

CONSTRUCTION PLANS FOR ROBERT F. TRACY MUNICIPAL AIRPORT MT. STERLING, BROWN COUNTY, ILLINOIS INSTALL AN AUTOMATIC WEATHER OBSERVATION SYSTEM (AWOS-III)

SCOPE OF WORK

BASE BID

THIS PROJECT CONSISTS OF FURNISHING AND INSTALLING AN AUTOMATIC WEATHER OBSERVING SYSTEM; AWOS III P/T, WITH GRAPHIC WEATHER DISPLAY AND NADIN (NATIONAL AIRSPACE DATA INTERCHANGE NETWORK), AND THE ASSOCIATED SITE WORK, CABLING, DUCT WORK, ELECTRICAL WORK, AND OTHER RELATED WORK.

ADDITIVE ALTERNATE NO. 1

ADDITIVE ALTERNATE NO. 1 SHALL CONSIST OF FURNISHING AND INSTALLING A 6' CLASS "E" FENCE AROUND THE PROPOSED AWOS-III P/T SITE.

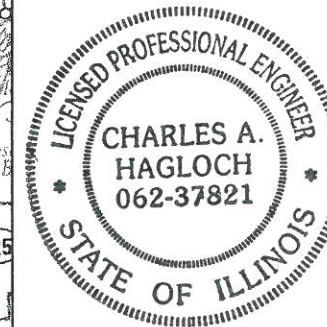
ADDITIVE ALTERNATE NO. 2

ADDITIVE ALTERNATE NO. 2 SHALL CONSIST OF FURNISHING AND INSTALLING CRUSHED AGGREGATE BASE COURSE MATERIAL TO IMPROVE THE EXISTING ACCESS ROAD TO THE PROPOSED AWOS-III P/T SITE.

ILL. PROJ.: 163-4276
A.I.P. PROJ.:

LATITUDE: 39° 59' 15"
LONGITUDE: 90° 48' 15"
ELEVATION: 732.0' M.S.L.
DATE: JANUARY 17, 2014

**COVERING
ELECTRICAL DESIGN**



Hanson Professional Services Inc.
ELECTRICAL ENGINEER

Submitted by *Kevin N. Lightfoot* ENG'R

Date Submitted MARCH 25, 2015

Lics. Exp. Date NOVEMBER 30, 2015



Hanson Professional Services Inc.
CIVIL ENGINEER

Submitted by *Charles A. Hagloch* ENG'R

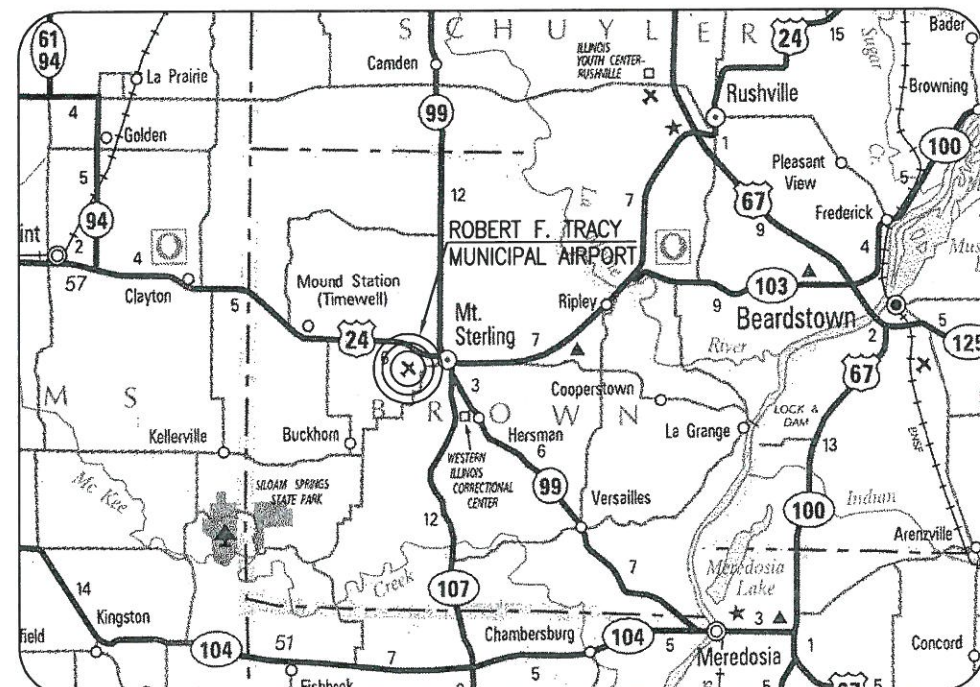
Date Submitted MARCH 25, 2015

Lics. Exp. Date NOVEMBER 30, 2015

CITY OF MT. STERLING

APPROVED *Daniel F. [Signature]*
MAYOR

Date 3/25/14



LOCATION

REVISION	DATE

ROBERT F. TRACY MUNICIPAL AIRPORT
MT. STERLING, ILLINOIS

LAYOUT	BAK	12/10/13
DRAWN	BAK	12/10/13
REVIEWED	CAH/KNL	01/10/14

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

INSTALL AUTOMATIC
 WEATHER
 OBSERVATION SYSTEM
 COVER SHEET

M:\24_2014_4:10 PM_HCL000382
 p:\sgp-srv306\hanson\dom\hanson_projects\documents\10400083\CAD\Airport\Sheet\G-001-CVR

SUMMARY OF QUANTITIES - BASE BID

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AR126420	AWOS III P/T, INSTALLED	L.S.	1	
AR152411	UNCLASSIFIED EXCAVATION	L.S.	1	
AR209510	CRUSHED AGGREGATE BASE COURSE	TON	38	

SUMMARY OF QUANTITIES - ADDITIVE ALTERNATE NO. 1

AS162506	CLASS E FENCE - 6'	L.F.	124	
AS162606	CLASS E GATE - 6'	EACH	1	

SUMMARY OF QUANTITIES - ADDITIVE ALTERNATE NO. 2

AT152411	UNCLASSIFIED EXCAVATION	L.S.	1	
AT209510	CRUSHED AGGREGATE BASE COURSE	TON	180	

INDEX TO SHEETS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	SUMMARY OF QUANTITIES AND INDEX TO SHEETS
3	PROPOSED SAFETY PLAN
4	PROPOSED SAFETY PLAN NOTES
5	PROPOSED SITE PLAN
6	ELECTRICAL SITE PLAN
7	AWOS SITE PLAN
8	AWOS DETAILS
9	ELECTRICAL NOTES
10	ELECTRICAL AND DUCT DETAILS
11	ELECTRICAL LEGEND, ABBREVIATIONS & NOTES
12	ELECTRICAL ONE LINE DIAGRAM FOR AWOS
13	GROUNDING DETAILS SHEET 1
14	GROUNDING DETAILS SHEET 2
15	GROUNDING NOTES

REVISION	DATE

ROBERT F. TRACY MUNICIPAL AIRPORT
MT. STERLING, ILLINOIS

IL PROJ.: 63-4276

Hanson Proj. No. 10A00008D	Filename G-002-FLP.dwg	Scale NOT TO SCALE	Date 03/25/14
LAYOUT	KNL	01/08/14	
DRAWN	BAK	01/08/14	
REVIEWED	CAH/KNL	01/10/14	

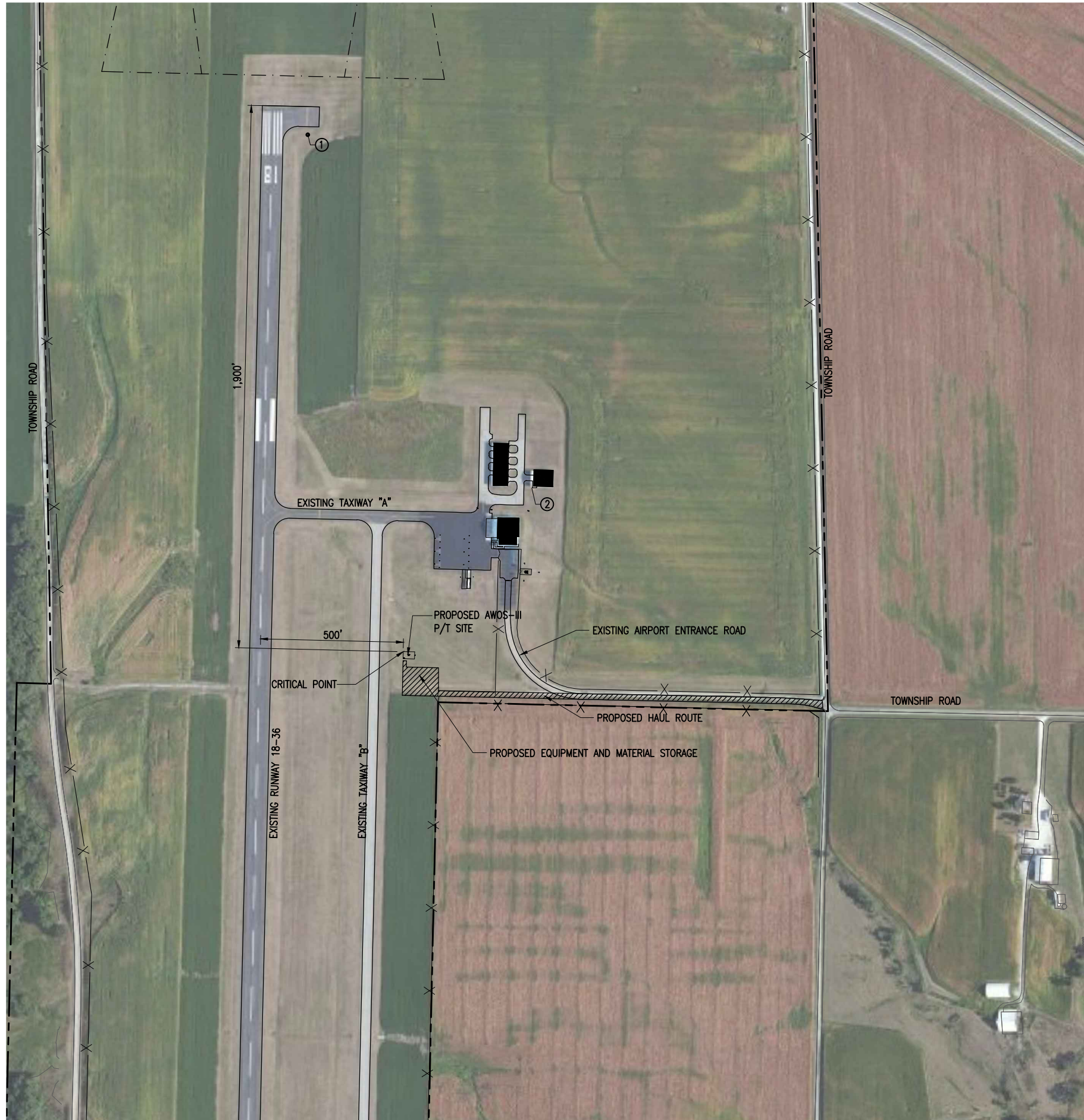


© Copyright Hanson Professional Services Inc. 2014
Hanson Professional Services Inc.
 1525 South Sixth Street
 Springfield, Illinois 62703-2886
 Ph: (217) 788-2450 Fax: (217) 788-2503
 www.hanson-inc.com
 Offices Nationwide

INSTALL AUTOMATIC
WEATHER
OBSERVATION SYSTEM

SUMMARY OF QUANTITIES
AND INDEX TO SHEETS

MAR 24, 2014 4:16 PM HAGL000382
 pw:\spt-svr306\hanson.dcm\Hanson Projects\Documents\10.000\10A0008\CAD\Airport\Sheet\10-003-SFT.PLN



J.U.L.I.E. INFORMATION

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

CRITICAL POINT DATA

LATITUDE: 39° 59' 17.73"
 LONGITUDE: 90° 48' 08.26"
 ELEVATION: 724.0 M.S.L.

