEMENT SHALL BE INSTALLED UP TO THE RESPECTIVE HANDHOLE OR MANHOLE. PROVIDE BUSHINGS OR BELLS AT CONDUIT TERMINATIONS IN ELECTRICAL HANDHOLES OR MANHOLES.
- UNDERGROUND DUCTS INSTALLED BY DIRECTIONAL-BORING METHOD SHALL BE INSTALLED IN A MANNER THAT WILL NOT DAMAGE ANY EXISTING UNDERGROUND UTILITIES, AND SHALL NOT DISTURB OR DAMAGE THE RESPECTIVE PAVEMENT OR ROADWAY SURFACE. DUCTS SHALL BE DIRECTIONAL-BORED AT THE LOCATIONS SHOWN ON THE CONSTRUCTION PLANS. THE DUCTS WILL BE BORED AT A MINIMUM DEPTH OF 42 IN. BELOW THE RESPECTIVE PAVEMENT IT IS BEING BORED UNDER.
- A PULL WIRE SHALL BE INSTALLED IN EACH CONDUIT OR DUCT TO BE LEFT VACANT.
- HIGH VOLTAGE CIRCUITS (AIRFIELD LIGHTING 5000 VOLT SERIES CIRCUITS AND/OR OTHER CIRCUITS RATED ABOVE 600 VOLTS) AND LOW VOLTAGE CIRCUITS (RATED 600 VOLTS AND BELOW) SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
- CONTROL CABLES SHALL BE RUN IN SEPARATE DUCTS FROM POWER CABLES.
- HOMERUN CABLES FOR A RESPECTIVE CIRCUIT SHALL BE INSTALLED IN THE SAME RACEWAY OR DUCT.
- COORDINATE DUCT INTERFACE TO MANHOLES AND HANDHOLES. FIELD CUT OPENINGS FOR CONDUITS AND DUCTS TO INTERFACE TO MANHOLES AND/OR HANDHOLES. CUT WALL OF RESPECTIVE HANDHOLE OR MANHOLE WITH A TOOL DESIGNED FOR MATERIAL TO BE CUT. SIZE HOLES FOR RESPECTIVE DUCTS, CONDUITS, AND TERMINATION FITTINGS AND SEAL AROUND PENETRATIONS. ALL CORING, INTERFACE, CUTTING, AND SEALING WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT INSTALLATION AND/OR RESPECTIVE HANDHOLE/MANHOLE INSTALLATION.
- CONTRACTOR SHALL COORDINATE DUCT MARKING WITH AIRPORT.
- ALL POWER AND CONTROL CABLES IN HANDHOLES, MANHOLES, AND JUNCTION BOXES SHALL BE TAGGED TO IDENTIFY THE RESPECTIVE CABLE. A MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A MANHOLE; ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT. CABLE TAGS SHALL BE STAMPED BRASS TAGS OR OTHER WEATHERPROOF/WATERPROOF CORROSION RESISTANT MATERIAL.

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

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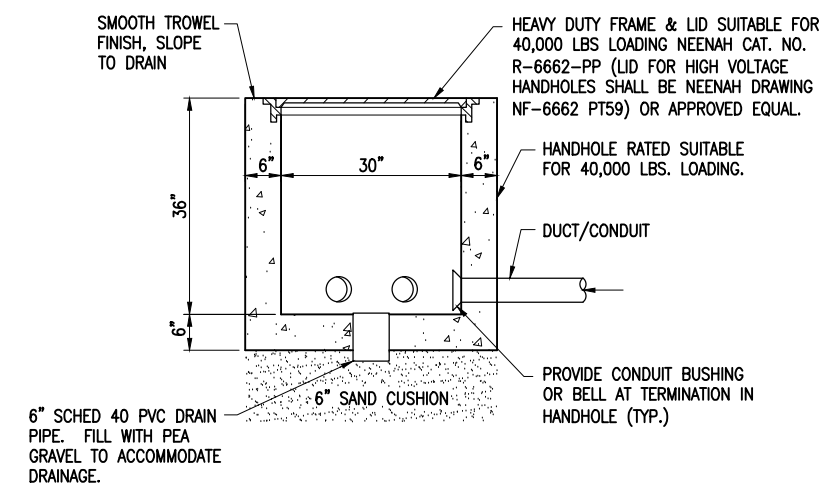
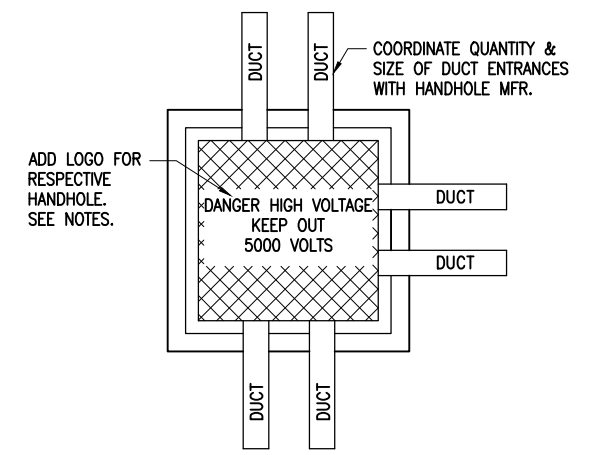
DESIGN BY: KNL 02/25/2015

DRAWN BY: CWS 02/26/2015

REVIEWED BY: CAH 10/20/2015

SHEET TITLE

DUCT BANK DETAILS
AND NOTES



NOTES:

1. LIDS FOR LOW VOLTAGE HANDHOLES SHALL BE LABELED "LOW VOLTAGE". LIDS FOR HIGH VOLTAGE HANDHOLES CONTAINING AIRFIELD LIGHTING SERIES CIRCUIT WIRING SHALL BE LABELED "DANGER HIGH VOLTAGE KEEP OUT 5000 VOLTS" TO COMPLY WITH NEC ARTICLE 300.45 "WARNING SIGNS" AND NEC ARTICLE 314.30(D) "COVERS". COORDINATE LETTERING WITH MFR.
2. HANDHOLES MAY BE CAST IN PLACE OR PRECAST. PRECAST MANUFACTURERS MUST BE ON THE IDOT (ILLINOIS DEPT. OF TRANSPORTATION) APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS.
3. MINIMUM CONCRETE STRENGTH SHALL BE 4,500 PSI AFTER 28 DAYS.
4. COORDINATE INSTALLATION OF HANDHOLES WITH RESPECTIVE FINISHED GRADE ELEVATIONS.
5. ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, CABLE IN UNIT DUCT, AND/OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE HANDHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

ELECTRICAL HANDHOLE
"NOT TO SCALE"

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

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SHEET TITLE

ELECTRICAL
HANDHOLE

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

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ISSUE: NOVEMBER 20, 2015
PROJECT NO: 13A0076D
CAD FILE: E-505-ELEC.DWG
DESIGN BY: KNL 02/25/2015
DRAWN BY: CWS 02/26/2015
REVIEWED BY: CAH 10/20/2015

SHEET TITLE

4'X4'X4' ELECTRICAL
MANHOLE

PRECAST 4'x4'x4' ELECTRICAL MANHOLE NOTES

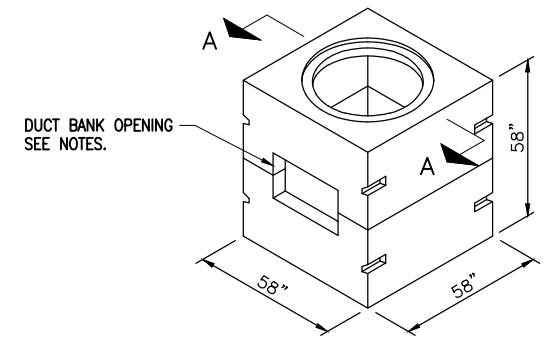
1. 4'x4'x4' ELECTRICAL MANHOLE SHALL BE CONSTRUCTED TO MEET THE FOLLOWING:

- DESIGN CRITERIA:**
- 1) DESIGN SPECIFICATION: ACI 318, AASHTO LOAD FACTOR DESIGN METHOD, AND ASTM C858
 - 2) DESIGN LOADING: AASHTO HS20 (32,000 LB/AXLE)
 - 3) LIVE LOAD SURCHARGE: .5% OF THE WHEEL LOADING APPLIED TO 8'-0" OF DEPTH.
 - 4) CONCRETE COMPRESSIVE STRENGTH: $F'_c = 4500$ PSI
 - 5) REINFORCING STEEL: ASTM A706, $F_y = 60000$ PSI

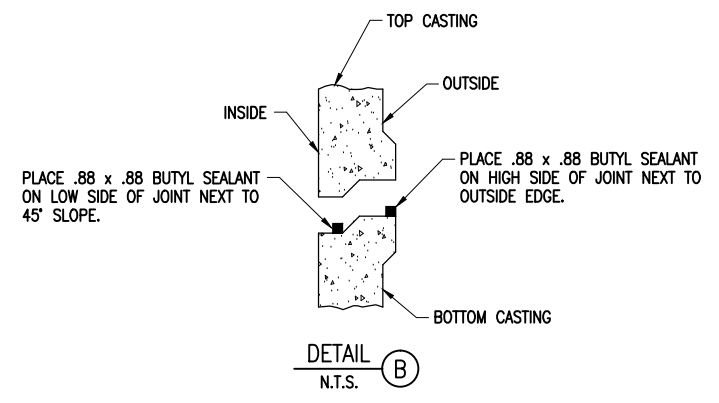
- DESIGN ASSUMPTIONS:**
- 1) GROUND WATER LEVEL: 3'-6" BELOW GRADE.
 - 2) EARTH COVER: 2'-0" MINIMUM TO 5'-0" MAXIMUM
 - 3) LIVE LOAD IMPACT:
 - 2'-0" $1 = 20\%$
 - 2'-1" TO 2'-11" $1 = 10\%$
 - 3'-0" TO 5'-0" $1 = 0\%$
 - 4) COEFFICIENT OF ACTIVE EARTH PRESSURE: $K_a = 0.3$
 - 5) SPECIFIC WEIGHT OF STD. AGGREGATE CONCRETE: 150 PCF
 - 6) SPECIFIC WEIGHT OF DRY EARTH: 100 PCF
 - 7) SPECIFIC WEIGHT OF SATURATED EARTH: 120 PCF
 - 8) EQUIVALENT FLUID PRESSURE OF DRY EARTH: 30 PSF
 - 9) EQUIVALENT FLUID PRESSURE OF SATURATED EARTH: 80 PSF

THE SUPPLIER SHALL PROVIDE CERTIFICATION THAT THE PRECAST MANHOLES MEET OR EXCEED THESE REQUIREMENTS PRIOR TO INSTALLATION.

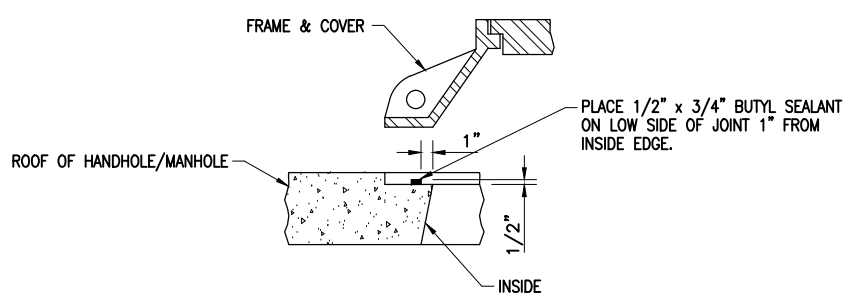
2. MANHOLE FRAME & LID SHALL BE CAPABLE OF WITHSTANDING MINIMUM 50,000 POUND LOADS. MANHOLE FRAME & LID SHALL BE NEENAH CATALOG NO. R-1640-C OR APPROVED EQUAL LID FOR LOW VOLTAGE MANHOLES SHALL BE LABELED "LOW VOLTAGE" OR "OV-600V". LIDS FOR HIGH VOLTAGE MANHOLES CONTAINING AIRFIELD LIGHTING SERIES CIRCUIT WIRING SHALL BE LABELED "DANGER HIGH VOLTAGE KEEP OUT 5000 VOLTS" TO COMPLY WITH 2014 NEC ARTICLE 300.45 "WARNING SIGNS" AND 2014 NEC ARTICLE 314.30(D) "COVERS". COORDINATE LETTERING WITH MFR.
3. COORDINATE DUCT BANK INTERFACE & OPENINGS WITH THE MANHOLE MFR. CONTRACTOR SHALL SLOPE DUCT BANK TO PRECAST MANHOLE OPENINGS. ALL OPENINGS SHALL BE SEALED WATERTIGHT AFTER DUCT BANK INSTALLATION.
4. 4'x4'x4' MANHOLE SHALL BE MANUFACTURED BY A CONCRETE ELECTRICAL MANHOLE PRODUCER ON THE ILLINOIS DEPARTMENT OF TRANSPORTATION APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS..
5. 4'x4'x4' MANHOLE SHALL BE PAID FOR UNDER ITEM AR110710 ELECTRICAL MANHOLE PER EACH.
6. CABLE RACKS SHALL BE HEAVY DUTY CORROSION RESISTANT NYLON MATERIAL WITH CORROSION RESISTANT STAINLESS STEEL MOUNTING HARDWARE; UNDERGROUND DEVICES, INC. CAT. NO. 3SR1N, 3SR2N OR 3SR3N OR EQUAL. PROVIDE AT LEAST TWO TRIPLE HOOK CABLE RACKS ON EACH MANHOLE WALL, SPACED TO SUPPORT RESPECTIVE CABLES.
7. COORDINATE INSTALLATION OF MANHOLES WITH RESPECTIVE FINISHED GRADE ELEVATIONS.
8. INCLUDE FLOOR SUMP OR DRAINAGE PIPE.
9. ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, CABLE IN UNIT DUCT, AND/OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE MANHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
10. INCLUDE 2" MIN. SCHED. 40 PVC CONDUIT SLEEVE IN BOTTOM OF MANHOLE TO ACCOMMODATE GROUND ROD INSTALLATION.



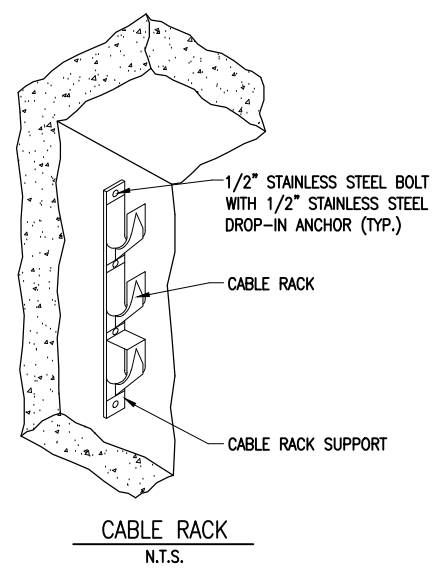
PRECAST 4'x4'x4' MANHOLE
N.T.S.



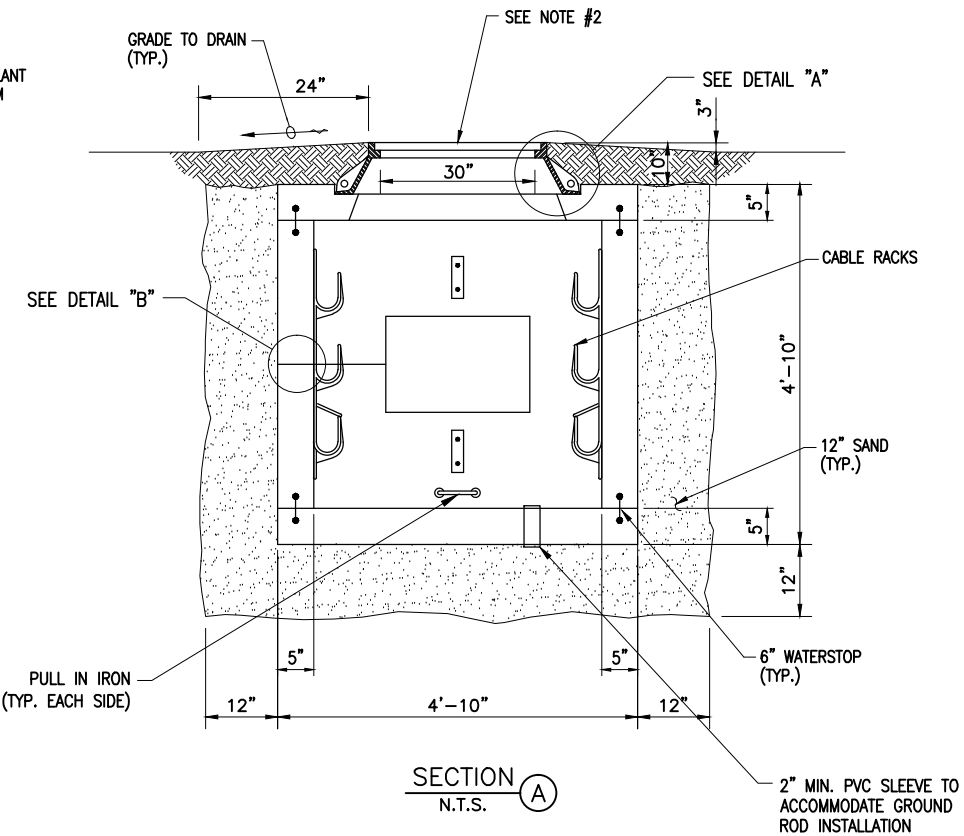
DETAIL B
N.T.S.



DETAIL A
N.T.S.



CABLE RACK
N.T.S.

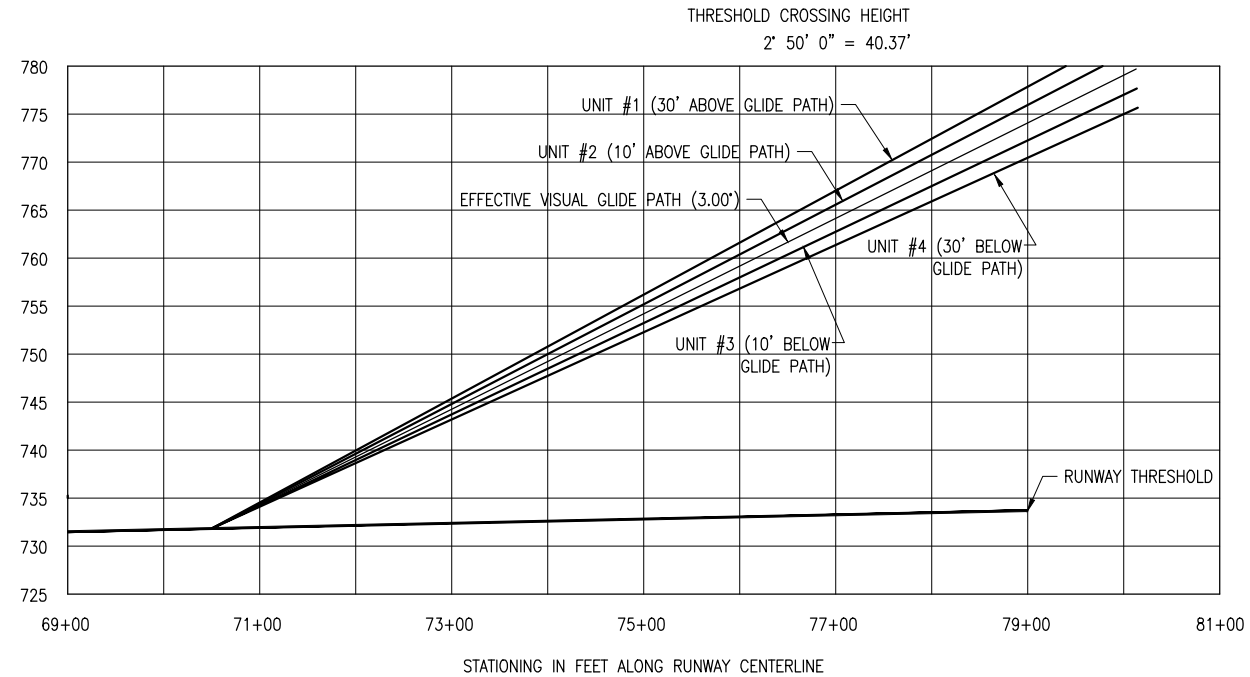


SECTION A
N.T.S.

