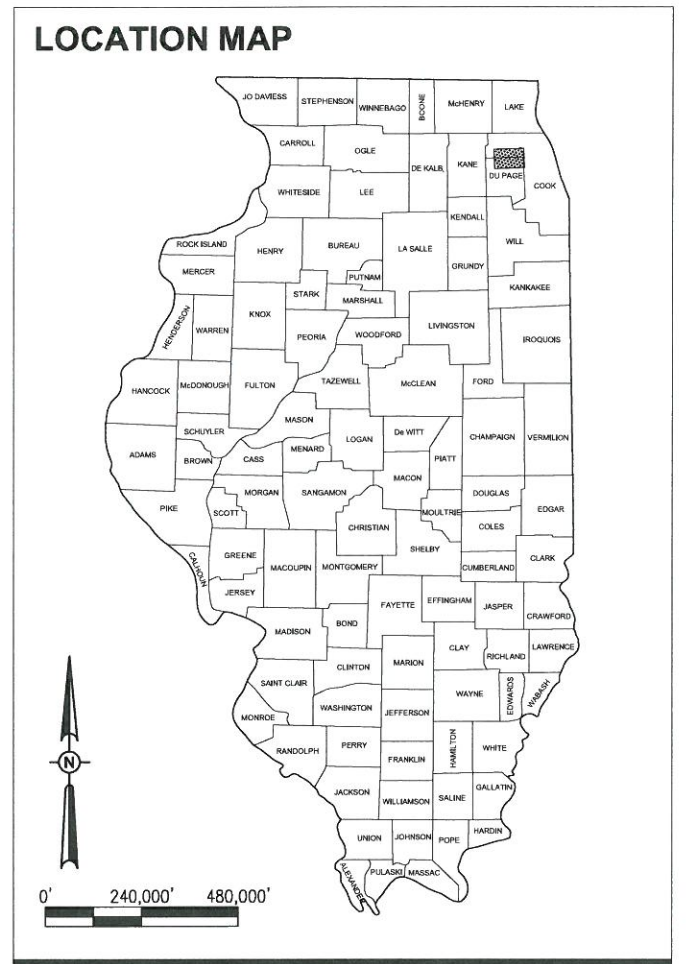
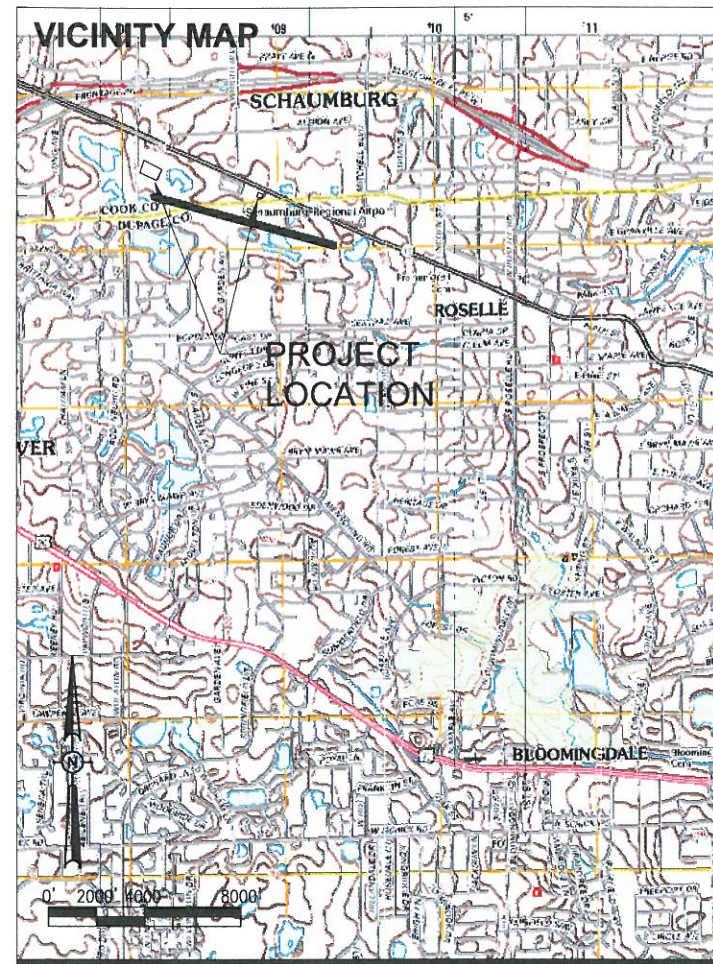


**CONSTRUCTION PLANS**

**INSTALL AWOS A-V, REPLACE AIRPORT ROTATING BEACON**

**VILLAGE OF SCHAUMBURG  
SCHAUMBURG REGIONAL AIRPORT (06C)  
SCHAUMBURG, COOK AND  
DUPAGE COUNTY, ILLINOIS**

**SBG PROJECT NO. 3-17-SBGP-XX  
IDA PROJECT NO. 06C-4339**



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

Seal (Sheets 1-9)  
  
 Date of Plans: Exp. 11/30/2015  
 Stephen J. McLaughlin, P.E., CPES  
 Project Engineer  
 Date: October 2, 2014

Seal (Sheets 10-24)  
  
 COVERING ELECTRICAL DESIGN  
 EXPIRES: 11/30/2015  
 Kevin N. Lightfoot, P.E.  
 Project Engineer  
 Date: 9/23/2014

**HANSON PROFESSIONAL SERVICES INC.**  
 815 Commerce Drive, Suite 200  
 Oak Brook, Illinois 60523  
 Telephone: 630.990.7000  
 Fax: 630.990.3801  
  
 Ronald M. Hudson, AICP  
 Project Manager  
 Date: 02 Oct 14

**SCHAUMBURG REGIONAL AIRPORT**  
 VILLAGE OF SCHAUMBURG  
 905 W. Irving Park Road  
 Schaumburg, IL 60193  
 Telephone: 847.923.3863  
  
 Brian Townsend  
 Village Manager  
 Date: 10/16/2014



**BASE BID**

INDEX OF SHEETS	
SHEET NO.	TITLE
1	COVER SHEET
2	SHEET INDEX AND SUMMARY OF QUANTITIES
3	SITE PLAN AND GENERAL NOTES
4	CONSTRUCTION SAFETY NOTES AND DETAILS
5	LANDSCAPING AND SWPP PLAN
6	SWPPP DETAILS
7	AWOS PAVEMENT PLAN
8	FENCE DETAILS
9	AWOS PAVEMENT DETAILS
10	AWOS GENERAL PLAN
11	AWOS SITE PLAN
12	AWOS DETAILS
13	AWOS SITE DISCONNECT ELEVATION
14	BEACON SITE PLAN
15	LIGHTNING PROTECTION DETAILS FOR BEACON
16	ELECTRICAL DETAILS
17	ELECTRICAL NOTES
18	ELECTRICAL LEGEND, ABBREVIATIONS & NOTES
19	ELECTRICAL ONE LINE DIAGRAM FOR AWOS
20	PANELBOARD SCHEDULES
21	ELECTRICAL ONE LINE FOR AIRPORT ROTATING BEACON
22	GROUNDING DETAILS - SHEET 1
23	GROUNDING DETAILS - SHEET 2
24	GROUNDING NOTES

SUMMARY OF QUANTITIES				
ITEM NO.	DESCRIPTION	UNIT	AS BID	RECORD PAID
AR108051	POWER CABLE IN UNIT DUCT	LINEAR FOOT	451.0	
AR108086	1/C #6 XLP-USE	LINEAR FOOT	3,737.0	
AR110550	SPLIT DUCT	LINEAR FOOT	20.0	
AR150510	ENGINEER'S FIELD OFFICE	LUMP SUM	1.0	
AR152411	UNCLASSIFIED EXCAVATION	LUMP SUM	1.0	
AR156520	INLET PROTECTION	EACH	4.0	
AR162606	CLASS E GATE - 6'	EACH	1.0	
AR208530	AGGREGATE SUBBASE COURSE	TON	60.0	
AR208610	10" AGGREGATE BASE COURSE	SQUARE YARD	97.0	
AR208612	12" AGGREGATE BASE COURSE	SQUARE YARD	132.0	
AR800908	AWOS A/V, INSTALLED	LUMP SUM	1.0	
AR800968	VAPOR BARRIER	SQUARE YARD	132.0	
AR800980	CLASS E FENCE 8' GALV W/ 2' BURIED	LINEAR FOOT	124.0	
AR800984	20' (DOUBLE 10') CLASS E GATE	EACH	1.0	
AR800991	REMOVE FENCE	LINEAR FOOT	20.0	
AR901510	SEEDING	ACRE	0.1	
AR905510	TOPSOILING (FROM ON SITE)	CUBIC YARD	53.0	
AR908510	MULCHING	ACRE	0.1	

**ADDITIVE ALTERNATE NO. 1**

SUMMARY OF QUANTITIES				
ITEM NO.	DESCRIPTION	UNIT	AS BID	RECORD PAID
AS208606	6" AGGREGATE BASE COURSE	SQUARE YARD	9.0	
AS401613	BIT. SURF. CSE. - METHOD I, SUPERPAVE	TON	10.0	
AS401660	SAW & SEAL BIT. JOINTS	LINEAR FOOT	31.0	
AS602510	BITUMINOUS PRIME COAT	GALLONS	24.0	
AS754904	REMOVE COMB CURB & GUTTER	LINEAR FOOT	21.0	
AS800979	PCC DRIVEWAY	SQUARE YARD	7.0	
AS800997	DEPRESSED CURB AND GUTTER	LINEAR FOOT	21.0	

**ADDITIVE ALTERNATE NO. 2**

SUMMARY OF QUANTITIES				
ITEM NO.	DESCRIPTION	UNIT	AS BID	RECORD PAID
AT800995	UPGRADE FENCE MATERIALS TO VINYL	LUMP SUM	1.0	
AT800996	UPGRADE GATE MATERIALS TO VINYL	LUMP SUM	1.0	

**ADDITIVE ALTERNATE NO. 3**

SUMMARY OF QUANTITIES				
ITEM NO.	DESCRIPTION	UNIT	AS BID	RECORD PAID
AU101580	REFURBISH 36" BEACON	LUMP SUM	1.0	
AU800951	MODIFY BEACON INSTALLATION	LUMP SUM	1.0	

PAYMENT WILL BE MADE UNDER THE ITEM NUMBERS, DESCRIPTIONS AND UNITS NOTED IN THE ABOVE TABLE IN ACCORDANCE WITH THE BASIS OF PAYMENT FOR EACH RESPECTIVE WORK ITEM NOTED IN THE SPECIAL PROVISIONS, COMPLETED AND ACCEPTED BY THE ENGINEER.

SOME ITEMS ARE BID AS ADDITIVE ALTERNATE 1 (AS), ADDITIVE ALTERNATE 2 (AT), OR ADDITIVE ALTERNATE 3 (AU) ITEMS. THE BIDDER SHALL SUBMIT A BID FOR ALL ADDITIVE ALTERNATES. THE AWARD WILL BE MADE BASED ON THE BASE BID AND ANY, ALL, OR NONE OF THE ADDITIVE ALTERNATES THAT IDOT ELECTS TO AWARD.

INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

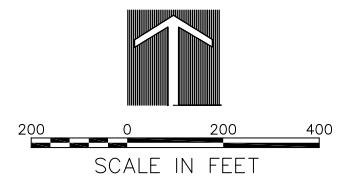
ISSUE: SEPTEMBER 12, 2014

PROJECT NO: 13A0094  
CAD FILE: 02-INDEXSQ.DWG  
LAYOUT BY: SJM 9/22/14  
DRAWN BY: LDH 8/22/13  
REVIEWED BY: RMH 9/10/14

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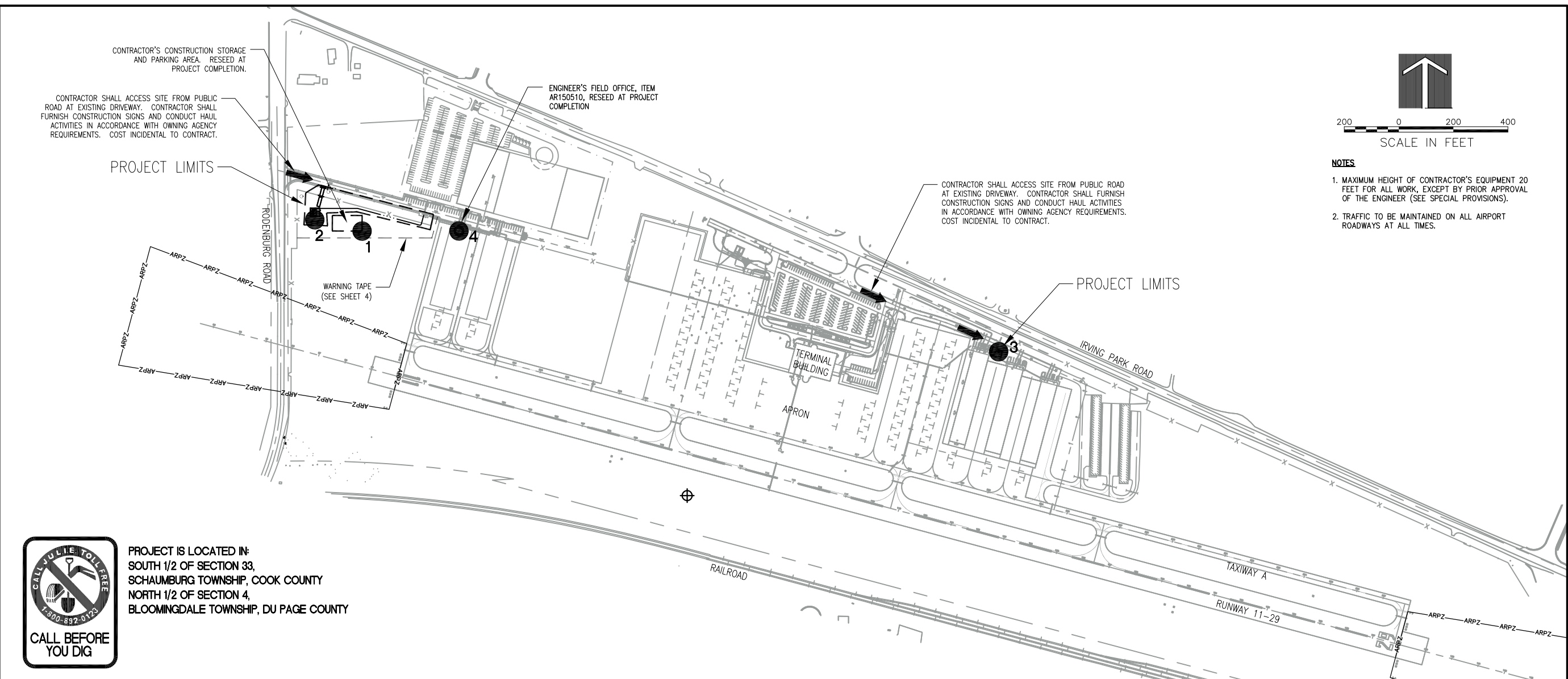
SHEET TITLE

SHEET INDEX AND  
SUMMARY OF  
QUANTITIES



**NOTES**

1. MAXIMUM HEIGHT OF CONTRACTOR'S EQUIPMENT 20 FEET FOR ALL WORK, EXCEPT BY PRIOR APPROVAL OF THE ENGINEER (SEE SPECIAL PROVISIONS).
2. TRAFFIC TO BE MAINTAINED ON ALL AIRPORT ROADWAYS AT ALL TIMES.



PROJECT IS LOCATED IN:  
SOUTH 1/2 OF SECTION 33,  
SCHAUMBURG TOWNSHIP, COOK COUNTY  
NORTH 1/2 OF SECTION 4,  
BLOOMINGDALE TOWNSHIP, DU PAGE COUNTY

**GENERAL NOTES**

**PROJECT DESCRIPTION**

THIS PROJECT IS TO INSTALL AWOS A-V, REPLACE AIRPORT ROTATING BEACON AT SCHAUMBURG REGIONAL AIRPORT INCLUDING, AMONG OTHER INCIDENTAL WORK, THE FOLLOWING ITEMS:

- PLACEMENT OF TEMPORARY SOIL EROSION CONTROL MEASURES.
- INSTALLATION OF AWOS A-V.
- CONSTRUCTION OF BITUMINOUS ACCESS ROAD AND AGGREGATE PAD.
- INSTALLATION OF FENCE AROUND AWOS.
- REPLACE BEACON ON EXISTING TOWER.
- PROVISION OF ASSOCIATED ELECTRICAL EQUIPMENT IN AND MODIFICATIONS TO EXISTING ELECTRICAL VAULT.
- TOPSOILING, SEEDING AND MULCHING OF DISTURBED AREAS.

THE PROJECT INCLUDES A BASE BID AND THREE ADDITIVE ALTERNATES, SEE SHEET 2. ADDITIVE ALTERNATES WILL BE AWARDED IN ACCORDANCE WITH CONTRACT DOCUMENTS.

**PROTECTION OF EXISTING AIRPORT FACILITIES**

THE CONTRACTOR IS TO BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES AND LIGHTING EQUIPMENT; DRIVEWAY AND ROAD PAVEMENT AND SHOULDERS; RUNWAY, TAXIWAY AND APRON PAVEMENTS AND SHOULDERS; RUNWAY, TAXIWAY AND AIRPORT LIGHTING EQUIPMENT; AND SEEDED AND TURFED AREAS THAT ARE UTILIZED IN OR AFFECTED BY THE CONTRACTOR'S ACTIVITIES. ITEMS DAMAGED BY THE CONTRACTOR ARE TO BE REPAIRED AT CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF AIRPORT MANAGER OR DESIGNATED REPRESENTATIVE.

IN ADDITION, WHEN CONDITIONS DICTATE OR AS DETERMINED BY THE AIRPORT MANAGER OR DESIGNATED REPRESENTATIVE, THE CONTRACTOR SHALL BE REQUIRED TO USE A PICK-UP TYPE SWEEPER IN ALL ACTIVE CONSTRUCTION AIRFIELD PAVEMENT AREAS. THE CONTRACTOR WILL BE REQUIRED TO HAVE A SWEEPER AVAILABLE FOR USE AT ALL TIMES. THE COST OF SWEEPING SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

**CONTRACTOR'S ACCESS AND TEMPORARY FACILITIES**

CONTRACTOR'S ACCESS TO THE PROJECT WHEN ON AIRPORT PROPERTY IS SHOWN ON THIS SHEET. CONTRACTOR'S ACCESS TO THE AIRPORT ITSELF IS TO BE PROVIDED BY PUBLIC RIGHTS-OF-WAY. THE CONTRACTOR IS TO SECURE ALL NECESSARY PERMITS FOR THE USE OF ANY PUBLIC RIGHTS-OF-WAY AND IS TO MAINTAIN TRAFFIC ON THESE PUBLIC ROADS AT ALL TIMES, WITH THE COSTS OF PERMITTING, CLEANING AND REPAIRING OF PAVEMENT DAMAGED BY CONTRACTOR'S ACTIVITIES INCIDENTAL TO THE CONTRACT. USE OF AND REPAIRS TO ANY PUBLIC FACILITIES ARE TO BE COMPLETED TO THE SATISFACTION OF THE FACILITY'S OWNER.

THE CONTRACTOR IS TO PROVIDE TEMPORARY CONSTRUCTION ROADS WITHIN THE CONSTRUCTION LIMIT LINES AS MAY BE REQUIRED BY HIS ACTIVITIES. HEAVY VEHICLES SHALL NOT CROSS EXISTING PAVEMENT SURFACES EXCEPT AS APPROVED BY THE AIRPORT MANAGER OR DESIGNATED REPRESENTATIVE. ANY DAMAGE TO PAVEMENTS THAT MAY OCCUR BY THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE AIRPORT MANAGER OR DESIGNATED REPRESENTATIVE.

THE CONTRACTOR IS TO PROVIDE AN EQUIPMENT STORAGE AND PARKING AREA AT THE LOCATIONS SHOWN ON THIS SHEET. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE ACCESS ROADS AND THE STORAGE AREA DURING CONSTRUCTION AND TO RESTORE THE AREAS AT PROJECT COMPLETION TO CONDITIONS SUITABLE TO THE AIRPORT MANAGER OR DESIGNATED REPRESENTATIVE. AT THE AIRPORT OWNERS'S DISCRETION, THE TEMPORARY FACILITIES MAY REMAIN, BUT THEY MUST BE LEFT IN CONDITIONS SUITABLE TO THE AIRPORT MANAGER OR DESIGNATED REPRESENTATIVE. THE COST OF PROVIDING, MAINTAINING AND RESTORING THE TEMPORARY FACILITIES IS INCIDENTAL TO THE CONTRACT.

**RESPONSIBILITY FOR EXISTING UTILITIES**

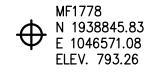
THE LOCATION, SIZE AND/OR TYPE OF MATERIAL OF EXISTING UNDERGROUND OR OVERHEAD UTILITIES AS MAY BE INDICATED ON THESE CONSTRUCTION PLANS IS NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE AIRPORT OWNER NOR THE PROJECT ENGINEER HAVE INDEPENDENTLY VERIFIED THIS INFORMATION AND NEITHER ASSUMES ANY RESPONSIBILITY WHATSOEVER IN RESPECT TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE INFORMATION AND GIVE NO EXPRESSED OR IMPLIED GUARANTEE THAT ANY CONDITIONS INDICATED ARE REPRESENTATIVE OF ACTUAL CONDITIONS TO BE ENCOUNTERED.

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 ALL UTILITY COMPANIES AND AGENCIES OF HIS CONSTRUCTION PLANS AND SHALL OBTAIN FROM EACH PARTY DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF ALL UTILITIES AND THE WORKING SCHEDULE OF ANY REMOVALS OR ADJUSTMENTS REQUIRED OF THE UTILITY. THE CONTRACTOR SHALL CONTACT JULIE (PHONE 800-892-0123) TO ASSIST IN THE ABOVE.

THE CONTRACTOR SHALL PROTECT ANY FACILITIES TO THE SATISFACTION OF THE UTILITY OR OWNING-AGENCY WITH THE COST OF ANY REQUIRED PROTECTION TO BE INCIDENTAL TO THE CONTRACT. IN THE EVENT A UTILITY LINE OR SERVICE IS UNEXPECTEDLY ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE AIRPORT MANAGER OR DESIGNATED REPRESENTATIVE AND THE UTILITY COMPANY OR AGENCY OF JURISDICTION. ANY SUCH UTILITIES DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO SERVICE AT ONCE.

**EXISTING BENCHMARKS**

PROJECT BENCHMARKS ARE AS FOLLOWS:



OBJECT INFORMATION									
ITEM NO.	DESCRIPTION	MOBILITY	GROUND ELEVATION	OBJECT ELEVATION	LATITUDE	LONGITUDE	RUNWAY 11-29 STATION	RUNWAY 11-29 OFFSET	RUNWAY 11-29 EXIST EL.
1	CONTRACTOR'S STAGING AREA	STATIONARY	798.7	818.7	41° 59' 31.7981" N	88° 06' 30.4817" W	97+35.21	480.7	801.0
2A	CONSTRUCTION EQUIPMENT (20')	MOVING	796.7	816.7	41° 59' 32.2135" N	88° 06' 32.7760" W	95+56.99	476.0	801.0
2B	CONSTRUCTION EQUIPMENT (50')	MOVING	796.7	846.7	41° 59' 32.2135" N	88° 06' 32.7760" W	95+56.99	476.0	801.0
3A	CONSTRUCTION EQUIPMENT (20')	MOVING	800.0	820.0	41° 59' 27.3675" N	88° 05' 59.5854" W	121+04.45	657.4	801.0
3B	CONSTRUCTION EQUIPMENT (70')	MOVING	800.0	850.0	41° 59' 27.3675" N	88° 05' 59.5854" W	121+04.45	657.4	801.0
4	ENGINEER'S FIELD OFFICE	STATIONARY	802.0	817.0	41° 59' 31.7929" N	88° 06' 25.7771" W	100+78.27	573.0	801.0

RUNWAY END COORDINATES			
DESCRIPTION	LATITUDE	LONGITUDE	STATION
RUNWAY 11 END	41° 59' 26.5310" N	88° 06' 28.7600" W	100+00
RUNWAY 29 END	41° 59' 16.7240" N	88° 05' 40.1880" W	138+00

**NOTES**

1. WORK MUST BE CONTROLLED.
2. MAXIMUM HEIGHT OF CONTRACTOR'S EQUIPMENT SHALL BE LIMITED TO A HEIGHT OF 20 FEET, EXCEPT LIMITED CRANE USE, SEE SHEET 4.
3. TRAFFIC TO BE MAINTAINED ON ALL AIRPORT ROADWAYS AT ALL TIMES.
4. NO CLOSURES TO RUNWAY, TAXIWAY, APRON, ROADWAY, AND AUTO PARKING SHALL BE PERMITTED EXCEPT AS SHOWN IN THE SITE PLAN.

INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 03-SITEPLAN.DWG  
LAYOUT BY: LDH 2/17/14  
DRAWN BY: LDH 2/17/14  
REVIEWED BY: RMH 9/10/14  
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SHEET TITLE

SITE PLAN AND  
GENERAL NOTES

**CONSTRUCTION AND SAFETY NOTES**

**SAFETY IS REQUIRED**

ANY WORK REQUIRED FOR PROJECT SAFETY AS SPECIFIED HEREIN SHALL BE INCIDENTAL TO THE CONTRACT. CONSTRUCTION OF THE PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH THE GUIDELINES SPECIFIED IN FAA ADVISORY CIRCULAR 150/5320-2 (CURRENT ISSUE), OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, AND THE APPLICABLE AIRPORT RULES AND REGULATIONS (AS PUBLISHED ON THE VILLAGE OF SCHAUMBURG, SCHAUMBURG REGIONAL AIRPORT WEBSITE AT [HTTP://WWW.CI.SCHAUMBURG.IL.US/TRANS/AIRPORT1/PAGES/RULESANDMINIMUMSTANDARDS.ASPX/](http://www.ci.schaumburg.il.us/trans/airport1/pages/rulesandminimumstandards.aspx/)).

**SEQUENCE OF CONSTRUCTION**

TO MINIMIZE DISRUPTIONS TO AIRPORT OPERATIONS, CONSTRUCTION OPERATIONS MUST BE CONTROLLED THROUGHOUT THE PROJECT'S DURATION AND WORK MUST BE COMPLETED EXPEDITIOUSLY. A CONSTRUCTION STAGING PLAN DETAILING THE SEQUENCING OF THE CONTRACTOR'S WORK THROUGHOUT THE PROJECT SHALL BE FURNISHED TO THE RESIDENT ENGINEER BY THE CONTRACTOR AT THE PRE-CONSTRUCTION CONFERENCE FOR THE REVIEW AND APPROVAL OF THE OWNER AND PROJECT ENGINEER. ANY AND ALL CHANGES TO THE CONSTRUCTION STAGING PLAN THAT IS SUBSEQUENTLY APPROVED THAT MAY BE REQUESTED BY THE CONTRACTOR AFTER PROJECT START MUST BE APPROVED BY THE PROJECT ENGINEER AND THE AIRPORT OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SUFFICIENT ADVANCE NOTICE OF ANY PROPOSED STAGING CHANGE TO PERMIT CONSIDERATION AND APPROVAL BY THE PROJECT ENGINEER AND THE AIRPORT OWNER. THE CONTRACTOR SHALL NOT BE ENTITLED TO ANY EXTRA COMPENSATION NOR EXTENSION TO THE CONTRACT TIME BECAUSE OF A STAGING CHANGE REQUEST NOR FOR ANY TIME NECESSARY IN RECEIVING THE REQUIRED APPROVALS. THE CONTRACTOR SHALL EXPEDITE WORK AT THOSE STAGES WHEN ACTIVE TAXIWAYS, APRONS, ROADWAYS OR PARKING LOTS MUST BE CLOSED TO MINIMIZE THE LENGTH OF TIME THAT AIRPORT OPERATIONS ARE RESTRICTED.

AT THE PRE-CONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL PROVIDE A CONTRACTOR COORDINATION PLAN THAT COORDINATES HIS WORK WITH THE WORK OF HIS SUBCONTRACTORS AND THE WORK OF OTHER CONTRACTORS OF OTHER AIRPORT PROJECTS.

**CONSTRUCTION LIMITS**

THE CONTRACTOR SHALL REMAIN WITHIN THE CONSTRUCTION LIMITS SHOWN ON THE PLANS. THE CONTRACTOR SHALL INSTALL LATHING AND WARNING TAPE TO DELINEATE THE WORK AREA, AS SHOWN IN DETAIL A, AND FURNISH MEASURES TO PREVENT EQUIPMENT AND PERSONNEL FROM OPERATING OUTSIDE THESE LIMITS.

**TEMPORARY BARRICADES**

THE CONTRACTOR SHALL FURNISH BARRICADES FOR ANY AIRFIELD OR ROADWAY PAVEMENT TO BE CLOSED BY HIS WORK. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH, PLACE AND MAINTAIN BARRICADES AS SHOWN IN DETAIL A, THIS SHEET, AND AS DIRECTED BY THE RESIDENT ENGINEER AND AIRPORT DIRECTOR. THE COST OF THESE ITEMS, AND THEIR MAINTENANCE, IS TO BE INCIDENTAL TO THE CONTRACT. ANY WORK THAT REQUIRES PORTIONS OF THE ROADWAY TO BE CLOSED MUST BE COMPLETED EXPEDITIOUSLY. THE CONTRACTOR SHALL MAINTAIN TRAFFIC ON THE AIRPORT ENTRANCE ROAD AND FURNISH TRAFFIC CONTROL AS PRESCRIBED IN IDOT HIGHWAY STANDARDS ([HTTP://WWW.DOT.STATE.IL.US/DESENV/HWYSTD/HWYSTDINDEX.HTML](http://www.dot.state.il.us/desenv/hwystds/hwystdindex.html)), DIVISION 700. COSTS FOR TEMPORARY BARRICADES AND TRAFFIC CONTROL SHALL BE INCIDENTAL TO THE CONTRACT.

**VEHICULAR TRAFFIC CONTROL**

THE CONTRACTOR SHALL ERECT AND MAINTAIN, AT NO COST TO THE CONTRACT, DIRECTIONAL AND INFORMATIONAL SIGNS FOR THE CONTRACTOR'S ACCESS ROUTES AT THE EXISTING CONSTRUCTION ENTRANCE AND FOR THE CONTRACTOR'S ROUTE WITHIN THE AIRPORT OPERATIONS AREA, AS NOTED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

**AIRFIELD OPERATIONAL SAFETY DURING CONSTRUCTION**

THE CONTRACTOR SHALL NOT HAVE ACCESS TO ANY PART OF THE ACTIVE AIRFIELD (RUNWAYS, TAXIWAYS OR APRONS) FOR ANY EQUIPMENT OR PERSONNEL WITHOUT THE APPROVAL OF THE RESIDENT ENGINEER AND THE AIRPORT OWNER. ACTIVITIES WITHIN THE AIRPORT OPERATIONS AREA (AOA) ARE SUBJECT TO FEDERAL ACCESS CONTROL. BECAUSE OF THE HIGH REQUIREMENTS FOR AIRPORT SECURITY AND SAFETY, THE FOLLOWING REQUIREMENTS MUST BE ADHERED TO:

- ALL EMPLOYEES OF THE CONTRACTOR SHALL PARK THEIR PERSONAL VEHICLES IN THE DESIGNATED EQUIPMENT PARKING AND STORAGE AREA. EACH PERSON OR VEHICLE ENTERING THE CONTRACTOR AREA SHALL DO SO IN ACCORDANCE WITH THE POLICIES AND PROCEDURES OF THE AIRPORT OWNER. THE CONTRACTOR WILL TRANSPORT THE WORKERS FROM THE PARKING AREAS TO THE WORK AREA. ONLY CONTRACTOR VEHICLES WILL BE ALLOWED OUTSIDE OF THE PROPOSED EQUIPMENT STORAGE AND PARKING AREAS.
- SHOULD ANY CONTRACTOR PERSONNEL BE IDENTIFIED AS NONCOMPLIANT WITH ANY VEHICLE DRIVING SAFETY REQUIREMENTS IN THIS SAFETY PLAN OR IN THE AIRPORT VEHICLE OPERATIONS REGULATIONS, SUCH DRIVERS SHALL BE PENALIZED BY RESCISSION OF THEIR ON-AIRPORT DRIVING PRIVILEGES, AND THEIR ACCESS TO THE CONSTRUCTION LIMIT AREA WHEN OPERATING VEHICLES SHALL BE REVOKED.
- THE CONTRACTOR WILL BE REQUIRED TO BE IN CONTACT WITH AIRPORT OPERATIONS. THIS WILL KEEP THE CONTRACTOR IN CONTACT WITH AIRPORT PERSONNEL AND ENABLE THE AIRPORT PERSONNEL TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTICAL EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.

THE CONTRACTOR SHALL REMAIN WITHIN THE CONSTRUCTION LIMITS LINE SHOWN IN THE PLANS. WHEN OUTSIDE THESE LIMITS, ALL CONTRACTOR ACTIVITIES SHALL REMAIN MORE THAN 125 FEET FROM THE CENTERLINE AND 240 FEET FROM THE END OF THE ACTIVE RUNWAY. FURTHER, THE CONTRACTOR SHALL NOT WORK WITHIN THE RUNWAY PROTECTION ZONE AS SHOWN ON SHEET 3. FOR WORK NEAR TAXIWAYS AND APRONS, THE CONTRACTOR'S PERSONNEL AND EQUIPMENT MUST REMAIN AT LEAST 44.5 FEET FROM CENTERLINE OF ACTIVE CATEGORY I TAXIWAYS, AND TEN (10) FEET FROM ACTIVE APRONS. WHEN CONSTRUCTION OPERATIONS MUST BE CONDUCTED WITHIN THESE SEPARATIONS, THE PAVEMENT MUST BE CLOSED TO AIRCRAFT ACTIVITY BY THE CONTRACTOR BY PROVIDING TEMPORARY BARRICADES AS SHOWN IN THE PLANS.

CLOSING OF ANY RUNWAY OR TAXIWAY BY CONTRACTOR ACTIVITIES SHALL NOT BE PERMITTED IN THIS PROJECT.

THE CONTRACTOR SHALL KEEP ALL OF HIS EQUIPMENT AND PERSONNEL AT LEAST 15 FEET FROM THE EDGE OF ANY ACTIVE ROADWAY OR AUTO PARKING PAVEMENT. WHEN HIS ACTIVITIES REQUIRE WORKING WITHIN 15 FEET OF THE ROAD/PAVEMENT EDGE, THE CONTRACTOR SHALL PROVIDE FOR TRAFFIC CONTROL IN ACCORDANCE WITH IDOT SPECIFICATIONS (HIGHWAY STANDARDS).

OPEN TRENCHES, EXCAVATIONS AND STOCKPILED MATERIAL AT THE CONSTRUCTION SITE SHALL BE DELINEATED WITH THE USE OF BARRICADES DURING HOURS OF RESTRICTED VISIBILITY AND/OR DARKNESS. NO OPEN TRENCHES SHALL BE ALLOWED WITHIN THE RUNWAY SAFETY AREA (RSA) OR THE TAXIWAY SAFETY AREA (TSA) WHEN THE RUNWAY OR TAXIWAY IS OPEN TO AIR TRAFFIC (INCLUDING OVERNIGHT). THE RSA IS DEFINED AS 60 FEET FROM THE CENTERLINE AND 240 FEET FROM THE END OF THE RUNWAY. THE TSA IS MEASURED AT 24.5 FEET FROM THE CATEGORY I TAXIWAY CENTERLINE. THE CONTRACTOR WILL HAVE STEEL PLATES ON-SITE TO ALLOW FOR THE RAPID COVERING OF TRENCHES OR EARTH DROPS IN THE EVENT OF UNEXPECTED WORK STOPPAGES FOR WEATHER OR AIRPORT EMERGENCIES.

WHEN NOT IN USE AND DURING NONWORKING HOURS, CONTRACTOR'S EQUIPMENT SHALL BE PARKED WITHIN THE CONTRACTOR'S EQUIPMENT STORAGE AND PARKING AREAS. THE EQUIPMENT STORAGE AND PARKING AREAS ARE TO BE LOCATED AS SHOWN ON THE PHASING PLAN. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE CONSTRUCTION ENTRANCE IN GOOD CONDITION. THE COST OF MAINTAINING THE CONSTRUCTION ENTRANCE IS TO BE INCIDENTAL TO THE CONTRACT.

AT NO TIME SHALL THE CONTRACTOR OPERATE OR PARK EQUIPMENT SO AS TO OBSTRUCT AN ACTIVE RUNWAY APPROACH SURFACE.

BEFORE REOPENING TEMPORARILY CLOSED ROADWAYS, THE CONTRACTOR SHALL INSPECT AND CLEAN, AS NECESSARY, THE PAVEMENT TO ASSURE THAT NO MATERIALS OR OBJECTS THAT MAY DAMAGE AIRCRAFT OR VEHICLES REMAIN. ANY REQUIRED CLEANING SHALL BE TO THE SATISFACTION OF THE RESIDENT ENGINEER AND AIRPORT OWNER AND IS INCIDENTAL TO THE CONTRACT.

CONTRACTOR'S EQUIPMENT SHALL EXTEND NO HIGHER THAN 20 FEET, EXCEPT FOR ANY MOBILE CRANE USED TO ERECT THE AWOS TOWER, WHOSE MAXIMUM HEIGHT SHALL BE 50 FEET, AND ANY MOBILE CRANE USED TO INSTALL THE BEACON, WHOSE MAXIMUM HEIGHT SHALL BE 70 FEET. WHEN NOT IN USE, THE CRANE(S) SHALL BE LOWERED AND STORED IN THE CONTRACTOR'S EQUIPMENT AREA OR REMOVED FROM THE AIRPORT.

ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROVED PROJECT SAFETY PLAN, ISSUED BY THE ILLINOIS DIVISION OF AERONAUTICS.

FAILURE TO USE THESE PRESCRIBED PROCEDURES OR ADHERE TO THE SAFETY REQUIREMENTS WILL RESULT IN THE SUSPENSION OF WORK.

**NOTIFICATIONS BY CONTRACTOR**

THE CONTRACTOR MUST NOTIFY THE RESIDENT ENGINEER AND THE AIRPORT OWNER 72 HOURS IN ADVANCE OF ANY REQUIRED PARTIAL OR COMPLETE CLOSING OF ANY RUNWAY, TAXIWAY OR APRON. THE DATE, TIME AND SCHEDULED DURATION OF THE CLOSING MUST BE APPROVED BY THE RESIDENT ENGINEER AND THE AIRPORT OWNER. THE CONTRACTOR SHALL NOTIFY THE RESIDENT ENGINEER AND AIRPORT OWNER 72 HOURS IN ADVANCE OF THE CONTRACTOR'S CLOSING OF OTHER ACTIVE ROADWAYS, AIRFIELD OR ROADWAY LIGHTING CIRCUITS, OR OTHER AIRPORT FACILITIES.

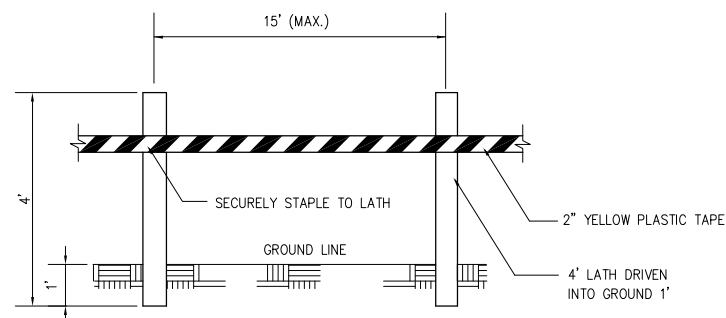
**CONTRACTOR'S USE OF SITE**

THE CONTRACTOR SHALL NOT OPERATE WITHIN, ENCROACH UPON OR OBSTRUCT AIRPORT OPERATIONAL AREAS, INCLUDING ACTIVE RUNWAY, TAXIWAYS AND APRON SAFETY AREAS, OBJECT AND OBSTACLE FREE ZONES, RUNWAY PROTECTION ZONES AND AIRPORT IMAGINARY SURFACES AS DEFINED IN FEDERAL AVIATION REGULATIONS (FAR) PART 77, "OBJECTS AFFECTING NAVIGABLE AIRSPACE".

THE CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF THE WORK AREA PRIOR TO BEGINNING WORK AT A NEW LOCATION.

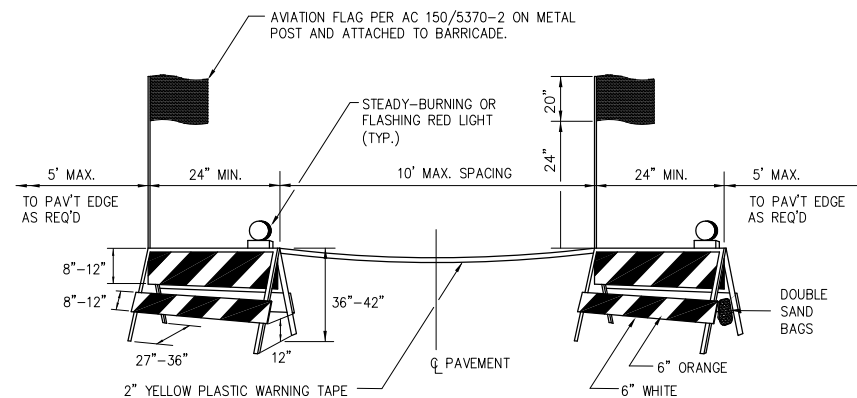
**UTILITY OUTAGES AND SHUTDOWNS**

THE CONTRACTOR SHALL PROVIDE 72 HOURS PRIOR NOTICE OF ANY OUTAGES OR SHUTDOWNS TO THE OWNER AND THE AGENCY OWNING THE AFFECTED UTILITY. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY CONNECTIONS OR OTHER MEASURES AS MAY BE REQUIRED TO MAINTAIN SERVICE AS MAY BE REQUIRED BY THE OWNING AGENCY AT NO COST TO THE OWNER.



MATERIALS ARE TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION. COST OF MATERIALS, INSTALLATION, RELOCATION AND MAINTENANCE OF LATHING AND WARNING TAPE IS TO BE INCIDENTAL TO THE CONTRACT.

**DETAIL A  
LATHING AND WARNING TAPE**



BARRICADES ARE TO BE OF IDOT TYPE I. A STEADY-BURNING OR FLASHING RED LIGHT FACING PASSING TRAFFIC IS TO BE MOUNTED ABOVE THE TOP OF EACH BARRICADE FRAME. THE BARRICADE IS TO BE STABILIZED FROM WIND BY DOUBLE SANDBAGS PLACED ON THE FRAME OR OTHER METHODS APPROVED BY THE RESIDENT ENGINEER. NO PART OF THE REFLECTORIZED PORTION OF THE BARRICADE IS TO BE OBSTRUCTED IN ANY MANNER. COST OF FURNISHING, INSTALLING, RELOCATING, MAINTAINING AND REMOVING BARRICADES IS TO BE INCIDENTAL TO THE CONTRACT.

**DETAIL B  
PAVEMENT BARRICADES**

**DETAILS SHOWN ARE NOT TO SCALE**



**INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON**

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

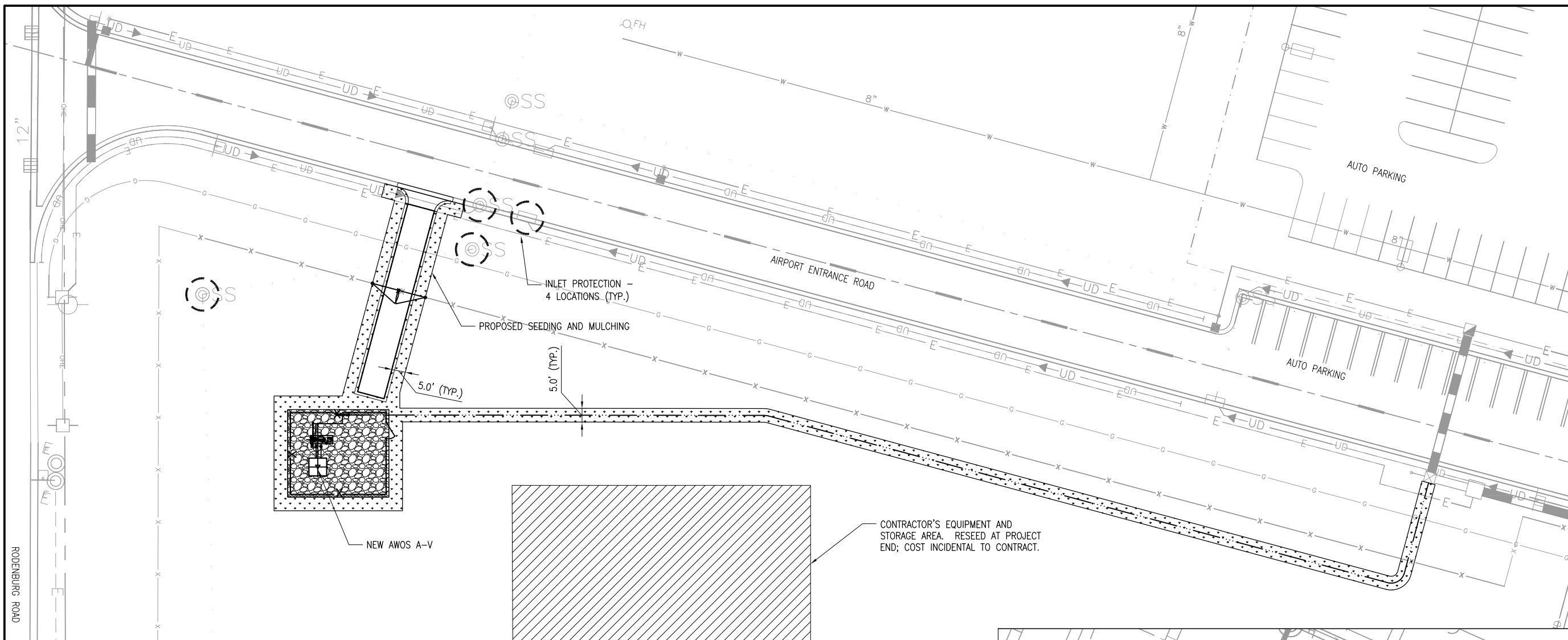
Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 04-SAFETY NOTES.DWG  
LAYOUT BY: LDH 2/17/14  
DRAWN BY: LDH 2/17/14  
REVIEWED BY: RMH 9/10/14

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SHEET TITLE

**CONSTRUCTION  
SAFETY NOTES  
AND DETAILS**



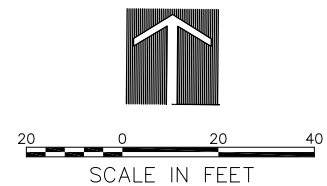
**CONSTRUCTION SEQUENCING:**

1. INSTALLATION OF SOIL EROSION AND SEDIMENT CONTROL SE/SC MEASURES INCLUDING SELECTIVE VEGETATION REMOVAL FOR SILT FENCE INSTALLATION (IF APPLICABLE)
2. INSTALL STORM SEWER AND ASSOCIATED INLET & OUTLET PROTECTION
3. PERMANENT SEED AND MULCH AREAS AFTER GRADING AS COMPLETED
4. INSTALL FENCE AND ASSOCIATED STRUCTURES AND BACKFILL
5. PERMANENTLY STABILIZE AREAS
6. REMOVE ALL TEMPORARY SE/SC MEASURES AFTER THE SITE IS STABILIZED WITH VEGETATION

**NOTES:**

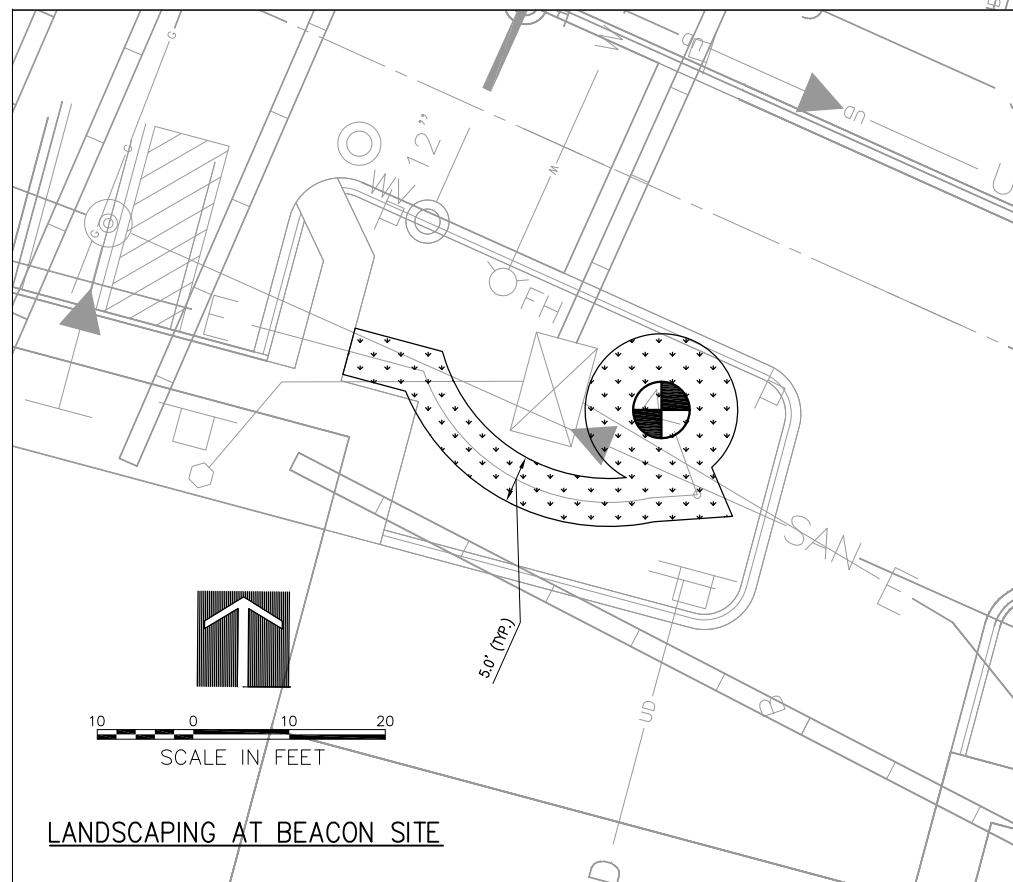
SOIL EROSION AND SEDIMENT CONTROL MAINTENANCE MUST OCCUR EVERY WEEK AND AFTER EVERY 1/2 OR GREATER RAINFALL EVENT.

