ITEM NO. 1A IDOT LETTING: NOVEMBER 21, 2014

SR088
TOTAL SHEETS = 33

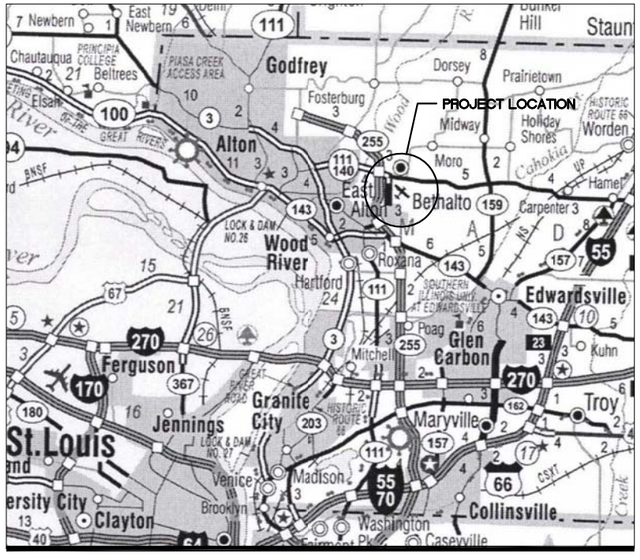
CONSTRUCTION PLANS

RELOCATE ELECTRIC VAULT SERVICE

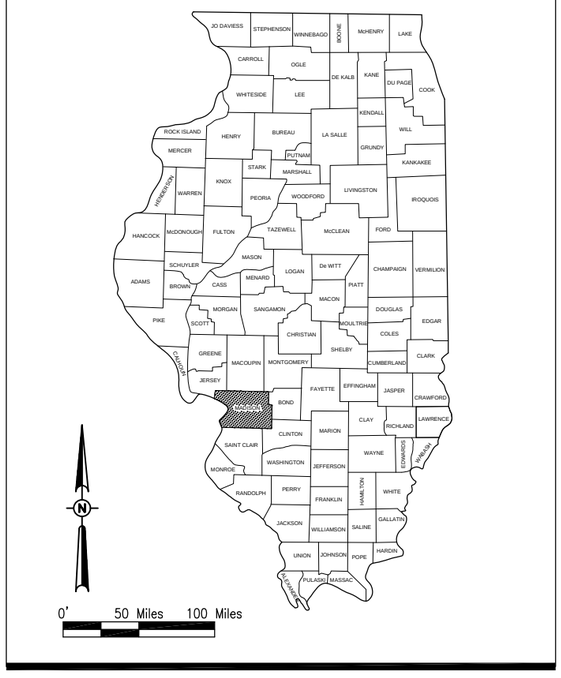
ST. LOUIS REGIONAL AIRPORT AUTHORITY
ST. LOUIS REGIONAL AIRPORT (ALN)
EAST ALTON, MADISON COUNTY, ILLINOIS

SBG PROJECT NO. TBD
IDA PROJECT NO. : ALN-4294

VICINITY MAP



LOCATION MAP



SCOPE OF WORK:

THIS PROJECT CONSISTS OF THE UPGRADE OF ELECTRIC SERVICE AND RELOCATION OF THE ELECTRICAL FEED FOR THE AIRPORT ELECTRICAL VAULT WITH THE ASSOCIATED DUCT BANKS, MANHOLES, HANDHOLES, AND CABLING. THIS PROJECT WILL INCLUDE A NEW AIRFIELD LIGHTING CONTROL SYSTEM FOR THE VAULT TO INTERFACE TO THE EXISTING L-821 LIGHTING CONTROL PANEL LOCATED IN THE AIR TRAFFIC CONTROL TOWER. THE PROJECT INCLUDES REMOVAL OF FEEDER AND CONTROL CABLES THAT RUN THROUGH HANGAR NUMBER 2 AND FURNISHING AND INSTALLING NEW CABLES IN THE NEW DUCT BANK SYSTEM. ALSO INCLUDED WILL BE VAULT MODIFICATIONS TO UPGRADE THE EXHAUST VENTILATION SYSTEM FOR THE AIRPORT ELECTRICAL VAULT.

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

COVERING ELECTRICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS

EXPIRES: 11/30/2015

Kevin N. Lightfoot, P.E.
Electrical Engineer
9/26/2014
Date

HANSON

HANSON PROFESSIONAL SERVICES INC.
1525 South Sixth Street
Springfield, Illinois 62703-2886
Telephone: 217.788.2450
Fax: 217.788.2503

STATE OF ILLINOIS
BARRY S. STOLZ
062-057281
PROFESSIONAL ENGINEER
LICENSED

EXP. 11-30-15

Barry S. Stolz, P.E.
Civil Engineer
9-26-14
Date

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY
8 Terminal Drive
East Alton, Illinois 62024
Telephone: 618.259.2531
Fax: 618.259.7669

David C. Miller
Airport Manager
9/24/14
Date

pw:\\spi-sw306.hanson.dom:Hanson Projects\Documents\13Jobs\13A00860\13A00860D\CAD\Airport\Sheet\C-001-CVR

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITY	AS-BUILT QUANTITY
AR108800	CONTROL CABLE	L.F.	2,700	
AR109210	VAULT MODIFICATIONS	L.S.	1	
AR109620	LIGHTING CONTROL SYSTEM	L.S.	1	
AR109902	REMOVE ELECTRICAL EQUIPMENT	L.S.	1	
AR109924	REPLACE ELECTRIC SERVICES	L.S.	1	
AR110014	4" DIRECTIONAL BORE	L.F.	665	
AR110502	2-WAY CONC. ENCASED DUCT	L.F.	115	
AR110506	6-WAY CONC. ENCASED DUCT	L.F.	326	
AR110710	ELECTRICAL MANHOLE	EA.	2	
AR110715	ELECTRICAL MANHOLE - SPECIAL	EA.	3	
AR125565	SPLICE CAN	EA.	1	
AR150510	ENGINEER'S FIELD OFFICE	L.S.	1	
AR150520	MOBILIZATION	L.S.	1	
AR800463	REM. & REPL. CONC. PAD & SIDEWALK	L.S.	1	
AR800464	REMOVE & REPLACE APRON PAVEMENT	L.S.	1	

INDEX OF SHEETS

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

STATE OF ILLINOIS
BARRY S. STOLZ
062-057281
LICENSED
PROFESSIONAL ENGINEER
EXP 11-30-15
9-26-14

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

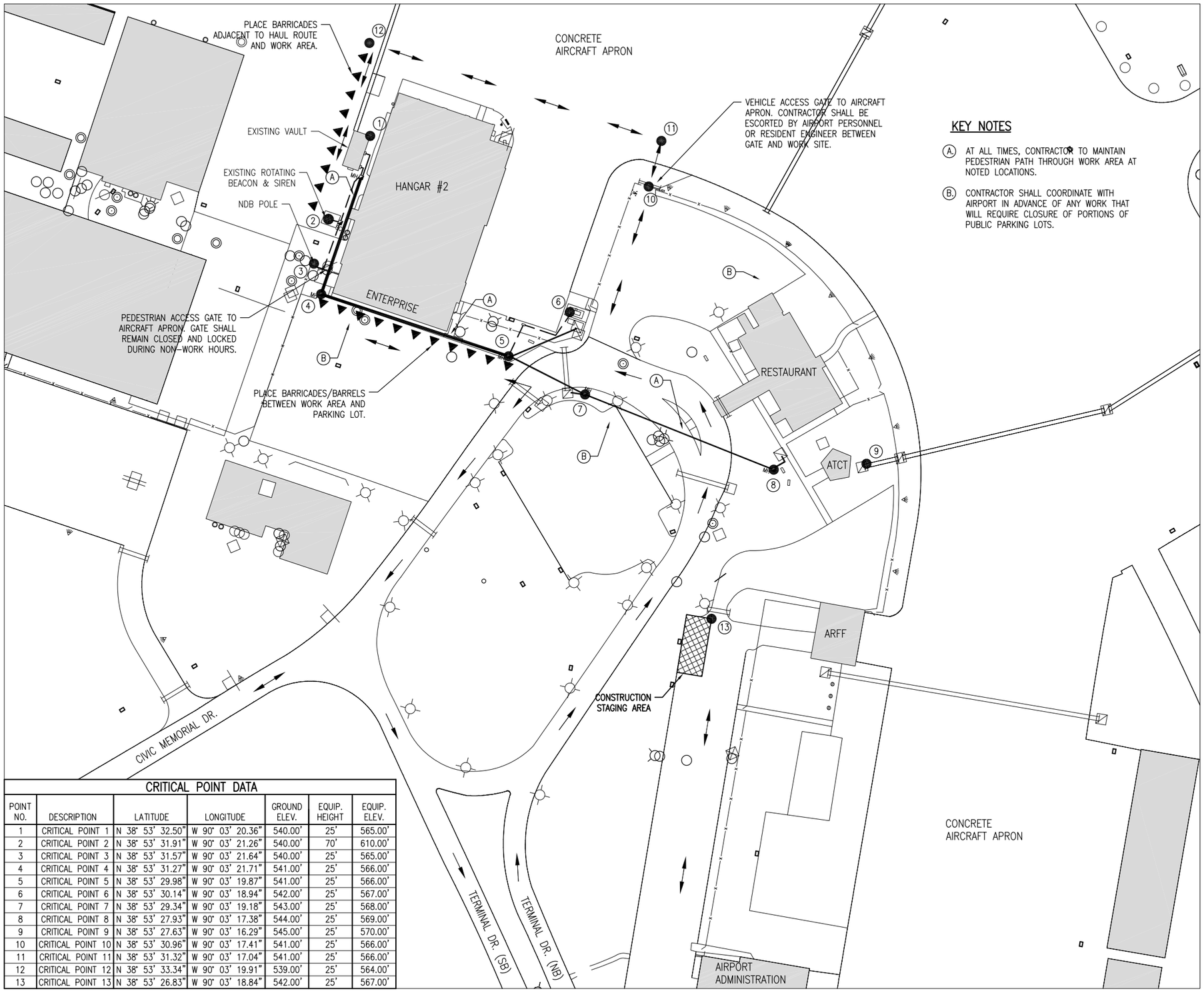
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: G-002-FLP.DWG
LAYOUT BY: KNL 09/24/2014
DRAWN BY: MLH 09/02/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

SUMMARY OF QUANTITIES AND INDEX TO SHEETS



KEY NOTES

(A.) AT ALL TIMES, CONTRACTOR TO MAINTAIN PEDESTRIAN PATH THROUGH WORK AREA AT NOTED LOCATIONS.

(B.) CONTRACTOR SHALL COORDINATE WITH AIRPORT IN ADVANCE OF ANY WORK THAT WILL REQUIRE CLOSURE OF PORTIONS OF PUBLIC PARKING LOTS.

50 0 50 100

LEGEND

- EXISTING IMPROVEMENTS
- PROPOSED DUCT BANK SYSTEM
- EXISTING BUILDINGS
- PROPOSED CONSTRUCTION STAGING AREA
- EXISTING FENCE
- PROPOSED BARRICADES
- PROPOSED HAUL ROUTE
- CRITICAL POINT

WORK AREA NOTES

1. BARRICADES SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
2. THE CHANGEOVER OF POWER SUPPLY TO THE VAULT BUILDING (RESULTING IN TEMPORARY POWER LOSS TO THE VAULT BUILDING) MUST BE COMPLETED DURING DAYLIGHT HOURS/VFR CONDITIONS AND SHALL BE COORDINATED IN ADVANCE WITH THE AIRPORT.
3. CLEAN EARTH BACKFILL FOR TRENCHES IS AVAILABLE ON AIRPORT PROPERTY BUT IS NOT SHOWN ON THIS PLAN VIEW. ACCESS MUST BE COORDINATED WITH THE AIRPORT.
4. AT ALL TIMES, ANY OPEN TRENCHES (NOT BEING ACTIVELY WORKED ON) ACROSS PAVEMENTS MUST BE COVERED BY STEEL PLATES TO ALLOW FOR VEHICLE/PEDESTRIAN TRAFFIC THROUGH THE WORK AREA. PRIOR TO RE-OPENING THE PAVEMENTS TO VEHICLE/PEDESTRIAN TRAFFIC, THE PAVEMENTS SHALL BE LEFT IN A CONDITION SATISFACTORY TO THE OWNER AND RESIDENT ENGINEER AT NO ADDITIONAL COST TO THE CONTRACT.
5. AT ALL TIMES, ANY OPEN TRENCHES ACROSS TURF AREAS MUST BE PROMINENTLY MARKED WITH LIGHTED BARRICADES/BARRELS, SNOW FENCE, ETC., TO PREVENT PEDESTRIAN ACCESS.
6. AIRPORT SECURITY SHALL BE MAINTAINED THROUGHOUT THE PROJECT. THE CONTRACTOR SHALL BE RESTRICTED TO THE DESIGNATED WORK AREAS. THE CONTRACTOR SHALL ENSURE THAT ACCESS POINTS USED BY CONSTRUCTION VEHICLES AND PERSONNEL ARE MONITORED WHEN OPEN AND LOCKED WHEN NOT IN USE TO PREVENT UNAUTHORIZED ACCESS TO THE AIRCRAFT MOVEMENT AREA.
7. AT THE COMPLETION OF ALL CONSTRUCTION, THE HAUL ROUTES AND THE CONSTRUCTION STAGING AREA ARE TO BE RETURNED TO THEIR PRE-CONSTRUCTION CONDITION.
8. THE COSTS FOR ALL ITEMS ASSOCIATED WITH THIS SAFETY PLAN SHALL BE PAID FOR UNDER ITEM AR150520 UNLESS OTHERWISE NOTED WITHIN THE PLAN SET.