SCOPE OF WORK

BASE BID

THIS PROJECT CONSISTS OF FURNISHING AND INSTALLING AN AUTOMATIC WEATHER OBSERVING SYSTEM; AWOS III P/T, WITH GRAPHIC WEATHER DISPLAY AND NADIN (NATIONAL AIRSPACE DATA INTERCHANGE NETWORK), AND THE ASSOCIATED SITE WORK, CABLING, DUCT WORK, ELECTRICAL WORK, AND OTHER RELATED WORK

ADDITIVE ALTERNATE NO. 1

ADDITIVE ALTERNATE NO. 1 SHALL CONSIST OF FURNISHING AND INSTALLING A 6' CLASS "E" FENCE AROUND THE PROPOSED AWOS-III P/T SITE.

ADDITIVE ALTERNATE NO. 2

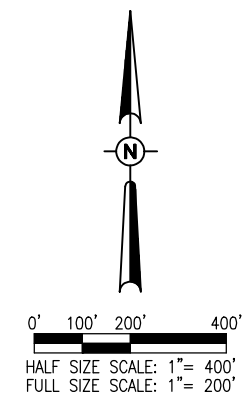
ADDITIVE ALTERNATE NO. 2 SHALL CONSIST OF FURNISHING AND INSTALLING CRUSHED AGGREGATE BASE COURSE MATERIAL TO IMPROVE THE EXISTING ACCESS ROAD TO THE PROPOSED AWOS-III P/T SITE.

BENCHMARK DATA

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

LEGEND

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



DATE	REVISION

**ROBERT F. TRACY MUNICIPAL AIRPORT
 MT. STERLING, ILLINOIS**

IL PROJ.: 163-4276

LAYOUT	CAH	01/08/14
DRAWN <td>BAK</td> <td>01/08/14</td>	BAK	01/08/14
REVIEWED <td>CAH</td> <td>01/10/14</td>	CAH	01/10/14

HANSON
 © Copyright Hanson Professional Services Inc. 2014
Hanson Professional Services Inc.
 1525 South Sixth Street
 Springfield, Illinois 62703-2886
 Ph: (217) 788-2450 Fax: (217) 788-2503
 www.hanson-inc.com
 Offices Nationwide

**INSTALL AUTOMATIC
 WEATHER
 OBSERVATION SYSTEM**

**PROPOSED
 SAFETY PLAN**

UTILITY NOTE

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

HAUL ROUTE AND VEHICLE PARKING

THE CONTRACTOR WILL BE ALLOWED TO USE THE EXISTING AIRPORT ENTRANCE ROAD FROM THE TOWNSHIP ROAD TO THE START OF THE CURVE. AT THE CURVE HE WILL USE THE EXISTING AGGREGATE ROAD TO ACCESS THE PROPOSED CONSTRUCTION SITE. THE CONTRACTOR SHALL USE THE EXISTING DOUBLE SWING GATE ACROSS THE AGGREGATE ROAD AS HIS ACCESS TO THE AIRFIELD SIDE. THIS GATE WILL REMAIN CLOSED UNLESS THE CONTRACTOR IS IN A CONTINUOUS HAULING OPERATION. THE CONTRACTOR AND THE RESIDENT ENGINEER WILL WALK THE HAUL ROUTE PRIOR TO THE START OF CONSTRUCTION TO NOTE ANY DEFICIENCIES. ANY DAMAGE TO THE HAUL ROUTE WILL BE REPAIRED BY THE CONTRACTOR AT THE END OF THE PROJECT AT NO ADDITIONAL COST TO THE PROJECT.

THE CONTRACTOR WILL BE ALLOWED TO CONSTRUCT A 100' X 100' EQUIPMENT PARKING AND MATERIAL STORAGE AREA AS SHOWN ON THIS SHEET. THE CONTRACTOR WILL MAINTAIN THIS AREA THROUGHOUT THE PROJECT DURATION AND RETURN IT TO ITS ORIGINAL CONDITION AT THE END OF THE PROJECT.

THE CONTRACTOR'S EMPLOYEES WILL PARK THEIR PERSONAL VEHICLES IN THE PROPOSED EQUIPMENT PARKING AND MATERIAL STORAGE AREA. NO EMPLOYEE VEHICLES WILL BE ALLOWED BEYOND THE EQUIPMENT PARKING AND MATERIAL STORAGE AREA.

IF AWARDED, ADDITIVE ALTERNATE NO. 2 WILL IMPROVE THE AGGREGATE ACCESS ROAD BY PLACING ADDITIONAL AGGREGATE ON THE EXISTING ACCESS ROAD AND CONSTRUCTING A ROAD FROM THE EXISTING ACCESS ROAD TO THE PROPOSED AWOS SITE. ANY DAMAGE TO THE EXISTING ROAD OR THE NEW ACCESS ROAD SHALL BE REPAIRED AND RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT.

CONTRACTOR RESPONSIBILITIES

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

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

THE RUNWAY SHALL NOT BE CLOSED.

CERTIFIED PAYROLLS

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

MATERIAL CERTIFICATION

COMPLETED WORK **CANNOT** BE PLACED ON A CONSTRUCTION REPORT UNTIL ALL MATERIAL CERTIFICATIONS FOR THAT PAY ITEM HAVE BEEN RECEIVED, REVIEWED AND ACCEPTED BY THE RESIDENT ENGINEER.

AIRPORT SECURITY NOTE

AIRPORT SECURITY WILL BE MAINTAINED AT ALL TIMES. THE CONTRACTOR WILL CLOSE AND LOCK THE EXISTING GATE IN THE HAUL ROUTE AT THE END OF EACH WORKING DAY.

HEIGHT OF CONSTRUCTION EQUIPMENT

THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 40 FEET, WHICH IS EXPECTED TO BE A CRANE TO SET THE AWOS TOWER OR A BUCKET TRUCK TO WORK ON THE AWOS TOWER. THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT AT ALL OTHER LOCATIONS WILL BE 25 FEET, WHICH IS EXPECTED TO BE A DUMP TRUCK OR A CONCRETE TRUCK. THE CRANE OR BUCKET TRUCK SHALL BE USED DURING THE DAYLIGHT HOURS AND VHR CONDITIONS ONLY AND SHALL BE LOWERED WHEN NOT IN USE, DURING THE HOURS BETWEEN SUNSET AND SUNRISE, AND/OR DURING IFR WEATHER CONDITIONS. WHEN IN USE, THE CRANE OR BUCKET TRUCK SHALL BE MARKED WITH A 3' SQUARE CHECKERED FLAG.

NOTE

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

PROPOSED SAFETY PLAN

GENERAL - THE ROBERT F. TRACY MUNICIPAL AIRPORT IS COMPRISED OF ONE RUNWAY. RUNWAY 18-36 WILL NOT BE CLOSED DURING THIS PROJECT.

NO TAXIWAY WILL BE CLOSED DURING THIS PROJECT.

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

RADIO CONTROL - THE CONTRACTOR WILL BE REQUIRED TO BE IN TWO-WAY RADIO CONTACT (122.80 MHz.) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTIC EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.

EROSION CONTROL

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

MS007

REVISION	
DATE	

ROBERT F. TRACY MUNICIPAL AIRPORT
MT. STERLING, ILLINOIS

IL PROJ.: 63-4276

Hanson Proj. No. 10A000080	12/10/13
Filename G-003-SAF.dwg	BAK
Scale NOT TO SCALE	DRAWN
Date 03/25/14	REVIEWED
	CAH/KNL
	01/10/14



© Copyright Hanson Professional Services Inc. 2014
Hanson Professional Services Inc.
 1525 South Sixth Street
 Springfield, Illinois 62703-2886
 Ph: (217) 788-2450 Fax: (217) 788-2503
 www.hanson-inc.com
 Offices Nationwide

INSTALL AUTOMATIC WEATHER OBSERVATION SYSTEM

PROPOSED SAFETY PLAN NOTES

MAR 24, 2014 4:13 PM H:\GLO00382
 pw:\spi--svr306.hanson.dom\hanson Projects\Documents\10\jobs\10A0008\CAD\Report\Sheet\G-003-SFT.PLT

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.

BASE BID NOTES

THE BASE BID SHALL CONSIST OF THE INSTALLATION OF THE PROPOSED AWOS-III. ASSOCIATED ITEMS SHALL CONSIST OF THE CONTRACTOR CORING THE AWOS SITE (25' X 40') TO A DEPTH OF 6" AND PLACE 6" OF CRUSHED AGGREGATE BASE COURSE INTO THE CORED AREA.

THE CRUSHED AGGREGATE BASE COURSE WILL REQUIRE MINIMAL COMPACTIVE EFFORT.

THE EARTH MATERIAL REMOVED BY CORING THE AWOS SITE WILL BE DISPOSED OF OFF THE AIRPORT SITE IN A LEGAL MANNER BY THE CONTRACTOR.

THE PROPOSED CRUSHED AGGREGATE BASE COURSE WILL BE PAID FOR UNDER ITEM:
AR209510 CRUSHED AGGREGATE BASE COURSE _ _ PER TON.

QUANTITY OF PROPOSED AGGREGATE BASE COURSE _ _ 38 TON

THE PROPOSED CORED EARTH MATERIAL WILL BE PAID FOR UNDER ITEM:
AR152411 UNCLASSIFIED EXCAVATION _ _ PER LUMP SUM.

ESTIMATED QUANTITY OF UNCLASSIFIED EXCAVATION _ _ 19 C.Y.

ADDITIVE ALTERNATE NO. 1 NOTES

ADDITIVE ALTERNATE NO. 1 SHALL CONSIST OF THE INSTALLATION OF THE CLASS E FENCE AND GATE AROUND THE PROPOSED AWOS-III AS DETAILED ON THIS SHEET.

THE PROPOSED CLASS E FENCE AND GATE SHALL BE INSTALLED IN ACCORDANCE WITH IDOT STANDARD 664001-02 CHAIN LINK FENCE.

A TOP RAIL WILL BE REQUIRED INSTEAD OF THE TOP TENSION WIRE.

THE PROPOSED CLASS E FENCE AND GATE WILL BE SIX (6") FEET IN HEIGHT. NO BARB WIRE WILL BE REQUIRED ON TOP OF THE PROPOSED FENCE AND GATE.

THE PROPOSED FENCE AND GATE WILL BE PAID FOR UNDER"
AS162506 CLASS E FENCE - 6' _ _ PER LIN. FT.
AS162606 CLASS E GATE - 6' _ _ PER EACH.

ADDITIVE ALTERNATE NO. 2 NOTES

ADDITIVE ALTERNATE NO. 2 SHALL CONSIST OF THE INSTALLATION OF CRUSHED AGGREGATE BASE COURSE ON THE EXISTING ACCESS ROAD AND THE CONSTRUCTION OF THE PROPOSED ACCESS ROAD AND PARKING AREA AS SHOWN ON THIS SHEET.

THE CONTRACTOR WILL PLACE CRUSHED AGGREGATE BASE COURSE MATERIAL OVER THE EXISTING ACCESS ROAD AT A DEPTH OF THREE (3") INCHES. THE CRUSHED AGGREGATE BASE COURSE WILL BE LIGHTLY COMPACTED (AT LEAST TWO PASSES OF A VIBRATORY ROLLER) TO THE SATISFACTION OF THE RESIDENT ENGINEER.

THE CONTRACTOR WILL ALSO CORE OUT THE PROPOSED ACCESS ROAD FROM THE EXISTING ACCESS GATE TO THE PROPOSED AWOS-III SITE. THIS AREA WILL BE CORED TO A DEPTH OF SIX (6") INCHES.

THE CORED EARTH MATERIAL WILL BE DISPOSED OF OFF THE AIRPORT SITE IN A LEGAL MANNER AT THE CONTRACTOR'S OWN EXPENSE.

THE CORED AREA WILL BE FILLED WITH CRUSHED AGGREGATE BASE COURSE AT A SIX (6") INCH DEPTH. THE CRUSHED AGGREGATE BASE COURSE MATERIAL WILL BE LIGHTLY COMPACTED (AT LEAST TWO PASSES OF A VIBRATORY ROLLER) TO THE SATISFACTION OF THE RESIDENT ENGINEER.