CONTRACTOR IS RESPONSIBLE FOR ALL SITE MAINTENANCE UNTIL THE SITE IS TURNED OVER. THIS INCLUDES MOWING WHERE VEGETATION HAS BEGUN TO GROW BEFORE SUBSTANTIAL COMPLETION.



**LEGEND:**

- PROPOSED INLET PROTECTION
- PROPOSED SEEDING
- CONTRACTOR'S EQUIPMENT AND STORAGE AREA
- EXISTING STORM SEWER MANHOLE
- 3-1/4 #6 XLP-USE 600V UG CABLE IN UNIT DUCT
- EXISTING STORM SEWER
- EXISTING UNDERDRAIN
- EXISTING FENCE



INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

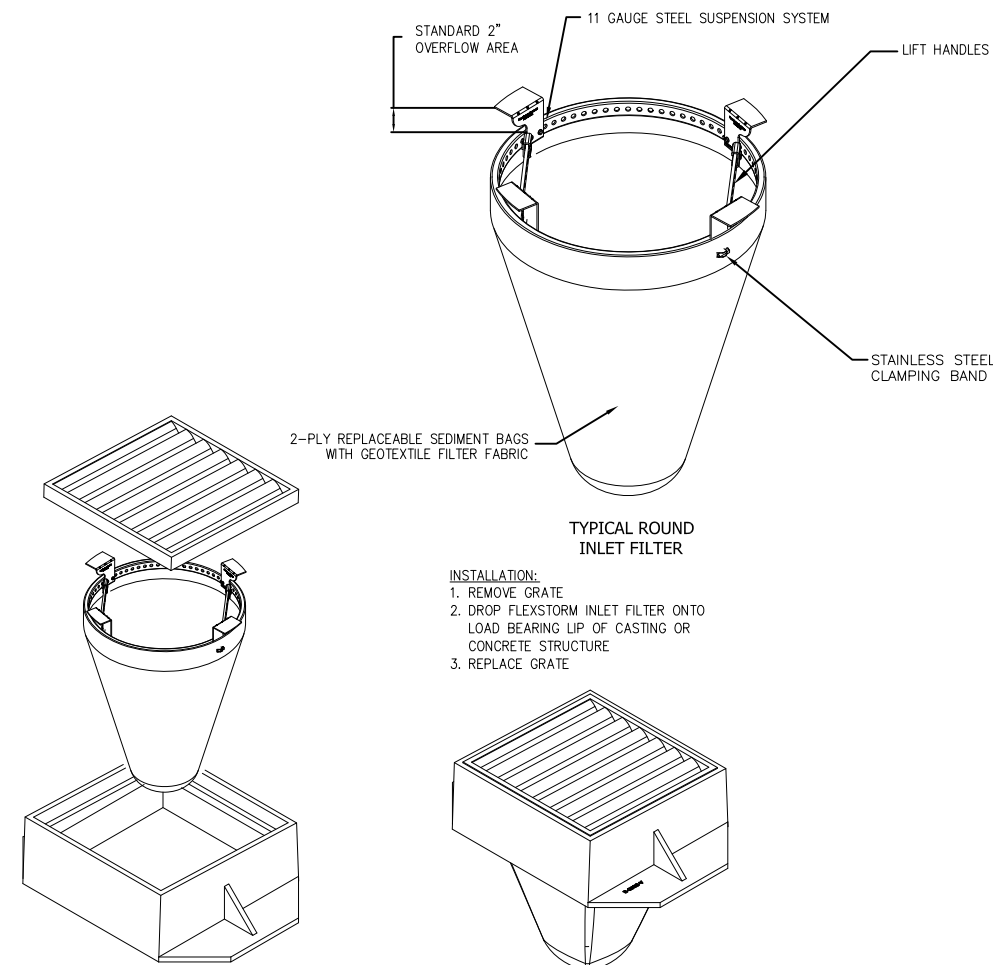
SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027


NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 05-SEED-SWPP.DWG  
LAYOUT BY: KNL 04/19/14  
DRAWN BY: SJM 04/19/14  
REVIEWED BY: RMH 9/10/14  
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LANDSCAPING AND  
SWPP PLAN



**INSTALLATION:**  
1. REMOVE GRATE  
2. DROP FLEXSTORM INLET FILTER ONTO  
LOAD BEARING LIP OF CASTING OR  
CONCRETE STRUCTURE  
3. REPLACE GRATE

**NOTES:**

1. FILTER FABRIC INLET PROTECTION SHALL CONSIST OF INLET BASKET AND FABRIC INSERT, IPP FLEXSTORM BY EROTEX OR EQUAL.
2. PRIOR TO FABRICATION, CONTRACTOR SHALL VERIFY INLET TYPE AND DIAMETER.
3. DEVICE SHALL BE EQUIPPED WITH AN OVERFLOW FEATURE SO DRAINAGE TO INLET IS NOT COMPLETELY BLOCKED IF DEVICE IS FULL OF SILT.
4. INLET BASKET IS AVAILABLE TO FIT ROUND, RECTANGULAR, BEEHIVE OR CURB INLET CASTINGS.
5. FILTER FABRIC SHALL HAVE AN APPARENT OPENING SIZE (AOS) OF AT LEAST 70 SIEVE FOR NONWOVEN.
6. FILTER FABRIC SHALL HAVE A GRAB TENSILE STRENGTH OF A LEAST 100 LBS FOR NON WOVEN.
7. POLYESTER OUTER REINFORCEMENT BAG SHALL HAVE FABRIC WITH A WEIGHT OF 4.55 OZ/SQYD +/- 15 PERCENT.
8. FRAME CONSTRUCTION SHALL HAVE A TENSILE STRENGTH OF AT LEAST 58,000 PSI AND A YIELD STRENGTH OF AT LEAST 36,000 PSI.
9. MAINTENANCE SHALL BE PERFORMED AS NEEDED. REMOVE SILT FROM FABRIC INSERT WHEN 50% OF CAPACITY IS REACHED. REMOVE SILT FROM INTERIOR AND EXTERIOR OF INLET DAM WHEN 50% OF DAM HEIGHT IS REACHED.
10. PAYMENT FOR INLET PROTECTION MAINTENANCE SHALL BE INCIDENTAL TO INLET PROTECTION.

**INLET PROTECTION**

**SEDIMENTATION AND EROSION CONTROL NOTES:**

- A. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS AND THE USE OF TEMPORARY OR PERMANENT MEASURES.
- B. SOIL EROSION AND SEDIMENT CONTROL FEATURES SHALL BE CONSTRUCTED PRIOR TO THE COMMENCEMENT OF HYDROLOGIC DISTURBANCE OF UPLAND AREAS.
- C. DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN 14 CALENDAR DAYS OF THE END OF ACTIVE HYDROLOGIC DISTURBANCE, OR REDISTURBANCE.
- D. AREAS OR EMBANKMENTS HAVING SLOPES GREATER THAN OR EQUAL TO 8H:1V SHALL BE STABILIZED WITH SOD, MAT OR BLANKET IN COMBINATION WITH SEEDING.
- E. EROSION CONTROL BLANKET SHALL BE REQUIRED ON ALL INTERIOR DETENTION BASIN SIDE SLOPES BETWEEN NORMAL WATER LEVEL AND HIGH WATER LEVEL.
- F. ALL STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED, BY AN APPROPRIATE SEDIMENT CONTROL MEASURE.
- G. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED.
- H. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED. THE PROPERTY OWNER SHALL BE ULTIMATELY RESPONSIBLE FOR MAINTENANCE AND REPAIR.
- I. A STABILIZED MAT OF AGGREGATE UNDERLAIN WITH FILTER CLOTH (OR OTHER APPROPRIATE MEASURE) SHALL BE LOCATED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE TO OR FROM A PUBLIC RIGHT-OF-WAY, STREET, ALLEY OR PARKING AREA. ANY SEDIMENT OR SOIL REACHING AN IMPROVED PUBLIC RIGHT-OF-WAY, STREET, ALLEY OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMULATIONS WARRANT AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
- J. SOIL STOCKPILES SHALL NOT BE LOCATED IN A FLOOD PRONE AREA OR A DESIGNATED BUFFER. NO STOCKPILES SHALL BE LOCATED WITHIN AN ACTIVE RUNWAY SAFETY AREA, RUNWAY OBJECT FREE AREA, RUNWAY OBSTACLE FREE ZONE, OR ACTIVE TAXIWAY OBJECT FREE AREA.
- K. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION. DISCHARGES SHALL BE ROUTED THROUGH AN EFFECTIVE SEDIMENT CONTROL MEASURE (e.g. SEDIMENT TRAP, SEDIMENT BASIN, OR OTHER APPROPRIATE MEASURE).
- L. THE EROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER OR GOVERNING AGENCY.

**STORM WATER POLLUTION PREVENTION NOTES**

**GENERAL**

THE CONTRACTOR SHALL IMPLEMENT ALL PROVISIONS OF THE CONTRACT DOCUMENTS TO ASSURE THAT STORM WATER POLLUTION PREVENTION ITEMS ARE CONSTRUCTED AND MAINTAINED IN A TIMELY MANNER. SEDIMENTATION MUST NOT BE TRANSPORTED OFF THE CONSTRUCTION SITE. PERMANENT DRAINAGE FEATURES AND VEGETATIVE MEASURES SHALL BE PROVIDED AS SOON AS POSSIBLE.

THE MAINTENANCE OF ALL STORM WATER POLLUTION PREVENTION MEASURES IS INCIDENTAL TO THE ASSOCIATED ITEM.

**POLLUTION PREVENTION MEASURES**

THE CONTRACTOR SHALL BE REQUIRED TO IMPLEMENT AND MAINTAIN STORM WATER POLLUTION PREVENTION PRACTICES AND MEASURES PRIOR TO THE STRIPPING OF EXISTING VEGETATION WHERE EVER POSSIBLE AND AS SOON AS CONSTRUCTION PERMITS IN OTHER AREAS. POLLUTION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, INCLUDING THESE CONSTRUCTION PLANS, AND WITH STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, CURRENT ISSUE. THE CONTRACTOR SHALL ADJUST HIS OPERATIONS AND IMPLEMENT POLLUTION CONTROL MEASURES SO THAT NO RUNOFF FROM STRIPPED AREAS WILL LEAVE THE CONSTRUCTION SITE OTHER THAN THROUGH SEDIMENT TRAPS OR OTHER SUITABLE CONTROL MEASURES.

POLLUTION CONTROL ITEMS SHALL BE PROVIDED AS NOTED ON THE STORM WATER POLLUTION PREVENTION PLAN AND IN THE STORM WATER POLLUTION PREVENTION DETAILS AND AS DIRECTED BY THE ENGINEER. THE LIMITS OF SUCH MEASURES SHALL BE STAKED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. SUCH LIMITS MAY BE ADJUSTED BY THE ENGINEER TO ACCOUNT FOR ACTUAL SITE CONDITIONS EXPERIENCED DURING CONSTRUCTION. ADDITIONAL COMPENSATION FOR MEASURES EXCEEDING THE PLAN QUANTITIES WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR EACH ITEM.

THE CONTRACTOR IS TO MAINTAIN AND ADJUST, REPAIR OR REPLACE ALL POLLUTION PREVENTION MEASURES AS REQUIRED OR AS DIRECTED BY THE ENGINEER UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED. MAINTENANCE OF POLLUTION CONTROL MEASURES IS TO BE PROVIDED AT NO ADDITIONAL COST TO THE CONTRACT.

ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES ARE EXISTING ON SITE LOCATED AT DRAINAGE FACILITIES AND ALONG THE PROPERTY LINE.

**INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON**

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014

PROJECT NO: 13A0094

CAD FILE: 06-SWPPP DETAILS.DWG

LAYOUT BY: SJM 05/15/2014

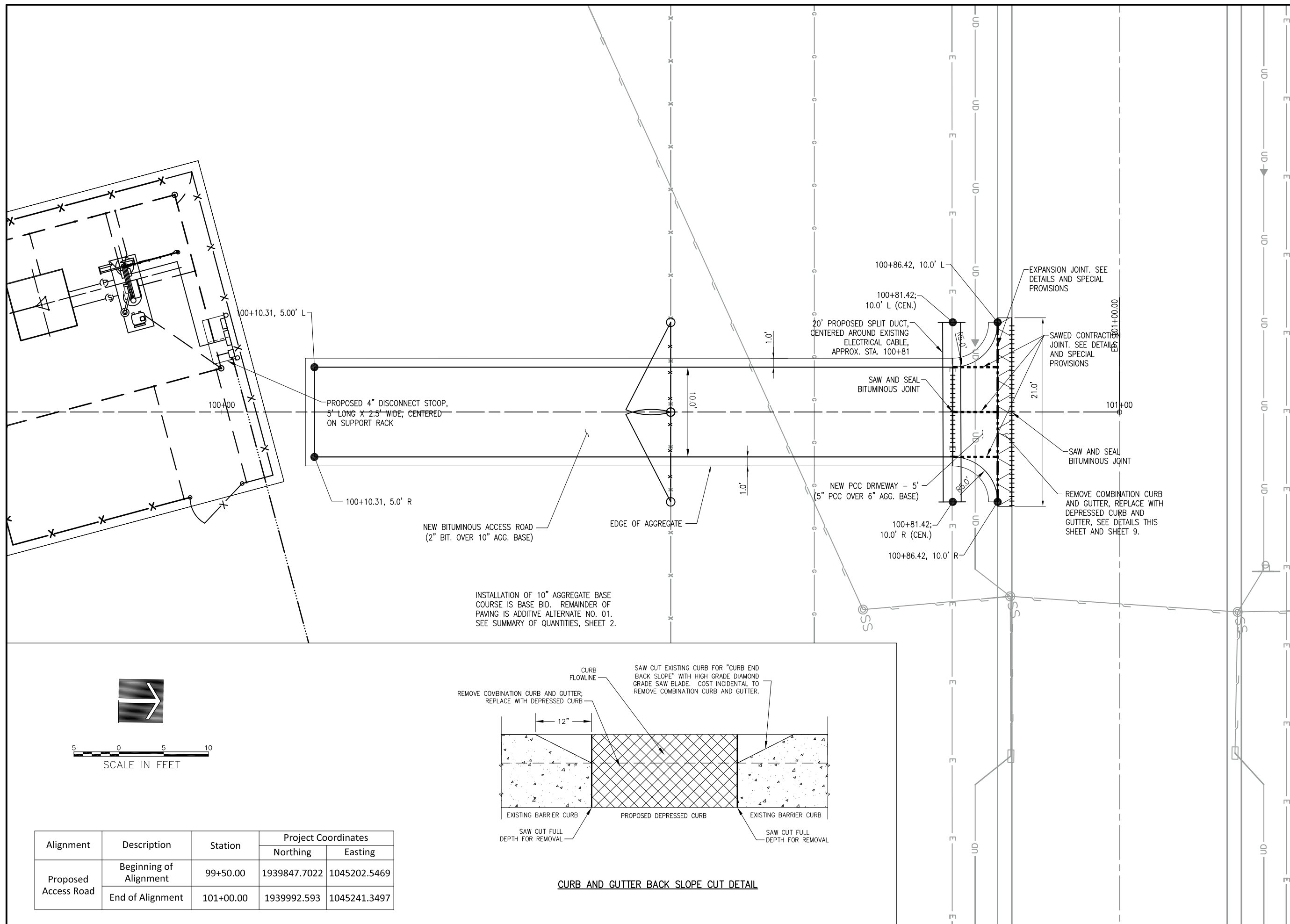
DRAWN BY: SJM 05/15/2014

REVIEWED BY: RMH 9/10/14

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SHEET TITLE

SWPPP  
DETAILS



INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

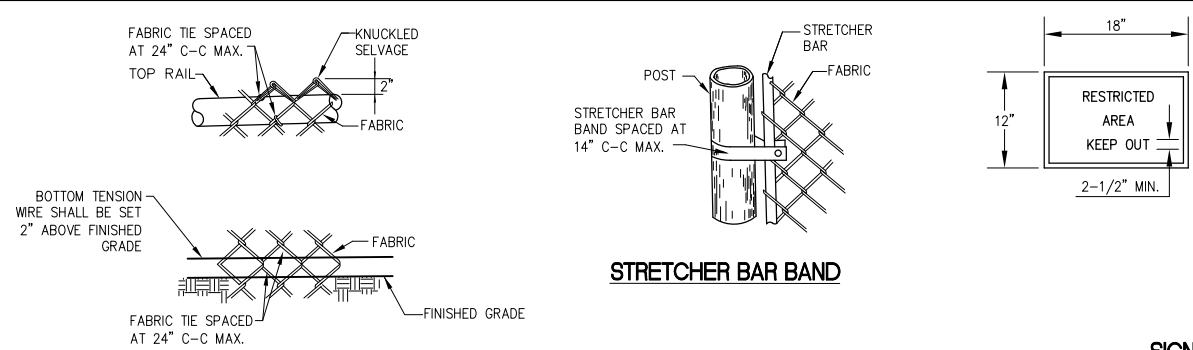
Contract No: SH027


NO.	DATE	DESCRIPTION		
		LAY	DWN	REV
ISSUE: SEPTEMBER 12, 2014				
PROJECT NO: 13A0094				
CAD FILE: 07-AWOS PVMT PLAN.DWG				
LAYOUT BY: SJM 05/22/14				
DRAWN BY: SJM 05/22/14				
REVIEWED BY: RMH 9/10/14				
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SHEET TITLE				

**AWOS PAVEMENT  
PLAN**

Alignment	Description	Station	Project Coordinates	
			Northing	Easting
Proposed Access Road	Beginning of Alignment	99+50.00	1939847.7022	1045202.5469
	End of Alignment	101+00.00	1939992.593	1045241.3497

OCT 13, 2014, 10:19 AM MCLAU01068  
Z:\13085\0862\13A0094\DESIGN\DRAWINGS\SHEETS\07-AWOS PVMT PLAN\DWG OCT 13, 2014 10:19AM MCLAU01068

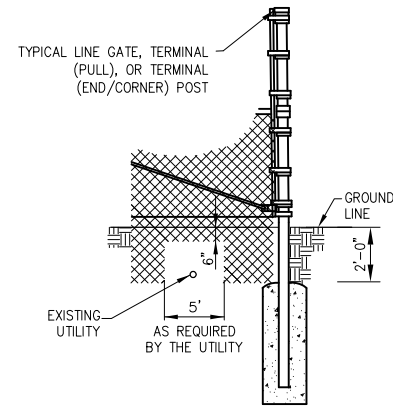


0.08 GA. ALUMINUM ALLOY SHEET  
(LETTERING COLOR SHALL BE RED ON  
WHITE BACKGROUND.)

**NOTES:**

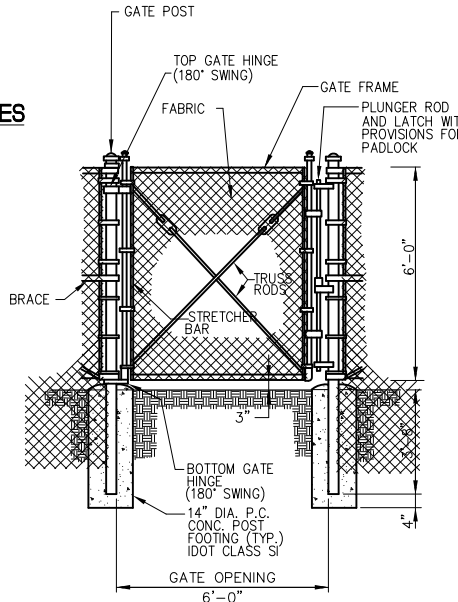
1. EACH GATE SHALL REQUIRE ONE SIGN.
2. EVERY SIDE OF AWOS FENCE SHALL REQUIRE ONE SIGN.
3. COST OF THESE SIGNS AND THEIR INSTALLATION IS INCIDENTAL TO FENCE OR GATE.

**SIGN DETAIL**



**FOR ADDITIVE ALTERNATE NO. 2,  
ALL FENCE AND GATE MATERIALS  
SHALL BE VINYL-COATED BLACK.**

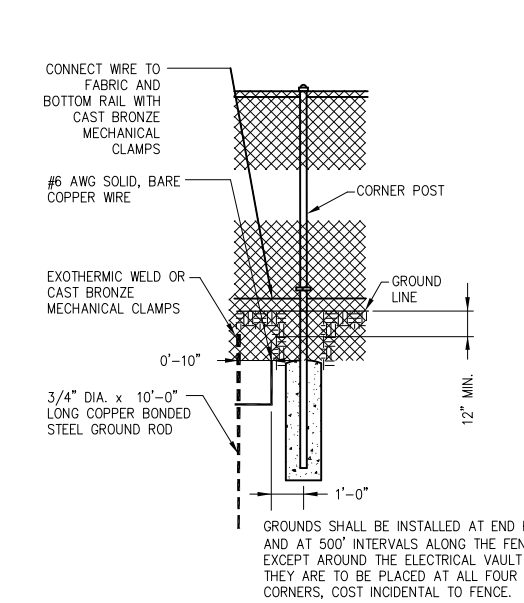
**FENCE INSTALLATION OVER UTILITIES**



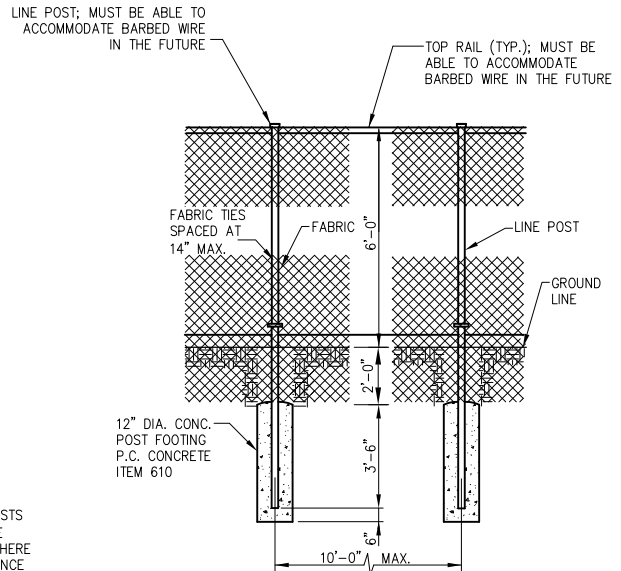
NOTE: 180° HINGES FOR GATES SHALL NOT BE AN "ADJUSTABLE ARM HINGE." INSTEAD HINGE SHALL BE HOOVER FENCE COMPANY'S BULLDOG CHAIN LINK GATE HINGE OR APPROVED EQUAL.