CRITICAL POINT DATA

POINT NO.	DESCRIPTION	LATITUDE	LONGITUDE	GROUND ELEV.	EQUIP. HEIGHT	EQUIP. ELEV.
1	CRITICAL POINT 1	N 38° 53' 32.50"	W 90° 03' 20.36"	540.00'	25'	565.00'
2	CRITICAL POINT 2	N 38° 53' 31.91"	W 90° 03' 21.26"	540.00'	70'	610.00'
3	CRITICAL POINT 3	N 38° 53' 31.57"	W 90° 03' 21.64"	540.00'	25'	565.00'
4	CRITICAL POINT 4	N 38° 53' 31.27"	W 90° 03' 21.71"	541.00'	25'	566.00'
5	CRITICAL POINT 5	N 38° 53' 29.98"	W 90° 03' 19.87"	541.00'	25'	566.00'
6	CRITICAL POINT 6	N 38° 53' 30.14"	W 90° 03' 18.94"	542.00'	25'	567.00'
7	CRITICAL POINT 7	N 38° 53' 29.34"	W 90° 03' 19.18"	543.00'	25'	568.00'
8	CRITICAL POINT 8	N 38° 53' 27.93"	W 90° 03' 17.38"	544.00'	25'	569.00'
9	CRITICAL POINT 9	N 38° 53' 27.63"	W 90° 03' 16.29"	545.00'	25'	570.00'
10	CRITICAL POINT 10	N 38° 53' 30.96"	W 90° 03' 17.41"	541.00'	25'	566.00'
11	CRITICAL POINT 11	N 38° 53' 31.32"	W 90° 03' 17.04"	541.00'	25'	566.00'
12	CRITICAL POINT 12	N 38° 53' 33.34"	W 90° 03' 19.91"	539.00'	25'	564.00'
13	CRITICAL POINT 13	N 38° 53' 26.83"	W 90° 03' 18.84"	542.00'	25'	567.00'

HANSON Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

STATE OF ILLINOIS
BARRY S. STOLZ
062-057281
LICENSED
PROFESSIONAL ENGINEER
EXP 11-30-15
9-26-14

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION	LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: G-101-SFY.DWG
LAYOUT BY: BSS 08/07/2014
DRAWN BY: BSS 08/08/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

CONSTRUCTION SAFETY PLAN

SEP 27, 2014 9:47 PM HARRI01115
pw:\\spi-svr306.hanson.dom\Hanson Projects\Documents\13Jobs\13A0086\13A0086D\CAD\Airport\Sheet\G-101-SFY

BARRICADE NOTES

1. ALL CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING THE ILLINOIS SUPPLEMENT (LATEST EDITION) AND THE FAA ADVISORY CIRCULARS (LATEST EDITION) UNLESS NOTED OTHERWISE. THE MORE STRINGENT SPECIFICATIONS SHALL GOVERN.
2. CONSTRUCTION RED WARNING LIGHT: THESE ARE PORTABLE, LENS DIRECTED, ENCLOSED LIGHTS. THE COLOR OF THE LIGHT EMITTED SHALL BE RED. THEY MAY BE USED IN EITHER A STEADY BURN (TYPE C) OR LOW INTENSITY FLASHING MODE (TYPE A) UNLESS NOTED OTHERWISE.
3. THE LIGHTING SHALL BE MAINTAINED IN OPERATION DURING THE HOURS OF DARKNESS BETWEEN 1/2 HOUR AFTER SUNSET AND 1/2 HOUR BEFORE SUNRISE AND WHEN CONDITIONS EXIST WHICH TEND TO OBSCURE VISION.
4. BARRICADES SHALL BE SECURED TO THE GROUND BY APPROVED METHODS TO PREVENT MOVEMENT BY PROP WASH, JET BLAST OR OTHER WIND CURRENTS.
5. THE ONLY COLOR COMBINATION ON BARRICADES IS ORANGE AND WHITE. THE ORANGE STRIPES SHALL BE ENCAPSULATED LENS REFLECTIVE SHEETING. THE WHITE STRIPES SHALL BE EITHER ENCAPSULATED OR ENCLOSED LENS REFLECTIVE SHEETING AND MUST BE IN ACCEPTABLE CONDITION.
6. COST FOR PROVIDING, PLACING, MAINTAINING, AND REMOVING BARRICADES SHALL BE INCLUDED IN ITEM AR150520 MOBILIZATION.

SAFETY NOTES

1. FOLLOWING ARE THE CONSTRUCTION SAFETY PROCEDURES THAT THE CONTRACTOR SHALL FOLLOW THROUGHOUT THIS PROJECT.
2. ALL PROVISIONS OF THE LATEST EDITION OF FAA ADVISORY CIRCULAR AC 150/5370-2 (CURRENT EDITION), "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION", APPLY TO THIS CONTRACT, EXCEPT AS MODIFIED BY THIS SAFETY PLAN, OR AS MODIFIED BY THE OWNER THROUGH THE RESIDENT ENGINEER AT THE PRECONSTRUCTION CONFERENCE, OR DURING THE COURSE OF THE CONTRACT.
3. THE CONTRACTORS SHALL MINIMIZE DISRUPTION OF STANDARD OPERATING PROCEDURES FOR AERONAUTICAL ACTIVITY BY REMAINING WITHIN THE PRESCRIBED STAGING, CONSTRUCTION, AND PHASING AREAS PRESENTED ON THE CONSTRUCTION SAFETY PLAN SHEET.
4. NO UNAUTHORIZED PERSONNEL SHALL ENTER ANY AREA OF THE AIRPORT THAT COULD POTENTIALLY BE HAZARDOUS. THE AIRPORT MANAGER RESERVES THE RIGHT TO SUSPEND OPERATIONS IN ORDER TO MAINTAIN SAFETY AT THE AIRPORT.
5. CONTRACTOR EQUIPMENT, VEHICLES, AND PROJECT MATERIALS SHALL BE STORED AT THE STAGING AREA SHOWN ON THE PLAN VIEW, EXCEPT AS OTHERWISE PROVIDED FOR AT THE PRECONSTRUCTION CONFERENCE.
6. ALL CONSTRUCTION EQUIPMENT OPERATING IN THE PRESCRIBED CONSTRUCTION AREA IS REQUIRED TO DISPLAY A CHECKERBOARD FLAG PROPERLY LOCATED OR A ROTATING BEACON (STROBE) AS SPECIFIED IN AC 150/5210-5, "PAINTING, MARKING, AND LIGHTING OF VEHICLES USED ON AN AIRPORT" LATEST EDITION.
7. NO CONSTRUCTION MATERIAL STOCKPILES SHALL BE LOCATED WITHIN 250' OF ANY ACTIVE RUNWAY, WITHIN 93' OF ANY OTHER ACTIVE AIRPORT OPERATIONS AREA, OR PENETRATE A PART 77 IMAGINARY SURFACE (PROVIDED BY THE RESIDENT ENGINEER) EXTENDING OUT AND UPWARDS FROM ALL SIDES OF AN ACTIVE RUNWAY.
8. CLOSED AIRFIELD PHASING AREAS, OPEN TRENCHES, AND STOCKPILED MATERIALS AT THE CONSTRUCTION SITE SHALL BE PROMINENTLY MARKED WITH LIGHTED BARRICADES WITH STEADY BURNING OR FLASHING RED LIGHTS AS SPECIFIED IN 150/5370-2, "OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION, LATEST EDITION. LIGHTED BARRICADES MUST BE NO TALLER THAN 18" (EXCLUSIVE OF SUPPLEMENTARY LIGHTS AND FLAGS) ON THE TAXIWAYS AND COMPLY WITH ADVISORY CIRCULAR 150/5370-2, LATEST EDITION. CONTRACTOR SHALL NIGHT CHECK BARRICADES DAILY FOR PROPER OPERATION.
9. NO OPEN TRENCHES WITHIN 250' OF AN ACTIVE RUNWAY CENTERLINE OR WITHIN 93' OF ANY AIRPORT OPERATIONS AREA WILL BE PERMITTED UNLESS PROPERLY MARKED. OTHER TRENCHES SHALL BE MAINTAINED SAFE, I.E., BARRICADED OR COVERED WITH STEEL PLATES IN ALL OTHER AREAS.
10. OPEN TRENCHES, EXCAVATIONS, AND STOCKPILED MATERIALS AT THE CONSTRUCTION SITE SHOULD BE PROMINENTLY MARKED WITH ORANGE FLAGS AND LIGHTED WITH FLASHING RED LIGHTS DURING HOURS OF RESTRICTED VISIBILITY AND/OR DARKNESS.
11. THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 70 FEET, WHICH IS EXPECTED TO BE A BUCKET TRUCK TO WORK ON THE BEACON TOWER. THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT AT ALL OTHER LOCATIONS WILL BE 25 FEET, WHICH IS EXPECTED TO BE A CONCRETE TRUCK OR A LINE TRUCK. THE BUCKET TRUCK SHALL BE USED DURING THE DAYLIGHT HOURS AND VFR CONDITIONS ONLY AND SHALL BE LOWERED WHEN NOT IN USE, DURING THE HOURS BETWEEN SUNSET AND SUNRISE, AND/OR DURING IFR WEATHER CONDITIONS. WHEN IN USE, THE BUCKET TRUCK SHALL BE MARKED WITH THE 3' SQUARE CHECKERED FLAG. NO OTHER CONSTRUCTION EQUIPMENT GREATER THAN 25 FEET TALL WILL BE PERMITTED ON THE AIRPORT UNLESS APPROVED BY THE AIRPORT MANAGER AND AIRSPACE APPROVAL IS PROVIDED BY THE FAA.
12. NO OPEN FLAME WELDING OR TORCH CUTTING OPERATION IS PERMITTED UNLESS ADEQUATE FIRE AND SAFETY PRECAUTIONS ARE PROVIDED AND HAVE BEEN APPROVED BY THE AIRPORT MANAGER NO FLARE POTS ARE ALLOWED ON THE PROJECT.
13. SOIL, DEBRIS, AND LOOSE MATERIAL DROPPED OR TRUCKED ONTO AIRPORT ROADS, TAXIWAYS, AND SOD SURFACES, OR WHICH CAN BE BLOWN ONTO SUCH SURFACES, SHALL BE IMMEDIATELY SWEPT, PICKED UP AND REMOVED, OR PLACED INTO CLOSED CONTAINERS. ANY DAMAGE TO AIRPORT PROPERTY SHALL BE REPAIRED IMMEDIATELY AT NO COST TO THE OWNER.
14. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAINTAINING AIRPORT LIGHTING AND NAVIGATIONAL ELECTRICAL SYSTEMS DURING CONSTRUCTION. A CONTACT PERSON AND TELEPHONE NUMBER FOR 24 HOUR EMERGENCY IMMEDIATE REPAIR SHALL BE SUBMITTED TO THE AIRPORT MANAGER AND RESIDENT ENGINEER. HAUL ROUTES CROSSING PAVEMENT, DRAINAGE, MISCELLANEOUS. STRUCTURES AND/OR AIRFIELD CABLES SHALL BE PROTECTED FROM DAMAGE.
15. ALL AIRCRAFT AND AIRPORT OPERATIONS HAVE THE RIGHT-OF-WAY. CONTRACTOR TO YIELD TO VEHICLES AND REMAIN CLEAR AT ALL TIMES.
16. CONTRACTOR SHALL PLACE, SECURE, AND MAINTAIN LIGHTED BARRICADES AND CLOSURE CROSSES WHEN A RUNWAY/TAXIWAY/APRON IS CLOSED OR AS REQUIRED BY THE PLANS AND DESIGNATED BY THE RESIDENT ENGINEER.
17. CONTRACTOR SHALL MARK HAZARDOUS AREAS WITH STEADY-BURNING OR FLASHING RED AND YELLOW LIGHTS DURING PERIODS OF LOW VISIBILITY AS REQUIRED.
18. THE CONTRACTOR SHALL PERIODICALLY PERFORM ONSITE INSPECTIONS THROUGHOUT THE DURATION OF THE PROJECT WITH THE IMMEDIATE REMEDY OF ANY DIFFERENCES, WHETHER CAUSED BY NEGLIGENCE, OVERSIGHT, OR PROJECT SCOPE CHANGE.
19. CONTRACTOR SHALL MOVE MAINTENANCE OF TRAFFIC COMPONENTS AT THE WRITTEN DIRECTION OF THE RESIDENT ENGINEER AT NO ADDITIONAL COST.
20. CONTRACTOR SHALL NOT REMOVE THE BARRICADES WITHOUT THE APPROVAL BY THE RESIDENT ENGINEER.
21. CONTRACTOR SHALL MAINTAIN FLASHERS, SIGNS AND/OR BARRICADES AS REQUIRED BY THE PLANS, LOCAL REGULATIONS OR CONTRACTOR ACTIVITIES. CONTRACTOR SHALL OBTAIN ANY AND ALL REQUIRED LOCAL PERMITS UNLESS SPECIFIED OTHERWISE.
22. THE CONTRACTOR SHALL UTILIZE WATER AND/OR CHEMICALS APPROVED BY THE RESIDENT ENGINEER AS NECESSARY TO CONTROL DUST.
23. NO CONSTRUCTION VEHICLES SHALL BE DRIVEN ACROSS ANY ACTIVE RUNWAY, INCLUDING TURF RUNWAYS. CONSTRUCTION EQUIPMENT OR CONSTRUCTION ACTIVITY WILL NOT BE PERMITTED WITHIN 250' OF ANY ACTIVE RUNWAY CENTERLINE OR WITHIN 93' OF ANY OTHER ACTIVE AIRPORT TAXIWAY OR APRON. HOWEVER, CONSTRUCTION MAY BE PERMITTED IN THESE AREAS IF THE CONTRACTOR HAS GAINED APPROVAL FROM THE AIRPORT MANAGER AT LEAST 7 DAYS IN ADVANCE OF THE SCHEDULED CONSTRUCTION PERIOD AND THE OPERATIONAL AREA IS CLOSED TO TRAFFIC AND PROPER NOTAMS ARE ISSUED BY THE AIRPORT MANAGER TO THE APPROPRIATE FLIGHT SERVICE STATION.
24. UNLESS SPECIFIED OTHERWISE, COST FOR THE ABOVE IS TO BE CONSIDERED INCIDENTAL TO THE PROJECT. SEPARATE PAYMENT SHALL NOT BE MADE.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