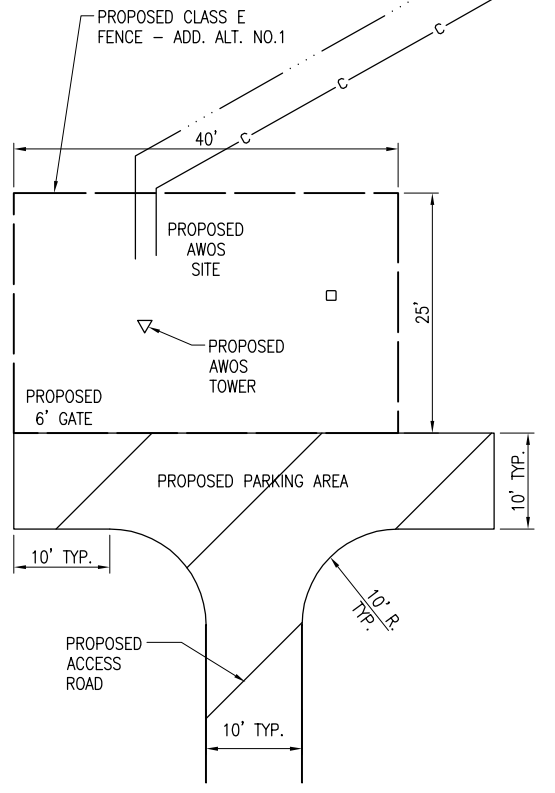
THE CORED EARTH MATERIAL WILL BE PAID FOR UNDER ITEM:
AT152411 UNCLASSIFIED EXCAVATION _ _ PER LUMP SUM.

THE PROPOSED CRUSHED AGGREGATE BASE COURSE WILL BE PAID FOR UNDER"
AT209510 CRUSHED AGGREGATE BASE COURSE _ _ PER TON.

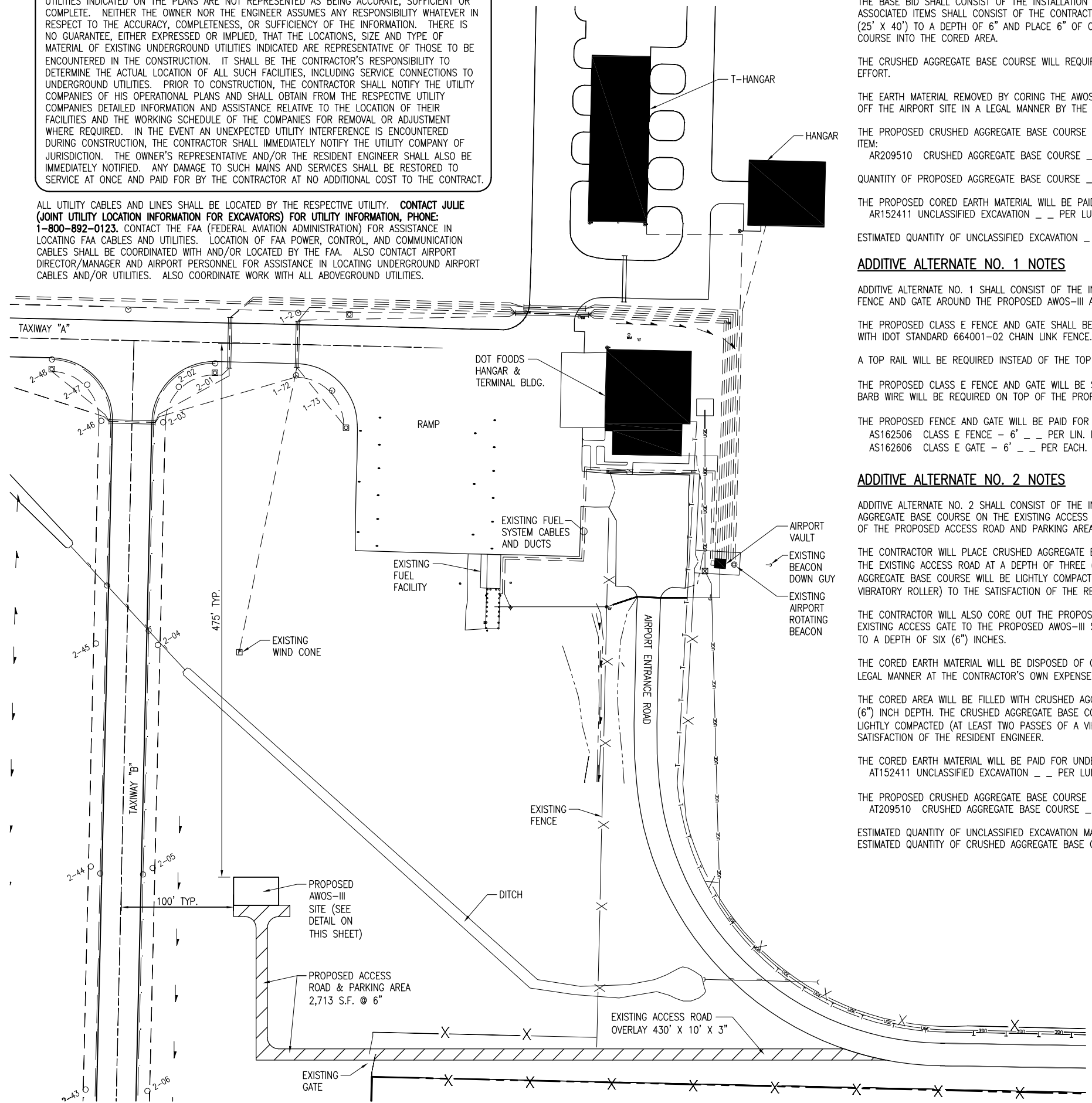
ESTIMATED QUANTITY OF UNCLASSIFIED EXCAVATION MATERIAL _ _ 50 C.Y.
ESTIMATED QUANTITY OF CRUSHED AGGREGATE BASE COURSE _ _ 180 TON

INSTALL MARKER DUE NORTH OF WIND SENSOR, DISTANCE PER MANUFACTURER.

PROPOSED TRUE NORTH MARKER
NOTE: DO NOT LOCATE MARKER BEYOND EXISTING GRASS AREA.

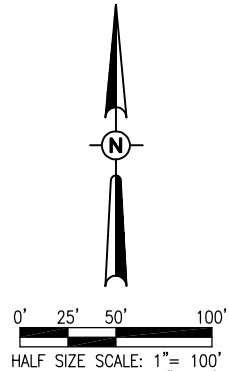


AWOS SITE DETAIL
SCALE: 1"=10'



LEGEND

- EXISTING IMPROVEMENTS
- EXISTING BUILDINGS
- EXISTING SWALE/DRAINAGE
- EXISTING TELEPHONE
- EXISTING FENCE
- PROPOSED FENCE - ADD. ALT. NO. 1
- EXISTING WATER
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING ELECTRIC
- PROPOSED ACCESS ROAD - ADD. ALT. NO. 2



REVISION	DATE

ROBERT F. TRACY MUNICIPAL AIRPORT
MT. STERLING, ILLINOIS

IL PROJ.: 65-4276

LAYOUT	KNL	12/17/13
DRAWN	BAK	12/17/13
REVIEWED	CAH/KNL	01/10/14

Hanson Proj. No. 10A000080
Filename: E-102-SIT.dwg
Scale: 1" = 50'
Date: 03/25/14

HANSON
Professional Services Inc. 2014
1525 South Sixth Street
Springfield, Illinois 62703-2986
Ph: (217) 788-2450 Fax: (217) 788-2503
www.hanson-inc.com
Offices Nationwide

INSTALL AUTOMATIC WEATHER OBSERVATION SYSTEM
PROPOSED SITE PLAN

MAR 24, 2014 4:19 PM H:\GLOD00382
pw:\sps-svr306\hanson\dom\hanson_projects\Documents\10\1008\10A0008\CAD\Airport\Sheet\E-102-SIT

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.

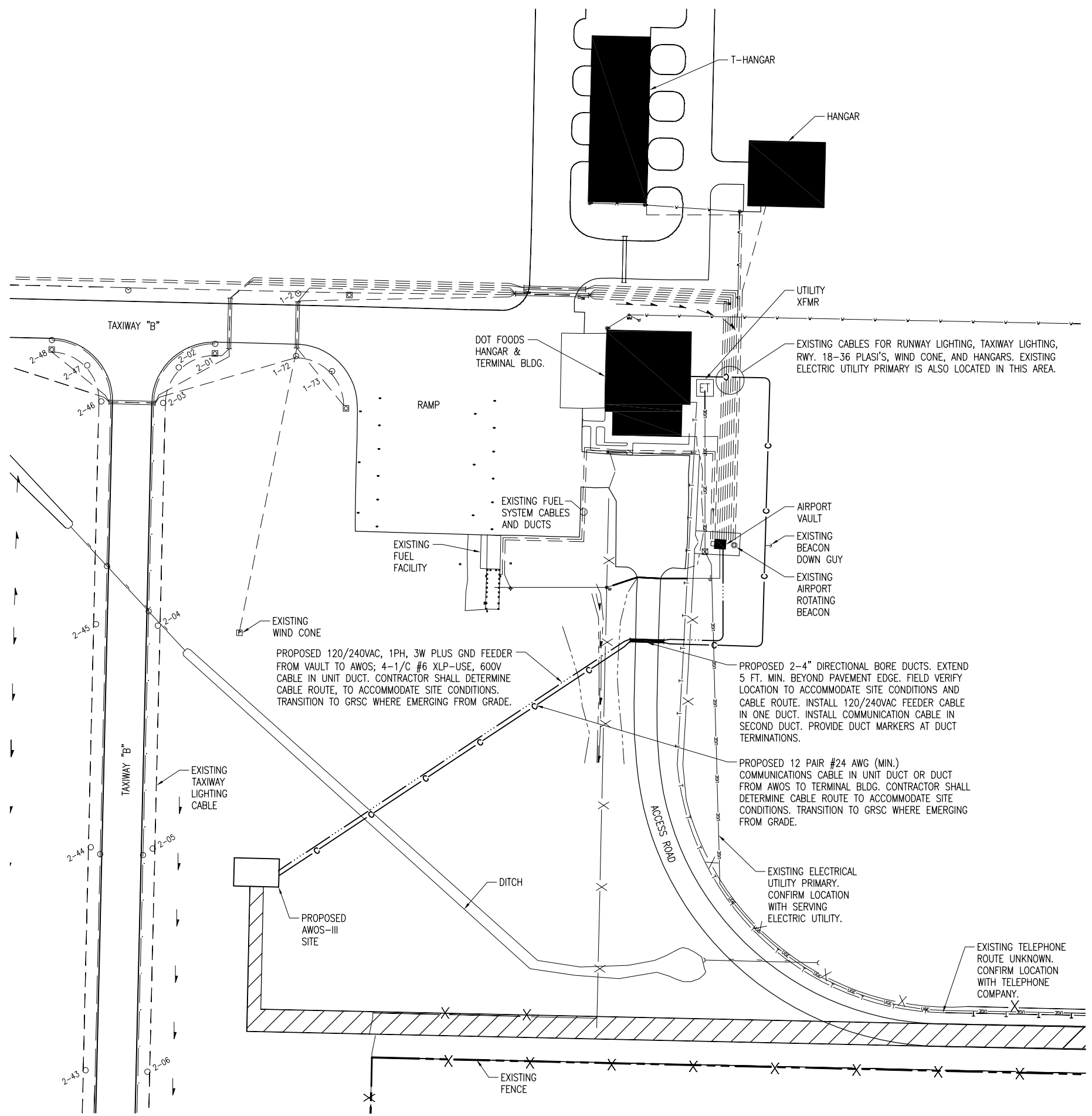
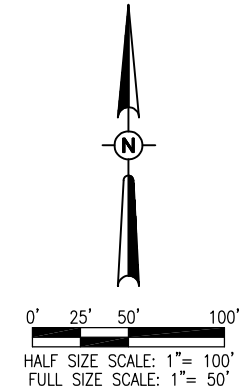
ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1-800-892-0123. CONTACT THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. LOCATION OF 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.