**PEDESTRIAN GATE, 6 FOOT WIDE**

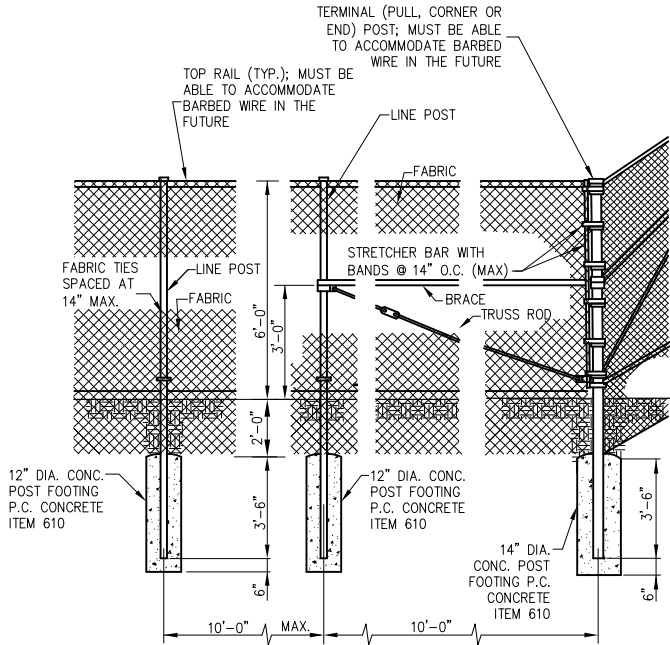
**FABRIC TIES**



**PROTECTIVE ELECTRICAL GROUND**



**LINE POST - NO BARBED WIRE**



**TERMINAL (PULL, CORNER OR END) POST - NO BARBED WIRE**

**FENCING NOTES**

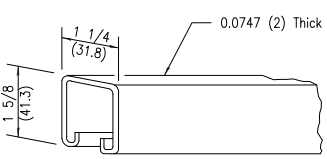
1. ALL FENCE, FABRIC, POSTS, GATES, TENSION WIRE, RODS, BRACES, ARMS AND MISCELLANEOUS FITTINGS SHALL BE GALVANIZED STEEL. EXCEPT FOR ITEMS AT800995 AND AT800996 IN ADDITIVE ALTERNATE NO. 2 WHICH SHALL BE BLACK VINYL OR POWDER COATED.
2. FENCE HEIGHT SHALL BE 8' WITH BOTTOM 2' BURIED. GATE HEIGHT ABOVE GROUND LINE SHALL BE 6'-0" AS SHOWN.
3. PULL POSTS SHALL BE PLACED AT 660 FOOT INTERVALS BETWEEN CORNER OR END POSTS TO WHICH THE ENDS OF THE FABRIC ARE CLAMPED OR MIDWAY BETWEEN SUCH POSTS WHEN THE DISTANCE IS LESS THAN 1,320 FEET AND GREATER THAN 660 FEET.
4. ALUMINUM RESTRICTED AREA SIGNS SHALL BE FURNISHED AS SHOWN IN THE DETAIL. COST INCIDENTAL TO FENCE OR GATE.
5. SONOTUBE TO BE USED FOR CASTING POST FOUNDATIONS IN WETLAND AREAS AND WHERE REQUIRED BY THE SOIL CONDITIONS TO PROVIDE A CONSTANT WIDTH FOOTING
6. COST OF TRENCHING FOR FENCE FABRIC BURIAL SHALL BE INCIDENTAL TO CHAIN LINK FENCE.
7. FOOTINGS FOR GATES SHALL BE 14" DIAMETER.
8. SOME FENCE ITEMS ARE ALSO BID AS ADDITIVE ALTERNATE NO. 1 ITEMS (AR800995 AND AR800996)
9. SEE SPECIAL PROVISIONS.

LINE POST	
Section	lbs./ft. (kg/m)
Pipe Type A 2.375 (60.3) O.D.	4.64 (6.90)
Pipe Type B 2.375 (60.3) O.D.	4.64 (6.90)
Pipe Type C 2.25x1.7 (57.2x43.2)	2.78 (4.14)
H 2.25x1.70 (57.2x43.2)	2.72 (4.05)

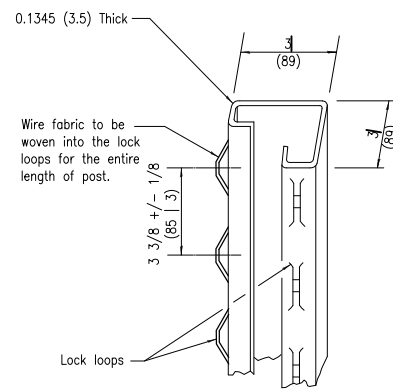
TERMINAL POST	
Section	lbs./ft. (kg/m)
Pipe Type A 2.875 (73.0) O.D.	4.64 (6.90)
Pipe Type B 2.875 (73.0) O.D.	4.64 (6.90)
Pipe Type C 3.5x3.5 (89.0x89.0)	5.10 (7.59)
Roll Formed 3.5x3.5 (89.0x89.0)	See detail
Sq. Tubing 2.5x2.5 (63.5x63.5)	5.10 (7.59)

HORIZONTAL BRACES	
Section	lbs./ft. (kg/m)
Pipe Type A 1.66 (42.2) O.D.	2.27 (3.38)
Pipe Type B 1.66 (42.2) O.D.	1.83 (2.72)
Pipe Type C 1.66 (42.2) O.D.	1.82 (2.71)
H 1.31x1.5 (33.3x38.1)	2.25 (3.35)
Roll Formed 1.625x1.25 (41.3x31.8)	See detail

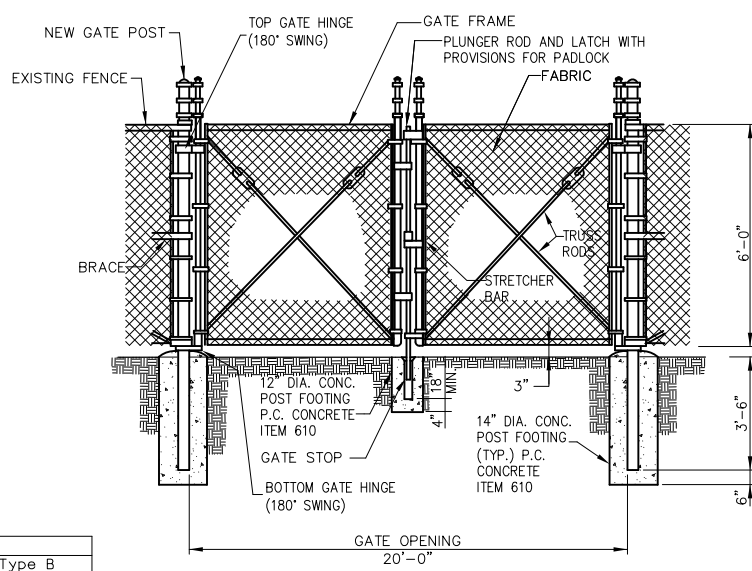
GATE FRAMES	
Section	lbs./ft. (kg/m)
Pipe Type A 1.66 (42.2) O.D.	2.27 (3.38)
Pipe Type B 1.66 (42.2) O.D.	1.83 (2.72)
Pipe Type C 1.66 (42.2) O.D.	1.82 (2.71)



**ROLL FORMED SECTION OF BRACE**



**ROLL FORMED SECTION OF TERMINAL + GATE POST**



**MANUAL SWING GATE, 20' (DOUBLE 10')**

**DETAILS SHOWN ARE NOT TO SCALE**

GATE POSTS *						
Gate Opening * ft. (m)		Pipe Type A		Pipe Type B		
Single	Double	Size (O.D.)	lbs./ft. (kg/m)	Size (O.D.)	lbs./ft. (kg/m)	
Up to 4 (1.2)	Up to 8 (2.5)	2.375 (60.3)	3.65 (5.43)	2 1/2 (63.5)	4.32 (6.43)	2.375 (60.3)
Over 4 (1.2) to 8 (2.5)	Over 8 (2.5) to 16 (5.0)	2.875 (73.0)	5.79 (8.62)	3 (76.2)	5.78 (8.60)	2.875 (73.0)
Over 8 (2.5) to 14 (3.6)	Over 16 (5.0) to 28 (7.4)	3.5 (89.0)	7.58 (11.28)	3 (76.2)	8.80 (13.10)	3.5 (89)

\* The 3 1/2 x 3 1/2 (89.0 x 89.0) roll formed section as detailed may be used as gate posts for single gate up to 6' (1.8 m) and double gate up to 12' (3.6 m).

**INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON**

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

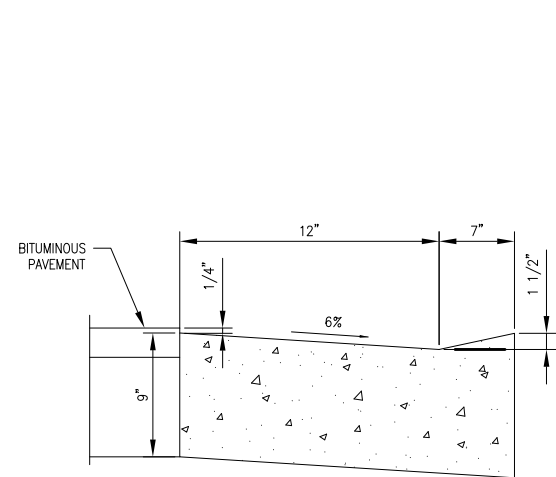
Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 08-FENCE DETAIL.DWG  
LAYOUT BY: SJM 05/16/2014  
DRAWN BY: SJM 05/16/2014  
REVIEWED BY: RMH 9/10/14

**FENCE DETAILS**

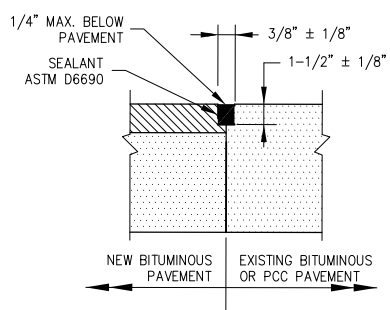




**SECTION**

**DEPRESSED CURB AND GUTTER**

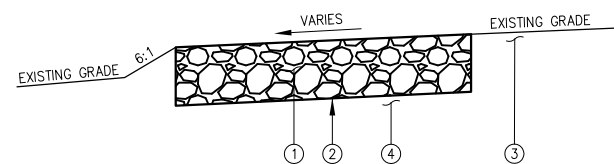
(DOT STANDARD 606001 - MODIFIED)



**NOTES:**

1. ALL BITUMINOUS/BITUMINOUS AND BITUMINOUS/PCC JOINT SEALING TO BE PAID UNDER SAW AND SEAL BITUMINOUS JOINTS, ITEM AS401660.
2. ADDITIVE ALTERNATE NO. 1

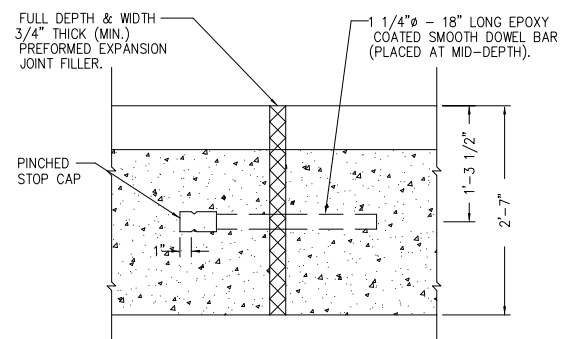
**BITUMINOUS/BITUMINOUS OR BITUMINOUS/PCC SEAL**



**TYPICAL SECTION - AWOS AGGREGATE PAD**

- 1 PROPOSED 12 INCH CRUSHED AGGREGATE BASE COURSE, ITEM AR208612
- 2 PROPOSED VAPOR BARRIER, ITEM AR800968
- 3 PROPOSED 4 INCH TOPSOIL, ITEM AR905510
- 4 PROPOSED AGGREGATE BACKFILL, ITEM AR208530  
EXISTING TOPSOIL TO BE STRIPPED (ITEM AR152411). AGGREGATE BACKFILL TO BE PLACED AS REQUIRED BELOW THE PROPOSED PAVEMENT SECTION.

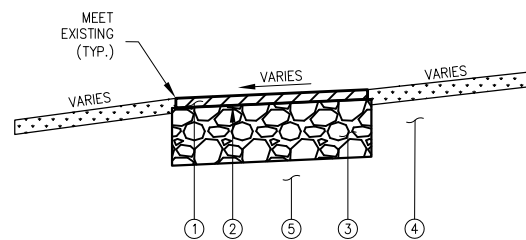
ALL BASE BID ITEMS



**EXPANSION JOINT DETAIL**

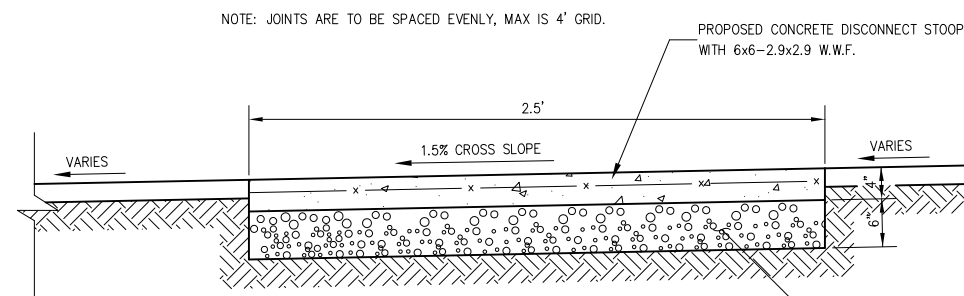
**NOTES**

1. CONTRACTION JOINTS TO BE LOCATED AT NO GREATER THAN 12.5' ON CENTER. CONTRACTION JOINTS ARE TO BE EITHER 3/4" THICK PREFORMED JOINT FILLER, SAWED 2" DEEP AT 4 TO 24 HOURS OR FORMED WITH A 1/8" THICK STEEL TEMPLATE 2" DEEP.
2. EXPANSION JOINTS TO BE LOCATED 5' FROM EACH SIDE OF AN INLET STRUCTURE AND AT 50' MAX SPACING.
3. ALL EXPANSION AND SAWED CONTRACTION JOINTS SHALL BE SEALED WITH HOT-POURED SEALANT, ASTM D6690, TYPE II, COST INCIDENTAL TO CURB AND GUTTER.
4. ALL JOINT, JOINT SEALING AND PROTECTIVE COATING IS INCIDENTAL.
5. COST OF CRUSHED AGGREGATE BASE UNDER CURB AND GUTTER INCIDENTAL TO ITEM 754.
6. ADDITIVE ALTERNATE NO. 1



**TYPICAL SECTION - ACCESS ROAD**

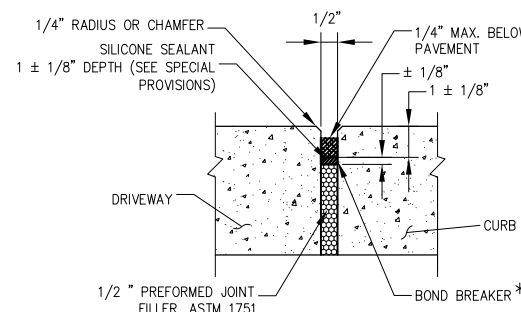
- 1 PROPOSED 2 INCH BITUMINOUS SURFACE COURSE, ITEM AS401613 (ADDITIVE ALTERNATE NO. 1)
- 2 PROPOSED BITUMINOUS PRIME COAT, ITEM AS602510 (ADDITIVE ALTERNATE NO. 1)
- 3 PROPOSED 10 INCH CRUSHED AGGREGATE BASE COURSE, ITEM AR208610 (BASE BID)
- 4 PROPOSED 4 INCH TOPSOIL, ITEM AR905510 (BASE BID)
- 5 PROPOSED AGGREGATE BACKFILL, ITEM AR208530 (BASE BID)  
EXISTING TOPSOIL TO BE STRIPPED (ITEM AR152411). AGGREGATE BACKFILL TO BE PLACED AS REQUIRED BELOW THE PROPOSED PAVEMENT SECTION.



**NOTES**

1. DISCONNECT STOOP SHALL BE SET ABOVE EXISTING GRADE AND SLOPED TRANSVERSELY TO MEET SURROUNDING AGGREGATE GRADE.

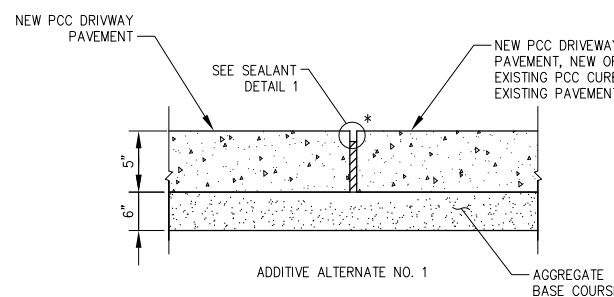
**DISCONNECT STOOP CROSS SECTION DETAIL**



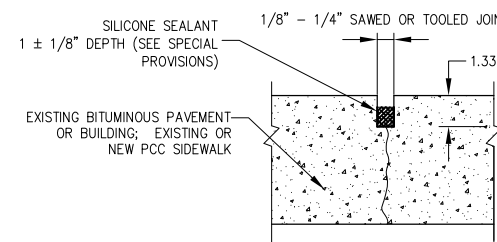
**DETAIL 1 - SEALANT**

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

ADDITIVE ALTERNATE NO. 1

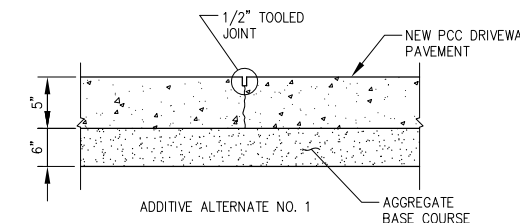


**EXPANSION JOINT**

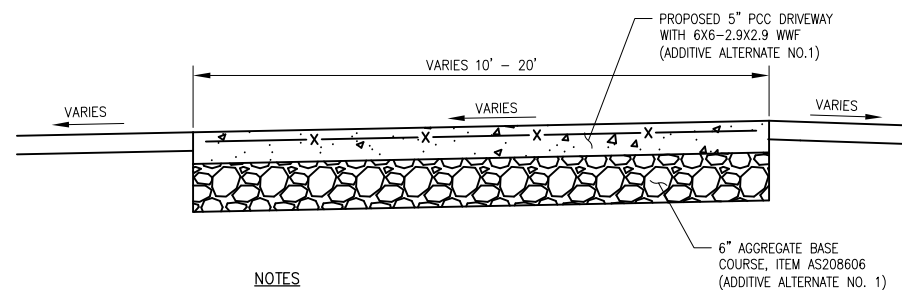


**DETAIL 2 - SEALANT**

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



**TOOLED CONTRACTION JOINT**



**NOTES**

1. SEE SPECIAL PROVISIONS FOR JOINTING AND PROTECTIVE COATING REQUIREMENTS.
2. ALL JOINT, JOINT SEALING AND PROTECTIVE COATING IS INCIDENTAL.
3. ADDITIVE ALTERNATE NO. 1

**PCC DRIVEWAY CROSS SECTION DETAIL**

INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

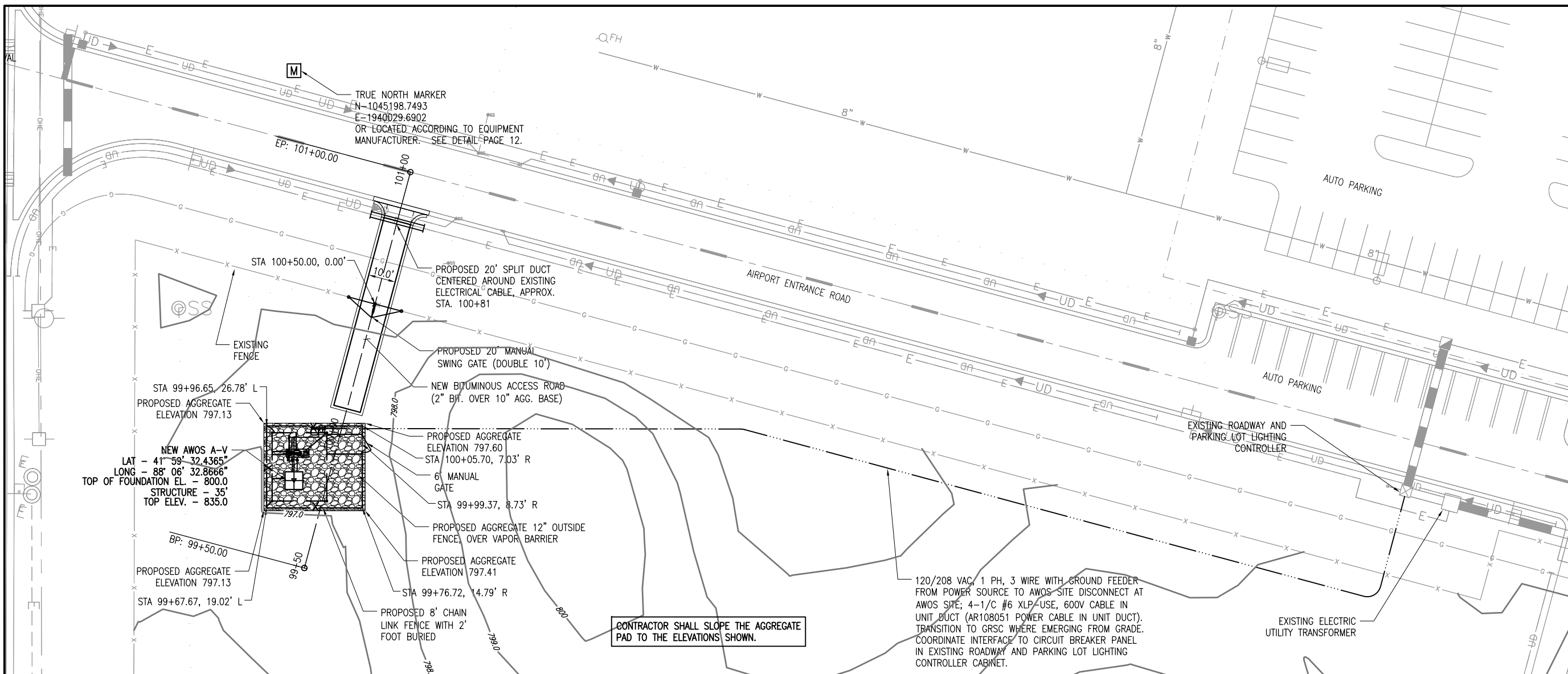
SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

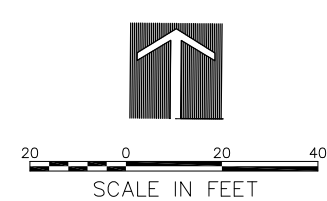
NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 09-AWOS PVMTDETAILS.D  
LAYOUT BY: SJM 03/07/2014  
DRAWN BY: SJM 03/07/2014  
REVIEWED BY: RMH 9/10/14  
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SHEET TITLE

AWOS PAVEMENT  
DETAILS



- NOTES**
- POWER CABLES, CONTROL, DATA AND SENSOR CABLES, ASSOCIATED WITH THE AWOS (LOCATED AT THE AWOS SITE) SHALL BE IN GALVANIZED RIGID STEEL CONDUIT AS NOTED. CONDUITS SHALL BE INSTALLED AT A DEPTH OF 24" BELOW FINISHED GRADE EXCEPT IN AREAS USED FOR FARMING WHERE DEPTH SHALL BE 42" BELOW FINISHED GRADE.
  - FINAL CONNECTIONS TO AWOS EQUIPMENT DEVICES SHALL BE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT WHERE RECOMMENDED BY AWOS MFR. ALL LIQUID TIGHT FLEXIBLE METAL CONDUIT USED ON THIS PROJECT SHALL BE SUNLIGHT RESISTANT, UL LISTED, SUITABLE FOR GROUNDING, AND COMPLY WITH ARTICLE 350 OF 2014 NEC.
  - IN THE EVENT SPlicing OF THE PROPOSED POWER CABLE BECOMES NECESSARY, L-867 SPLICE CANS OR HANDHOLES WILL BE INSTALLED AT LOCATIONS DESIGNATED BY THE RESIDENT PROJECT REPRESENTATIVE. SPlicing OF THE MULTICONDUCTOR CONTROL CABLE(S) WILL NOT BE ALLOWED. THREE FEET OF CABLE SLACK SHALL BE LEFT AT EACH SPLICE CAN. THIS REQUIRED SLACK WILL ALLOW THE SPLICE KIT OR CONNECTOR KIT TO BE REMOVED FROM THE SPLICE CAN.
  - THE PROPOSED AWOS SITE POWER AND/OR SIGNAL CONTROL CABLES SHALL BE AS PER THE AWOS MANUFACTURER'S SPECIFICATIONS.
  - POWER SHALL BE SUPPLIED TO THE PROPOSED AWOS SITE FROM THE EXISTING AIRPORT ELECTRICAL VAULT. SEE DETAILS HEREIN ON THE PLANS FOR ELECTRICAL POWER AND EQUIPMENT REQUIREMENTS. THESE ITEMS OF WORK ARE CONSIDERED INCIDENTAL TO THE PROJECT. NO ADDITIONAL COMPENSATION WILL BE ALLOWED. SHOULD POWER REQUIREMENTS OF THE PROPOSED AWOS III P/T EQUIPMENT REQUIRE ANY CHANGE, OR ALTERNATE ITEMS AND EQUIPMENT, THEY WILL BE AS PER THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. THE CONTRACTOR WILL PROVIDE THE PROJECT ENGINEER WITH THESE SPECIFICATIONS AND RECOMMENDATIONS.
  - VERIFY LAYOUT AND INSTALLATION OF AWOS EQUIPMENT WITH THE RESPECTIVE AWOS MANUFACTURER. FURNISH & INSTALL ADDITIONAL GROUND RODS AS/IF RECOMMENDED BY RESPECTIVE AWOS MANUFACTURER. COORDINATE ANY DEVIATIONS FROM THE GROUNDING LAYOUT SHOWN WITH THE PROJECT ENGINEER.
  - THE PROPOSED AWOS PANELBOARD SHALL BE MOUNTED ON THE AWOS EQUIPMENT SUPPORT STRUCTURE AS DETAILED HEREIN, AND PER THE AWOS MFR. DIRECTIONS.
  - CONTROL AND DATA INFORMATION FROM THE AWOS SITE TO THE OPERATOR TERMINAL AND GRAPHIC WEATHER DISPLAY LOCATED AT THE DOT FOODS HANGAR/TERMINAL BUILDING SHALL BE TRANSMITTED BY A COMMUNICATIONS CABLE LINK.
  - CONTRACTOR SHALL COORDINATE TELEPHONE SERVICE (FOR THE AWOS) TO THE DOT FOODS/TERMINAL BUILDING WITH THE SERVING TELEPHONE COMPANY & THE AIRPORT MANAGER.
  - ALL ITEMS OF WORK ASSOCIATED WITH THE AFOREMENTIONED NOTES ARE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE AWOS, AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.