STATE OF ILLINOIS
BARRY S. STOLZ
062-057281
LICENSED PROFESSIONAL ENGINEER
EXP 11-30-15
9-26-14

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

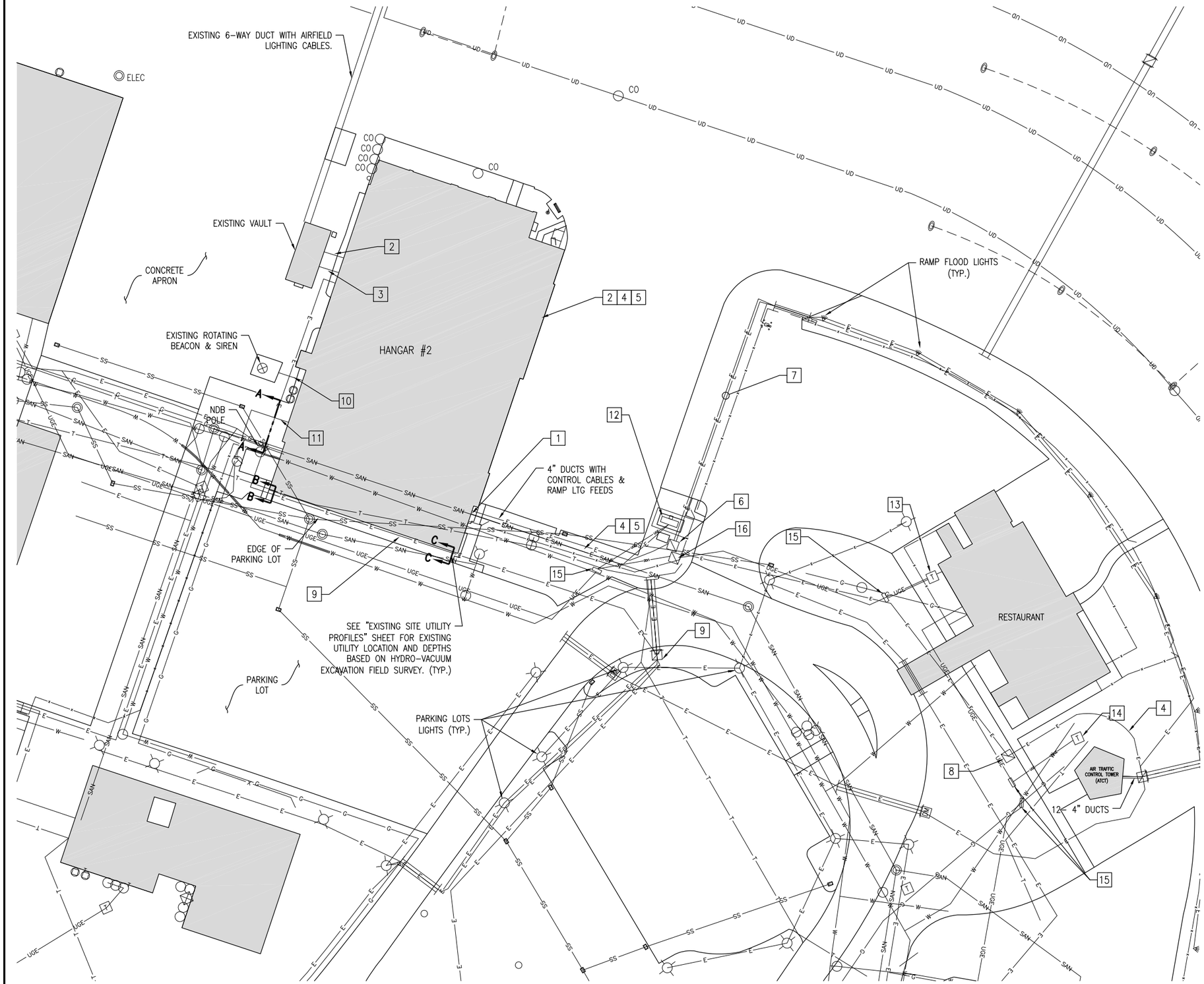
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: G-501-SFYDET.DWG
LAYOUT BY: BSS 07/28/2014
DRAWN BY: BSS 07/30/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

CONSTRUCTION SAFETY NOTES



NOTE

SEE "NOTES FOR EXISTING ELECTRICAL PLAN" SHEET FOR EXISTING ELECTRICAL PLAN KEYED NOTES AND GENERAL NOTES.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 09/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-141ELEC.DWG
LAYOUT BY: KNL 08/01/2014
DRAWN BY: MLH 09/02/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

EXISTING ELECTRICAL PLAN

SEP 27, 2014 9:49 PM HARRI01115
pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\13Jobs\13A0086\13A0086D\CAD\AirportSheet\E-141ELEC

KEYED NOTES

1 EXISTING ELECTRIC SERVICE AND SERVICE BREAKER FOR VAULT TO BE REMOVED. COORDINATE REMOVAL WITH INSTALLATION OF NEW SERVICE FOR VAULT TO MINIMIZE DOWNTIME OF VAULT. EXISTING SERVICE AND SERVICE DISCONNECT FOR HANGAR NO. 2 TO REMAIN IN PLACE.

2 EXISTING 400 AMP, 208/120 VAC, 3 PHASE, 4-WIRE FEEDER FROM VAULT SERVICE BREAKER IS ROUTED THROUGH HANGAR NO. 2 TO THE VAULT MAIN DISCONNECT PANEL. EXISTING FEEDER CABLE FOR VAULT POWER SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. EXISTING EXPOSED EXTERIOR CONDUIT SHALL BE REMOVED. EXISTING CONDUIT LOCATED INSIDE HANGAR NO. 2 SHALL BE ABANDONED IN PLACE. EXISTING CONDUIT AT VAULT MAY BE REUSED IN PLACE FOR THE REPLACEMENT FEEDER CIRCUIT.

3 EXISTING 4" CONDUIT FROM VAULT LOW VOLTAGE RACEWAY TO HANGAR NO. 2 WITH THE FOLLOWING CIRCUITS:

- 6-5/C #12 CONTROL CABLES FOR TXY A-EAST CCR, TXY A-WEST CCR, RWY 17-35 CCR, TXY B CCR, TXY C-SOUTH CCR, AND TXY C-NORTH CCR
- 2-9/C #12 CONTROL CABLES FOR RWY 11-29 CCR TRANSFER RELAY PANEL AND LIGHTING CONTACTOR PANEL
- 1-12/C #12 CONTROL CABLE FOR LIGHTING CONTACTOR PANEL
- 1-3/C #12 CONTROL CABLE FOR RELAY INTERFACE PANEL
- 3 #12 THWN FOR NDB 120 VAC POWER FEED
- 4 #4 THWN FOR RAMP LIGHTS 208 VAC POWER CIRCUITS #1 AND #2
- 4 #8 THWN FOR AIRPORT ROTATING BEACON 120/208 VAC POWER FEED
- 2 #10 THWN FOR SIREN 208 VAC POWER FEED
- 3 #4 THWN FOR PARKING LOT LIGHTING 120 OR 208 VAC POWER FEED

4 EXISTING CONTROL CABLES IN 4" CONDUIT AND DUCT FOR CCR'S AND AIRFIELD LIGHTING ARE ROUTED FROM THE VAULT THROUGH HANGAR NO. 2 TO THE ATCT. EXISTING CONTROL CABLES FOR CCR'S AND AIRFIELD LIGHTING SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. EXISTING EXPOSED EXTERIOR CONDUIT SHALL BE REMOVED. EXISTING CONDUIT LOCATED INSIDE HANGAR NO. 2 SHALL BE ABANDONED IN PLACE.

5 EXISTING FEEDER CIRCUITS TO RAMP LIGHTS CIRCUIT 1 AND CIRCUIT 2 ARE RUN WITH THE CONTROL CABLES FOR CCR'S AND AIRFIELD LIGHTING AND ROUTED FROM THE VAULT THROUGH HANGAR NO. 2 TO THE RAMP LIGHTS. EXISTING FEEDER CABLES FOR RAMP LIGHTS CIRCUIT 1 AND CIRCUIT 2 VAULT SHALL BE REMOVED FROM THE VAULT TO THE RESPECTIVE HANDHOLE LOCATED AT THE SOUTH CORNER OF THE APRON ON EAST SIDE OF HANGAR NO. 2, AND TURNED OVER TO THE AIRPORT. EXISTING EXPOSED EXTERIOR CONDUIT SHALL BE REMOVED. EXISTING CONDUIT LOCATED INSIDE HANGAR NO. 2 SHALL BE ABANDONED IN PLACE. PROVIDE CONDUIT CAPS FOR EMPTY CONDUITS AT EXPOSED TERMINATIONS.

6 EXISTING HANDHOLE LOCATED AT THE SOUTH CORNER OF THE APRON ON EAST SIDE OF HANGAR NO. 2 WITH THE FOLLOWING CIRCUITS:

- 6-5/C #12 CONTROL CABLES FOR TXY A-EAST CCR, TXY A-WEST CCR, RWY 17-35 CCR, TXY B CCR, TXY C-SOUTH CCR, AND TXY C-NORTH CCR
- 2-9/C #12 CONTROL CABLES FOR RWY 11-29 CCR TRANSFER RELAY PANEL AND LIGHTING CONTACTOR PANEL
- 1-12/C #12 CONTROL CABLE FOR LIGHTING CONTACTOR PANEL
- 1-3/C #12 CONTROL CABLE FOR RELAY INTERFACE PANEL
- 4 #4 THWN FOR RAMP LIGHTS 208 VAC POWER CIRCUITS #1 AND #2

7 EXISTING RAMP LIGHTS 208 VAC POWER CIRCUIT 1 AND CIRCUIT 2 (4 #4 THWN) IN 2" DUCT FROM HANDHOLE LOCATED AT SOUTH CORNER OF APRON ON EAST SIDE OF HANGAR NO. 2 TO THE RAMP LIGHTS, TO REMAIN.

8 EXISTING HANDHOLE AT WEST SIDE OF AIR TRAFFIC CONTROL TOWER WITH THE FOLLOWING CIRCUITS:

- 6-5/C #12 CONTROL CABLES FOR TXY A-EAST CCR, TXY A-WEST CCR, RWY 17-35 CCR, TXY B CCR, TXY C-SOUTH CCR, AND TXY C-NORTH CCR
- 2-9/C #12 CONTROL CABLES FOR RWY 11-29 CCR TRANSFER RELAY PANEL AND LIGHTING CONTACTOR PANEL
- 1-12/C #12 CONTROL CABLE FOR LIGHTING CONTACTOR PANEL
- 1-3/C #12 CONTROL CABLE FOR RELAY INTERFACE PANEL

9 EXISTING FEEDER CIRCUIT FOR PARKING LOT LIGHTING IS ROUTED FROM THE VAULT THROUGH HANGAR NO. 2 TO THE PARKING LOT LIGHTS. EXISTING FEEDER CABLES FOR PARKING LOT LIGHTS SHALL BE REMOVED WHERE ACCESSIBLE AND ABANDONED IN PLACE ELSEWHERE. CABLES ARE UNDERSTOOD TO BE DIRECT BURIED FROM THE WEST SIDE OF HANGAR NO. 2 TO THE RESPECTIVE HANDHOLE FOR THE PARKING LOT LIGHTS. THE #4 THWN FEEDER CABLES FOR THE PARKING LOT LIGHTING FROM THE VAULT ARE SPLICED TO DIFFERENT SIZE CABLES IN HANGAR NO. 2.

10 EXISTING FEEDER CIRCUIT FOR THE AIRPORT ROTATING BEACON AND THE SIREN ARE ROUTED FROM THE VAULT THROUGH HANGAR NO. 2 TO THE TOP OF THE BEACON TOWER. THE SIREN IS MOUNTED ON TOP OF THE BEACON TOWER. EXISTING FEEDER CABLES FOR THE AIRPORT ROTATING BEACON AND THE SIREN SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. EXISTING CONDUITS SHALL BE REMOVED WHERE ACCESSIBLE AND ABANDONED IN PLACE ELSEWHERE.