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

P.A.P.I. NOTES

1. THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON PROPOSED ELECTRICAL PLAN SHEETS.
2. THE PROPOSED CONCRETE FOUNDATION PIERS SHALL BE AS DETAILED ON THE "PAPI FOUNDATION DETAILS" SHEET.
3. EACH PAPI UNIT SHALL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 732.00.
4. THE PROPOSED PAPI SIGNAL SHALL ONLY BE VISIBLE FOR A 10 DEGREE ZONE ON EITHER SIDE OF THE RUNWAY CENTERLINE IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5340-30H, FIGURE 80 AND SECTION 7.7 f (7)(c) WHICH STATES "...BAFFLES WILL BE REQUIRED TO SET THE LIMITS OF THE OCS TO 10 DEGREES EITHER SIDE OF RUNWAY CENTERLINE (20 DEGREES TOTAL) TO RESTRICT EXCESS HORIZONTAL LIGHT BEAM DISTRIBUTION...".
5. THE PAPI INSTALLATION WILL BE PAID FOR UNDER ITEM: AR125615 PAPI (L-880 SYSTEM) PER EACH

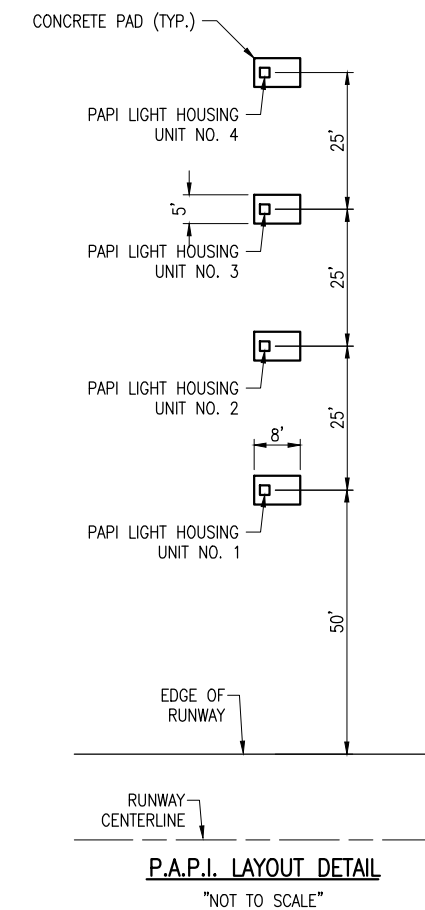
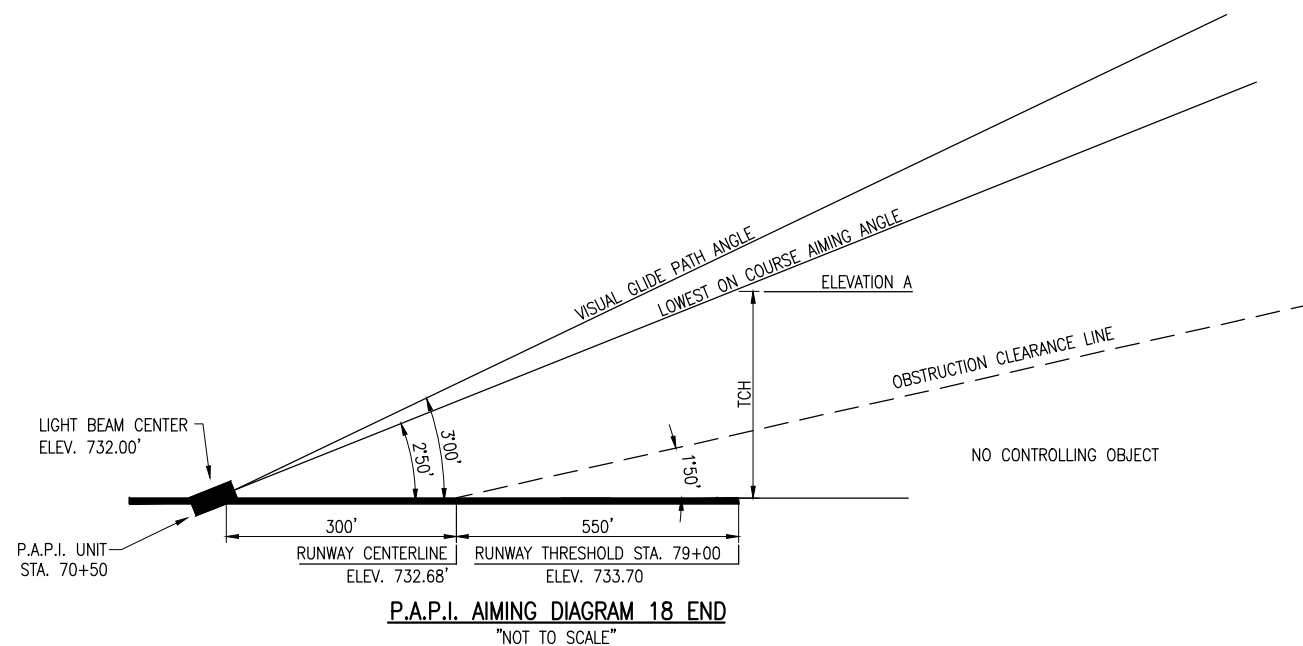


RUNWAY END 18 CENTERLINE PROFILE

NOTE:

LOWEST ON-COURSE ANGLE - 2' 50' ELEVATION A = 774.07 TCH = 40.37'

| PAPI DATA-RUNWAY END 18 | | | | |
|----------------------------------|------------------|------------------|------------------|------------------|
| | P.A.P.I. UNIT #1 | P.A.P.I. UNIT #2 | P.A.P.I. UNIT #3 | P.A.P.I. UNIT #4 |
| DISTANCE FROM RUNWAY CL | 87.5' | 112.5' | 137.5' | 162.5' |
| AIMING ANGLE | 3'30" | 3'10" | 2'50" | 2'30" |
| APPROXIMATE GROUND ELEVATION | 728.7' | 727.9' | 728.3' | 728.5' |
| P.A.P.I. UNIT APERTURE ELEVATION | 732.00' | 732.00' | 732.00' | 732.00' |



REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

| NO. | DATE | DESCRIPTION | | |
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ISSUE: NOVEMBER 20, 2015
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CAD FILE: C-501-DETL.DWG
DESIGN BY: CAH 1/12/2015
DRAWN BY: CAH 1/13/2015
REVIEWED BY: BSS 5/13/2015

SHEET TITLE

PROPOSED PAPI
DETAILS AND NOTES
RUNWAY END 18

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

| NO. | DATE | DESCRIPTION | | |
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ISSUE: NOVEMBER 20, 2015

PROJECT NO: 13A0076D
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DESIGN BY: CAH 1/12/2015
DRAWN BY: CAH 1/13/2015
REVIEWED BY: BSS 5/13/2015

SHEET TITLE

PROPOSED PAPI
DETAILS AND NOTES
RUNWAY END 36

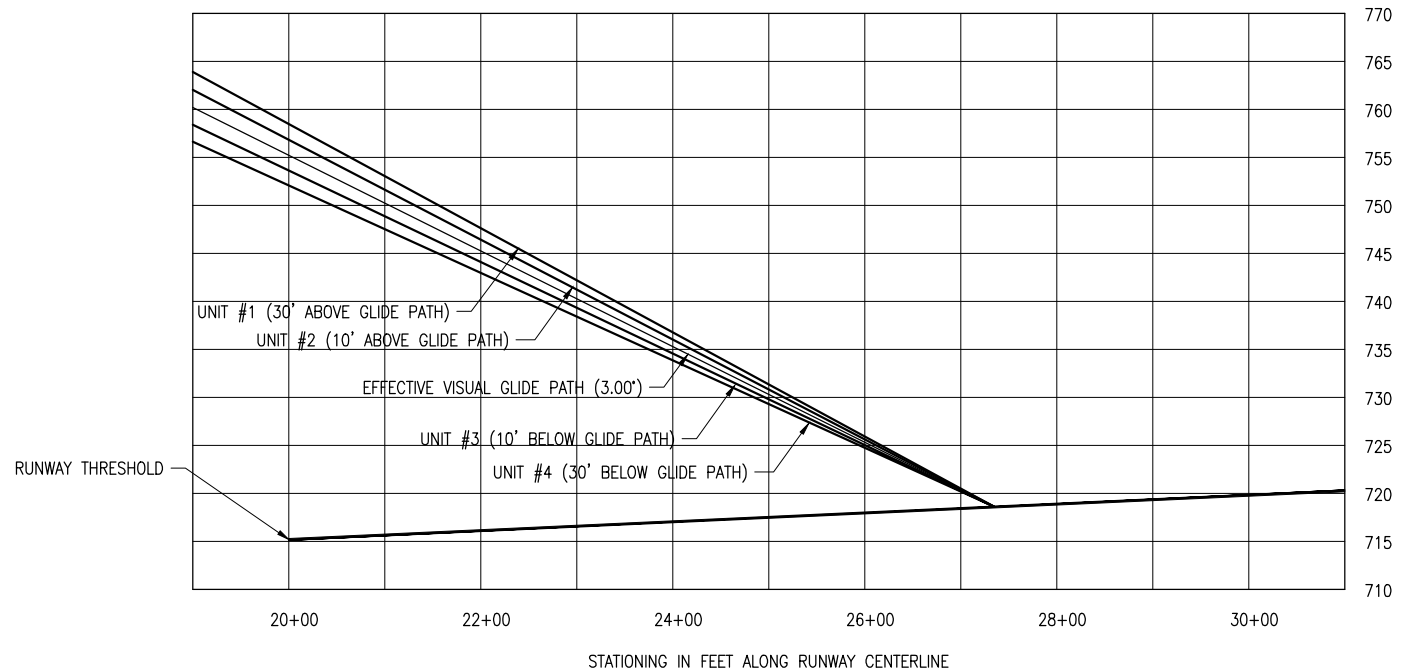
P.A.P.I. NOTES

1. THE PROPOSED PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM WILL BE PLACED AT THE LOCATION SHOWN ON PROPOSED ELECTRICAL PLAN SHEETS.
2. THE PROPOSED CONCRETE FOUNDATION PIERS SHALL BE AS DETAILED ON THE "PAPI FOUNDATION DETAILS" SHEET.
3. EACH PAPI UNIT SHALL BE CONSTRUCTED SUCH THAT THE BEAM CENTERS WILL BE WITHIN ±1" OF ELEVATION 718.58.
4. THE PROPOSED PAPI SIGNAL SHALL ONLY BE VISIBLE FOR A 10 DEGREE ZONE ON EITHER SIDE OF THE RUNWAY CENTERLINE IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5340-30H, FIGURE 80 AND SECTION 7.7 f (7)(c) WHICH STATES "...BAFFLES WILL BE REQUIRED TO SET THE LIMITS OF THE OCS TO 10 DEGREES EITHER SIDE OF RUNWAY CENTERLINE (20 DEGREES TOTAL) TO RESTRICT EXCESS HORIZONTAL LIGHT BEAM DISTRIBUTION...".
5. THE PAPI INSTALLATION WILL BE PAID FOR UNDER ITEM: AR125615 PAPI (L-880 SYSTEM) PER EACH

NOTE:

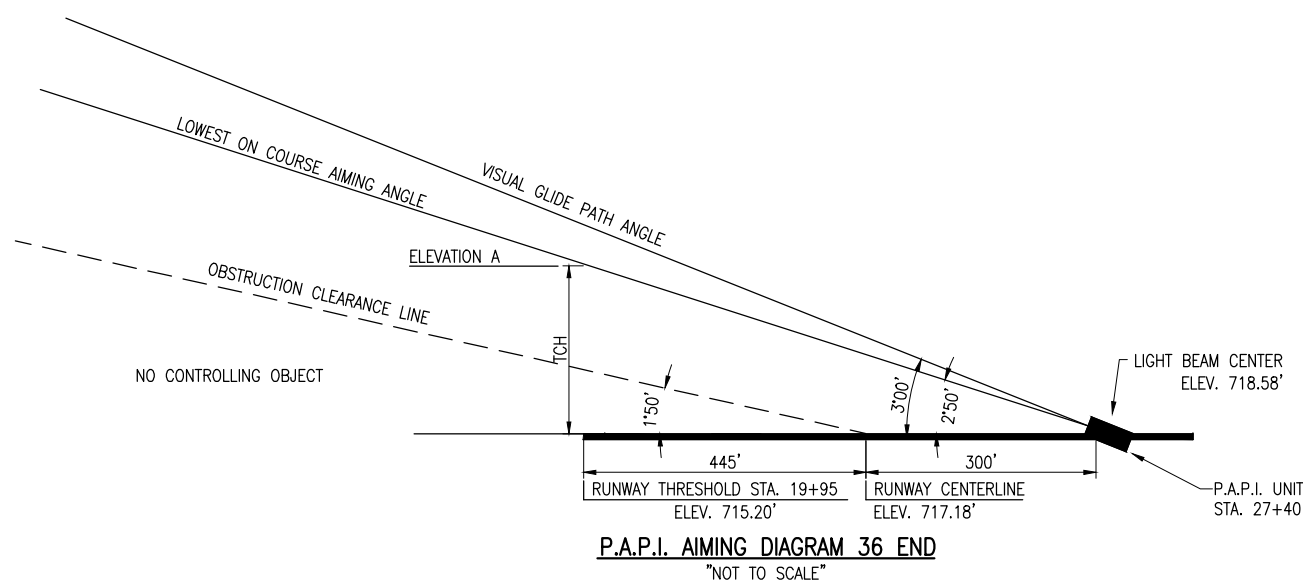
LOWEST ON-COURSE ANGLE - 2' 50" ELEVATION A = 755.45 TCH = 40.25'

THRESHOLD CROSSING HEIGHT
2' 50" 0" = 40.25'

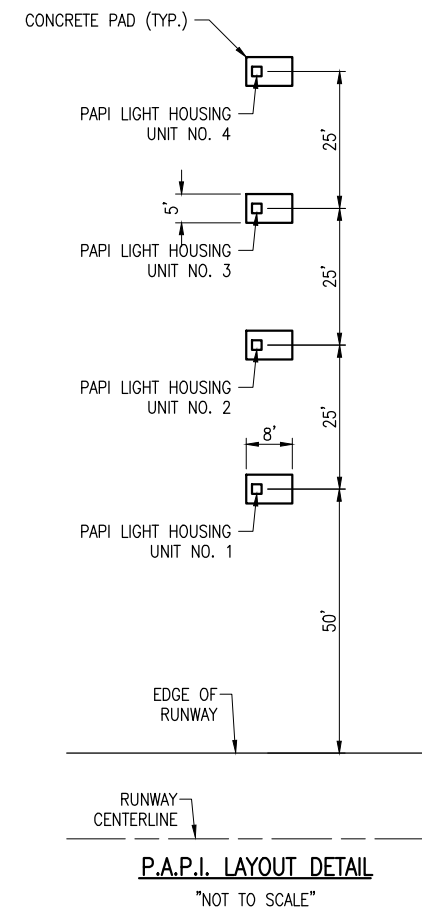


RUNWAY END 36 CENTERLINE PROFILE

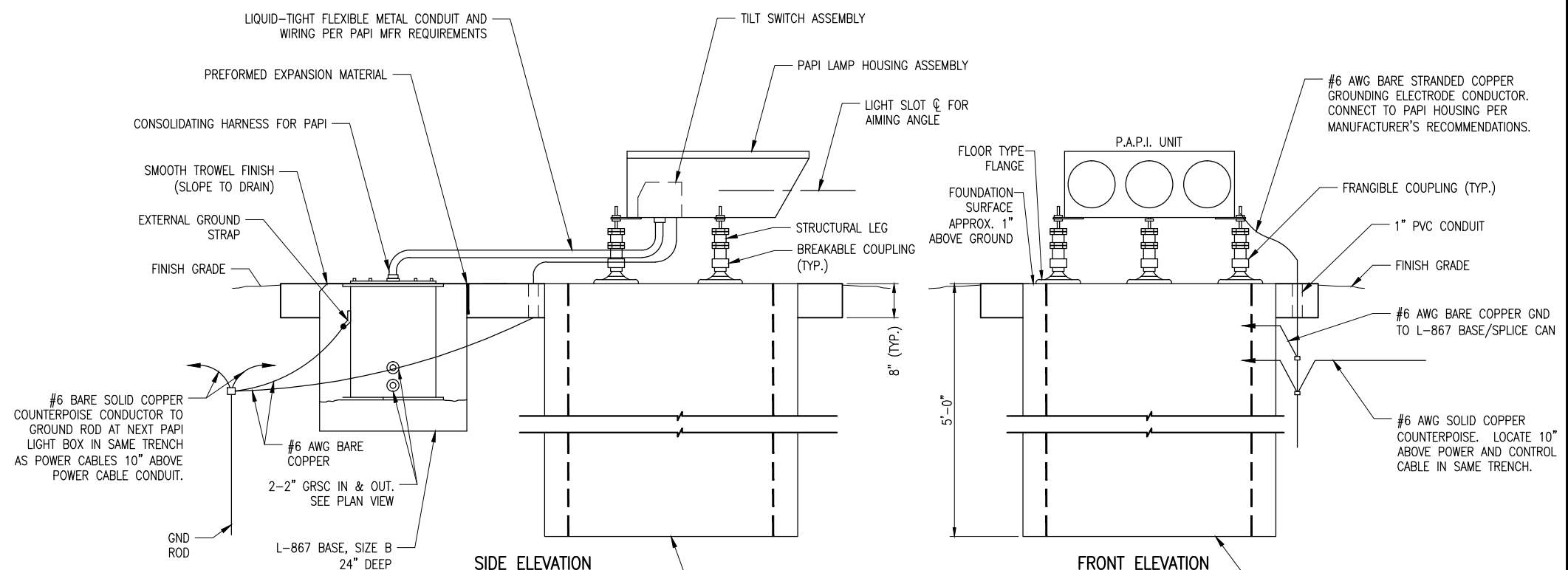
| PAPI DATA-RUNWAY END 36 | | | | |
|----------------------------------|------------------|------------------|------------------|------------------|
| | P.A.P.I. UNIT #1 | P.A.P.I. UNIT #2 | P.A.P.I. UNIT #3 | P.A.P.I. UNIT #4 |
| DISTANCE FROM RUNWAY C | 87.5' | 112.5' | 137.5' | 162.5' |
| AIMING ANGLE | 3'30" | 3'10" | 2'50" | 2'30" |
| APPROXIMATE GROUND ELEVATION | 716.7' | 716.2' | 715.8' | 715.4' |
| P.A.P.I. UNIT APERTURE ELEVATION | 718.58' | 718.58' | 718.58' | 718.58' |



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



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



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

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

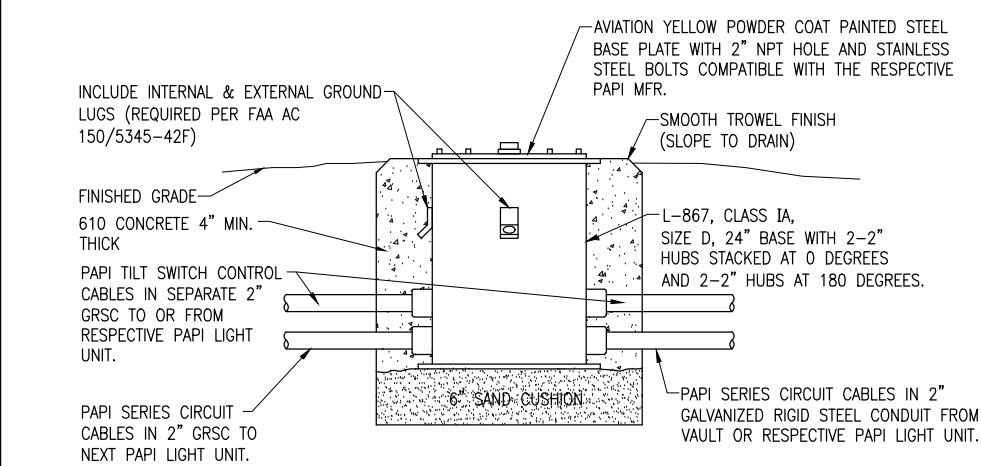
GROUNDING FOR PAPI'S

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

2 GALVANIZED RIGID STEEL CONDUITS WITH THREADED FITTINGS; PAPI TILT SWITCH CONTROL CABLES IN SEPERATE 2" GRSC AND PAPI SERIES CIRCUIT CABLES IN SECOND SEPERATE 2" GRSC TO OR FROM RESPECTIVE PAPI LIGHT UNIT.

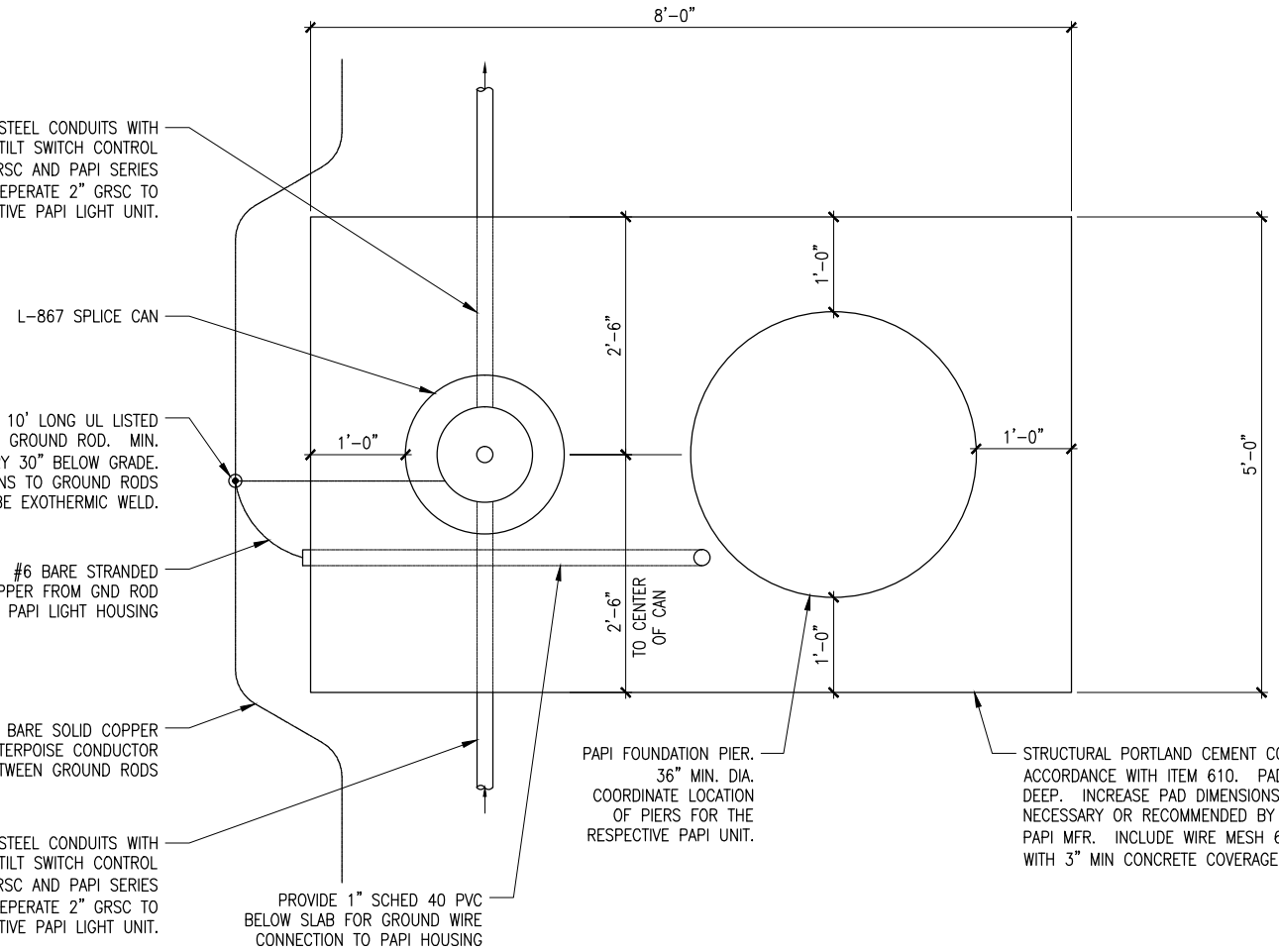
36" DIA. MINIMUM CONCRETE FOOTING, 5 FEET DEEP WITH 6 #4 BARS SYMMETRICALLY AROUND CIRCUMFERENCE WITH 6" X 6" NO. 6 WIRE MESH. INCREASE DIAMETER WHERE NECESSARY TO ACCOMMODATE RESPECTIVE PAPI MANUFACTURER'S MOUNTING ARRANGEMENT.