- PROPOSED LEGEND**
- 4-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT
  - PROPOSED AGGREGATE
- EXISTING LEGEND**
- STORM SEWER
  - UNDERDRAIN
  - FENCE
  - TELEPHONE
  - GAS
  - WATER
  - ELECTRIC

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

**INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON**

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027


NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

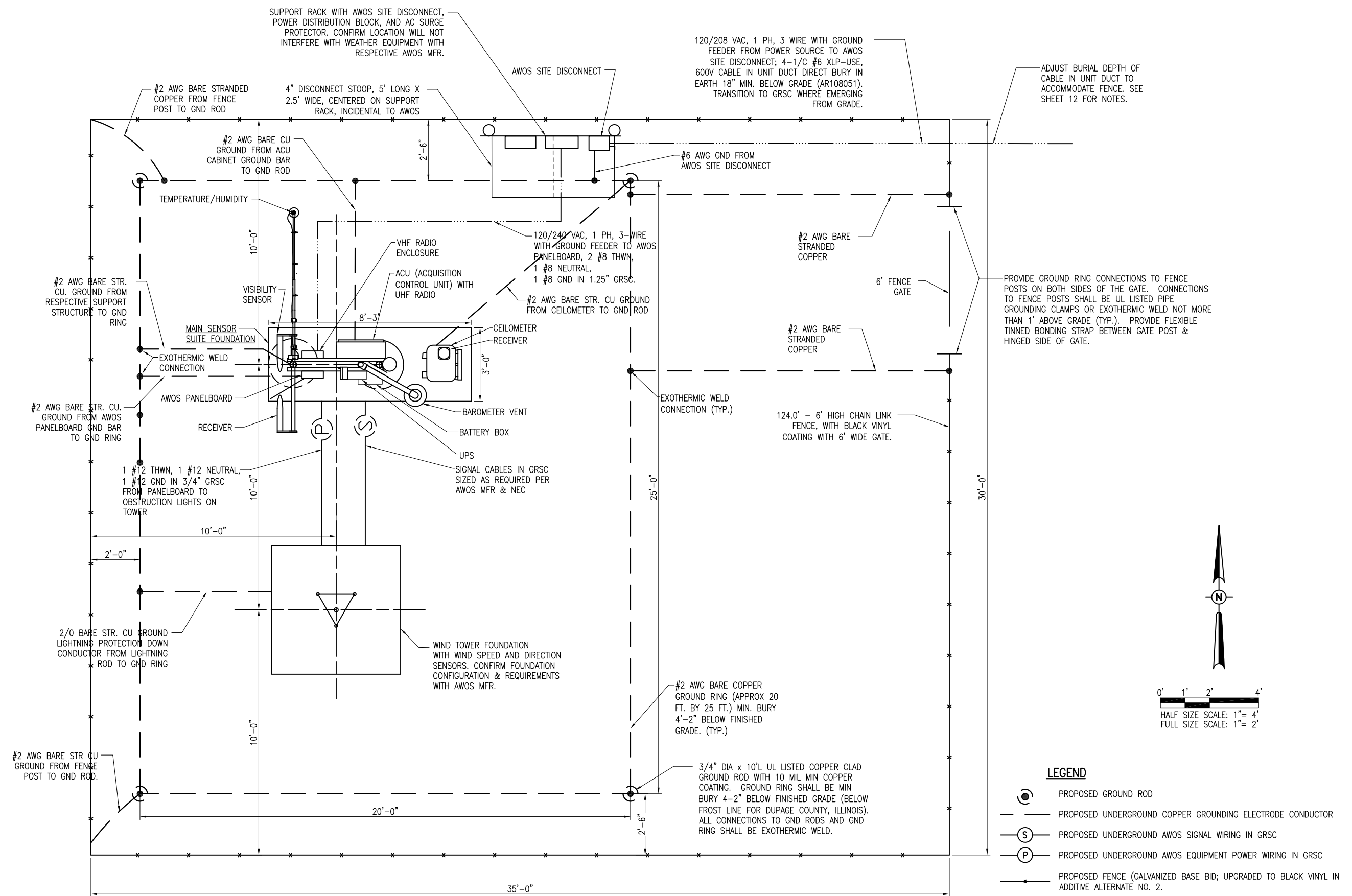
ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 10-AWOS PLAN.DWG  
LAYOUT BY: KNL 04/19/14  
DRAWN BY: SJM 04/19/14  
REVIEWED BY: RMH 9/10/14

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**SHEET TITLE**  
**AWOS GENERAL  
PLAN**

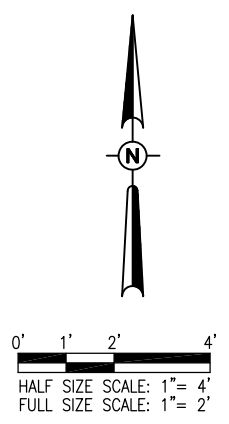
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SEP 23, 2014 2:19 PM MCLAU10058  
Z:\130085\0842\340094\DESIGN\DRAWINGS\11-AWOS SITE PLAN.DWG SEP 23, 2014 2:19PM MCLAU10058



- LEGEND**
- PROPOSED GROUND ROD
  - PROPOSED UNDERGROUND COPPER GROUNDING ELECTRODE CONDUCTOR
  - PROPOSED UNDERGROUND AWOS SIGNAL WIRING IN GRSC
  - PROPOSED UNDERGROUND AWOS EQUIPMENT POWER WIRING IN GRSC
  - PROPOSED FENCE (GALVANIZED BASE BID; UPGRADED TO BLACK VINYL IN ADDITIVE ALTERNATE NO. 2)
  - PROPOSED 3-1/C #6 XLP-USE, 600V CABLE IN UNIT DUCT
  - PROPOSED 120/240 VAC, 1 PH, 3W, FEEDER IN GRSC



PROVIDE GROUND RING CONNECTIONS TO FENCE POSTS ON BOTH SIDES OF THE GATE. CONNECTIONS TO FENCE POSTS SHALL BE UL LISTED PIPE GROUNDING CLAMPS OR EXOTHERMIC WELD NOT MORE THAN 1' ABOVE GRADE (TYP.). PROVIDE FLEXIBLE TINNED BONDING STRAP BETWEEN GATE POST & HINGED SIDE OF GATE.

INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

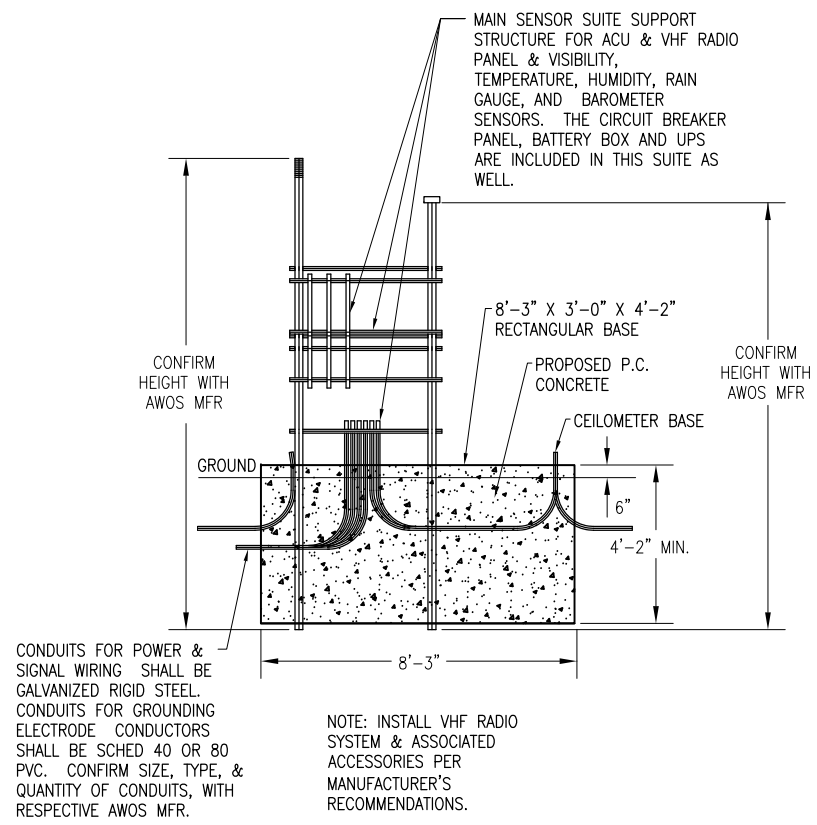
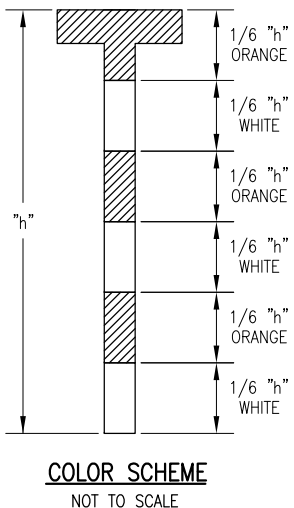
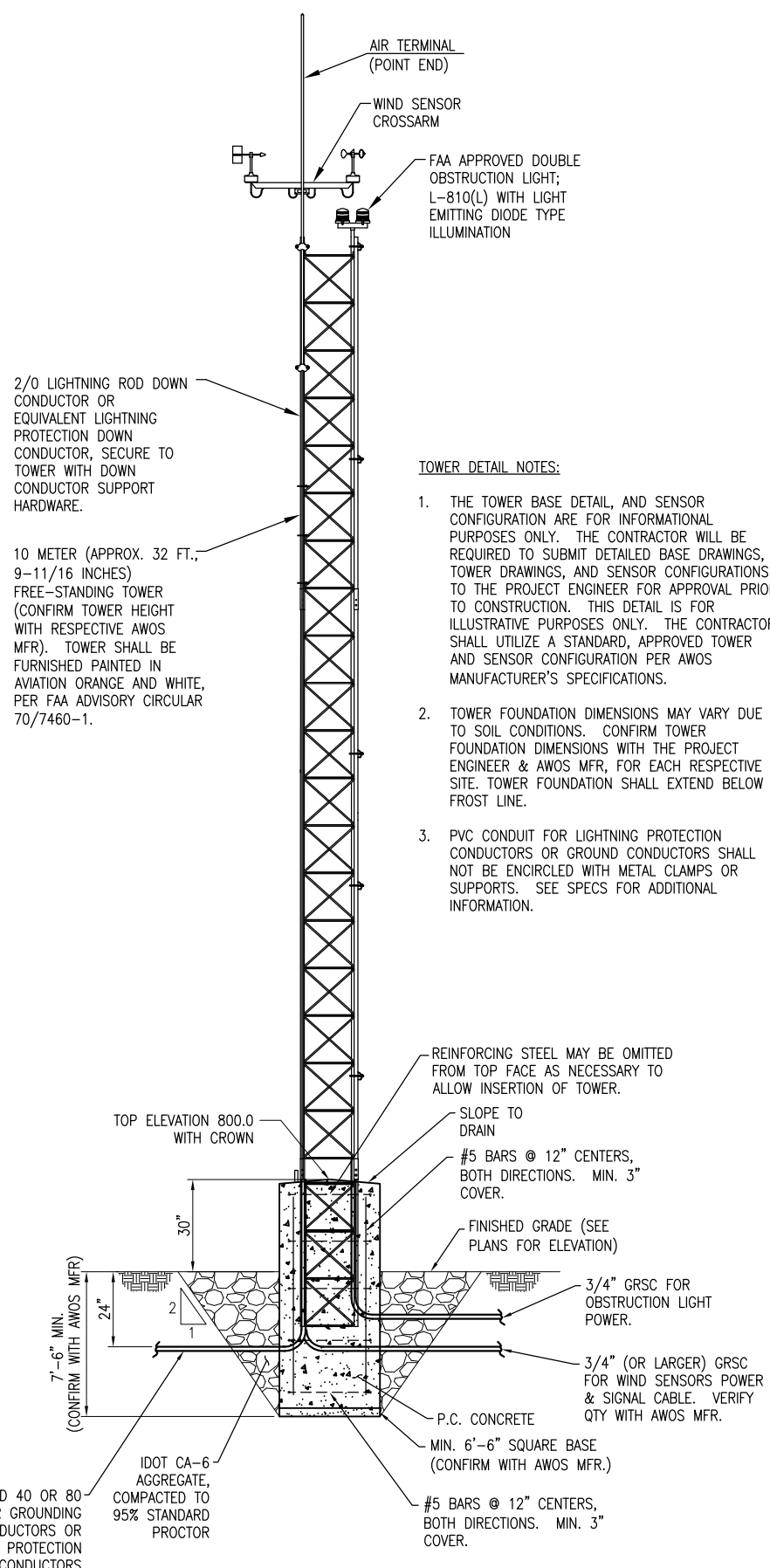
SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 11-AWOS SITE PLAN.DWG  
LAYOUT BY: KNL 2/17/14  
DRAWN BY: SJM 2/17/14  
REVIEWED BY: RMH 9/10/14  
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SHEET TITLE

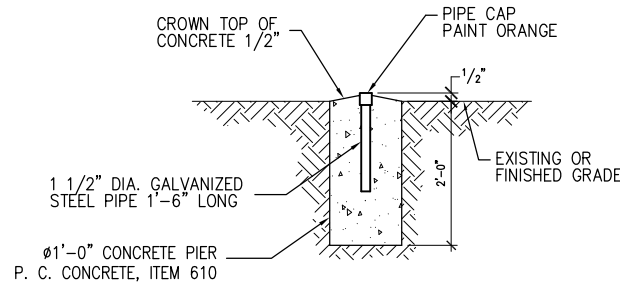
**AWOS SITE PLAN**



**AWOS EQUIP. FRAME INSTALLATION**  
NO SCALE

CONFIRM FOUNDATION REQUIREMENTS, DIMENSIONS, AND DETAILS WITH RESPECTIVE AWOS MFR, AND ADJUST TO CONFORM TO THE AWOS MFR. RECOMMENDATIONS AND RESPECTIVE SITE CONDITIONS.

- NOTES:**
- DETAILS ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT DETAILED MANUFACTURER'S SHOP DRAWINGS TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
  - POWER AND SENSOR CABLE/CONDUITS SHALL BE BURIED AT A DEPTH OF 2' BELOW TOP OF FINISHED GRADE AND SHALL BE IN GALVANIZED RIGID STEEL CONDUIT.
  - THE CONTRACTOR SHALL THOROUGHLY INVESTIGATE THE INTERIOR OF THE TERMINAL BUILDING AND CONSULT WITH THE AIRPORT MANAGER BEFORE DETERMINING THE EXACT LOCATIONS OF EQUIPMENT, CABLE & CONDUIT RUNS. WIRING LOCATED AT THE TERMINAL BUILDING SHALL BE IN METAL CONDUIT (GRSC, IMC, OR EMT) AND SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.



- NOTES**
- COST OF TRUE NORTH MARKER IS INCIDENTAL TO ITEM AR800908.
  - MARKER TO BE LOCATED AS SHOWN ON SHEET 10.
  - MARKER SHALL READ "AWOS NORTH" IN 2 INCH LETTERING INSCRIBED ON CROWN OF CONCRETE PIER.

INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

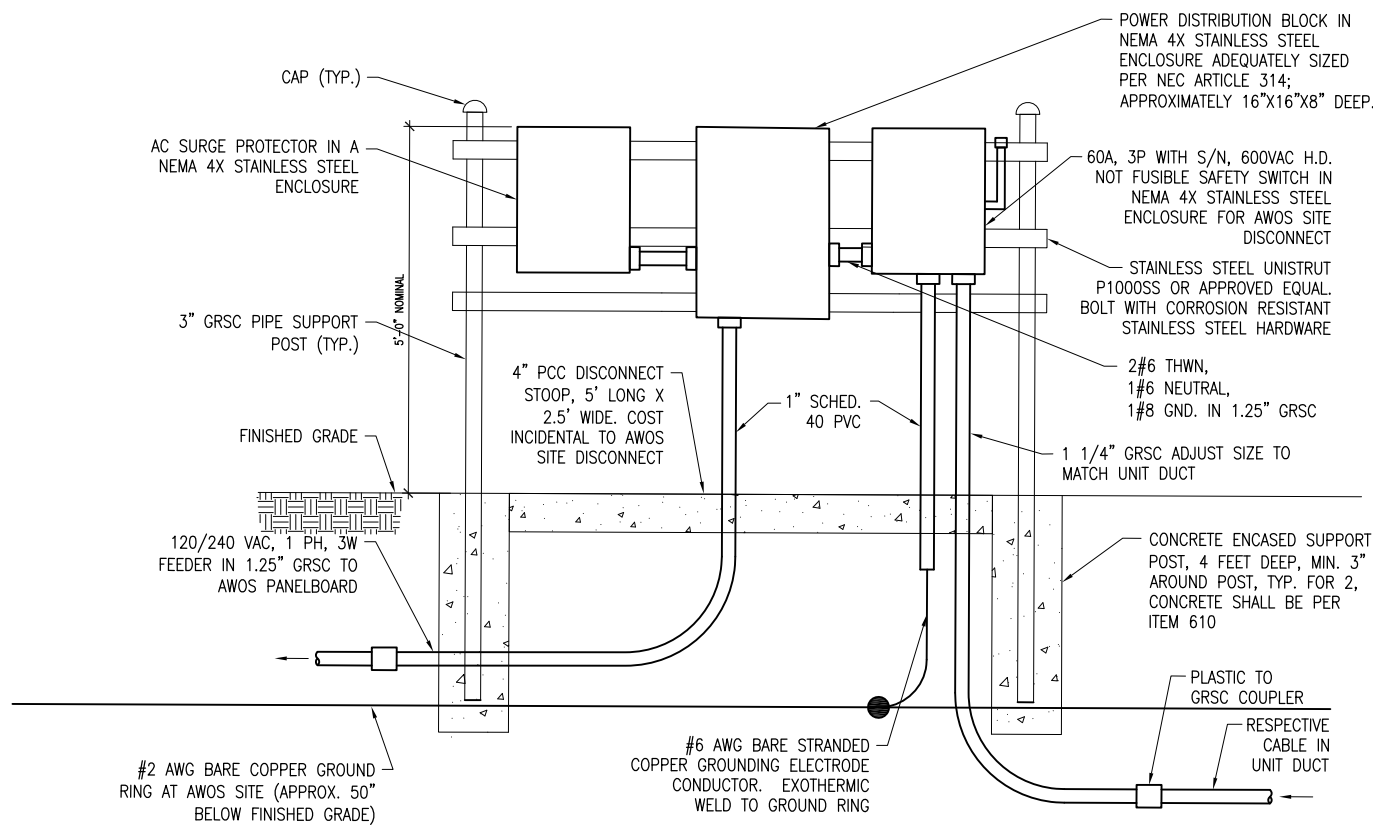
Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 12-AWOS DETAILS.DWG  
LAYOUT BY: KNL 04/16/14  
DRAWN BY: SJM 04/16/14  
REVIEWED BY: RMH 9/10/14  
SHEET TITLE

AWOS DETAILS

OCT 13, 2014 10:29 AM MCLAU01068 2:13:08S [0842] 13A0094 [DESIGN] [DRAWINGS] [SHEETS] 12-AWOS DETAILS.DWG OCT 13, 2014 10:29AM MCLAU01068



**NOTES**

- SEE ELECTRICAL ONE-LINE DIAGRAMS FOR ADDITIONAL INFORMATION ON EQUIPMENT AND WIRING.
- FIELD VERIFY LOCATION OF SUPPORT RACK INSTALLATION WITH RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE, COORDINATE LOCATION WITH FENCING, AWOS EQUIPMENT, AND GROUND RING.
- PROVIDE NEMA 4, 4X HUBS FOR ALL CONDUIT ENTRIES INTO NEMA 4, 4X RATED ENCLOSURES TO MAINTAIN THE NEMA 4, 4X RATING.

**AWOS SITE DISCONNECT ELEVATION**

(NOT TO SCALE)

**NOTES**

- POWER CABLES, CONTROL, DATA AND SENSOR CABLES, ASSOCIATED WITH THE AWOS (LOCATED AT THE AWOS SITE) SHALL BE IN GALVANIZED RIGID STEEL CONDUIT AS NOTED. CONDUITS SHALL BE INSTALLED AT A DEPTH OF 24" BELOW FINISHED GRADE EXCEPT IN AREAS USED FOR FARMING WHERE DEPTH SHALL BE 42" BELOW FINISHED GRADE.
- FINAL CONNECTIONS TO AWOS EQUIPMENT DEVICES SHALL BE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT WHERE RECOMMENDED BY AWOS MFR. ALL LIQUID TIGHT FLEXIBLE METAL CONDUIT USED ON THIS PROJECT SHALL BE SUNLIGHT RESISTANT, UL LISTED, SUITABLE FOR GROUNDING, AND COMPLY WITH ARTICLE 350 OF 2014 NEC.
- IN THE EVENT SPlicing OF THE PROPOSED POWER CABLE BECOMES NECESSARY, L-867 SPLICE CANS OR HANDHOLES WILL BE INSTALLED AT LOCATIONS DESIGNATED BY THE RESIDENT PROJECT REPRESENTATIVE. SPlicing OF THE MULTICONDUCTOR CONTROL CABLE(S) WILL NOT BE ALLOWED. THREE FEET OF CABLE SLACK SHALL BE LEFT AT EACH SPLICE CAN. THIS REQUIRED SLACK WILL ALLOW THE SPLICE KIT OR CONNECTOR KIT TO BE REMOVED FROM THE SPLICE CAN.
- THE PROPOSED AWOS SITE POWER AND/OR SIGNAL CONTROL CABLES SHALL BE AS PER THE AWOS MANUFACTURER'S SPECIFICATIONS.
- POWER SHALL BE SUPPLIED TO THE PROPOSED AWOS SITE FROM AN EXISTING POWER SOURCE. SEE DETAILS HEREIN ON THE PLANS FOR ELECTRICAL POWER AND EQUIPMENT REQUIREMENTS. THESE ITEMS OF WORK ARE CONSIDERED INCIDENTAL TO THE PROJECT. NO ADDITIONAL COMPENSATION WILL BE ALLOWED. SHOULD POWER REQUIREMENTS OF THE PROPOSED AWOS A/V EQUIPMENT REQUIRE ANY CHANGE, OR ALTERNATE ITEMS AND EQUIPMENT, THEY WILL BE AS PER THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. THE CONTRACTOR WILL PROVIDE THE PROJECT ENGINEER WITH THESE SPECIFICATIONS AND RECOMMENDATIONS.
- VERIFY LAYOUT AND INSTALLATION OF AWOS EQUIPMENT WITH THE RESPECTIVE AWOS MANUFACTURER. FURNISH & INSTALL ADDITIONAL GROUND RODS AS/IF RECOMMENDED BY RESPECTIVE AWOS MANUFACTURER. COORDINATE ANY DEVIATIONS FROM THE GROUNDING LAYOUT SHOWN WITH THE PROJECT ENGINEER.
- THE PROPOSED AWOS PANELBOARD SHALL BE MOUNTED ON THE AWOS EQUIPMENT SUPPORT STRUCTURE AS DETAILED HEREIN, AND PER THE AWOS MFR. DIRECTIONS.
- CONTROL AND DATA INFORMATION FROM THE AWOS SITE TO THE OPERATOR TERMINAL AND GRAPHIC WEATHER DISPLAY LOCATED AT THE TERMINAL BUILDING SHALL BE TRANSMITTED BY A UHF COMMUNICATIONS LINK.
- CONTRACTOR SHALL COORDINATE TELEPHONE SERVICE (FOR THE AWOS) TO THE TERMINAL BUILDING WITH THE SERVING TELEPHONE COMPANY & THE AIRPORT MANAGER.
- ALL ITEMS OF WORK ASSOCIATED WITH THE AFOREMENTIONED NOTES ARE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE AWOS, AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

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.