NOTES

- ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
- CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS.
- CABLE MARKERS SHALL BE PLACED AT CHANGES IN DIRECTION AND APPROXIMATELY EVERY 200 FT ALONG CABLE RUNS.
- COORDINATE WORK IN THE DOT FOODS HANGAR & TERMINAL BLDG. WITH THE AIRPORT MANAGER.
- COORDINATE TELEPHONE SERVICE FOR THE AWOS WITH THE SERVING TELEPHONE COMPANY AND THE AIRPORT MANAGER.

LEGEND

- EXISTING IMPROVEMENTS
- EXISTING BUILDINGS
- EXISTING SWALE/DRAINAGE
- EXISTING TELEPHONE
- EXISTING FENCE
- EXISTING WATER
- EXISTING UNDERGROUND ELECTRIC UTILITY PRIMARY
- EXISTING ELECTRIC
- PROPOSED SITE ACCESS ROUTE
- PROPOSED 4-1/C #6 XLP-USE, 600V CABLE IN UNIT DUCT
- PROPOSED AWOS COMMUNICATION CABLE IN UNIT DUCT
- PROPOSED DUCT



MAR 24, 2014 4:21 PM H:\GLO00382
 pw:\sps-svr306\hanson.dom\hanson_projects\Documents\10\100008\10\100008\CAD\Airport\Sheet\E-101-SIT

REVISION DATE	ROBERT F. TRACY MUNICIPAL AIRPORT MT. STERLING, ILLINOIS
HANSON Professional Services Inc. 2014 1525 South Sixth Street Springfield, Illinois 62703-2986 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide	
INSTALL AUTOMATIC WEATHER OBSERVATION SYSTEM ELECTRICAL SITE PLAN	
6 6 of 15 sheets	






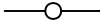
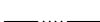
NOTES

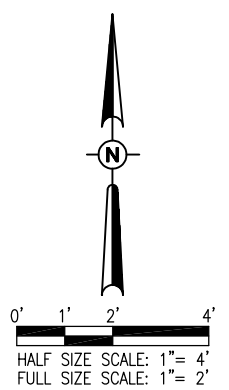
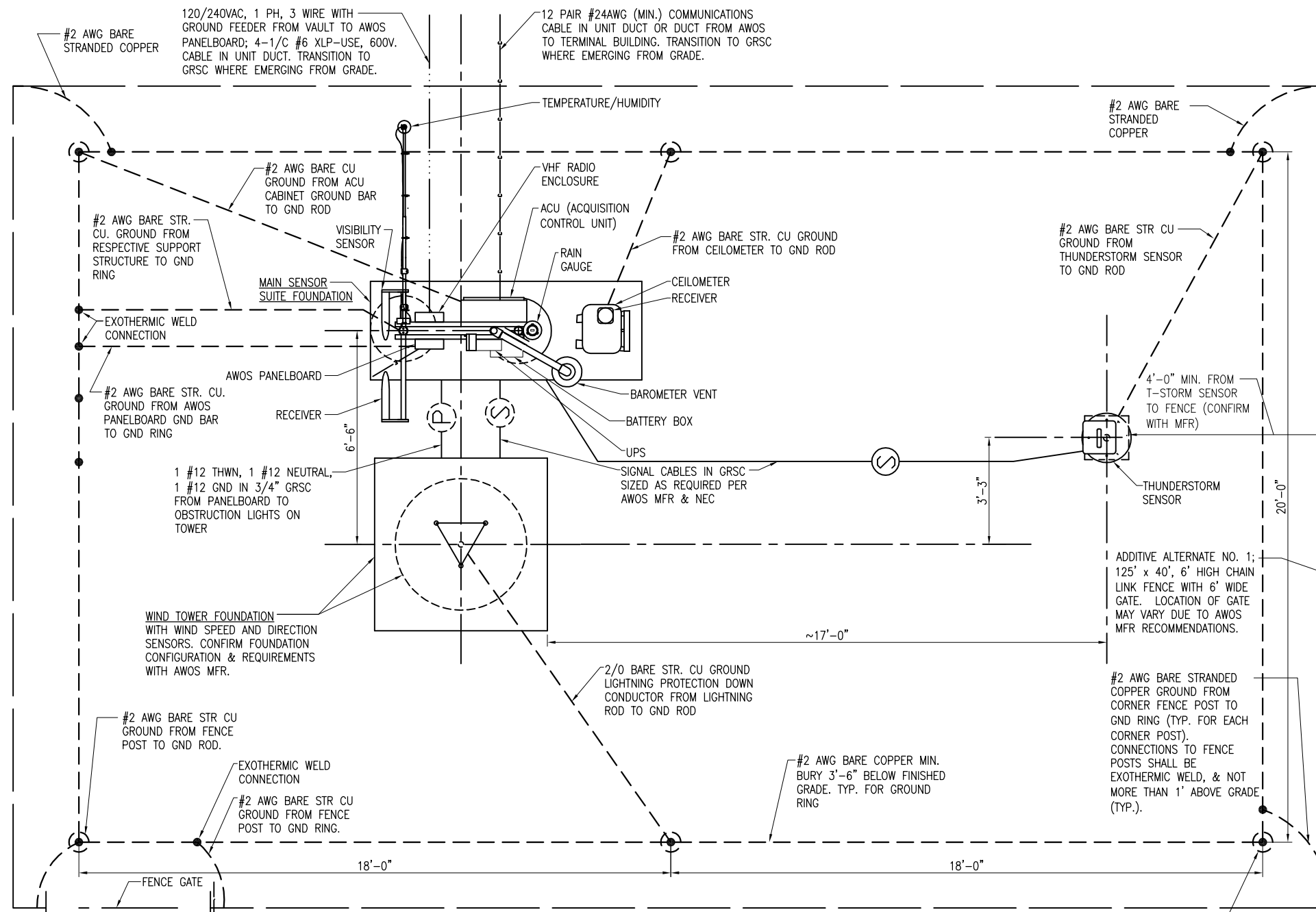
- POWER CABLES, CONTROL, DATA AND SENSOR CABLES, ASSOCIATED WITH THE AWOS (LOCATED AT THE AWOS SITE) SHALL BE IN GALVANIZED RIGID STEEL CONDUIT AS NOTED. CONDUITS SHALL BE INSTALLED AT A DEPTH OF 24" BELOW FINISHED GRADE EXCEPT IN AREAS USED FOR FARMING WHERE DEPTH SHALL BE 42" BELOW FINISHED GRADE.
- 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.

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

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

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
-  PROPOSED 4-1/C #6 XLP-USE, 600V CABLE IN UNIT DUCT
-  PROPOSED AWOS COMMUNICATION CABLE IN UNIT DUCT



MAR 24, 2014 4:38 PM H:\GLO00382 p:\s\sp\svr306\hanson\dom\hanson\Projects\Documents\10\100008\CAD\Airport\Sheet\E-103-SIT

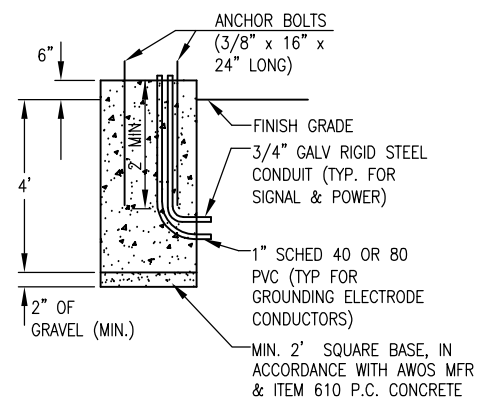
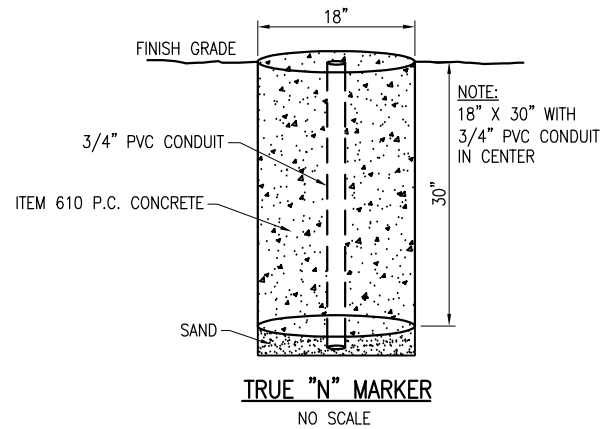
REVISION	DATE

ROBERT F. TRACY MUNICIPAL AIRPORT
MT. STERLING, ILLINOIS
IL PROJ.: 163-4276

Hanson Proj. No. 10A000080	12/17/13
Filename E-103-SIT.dwg	BAK
Scale 1" = 50'	12/17/13
Date 03/25/14	REVIEWED
LAYOUT	CAH/KNL
DRAWN	01/10/14

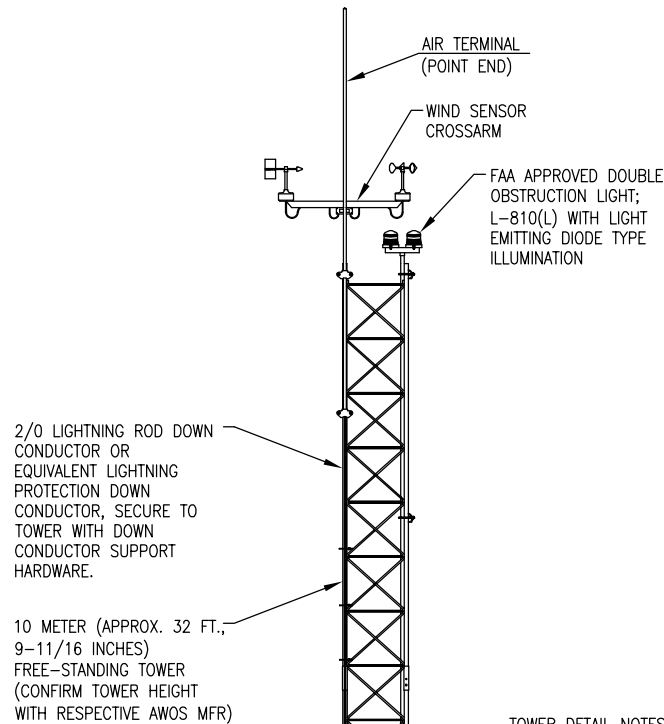
HANSON
Professional Services Inc. 2014
1525 South Sixth Street
Springfield, Illinois 62703-2986
Ph: (217) 788-2450 Fax: (217) 788-2503
www.hanson-inc.com
Offices Nationwide

INSTALL AUTOMATIC WEATHER OBSERVATION SYSTEM
AWOS SITE PLAN



CONTRACTOR SHALL CONFIRM SENSOR BASE DETAILS AND DIMENSIONS WITH RESPECTIVE AWOS MFR AND ADJUST TO CONFORM TO AWOS MFR RECOMMENDATIONS AND RESPECTIVE SITE CONDITIONS.