36" DIA. MINIMUM CONCRETE FOOTING, 5 FEET DEEP WITH 6 #4 BARS SYMMETRICALLY AROUND CIRCUMFERENCE WITH 6" X 6" NO. 6 WIRE MESH. INCREASE DIAMETER WHERE NECESSARY TO ACCOMMODATE RESPECTIVE PAPI MANUFACTURER'S MOUNTING ARRANGEMENT.



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

NOTE:
1. FOR THE PURPOSE OF ENHANCING SAFETY, EACH BASE MUST HAVE INSTALLED, BY THE MANUFACTURER, AND INTERNAL AND EXTERNAL GROUND STRAP THAT IS AVAILABLE FOR THE PURPOSE OF ATTACHING A GROUND LUG THAT IS CONNECTED TO AN EARTH GROUND OR A SAFETY GROUND CONDUCTOR INSTALLED WITH THE RESPECTIVE CIRCUIT. FOR AIRPORT PROJECTS RECEIVING FEDERAL FUNDS THIS REQUIREMENT IS MANDATORY PER FAA AC 150/5345-42F.
2. PAPI TILT SWITCH CONTROL CONDUCTORS SHALL HAVE 3,000 VOLT (MINIMUM) RATED INSULATION AND SHALL BE SIZED IN ACCORDANCE WITH THE RESPECTIVE PAPI MANUFACTURER'S RECOMMENDATION, 3,000 VOLT MIL-W-16878 MILITARY HOOK-UP WIRE PVC OR XLPE WILL BE SUITABLE FOR TILT SWITCH CONTROL WIRING.



CONCRETE PAD/FOUNDATION PLAN VIEW
"NOT TO SCALE"

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

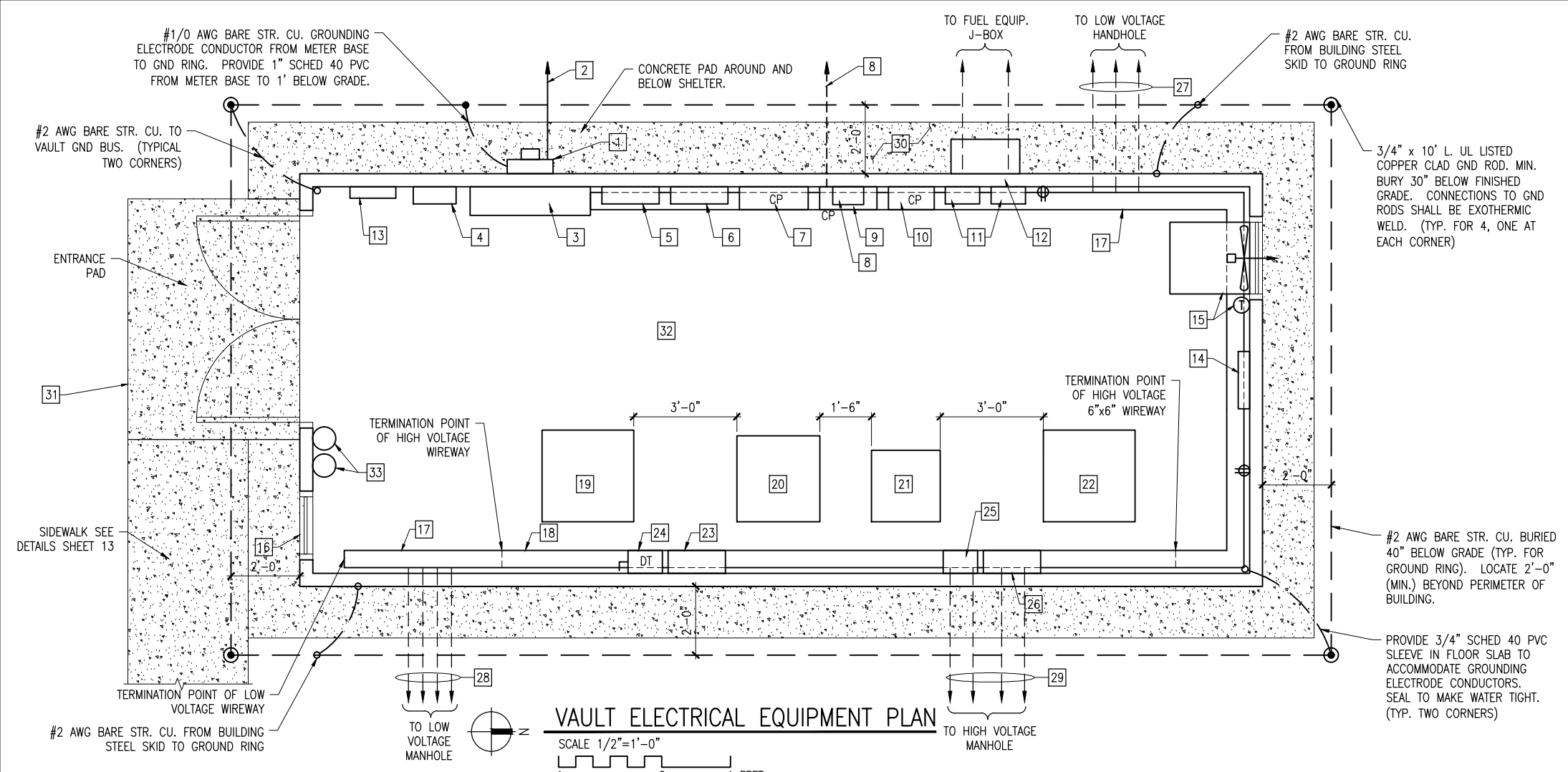
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ISSUE: NOVEMBER 20, 2015

PROJECT NO: 13A0076D
CAD FILE: C-503-DET.LDWG
DESIGN BY: KNL 03/08/2015
DRAWN BY: CWS 03/09/2015
REVIEWED BY: CAH 10/20/2015

SHEET TITLE

STYLE B PAPI FOUNDATION DETAILS



VAULT BUILDING NOTES

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

THE PROPOSED ELECTRICAL VAULT BUILDING SHALL HAVE A NOMINAL 12 FOOT WIDE EXTERIOR (INTERIOR WIDTH SHALL NOT BE LESS THAN 11 FEET, ADJUST EXTERIOR WIDTH AS APPLICABLE) BY NOMINAL 28 FEET IN LENGTH (INTERIOR LENGTH SHALL NOT BE LESS THAN 27 FEET, ADJUST EXTERIOR LENGTH AS APPLICABLE) BY NOMINAL 9 FEET HIGH INTERIOR (FLOOR TO CEILING).

GENERAL NOTES

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

KEYED NOTES

- 1 ELECTRIC UTILITY METER WITH SUPPORT HARDWARE PER SERVING ELECTRIC UTILITY COMPANY REQUIREMENTS. ADJUST LOCATION TO COORDINATE WITH VAULT LAYOUT AND CONDUIT TO SERVICE PANELBOARD.
- 2 UTILITY SERVICE CONDUCTORS IN 3" SCHED. 80 PVC C. FROM UTILITY TRANSFORMER TO METER BASE. CONTRACTOR SHALL FURNISH AND INSTALL SERVICE CONDUCTORS AND CONDUIT FROM METER BASE TO SERVICE PANEL. SEE "PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD".
- 3 VAULT SERVICE AND DISTRIBUTION PANEL "A". SEE SCHEDULE.
- 4 AC SURGE PROTECTION DEVICE.
- 5 VAULT DISTRIBUTION PANEL "B". SEE SCHEDULE.
- 6 FUEL SYSTEM PANELBOARD "C". SEE SCHEDULE.
- 7 LIGHTING CONTACTOR PANEL. SEE "LIGHTING CONTACTOR PANEL DETAIL".
- 8 L-854 RADIO CONTROL UNIT. EXTEND RADIO ANTENNA CABLE IN 1" GRSC ABOVE GRADE & 1" SCHED 40 PVC BELOW GRADE TO BEACON TOWER AND MOUNT ANTENNA ABOVE ROOF PEAK OF TERMINAL BUILDING FOR PROPER OPERATION. PROVIDE SCHED 40 PVC NIPPLE AT ENTRY TO VAULT FOR ISOLATION. BOND EXTERIOR METAL CONDUIT TO GND RING WITH PIPE CLAMP AND #2 AWG BARE CU BONDING CONDUCTOR.
- 9 RADIO RELAY INTERFACE PANEL WITH PHOTOCELL BYPASS SWITCH FOR AIRFIELD LIGHTING SYSTEM. SEE "AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC" FOR WIRING REQUIREMENTS. MOUNT PHOTOCELL ABOVE VAULT ROOF LEVEL. FIELD VERIFY LOCATION FOR PROPER CONTROL AND OPERATION. PROVIDE SCHED 40 PVC NIPPLE AT ENTRY TO VAULT FOR ISOLATION. BOND EXTERIOR METAL CONDUIT TO GND RING WITH PIPE CLAMP AND #2 AWG CU BONDING CONDUCTOR.
- 10 RADIO RELAY INTERFACE PANEL FOR PAPI SYSTEMS. THIS PANEL MAY BE COMBINED WITH THE RADIO RELAY INTERFACE PANEL FOR AIRFIELD LIGHTING.
- 11 RELOCATED FUEL SYSTEM EQUIPMENT PANELS.
- 12 24" x 24" x 12" DEEP NEMA 4X STAINLESS STEEL PULL BOX FOR FUEL SYSTEM WIRING. MOUNT ON VAULT EXTERIOR. EXTEND 2-2" GRSC TO FUEL SYSTEM JUNCTION BOX (2ND 24" x 24" x 12" DEEP NEMA 4X SS ENCL) AND INTERFACE TO EXISTING FUEL SYSTEM WIRING.
- 13 ELECTRIC WALL HEATER EH-1, 4000 WATT, 240 VAC, 1 PHASE, SUITABLE FOR SURFACE MOUNTING WITH INTEGRAL THERMOSTAT, C-MARK MODEL CWH3404 OR APPROVED EQUAL. HEATER SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENTS. LOCATE HEATER SUCH THAT IT IS NOT LESS THAN 8" FROM ADJACENT WALLS OR EQUIPMENT.
- 14 ELECTRIC WALL HEATER EH-2 4000 WATT, 240 VAC, 1 PHASE, SUITABLE FOR SURFACE MOUNTING WITH INTEGRAL THERMOSTAT, C-MARK MODEL CWH3404 OR APPROVED EQUAL HEATER SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENTS. BOTTOM OF HEATER SHALL BE 8" (MIN.) ABOVE THE UPPER ELECTRICAL WIREWAY. COORDINATE WITH CCR INSTALLATION & FAN INSTALLATION. LOCATE HEATER ON WALL SUCH THAT IT IS NOT DIRECTLY BEHIND CCR. LOCATE HEATER SUCH THAT IT IS NOT LESS THAN 8" FROM ADJACENT WALLS OR EQUIPMENT.
- 15 EXHAUST FAN EF-1, 3100 CFM (MINIMUM) AT .25" STATIC PRESSURE WITH 1/3 HP (MINIMUM), 120 VAC MOTOR, COOK MODEL 20S100, OR APPROVED EQUAL. INCLUDE WALL HOUSING WITH GUARD, HEAVY DUTY BACK DRAFT DAMPER, ALUMINUM WEATHER-HOOD PAINTED TO MATCH BUILDING EXTERIOR, STAINLESS STEEL INSECT SCREEN, AND FRACTIONAL HP ELECTRICAL DISCONNECT. INSTALL FAN AS HIGH AS POSSIBLE. PROVIDE 120 VAC THERMOSTAT, AT 48" AFF. SEE EXHAUST FAN CONTROL SCHEMATIC FOR WIRING REQUIREMENTS. FAN SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENTS.
- 16 INTAKE LOUVER L-1, 24" WIDE BY 48" HIGH INTAKE LOUVER WITH STAINLESS STEEL INSECT SCREEN, FLANGED FRAME, 120 VAC LOW LEAK MOTORIZED DAMPER WITH LIMIT SWITCH, KYNAR FINISH MATCHING BUILDING EXTERIOR, RUSKIN MODEL ELF375DX, OR APPROVED EQUAL. SEE EXHAUST FAN CONTROL SCHEMATIC FOR WIRING REQUIREMENTS. LOUVER / DAMPER SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENTS.
- 17 6" BY 6" LOW VOLTAGE WIREWAY. LABEL "LOW VOLTAGE" EVERY 6 FEET. INSTALL ABOVE HIGH VOLTAGE WIREWAY.
- 18 6" BY 6" HIGH VOLTAGE WIREWAY. LABEL "HIGH VOLTAGE" EVERY 6 FEET. INSTALL BELOW LOW VOLTAGE WIREWAY.
- 19 NEW RUNWAY 18-36 CONSTANT CURRENT REGULATOR. SEE GENERAL NOTE 1.
- 20 BACKUP/SPARE CCR FOR RUNWAY 18-36 RELOCATED FROM EXISTING VAULT. SEE GENERAL NOTE 1.
- 21 RELOCATED TAXIWAY CONSTANT CURRENT REGULATOR. SEE GENERAL NOTE 1.
- 22 NEW PAPI CONSTANT CURRENT REGULATOR. SEE GENERAL NOTE 1.
- 23 TRANSFER PAIR SERIES PLUG CUTOUTS (TYPE S-1) WITH ENCLOSURE, FOR RUNWAY 18-36.
- 24 60 AMP, 240 VAC, 2P DOUBLE THROW FUSIBLE SAFETY SWITCH FOR RUNWAY 18-36 CCR'S.
- 25 SERIES PLUG CUTOUT (TYPE S-1) WITH ENCLOSURE, FOR TAXIWAY.
- 26 SERIES PLUG CUTOUTS (TYPE S-1) WITH ENCLOSURE FOR RUNWAY 18-36 PAPI'S.

- 27 3-3" PVC DUCT DIRECT BURY FROM LOW VOLTAGE WIREWAY TO LOW VOLTAGE HANDHOLE. PROVIDE 3-3" PVC COATED GRSC WITH PVC COATED GRSC ELBOWS AT ENTRY TO VAULT. 3" GRSC AND ELBOWS WITH ASPHALT BASED PAINT IS ALSO ACCEPTABLE.
- 28 4-WAY 3" CONCRETE ENCASED DUCT FROM LOW VOLTAGE WIREWAY TO LOW VOLTAGE MANHOLE. PROVIDE 4-3" PVC COATED GRSC WITH PVC COATED GRSC ELBOWS AT ENTRY TO VAULT. 3" GRSC AND ELBOWS WITH ASPHALT BASED PAINT IS ALSO ACCEPTABLE.
- 29 4-WAY 3" CONCRETE ENCASED DUCT FROM HIGH VOLTAGE WIREWAY TO HIGH VOLTAGE MANHOLE. PROVIDE 4-3" PVC COATED GRSC WITH PVC COATED GRSC ELBOWS AT ENTRY TO VAULT. 3" GRSC AND ELBOWS WITH ASPHALT BASED PAINT IS ALSO ACCEPTABLE.
- 30 4" THICK CONCRETE PAD WITH 6x6-2.9x2.9 W.W.F. AND 6" CRUSHED COMPACTED AGGREGATE BASE COURSE. COORDINATE WITH PIER FOUNDATIONS. PROVIDE 1/2" TOOLED JOINTS THAT INTERSECT PIER FOUNDATIONS. PROPOSED PAD WILL COVER ENTIRE AREA BENEATH VAULT STRUCTURE AS WELL AS 18" AROUND THE PERIMETER OF THE BUILDING EDGE. THE CONCRETE PAD WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE PROPOSED ELECTRICAL VAULT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- 31 ENTRANCE PAD CONSTRUCTED OF 6" MIN. CONCRETE SLAB W/ 6X6-W5X5 WELDED WIRE FABRIC ON A COMPACTED SUBGRADE. MINIMUM DIMENSIONS OF PAD WILL BE 7'Wx5'-6"Dx6"H, SLOPED AT A MIN. OF 0.5"/FT AWAY FROM THE VAULT ENTRANCE. THE CONCRETE PAD WILL BE PLACED AT LEAST 3" INTO THE EXISTING GRADE. STEP INTO VAULT BUILDING SHALL NOT EXCEED 7". PCC USED TO CONSTRUCT THE PAD WILL CONFORM TO ITEM 610. ALL MATERIALS, LABOR AND EQUIPMENT USED TO CONSTRUCT THE PAD AND 4' WIDE SIDEWALK INCLUDING ANY GRADING REQUIRED WILL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE PROPOSED ELECTRICAL VAULT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- 32 THE NUMBER, SIZE, DEPTH, REINFORCEMENT, AND LOCATION OF THE PROPOSED CONCRETE PIERS WILL BE COORDINATED WITH THE MANUFACTURER OF THE PROPOSED ELECTRICAL VAULT BUILDING. THE TOP OF THE PROPOSED PIERS WILL BE AT LEAST 4" ABOVE THE EXISTING GRADE.
- 33 FURNISH AND INSTALL A UL RATED, 10 POUND CARBON DIOXIDE FIRE EXTINGUISHER SUITABLE FOR USE ON CLASS C FIRES AND A 10 POUND CLASS 4A:80B:C DRY CHEMICAL ABC FIRE EXTINGUISHER SUITABLE FOR USE ON CLASS A,B,C FIRES, IN THE VAULT SHELTER. PER NFPA 10 "PORTABLE FIRE EXTINGUISHERS" CLASS C ARE FOR FIRES THAT INVOLVE ENERGIZED ELECTRICAL EQUIPMENT. FIRE EXTINGUISHERS SHALL BE MADE IN THE UNITED STATES OF AMERICA TO COMPLY WITH BUY AMERICAN REQUIREMENT. FIRE EXTINGUISHER TYPE CO2 SHALL BE AMEREX MODEL 330, ANSUL SENTRY 10 MODEL CD10A-1 OR APPROVED EQUAL. FIRE EXTINGUISHER DRY CHEMICAL TYPE ABC SHALL BE AMEREX MODEL B456, OR APPROVED EQUAL. PROVIDE WALL MOUNTING BRACKET FOR EACH FIRE EXTINGUISHER. CONFIRM MODEL NUMBERS WITH THE RESPECTIVE FIRE EXTINGUISHER MANUFACTURER.

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

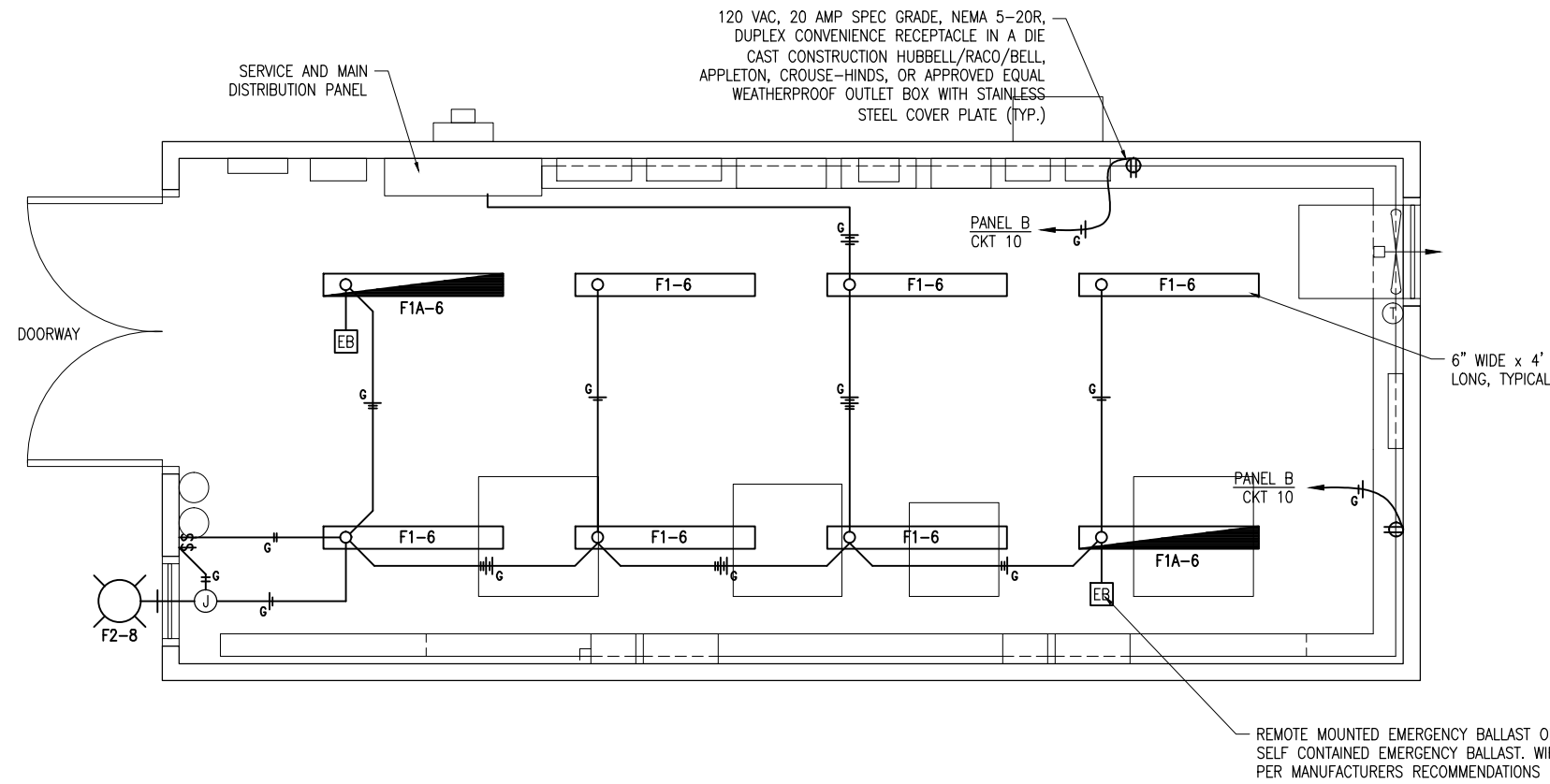
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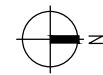
SHEET TITLE

PROPOSED VAULT ELECTRICAL EQUIPMENT PLAN



NOTES

- 15 AMP & 20 AMP BRANCH CIRCUITS FOR LIGHTING & RECEPTACLES SHALL USE #12 AWG THWN (MIN.). EMT MAY BE USED FOR LIGHTING AND RECEPTACLE BRANCH CIRCUITS.
- LIGHT FIXTURES SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWINGS SUBMITTAL.
- ADJUST RECEPTACLE LOCATIONS WHERE NECESSARY TO ACCOMMODATE EQUIPMENT LAYOUT.
- TEST EMERGENCY LIGHTING AND CONFIRM PROPER OPERATION.
- "USPOM" SUFFIX ON LITHONIA LIGHT FIXTURE CATALOG NUMBERS INDICATES UNITED STATES POINT OF MANUFACTURE.