**INSTALL AWOS A-V, REPLACE AIRPORT ROTATING BEACON**

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

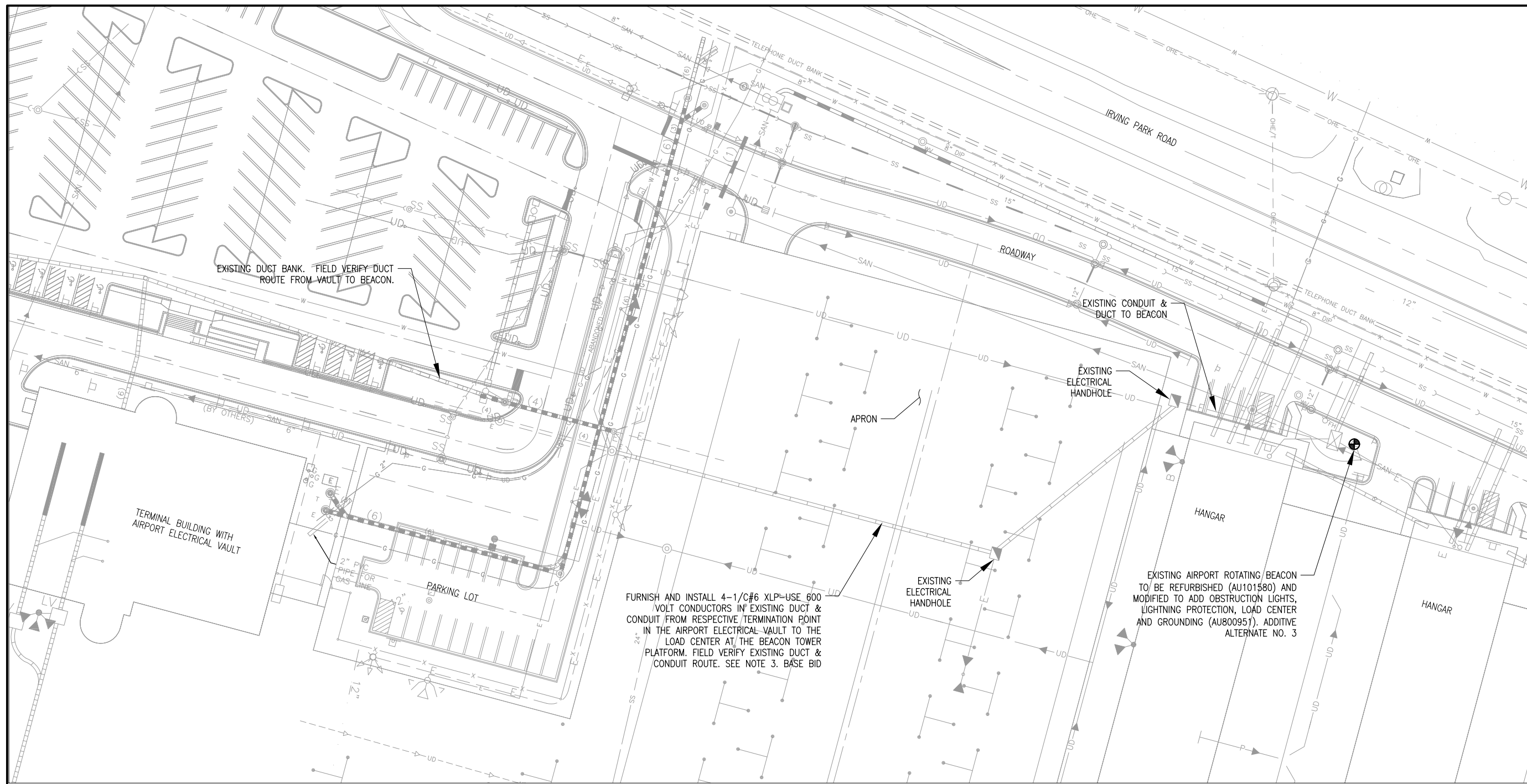
NO.	DATE	DESCRIPTION		
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ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 13-STEP DWN EL-NTS.DW  
LAYOUT BY: KNL 04/11/14  
DRAWN BY: SJM 04/15/14  
REVIEWED BY: RMH 9/10/14

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SHEET TITLE

**AWOS SITE DISCONNECT ELEVATION**

SEP 23, 2014 2:47 PM MCLAU01058  
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EXISTING DUCT BANK. FIELD VERIFY DUCT ROUTE FROM VAULT TO BEACON.

EXISTING CONDUIT & DUCT TO BEACON

EXISTING ELECTRICAL HANDHOLE

EXISTING AIRPORT ROTATING BEACON TO BE REFURBISHED (AU101580) AND MODIFIED TO ADD OBSTRUCTION LIGHTS, LIGHTNING PROTECTION, LOAD CENTER AND GROUNDING (AU800951). ADDITIVE ALTERNATE NO. 3

FURNISH AND INSTALL 4-1/C#6 XLP-USE 600 VOLT CONDUCTORS IN EXISTING DUCT & CONDUIT FROM RESPECTIVE TERMINATION POINT IN THE AIRPORT ELECTRICAL VAULT TO THE LOAD CENTER AT THE BEACON TOWER PLATFORM. FIELD VERIFY EXISTING DUCT & CONDUIT ROUTE. SEE NOTE 3. BASE BID

**NOTES**

- SOME WORK ON THIS SHEET IS BASE BID AND SOME WORK IS ADDITIVE ALTERNATE NO. 3 AS NOTED.
- 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).
- CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING THE BEACON, RESPECTIVE LIGHTING, NAVAID, OR OTHER DEVICE.
- ITEM AR108086 1/C #6 XLP-USE WILL BE MEASURED FOR PAYMENT FROM THE LOAD CENTER AT THE BEACON TOWER UP TO THE TERMINAL BUILDING POINT OF ENTRY, CABLE INSIDE OR BELOW THE TERMINAL BUILDING UP TO THE TERMINATION POINT IN THE AIRPORT ELECTRICAL VAULT WILL BE CONSIDERED INCIDENTAL TO ITEM AU800922 MODIFY BEACON INSTALLATION.
- NO CONNECTION TO AN ACTIVE LIGHTING OR NAVAID CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

**PROPOSED LEGEND**

REFURBISHED ROTATING BEACON

**EXISTING LEGEND**

— UD — SANITARY SEWER  
 — X — UNDERDRAIN  
 — T — FENCE  
 — — TELEPHONE  
 — G — GAS



30 0 30 60  
SCALE IN FEET

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

**INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON**

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

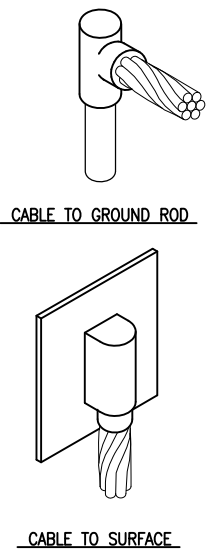
Contract No: SH027


NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
 PROJECT NO: 13A0094  
 CAD FILE: 14-BEACON SITE PLAN.D  
 LAYOUT BY: KNL 04/16/2014  
 DRAWN BY: SJM 04/17/2014  
 REVIEWED BY: RMH 9/10/14  
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 SHEET TITLE

**BEACON  
SITE PLAN**

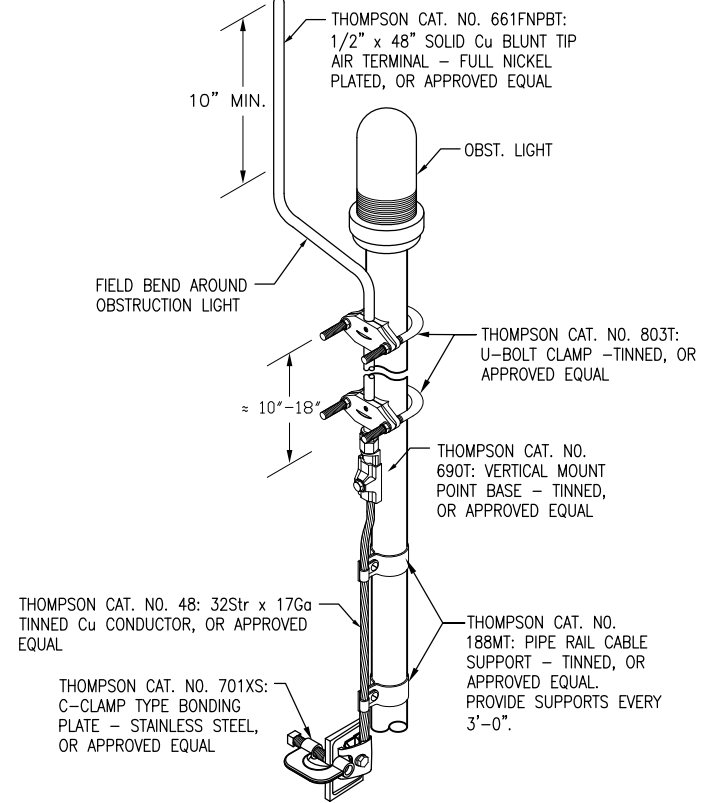
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**DETAIL NOTES**

- EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA, OR APPROVED EQUAL. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.
- FOR APPLICATIONS TO GALVANIZED STEEL OR PAINTED STEEL, REMOVE GALVANIZING AND/OR PAINT & CLEAN THE SURFACE TO EXPOSE BARE STEEL BEFORE MAKING EXOTHERMIC WELD CONNECTION.
- VERIFY EXOTHERMIC MOLDS ARE SUITABLE FOR USE WITH THE RESPECTIVE TYPE (SOLID OR STRANDED) & SIZE CONDUCTOR.

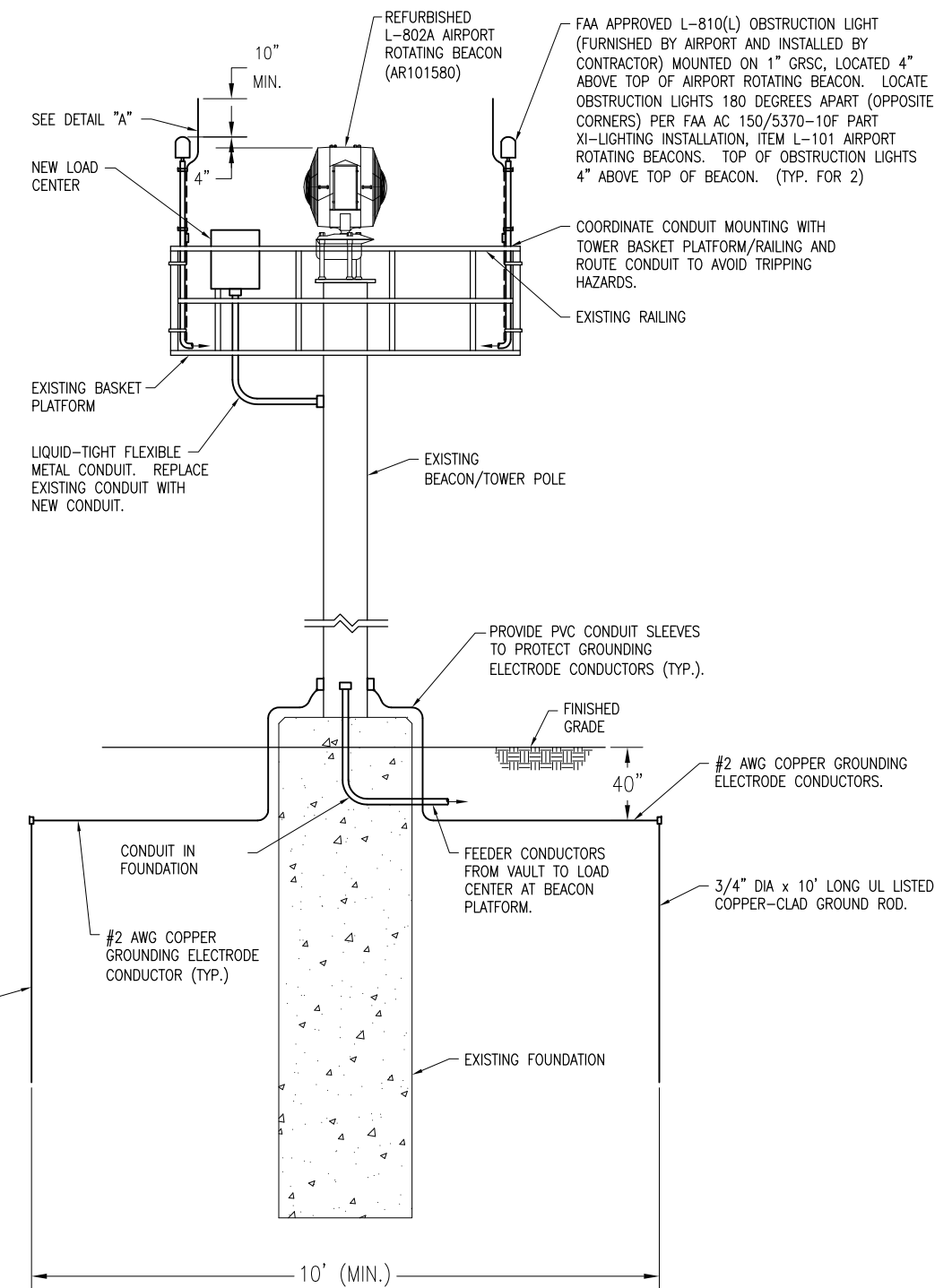
**EXOTHERMIC WELD DETAILS**



**DETAIL A**  
NTS

**NOTES**

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



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

**NOTES**

- EXISTING LOAD CENTER SHALL BE REPLACED WITH A NEW LOAD CENTER; (ITEM AU800951).
- EXISTING LIGHTNING PROTECTION SHALL BE REMOVED AND REPLACED WITH NEW LIGHTNING PROTECTION AS DETAILED HEREIN; (ITEM AU800951).
- EXISTING OBSTRUCTION LIGHTING SHALL BE REMOVED AND REPLACED WITH NEW OBSTRUCTION LIGHTS. INSTALLATION OF NEW OBSTRUCTION LIGHTS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCIDENTAL TO ITEM AU800951 MODIFY BEACON INSTALLATION.
- EXISTING BEACON SHALL BE REPLACED WITH A REFURBISHED BEACON. (ITEM AU101580).

ALL WORK ON THIS SHEET IS ADDITIVE ALTERNATE NO. 3, ITEMS AU101580 AND AU800951.

AIRPORT ROTATING BEACON LOAD CENTER SCHEDULE						
CKT #	DUTY	SIZE	SIZE	DUTY	CKT #	
1	BLANK		30A 1P	SURGE PROTECTOR (PHASE A)	2	
3	BLANK		30A 1P	SURGE PROTECTOR (PHASE B)	4	
5	AIRPORT ROTATING BEACON	15A 1P		BLANK	6	
7	OBSTRUCTION LIGHTS	15A 1P		BLANK	8	
9	SPARE	20A 1P		BLANK	10	
11	BLANK			BLANK	12	

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

**NOTES**

- INCLUDE EQUIPT GROUND BAR KIT.
- ALL BREAKERS SHALL HAVE 10,000 AIC RATING AT 120/240 VAC.
- PHASE "A" SHALL BE SWITCHED THROUGH A LIGHTING CONTACTOR AT THE VAULT. PHASE "B" SHALL BE UNSWITCHED.
- INCLUDE ENGRAVED PHENOLIC LEGEND PLATE LABELED "ARB PANEL, 120/240 VAC, 1PH, 3W, FED FROM VAULT".
- SURGE PROTECTORS SHALL BE SUITABLE FOR 120VAC, 1PH, 2W PLUS GROUND, 30KA (MINIMUM) SURGE CURRENT RATING, JOSLYN MODEL 1260-21 OR LIGHTING PROTECTION CORP. MODEL LPC 11765-132, OR APPROVED EQUAL. FURNISH & INSTALL TWO SURGE PROTECTORS (ONE FOR EACH PHASE).
- LOAD CENTER SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENT. PROVIDE CERTIFICATION OF MANUFACTURE IN THE UNITED STATES WITH SHOP DRAWING SUBMITTAL.



INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014

PROJECT NO: 13A0094

CAD FILE: 15-LNG PRO BEACON.DWG

LAYOUT BY: KNL 04/10/14

DRAWN BY: SJM 04/11/14

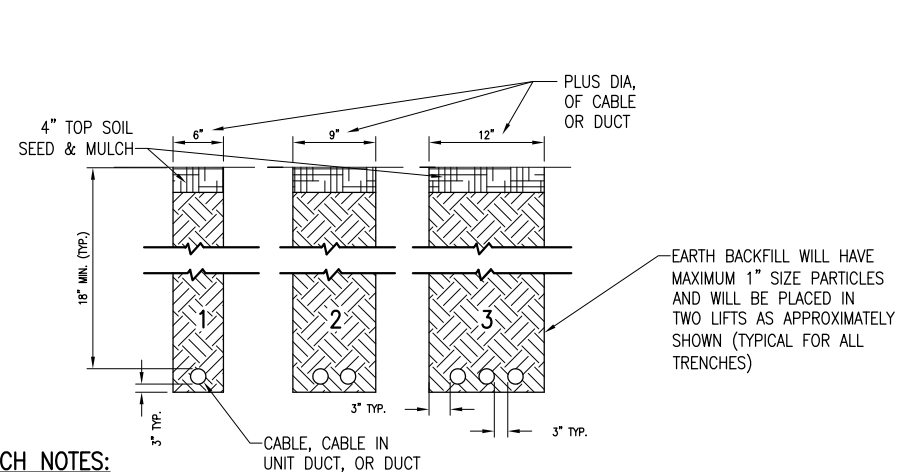
REVIEWED BY: RMH 9/10/14

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SHEET TITLE

LIGHTNING  
PROTECTION DETAILS  
FOR BEACON

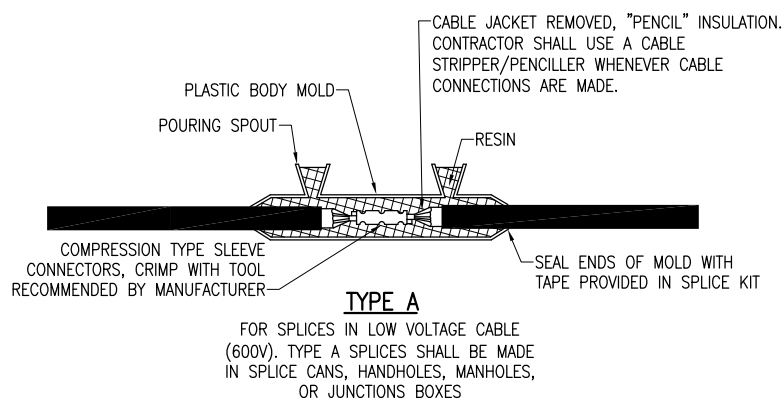
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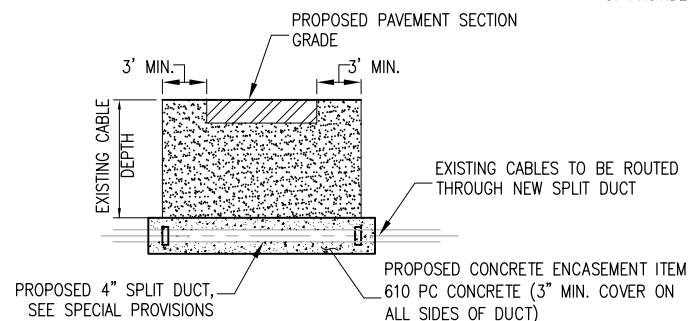
**CABLE TRENCH NOTES:**

1. DETAIL NUMBERS INDICATE NO. OF CABLES.
2. TRENCHES WITH MORE THAN THREE CABLES SHALL BE INCREASED 3" IN WIDTH FOR EACH ADDITIONAL CABLE; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.
3. DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS. MINIMUM COVER REQUIREMENTS FOR CABLES AND DUCTS AT AIRPORT RUNWAYS OR 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.
4. ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH.

**CABLE TRENCHES**  
(NOT TO SCALE)



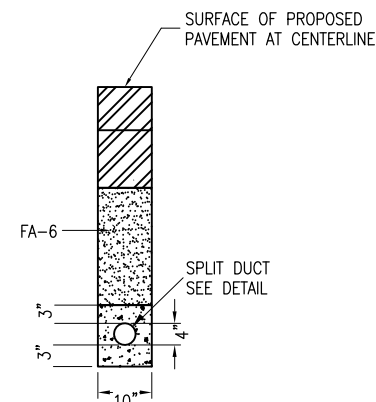
**CABLE SPLICES**  
(NOT TO SCALE)



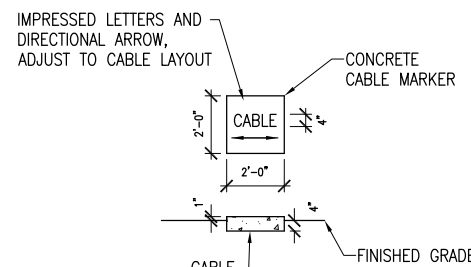
**NOTE:**

1. NEW 4" CONCRETE ENCASED SPLIT DUCT TO EXTEND 3' BEYOND PROPOSED PAVEMENT EDGE.

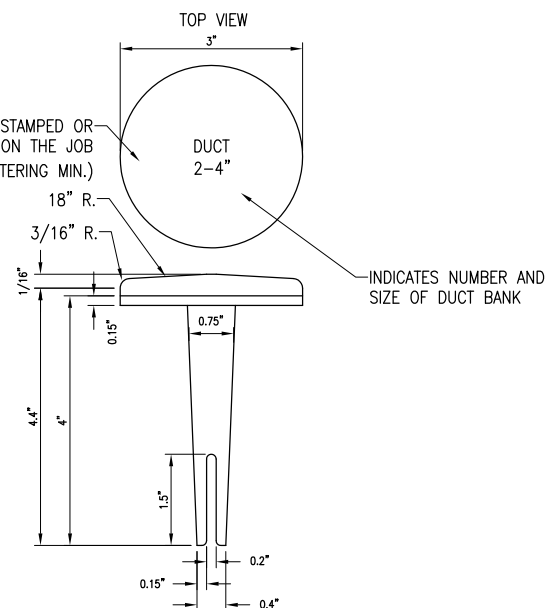
**SPLIT DUCT**



**SPLIT DUCT**  
(NOT TO SCALE)



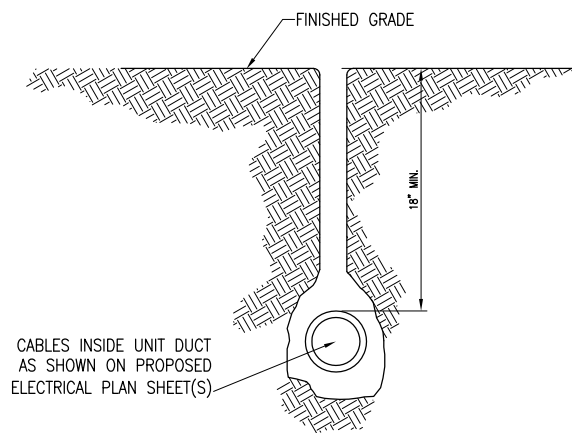
**TURF CABLE MARKERS**  
(NOT TO SCALE)



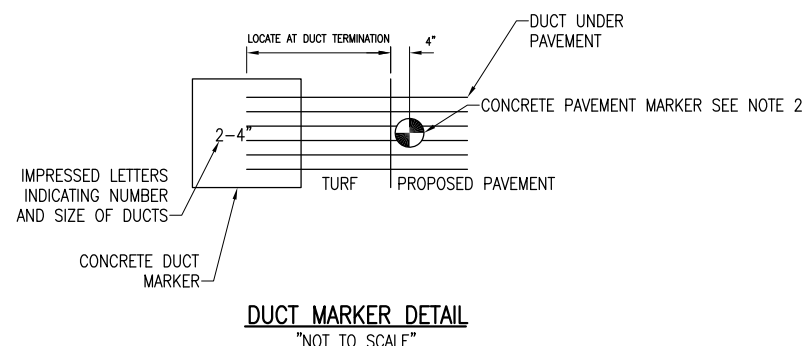
**BITUMINOUS PAVEMENT DUCT MARKERS**  
(NOT TO SCALE)

**NOTES:**

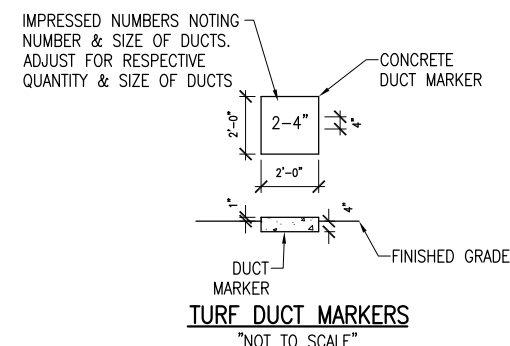
1. TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE.