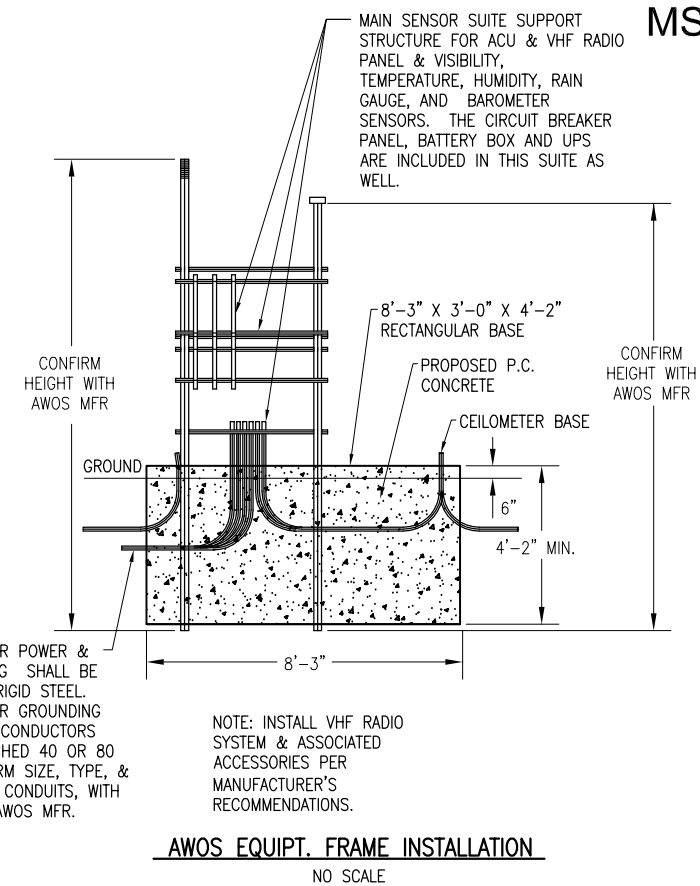
1" SCHED 40 OR 80 PVC FOR GROUNDING CONDUCTORS OR LIGHTNING PROTECTION CONDUCTORS



TOWER DETAIL NOTES:

1. THE TOWER BASE DETAIL, AND SENSOR CONFIGURATION ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT DETAILED BASE DRAWINGS, TOWER DRAWINGS, AND SENSOR CONFIGURATIONS TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. THIS DETAIL IS FOR ILLUSTRATIVE PURPOSES ONLY. THE CONTRACTOR SHALL UTILIZE A STANDARD, APPROVED TOWER AND SENSOR CONFIGURATION PER AWOS MANUFACTURER'S SPECIFICATIONS.
2. TOWER FOUNDATION DIMENSIONS MAY VARY DUE TO SOIL CONDITIONS. CONFIRM TOWER FOUNDATION DIMENSIONS WITH THE PROJECT ENGINEER & AWOS MFR, FOR EACH RESPECTIVE SITE. TOWER FOUNDATION SHALL EXTEND BELOW FROST LINE.
3. PVC CONDUIT FOR LIGHTNING PROTECTION CONDUCTORS OR GROUND CONDUCTORS SHALL NOT BE ENCIrcLED WITH METAL CLAMPS OR SUPPORTS. SEE SPECS FOR ADDITIONAL INFORMATION.

CONDUITS FOR POWER & SIGNAL WIRING SHALL BE GALVANIZED RIGID STEEL. CONDUITS FOR GROUNDING ELECTRODE CONDUCTORS SHALL BE SCHED 40 OR 80 PVC. CONFIRM SIZE, TYPE, & QUANTITY OF CONDUITS, WITH RESPECTIVE AWOS MFR.



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

NOTES:

1. 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.
2. 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.
3. THE CONTRACTOR SHALL THOROUGHLY INVESTIGATE THE INTERIOR OF THE TERMINAL BUILDING/HANGAR AND CONSULT WITH THE AIRPORT MANAGER BEFORE DETERMINING THE EXACT LOCATIONS OF EQUIPMENT, CABLE & CONDUIT RUNS. WIRING LOCATED AT THE TERMINAL BUILDING/HANGAR SHALL BE IN METAL CONDUIT (GRSC, IMC, OR EMT) AND SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
4. 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 1, 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 1, 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.

MS007

REVISION	DATE

ROBERT F. TRACY MUNICIPAL AIRPORT
 MT. STERLING, ILLINOIS

IL PROJ.: 63-4276

Hanson Proj. No. 10A00008D	12/10/13
Filename: E-504-ELEC.dwg	BAK
Scale: NOT TO SCALE	BAK
Date: 03/25/14	REVIEWED
LAYOUT	CAH/KNL
DRAWN	01/10/14

HANSON
 © Copyright Hanson Professional Services Inc. 2014
 Hanson Professional Services Inc.
 1525 South Sixth Street
 Springfield, Illinois 62703-2986
 Ph: (217) 788-2450 Fax: (217) 788-2503
 www.hanson-inc.com
 Offices Nationwide

INSTALL AUTOMATIC
 WEATHER
 OBSERVATION SYSTEM

AWOS DETAILS

GENERAL NOTES

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

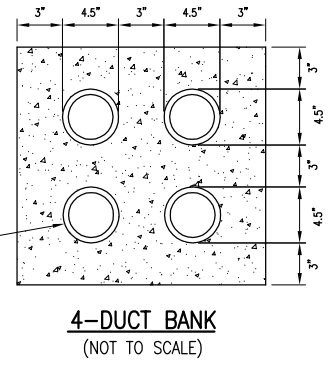
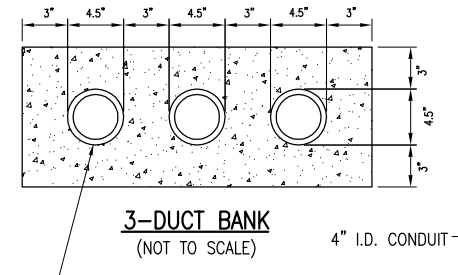
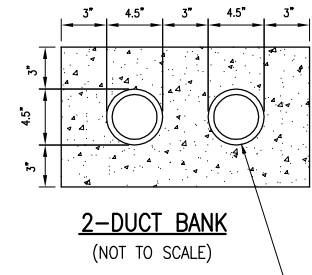
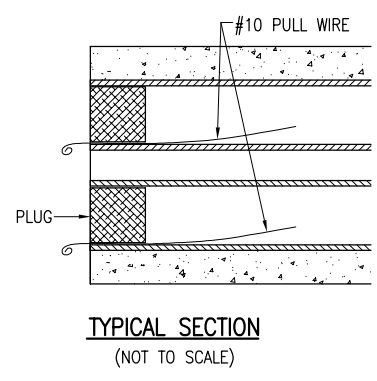
POWER AND CONTROL NOTES

- 1. PROVIDE LEGEND PLATES FOR ALL ELECTRICAL EQUIPMENT TO IDENTIFY FUNCTION, CIRCUIT VOLTAGE AND PHASE. WHERE THE EQUIPMENT CONTAINS FUSES, ALSO IDENTIFY THE FUSE OR FUSE LINK AMPERE RATING. WHERE THE EQUIPMENT DOES NOT HAVE SUFFICIENT AREA TO INSTALL LEGEND PLATES, THE LEGEND PLATES SHALL BE INSTALLED ON THE WALL NEXT TO THE UNIT. LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND UNLESS NOTED OTHERWISE. SECURE WITH WEATHERPROOF ADHESIVE AND MACHINE SCREWS. FURNISH ADDITIONAL LEGEND PLATES WHERE REQUIRED BY CODE, FOR ADDITIONAL EQUIPMENT, AS DETAILED HEREIN ON THE PLANS, AND AS NOTED IN THE SPECIAL PROVISION SPECIFICATIONS.
2. COLOR CODE ALL PHASE WIRING BY THE USE OF COLORED WIRE INSULATION AND/OR COLORED TAPE. WHERE TAPE IS USED, THE WIRE INSULATION SHALL BE BLACK. BLACK AND RED SHALL BE USED FOR PHASE CONDUCTORS ON 120/240VAC SINGLE-PHASE, THREE WIRE SYSTEMS AND BLACK, ORANGE (FOR HIGH LEG) AND BLUE SHALL BE USED FOR PHASE CONDUCTORS ON 240/120VAC THREE-PHASE, FOUR WIRE SYSTEMS. NEUTRAL CONDUCTORS, SIZE NO. 6 AWG OR SMALLER, SHALL BE IDENTIFIED BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH. NEUTRAL CONDUCTORS LARGER THAN NO. 6 AWG SHALL BE IDENTIFIED EITHER BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH OR BY THE USE OF WHITE TAPE AT ITS TERMINATIONS AND INSIDE ACCESSIBLE WIREWAYS. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR SIZES (AWG OR KCMIL).
3. ALL BRANCH CIRCUIT CONDUCTORS CONNECTED TO A PARTICULAR PHASE SHALL BE IDENTIFIED WITH THE SAME COLOR. THE COLOR CODING SHALL BE EXTENDED TO THE POINT OF UTILIZATION.
4. IN CONTROL WIRING THE SAME COLOR SHALL BE USED THROUGHOUT THE SYSTEM FOR THE SAME FUNCTION, SUCH AS 10%, 30%, 100% BRIGHTNESS CONTROL, ETC.
5. LOW VOLTAGE (600 V.) AND HIGH VOLTAGE (5000 V.) CONDUCTORS SHALL BE INSTALLED IN SEPARATE WIREWAYS.
6. NEATLY LACE WIRING IN DISTRIBUTION PANELS, WIREWAYS, SWITCHES AND JUNCTION/PULL BOXES.
7. THE MINIMUM SIZE OF PULL/JUNCTION BOXES, REGARDLESS OF THE QUANTITY AND SIZE OF THE CONDUCTORS SHOWN, SHALL BE AS FOLLOWS:
A. IN STRAIGHT PULLS THE LENGTH OF THE BOX SHALL NOT BE LESS THAN EIGHT TIMES THE TRADE DIAMETER OF THE LARGER CONDUIT. THE TOTAL AREA (INCLUDING THE CONDUIT CROSS-SECTIONAL AREA) OF A BOX END SHALL BE AT LEAST 3 TIMES GREATER THAN THE TOTAL TRADE CROSS-SECTIONAL AREA OF THE CONDUITS TERMINATING AT THE END.
B. IN ANGLE PULLS OR 'U' PULLS THE DISTANCE BETWEEN EACH CONDUIT ENTRY INSIDE THE BOX AND THE OPPOSITE WALL OF THE BOX SHALL NOT BE LESS THAN SIX (6) TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT. THIS DISTANCE SHALL BE INCREASED FOR ADDITIONAL ENTRIES BY THE AMOUNT OF THE SUM OF THE DIAMETERS OF ALL OTHER CONDUIT ENTRIES ON THE SAME WALL AS THE BOX. THE DISTANCE BETWEEN CONDUIT ENTRIES ENCLOSING THE SAME CONDUCTOR SHALL NOT BE LESS THAN SIX TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT.
8. A RUN OF CONDUIT BETWEEN TERMINATIONS AT EQUIPMENT ENCLOSURES, SQUARE DUCTS AND PULL/JUNCTION BOXES, SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL), INCLUDING THOSE BENDS LOCATED IMMEDIATELY AT THE TERMINATIONS, CAST, CONDUIT TYPE OUTLETS SHALL NOT BE TREATED AS PULL/JUNCTION BOXES.
9. EQUIPMENT CABINETS SHALL NOT BE USED AS PULL/JUNCTION BOXES. ONLY WIRING TERMINATING AT THE EQUIPMENT SHALL BE BROUGHT INTO THESE ENCLOSURES.
10. SPLICES AND JUNCTION POINTS SHALL BE PERMITTED ONLY IN JUNCTION BOXES, DUCTS EQUIPPED WITH REMOVABLE COVERS, AND AT EASILY ACCESSIBLE LOCATIONS.
11. CIRCUIT BREAKERS IN POWER DISTRIBUTION PANEL(S) SHALL BE THERMAL-MAGNETIC MOLDED CASE, PERMANENT TRIP WITH 100 AMPERE, MINIMUM FRAME.
12. DUAL LUGS SHALL BE USED WHERE TWO (2) WIRES, SIZE NO. 6 OR LARGER, ARE TO BE CONNECTED TO THE SAME TERMINAL.
13. ALL INTERIOR WALL MOUNTED EQUIPMENT ENCLOSURES SHALL BE MOUNTED ON HOT DIPPED GALVANIZED STEEL STRUT SUPPORT, OR STAINLESS STEEL STRUT SUPPORT, WITH CORROSION RESISTANT HARDWARE.
14. SUPPORT FOR EXTERIOR MOUNTED EQUIPMENT SHALL USE HOT DIPPED GALVANIZED STEEL STRUT SUPPORT OR STAINLESS STEEL STRUT SUPPORT WITH STAINLESS STEEL HARDWARE. PROVIDE ZINC RICH PAINT APPLIED TO FIELD CUTS OF GALVANIZED STEEL SUPPORT TO MINIMIZE THE POTENTIAL FOR CORROSION PER THE RESPECTIVE STRUT SUPPORT MANUFACTURER'S RECOMMENDATIONS.
15. CONDUITS FOR ELECTRIC SERVICE ENTRANCE AND FEEDERS SHALL BE AS DETAILED HEREIN ON THE PLANS. WHERE GALVANIZED RIGID STEEL CONDUIT IS SPECIFIED IT SHALL HAVE THREADED FITTINGS. SET SCREW TYPE FITTINGS WILL NOT BE ACCEPTABLE. CONDUITS FOR UNDERGROUND APPLICATIONS SHALL BE AS DETAILED HEREIN. CONDUITS FOR GROUNDING ELECTRODE CONDUCTORS OR INDIVIDUAL GROUNDING CONDUCTORS SHALL BE SCHEDULE 40 OR SCHEDULE 80 PVC.
16. PROVIDE LIQUID TIGHT FLEXIBLE METAL CONDUIT AT CONNECTIONS TO EQUIPMENT SUBJECT TO VIBRATION OR WHERE FLEXIBILITY IS REQUIRED. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING, SUNLIGHT RESISTANT, AND RESISTANT TO OIL, GASOLINE, AND GREASE. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO MOTORS, TRANSFORMERS, & CONSTANT CURRENT REGULATORS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. DO NOT INSTALL LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL LISTED. CONFIRM LIQUID-TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.
17. UNLESS OTHERWISE SHOWN, ALL EXPOSED CONDUITS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES WITH THE LINES OF THE STRUCTURE.
18. ALL STEEL CONDUITS, FITTINGS, NUTS, BOLTS, ETC. SHALL BE GALVANIZED.
19. USE CONDUIT BUSHINGS AT EACH CONDUIT TERMINATION. WHERE NO. 4 AWG OR LARGER UNDERGROUND WIRE IS INSTALLED, USE INSULATED BUSHINGS.
20. USE DOUBLE LOCK NUTS AT EACH CONDUIT TERMINATION.
21. WRAP ALL PRIMARY AND SECONDARY POWER TRANSFORMER CONNECTIONS WITH SUFFICIENT LAYERS OF INSULATING TAPE (3M SCOTCH 23 ALL-VOLTAGE SPLICING TAPE, 3M SCOTCH 130C LINERLESS RUBBER SPLICING TAPE, OR APPROVED EQUAL) AND COVER WITH VINYL ELECTRICAL TAPE (3M SCOTCH 88 VINYL ELECTRICAL TAPE OR APPROVED EQUAL) FOR FULL VALUE OF CABLE INSULATION VOLTAGE.
22. UNLESS OTHERWISE NOTED, ALL SINGLE CONDUCTOR CONTROL WIRING SHALL BE NO. 12 AWG. COPPER MINIMUM.
23. THE FOLLOWING SHALL APPLY TO RELAY/CONTACTOR PANELS/ENCLOSURES:
A. FOR INTERIOR LOCATIONS ALL COMPONENTS SHALL BE MOUNTED IN NEMA 12 (DUST TIGHT) ENCLOSURE(S) WITH VERTICALLY HINGED COVERS. FOR EXTERIOR/OUTDOOR LOCATIONS ALL COMPONENTS SHALL BE MOUNTED IN NEMA 4X STAINLESS STEEL ENCLOSURE(S) WITH VERTICALLY HINGED COVERS. ALL CONDUIT ENTRIES INTO NEMA 4, 4X ENCLOSURES SHALL HAVE NEMA 4 HUBS LISTED SUITABLE FOR THE RESPECTIVE ENCLOSURE TO MAINTAIN THE NEMA 4, 4X RATING OF THE ENCLOSURE.
B. THE ENCLOSURE(S) SHALL HAVE AMPLE SPACE FOR THE CIRCUIT COMPONENTS, TERMINAL BLOCKS AND INCOMING AND INTERNAL WIRING.
C. ALL CONTROL CONDUCTOR TERMINATIONS SHALL BE OF THE OPEN-EYE CONNECTOR/SCREW TYPE. SOLDERED CLOSED-EYE TERMINATIONS, OR TERMINATIONS WITHOUT CONNECTORS ARE NOT ACCEPTABLE.
D. WHEN THE ENCLOSURE COVER IS OPENED, ALL CIRCUIT COMPONENTS, WIRING AND TERMINALS SHALL BE EXPOSED AND ACCESSIBLE WITHOUT REMOVAL OF ANY PANELS, COVERS, ETC., EXCEPT THOSE COVERING HIGH VOLTAGE COMPONENTS.
E. ACCESS TO, OR REMOVAL OF A CIRCUIT COMPONENT OR TERMINAL BLOCK WILL NOT REQUIRE THE REMOVAL OF ANY OTHER CIRCUIT COMPONENT OR TERMINAL BLOCK.
F. EACH CIRCUIT COMPONENT SHALL BE CLEARLY IDENTIFIED INDICATING ITS CORRESPONDING NUMBER SHOWN ON THE DRAWINGS AND ITS FUNCTION.
G. A COMPLETE WIRING DIAGRAM SHALL BE MOUNTED ON THE INSIDE OF THE COVER. THE DIAGRAM SHALL REPRESENT EACH CONDUCTOR BY A SEPARATE LINE.
H. THE DIAGRAM SHALL IDENTIFY EACH CIRCUIT COMPONENT AN NUMBERING AND COLOR OF EACH TERMINAL CONDUCTOR AND TERMINAL.
I. ALL WIRING SHALL BE NEATLY TRAINED AND LACED.
J. MINIMUM WIRE SIZE SHALL BE NO. 12 AWG.
24. FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH METER SOCKET, SERVICE DISCONNECT, SAFETY SWITCH, CUTOUT, PANELBOARD, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION".