11 EXISTING FEEDER CIRCUIT FOR THE NDB (NON-DIRECTIONAL BEACON), IS ROUTED FROM THE VAULT THROUGH HANGAR NO. 2 TO THE NDB. EXISTING FEEDER CABLES FOR THE NDB SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT. EXISTING CONDUITS SHALL BE REMOVED WHERE ACCESSIBLE AND ABANDONED IN PLACE ELSEWHERE.

12 ELECTRIC UTILITY TRANSFORMER FOR VAULT AND HANGAR NO. 2.

13 ELECTRIC UTILITY TRANSFORMER FOR RESTAURANT

14 ELECTRIC UTILITY TRANSFORMER FOR AIR TRAFFIC CONTROL TOWER.

15 ELECTRIC UTILITY JUNCTION BOX (ABOVE GRADE)

16 ELECTRIC UTILITY PRIMARY MANHOLE APPROXIMATELY 6 FT. BY 6 FT. BY 8 FT. DEEP.

GENERAL NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER AND AIRPORT OPERATIONS SUPERINTENDENT. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).

2. CONTRACTOR SHALL EXAMINE THE SITE 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.

3. **NOTE THE EXISTING AIRPORT ELECTRICAL VAULT, HANGAR NO. 2, AND/OR FEEDER CIRCUITS ORIGINATING IN THE AIRPORT ELECTRICAL VAULT HAVE SOME APPARENT NEC (NATIONAL ELECTRICAL CODE) VIOLATIONS WHICH MIGHT CAUSE UNSAFE WORKING CONDITIONS. APPARENT NEC VIOLATIONS INCLUDE, BUT ARE NOT LIMITED TO, FEEDER CIRCUITS FROM THE VAULT PASSING THOUGHT HANGAR NO. 2 WITHOUT DISCONNECTING MEANS AT HANGAR NO. 2, MISSING IDENTIFICATION OF FEEDER CIRCUITS PASSING THROUGH HANGAR NO. 2, INCORRECT IDENTIFICATION OF PHASE, NEUTRAL, AND/OR EQUIPMENT GROUND WIRES, AND MISSING EQUIPMENT GROUND WIRES FOR FEEDER CIRCUITS TO RAMP LIGHTS, PARKING LOT LIGHTS, AND SIREN. CONTRACTOR WILL NEED TO EXERCISE CAUTION WHEN WORKING AT THESE RESPECTIVE FACILITIES.**

4. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370-2F (OR MOST CURRENT ISSUE) **"OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".**

5. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E – STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.

6. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF NEW CABLES AND DUCTS TO MINIMIZE DOWNTIME OF EXISTING AIRFIELD LIGHTING AND NAVAIDS.

7. NO CONNECTION TO AN ACTIVE CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH THE ABOVE NOTE 1.

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

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.

DUE TO THE QUANTITIES OF EXISTING UTILITIES AND LINES IN THE PROPOSED AREAS OF WORK, THE CONTRACTOR WILL NEED TO CAREFULLY EXCAVATE TO EXPOSE AND PROTECT THESE UTILITIES AND LINES BY HYDRO EXCAVATION OR OTHER APPROVED METHOD PRIOR TO INSTALLING THE TRENCHES FOR THE PROPOSED DUCT BANK SYSTEM. COST INCIDENTAL TO DUCT BANKS.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

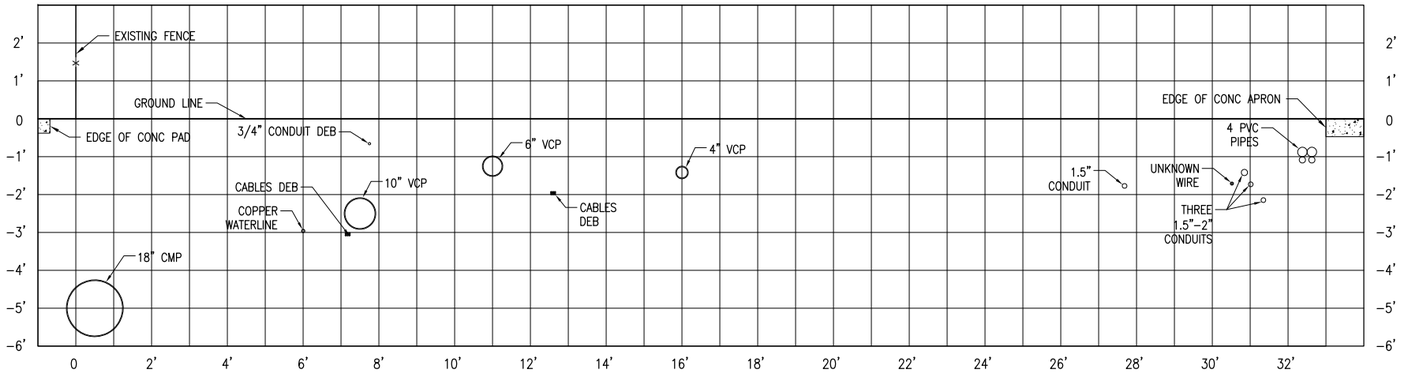
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-641.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/29/2014
REVIEWED BY: CAH 09/04/2014

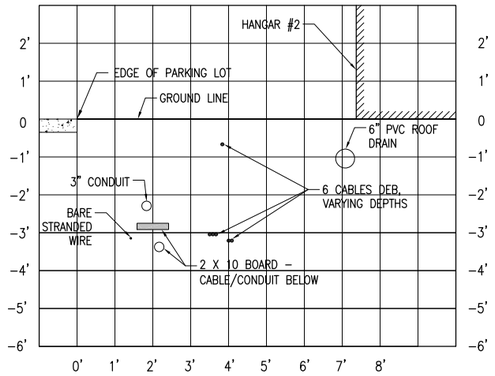
SHEET TITLE

NOTES FOR EXISTING ELECTRICAL PLAN



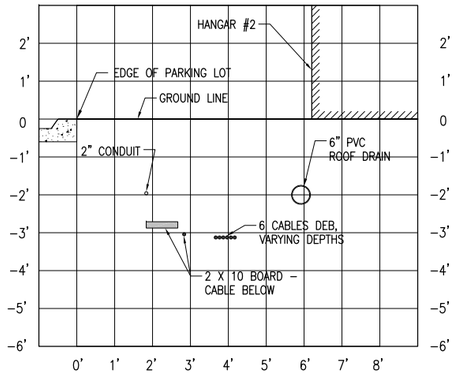
SECTION A–A EXISTING UTILITY PROFILE

SCALE: 1" = 2'



SECTION B–B EXISTING UTILITY PROFILE

SCALE: 1" = 2'



SECTION C–C EXISTING UTILITY PROFILE

SCALE: 1" = 2'

NOTES:

1. SEE "EXISTING ELECTRICAL PLAN" FOR CORRESPONDING LOCATIONS OF PROFILES.
2. UTILITY DEPTHS AND LOCATIONS ARE BASED ON HYDRO–VACUUM EXCAVATION UTILITY LOCATING PERFORMED ON MARCH 26, 2014. LOCATIONS AND DEPTHS ARE APPROXIMATE AND ARE BASED ON FIELD MEASUREMENTS.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

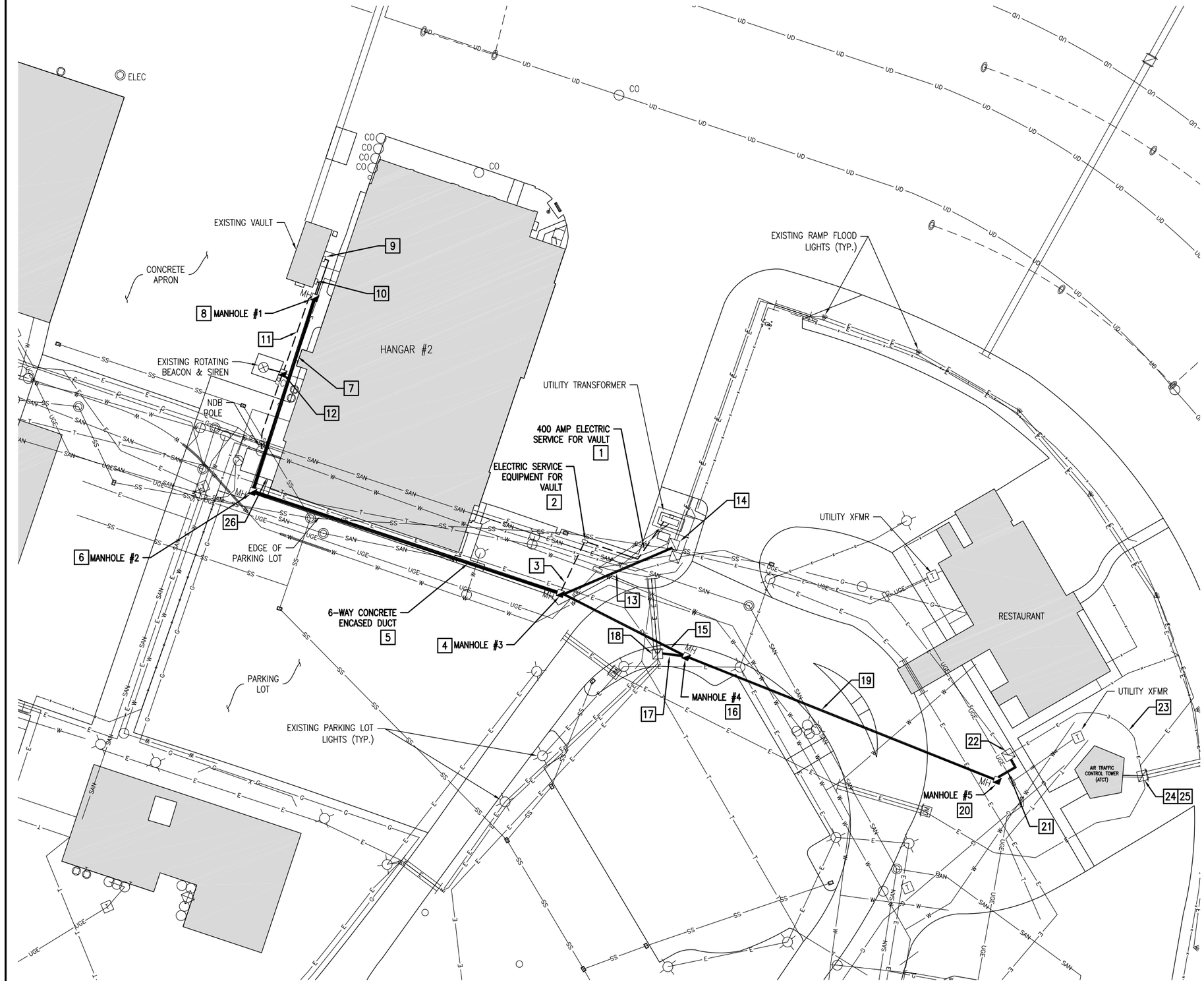
NO.	DATE	DESCRIPTION		

LAY | DWN | REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: G-531-UTLDET.DWG
LAYOUT BY: MLH 08/28/2014
DRAWN BY: RAD 08/28/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

EXISTING SITE UTILITY PROFILES



LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING ELECTRICAL DUCT
- EXISTING ELECTRICAL CABLES
- UD — EXISTING UNDERDRAIN
- SS — EXISTING STORM SEWER
- SAN — EXISTING SANITARY SEWER
- W — EXISTING WATER LINE
- G — EXISTING GAS
- T — EXISTING TELEPHONE
- E — EXISTING ELECTRIC
- UGE — EXISTING UNDERGROUND ELECTRIC PRIMARY
- X — EXISTING FENCE
- EXISTING ROTATING BEACON
- EXISTING ELECTRICAL MANHOLE/HANDHOLE
- EXISTING INLET
- SS — EXISTING STORM SEWER MANHOLE
- SAN — EXISTING SANITARY SEWER MANHOLE
- CO — EXISTING STORM SEWER CLEANOUT
- EXISTING POLE LIGHT
- EXISTING GROUND ROD
- PROPOSED ELECTRIC
- PROPOSED ELECTRICAL DUCT
- MH — PROPOSED ELECTRICAL MANHOLE
- SC — PROPOSED SPLICE CAN
- T — UTILITY TRANSFORMER

NOTE
SEE "NOTES FOR PROPOSED ELECTRICAL PLAN" SHEET FOR PROPOSED ELECTRICAL PLAN KEYED NOTES AND GENERAL NOTES.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 09/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-142ELEC.DWG
LAYOUT BY: KNL 08/07/2014
DRAWN BY: BCT 08/08/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

PROPOSED ELECTRICAL PLAN

SEP 27, 2014 9:49 PM HARRI01.115
pw:\\spi-srv306.hanson.dom:Hanson Projects\Documents\13Jobs\13A0086\13A0086D\CADD\Airport\Sheet\E-142ELEC

KEYED NOTES

1 PROPOSED 400 AMP, 208/120 VAC, 3–PHASE, 4–WIRE ELECTRIC SERVICE FOR VAULT; 3 # 600 MCM XHHW, 1 #600 MCM XHHW NEUTRAL IN 4" SCHEDULE 80 PVC CONDUIT DIRECT BURY FROM UTILITY TRANSFORMER TO ELECTRIC UTILITY METER. COORDINATE WORK WITH THE SERVING ELECTRIC UTILITY COMPANY. (AR109924)