Vault Lighting and Receptacle Plan

SCALE 1/2"=1'-0"
1 0 2 4 FEET

| ELECTRICAL LEGEND - PLANS | |
|---------------------------|---|
| | CONDUIT (EXPOSED) |
| | CONDUIT OR DUCT (CONCEALED OR BURIED) |
| | DUPLEX CONVENIENCE RECEPTACLE, 120V, 20 AMP SINGLE PHASE, NEMA 5-20R, GROUNDING TYPE. |
| | WALL OR CEILING MTD. JUNCTION BOX. CONFIGURATION VARIES WITH USE. |
| | SINGLE THROW DISCONNECT SWITCH |
| | SINGLE THROW, FUSIBLE DISCONNECT SWITCH |
| | DOUBLE THROW SAFETY SWITCH, MANUAL TRANSFER SWITCH |
| | CONTROL PANEL |
| | MOTOR |
| | TRANSFORMER |
| | ELECTRIC UTILITY METER |
| | ENCLOSURE |
| | CIRCUIT BREAKER PANEL-SEE SCHEDULES |
| | GROUND ROD |
| | #12 AWG THWN COPPER UNLESS NOTED OTHERWISE. LONG SLASHES INDICATE NEUTRAL. SHORT SLASHES INDICATE HOT OR SWITCHED LEG. "G" OR SLASHES WITH DOT INDICATE SEPARATE GROUND WIRE. |
| | HOMERUN TO PANEL PNL A INDICATES PANEL 1,3,5 INDICATES CIRCUIT NUMBERS |
| | SURFACE MOUNTED FLUORESCENT FIXTURE. LETTER WITH NUMBER INDICATES FIXTURE TYPE. X= CIRCUIT NUMBER |
| | SURFACE MOUNTED FLUORESCENT FIXTURE WITH EMERGENCY BALLAST BATTERY BACKUP. LETTER WITH NUMBER INDICATES FIXTURE TYPE. X= CIRCUIT NUMBER |
| | WALL OR CEILING MTD. COMPACT FLUORESCENT OR HID FIXTURE. |
| | SINGLE POLE SWITCH |

| LIGHTING FIXTURE SCHEDULE | | | | | | |
|---------------------------|---|--|---|-------|---|---|
| FIXT. TYPE | DESCRIPTION | MANUFACTURER & CATALOG NO. | LAMPS/WATTS | VOLTS | MOUNTING | REMARKS |
| F1 | 4 FT. WET LOCATION LISTED ENCLOSED AND GASKETED INDUSTRIAL FLUORESCENT LIGHT FIXTURE, IMPACT RESISTANT, UV RESISTANT REINFORCED POLYESTER FIBERGLASS HOUSING, HIGH IMPACT ACRYLIC DIFFUSER, RAPID START COLD WEATHER 0 DEG. F. ELECTRONIC BALLAST WITH LESS THAN OR EQUAL TO 10% THD. | LITHONIA: DMW-2-32-AR-120- CW-GE10RS-WLF -USPOM | 2-32W T8 4100K 59 TOTAL INPUT WATTS | 120 | SURFACE TO HARD CEILING | PROVIDE WET LOCATION FITTINGS INSTALLED IN TOP OF FIXTURE. |
| F1A | SAME AS F1 EXCEPT PROVIDE AN EMERGENCY BALLAST CAPABLE OF OPERATING 2 LAMPS FOR 90 MINUTES AT 1100-1400 TOTAL LUMENS, BODINE #B50ST. NOTE BALLAST MIGHT REQUIRE TO BE REMOTE MOUNTED NEAR FIXTURE AS INDICATED ON THE PLANS. | LITHONIA: DMW-2-32-AR-120- CW-GE10RS-WLF -USPOM | 2-32W T8 4100K 59 TOTAL INPUT WATTS | 120 | SURFACE TO HARD CEILING | PROVIDE WET LOCATION FITTINGS INSTALLED IN TOP OF FIXTURE. |
| F2 | COMPACT FLUORESCENT WALL-PAK, ONE PIECE INJECTION MOLDED UV STABILIZED POLYCARBONATE HOUSING, HIGH PERFORMANCE SPECULAR ANODIZED SEGMENTED REFLECTOR, ONE PIECE HIGH TEMPERATURE SILICONE GASKET, MEDIUM BRONZE FINISH, HIGH POWERFACTOR ELECTRONIC BALLAST WITH LESS THAN OR EQUAL TO 10% THD, UL LISTED FOR WET LOCATIONS, FUSED. | LITHONIA: DMW-2-32-AR-120- CW-GE10RS-WLF -USPOM | 1-42W TRT 4100K 47 TOTAL INPUT WATTS | 120 | SURFACE TO WALL ABOVE AND TO THE LEFT OF EXTERIOR DOOR APPROXIMATELY 4 INCHES ABOVE TOP OF DOOR FRAME. ADJUST LOCATION TO ACCOMMODATE DOORWAY OVERHANG. | CONNECT TO WALL SWITCH LOCATED ON THE INSIDE OF THE BUILDING. |

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

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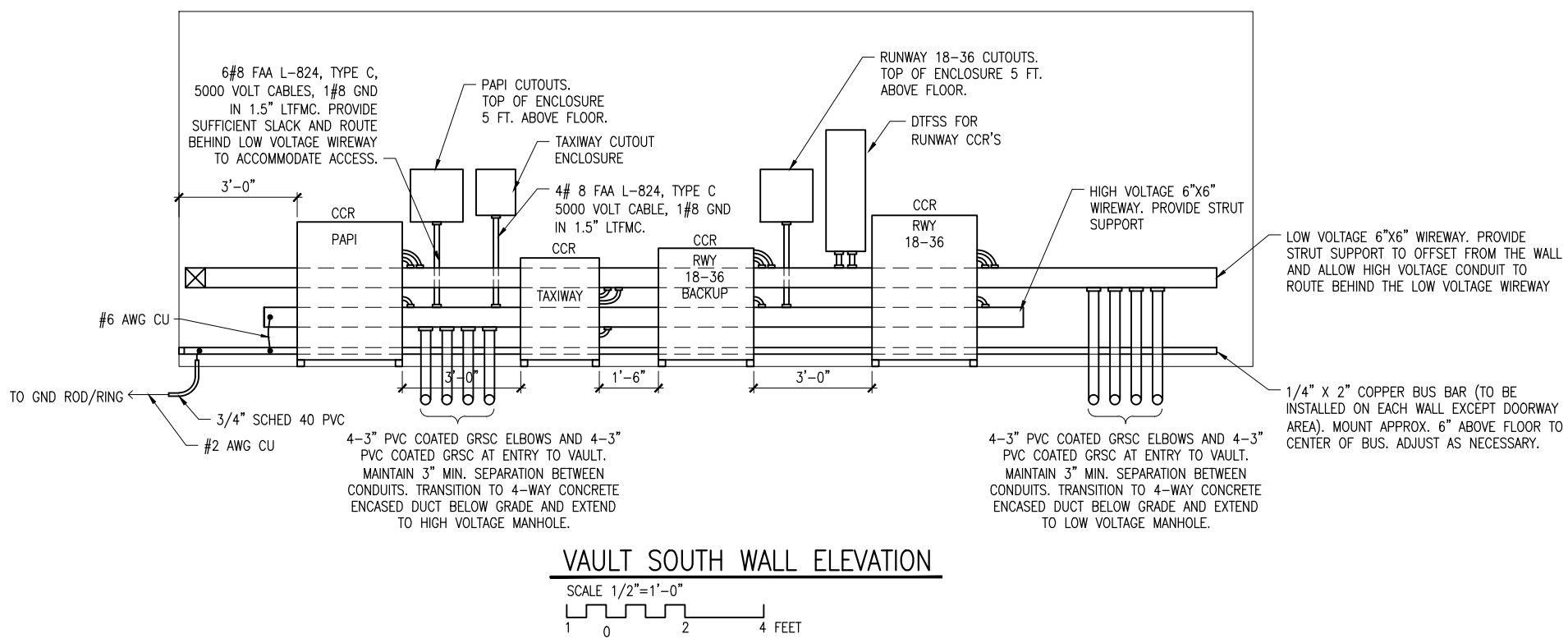
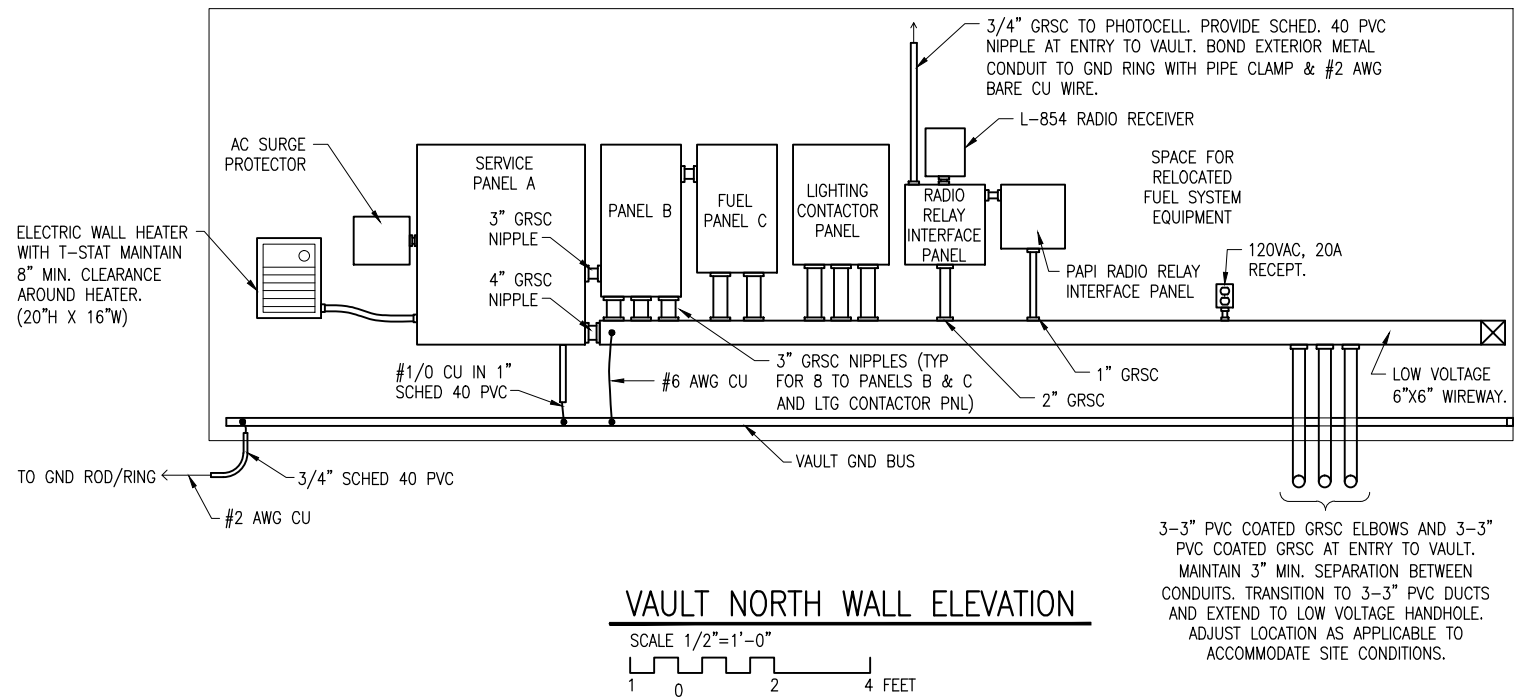
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SHEET TITLE

PROPOSED VAULT
LIGHTING AND
RECEPTACLE PLAN



REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

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SBG NO: 3-17-SBGP-XX

Contract No. MS008

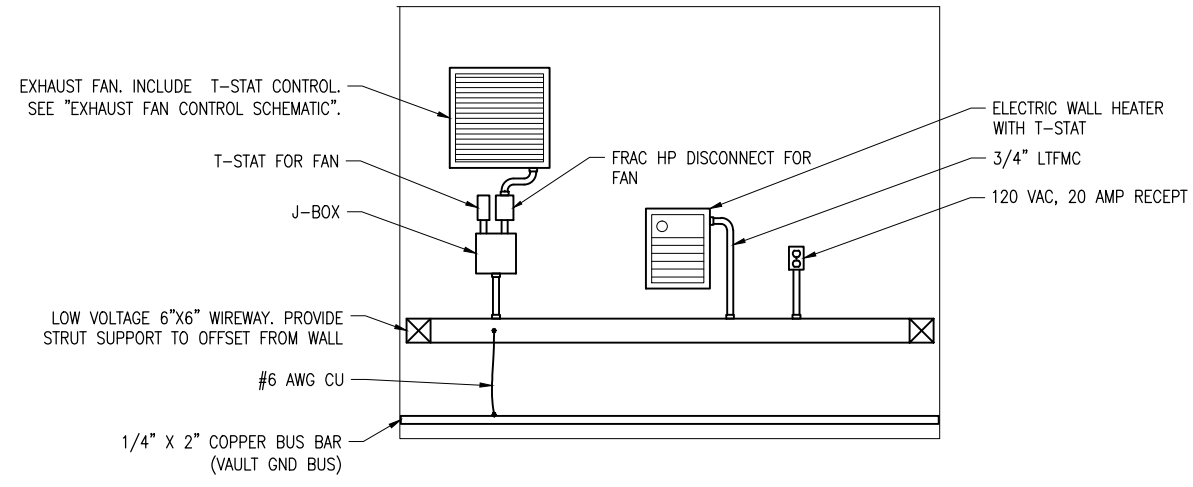
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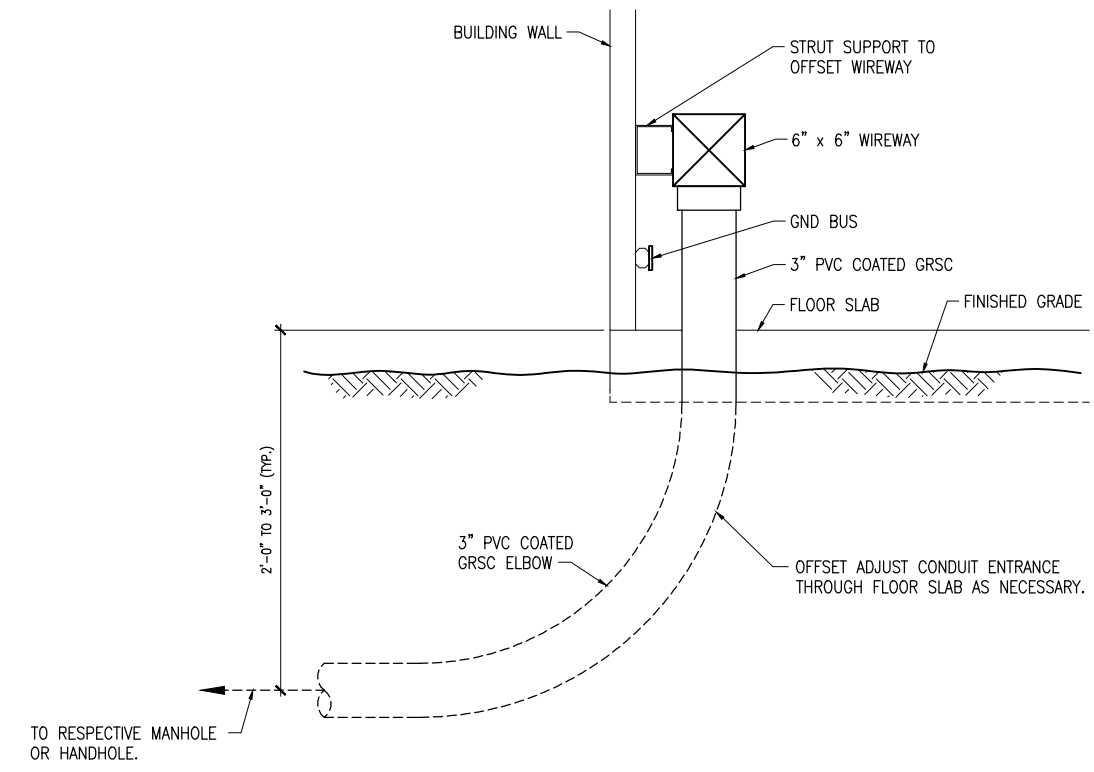
SHEET TITLE

PROPOSED VAULT WALL ELEVATIONS (SHEET 1)

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VAULT EAST WALL ELEVATION
SCALE 1/2"=1'-0"
1 0 2 4 FEET



CONDUIT ENTRANCE DETAIL
SCALE 1/2"=1'-0"
0.5 0 1 2 FEET

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

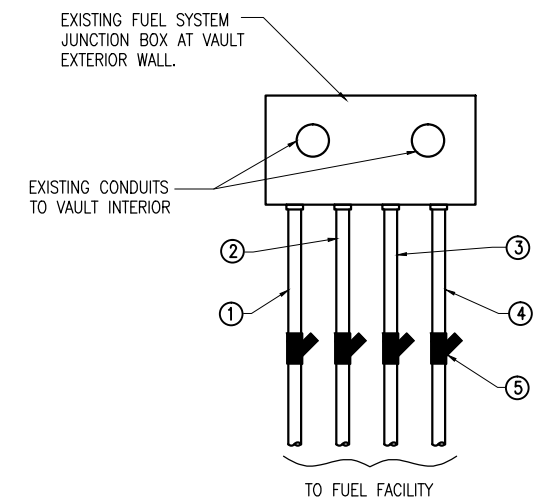
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SHEET TITLE

PROPOSED VAULT WALL ELEVATIONS (SHEET 2)

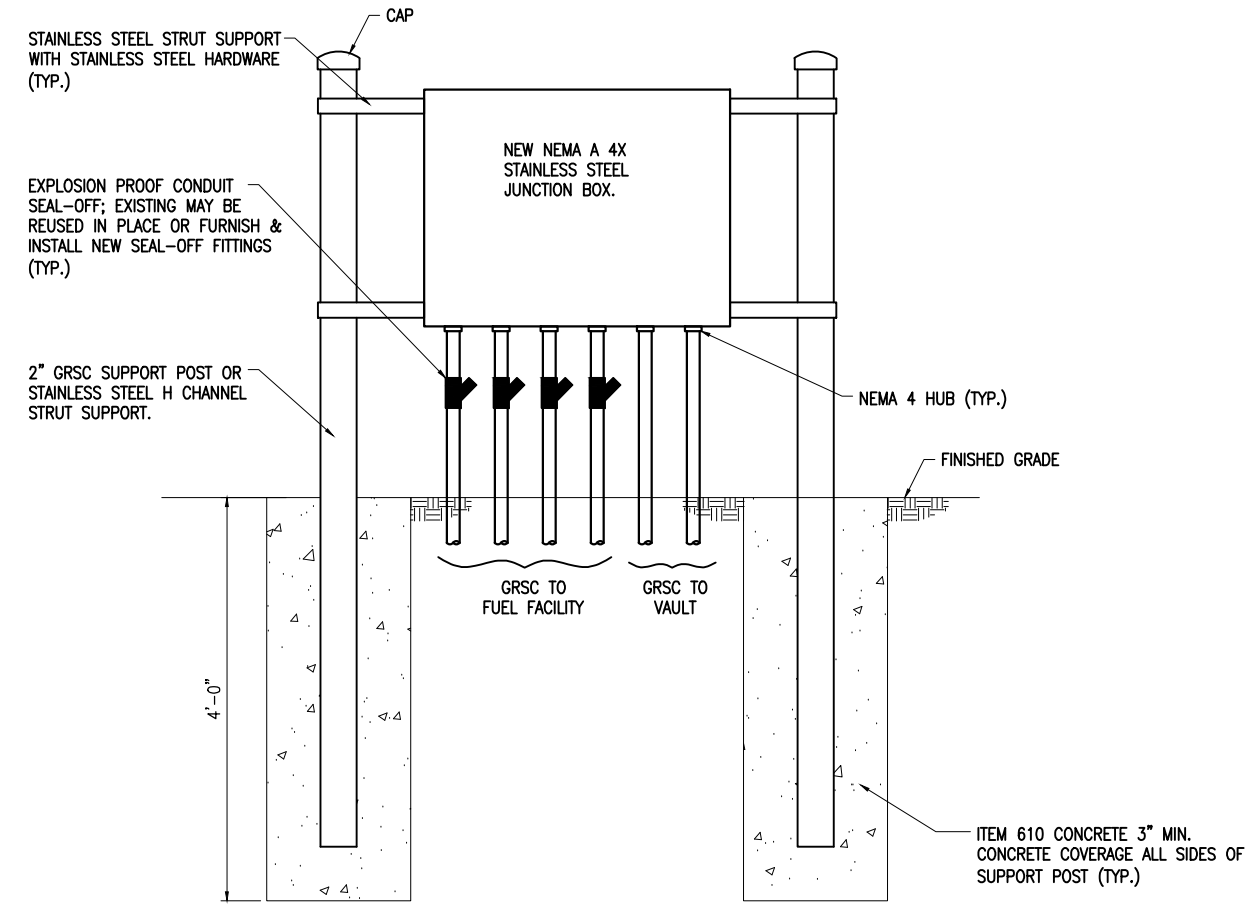


EXISTING FUEL FACILITY JUNCTION BOX DETAIL

NOT TO SCALE

KEYED NOTES:

- ① 3# 12 THWN (GRAY, RED, GREEN) 2- 2/C #18 AWG SHIELDED TYPE CM CABLE IN 3/4" GRSC.
- ② 7 #12 THWN (RED, WHITE, BLACK, GREEN, ORANGE, ORANGE, BLUE)
1 #14 THWN BLUE IN 3/4" GRSC
- ③ 2-2/C TYPE CM #18 AWG SHIELDED CABLES IN 3/4" GRSC.
- ④ 7 #12 THWN (RED, WHITE, BLACK, GREEN, ORANGE, ORANGE, BLUE) IN 3/4" GRSC.
- ⑤ EXPLOSION PROOF CONDUIT SEAL OFF FITTING.