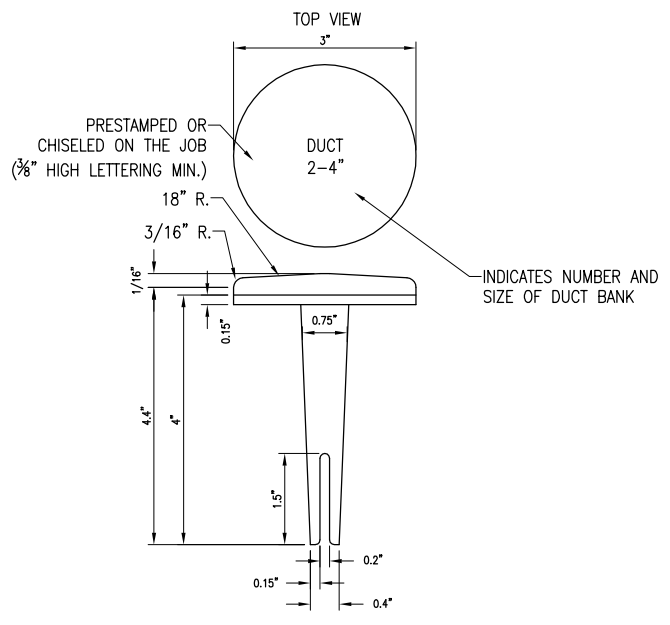
MAR 24, 2014 4:25 PM H:\GLO00382 p:\s\spi-svr306\hanson.dom\hanson Projects\Documents\10\jobs\1040008\CAD\Airport\Sheet\E-001-NOTES

REVISION DATE ROBERT F. TRACY MUNICIPAL AIRPORT MT. STERLING, ILLINOIS HANSON Professional Services Inc. 2014 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2986 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide INSTALL AUTOMATIC WEATHER OBSERVATION SYSTEM ELECTRICAL NOTES 9 of 15 sheets

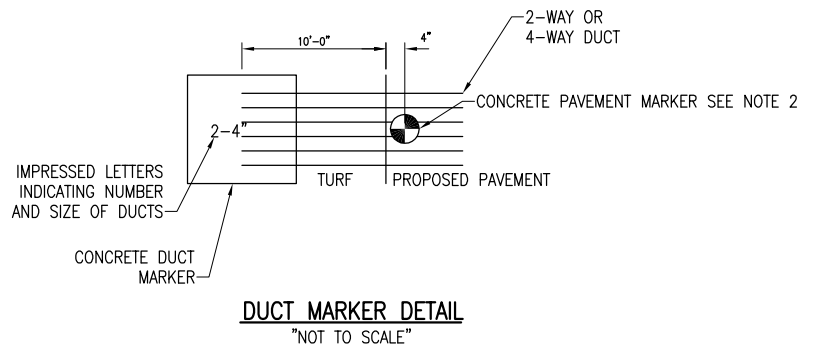
MAR 24, 2014 4:26 PM H:\GLO00382
 pw:\spi-svr306\hanson.dom\hanson_projects\Documents\10\100008\10\100008\CAD\Report\Sheet\E-501-DETL



4" I.D. DUCT



- 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.

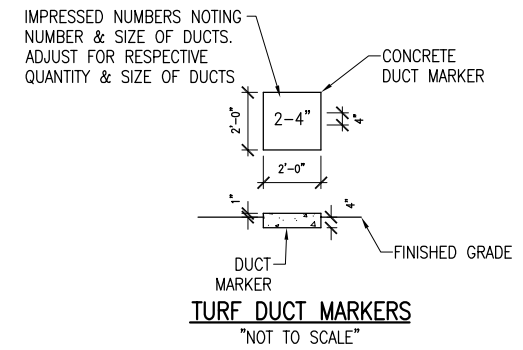
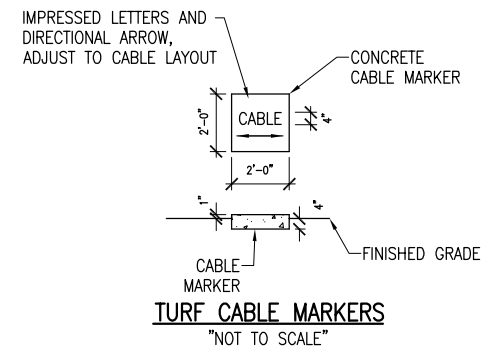
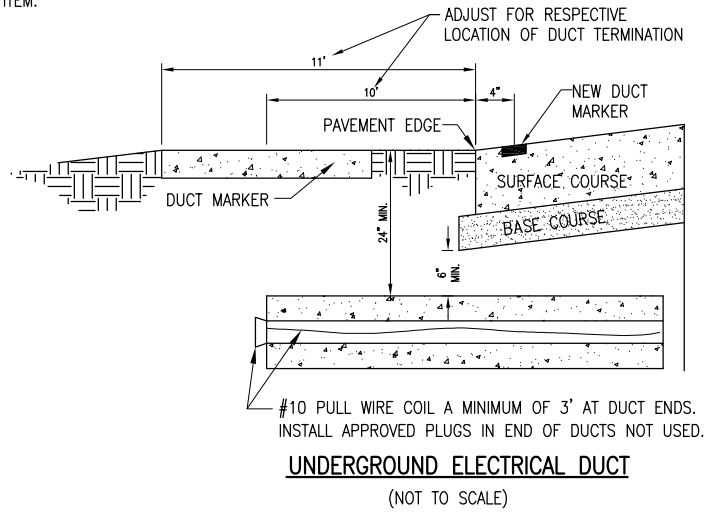


DUCT BANK NOTES:

1. DIMENSIONS FOR CONCRETE COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
2. INCLUDE DUCT SPACERS AS MANUFACTURED BY UNDERGROUND DEVICES INC., OR APPROVED EQUAL TO MAINTAIN PROPER SEPARATION OF CONDUITS.
3. PROVIDE REBAR WHERE APPLICABLE TO ACCOMMODATE INTERFACE OF CONCRETE ENCASED DUCT BANKS TERMINATING IN HANDHOLE. PROVIDE REBAR WHERE APPLICABLE TO EXTEND AND EXISTING CONCRETE ENCASED DUCT BANK. REBAR SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 706, GRADE 60.
4. CONDUITS FOR CONCRETE ENCASED DUCT SHALL BE SCHEDULE 40 PVC CONFORMING TO ITEM 110.
5. MINIMUM DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 18" BELOW FINISHED GRADE.
6. HIGH VOLTAGE AND LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
7. HOMERUN CABLES FOR A RESPECTIVE CIRCUIT SHALL BE INSTALLED IN THE SAME RACEWAY OR DUCT.
8. DUCT INTERFACE TO HANDHOLES OR MANHOLES WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT PAY ITEM.