2 NEW ELECTRIC SERVICE EQUIPMENT AND SUPPORT STRUCTURE. SEE " ELECTRIC SERVICE ELEVATION DETAIL SHEET". (AR109924)

3 PROPOSED 400 AMP, 208/120 VAC, 3–PHASE, 4–WIRE ELECTRIC FEEDER FOR VAULT; 3 # 600 MCM XHHW, 1 #600 MCM XHHW NEUTRAL IN 4" SCHEDULE 80 PVC CONDUIT DIRECT BURY FROM SERVICE DISCONNECT TO MANHOLE NO. 1. ELECTRIC FEEDER CONDUCTORS FOR VAULT SHALL EXTEND TO THE VAULT MAIN DISCONNECT PANEL. ADJUST LOCATION AND ELEVATION TO AVOID INTERFERENCES WITH EXISTING UTILITIES, LINES, PAVEMENT, & OTHER STRUCTURES. (AR109924)

4 MANHOLE NO. 3; AIRPORT RATED ELECTRICAL MANHOLE 4' X 4' X 6' DEEP. SEE DETAILS. (AR110715)

5 6–WAY CONCRETE ENCASED DUCT BANK FROM MANHOLE NO. 3 TO MANHOLE NO. 2, (196 L. F.). COORDINATE INSTALLATION WITH EXISTING UTILITIES AND LINES. ADJUST LOCATION AND ELEVATION TO AVOID INTERFERENCES WITH EXISTING UTILITIES, LINES, AND ROOF DRAIN TILES. (AR110506)

6 MANHOLE NO. 2; AIRPORT RATED ELECTRICAL MANHOLE 4' X 4' X 6' DEEP. SEE DETAILS. (AR110715)

7 6–WAY CONCRETE ENCASED DUCT BANK FROM MANHOLE NO. 2 TO MANHOLE NO. 1, (130 L. F.). COORDINATE INSTALLATION WITH EXISTING UTILITIES AND LINES. ADJUST LOCATION AND ELEVATION TO AVOID INTERFERENCES WITH EXISTING UTILITIES AND LINES. (AR110506)

8 MANHOLE NO. 1; AIRPORT RATED ELECTRICAL MANHOLE 4' X 4' X 6' DEEP. SEE DETAILS. (AR110715)

9 NEMA 4X STAINLESS STEEL PULL BOX WITH HINGED COVER AND PAD LOCK FEATURE (MINIMUM 36" HIGH BY 36" WIDE BY 12" DEEP). INSTALL ON VAULT EXTERIOR WALL. PROVIDE 2–4" GRSC FROM MANHOLE TO PULL BOX. INTERFACE 4" GRSC FROM PULL BOX TO MAIN DISCONNECT PANEL IN THE VAULT. (AR109924)

10 NEMA 4X STAINLESS STEEL PULL BOX WITH HINGED COVER AND PAD LOCK FEATURE (MINIMUM 36" HIGH BY 36" WIDE BY 12" DEEP). INSTALL ON VAULT EXTERIOR WALL. PROVIDE 4–4" GRSC FROM MANHOLE TO PULL BOX. INTERFACE GRSC FROM PULL BOX TO THE AIRFIELD LIGHTING CONTROL SYSTEM, LIGHTING CONTACTOR PANEL AND LOW VOLTAGE RACEWAY SYSTEM AT THE VAULT. (AR109924)

11 FURNISH AND INSTALL A 2" SCHEDULE 40 (MINIMUM) PVC DUCT FROM MANHOLE NO. 1 TO THE PROPOSED L–867D SPLICE CAN LOCATED NEAR THE BASE OF THE AIRPORT ROTATING BEACON TOWER. FURNISH AND INSTALL 4 #8 THWN (BLACK, RED, WHITE, AND GREEN) FOR THE AIRPORT ROTATING BEACON, 3 #10 THWN (BLACK, RED, GREEN) FOR THE SIREN LOCATED ON TOP OF THE BEACON TOWER, AND 3#10 THWN (BLACK, WHITE, GREEN) FOR THE NON–DIRECTIONAL BEACON FROM THE VAULT TO EACH RESPECTIVE DEVICE. EXTEND 2" GRSC TO THE BEACON TOWER AND 2" GRSC TO THE NON–DIRECTIONAL BEACON. PROVIDE CONDUIT FITTINGS AND REDUCERS TO INTERFACE TO EXISTING RACEWAY SYSTEM. (AR109924).

12 L–867 SIZE D, 12" DEEP TO 24" DEEP SPLICE CAN. (AR125565).

13 2–WAY CONCRETE ENCASED DUCT BANK FROM MANHOLE NO. 3 TO EXISTING HANDHOLE LOCATED AT THE SOUTH CORNER OF THE APRON ON EAST SIDE OF HANGAR NO. 2, (75 L. F.). COORDINATE INTERFACE TO EXISTING HANDHOLE. LEAVE ONE DUCT EMPTY FOR USE AS SPARE. ADJUST LOCATION AND ELEVATION TO AVOID INTERFERENCES WITH EXISTING UTILITIES, LINES, AND FENCE. (AR110502)

14 EXISTING HANDHOLE LOCATED AT THE SOUTH CORNER OF THE APRON ON EAST SIDE OF HANGAR NO. 2. FURNISH AND INSTALL 4 #4 THWN, 1 #4 THWN GROUND WITH GREEN COLORED INSULATION FOR RAMP LIGHTING CIRCUITS #1 AND #2 FROM VAULT TO THE EXISTING HANDHOLE. SPLICE THE NEW FEEDER CABLES TO THE EXISTING FEEDER CABLES FOR RAMP LIGHTS 208 VAC POWER CIRCUITS #1 AND #2. (AR109924).

15 3–4" DIRECTIONAL BORE DUCTS AT 85 L. F. EACH, 255 L. F. TOTAL. INSTALL DUCTS FROM MANHOLE NO. 3 TO MANHOLE NO. 4, AND TERMINATE DUCTS IN MANHOLES. ADJUST LOCATION AND ELEVATION TO AVOID INTERFERENCES WITH EXISTING UTILITIES, LINES, POLE LIGHTS, PAVEMENT, & OTHER STRUCTURES. (AR110014)

16 MANHOLE NO. 4; ELECTRICAL MANHOLE 4' X 4' X 4' DEEP. SEE DETAILS. (AR110710)

17 2–WAY CONCRETE ENCASED DUCT BANK FROM MANHOLE NO. 4 TO EXISTING HANDHOLE FOR PARKING LOT LIGHTING, (20 L. F.). COORDINATE INTERFACE TO EXISTING HANDHOLE. LEAVE ONE DUCT EMPTY FOR USE AS SPARE. ADJUST LOCATION AND ELEVATION TO AVOID INTERFERENCES WITH EXISTING UTILITIES AND LINES. (AR110502)

18 EXISTING HANDHOLE FOR PARKING LOT LIGHTING. FURNISH AND INSTALL 2 #4 THWN, 1 #4 THWN GROUND WITH GREEN COLORED INSULATION FOR PARKING LOT LIGHTING FROM VAULT TO THE EXISTING HANDHOLE. SPLICE THE NEW FEEDER CABLES TO THE EXISTING FEEDER CABLES FOR PARKING LOT LIGHTING. FIELD VERIFY EXISTING VOLTAGE SYSTEM FOR PARKING LOT LIGHTING. PROVIDE COLORED MARKING TAPE OR COLORED INSULATION FOR THE FEEDER CABLES TO IDENTIFY THE RESPECTIVE VOLTAGE SYSTEM. (AR109924).

19 2–4" DIRECTIONAL BORE DUCTS AT 205 L. F. EACH, 410 L. F. TOTAL. INSTALL DUCTS FROM MANHOLE NO. 4 TO MANHOLE NO. 5, AND TERMINATE DUCTS IN MANHOLES. ADJUST LOCATION AND ELEVATION TO AVOID INTERFERENCES WITH EXISTING UTILITIES, LINES, POLE LIGHTS, PAVEMENT, & OTHER STRUCTURES. (AR110014)

20 MANHOLE NO. 5; ELECTRICAL MANHOLE 4' X 4' X 4' DEEP. SEE DETAILS. (AR110710)

21 2–WAY CONCRETE ENCASED DUCT BANK FROM MANHOLE NO. 5 TO EXISTING HANDHOLE AT WEST SIDE OF AIR TRAFFIC CONTROL TOWER, (20 L. F.). COORDINATE INTERFACE TO EXISTING HANDHOLE. LEAVE ONE DUCT EMPTY FOR USE AS SPARE. ADJUST LOCATION AND ELEVATION TO AVOID INTERFERENCES WITH EXISTING UTILITIES AND LINES. (AR110502)

22 EXISTING HANDHOLE AT WEST SIDE OF AIR TRAFFIC CONTROL TOWER.

23 EXISTING 4" DUCT FROM EXISTING HANDHOLE AT WEST SIDE OF ATCT TO EXISTING MANHOLE AT EAST SIDE OF ATCT.

24 EXISTING MANHOLE AT EAST SIDE OF ATCT.

25 FURNISH AND INSTALL 3 SETS OF 24/C #12 600 VOLT TYPE TC CONTROL CABLE FROM THE VAULT TO THE EXISTING L–821 CONTROL PANEL LOCATED AT THE AIR TRAFFIC CONTROL TOWER CAB (TOP FLOOR). 24/C #12 600 VOLT TYPE TC CONTROL CABLE WILL BE PAID FOR UNDER ITEM AR108800 CONTROL CABLE PER LINEAL FOOT.

26 CONCRETE LOADING RAMP SHALL BE REMOVED AND REPLACED TO ACCOMMODATE DUCT WORK.

GENERAL NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER AND AIRPORT OPERATIONS SUPERINTENDENT. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).

2. CONTRACTOR SHALL EXAMINE THE SITE 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.

3. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF FAA AC NO. 150/5370–2F (OR MOST CURRENT ISSUE) **"OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".**

4. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF NFPA 70E – STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE.

5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF NEW CABLES AND DUCTS TO MINIMIZE DOWNTIME OF EXISTING AIRFIELD LIGHTING AND NAVAIDS. ADJUSTMENTS TO DUCT ROUTES AND ELEVATIONS MAY BE NECESSARY TO AVOID INTERFERENCES WITH EXISTING LINES AND UTILITIES.

6. SEE "CONCRETE SITE WORK PLAN" SHEET FOR RESTORATION REQUIREMENTS OF CONCRETE PAVEMENTS.

7. NO CONNECTION TO AN ACTIVE CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH THE ABOVE NOTE 1.

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

DUE TO THE QUANTITIES OF EXISTING UTILITIES AND LINES IN THE PROPOSED AREAS OF WORK, THE CONTRACTOR WILL NEED TO CAREFULLY EXCAVATE TO EXPOSE AND PROTECT THESE UTILITIES AND LINES BY HYDRO EXCAVATION OR OTHER APPROVED METHOD PRIOR TO INSTALLING THE TRENCHES FOR THE PROPOSED DUCT BANK SYSTEM. COST INCIDENTAL TO DUCT BANKS.

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.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

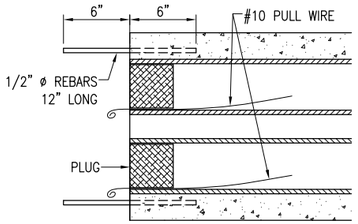
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

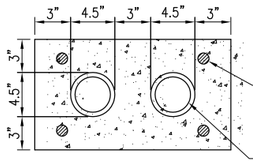
ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-642.DWG
LAYOUT BY: KNL 08/18/2014
DRAWN BY: BCT 08/08/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

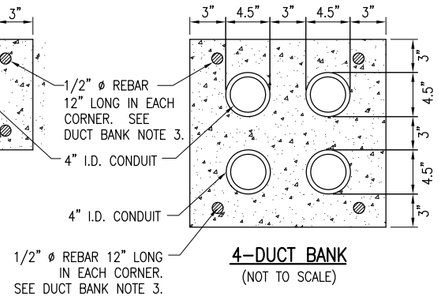
NOTES FOR PROPOSED ELECTRICAL PLAN



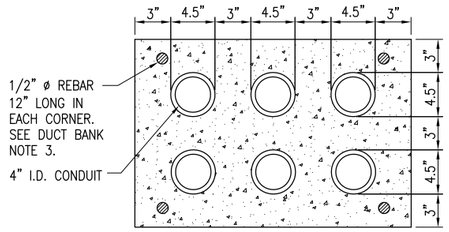
TYPICAL SECTION
(NOT TO SCALE)



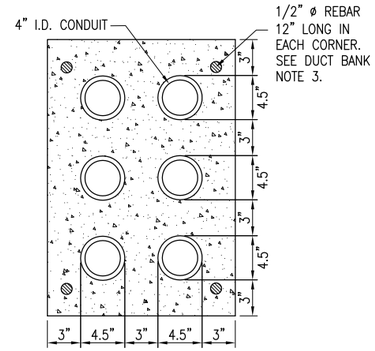
2–DUCT BANK
(NOT TO SCALE)



4–DUCT BANK
(NOT TO SCALE)