**PLOWED CABLE**  
(NOT TO SCALE)



**DUCT MARKER DETAIL**  
(NOT TO SCALE)



**TURF DUCT MARKERS**  
(NOT TO SCALE)

**CABLE & DUCT MARKER NOTES:**

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

**INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON**

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 16-DUCT DETAILS.DWG  
LAYOUT BY: KNL 04/16/2014  
DRAWN BY: SJM 04/18/2014  
REVIEWED BY: RMH 9/10/14  
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SHEET TITLE

**ELECTRICAL  
DETAILS**

OCT 13, 2014 11:10 AM MCLAUD1068  
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**GENERAL NOTES**

- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 – NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- 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 CONTRACTOR SHALL ASCERTAIN THAT ALL LIGHTING SYSTEM COMPONENTS FURNISHED BY HIM, INCLUDING FAA APPROVED EQUIPMENT, ARE COMPATIBLE IN ALL RESPECTS WITH EACH OTHER AND THE REMAINDER OF THE NEW/EXISTING SYSTEM. ANY NONCOMPATIBLE COMPONENTS FURNISHED BY THIS CONTRACTOR SHALL BE REPLACED BY HIM AT NO ADDITIONAL COST TO THE AIRPORT SPONSOR WITH A SIMILAR UNIT, APPROVED BY THE ENGINEER (DIFFERENT MODEL OR DIFFERENT MANUFACTURER) THAT IS COMPATIBLE WITH THE REMAINDER OF THE AIRPORT LIGHTING SYSTEM.
- IN CASE THE CONTRACTOR ELECTS TO FURNISH AND INSTALL AIRPORT LIGHTING EQUIPMENT REQUIRING ADDITIONAL WIRING, TRANSFORMERS, ADAPTORS, MOUNTINGS, ETC., TO THOSE SHOWN ON THE DRAWINGS AND/OR LISTED IN THE SPECIFICATION, ANY COST FOR THESE ITEMS SHALL BE INCIDENTAL TO THE EQUIPMENT COST.
- THE CONTRACTOR INSTALLED EQUIPMENT (INCLUDING FAA APPROVED) SHALL NOT GENERATE ANY ELECTROMAGNETIC INTERFERENCE IN THE EXISTING AND/OR NEW COMMUNICATIONS, WEATHER, AIR NAVIGATION, AND AIR TRAFFIC CONTROL EQUIPMENT. ANY EQUIPMENT GENERATING SUCH INTERFERENCE SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST WITH THE EQUIPMENT MEETING THE APPLICABLE SPECIFICATIONS AND NOT GENERATING ANY INTERFERENCE.
- WHEN A SPECIFIC TYPE, STYLE, CLASS, ETC. OF FAA APPROVED EQUIPMENT IS SPECIFIED ONLY THAT TYPE, STYLE, CLASS, WILL BE ACCEPTABLE, EVEN THOUGH EQUIPMENT OF OTHER TYPES STYLES, CLASSES, ETC. MAY BE APPROVED.
- ANY AND ALL INSTRUCTIONS FROM THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE TO THE CONTRACTOR REGARDING CHANGES IN OR DEVIATIONS FROM THE PLANS AND SPECIFICATIONS SHALL BE IN WRITING WITH COPIES SENT TO THE AIRPORT SPONSOR AND THE ILLINOIS DEPARTMENT OF TRANSPORTATION DIVISION OF AERONAUTICS). THE CONTRACTOR SHALL NOT ACCEPT ANY VERBAL INSTRUCTIONS FROM THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE REGARDING ANY CHANGES FROM THE PLANS AND SPECIFICATIONS.
- A MINIMUM OF THREE COPIES OF THE INSTRUCTION BOOK SHALL BE SUPPLIED WITH EACH DIFFERENT TYPE OF EQUIPMENT. THE BOOKS DESCRIBING A MORE SOPHISTICATED TYPE OF EQUIPMENT, SUCH AS REGULATORS, PAPI, REIL, ETC. AS A MINIMUM SHALL CONTAIN THE FOLLOWING:
  - A DETAILED DESCRIPTION OF THE OVERALL EQUIPMENT AND ITS INDIVIDUAL COMPONENTS.
  - THEORY OF OPERATION INCLUDING THE FUNCTION OF EACH COMPONENT.
  - INSTALLATION INSTRUCTION.
  - START-UP INSTRUCTIONS.
  - PREVENTATIVE MAINTENANCE REQUIREMENTS.
  - CHART FOR TROUBLE-SHOOTING.
  - COMPLETE POWER AND CONTROL DETAILED WIRING DIAGRAM(S), SHOWING EACH CONDUCTOR/CONNECTION/COMPONENT – "BLACK" BOXES ARE NOT ACCEPTABLE. THE DIAGRAM OF THE NARRATIVE SHALL SHOW VOLTAGE/CURRENTS/WAVE SHAPES AT STRATEGIC LOCATIONS TO BE USED WHEN CHECKING AND/OR TROUBLE-SHOOTING THE EQUIPMENT. WHEN THE EQUIPMENT HAS SEVERAL MODES OF OPERATION, SUCH AS SEVERAL BRIGHTNESS STEPS, THESE PARAMETERS SHALL BE INDICATED FOR ALL DIFFERENT MODES.
  - PARTS LIST WHICH WILL INCLUDE ALL MAJOR AND MINOR COMPONENTS SUCH AS RESISTORS, DIODES, ETC. IT SHALL INCLUDE A COMPLETE NOMENCLATURE OF EACH COMPONENT AND, IF APPLICABLE, THE NAME OF ITS MANUFACTURER AND THE CATALOG NUMBER.
  - SAFETY INSTRUCTIONS.

**POWER AND CONTROL NOTES**

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

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

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**INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON**

**SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339**

**Contract No: SH027**

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**ELECTRICAL NOTES**



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

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

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

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

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

**NOTES:**

- CONTRACTOR SHALL EXAMINE THE SITE, TERMINAL BUILDING, AND VAULT TO DETERMINE EXISTING SITE CONDITIONS.
- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- ALL VAULT WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- PER NEC 513 THE ENTIRE AREA OF THE HANGAR INCLUDING ANY ADJACENT AND COMMUNICATING AREAS NOT SUITABLY CUT OFF FROM THE HANGAR, SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 HAZARDOUS LOCATION UP TO A LEVEL 18 INCHES ABOVE THE FLOOR. PER NEC 513.3(C) "VICINITY OF AIRCRAFT", THE AREA WITHIN 5 FT. HORIZONTALLY FROM AIRCRAFT POWER PLANTS OR AIRCRAFT FUEL TANKS SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 LOCATION THAT SHALL EXTEND UPWARD FROM THE FLOOR TO A LEVEL 5 FT. ABOVE THE UPPER SURFACE OF WINGS AND OF ENGINE ENCLOSURES. ALL ELECTRICAL INSTALLATIONS IN CLASSIFIED HAZARDOUS LOCATIONS SHALL BE AVOIDED UNLESS SPECIFICALLY APPROVED FOR SUCH LOCATIONS AND INSTALLED IN CONFORMANCE WITH NEC 500, 501, AND 513 AS WELL AS OTHER APPLICABLE CODES AND REQUIREMENTS.
- COLOR CODE PHASE AND NEUTRAL CONDUCTOR INSULATION FOR NO. 6 AWG OR SMALLER. PROVIDE COLORED INSULATION OR COLORED MARKING TAPE FOR PHASE AND NEUTRAL CONDUCTORS FOR NO. 4 AWG AND LARGER. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR AWG AND/OR KCMIL TO COMPLY WITH NEC 250.119. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION FOR NO. 6 AWG AND SMALLER TO MEET THE REQUIREMENTS OF NEC 200.6. STANDARD COLORS FOR POWER WIRING AND BRANCH CIRCUITS SHALL BE AS FOLLOWS:  
  
120/240 VAC, 1 PHASE, 3 WIRE  
PHASE A           BLACK  
PHASE B           RED  
NEUTRAL           WHITE  
GROUND           GREEN
- SEE RESPECTIVE SITE PLANS FOR SITE LEGEND INFORMATION.
- LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.
- ALL ENCLOSURES RATED NEMA 4, 4X SHALL HAVE WATERTIGHT HUBS AT CONDUIT ENTRANCES U.L. LISTED NEMA 4, 4X FOR THE RESPECTIVE ENCLOSURE, TO MAINTAIN THE NEMA 4, 4X RATING.
- HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, OR HANDHOLE.

INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

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ELECTRICAL LEGEND,  
ABBREVIATIONS &  
NOTES

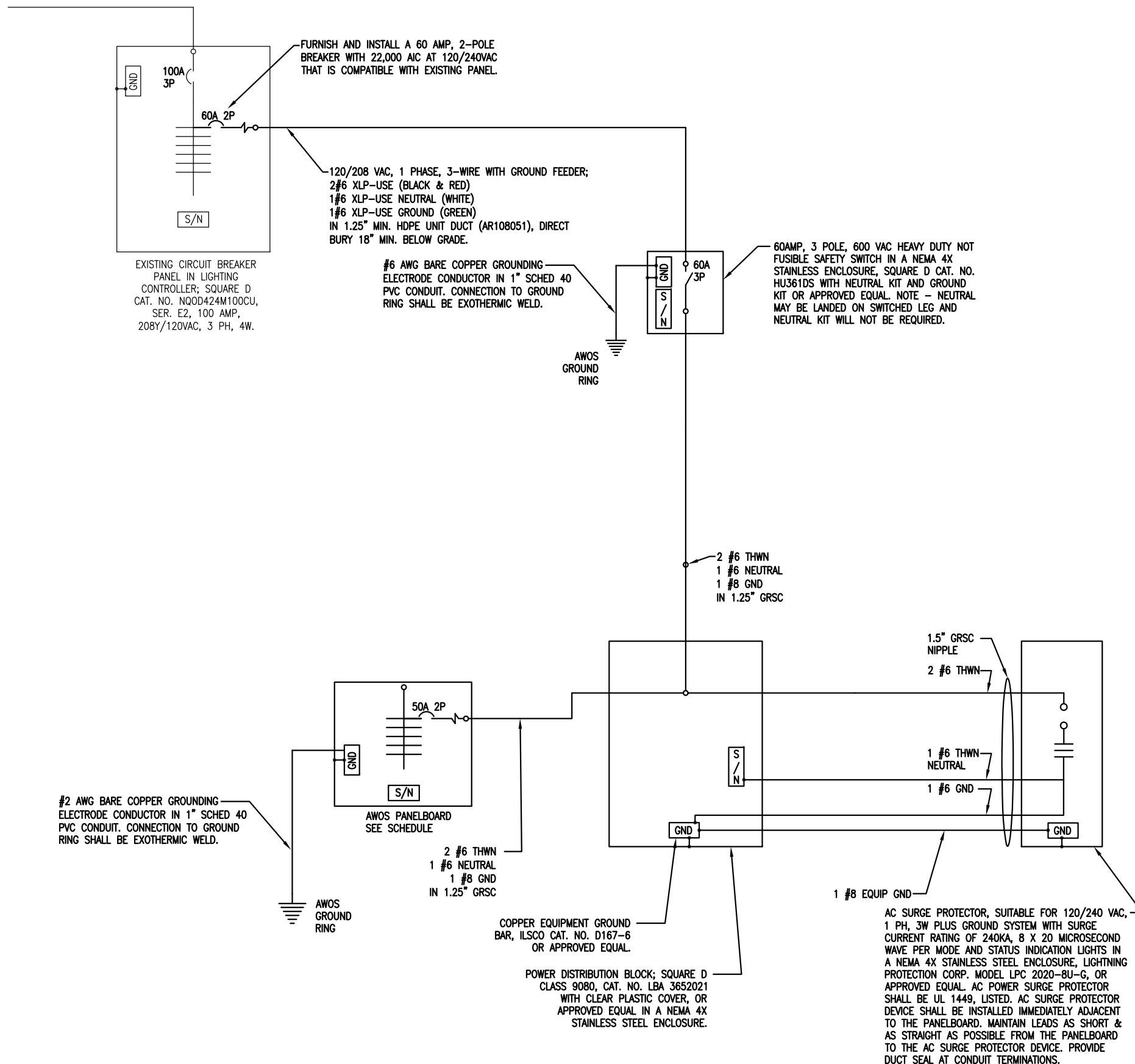


LEGEND PLATE SCHEDULE CONTINUED	
DEVICE	LABEL
DISCONNECT FOR AWOS SITE	AWOS DISCONNECT 120/208 VAC, 1 PH, 3 W
POWER DISTRIBUTION BLOCK ENCLOSURE	POWER DISTRIBUTION BLOCK
AWOS PANEL	AWOS PANELBOARD 120/208 VAC, 1 PH, 3 W

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

**NOTES**

- CONTRACTOR SHALL EXAMINE THE SITE AND FIELD VERIFY EXISTING CONDITIONS.
- 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).
- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, INTERTEK TESTING SERVICES VERIFICATION/LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- ALL CONDUCTORS/WIRING SHALL BE COPPER.
- CONTRACTOR SHALL CONFIRM POWER REQUIREMENTS WITH THE ACTUAL NAMEPLATE ON EACH PIECE OF AWOS EQUIPMENT (OR OTHER RESPECTIVE EQUIPMENT) AND ADJUST CIRCUIT BREAKER, WIRE SIZES & CONDUIT SIZES TO CONFORM WITH NEC & MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE. WIRE SIZES SHOWN ON THE PLANS ARE MINIMUM.
- HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, JUNCTION BOX, OR RACEWAY.
- ALL EQUIPMENT AND MATERIALS NOT LABELED AS EXISTING IS NEW.
- FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH SAFETY SWITCH, PANELBOARD, LOAD CENTER, CUTOUT, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION". LABELS SHALL BE HAZARD COMMUNICATION SYSTEMS, LLC (190 OLD MILFORD RD., BOX 1174, MILFORD, PA 18337, PHONE: 1-877-748-0244) PART NO. H6010-9VWHBJ OR APPROVED EQUAL.
- PROVIDE NEMA 4, 4X HUBS FOR ALL CONDUIT ENTRIES INTO NEMA 4, 4X ENCLOSURES TO MAINTAIN THE NEMA 4, 4X RATING OF THE RESPECTIVE ENCLOSURE.



ELECTRICAL ONE LINE DIAGRAM FOR AWOS

INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

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ELECTRICAL ONE LINE  
DIAGRAM FOR AWOS

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### AWOS PANELBOARD SCHEDULE

CKT #	DUTY	SIZE	SIZE	DUTY	CKT #
1	MAIN BREAKER	50A, 2P	15A, 1P	OBSTRUCTION LIGHTS	2
3			15A, 1P	SPARE	4
5	UPS FOR AWOS ACCESS CONTROL UNIT (ACU)	15A, 1P	15A, 1P	SPARE	6
7	CEILOMETER	15A, 1P		BLANK	8
9	SPARE	20A, 1P		BLANK	10
11	SPARE	20A, 1P		BLANK	12
13	BLANK			BLANK	14
15	BLANK			BLANK	16
17	BLANK			BLANK	18

S/N

GND

100 AMP, 120/240VAC, 1Ø, 3 WIRE, 18 CIRCUIT PANELBOARD WITH MAIN LUGS AND 50 AMP, 2 POLE REVERSE FEED MAIN CIRCUIT BREAKER. INCLUDE COPPER SOLID NEUTRAL AND SEPARATE COPPER GROUND BUS. PANELBOARD SHALL BE SQUARE D CLASS 1630, CAT. NO. NQ18L1C IN A NEMA 3R & 12 ENCLOSURE WITH HINGED COVER, OR APPROVED EQUAL.

**NOTES**

- PANELBOARD BUSES SHALL BE COPPER, NEUTRAL BUS SHALL BE COPPER, EQUIPMENT GROUND BAR SHALL BE COPPER.
- INCLUDE WEATHERPROOF ENGRAVED PHENOLIC NAMEPLATES LABELED "AWOS PANELBOARD" AND "120/240VAC, 1 PH, 3-WIRE FED FROM AWOS SITE DIST. PANEL".
- VERIFY CIRCUIT BREAKERS ARE SIZED IN CONFORMANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATION & NEC. ALL CIRCUIT BREAKERS SHALL BE A BOLT-ON TYPE WITH 10,000 AIC (MIN.) AT 120/240VAC.
- ALL METAL CONDUIT TERMINATIONS IN THE PANELBOARD SHALL HAVE FITTINGS UL LISTED SUITABLE FOR GROUNDING.
- WIRING FOR 15 AMP & 20 AMP, 120 VAC BRANCH CIRCUITS SHALL BE 1 #12 THWN, 1 #12 NEUTRAL, 1 #12 GND IN 3/4" GRSC AND/OR 3/4" SUNLIGHT RESISTANT, UL LISTED SUITABLE FOR GROUNDING, LIQUID TIGHT FLEXIBLE METAL CONDUIT.
- THE ACU, CEILOMETER, AND OBSTRUCTION LIGHTS BRANCH CIRCUITS SHALL BE DIVIDED BETWEEN THE TWO PHASES (AS SHOWN IN THE SCHEDULE) FOR PURPOSE OF BALANCING THE LOAD. CONFIRM CIRCUIT BREAKER REQUIREMENTS WITH THE AWOS MANUFACTURER AND ADJUST SIZES WHERE APPLICABLE TO MEET MANUFACTURER REQUIREMENTS AND RECOMMENDATIONS.

INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

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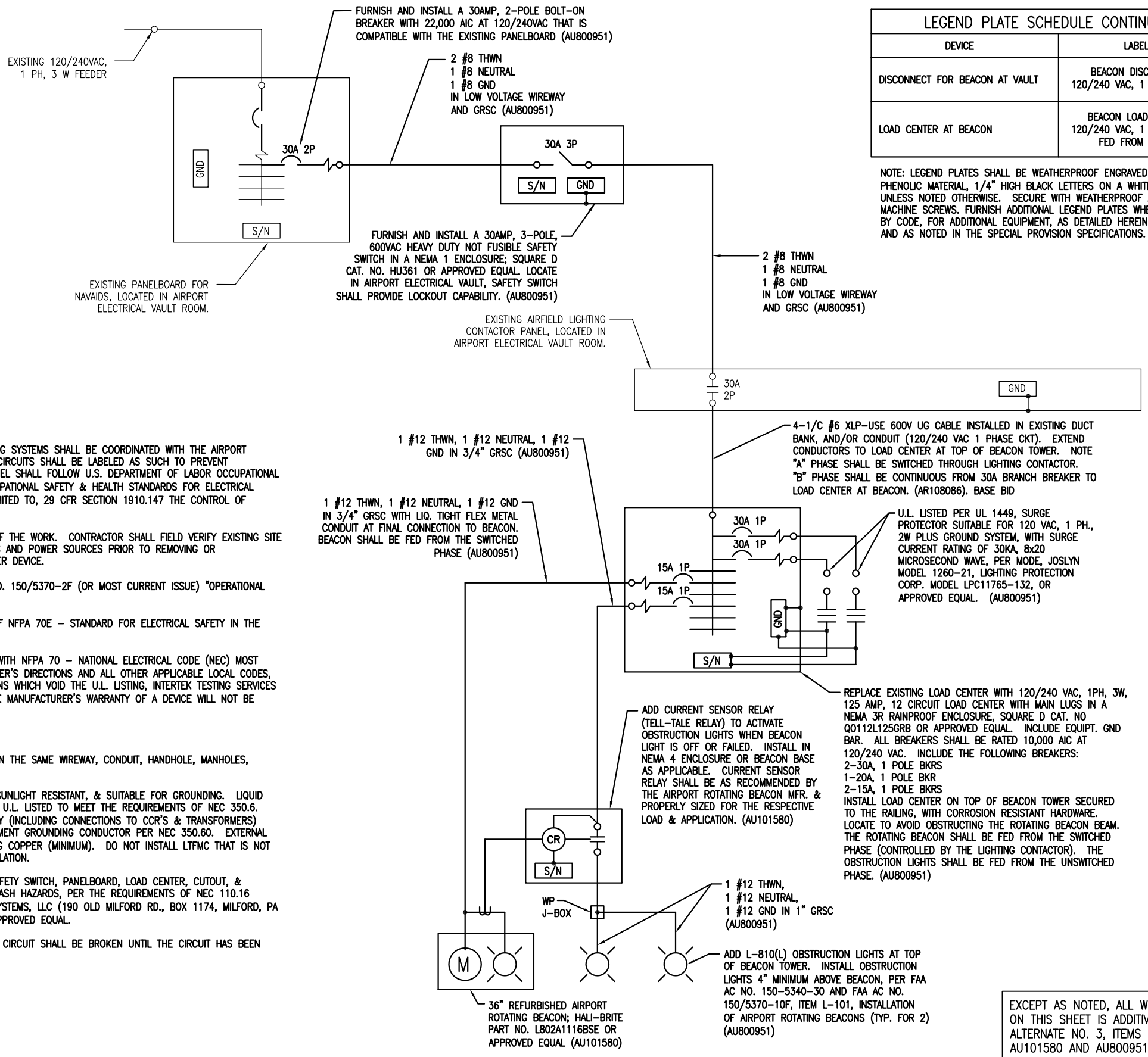
SHEET TITLE

PANELBOARD  
SCHEDULES



LEGEND PLATE SCHEDULE CONTINUED	
DEVICE	LABEL
DISCONNECT FOR BEACON AT VAULT	BEACON DISCONNECT 120/240 VAC, 1 PH, 3 WIRE
LOAD CENTER AT BEACON	BEACON LOAD CENTER 120/240 VAC, 1 PH, 3 WIRE FED FROM VAULT

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



**NOTES**

- ALL VAULT WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER OR DESIGNATED 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 EXAMINE THE SITE TO DETERMINE THE EXTENT OF THE WORK. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING THE RESPECTIVE AIRFIELD LIGHTING, NAVAID, OR OTHER DEVICE.
- 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.
- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, INTERTEK TESTING SERVICES VERIFICATION/LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
- ALL CONDUCTORS/WIRING SHALL BE COPPER.
- HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, MANHOLES, JUNCTION BOX, OR RACEWAY.
- LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.
- FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH SAFETY SWITCH, PANELBOARD, LOAD CENTER, CUTOUT, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION". LABELS SHALL BE HAZARD COMMUNICATION SYSTEMS, LLC (190 OLD MILFORD RD., BOX 1174, MILFORD, PA 18337, PHONE: 1-877-748-0244) PART NO. H6010-9VWHBJ OR APPROVED EQUAL.
- NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH THE ABOVE NOTE 1.

EXCEPT AS NOTED, ALL WORK ON THIS SHEET IS ADDITIVE ALTERNATE NO. 3, ITEMS AU101580 AND AU800951.