PROPOSED FUEL FACILITY JUNCTION BOX DETAIL

NOT TO SCALE

FUEL SYSTEM EQUIPMENT RELOCATION NOTES

1. EXISTING FUEL SYSTEM EQUIPMENT SHALL BE RELOCATED FROM THE EXISTING VAULT TO THE NEW VAULT. THE CONTRACTOR SHALL COORDINATE RELOCATION OF THE EQUIPMENT WITH THE AIRPORT MANAGER AND MINIMIZE DOWN TIME OF THE FUEL FACILITY.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL DOCUMENT AND RECORD EXISTING SITE CONDITIONS AND WIRING OF FUEL FACILITY EQUIPMENT PRIOR TO REMOVING EQUIPMENT. CONTRACTOR PERFORMING THE RELOCATION OF THE FUEL FACILITY EQUIPMENT PANELS SHALL BE FAMILIAR WITH THE RESPECTIVE TYPE OF EQUIPMENT. AT CONTRACTORS OPTION HE MAY EMPLOY THE SERVICES OF THE FUEL FACILITY MAINTENANCE CONTRACTOR; ILLINOIS OIL MARKETING EQUIPMENT, INC., 850 BRENKMAN DRIVE, PEKIN, ILLINOIS 61554, PHONE 309-347-1819, OR 1-800-447-2611, ATTN. MR. PETE BRADSHAW.
3. FUEL SYSTEM EQUIPMENT PANELS TO BE RELOCATED INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
 - A. OPW FUEL MANAGEMENT, 6900 SANTE FE DRIVE, HOCKINS, IL 60525, MODEL PCM, PUMP CONTROL MODULE, SERIAL NUMBER 0854483, INPUT 115/230 VAC, 50/60HZ, 1.0 A/0.7 A, RELAY OUTPUT 240 VAC, 20 AMP. 3.0 HP.
 - B. EMERGENCY SHUT OFF SYSTEM. THE EMERGENCY SHUT OFF SYSTEM ACTIVATES 4 RELAYS THAT CONTROL THE JET FUEL DISPENSER, AVGAS DISPENSER, DISPENSER CONTROL, CARD READER, AND HOSE REWIND MOTORS. THERE ARE TWO EMERGENCY STOP PUSH BUTTONS; ONE AT THE FUEL FACILITY AND A SECOND ONE LOCATED ON THE FENCE.
 - C. POWER INTEGRITY CORPORATION GREENSBORO, NC, SURGE MANAGEMENT SYSTEM, MODEL PS-06. THIS PANEL CONTAINS 6 TRANSIENT SURGE SUPPRESSORS ZTAS-03-15-1, 125 V, 15 AMP. IT APPEARS TO PROVIDE SURGE PROTECTION FOR THE CARD READER, PCU, SITE CXX, JET FUEL SYSTEM, AND AVGAS SYSTEM.
4. THE EXISTING JUNCTION BOX FOR THE FUEL FACILITY WIRING LOCATED ON THE VAULT EXTERIOR SHALL BE REPLACED WITH A NEW NEMA 4X STAINLESS STEEL ENCLOSURE, MINIMUM 24" BY 24" BY 12" DEEP WITH STAINLESS STEEL SUPPORT HARDWARE AND CONCRETE FOUNDATION. PROVIDE NEMA 4 HUBS FOR ALL CONDUIT ENTRIES INTO NEMA 4, 4X ENCLOSURES TO MAINTAIN THE NEMA 4, 4X RATING OF THE ENCLOSURE.
5. CONDUIT SEAL OFF FITTINGS SHALL BE UL LISTED OR FM APPROVED SUITABLE FOR CLASS I, DIVISION 1, GROUP D LOCATION. PER UL STANDARD 886 AND NEC 501.15(C)(6), THE CROSS-SECTIONAL AREA OF THE CONDUCTORS PERMITTED IN A SEAL SHALL NOT EXCEED 25 PERCENT OF THE CROSS-SECTIONAL AREA OF A RIGID METAL CONDUIT OF THE SAME TRADE SIZE UNLESS THE SEAL IS SPECIFICALLY IDENTIFIED FOR A HIGHER PERCENTAGE OF FILL.
6. TEST FUEL FACILITY EQUIPMENT AFTER RELOCATION OF PANELS TO CONFIRM PROPER OPERATION. COORDINATE TESTS WITH THE AIRPORT MANAGER.

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

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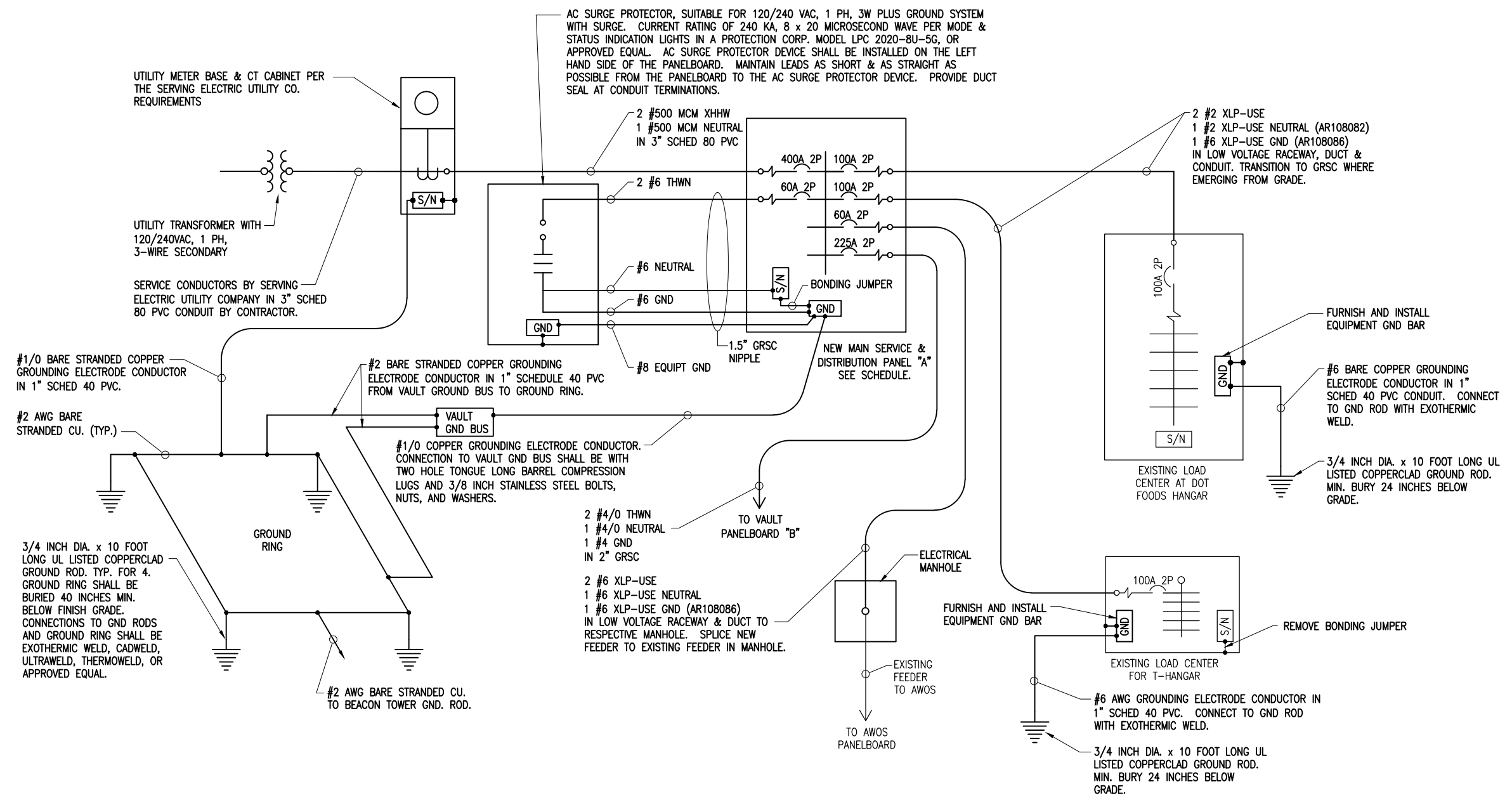
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FUEL EQUIPMENT
RELOCATION DETAILS



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

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

IDA No: I63-4325
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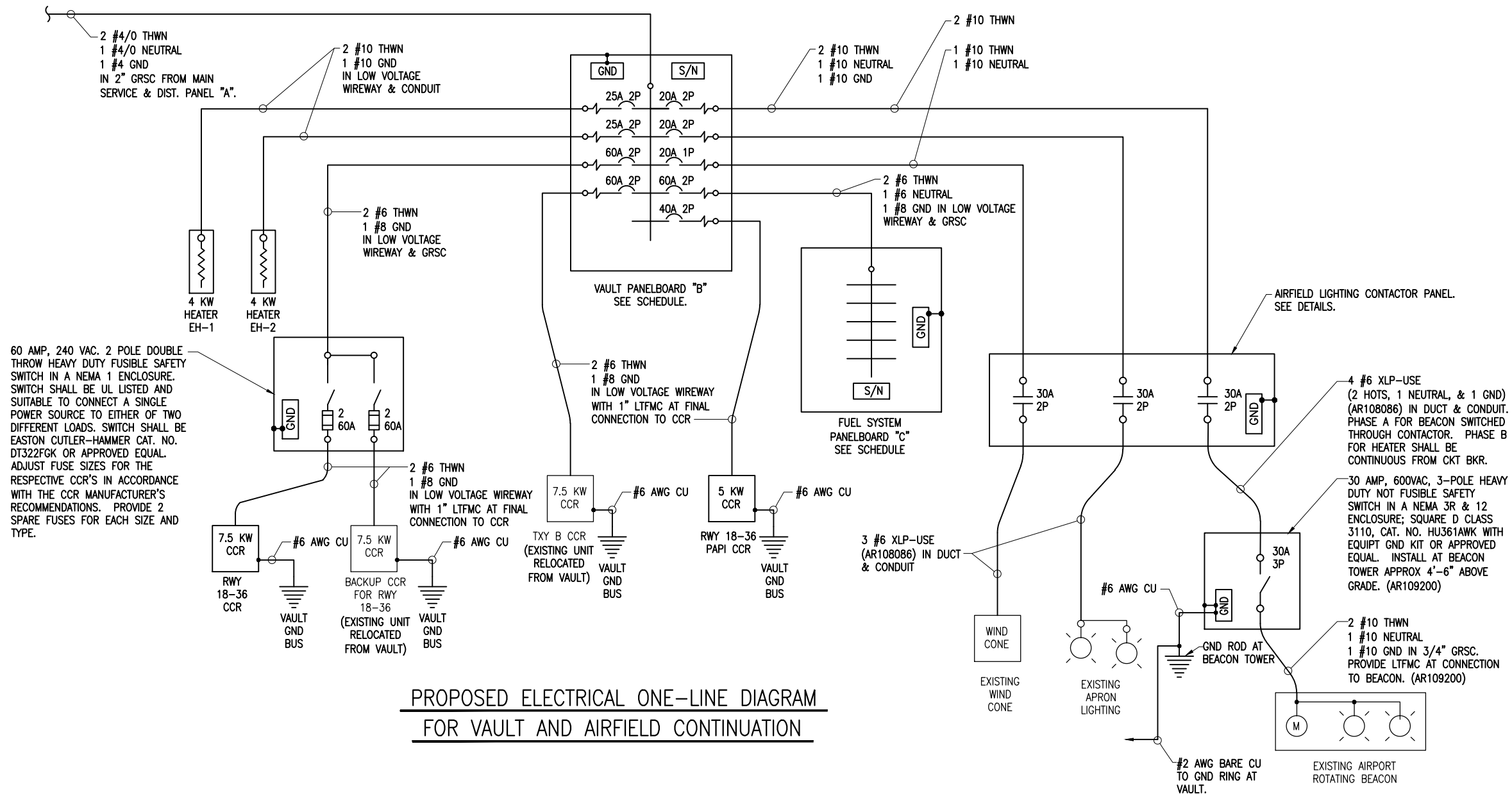
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SHEET TITLE

PROPOSED
ELECTRICAL
ONE-LINE FOR VAULT
AND AIRFIELD

NOTES

1. ALL VAULT WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. ALL ELECTRICAL EQUIPMENT AND MATERIALS 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, INTERTEK TESTING SERVICES VERIFICATION/ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
3. ALL CONDUCTORS/WIRING SHALL BE COPPER.
4. CONTRACTOR SHALL CONFIRM POWER REQUIREMENTS WITH THE ACTUAL NAMEPLATE ON EACH CONSTANT CURRENT REGULATOR (OR OTHER RESPECTIVE EQUIPMENT) AND ADJUST CIRCUIT BREAKER, FUSES, WIRE SIZES & CONDUIT SIZES TO CONFORM WITH NEC & MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE. WIRE SIZES SHOWN ON THE PLANS ARE MINIMUM.
5. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, MANHOLE, JUNCTION BOX, OR RACEWAY.
6. LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE NEW ELECTRICAL SERVICE WITH THE SERVING ELECTRIC UTILITY AND THE AIRPORT MANAGER. CONTRACTOR SHALL CONFIRM REQUIREMENTS WITH SERVING ELECTRIC UTILITY COMPANY. THE SERVING ELECTRIC UTILITY IS ADAMS ELECTRIC CO-OP, 700 EAST WOOD STREET, P.O. BOX 247, CAMP POINT, IL 62320, PHONE: (217) 593-7701
8. ALL EQUIPMENT NOT LABELED AS EXISTING IS NEW.



REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
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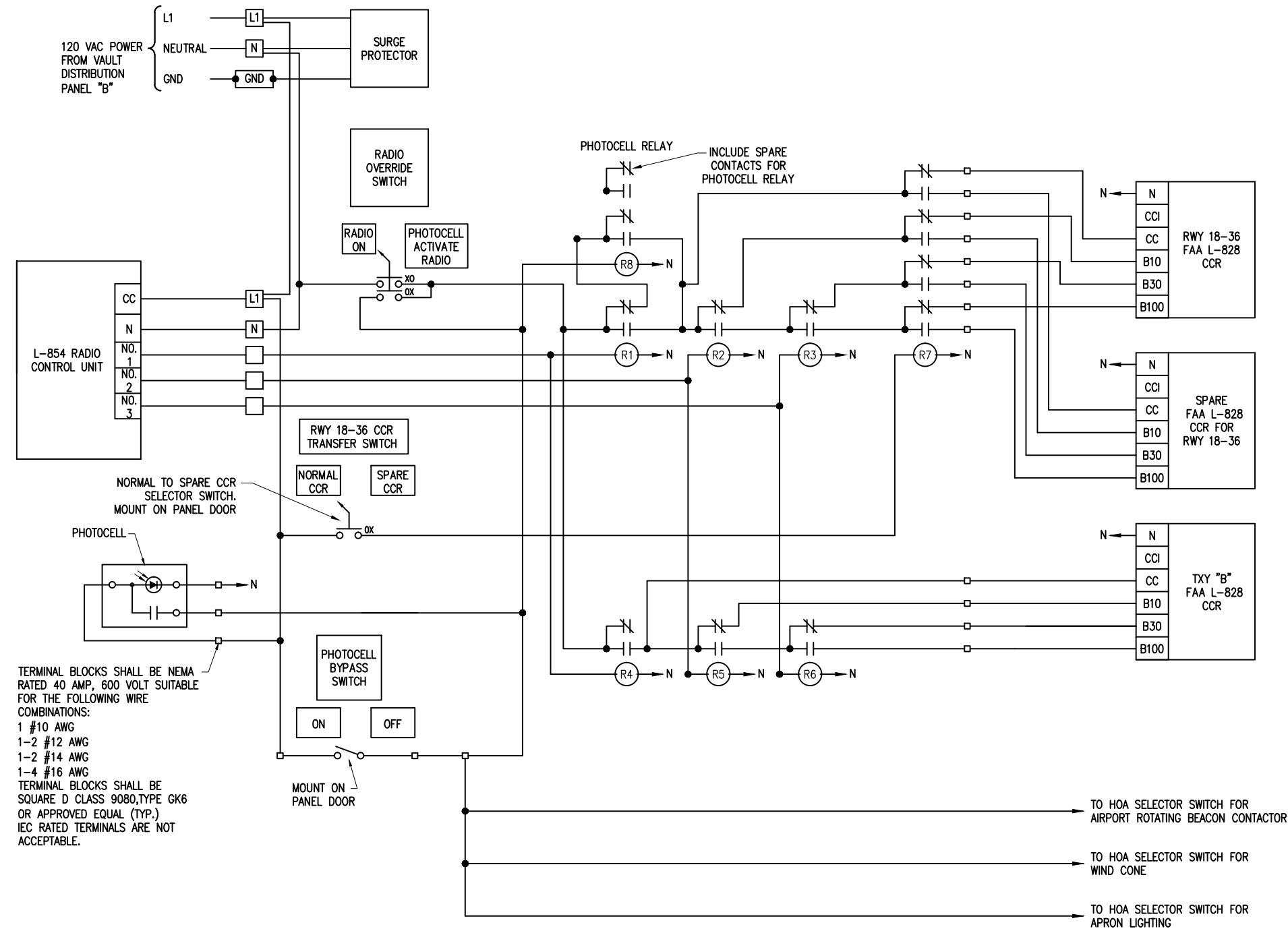
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SHEET TITLE

PROPOSED ELECTRICAL ONE-LINE FOR VAULT AND AIRFIELD SHEET 2

NOTES:

- RELAY INTERFACE CONTROL PANEL SHALL BE MANUFACTURED BY AN FAA APPROVED L-821 PANEL BUILDER OR A UL 508 INDUSTRIAL CONTROL PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT. RELAY INTERFACE CONTROL PANEL SHALL BE A SEPARATE PANEL. DO NOT COMBINE WITH LIGHTING CONTACTOR PANEL.
- PANEL SHALL BE IN A NEMA 12 ENCLOSURE WITH HINGED COVER. DRILL HOLE IN BOTTOM OF ENCLOSURE TO ALLOW CONDENSATION TO ESCAPE.
- EXTERNAL CONTROL CABLE SHALL BE NO. 12 AWG COPPER, 600 VOLT CABLE. ALL PANEL INTERIOR CONTROL CABLE SHALL BE MINIMUM 16 AWG, COPPER, 600 VOLT CABLE.
- IN THE AUTOMATIC MODE OF OPERATION THE RUNWAY 18-36 CONSTANT CURRENT REGULATORS (PRIMARY UNIT & SPARE UNIT) SHALL BE CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:
PHOTOCELL - 10% BRIGHTNESS & ACTIVATE RADIO CONTROL
5 CLICKS - 30% BRIGHTNESS
7 CLICKS - 100% BRIGHTNESS
- IN THE AUTOMATIC MODE OF OPERATION THE TAXIWAY CIRCUIT WILL BE CONTROLLED BY THE PHOTOCELL & THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:
PHOTOCELL -ACTIVATE RADIO CONTROL
3 CLICKS -10% BRIGHTNESS
5 CLICKS -30% BRIGHTNESS
7 CLICKS -100% BRIGHTNESS
- THE RADIO OVERRIDE SWITCH WILL ACTIVATE L-854 RADIO CONTROL 24 HOURS PER DAY IN THE "RADIO ON" POSITION. THE PHOTOCELL WILL ACTIVATE RADIO CONTROL IN THE "PHOTOCELL ACTIVATE RADIO" POSITION.
- IN THE AUTOMATIC MODE OF OPERATION THE AIRPORT ROTATING BEACON, WIND CONE & APRON LIGHTING SHALL BE ACTIVATED BY THE PHOTOCELL OR PHOTOCELL BYPASS SWITCH.
- EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT & EACH CONTROL CIRCUIT.
- INCLUDE PHOTOCELL BYPASS SWITCH.
- SURGE PROTECTOR SHALL BE UL LISTED PER UL 1449, SUITABLE FOR 120 VAC, 1 PH, 2 WIRE PLUS GROUND SYSTEM WITH SURGE CURRENT RATING OF 40 KA (MIN.), 8x20 MICROSECOND WAVE, AND STATUS INDICATION LIGHTS IN A WEATHERPROOF HOUSING, JOSLYN MODEL 1260-21, OR APPROVED EQUAL. MAINTAIN LEADS AS SHORT & AS STRAIGHT AS POSSIBLE. INCLUDE MOUNTING BRACKET.
- INCLUDE EQUIPMENT GROUND BAR, ILSCO D167-12 OR EQUAL.
- CONTROL RELAYS SHALL HAVE 10 AMP CONTACT RATINGS AT 240 VAC WITH 120 VAC COILS. PROVIDE 3 SPARE RELAYS FOR EACH TYPE USED IN THE RELAY INTERFACE PANEL.
- COLOR CODING FOR THE CONTROL WIRING TO EACH CONSTANT CURRENT REGULATOR SHALL BE CONSISTENT FOR ALL REGULATORS. COLOR CODING SHALL BE AS FOLLOWS:
CC -RED
10% -ORANGE
30% -YELLOW
100% -BLUE
NEUTRAL -WHITE
EQUIPT. GND -GREEN
ALSO TAG THE CONTROL WIRES WITH THE RESPECTIVE DESIGNATION (CC, 10%, 30%, 100%)
- "N" DESIGNATES NEUTRAL CONNECTION OR NEUTRAL CONDUCTOR.