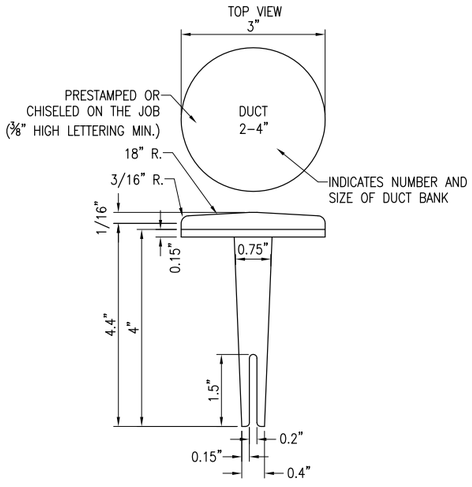


6–DUCT BANK
(NOT TO SCALE)



6–DUCT BANK ALTERNATIVE
(NOT TO SCALE)

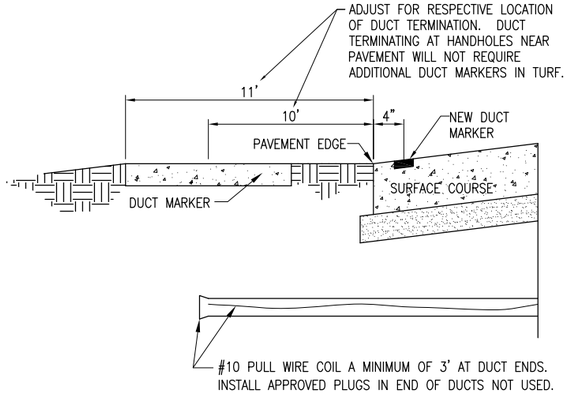
DUCT BANK DETAILS



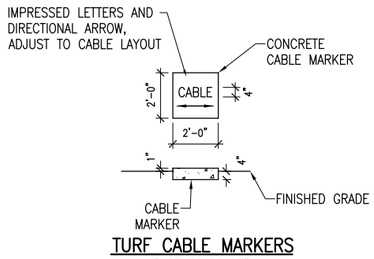
BITUMINOUS PAVEMENT DUCT MARKERS
"NOT TO SCALE"

NOTE:

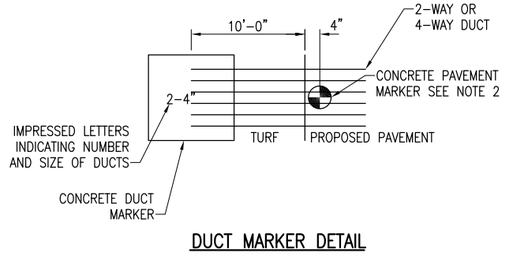
1. TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE
2. BRASS DUCT MARKERS ARE AVAILABLE FROM G&S FOUNDRY & MANUFACTURING CO. INC., 210 KASKASKIA DRIVE, RED BUD, IL 62278.



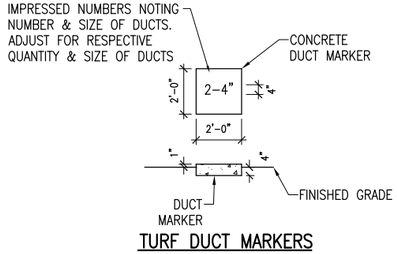
UNDERGROUND ELECTRICAL DUCT
(NOT TO SCALE)



TURF CABLE MARKERS
"NOT TO SCALE"



DUCT MARKER DETAIL
"NOT TO SCALE"



TURF DUCT MARKERS
"NOT TO SCALE"

DUCT BANK NOTES:

1. ALL DIMENSIONS ARE MINIMUM.
2. INCLUDE DUCT SPACERS AS MANUFACTURED BY UNDERGROUND DEVICES INC., TO MAINTAIN PROPER SEPARATION OF CONDUITS.
3. PROVIDE REBAR WHERE APPLICABLE TO ACCOMMODATE INTERFACE TO HANDHOLES AND MANHOLES AT DUCT BANK TERMINATIONS. COORDINATE WITH MANHOLE INSTALLATIONS. REBAR SHALL CONFORM TO THE REQUIREMENTS OF ASTM A706 GRADE 60 OR ASTM A615 GRADE 60.
4. CONDUITS FOR CONCRETE ENCASED DUCT SHALL BE SCHEDULE 40 (MINIMUM) PVC CONDUIT OR SCHEDULE 40 (MINIMUM) HDPE CONDUIT CONFORMING TO ITEM 110.
5. MINIMUM DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 24" BELOW FINISHED GRADE. DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 42" MINIMUM TO FINISHED GRADE IN CULTIVATED/FARMED AREAS. ADJUST DEPTHS TO ACCOMMODATE SITE CONDITIONS AND/OR TO AVOID INTERFERENCES WITH OTHER UTILITIES OR LINES.
6. HIGH VOLTAGE AND LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE. FIBER OPTIC CABLES SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE OR MANHOLE WITH HIGH VOLTAGE OR LOW VOLTAGE CIRCUITS.
7. HOMERUN CABLES FOR A RESPECTIVE CIRCUIT SHALL BE INSTALLED IN THE SAME RACEWAY OR DUCT.
8. INSTALL DUCT BANKS WITH SLOPE TO DRAIN WHERE TERMINATING IN MANHOLES OR HANDHOLES.

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 INFORMED 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 ½" AND ¼" DEEP. ALL LETTERS, NUMBERS AND ARROWS TO BE IMPRESSED.
5. EMPLOY THE FOLLOWING METHODS WHERE ADDITIONAL SPACE TO FIT 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.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

RELOCATE
ELECTRICAL VAULT
SERVICE

IDA No: ALN-4294

Contract No. SR088

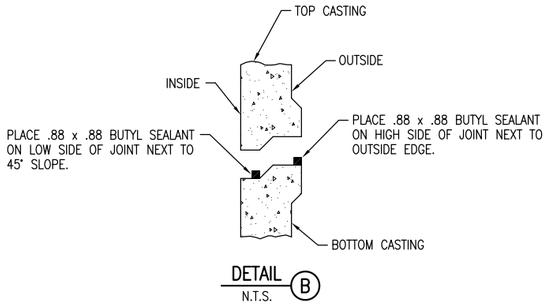
NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-501.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/29/2014
REVIEWED BY: CAH 09/04/2014

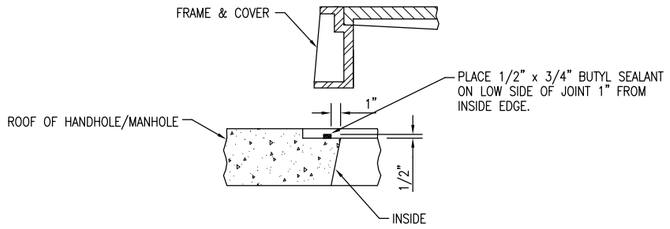
SHEET TITLE

ELECTRICAL DUCT
DETAILS

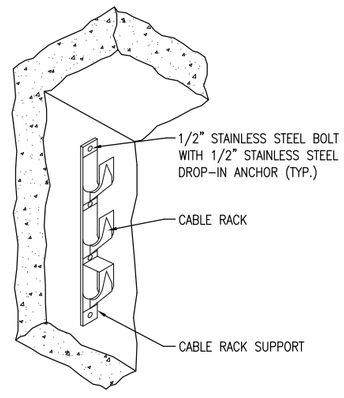
SEP 27, 2014 9:49 PM HARRI01115
pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\13\obs\13A0086\13A0086D\CAD\Airport\Sheet\E-501-ELECTRICAL DUCT DETAILS



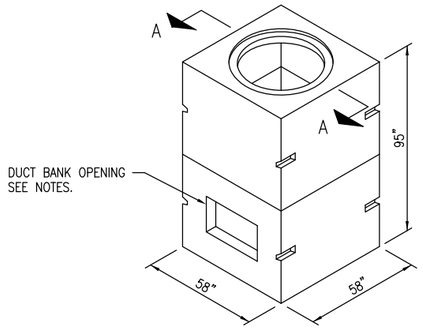
DETAIL (B)
N.T.S.



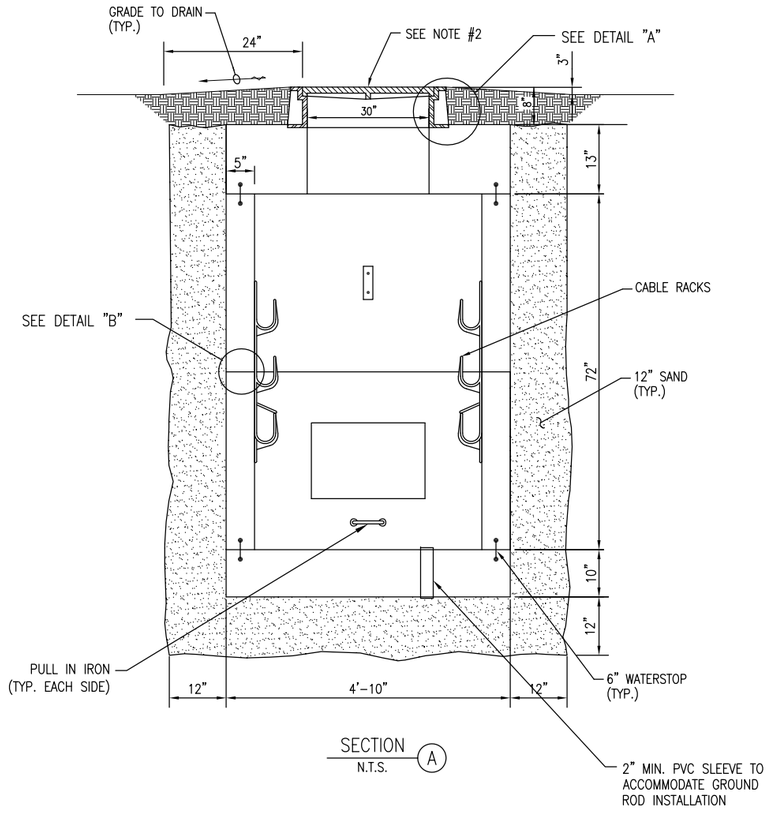
DETAIL (A)
N.T.S.



CABLE RACK
N.T.S.



PRECAST 4'x4'x6' AIRPORT MANHOLE
N.T.S.



SECTION (A)
N.T.S.

4'x4'x6' AIRPORT MANHOLE DETAILS
N.T.S. (NOT TO SCALE)

PRECAST 4'x4'x6' AIRPORT MANHOLE NOTES

1. 4'x4'x6' AIRPORT MANHOLE SHALL BE CONSTRUCTED TO MEET THE FOLLOWING:

   DESIGN CRITERIA:
   1) DESIGN SPECIFICATIONS: ACI 318, ASTM C857 AND C858, FAA AC 150/5320-6E APPENDIX 3
   2) DESIGN LOADING:
      B727-200, 97,600 LBS. MAIN. GEAR
      B747-400ER, 213,600 LBS. MAIN GEAR
   3) LIVE LOAD SURCHARGE: 24.5% OF THE WHEEL LOAD SOIL PRESSURE
   4) CONCRETE COMPRESSIVE STRENGTH: F'c = 5,000 PSI AT 28 DAYS
   5) REINFORCING STEEL: ASTM A706, 60,000 PSI

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

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

2. AIRPORT MANHOLE FRAME & LID SHALL BE CAPABLE OF WITHSTANDING MINIMUM 100,000 POUND LOADS AS CALLED FOR IN FAA ADVISORY CIRCULAR AC 150/5320-6E APPENDIX 3 ITEM 2.d. (1). AIRPORT MANHOLE FRAME & LID SHALL BE NEENAH CATALOG NO. R-3492-A OR APPROVED EQUAL. LID FOR LOW VOLTAGE MANHOLE SHALL BE LABELED "LOW VOLTAGE".

3. COORDINATE DUCT BANK INTERFACE & OPENINGS WITH THE MANHOLE MFR. CONTRACTOR SHALL SLOPE DUCT BANK TO PRECAST MANHOLE OPENINGS. ALL OPENINGS SHALL BE SEALED WATERTIGHT AFTER DUCT BANK INSTALLATION.

4. 4'x4'x6' AIRPORT MANHOLE SHALL BE MANUFACTURED BY A CONCRETE ELECTRICAL MANHOLE PRODUCER ON THE ILLINOIS DEPARTMENT OF TRANSPORTATION APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS.

5. 4'x4'x6' AIRPORT MANHOLE SHALL BE PAID FOR UNDER ITEM AR110715 ELECTRICAL MANHOLE SPECIAL PER EACH.

6. CABLE RACKS SHALL BE HEAVY DUTY CORROSION RESISTANT NYLON MATERIAL WITH CORROSION RESISTANT STAINLESS STEEL MOUNTING HARDWARE; UNDERGROUND DEVICES, INC. CAT. NO. 3SR1N, 3SR2N OR 3SR3N OR EQUAL. PROVIDE AT LEAST TWO TRIPLE HOOK CABLE RACKS ON EACH MANHOLE WALL, SPACED TO SUPPORT RESPECTIVE CABLES.

7. COORDINATE INSTALLATION OF MANHOLES WITH RESPECTIVE FINISHED GRADE ELEVATIONS.

8. INCLUDE FLOOR SUMP OR DRAINAGE PIPE.

9. ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, CABLE IN UNIT DUCT, AND/OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE MANHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

10. FOR MANHOLES LOCATED IN PAVED AREAS, COORDINATE WITH RESPECTIVE SURROUNDING PAVEMENT WORK. MANHOLE LID TO BE FLUSH WITH SURROUNDING PAVEMENT.