INSTALL AWOS A-V, REPLACE AIRPORT ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

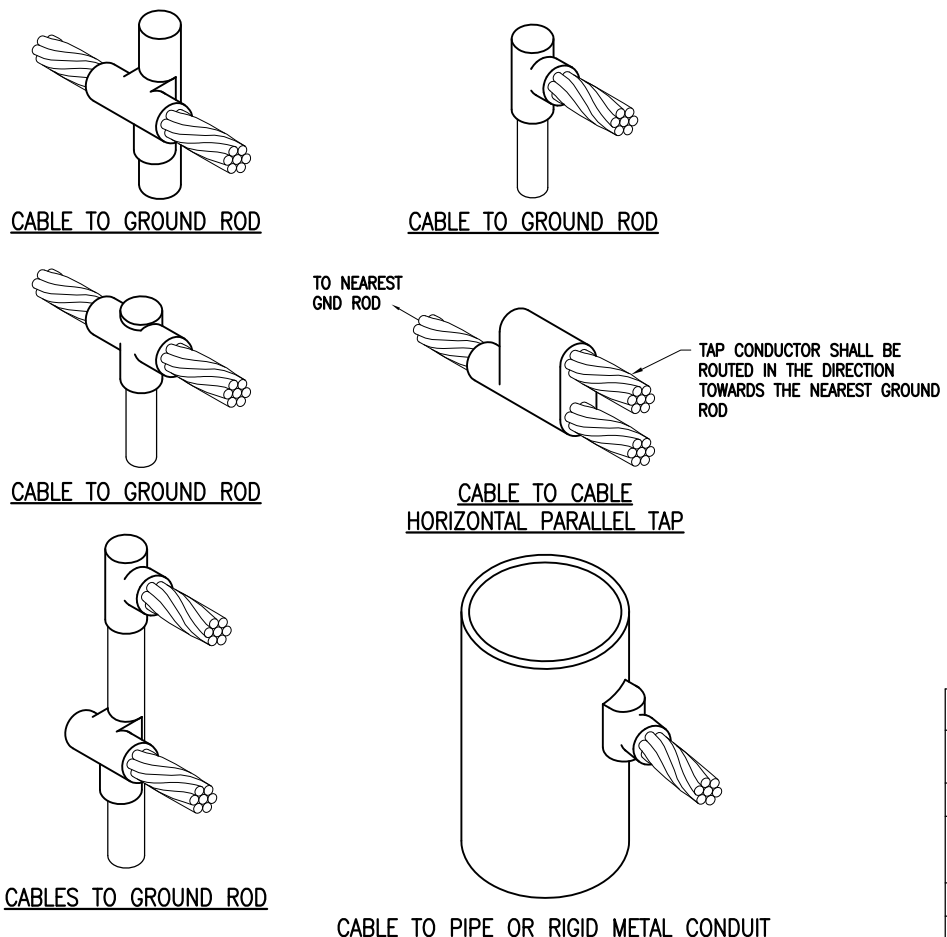
Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 21-ONE LINE-BEACON.DWG  
LAYOUT BY: KNL 04/10/14  
DRAWN BY: SJM 04/11/14  
REVIEWED BY: RMH 9/10/14  
SHEET TITLE

ELECTRICAL ONE LINE FOR AIRPORT ROTATING BEACON

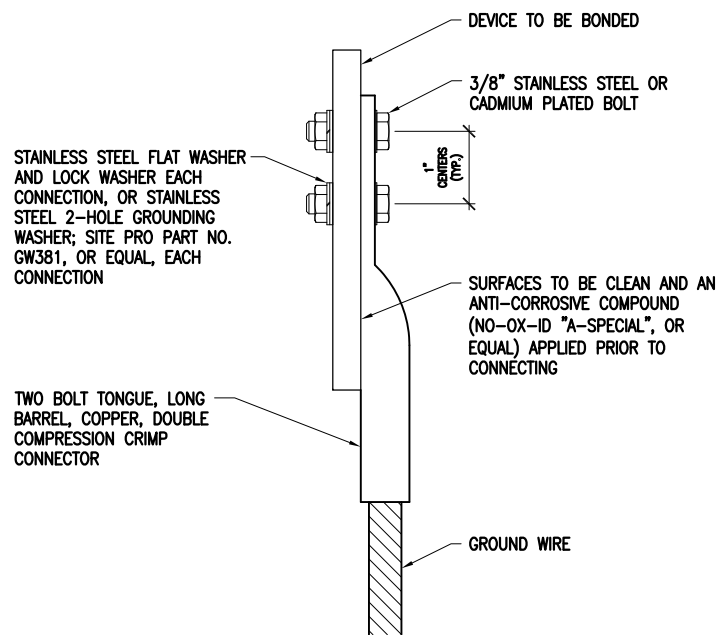
ELECTRICAL ONE LINE DIAGRAM FOR AIRPORT ROTATING BEACON



**DETAIL NOTES**

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

**EXOTHERMIC WELD DETAILS**

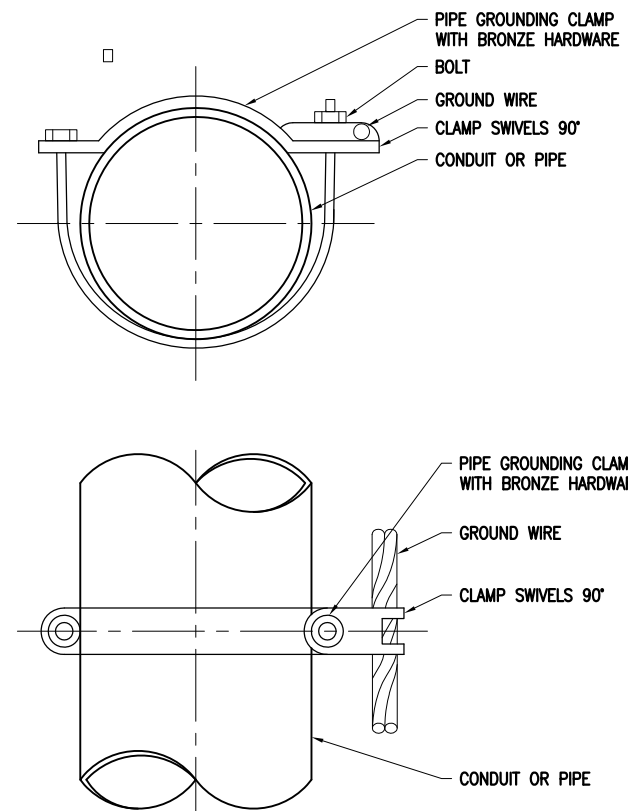


2 HOLE LONG BARREL COMPRESSION LUG TABLE			
WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1		
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159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

**NOTES**

- ALL CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.
- GROUND WIRE CONNECTIONS TO EQUIPMENT SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE DEVICE OR WITH THE RESPECTIVE 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 ENIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC APTH FROM ENCIRCLING THE CONDUIT.
- ALL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND (SANCHEM INC. NO-OX-ID "A-SPECIAL", BURNDY PENETROX E, OR EQUAL) BEFORE JOINING. ALL COPPER BUS BARS SHALL BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION. CLEAN SURFACES, OF RESPECTIVE DEVICES TO BE BONDED, TO BARE METAL, PER NEC 250-12.

**GROUNDING LUG CONNECTION DETAIL**



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

**NOTES**

- PIPE GROUNDING CLAMPS SHALL HAVE BRONZE HARDWARE, BE CORROSION RESISTANT, SUITABLE FOR DIRECT BURIAL IN EARTH OR CONCRETE, & UL 467 LISTED.
- REMOVE NON-CONDUCTIVE MATERIAL TO EXPOSE CLEAN METAL SURFACES. NON-CONDUCTIVE COATINGS (SUCH AS PAINT, LACQUER, AND ENAMEL) ON EQUIPMENT TO BE GROUNDED SHALL BE REMOVED FROM THREADS AND OTHER CONTACT SURFACES TO ENSURE GOOD ELECTRICAL CONTINUITY OR BE CONNECTED BY MEANS OF FITTINGS DESIGNED SO AS TO MAKE SUCH REMOVAL UNNECESSARY IN ACCORDANCE WITH NEC 250.12.

**PIPE/CONDUIT GROUNDING CLAMP DETAIL**

ALL WORK ON THIS SHEET IS INCLUDED IN THE RESPECTIVE PAY ITEM.

INSTALL AWOS A-V, REPLACE AIRPORT ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 12, 2014

PROJECT NO: 13A0094

CAD FILE: 22-GROUNDING DET 1.DWG

LAYOUT BY: KNL 04/07/14

DRAWN BY: SJM 04/07/14

REVIEWED BY: RMH 9/10/14

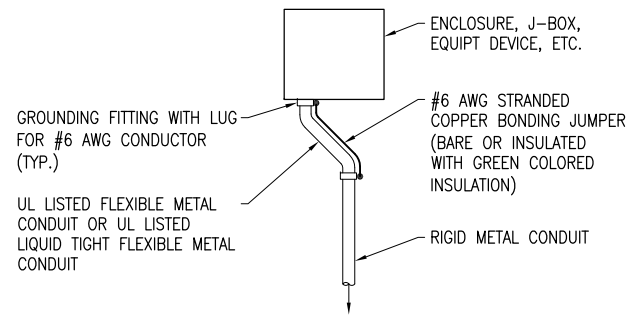
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SHEET TITLE

GROUNDING DETAILS  
SHEET 1

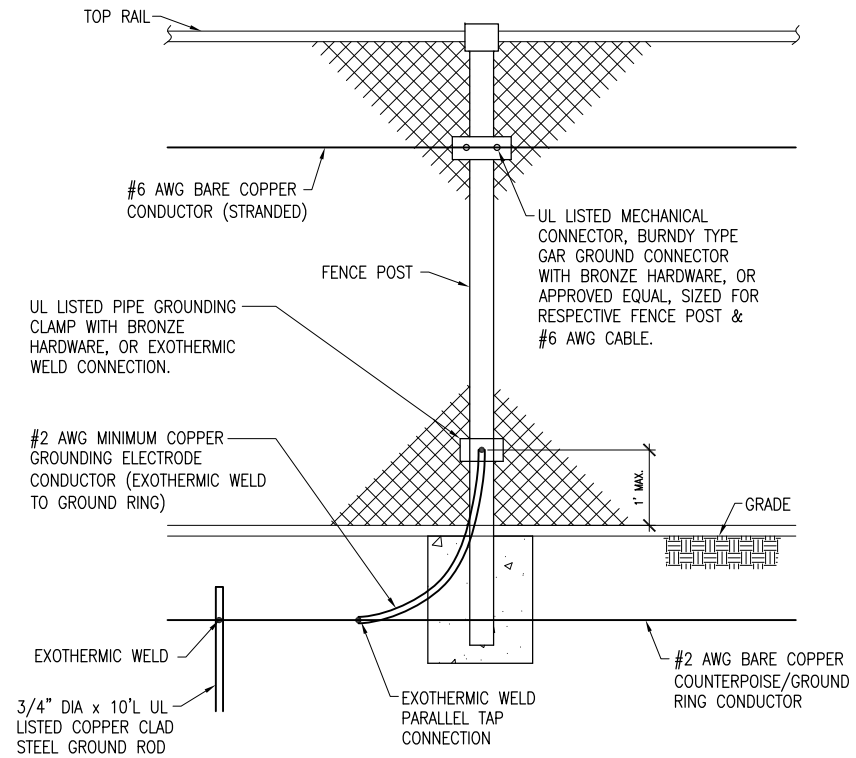
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### LIQUID TIGHT FLEXIBLE METAL CONDUIT BONDING JUMPER DETAIL



**NOTES:**

1. ALL LIQUID TIGHT FLEXIBLE METAL CONDUITS AND ALL FLEXIBLE METAL CONDUITS SHALL INCLUDE AN EXTERNAL BONDING JUMPER PER THE REQUIREMENTS OF FAA STD 019e SECTION 4.2.10.3. THIS BONDING JUMPER SHALL BE A #6 AWG STRANDED COPPER CONDUCTOR. THE BONDING JUMPER SHALL TERMINATE ON APPROVED GROUNDING FITTINGS AT EACH END OF THE LIQUID TIGHT FLEXIBLE METAL CONDUIT OR FLEXIBLE METAL CONDUIT.
2. LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT U.L. LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TYPE FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. DO NOT INSTALL LTFMC THAT IS NOT U.L. LISTED. CONFIRM LTFMC BEARS THE LABEL PRIOR TO INSTALLATION.



**FENCE GROUNDING NOTES**

1. REMOVE NON-CONDUCTIVE MATERIAL TO EXPOSE CLEAN METAL SURFACES. NON-CONDUCTIVE COATINGS (SUCH AS PAINT, LACQUER, AND ENAMEL) ON EQUIPMENT TO BE GROUNDED SHALL BE REMOVED FROM THREADS AND OTHER CONTACT SURFACES TO ENSURE GOOD ELECTRICAL CONTINUITY OR BE CONNECTED BY MEANS OF FITTINGS DESIGNED SO AS TO MAKE SUCH REMOVAL UNNECESSARY IN ACCORDANCE WITH NEC 250.12.
2. GATES SHALL HAVE A 1 IN. BY 1/8 IN. FLEXIBLE TINNED COPPER BOND STRAP OR AN INSULATED #4/0 AWG FLEXIBLE (WELDING) COPPER CABLE THAT IS BONDED TO THE ADJACENT POST (EXOTHERMIC WELDING IS RECOMMENDED). THE POSTS AT EACH SIDE OF THE GATE SHALL ALSO BE BONDED, AT A HEIGHT NO GREATER THAN 1 FOOT ABOVE GRADE, TO THE RESPECTIVE GROUND RING WITH A #2 AWG (MINIMUM) BARE COPPER CABLE. THE BONDING STRAP TO THE POST SHALL BE INSTALLED SO AS NOT TO LIMIT FULL MOTION OF THE GATE (WHETHER SWING OR SLIDE TYPE). ADDITIONALLY, A HORIZONTAL BARE #6 AWG STRANDED COPPER CONDUCTOR SHALL BE WOVEN CONTINUOUSLY THROUGH THE GATE FABRIC AND MECHANICALLY BONDED TO THE GATE RAILS, WITH UL LISTED GROUNDING CONNECTORS SIZED FOR THE RESPECTIVE RAILS & #6 AWG CONDUCTOR.
3. A HORIZONTAL BARE #6 AWG STRANDED COPPER CONDUCTOR, SHALL BE WOVEN THROUGH THE FENCING FABRIC AND SHALL BE MECHANICALLY BONDED TO THE FENCE POSTS AT INTERVALS NOT GREATER THAN 40 FEET. THE FENCE POSTS WITH THESE BONDS AND FENCE POSTS ADJACENT TO GATES SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG (MINIMUM) BARE COPPER CABLE. CONNECTIONS TO FENCE POSTS SHALL BE WITH UL LISTED PIPE GROUNDING CLAMPS WITH BRONZE HARDWARE OR EXOTHERMIC WELD CONNECTION. CONNECTIONS TO THE GROUND RING SHALL BE WITH EXOTHERMIC WELD CONNECTION.

GROUNDING ASSOCIATED WITH THE FENCE SHALL BE INCIDENTAL TO THE INSTALLATION OF THE FENCE.

### FENCE GROUNDING DETAIL

ALL WORK ON THIS SHEET IS INCLUDED IN THE RESPECTIVE PAY ITEM.



INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

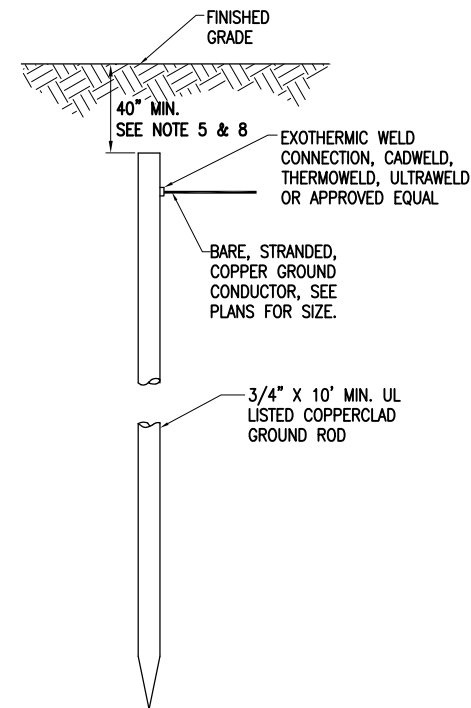
ISSUE: SEPTEMBER 12, 2014  
PROJECT NO: 13A0094  
CAD FILE: 23-GROUND DET 2.DWG  
LAYOUT BY: KNL 04/07/14  
DRAWN BY: SJM 04/07/14  
REVIEWED BY: RMH 9/10/14  
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SHEET TITLE

GROUNDING DETAILS  
SHEET 2

**GROUNDING NOTES**

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70) IN FORCE AND FAA-STD-019e (LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING, AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT). THE RELIABILITY OF THE GROUNDING SYSTEM IS DEPENDENT ON CAREFUL, PROPER INSTALLATION AND CHOICE OF MATERIALS. IMPROPER PREPARATION OF SURFACES TO BE JOINED TO MAKE AN ELECTRICAL PATH, LOOSE JOINTS OR CORROSION CAN INTRODUCE IMPEDANCE THAT WILL SERIOUSLY IMPAIR THE ABILITY OF THE GROUND PATH TO PROTECT PERSONNEL AND EQUIPMENT AND TO ABSORB TRANSIENTS THAT CAN CAUSE NOISE IN COMMUNICATIONS CIRCUITS. THE FOLLOWING FUNCTIONS ARE PARTICULARLY IMPORTANT TO ENSURE A RELIABLE GROUND SYSTEM:
2. FURNISH AND INSTALL GROUND RODS AS DETAILED HEREIN. GROUND RODS FOR BEACON TOWER AND FOR AWOS SITE APPLICATIONS SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED, COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS SHALL BE SPACED OR AS DETAILED ON THE RESPECTIVE PLANS, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH APART. ALL CONNECTIONS TO GROUND RODS AND THE GROUND RING SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE 1-800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE 918-663-1440) OR ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE 1-800-842-7437) OR APPROVED EQUAL. EXOTHERMIC WELD CONNECTIONS SHALL BE INSTALLED IN CONFORMANCE WITH THE RESPECTIVE MANUFACTURER'S DIRECTIONS USING MOLDS AS REQUIRED FOR EACH RESPECTIVE APPLICATION. BOLTED CONNECTIONS WILL NOT BE PERMITTED AT GROUND RODS OR AT BURIED GROUNDING ELECTRODE CONDUCTORS.
3. CONTRACTOR SHALL TEST EACH MADE ELECTRODE GROUND ROD/GROUND FIELD/GROUND RING WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUND FIELD SYSTEMS. IF GROUND RESISTANCE FOR AWOS GROUND RING EXCEEDS 10 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. IF GROUND RESISTANCE FOR GROUND RODS AT BEACON TOWER 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.
4. ALL PRODUCTS ASSOCIATED WITH THE GROUNDING SYSTEM SHALL BE UL-LISTED AND LABELED.
5. ALL BOLTED OR MECHANICAL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND BEFORE JOINING, SANICHEM INC. 'NO-OX-ID 'A-SPECIAL' COMPOUND, BURNDY PENETROX E, OR EQUAL.
6. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2014 NATIONAL ELECTRICAL CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.
7. METALLIC RACEWAY FITTINGS SHALL BE MADE UP TIGHT TO PROVIDE A PERMANENT LOW IMPEDANCE PATH FOR ALL CIRCUITS. METAL CONDUIT TERMINATIONS IN ENCLOSURES SHALL BE BONDED TO THE ENCLOSURE WITH UL-LISTED FITTINGS SUITABLE FOR GROUNDING. PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPER FOR ALL METAL CONDUITS ENTERING SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPER FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT
8. ALL CONNECTIONS, LOCATED ABOVE GRADE, BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS SHALL BE MADE USING UL-LISTED DOUBLE COMPRESSION CRIMP TYPE CONNECTORS OR UL-LISTED BOLTED GROUND CONNECTORS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, THOMAS AND BETTS, OR EQUAL. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES IN UL STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
9. ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
10. PROVIDE ALL BOXES FOR PROPOSED OUTLETS, SWITCHES, CIRCUIT BREAKERS, ETC. WITH GROUNDING SCREWS. PROVIDE ALL PANELBOARD, SWITCHGEAR, ETC., ENCLOSURES WITH GROUNDING BARS WITH INDIVIDUAL SCREWS, LUGS, CLAMPS, ETC., FOR EACH OF THE GROUNDING CONDUCTORS THAT ENTER THEIR RESPECTIVE ENCLOSURES.
11. EACH NEW FEEDER CIRCUIT AND/OR BRANCH CIRCUIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. METAL RACEWAY OR CONDUIT SHALL NOT MEET THIS REQUIREMENT. THE EQUIPMENT GROUND WIRE FROM EQUIPMENT SHALL NOT BE SMALLER THAN ALLOWED BY 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.

12. ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC., SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 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.
13. IT IS THE INTENT OF THIS SPECIFICATION THAT ALL MOTOR FRAMES, PUMP BASES ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.
14. PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUND NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
15. EACH AND ALL GROUND CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.
16. ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, OR APPROVED EQUAL.
17. BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
18. BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.
19. INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY ENCIRCLE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. USE NON-METALLIC REINFORCED FIBERGLASS STRUT SUPPORT. WHERE METAL CONDUIT CLAMPS ARE INSTALLED, USE NYLON BOLTS, NUTS, WASHERS AND SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT. THIS IS REQUIRED TO AVOID GIRDLING OF GROUND CONDUCTORS. GIRDLING OF A GROUND CONDUCTOR IS THE RESULT OF PLACING THE CONDUCTOR IN A RING OF MAGNETIC MATERIAL. THIS RING COULD BE A METALLIC CONDUIT, U-BOLT OR STRUT SUPPORT PIPE CLAMP, OR OTHER SUPPORT HARDWARE. THE RESULT OF GIRDLING GROUND CONDUCTORS SIGNIFICANTLY INCREASES THE INDUCTIVE IMPEDANCE OF THE GROUND CONDUCTOR. INDUCTIVE AND CAPACITIVE IMPEDANCE IS A TYPE OF RESISTANCE THAT OPPOSES THE FLOW OF ALTERNATING CURRENT. ANY INCREASE IN THE IMPEDANCE OF A GROUND CONDUCTOR REDUCES ITS ABILITY TO EFFECTIVELY MITIGATE RADIO FREQUENCY NOISE IN THE GROUND SYSTEM. THE CONDITION WHERE A GROUND CONDUCTOR IS GIRDLED DURING A LIGHTNING STRIKE RESULTS IN PHENOMENA KNOWN AS SURGE IMPEDANCE LOADING. SURGE IMPEDANCE LOADING IS A RESULT OF VOLTAGE AND CURRENT REACHING 500,000 VOLTS AND 10,000 AMPS FOR A SHORT DURATION. GIRDLING FURTHER INCREASES THE IMPEDANCE AT LIGHTNING FREQUENCIES OF 100 KILOHERTZ TO 100 MEGAHERTZ. AT THESE POWER AND FREQUENCY LEVELS ANY INCREASE IN THE IMPEDANCE OF THE GROUND CONDUCTOR MUST BE CONTROLLED. DURING LIGHTNING DISCHARGE CONDITIONS A LOW INDUCTIVE IMPEDANCE PATH IS MORE IMPORTANT THAN A LOW DC RESISTANCE PATH.
20. IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2014 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
21. WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.
22. GROUND RODS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. STEEL USED TO MANUFACTURE GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.



**10 FT. GROUND ROD**

**NOTES**

1. TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
2. GROUND RODS SHALL BE SPACED AS DETAILED ON THE PLANS AND SHALL NOT BE SPACED LESS THAN ONE ROD LENGTH APART.
3. COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.
4. THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM FOR THE AWOS SHALL NOT EXCEED 10 OHMS.
5. TOP OF GROUND RODS FOR THE AWOS GROUND RING SHALL BE 40" MINIMUM BELOW GRADE WITH GROUND RING 50" BELOW GRADE. GROUND RING CONDUCTORS SHALL BE 50" MINIMUM BELOW GRADE TO BE BELOW THE FROST LINE FOR COOK AND DUPAGE COUNTIES, ILLINOIS.
6. GROUND RODS FOR AWOS SHALL BE A MINIMUM 3/4-INCH DIAMETER BY 10-FT LONG UL LISTED COPPER CLAD.
7. THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM FOR THE BEACON TOWER SHALL NOT EXCEED 25 OHMS.
8. TOPS OF THE GROUND RODS FOR BEACON TOWER SHALL BE 40" MINIMUM BELOW GRADE.
9. GROUND RODS FOR BEACON TOWER SHALL BE A MINIMUM 3/4" DIAMETER BY 10-FT LONG UL LISTED COPPER CLAD.

**GROUND RODS**

(NOT TO SCALE)

ALL WORK ON THIS SHEET IS INCLUDED IN THE RESPECTIVE PAY ITEM.

SEP 23, 2014, 2:43 PM MCLAU01058 2:15:05S [00842] 13A0094 [DESIGN] [DRAWINGS] [SHEETS] 24-GROUND NOTES.DWG SEP 23, 2014 2:43PM MCLAU01058



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INSTALL AWOS A-V,  
REPLACE AIRPORT  
ROTATING BEACON

SBG No: 3-17-SBGP-XX  
IDA No: 06C-4339

Contract No: SH027

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

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DRAWN BY: KNL 04/07/14  
REVIEWED BY: RMH 9/10/14  
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SHEET TITLE

GROUNDING NOTES