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

AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

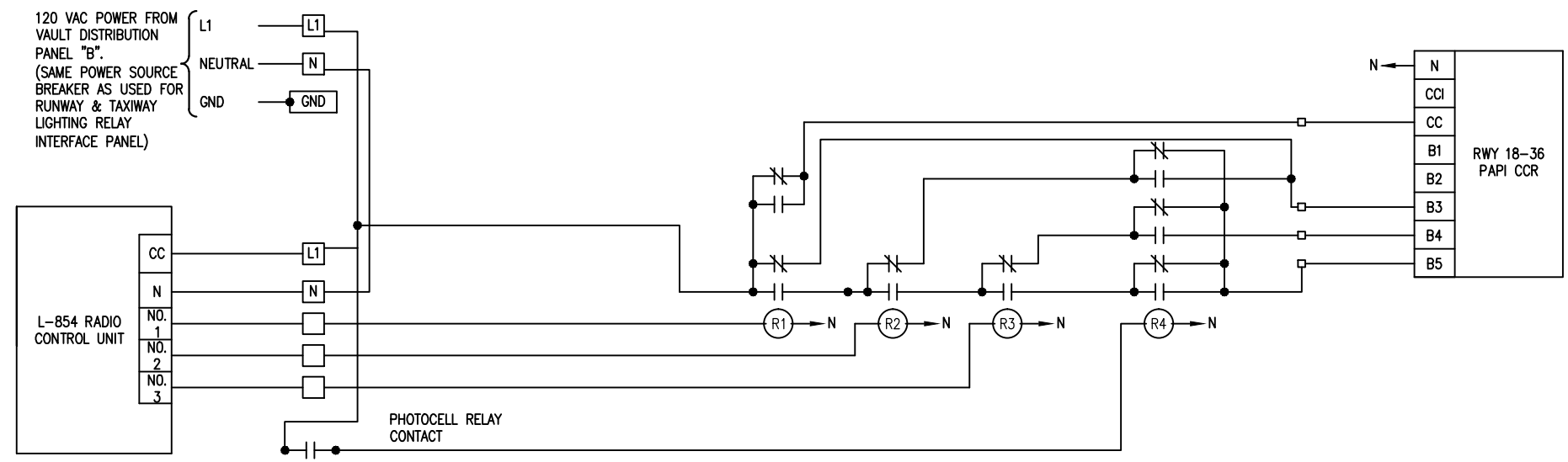
Contract No. MS008

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SHEET TITLE

AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC



PAPI CONTROL WIRING SCHEMATIC

NOTES:

- RELAY INTERFACE CONTROL PANEL SHALL BE MANUFACTURED BY AN FAA APPROVED L-821 PANEL BUILDER OR A UL 508 INDUSTRIAL CONTROL PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT AND THE "BUY AMERICAN ACT". RELAY INTERFACE CONTROL PANEL SHALL BE A SEPARATE PANEL. THE PAPI INTERFACE PANEL MAY BE COMBINED WITH THE RELAY INTERFACE CONTROL PANEL FOR AIRFIELD LIGHTING.
- PANEL SHALL BE IN A NEMA 12 ENCLOSURE WITH HINGED COVER. DRILL HOLE IN BOTTOM OF ENCLOSURE TO ALLOW CONDENSATION TO ESCAPE.
- EXTERNAL CONTROL CABLE SHALL BE NO. 12 AWG COPPER, 600 VOLT CABLE. ALL PANEL INTERIOR CONTROL CABLE SHALL BE MINIMUM 16 AWG, COPPER, 600 VOLT CABLE.
- IN THE AUTOMATIC MODE OF OPERATION THE RUNWAY 18-36 PAPI CONSTANT CURRENT REGULATOR SHALL BE CONTROLLED BY THE L-854 RADIO CONTROL UNIT IN THE FOLLOWING MANNER:

PAPI RADIO CONTROL DAY MODE ILLUMINATION INTENSITY
 IDLE PERIODS - PAPI ON AT 5% BRIGHTNESS
 3 CLICKS - 100% BRIGHTNESS
 5 CLICKS - REMAIN 100% BRIGHTNESS
 7 CLICKS - REMAIN 100% BRIGHTNESS

PAPI RADIO CONTROL NIGHT MODE ILLUMINATION INTENSITY
 IDLE PERIODS - PAPI ON AT 5% BRIGHTNESS
 3 CLICKS - 5% BRIGHTNESS
 5 CLICKS - 25% BRIGHTNESS
 7 CLICKS - 100% BRIGHTNESS
- EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT & EACH CONTROL CIRCUIT.
- INCLUDE PHOTOCELL BYPASS SWITCH.
- INCLUDE EQUIPMENT GROUND BAR, ILSCO D167-12 OR EQUAL.
- CONTROL RELAYS SHALL HAVE 10 AMP CONTACT RATINGS AT 240 VAC WITH 120 VAC COILS. PROVIDE 3 SPARE RELAYS FOR EACH TYPE USED IN THE RELAY INTERFACE PANEL.
- COLOR CODING FOR 5 STEP REGULATORS SHALL BE AS FOLLOWS:
 CC -RED
 B3 -ORANGE
 B4 -YELLOW
 B5 -BLUE
 NEUTRAL -WHITE
 EQUIPT. GND -GREEN
 ALSO TAG THE CONTROL WIRES WITH THE RESPECTIVE DESIGNATION (CC, B3, B4, B5)
- "N" DESIGNATES NEUTRAL CONNECTION OR NEUTRAL CONDUCTOR.

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

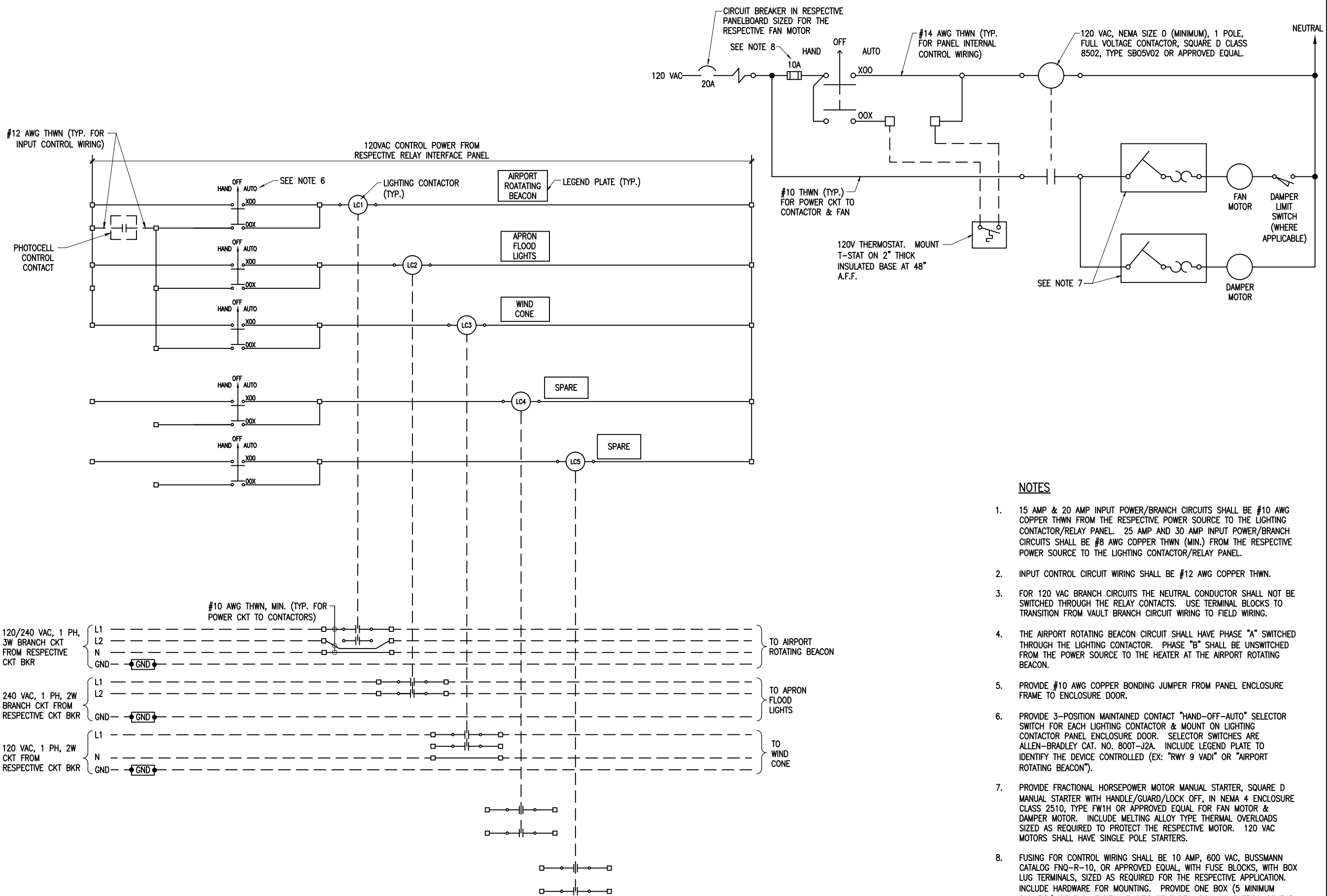
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SHEET TITLE

PAPI CONTROL
WIRING SCHEMATIC



NOTES

- 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 25 AMP AND 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
- INPUT CONTROL CIRCUIT WIRING 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 HEATER AT THE AIRPORT ROTATING BEACON.
- PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
- PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCHES ARE ALLEN-BRADLEY CAT. NO. 800T-J2A. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "RWY 9 VADI" OR "AIRPORT ROTATING BEACON").
- PROVIDE FRACTIONAL HORSEPOWER MOTOR MANUAL STARTER, SQUARE D MANUAL STARTER WITH HANDLE/GUARD/LOCK OFF, IN NEMA 4 ENCLOSURE CLASS 2510, TYPE FW1H OR APPROVED EQUAL FOR FAN MOTOR & DAMPER MOTOR. INCLUDE MELTING ALLOY TYPE THERMAL OVERLOADS SIZED AS REQUIRED TO PROTECT THE RESPECTIVE MOTOR. 120 VAC MOTORS SHALL HAVE SINGLE POLE STARTERS.
- FUSING FOR CONTROL WIRING SHALL BE 10 AMP, 600 VAC, BUSSMANN CATALOG FNQ-R-10, OR APPROVED EQUAL, WITH FUSE BLOCKS, WITH BOX LUG TERMINALS, SIZED AS REQUIRED FOR THE RESPECTIVE APPLICATION. INCLUDE HARDWARE FOR MOUNTING. PROVIDE ONE BOX (5 MINIMUM QUANTITY) OF EACH TYPE AND SIZE OF FUSE, UPON COMPLETION OF THE JOB FOR USE AS SPARES.

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

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SHEET TITLE

CONTROL PANEL FOR AIRFIELD NAVAIDS SCHEMATIC

CONTROL PANEL FOR AIRFIELD NAVAIDS SCHEMATIC

NOTES

- 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR PANEL. 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR PANEL.
- INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
- FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
- THE AIRPORT ROTATING BEACON CIRCUIT SHALL HAVE PHASE "A" SWITCHED THROUGH THE LIGHTING CONTACTOR. PHASE "B" SHALL BE UNSWITCHED FROM THE POWER SOURCE TO THE HEATER AT THE AIRPORT ROTATING BEACON.
- PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
- PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCHES SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "WIND CONE" OR "AIRPORT ROTATING BEACON").
- SEE "LIGHTING CONTACTOR SCHEMATIC" AND "EXHAUST FAN CONTROL SCHEMATIC" FOR ADDITIONAL INFORMATION ON WIRING.
- FUSING FOR FAN CIRCUIT CONTROL WIRING SHALL BE 10 AMP, 600 VAC, BUSSMANN CATALOG FNQ-R-10, OR APPROVED EQUAL, WITH FUSE BLOCKS, WITH BOX LUG TERMINALS, SIZED AS REQUIRED FOR THE RESPECTIVE APPLICATION. INCLUDE HARDWARE FOR MOUNTING. PROVIDE ONE BOX (5 MINIMUM QUANTITY) OF EACH TYPE AND SIZE OF FUSE, UPON COMPLETION OF THE JOB FOR USE AS SPARES.
- INCLUDE LEGEND PLATE ON CONTROL PANEL ENCLOSURE OUTER DOOR LABELED "NOTICE: CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME".
- 120/240 VAC PHASE "A" CONDUCTORS SHALL HAVE BLACK COLORED INSULATION. 120/240 VAC PHASE "B" CONDUCTORS SHALL HAVE RED COLORED INSULATION. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION. INSULATED EQUIPMENT GROUND WIRES SHALL HAVE GREEN COLORED INSULATION.
- CONTROL PANEL FOR AIRFIELD NAVAIDS & VAULT FAN SHALL BE MANUFACTURED BY A UL 508 INDUSTRIAL CONTROL PANEL BUILDER OR AN FAA APPROVED L-821 PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCES REQUIREMENT. WHERE THE PANEL IS MANUFACTURED BY AN L-821 PANEL BUILDER IT SHALL BE LABELED AS AN L-821 PANEL.
- CONTROL PANEL FOR AIRFIELD NAVAIDS & VAULT FAN SHALL BE SEPARATE FROM THE RELAY INTERFACE CONTROL PANEL.

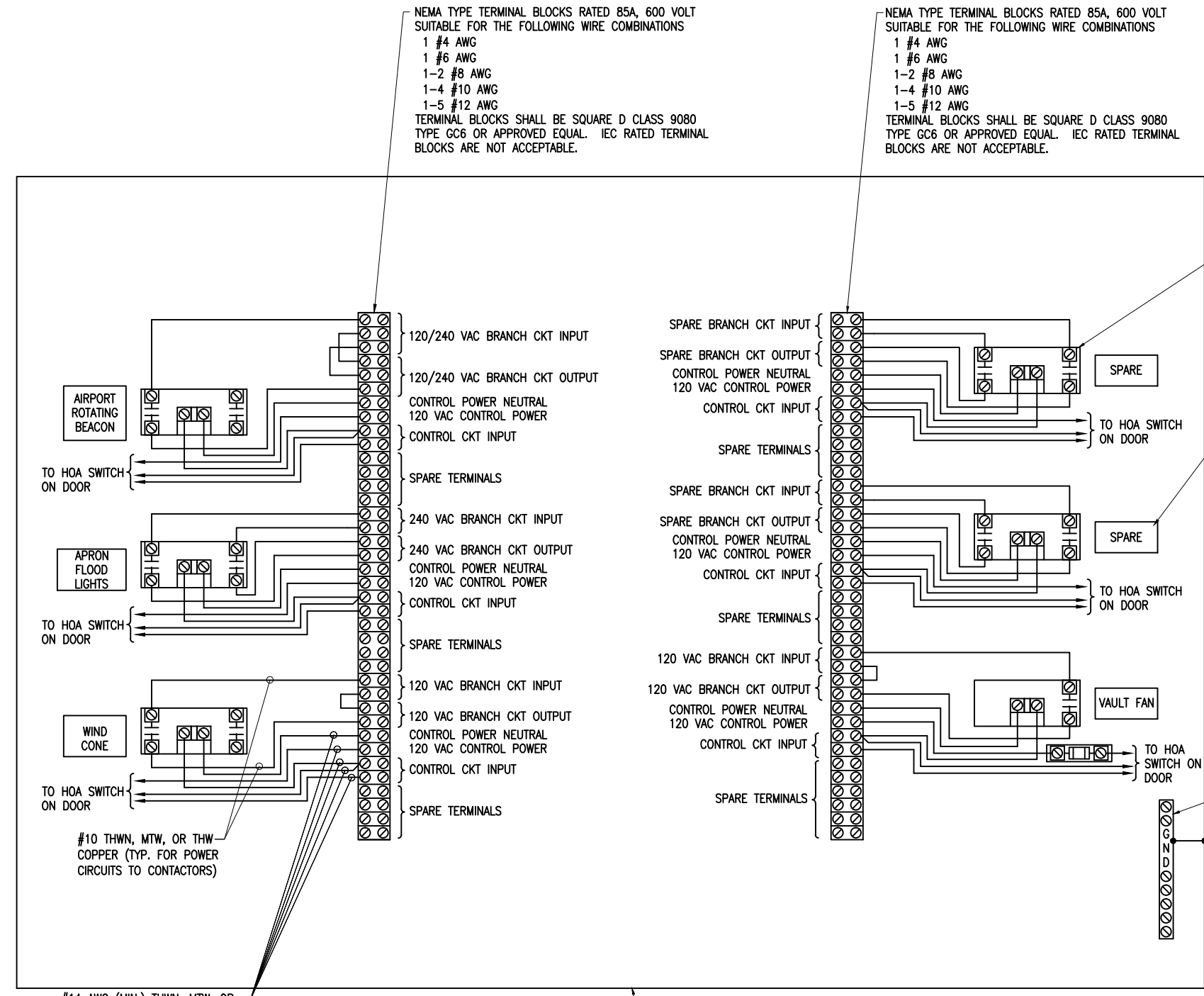
NEMA TYPE TERMINAL BLOCKS RATED 85A, 600 VOLT SUITABLE FOR THE FOLLOWING WIRE COMBINATIONS
1 #4 AWG
1 #6 AWG
1-2 #8 AWG
1-4 #10 AWG
1-5 #12 AWG
TERMINAL BLOCKS SHALL BE SQUARE D CLASS 9080 TYPE GC6 OR APPROVED EQUAL. IEC RATED TERMINAL BLOCKS ARE NOT ACCEPTABLE.

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

30 AMP, 600 VAC, 2 POLE ELECTRICALLY HELD LIGHTING CONTACTOR WITH 120 VAC COIL, SQUARE D CLASS 8903, TYPE SMO1V02, OR APPROVED EQUAL (TYPICAL FOR 5)

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

COPPER EQUIPMENT GROUND BAR ADEQUATELY SIZED FOR ALL GROUND WIRES TO AND FROM LIGHTING CONTACTOR PANEL; ILSCO D167-12, OR EQUAL. INSTALL ONE GROUND WIRE PER TERMINAL.



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

#14 AWG (MIN.) THWN, MTW, OR THW COPPER (TYP. FOR CONTROL CIRCUITS TO LIGHTING CONTACTORS); MAX CIRCUIT BREAKER SIZE FOR CONTROL POWER SHALL BE 15 AMP)

NEMA 12 ENCLOSURE WITH HINGED DOOR SIZED AS REQUIRED TO HOUSE LIGHTING CONTACTORS, CONTROL RELAY, TERMINAL BLOCKS, WIRING & INTERFACE TO EXISTING CONDUITS, APPROXIMATE 30"Hx24"Wx8"D; HOFFMAN CAT. NO. CSD30248, WITH BACK PLANE CP3024. CONFIRM DIMENSIONS AND PROVIDE AN ENCLOSURE TO ADEQUATELY HOUSE EQUIPMENT AND WIRING.