11. INCLUDE 2" MIN. SCHED 40 PVC CONDUIT SLEEVE IN BOTTOM OF MANHOLE TO ACCOMMODATE GROUND ROD INSTALLATION.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

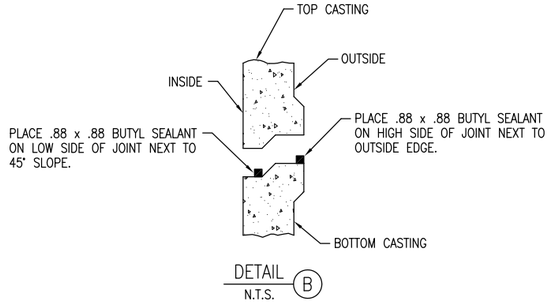
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

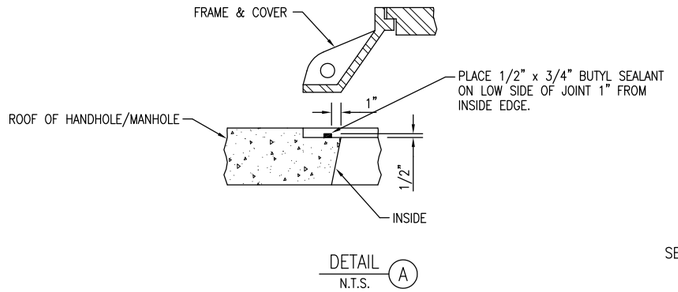
ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-502.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/29/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

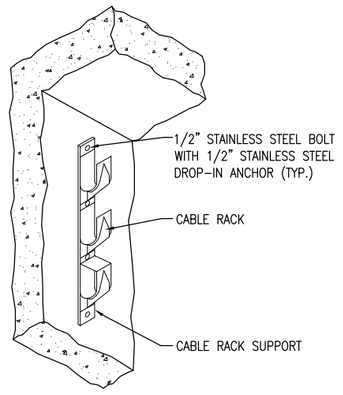
4'X4'X6' AIRPORT MANHOLE



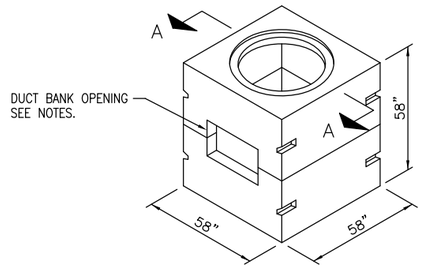
DETAIL (B)
N.T.S.



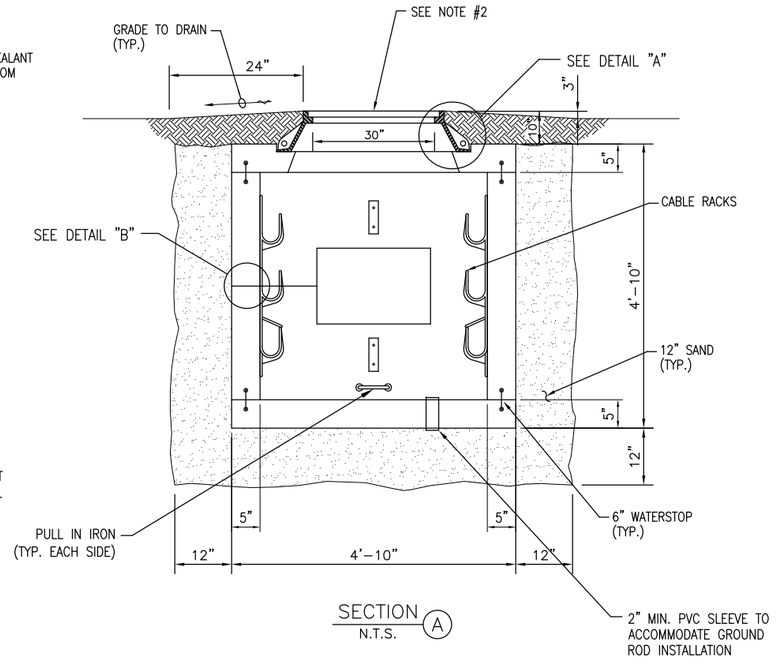
DETAIL (A)
N.T.S.



CABLE RACK
N.T.S.



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



SECTION (A)
N.T.S.

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

PRECAST 4'x4'x4' ELECTRICAL MANHOLE NOTES

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

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

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

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

2. MANHOLE FRAME & LID SHALL BE CAPABLE OF WITHSTANDING MINIMUM 50,000 POUND LOADS. MANHOLE FRAME & LID SHALL BE NEENAH CATALOG NO. R-1640-C OR APPROVED EQUAL. LID FOR LOW VOLTAGE MANHOLES SHALL BE LABELED "LOW VOLTAGE" OR "0V-600V".

3. COORDINATE DUCT BANK INTERFACE & OPENINGS WITH THE MANHOLE MFR. CONTRACTOR SHALL SLOPE DUCT BANK TO PRECAST MANHOLE OPENINGS. ALL OPENINGS SHALL BE SEALED WATERTIGHT AFTER DUCT BANK INSTALLATION.

4. 4'x4'x4' MANHOLE SHALL BE MANUFACTURED BY A CONCRETE ELECTRICAL MANHOLE PRODUCER ON THE ILLINOIS DEPARTMENT OF TRANSPORTATION APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS..

5. 4'x4'x4' MANHOLE SHALL BE PAID FOR UNDER ITEM AR110710 ELECTRICAL MANHOLE PER EACH.

6. CABLE RACKS SHALL BE HEAVY DUTY CORROSION RESISTANT NYLON MATERIAL WITH CORROSION RESISTANT STAINLESS STEEL MOUNTING HARDWARE; UNDERGROUND DEVICES, INC. CAT. NO. 3SR1N, 3SR2N OR 3SR3N OR EQUAL. PROVIDE AT LEAST TWO TRIPLE HOOK CABLE RACKS ON EACH MANHOLE WALL, SPACED TO SUPPORT RESPECTIVE CABLES.

7. COORDINATE INSTALLATION OF MANHOLES WITH RESPECTIVE FINISHED GRADE ELEVATIONS.

8. INCLUDE FLOOR SUMP OR DRAINAGE PIPE.

9. ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, CABLE IN UNIT DUCT, AND/OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE MANHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

10. INCLUDE 2" MIN. SCHED. 40 PVC CONDUIT SLEEVE IN BOTTOM OF MANHOLE TO ACCOMMODATE GROUND ROD INSTALLATION.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

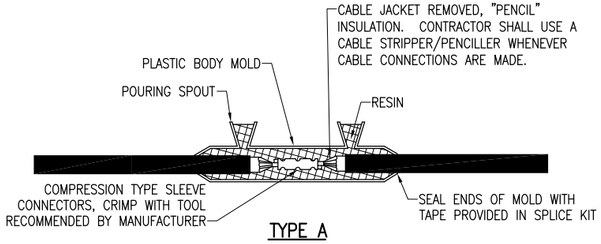
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-503.DWG
LAYOUT BY: KNL 8/18/2014
DRAWN BY: BCT 07/30/2014
REVIEWED BY: CAH 09/04/2014

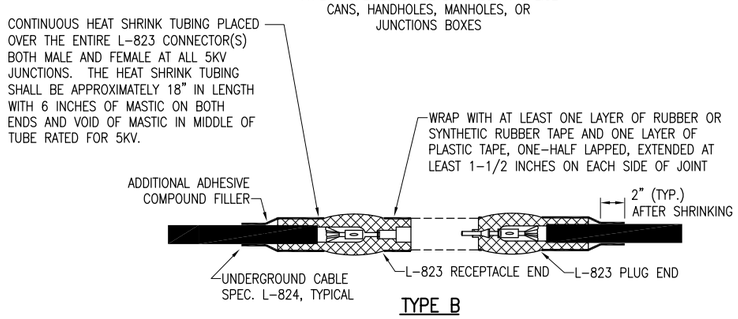
SHEET TITLE

4'X4'X4' ELECTRICAL MANHOLE



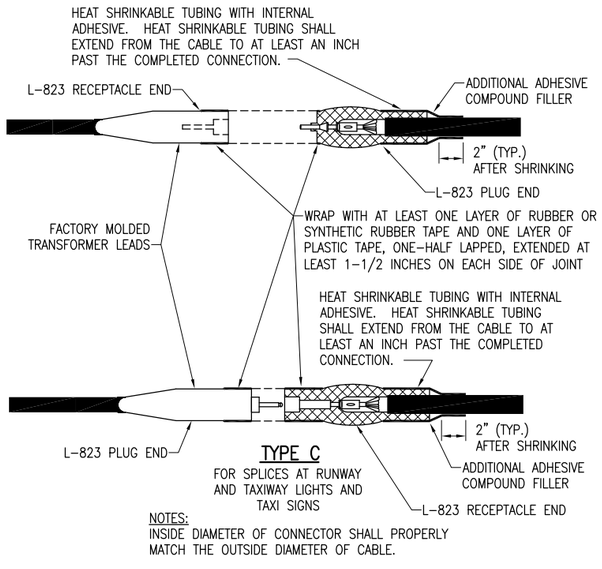
TYPE A

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



TYPE B

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



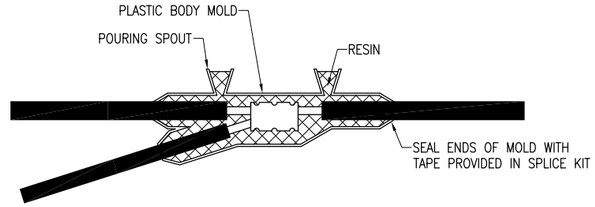
TYPE C

FOR SPLICES AT RUNWAY AND TAXIWAY LIGHTS AND TAXI SIGNS

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

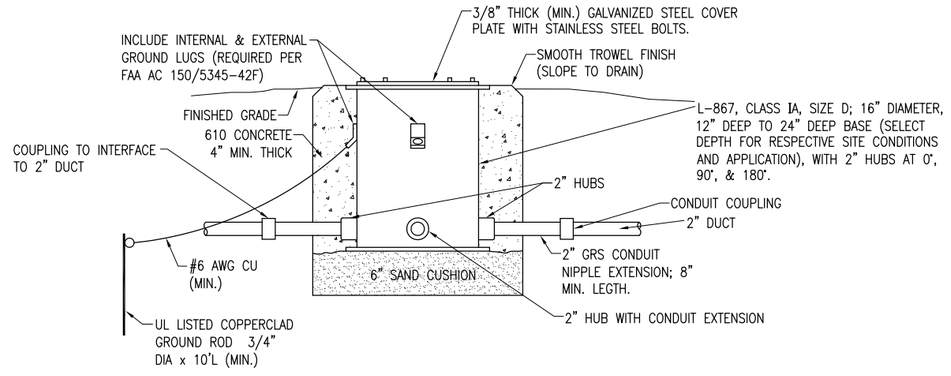
CABLE SPLICES

(NOT TO SCALE)



LOW VOLTAGE UNDERGROUND TAP SPLICE

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



SPLICE CAN DETAIL

(NOT TO SCALE)

NOTES:

1. SPLICE DETAILS ARE PROVIDED TO ASSIST IN REPAIRS OF ACCIDENTAL OR UNEXPECTED INTERRUPTIONS AND/OR CUTS TO AIRFIELD LIGHTING CABLES.
2. CONTRACTOR SHALL KEEP ON HAND A MINIMUM OF 10 SETS OF SPLICE KITS FOR L-823 CONNECTORS AND A MINIMUM OF 10 SETS OF TYPE A LOW VOLTAGE SPLICE KITS TO ACCOMMODATE REPAIRS.
3. EVERY AIRFIELD LIGHTING CABLE SPLICER SHALL BE QUALIFIED IN MAKING CABLE SPLICES AND TERMINATIONS ON CABLES RATED AT AND/OR ABOVE 5,000 VOLTS AC.
4. WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.

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

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-504.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/29/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

AIRFIELD LIGHTING CABLE SPLICE 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. BLACK, ORANGE (FOR HIGH LEG) AND BLUE SHALL BE USED FOR PHASE CONDUCTORS ON 240/120VAC THREE–PHASE, FOUR WIRE SYSTEMS. BLACK, RED, AND BLUE SHALL BE USED FOR PHASE CONDUCTORS ON 208Y/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 MINUMUM.

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 AND 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".

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-001.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/29/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

ELECTRICAL NOTES

DUCT INSTALLATION NOTES

1. ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 – NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, INTERTEK TESTING SERVICES VERIFICATION/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 AND/OR AIRPORT OPERATIONS SUPERINTENDENT. 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 LOCATION, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS IS NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO ACCURACY, COMPLETENESS, OR SUFFICIENCY OF THE INFORMATION. THERE IS NO GUARANTEE EITHER EXPRESSED OR IMPLIED, THAT THE LOCATIONS, SIZE AND TYPE OF MATERIAL OF EXISTING UNDERGROUND UTILITIES INDICATED ARE REPRESENTATIVE OF THOSE TO BE ENCOUNTERED IN THE CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE OWNER'S REPRESENTATIVE AND/OR THE RESIDENT ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED. ANY DAMAGE TO SUCH MAINS AND SERVICES SHALL BE RESTORED TO SERVICE AT ONCE AND PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT. ALL UTILITY CABLES AND LINES SHALL BE LOCATED BY THE RESPECTIVE UTILITY. **CONTACT JULIE (JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS) FOR UTILITY INFORMATION, PHONE: 1–800–892–0123.** CONTACT THE FAA (FEDERAL AVIATION ADMINISTRATION) FOR ASSISTANCE IN LOCATING FAA CABLES AND UTILITIES. 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.