CABLE & DUCT MARKER NOTES:

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



REVISION					
DATE					
ROBERT F. TRACY MUNICIPAL AIRPORT MT. STERLING, ILLINOIS					
Hanson Proj. No. 10A00008D	Filename E-501-DETL.dwg	Scale NOT TO SCALE	Date 03/25/14	LAYOUT KNL	12/10/13
				DRAWN BAK	12/11/13
				REVIEWED CAH/KNL	01/10/14
 © Copyright Hanson Professional Services Inc. 2014 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2886 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide					
INSTALL AUTOMATIC WEATHER OBSERVATION SYSTEM			ELECTRICAL AND DUCT DETAILS		
10 10 of 15 sheets					

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

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

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

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

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

NOTES:

- 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 1, 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 1, 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.

REVISION				
DATE				
ROBERT F. TRACY MUNICIPAL AIRPORT MT. STERLING, ILLINOIS				
Hanson Proj. No. 10A00080	Filename E-002-ELEC.dwg	Scale NOT TO SCALE	Date 03/25/14	
LAYOUT	KNL	12/10/13		
DRAWN	BAK	12/11/13		
REVIEWED	CAH/KNL	01/10/14		
 © Copyright Hanson Professional Services Inc. 2014 Hanson Professional Services Inc. 1525 South Sixth Street Springfield, Illinois 62703-2986 Ph: (217) 788-2450 Fax: (217) 788-2503 www.hanson-inc.com Offices Nationwide				
INSTALL AUTOMATIC WEATHER OBSERVATION SYSTEM		ELECTRICAL LEGEND, ABBREVIATIONS & NOTES		
11				
11 of 15 sheets				

MAR 24, 2014 4:29 PM H:\GLO000382
 p:\s\spi-svr306\hanson\Documents\Projects\Documents\10\0008\CAD\Airport\Sheet\E-601-ELEC

AWOS PANELBOARD SCHEDULE			
CKT #	DUTY	SIZE	CKT #
1	MAIN BREAKER	60A, 2P	2
3			4
5	UPS FOR AWOS ACCESS CONTROL UNIT (ACU)	15A, 1P	6
7	CEILOMETER	15A, 1P	8
9	CONVENIENCE CFCI RECEPT.	20A, 1P	10
11	SPARE	20A, 1P	12
13	BLANK		14
15	BLANK		16
17	BLANK		18

S/N

GND

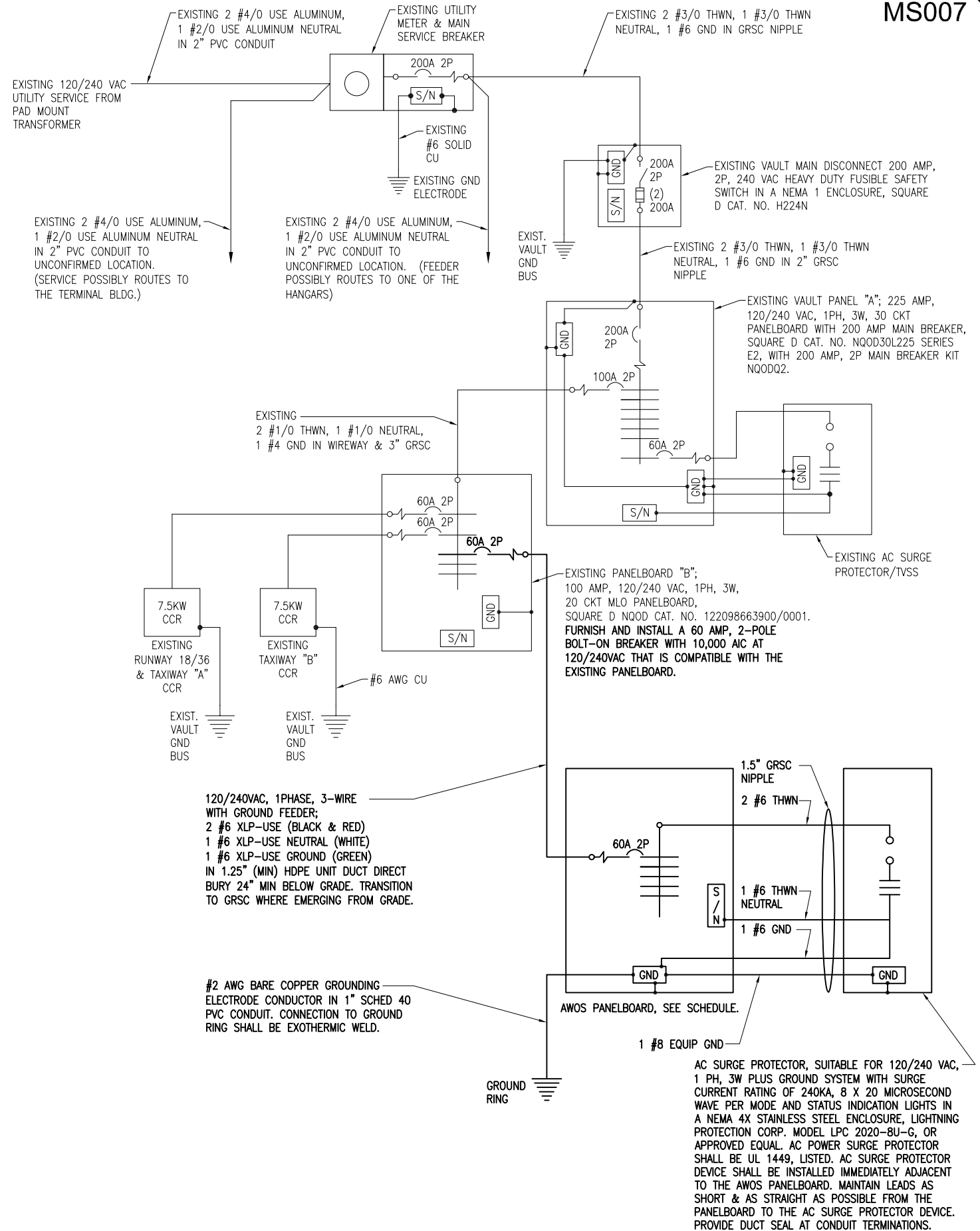
100 AMP, 120/240VAC, 1Ø, 3 WIRE, 18 CIRCUIT PANELBOARD WITH MAIN LUGS AND 60 AMP, 2 POLE REVERSE FEED MAIN CIRCUIT BREAKER. INCLUDE COPPER SOLID NEUTRAL AND SEPARATE COPPER GROUND BUS. PANELBOARD SHALL BE SQUARE D CLASS 1630, CAT. NO. NQ18LIC IN A NEMA 3R & 12 ENCLOSURE WITH HINGED COVER, OR APPROVED 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 SYSTEM PANELBOARD" AND "120/240VAC, 1 PH".
- 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.
- FURNISH AND INSTALL A 120VAC, 20 AMP, U.L. LISTED SPEC GRADE GFCI RECEPT. WITH CAST ALUMINUM FS BOX AND WATERPROOF (NEMA 3R) COVER AT PANELBOARD. BRANCH CIRCUIT SHALL BE 1 #12 THWN, 1 #12 NEUTRAL, 1 #12 GND IN 3/4" GRSC NIPPLE. WP COVER SHALL BE TAYMAC CAT. # 20550 OR APPROVED EQUAL.
- WIRING FOR 15 AMP & 20 AMP, 120 VAC BRANCH CIRCUITS SHALL BE 1 #12 THWN, 1 #12 NEUTRAL, 1 #12 GND IN 3/4" SUNLIGHT RESISTANT, UL LISTED SUITABLE FOR GROUNDING, LIQUID TIGHT FLEXIBLE METAL CONDUIT.
- THE ACU, CEILOMETER, OBSTRUCTION LIGHTS, AND RAIN ACCUMULATOR 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.

NOTES

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



ELECTRICAL ONE LINE DIAGRAM FOR AWOS

MS007

REVISION	DATE

ROBERT F. TRACY MUNICIPAL AIRPORT
 MT. STERLING, ILLINOIS

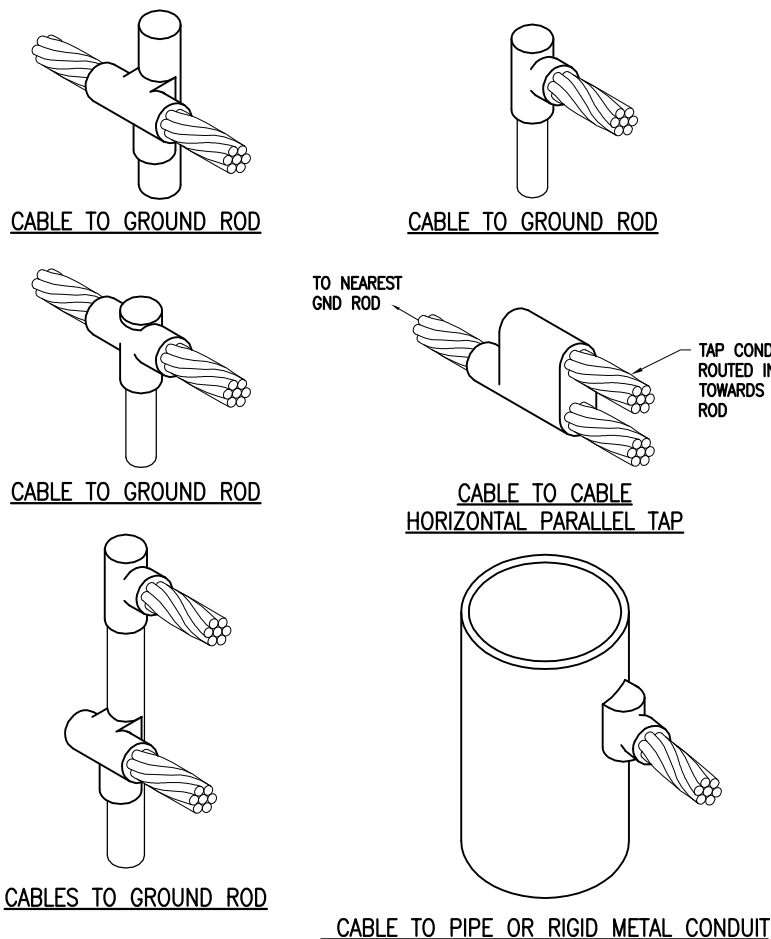
IL PROJ.: 63-4276

Hanson Proj. No. 10A000080	12/10/13
Filename E-601-ELEC.dwg	BAK
Scale NOT TO SCALE	12/24/13
Date 03/25/14	REVIEWED
	CAH/KNL
	01/10/14

HANSON
 Professional Services Inc. 2014
 Hanson Professional Services Inc.
 1525 South Sixth Street
 Springfield, Illinois 62703-2986
 Ph: (217) 788-2450 Fax: (217) 788-2503
 www.hanson-inc.com
 Offices Nationwide

INSTALL AUTOMATIC
 WEATHER
 OBSERVATION SYSTEM

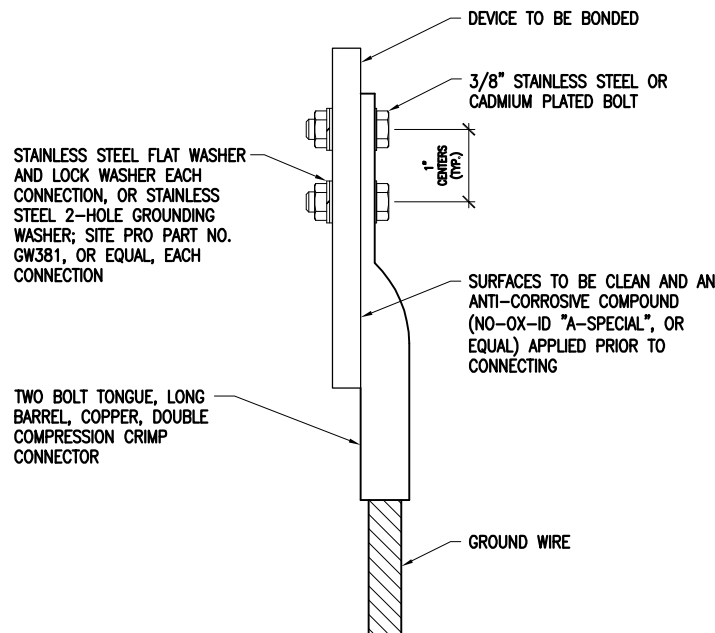
ELECTRICAL ONE LINE
 DIAGRAM FOR AWOS



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 ENCIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT.