CONTROL PANEL FOR AIRFIELD NAVAIDS & EXHAUST FAN

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

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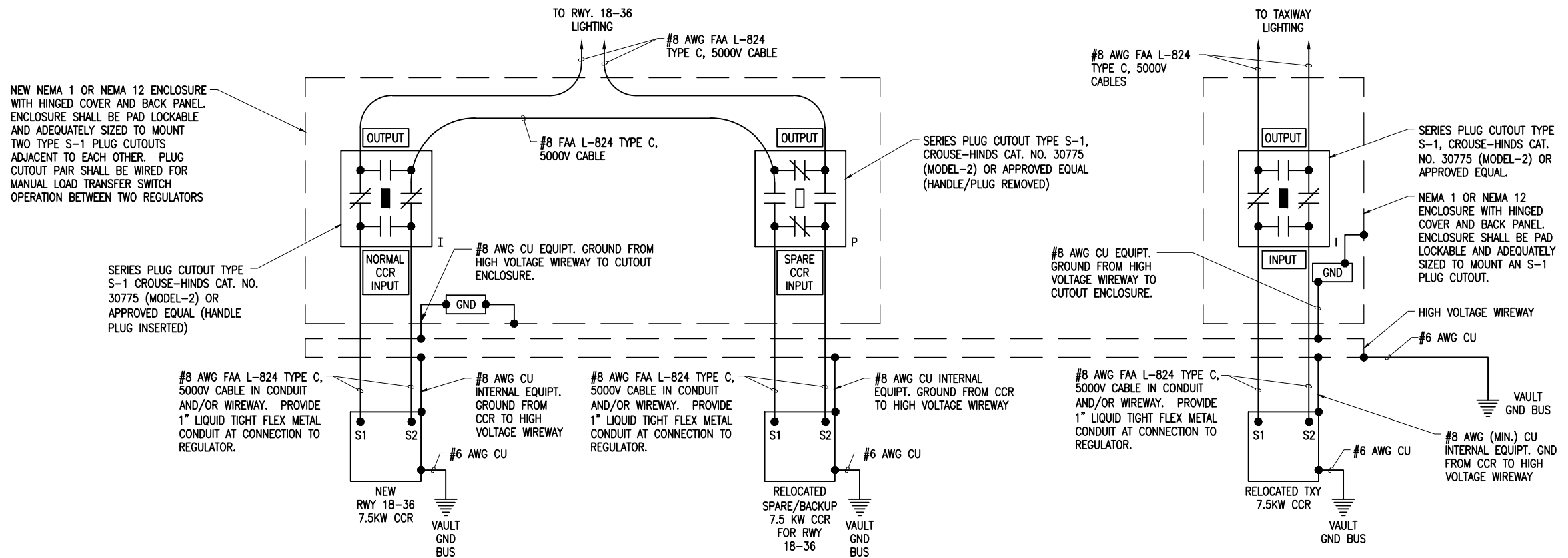
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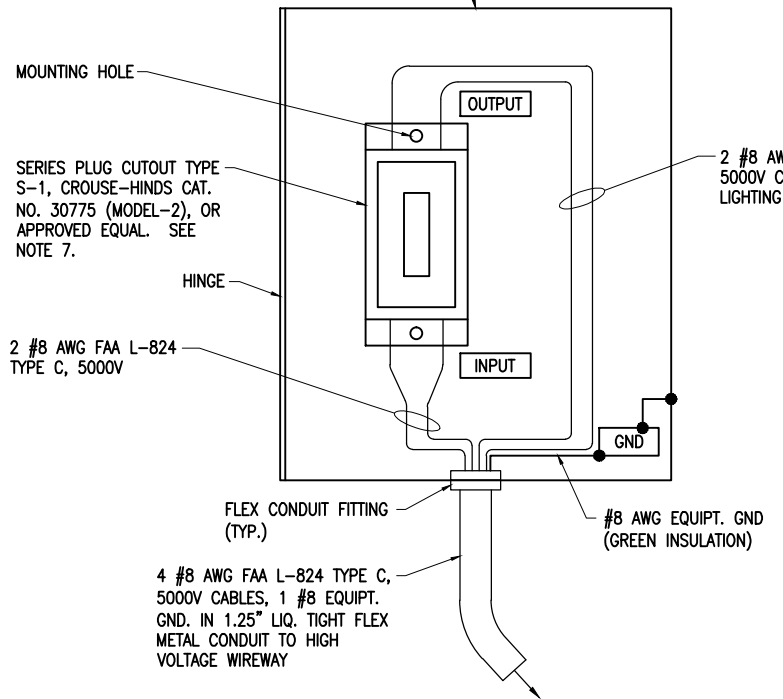
SHEET TITLE

CONTROL PANEL FOR AIRFIELD NAVAIDS & EXHAUST FAN



HIGH VOLTAGE WIRING SCHEMATIC

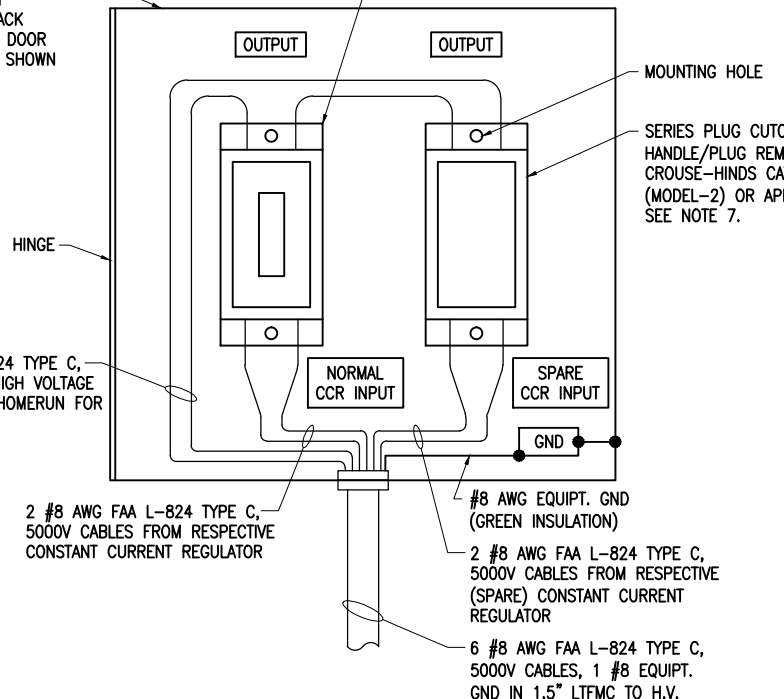
14"H x 12"W x 8"D (APPROXIMATE DIMENSIONS) NEMA 1 OR NEMA 12 ENCLOSURE WITH HINGED COVER & BACK PANEL. NOTE FRONT DOOR OF ENCLOSURE NOT SHOWN FOR CLARITY. ADJUST ENCLOSURE DIMENSIONS AS NECESSARY TO ACCOMMODATE THE RESPECTIVE CUTOUT.



SERIES PLUG CUTOUT MOUNTING DETAIL FOR TAXIWAY CIRCUIT

NOT TO SCALE

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



SERIES PLUG CUTOUT MOUNTING DETAIL FOR RUNWAY CIRCUIT

NOT TO SCALE

NOTES

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

LEGEND

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

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

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SHEET TITLE

HIGH VOLTAGE WIRING SCHEMATIC

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

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SHEET TITLE

LEGEND PLATE
SCHEDULES

| LEGEND PLATE SCHEDULE | |
|---|--|
| DEVICE | LABEL |
| MAIN SERVICE AND DISTRIBUTION PANELBOARD | MAIN SERVICE AND DIST. PANEL "A" 240/120 VAC, 1 PHASE, 3 WIRE |
| MAIN BREAKER IN MAIN SERVICE AND DISTRIBUTION PANELBOARD | SERVICE DISCONNECT |
| MAIN SERVICE AND DISTRIBUTION PANELBOARD (SEE NOTE 4) | MAX AVAILABLE FAULT CURRENT CALCULATED TO BE _____AMPS LINE TO LINE, _____AMPS LINE TO NEUTRAL ON (DATE) |
| MAIN SERVICE AND DISTRIBUTION PANELBOARD BREAKER FOR AC SURGE PROTECTOR | VAULT PANEL "C" |
| MAIN SERVICE AND DISTRIBUTION PANELBOARD FEEDER BREAKER FOR DOT FOODS HANGAR | DOT FOODS HANGAR |
| MAIN SERVICE AND DISTRIBUTION PANELBOARD FEEDER BREAKER FOR T-HANGAR | T-HANGAR |
| MAIN SERVICE AND DISTRIBUTION PANELBOARD FEEDER BREAKER FOR AWOS | AWOS |
| MAIN SERVICE AND DISTRIBUTION PANELBOARD FEEDER BREAKER FOR VAULT DISTRIBUTION PANELBOARD B | VAULT PANEL B |
| DOT FOODS HANGAR LOAD CENTER | DOT FOOD HANGAR 120/240 VAC, 1 PHASE, 3 WIRE FED FROM MAIN SERVICE AND DIST. PANEL A AT VAULT |
| T-HANGAR LOAD CENTER | T-HANGAR 120/240 VAC, 1 PHASE, 3 WIRE FED FROM MAIN SERVICE AND DIST. PANEL A AT VAULT |
| AWOS PANELBOARD | AWOS PANEL 120/240 VAC, 1 PHASE, 3 WIRE FED FROM MAIN SERVICE AND DIST. PANEL A AT VAULT |
| VAULT DISTRIBUTION PANELBOARD B | VAULT DIST PANEL "B" 120/240 VAC, 1 PHASE, 3 WIRE FED FROM MAIN SERVICE AND DIST. PANEL A |
| FUEL FACILITY PANELBOARD C | FUEL FACILITY PANEL C 120/240 VAC, 1 PHASE, 3-WIRE FED FROM VAULT PANEL B |
| TAXIWAY B CCR | TAXIWAY B |
| RUNWAY 18-36 CCR | RUNWAY 18-36 |
| BACKUP/SPARE CCR FOR RUNWAY 18-36 | SPARE FOR RUNWAY 18-36 |
| CUTOUT ENCLOSURE FOR TAXIWAY | TAXIWAY |
| TAXIWAY CUTOUT INPUT SIDE CONNECTION | INPUT |
| TAXIWAY CUTOUT OUTPUT SIDE CONNECTION | OUTPUT |
| CUTOUT ENCLOSURE FOR RUNWAY 18-36 | RUNWAY 18-36 CUTOUTS |
| NORMAL CUTOUT INPUT SIDE CONNECTION FOR RUNWAY 18-36 | NORMAL CCR INPUT |
| SPARE CUTOUT INPUT SIDE CONNECTION FOR RUNWAY 18-36 | SPARE CCR INPUT |
| RUNWAY 18-36 PAPI CCR | RUNWAY 18-36 PAPI UNITS |

| LEGEND PLATE SCHEDULE (CONTINUED) | |
|---|---|
| DEVICE | LABEL |
| CUTOUT FOR RUNWAY 18 PAPI | RUNWAY 18 PAPI |
| CUTOUT FOR RUNWAY 36 PAPI | RUNWAY 36 PAPI |
| RUNWAY 18-36 PAPI CUTOUT ENCLOSURE | CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF |
| RUNWAY 18-36 PAPI CUTOUTS INPUT SIDE CONNECTIONS (PROVIDE 2 LEGEND PLATES) | INPUT |
| RUNWAY 18 PAPI CUTOUT OUTPUT SIDE CONNECTION | RWY 18 PAPI OUTPUT |
| RUNWAY 36 PAPI CUTOUT OUTPUT SIDE CONNECTION | RWY 36 PAPI OUTPUT |
| EACH CUTOUT (RUNWAY 18-36) OUTPUT SIDE CONNECTION (2 LEGEND PLATES) | OUTPUT |
| EACH CUTOUT ENCLOSURE (3 LEGEND PLATES) | CAUTION OPERATE CUTOUTS WITH CCR'S SHUT OFF |
| RADIO RELAY INTERFACE PANEL | RADIO RELAY INTERFACE PANEL |
| MANUAL TRANSFER SWITCH FOR RUNWAY 18-36 NORMAL CCR AND SPARE/BACKUP CCR | TRANSFER SWITCH FOR RUNWAY 18-36 CONSTANT CURRENT REGULATORS |
| MANUAL TRANSFER SWITCH FOR RUNWAY 18-36 NORMAL CCR AND SPARE/BACKUP CCR - NORMAL SWITCH POSITION | NORMAL CCR |
| MANUAL TRANSFER SWITCH FOR RUNWAY 18-36 NORMAL CCR AND SPARE/BACKUP CCR - BACKUP SWITCH POSITION | SPARE/BACKUP CCR |
| CONTROL PANEL FOR AIRFIELD NAVAIDS AND VAULT FAN | CONTACTOR PANEL FOR AIRFIELD NAVAIDS, & VAULT FAN |
| CONTACTOR PANEL FOR AIRFIELD NAVAIDS AND VAULT FAN | NOTICE CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME |
| LOW VOLTAGE WIREWAY (PROVIDE 9 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND) | LOW VOLTAGE |
| HIGH VOLTAGE WIREWAY (PROVIDE 6 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND) | HIGH VOLTAGE |
| VAULT GROUND BUS (PROVIDE 4 LEGEND PLATES 1/2" HIGH WHITE LETTERS GREEN BACKGROUND; INSTALL ABOVE OR BELOW GROUND BUS) | VAULT GROUND BUS |
| GROUNDING ELECTRODE CONDUCTORS TERMINATED ON VAULT GROUND BUS. (PROVIDE 3 LEGEND PLATES & SECURE TO CONDUCTORS WITH NYLON STRING OR CABLE TIES) | DO NOT DISCONNECT |

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

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

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

RUNWAY 18-36 CCR TRANSFER PROCEDURE PLACARD DETAIL

| CABLE TAG SCHEDULE | |
|--|---------------|
| CABLE | LABEL |
| 120/240 VAC, 1 PHASE, 3-WIRE FEEDER FOR DOT FOODS HANGAR | DOT FOODS HGR |
| 120/240 VAC, 1 PHASE, 3-WIRE FEEDER FOR T-HANGAR | T-HANGAR |
| 120/240 VAC, 1 PHASE, 3-WIRE FEEDER FOR AWOS | AWOS |
| AIRPORT ROTATING BEACON FEEDER CIRCUIT | BEACON |
| WIND CONE FEEDER CIRCUIT | WIND CONE |
| APRON LIGHTING FEEDER CIRCUIT | APRON LTG |
| RUNWAY 18-36 LIGHTING SERIES CIRCUIT HOMERUN CABLES | RWY 18-36 |
| TAXIWAY B LIGHTING SERIES CIRCUIT HOMERUN CABLES | TXY B |
| RUNWAY 18 PAPI SERIES CIRCUIT HOMERUN CABLES | RWY 18 PAPI |
| RUNWAY 36 PAPI SERIES CIRCUIT HOMERUN CABLES | RWY 36 PAPI |



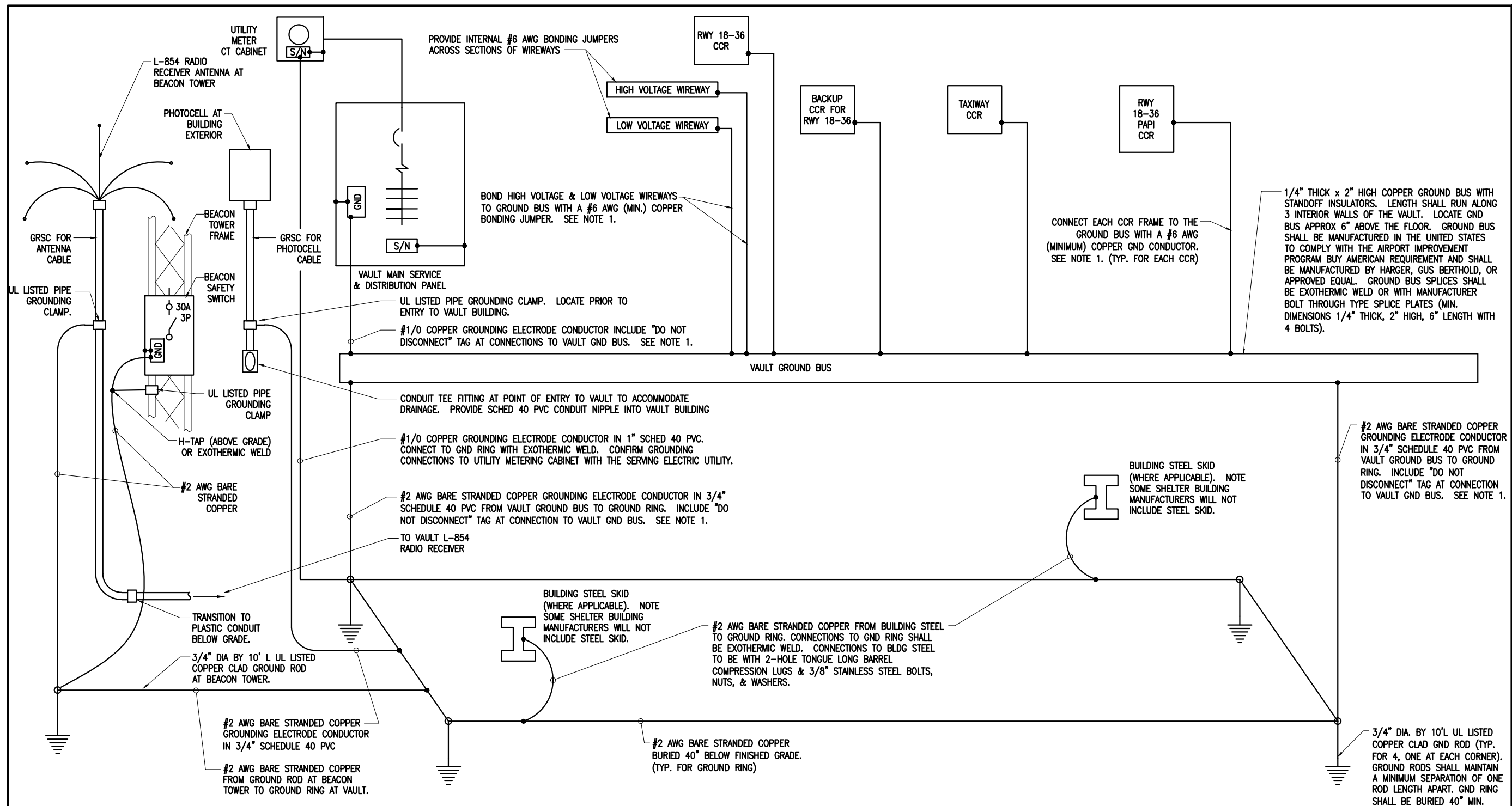
"DANGER - HIGH VOLTAGE KEEP OUT" SIGN

PROVIDE WARNING SIGN ON VAULT EXTERIOR DOORS LABELED "DANGER - HIGH VOLTAGE - KEEP OUT" PER THE REQUIREMENTS OF NEC 110.34 (C). PROVIDE MINIMUM OF 2 SIGNS (ONE ON EACH DOOR TO THE VAULT). SIGNS SHALL BE APPROXIMATELY 10"H x 14"W.



"DANGER - HIGH VOLTAGE KEEP OUT" LABEL

FURNISH AND INSTALL "DANGER - HIGH VOLTAGE KEEP OUT" LABELS/SIGNS FOR EACH CUTOUT ENCLOSURE, EACH CONSTANT CURRENT REGULATOR, AND THE HIGH VOLTAGE WIREWAY, TO COMPLY WITH FAA AC 150/5340-26B "MAINTENANCE OF AIRPORT VISUAL AID FACILITIES" AND 2014 NEC ARTICLE 300.45 "WARNING SIGNS". LABELS SHALL BE APPROXIMATELY 4" x 6"



VAULT GROUND BUS RISER

NOTES

1. CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2-HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.
2. ALL CONNECTIONS TO THE GROUND RING AND GROUND RODS SHALL BE EXOTHERMIC WELD.
3. ALL INSULATED GROUND WIRES SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR AWG AND KCMIL.
4. ALL WORK SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER ITEM AR109200 "INSTALL ELECTRICAL EQUIPMENT" PER LUMP SUM.
5. TEST GROUND RING AND RECORD RESULTS. WHERE GROUND RESISTANCE TEST RESULTS EXCEED 25 OHMS CONTACT PROJECT ENGINEER FOR FURTHER DIRECTION.

1/4" THICK x 2" HIGH COPPER GROUND BUS WITH STANDOFF INSULATORS. LENGTH SHALL RUN ALONG 3 INTERIOR WALLS OF THE VAULT. LOCATE GND BUS APPROX 6" ABOVE THE FLOOR. GROUND BUS SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT AND SHALL BE MANUFACTURED BY HARGER, GUS BERTHOLD, OR APPROVED EQUAL. GROUND BUS SPLICES SHALL BE EXOTHERMIC WELD OR WITH MANUFACTURER BOLT THROUGH TYPE SPLICE PLATES (MIN. DIMENSIONS 1/4" THICK, 2" HIGH, 6" LENGTH WITH 4 BOLTS).

CONNECT EACH CCR FRAME TO THE GROUND BUS WITH A #6 AWG (MINIMUM) COPPER GND CONDUCTOR. SEE NOTE 1. (TYP. FOR EACH CCR)

#2 AWG BARE STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR IN 3/4" SCHEDULE 40 PVC FROM VAULT GROUND BUS TO GROUND RING. INCLUDE "DO NOT DISCONNECT" TAG AT CONNECTION TO VAULT GND BUS. SEE NOTE 1.

BUILDING STEEL SKID (WHERE APPLICABLE). NOTE SOME SHELTER BUILDING MANUFACTURERS WILL NOT INCLUDE STEEL SKID.

#2 AWG BARE STRANDED COPPER FROM BUILDING STEEL TO GROUND RING. CONNECTIONS TO GND RING SHALL BE EXOTHERMIC WELD. CONNECTIONS TO BLDG STEEL TO BE WITH 2-HOLE TONGUE LONG BARREL COMPRESSION LUGS & 3/8" STAINLESS STEEL BOLTS, NUTS, & WASHERS.

3/4" DIA. BY 10' L UL LISTED COPPER CLAD GND ROD (TYP. FOR 4, ONE AT EACH CORNER). GROUND RODS SHALL MAINTAIN A MINIMUM SEPARATION OF ONE ROD LENGTH APART. GND RING SHALL BE BURIED 40" MIN. BELOW FINISHED GRADE TO ACCOMMODATE FROST LINE DEPTH FOR BROWN COUNTY, ILLINOIS. CONNECTIONS TO GND RODS AND GND RING SHALL BE EXOTHERMIC WELD, CADWELD, THERMOWELD, OR ULTRAWELD, OR APPROVED EQUAL.