EXOTHERMIC WELD DETAILS

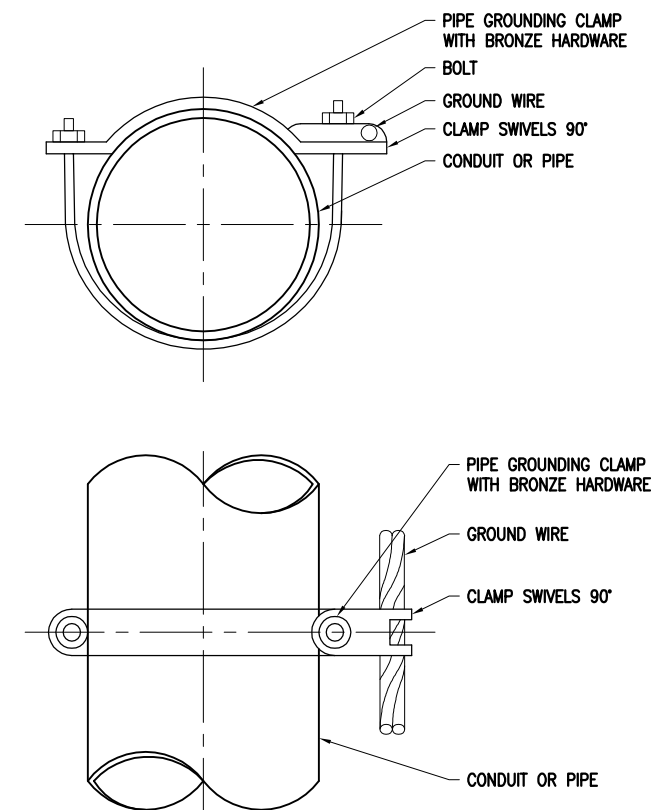


2 HOLE LONG BARREL COMPRESSION LUG TABLE			
WIRE SIZE	BURNDY CAT. NO.	THOMAS & BETTS CAT. NO.	PENN-UNION CAT. NO.
#8 AWG STRANDED	YA8C-2TC38	256-30695-1157	BBLU-8D-2TC38
#6 AWG SOLID	YA8C-2TC38 OR YGA6C-2TC38E2G1		
#6 AWG STRANDED	YA6C-2TC38	256-30695-1158	BBLU-6D-2TC38
#4 AWG STRANDED	YA4C-2TC38	256-30695-1159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

NOTES

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

GROUNDING LUG CONNECTION DETAIL



PIPE GROUNDING CLAMP TABLE	
BURNDY CAT. NO.	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.

PIPE/CONDUIT GROUNDING CLAMP DETAIL

MAR 24, 2014 4:30 PM H4GL000382
 p:\s\spi-svr306\hanson\Documents\Projects\1040008\CAD\Report\Sheet\E-505-DETL

REVISION	DATE

ROBERT F. TRACY MUNICIPAL AIRPORT
 MT. STERLING, ILLINOIS

IL PROJ.: 163-4276

Hanson Proj. No. 1040008D	12/10/13
Filename E-502-DETL.dwg	12/11/13
Scale NOT TO SCALE	03/25/14
Date	
LAYOUT	KNL
DRAWN	BAK
REVIEWED	CAH/KNL

HANSON
 © Copyright Hanson Professional Services Inc. 2014
 Hanson Professional Services Inc.
 1525 South Sixth Street
 Springfield, Illinois 62703-2886
 Ph: (217) 788-2450 Fax: (217) 788-2503
 www.hanson-inc.com
 Offices Nationwide

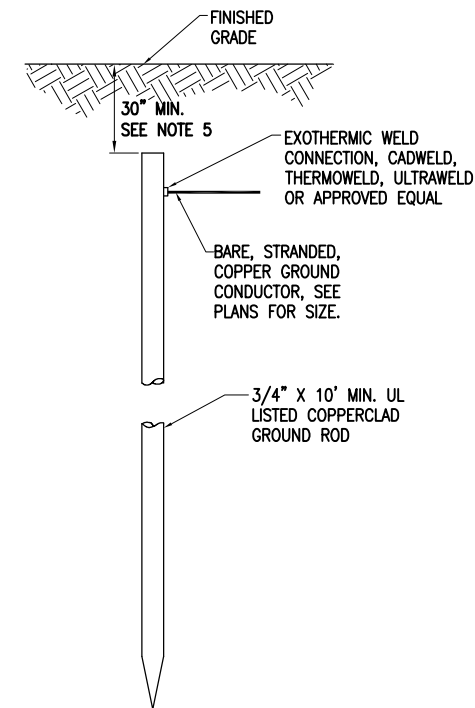
INSTALL AUTOMATIC
 WEATHER
 OBSERVATION SYSTEM

GROUNDING DETAILS
 SHEET 1

GROUNDING NOTES

- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70) IN FORCE AND FAA-STD-019e (LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING, AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT). THE RELIABILITY OF THE GROUNDING SYSTEM IS DEPENDENT ON CAREFUL, PROPER INSTALLATION AND CHOICE OF MATERIALS. IMPROPER PREPARATION OF SURFACES TO BE JOINED TO MAKE AN ELECTRICAL PATH, LOOSE JOINTS OR CORROSION CAN INTRODUCE IMPEDANCE THAT WILL SERIOUSLY IMPAIR THE ABILITY OF THE GROUND PATH TO PROTECT PERSONNEL AND EQUIPMENT AND TO ABSORB TRANSIENTS THAT CAN CAUSE NOISE IN COMMUNICATIONS CIRCUITS. THE FOLLOWING FUNCTIONS ARE PARTICULARLY IMPORTANT TO ENSURE A RELIABLE GROUND SYSTEM:
- FURNISH AND INSTALL GROUND RODS AS DETAILED HEREIN. GROUND RODS FOR 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.
- CONTRACTOR SHALL TEST EACH MADE ELECTRODE GROUND ROD/GROUND FIELD/GROUND RING WITH AN INSTRUMENT SPECIFICALLY DESIGNED FOR TESTING GROUND FIELD SYSTEMS. IF GROUND RESISTANCE EXCEEDS 10 OHMS, CONTACT THE PROJECT ENGINEER FOR FURTHER DIRECTION. COPIES OF GROUND ROD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE.
- ALL PRODUCTS ASSOCIATED WITH THE GROUNDING SYSTEM SHALL BE UL-LISTED AND LABELED.
- ALL BOLTED OR MECHANICAL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND BEFORE JOINING, SANICHEM INC. 'NO-OX-ID 'A-SPECIAL' COMPOUND, BURNDY PENETROX E, OR EQUAL.
- METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2014 NATIONAL ELECTRICAL CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.
- METALLIC RACEWAY FITTINGS SHALL BE MADE UP TIGHT TO PROVIDE A PERMANENT LOW IMPEDANCE PATH FOR ALL CIRCUITS. METAL CONDUIT TERMINATIONS IN ENCLOSURES SHALL BE BONDED TO THE ENCLOSURE WITH UL-LISTED FITTINGS SUITABLE FOR GROUNDING. PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT
- ALL CONNECTIONS, LOCATED ABOVE GRADE, BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS SHALL BE MADE USING UL-LISTED DOUBLE COMPRESSION CRIMP TYPE CONNECTORS OR UL-LISTED BOLTED GROUND CONNECTORS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, THOMAS AND BETTS, OR EQUAL. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES IN UL STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
- ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
- PROVIDE ALL BOXES FOR PROPOSED OUTLETS, SWITCHES, CIRCUIT BREAKERS, ETC. WITH GROUNDING SCREWS. PROVIDE ALL PANELBOARD, SWITCHGEAR, ETC., ENCLOSURES WITH GROUNDING BARS WITH INDIVIDUAL SCREWS, LUGS, CLAMPS, ETC., FOR EACH OF THE GROUNDING CONDUCTORS THAT ENTER THEIR RESPECTIVE ENCLOSURES.
- EACH NEW FEEDER CIRCUIT AND/OR BRANCH CIRCUIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. METAL RACEWAY OR CONDUIT SHALL NOT MEET THIS REQUIREMENT. THE EQUIPMENT GROUND WIRE FROM EQUIPMENT SHALL NOT BE SMALLER THAN ALLOWED BY 2014 NEC TABLE 250-122 "MINIMUM SIZE CONDUCTORS OR GROUNDING RACEWAY AND EQUIPMENT." WHEN CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT-GROUNDING CONDUCTORS SHALL BE ADJUSTED PROPORTIONATELY ACCORDING TO CIRCULAR MIL AREA. ALL EQUIPMENT GROUND WIRES SHALL BE COPPER, EITHER BARE OR INSULATED GREEN IN COLOR. WHERE THE EQUIPMENT GROUNDING CONDUCTORS ARE INSULATED, THEY SHALL BE IDENTIFIED BY THE COLOR GREEN, AND SHALL BE THE SAME INSULATION TYPE AS THE PHASE CONDUCTORS.

- ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC., SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 2014 NEC 250-102. WHERE METAL CONDUITS TERMINATE IN AN ENCLOSURE (SUCH AS A MOTOR CONTROL CENTER, SWITCHBOARD, ETC) WHERE THERE IS NOT ELECTRICAL CONTINUITY WITH THE CONDUIT AND THE RESPECTIVE ENCLOSURE, PROVIDE A BONDING JUMPER FROM THE RESPECTIVE ENCLOSURE GROUND BUS TO THE CONDUIT SIZED PER 2014 NEC 250-102.
- IT IS THE INTENT OF THIS SPECIFICATION THAT ALL MOTOR FRAMES, PUMP BASES ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.
- PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUNDED NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
- EACH AND ALL GROUNDED CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.
- ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, OR APPROVED EQUAL.
- BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
- BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.
- INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY 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.
- IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2014 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
- WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.
- GROUND RODS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. STEEL USED TO MANUFACTURER GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.



10 FT. GROUND ROD

NOTES

- TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.
- THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM FOR THE AWOS SHALL NOT EXCEED 10 OHMS.
- COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.
- GROUND RODS SHALL BE SPACED AS DETAILED ON THE PLANS AND SHALL NOT BE SPACED LESS THAN ONE ROD LENGTH APART.
- TOP OF GROUND RODS SHALL BE 30" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN. GROUND RING CONDUCTORS SHALL BE 42" MINIMUM BELOW GRADE TO BE BELOW THE FROST LINE FOR BROWN COUNTY, ILLINOIS.
- GROUND RODS FOR AWOS SHALL BE A MINIMUM 3/4-INCH DIAMETER BY 10-FT LONG UL LISTED COPPER CLAD.

GROUND RODS

(NOT TO SCALE)

MAR 24, 2014 4:35 PM H:\GLO00382
 p:\sps-svr206\hanson.dom\hanson_projects\Documents\10\jobs\10A0008\CAD\Airport\Sheet\E-003-NOTE

REVISION	
DATE	
ROBERT F. TRACY MUNICIPAL AIRPORT MT. STERLING, ILLINOIS	
IL PROJ.: 65-4276	

Hanson Proj. No. 10A0008D	12/10/13
Filename E-003-NOTE.dwg	BAK
Scale NOT TO SCALE	DRAWN
Date 03/25/14	REVIEWED
	CHK/KNL


HANSON
 Professional Services Inc. 2014
 1525 South Sixth Street
 Springfield, Illinois 62703-2886
 Ph: (217) 788-2450 Fax: (217) 788-2503
 www.hanson-inc.com
 Offices Nationwide

INSTALL AUTOMATIC
 WEATHER
 OBSERVATION SYSTEM

 GROUNDING NOTES