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

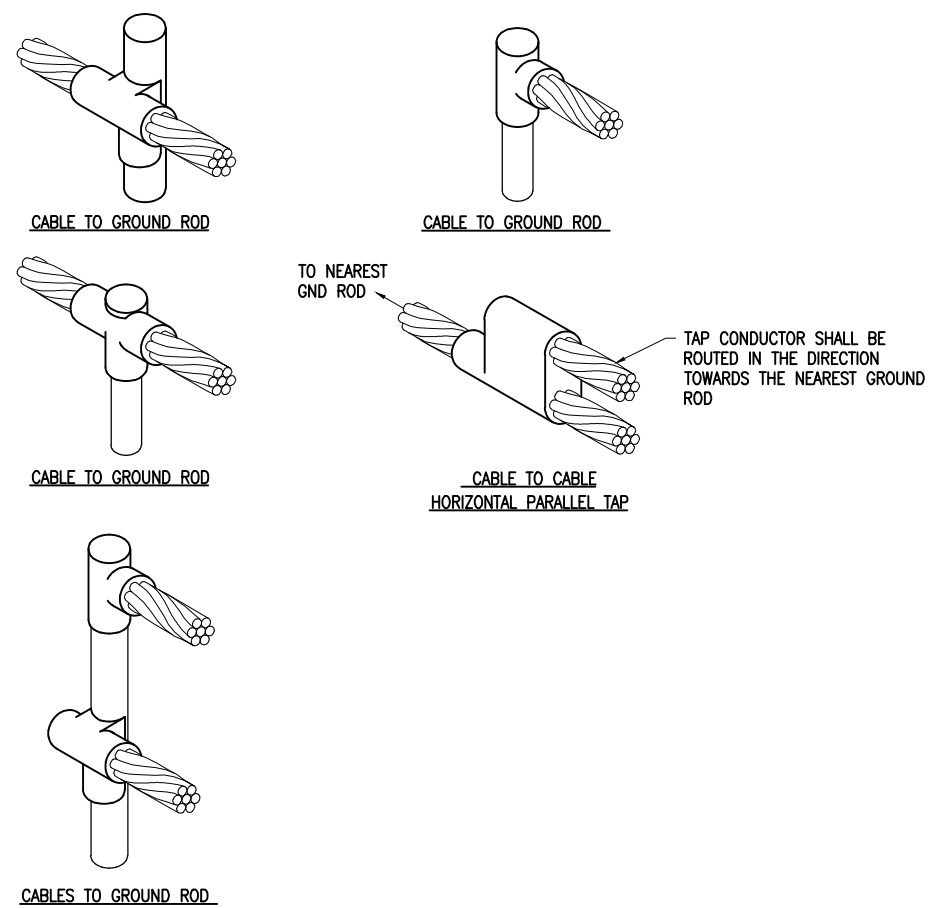
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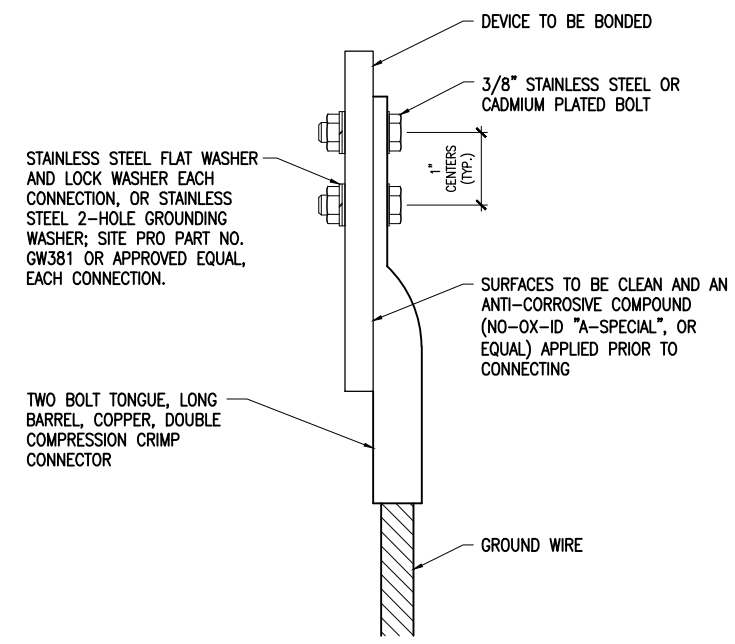
VAULT GROUND BUS RISER



DETAIL NOTES

- ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELDED AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, OR THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA. 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



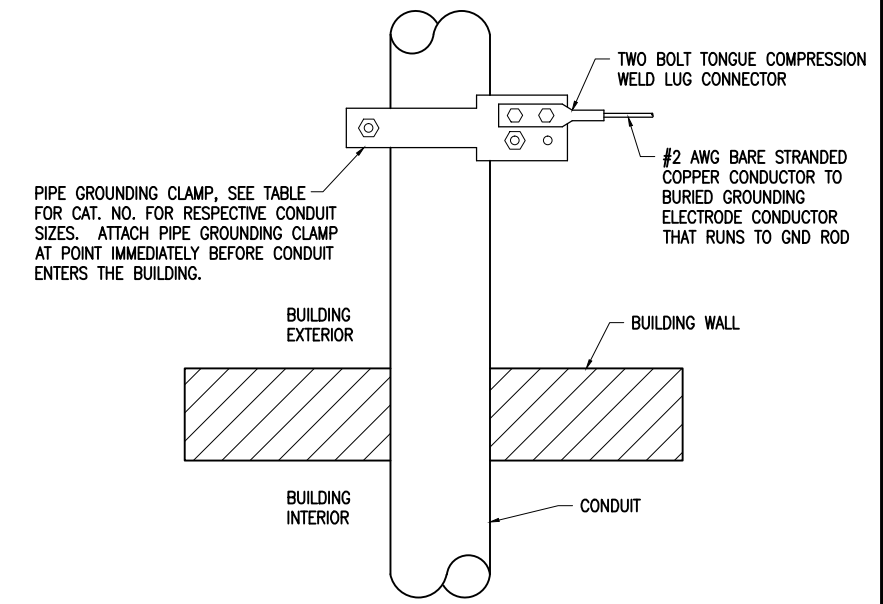
2 HOLE LONG BARREL COMPRESSION LUG TABLE

| 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-1/0D-2TC38 |
| #2/0 AWG STRANDED | YA26-2TC38 | 256-30695-1116 | BBLU-2/0D-2TC38 |
| #3/0 AWG STRANDED | YA27-2TC38 | 54816BE | BBLU-3/0D-2TC38 |
| #4/0 AWG STRANDED | YA28-2TC38 | 256-30695-1117 | BBLU-4/0D-2TC38 |

NOTES

- ALL CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.
- GROUND WIRE CONNECTIONS TO EQUIPMENT SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE DEVICE OR WITH THE RESPECTIVE 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. | CONDUIT SIZE |
|-----------------|-----------------|
| GAR3902TC | 1/2" - 1" |
| GAR3903TC | 1 1/4" - 2" |
| GAR3904TC | 2 1/2" - 3 1/2" |
| GAR3905TC | 4" - 5" |
| GAR3906TC | 6" |
| GAR3907TC | 8" |

NOTES

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

EXTERIOR CONDUIT GROUNDING DETAIL

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

IDA No: I63-4325
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Contract No. MS008

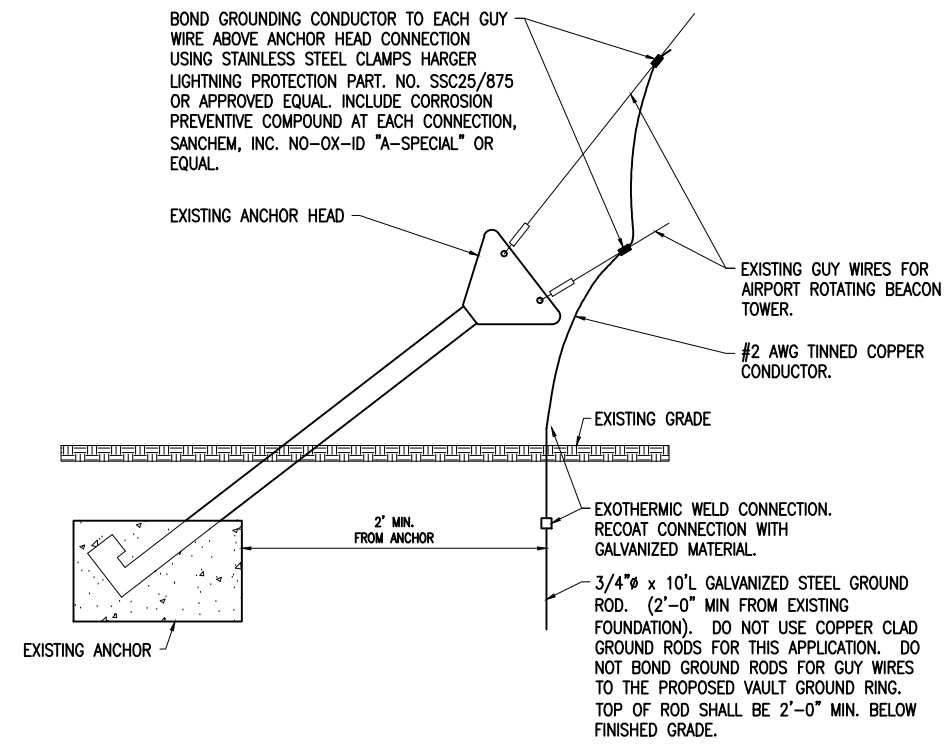
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SHEET TITLE

GROUNDING DETAILS
SHEET 1



GUY WIRE GROUNDING DETAIL

(TYPICAL FOR 3 LOCATIONS)

NOTES:

1. GUY WIRES ARE EXISTING AND ARE USED FOR THE BEACON TOWER. THERE ARE 3 EXISTING SETS OF GUY WIRES WITH 2 WIRES PER SET & ANCHOR.
2. GROUNDING FOR GUY WIRES SHALL BE INCIDENTAL TO AND PAID FOR UNDER ITEM AR109200 INSTALL ELECTRICAL EQUIPMENT PER LUMP SUM.

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

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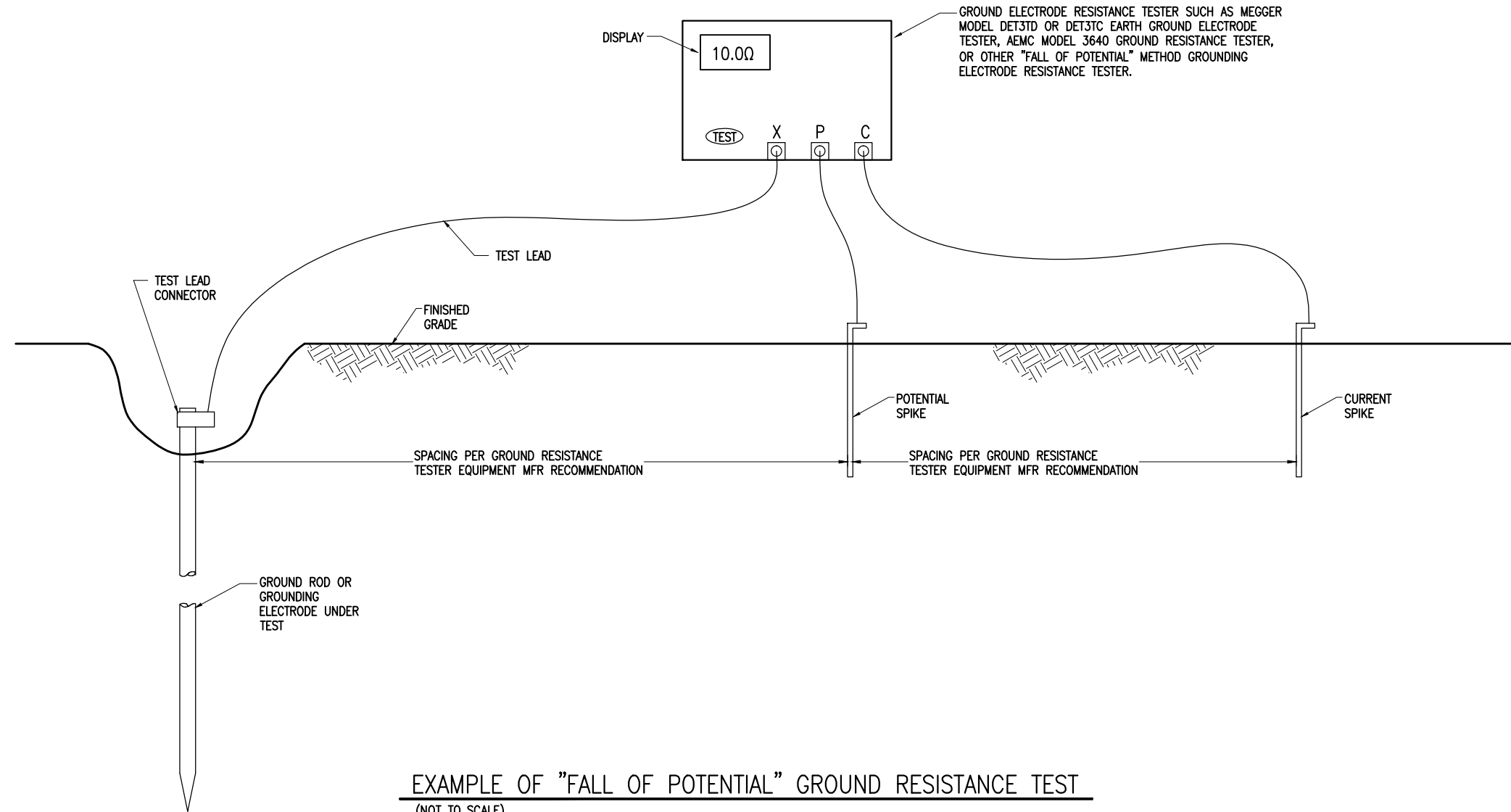
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SHEET TITLE

GROUNDING DETAILS
SHEET 2



EXAMPLE OF "FALL OF POTENTIAL" GROUND RESISTANCE TEST
(NOT TO SCALE)

NOTES

1. CONTRACTOR SHALL TEST AND RECORD THE RESISTANCE FOR EACH MADE ELECTRODE GROUND ROD/GROUND FIELD/GROUND RING WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUNDING ELECTRODE SYSTEMS. IF GROUND RESISTANCE EXCEEDS 25 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. COPIES OF GROUND ROD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER/RESIDENT TECHNICIAN.
2. FOR EACH AIRFIELD LIGHT FIXTURE, TAXI GUIDANCE SIGN, AND/OR NAVAID THE CONTRACTOR SHALL TEST THE MADE ELECTRODE GROUND SYSTEM WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUND SYSTEMS. TEST RESULTS SHALL BE RECORDED FOR EACH AIRFIELD LIGHT FIXTURE, TAXI GUIDANCE SIGN, AND NAVAIDS INSTALLATION. IF GROUND RESISTANCE EXCEEDS 25 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. COPIES OF THE GROUND SYSTEM TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER / RESIDENT TECHNICIAN.
3. GROUND RESISTANCE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH THE RESPECTIVE GROUND ELECTRODE RESISTANCE TESTING EQUIPMENT MANUFACTURER'S INSTRUCTIONS.
4. RECORD SITE CONDITIONS DURING TESTS.
5. "FALL OF POTENTIAL" TYPE GROUND ELECTRODE RESISTANCE TESTER IS RECOMMENDED FOR TESTING INDIVIDUAL STAND ALONE GROUND RODS.

REMOVE AND REPLACE THE VADI UNITS ON RUNWAY 18-36; REPLACE ELECTRICAL VAULT

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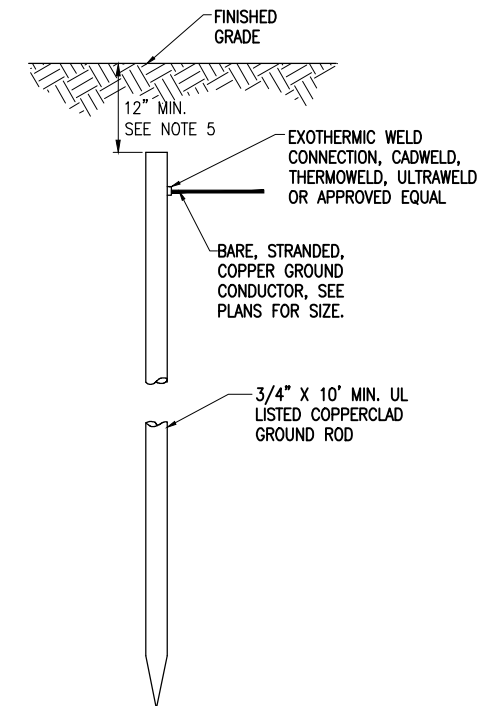
SHEET TITLE

GROUND RESISTANCE TESTING DETAILS

GROUNDING NOTES

- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70) IN FORCE AND FAA-STD-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:
- FURNISH AND INSTALL GROUND RODS AS DETAILED HEREIN. GROUND RODS FOR AIRFIELD LIGHTING, NAVAIDS, AND SPLICE CANS SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS FOR DOWN GUYS SHALL BE 3/4-IN. DIAMETER BY 10-FT LONG GALVANIZED STEEL. GROUND RODS FOR OTHER APPLICATIONS SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED, COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS SHALL BE SPACED OR AS DETAILED ON THE RESPECTIVE PLANS, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH APART. ALL CONNECTIONS TO GROUND RODS AND THE GROUND RING SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE 1-800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE 918-663-1440) OR ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE 1-800-842-7437) OR APPROVED EQUAL. EXOTHERMIC WELD CONNECTIONS SHALL BE INSTALLED IN CONFORMANCE WITH THE RESPECTIVE MANUFACTURER'S DIRECTIONS USING MOLDS AS REQUIRED FOR EACH RESPECTIVE APPLICATION. BOLTED CONNECTIONS WILL NOT BE PERMITTED AT GROUND RODS OR AT BURIED GROUNDING ELECTRODE CONDUCTORS.
- CONTRACTOR SHALL TEST EACH MADE ELECTRODE GROUND ROD/GROUND FIELD/GROUND RING WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUND FIELD SYSTEMS. IF GROUND RESISTANCE EXCEEDS 25 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. COPIES OF GROUND ROD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE.
- ALL PRODUCTS ASSOCIATED WITH THE GROUNDING SYSTEM SHALL BE UL-LISTED AND LABELED.
- ALL BOLTED OR MECHANICAL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND BEFORE JOINING, SANCHEM INC. 'NO-OX-ID 'A-SPECIAL' COMPOUND, BURNDY PENETROX E, OR APPROVED EQUAL.
- METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2014 NATIONAL ELECTRICAL CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.
- METALLIC RACEWAY FITTINGS SHALL BE MADE UP TIGHT TO PROVIDE A PERMANENT LOW IMPEDANCE PATH FOR ALL CIRCUITS. METAL CONDUIT TERMINATIONS IN ENCLOSURES SHALL BE BONDED TO THE ENCLOSURE WITH UL-LISTED FITTINGS SUITABLE FOR GROUNDING. PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT
- ALL CONNECTIONS, LOCATED ABOVE GRADE, BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS SHALL BE MADE USING UL-LISTED DOUBLE COMPRESSION CRIMP TYPE CONNECTORS OR UL-LISTED BOLTED GROUND CONNECTORS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, THOMAS AND BETTS, OR EQUAL. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES IN UL STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
- ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
- PROVIDE ALL BOXES FOR PROPOSED OUTLETS, SWITCHES, CIRCUIT BREAKERS, ETC. WITH GROUNDING SCREWS. PROVIDE ALL PANELBOARD, SWITCHGEAR, ETC., ENCLOSURES WITH GROUNDING BARS WITH INDIVIDUAL SCREWS, LUGS, CLAMPS, ETC., FOR EACH OF THE GROUNDING CONDUCTORS THAT ENTER THEIR RESPECTIVE ENCLOSURES.
- EACH NEW FEEDER CIRCUIT AND/OR BRANCH CIRCUIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. METAL RACEWAY OR CONDUIT SHALL NOT MEET THIS REQUIREMENT. THE EQUIPMENT GROUND WIRE FROM EQUIPMENT SHALL NOT BE SMALLER THAN ALLOWED BY 2014 NEC TABLE 250-122 "MINIMUM SIZE CONDUCTORS OR GROUNDING RACEWAY AND EQUIPMENT." WHEN CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT-GROUNDING CONDUCTORS SHALL BE ADJUSTED PROPORTIONATELY ACCORDING TO CIRCULAR MIL AREA. ALL EQUIPMENT GROUND WIRES SHALL BE COPPER, EITHER BARE OR INSULATED GREEN IN COLOR. WHERE THE EQUIPMENT GROUNDING CONDUCTORS ARE INSULATED, THEY SHALL BE IDENTIFIED BY THE COLOR GREEN, AND SHALL BE THE SAME INSULATION TYPE AS THE PHASE CONDUCTORS.

- ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC., SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 2014 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 2014 NEC 250-102.
- IT IS THE INTENT OF THIS SPECIFICATION THAT ALL MOTOR FRAMES, PUMP BASES ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.
- PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUNDED NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
- EACH AND ALL 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.
- ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, OR APPROVED EQUAL.
- BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
- BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.
- INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY 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 GIRDLING DURING A LIGHTNING STRIKE RESULTS IN PHENOMENA KNOWN AS SURGE IMPEDANCE LOADING. SURGE IMPEDANCE LOADING IS A RESULT OF VOLTAGE AND CURRENT REACHING 500,000 VOLTS AND 10,000 AMPS FOR A SHORT DURATION. GIRDLING FURTHER INCREASES THE IMPEDANCE AT LIGHTNING FREQUENCIES OF 100 KILOHERTZ TO 100 MEGAHERTZ. AT THESE POWER AND FREQUENCY LEVELS ANY INCREASE IN THE IMPEDANCE OF THE GROUND CONDUCTOR MUST BE CONTROLLED. DURING LIGHTNING DISCHARGE CONDITIONS A LOW INDUCTIVE IMPEDANCE PATH IS MORE IMPORTANT THAN A LOW DC RESISTANCE PATH.
- IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2014 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.
- GROUND RODS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. STEEL USED TO MANUFACTURER GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.



10 FT. GROUND ROD

NOTES

- TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
- THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.
- COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.
- GROUND RODS SHALL BE SPACED AS DETAILED ON THE PLANS AND SHALL NOT BE SPACED LESS THAN ONE ROD LENGTH APART.
- TOP OF GROUND RODS SHALL BE 12" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN. TOP OF GROUND RODS FOR VAULT GROUND RING SHALL BE 30" MIN. BELOW GRADE. GROUND RING CONDUCTORS SHALL BE 40" MINIMUM BELOW GRADE TO BE BELOW FROST LINE FOR BROWN COUNTY, ILLINOIS.
- GROUND RODS FOR PAPI LIGHT HOUSING UNITS, SPLICE CANS AND AIRFIELD LIGHTING SHALL BE A MINIMUM 3/4-INCH DIAMETER BY 10-FT LONG UL LISTED COPPER CLAD.

GROUND RODS
(NOT TO SCALE)

REMOVE AND
REPLACE THE VADI
UNITS ON RUNWAY
18-36; REPLACE
ELECTRICAL VAULT

IDA No: I63-4325
SBG NO: 3-17-SBGP-XX

Contract No. MS008

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SHEET TITLE

GROUNDING NOTES