5. ADJUSTMENTS TO DUCT BANK ROUTES MIGHT BE REQUIRED TO ACCOMMODATE EXISTING SITE CONDITIONS AND UNDERGROUND LINES AND UTILITIES. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL COORDINATE DUCT ROUTE ADJUSTMENTS WITH THE RESIDENT ENGINEER/ RESIDENT PROJECT REPRESENTATIVE AND THE AIRPORT OPERATIONS SUPERINTENDENT.

6. CONTRACTOR SHALL LOCATE AND MARK ALL EXISTING CABLES, LINES, OR UTILITIES WITHIN 10 FT OF PROPOSED EXCAVATING/TRENCHING AREA. ANY CABLES, LINES, AND UTILITIES FOUND INTERFERING WITH PROPOSED EXCAVATION OR CABLE/TRENCHING SHALL BE HAND DUG AND EXPOSED. ANY DAMAGED CABLES OR OTHER UTILITIES SHALL BE IMMEDIATELY REPAIRED TO THE SATISFACTION OF THE RESIDENT PROJECT REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE. THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE AND OWNER SHALL BE NOTIFIED IMMEDIATELY IF ANY CABLES OR OTHER UTILITIES ARE DAMAGED.

7. PAYMENT FOR LOCATING AND MARKING UNDERGROUND UTILITIES AND CABLES WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT INSTALLATION.

8. THE CONTRACTOR WILL DETERMINE IF THERE IS A CONFLICT BETWEEN THE INSTALLATION OF THE PROPOSED ELECTRICAL DUCTS AND ANY EXISTING UTILITIES. HE WILL MAKE ALL NECESSARY ADJUSTMENTS IN DEPTH OF INSTALLATION TO AVOID ANY AND ALL PROPOSED UNDERGROUND IMPROVEMENTS

9. CONDUITS FOR CONCRETE ENCASED DUCT BANK SHALL BE SCHEDULE 40 PVC CONDUIT, UL–LISTED, RATED FOR 90°C CABLE–CONFORMING TO NEMA STANDARD TC–2 AND UL 651, LISTED SUITABLE FOR UNDERGROUND USE EITHER DIRECT–BURIED OR ENCASED IN CONCRETE, OR SCHEDULE 40 (MINIMUM) HDPE CONDUIT, UL LISTED, CONFORMING TO NEMA STANDARD TC–7 AND UL 651B AND LISTED SUITABLE FOR UNDERGROUND USE; EITHER DIRECT BURY OR ENCASED IN CONCRETE.

10. CONDUITS FOR DIRECTIONAL BORING SHALL BE SCHEDULE 40 PVC CONDUIT OR SCHEDULE 80 PVC CONDUIT, UL–LISTED, RATED FOR 90°C CABLE–CONFORMING TO NEMA STANDARD TC–2 AND UL 651 AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION, SCHEDULE 80 HDPE CONDUIT, UL–LISTED, CONFORMING TO NEMA STANDARD TC–7 AND UL 651B AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION, OR WALL TYPE SDR 13.5 OR SDR 11 HDPE CONDUIT MANUFACTURED IN ACCORDANCE WITH ASTM D–3350 (SPECIFICATION OF POLYETHYLENE PLASTICS PIPE AND FITTINGS MATERIALS) AND ASTM F2160 (STANDARD SPECIFICATION FOR SOLID WALL, HIGH–DENSITY POLYETHYLENE CONDUIT BASED ON CONTROLLED OUTSIDE DIAMETER), AND SUITABLE FOR DIRECTIONAL BORING INSTALLATION. PER NEC 300.5 (K), RACEWAYS INSTALLED USING DIRECTIONAL BORING EQUIPMENT SHALL BE APPROVED FOR THE PURPOSE.

11. INSTALLATION OF CONDUIT AND DUCTS SHALL CONFORM TO ITEM 110 AIRPORT UNDERGROUND ELECTRICAL DUCT BANKS AND CONDUITS.

12. DUCTS INSTALLED IN TRENCH SHALL BE INSTALLED 24 IN. MINIMUM BELOW GRADE. DUCTS LOCATED IN AREA SUBJECT TO FARMING SHALL BE 42 IN. MINIMUM BELOW GRADE. WHERE DETAILED ON THE PLANS OR WHERE REQUIRED TO AVOID OBSTRUCTIONS, DUCTS SHALL BE BURIED DEEPER.

13. WHERE CONCRETE–ENCASED DUCT INTERFACES TO AN ELECTRICAL HANDHOLE OR MANHOLE, THE CONCRETE ENCASEMENT SHALL BE INSTALLED UP TO THE RESPECTIVE HANDHOLE OR MANHOLE. PROVIDE BUSHINGS OR BELLS AT CONDUIT TERMINATIONS IN ELECTRICAL HANDHOLES OR MANHOLES.

14. UNDERGROUND DUCTS INSTALLED BY DIRECTIONAL–BORING METHOD SHALL BE INSTALLED IN A MANNER THAT WILL NOT DAMAGE ANY EXISTING UNDERGROUND UTILITIES, AND SHALL NOT DISTURB OR DAMAGE THE RESPECTIVE PAVEMENT OR ROADWAY SURFACE. DUCTS SHALL BE DIRECTIONAL–BORED AT THE LOCATIONS SHOWN ON THE CONSTRUCTION PLANS. THE DUCTS WILL BE BORED AT A MINIMUM DEPTH OF 42 IN. BELOW THE RESPECTIVE PAVEMENT IT IS BEING BORED UNDER.

15. A PULL WIRE SHALL BE INSTALLED IN EACH CONDUIT OR DUCT TO BE LEFT VACANT.

16. HIGH VOLTAGE AND LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE. FIBER OPTIC CABLES SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE WITH HIGH VOLTAGE OR LOW VOLTAGE CIRCUITS.

17. CONTROL CABLES SHALL BE RUN IN SEPARATE DUCTS FROM POWER CABLES.

18. COORDINATE DUCT INTERFACE TO MANHOLES AND HANDHOLES. FIELD CUT OPENINGS FOR CONDUITS AND DUCTS TO INTERFACE TO MANHOLES AND/OR HANDHOLES. CUT WALL OF RESPECTIVE HANDHOLE OR MANHOLE WITH A TOOL DESIGNED FOR MATERIAL TO BE CUT. SIZE HOLES FOR RESPECTIVE DUCTS, CONDUITS, AND TERMINATION FITTINGS AND SEAL AROUND PENETRATIONS. ALL CORING, INTERFACE, CUTTING, AND SEALING WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT INSTALLATION AND/OR RESPECTIVE HANDHOLE/MANHOLE INSTALLATION.

19. CONTRACTOR SHALL COORDINATE DUCT MARKING WITH AIRPORT.

20. ALL POWER AND CONTROL CABLES IN HANDHOLES, MANHOLES, AND JUNCTION BOXES SHALL BE TAGGED TO IDENTIFY THE RESPECTIVE CABLE. A MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A MANHOLE; ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT. CABLE TAGS SHALL BE STAMPED BRASS TAGS OR OTHER WEATHERPROOF/WATERPROOF CORROSION RESISTANT MATERIAL.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-002.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/29/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

DUCT INSTALLATION 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
M	MOTOR
#	LOAD, MOTOR, # = HORSEPOWER
	ELECTRIC UTILITY METER BASE
	JUNCTION BOX WITH SPLICE
XXX	EQUIPMENT, XXX = DEVICE DESCRIPTION
GND	GROUND BUS OR TERMINAL
S/N	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
N EM L	TRANSFER SWTICH
G	ENGINE GENERATOR SET

ELECTRICAL LEGEND – SCHEMATIC

	NORMALLY OPEN (N.O.) CONTACT
	NORMALLY CLOSED (N.C.) CONTACT
S*	STARTER COIL, * = STARTER NUMBER
OL	OVERLOAD RELAY CONTACT
CR*	CONTROL RELAY, * = CONTROL RELAY NUMBER
R*	RELAY, * = RELAY NUMBER
	TOGGLE SWITCH / 2 POSITION SWITCH
OFF AUTO OX	2-POSITION SELECTOR SWITCH
OFF HAND AUTO XOO OOX	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
GND	GROUND BUS OR TERMINAL
S/N	NEUTRAL BUS
	GROUND, GROUND ROD, GROUND BUS
	INDUSTRIAL CONTROL RELAY OR LIGHTING CONTACTOR
P	S1 CUTOUT HANDLE REMOVED
I	S1 CUTOUT HANDLE INSERTED
	N.O. THERMAL SWITCH
	N.C. THERMAL SWITCH
	L-830 SERIES ISOLATION TRANSFORMER

ELECTRICAL ABBREVIATIONS

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

ELECTRICAL ABBREVIATIONS (CONTINUED)

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

AIRPORT EQUIPMENT/FACILITY ABBREVIATIONS

ASOS	AUTOMATED SURFACE OBSERVING SYSTEM
ATCT	AIR TRAFFIC CONTROL TOWER
AWOS	AUTOMATED WEATHER OBSERVING SYSTEM
CCR	CONSTANT CURRENT REGULATOR
DME	DISTANCE MEASURING EQUIPMENT
FAR	FEDERAL AVIATION REGULATION
GS	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:

1. CONTRACTOR SHALL EXAMINE THE SITE, AIR TRAFFIC CONTROL TOWER, HANGAR NO. 2, AND VAULT TO DETERMINE EXISTING SITE CONDITIONS.
2. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 – NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES, AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L. LISTING, ETL LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
3. ALL 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).
4. 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:

   208/120 VAC, 3 PHASE, 4 WIRE

PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUND	GREEN

5. SEE RESPECTIVE SITE PLANS FOR SITE LEGEND INFORMATION.
6. LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.
7. 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.
8. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, OR HANDHOLE.

HANSON Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

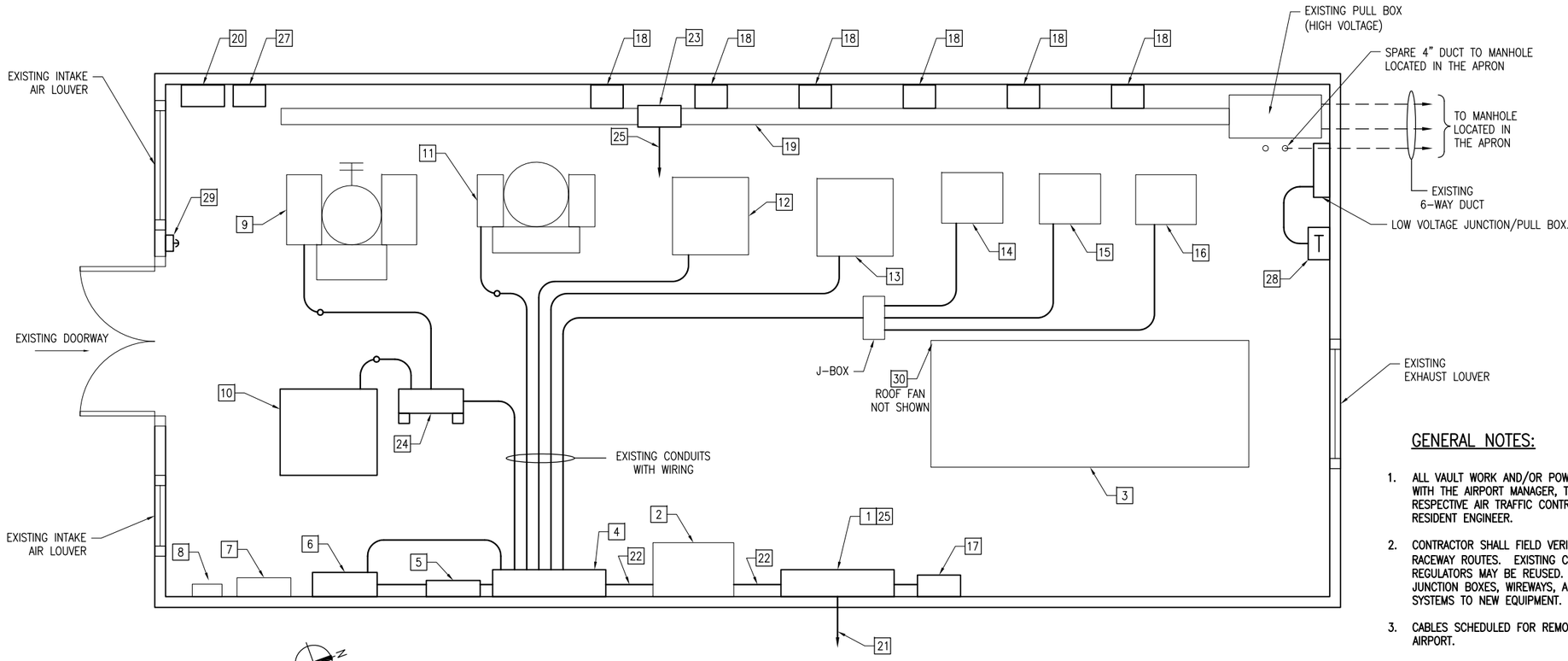
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-003.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/29/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

ELECTRICAL LEGEND ABBREVIATIONS AND NOTES



ELECTRICAL EQUIPMENT PLAN FOR VAULT

GENERAL NOTES:

1. ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER, THE DIRECTOR OF OPERATIONS, THE RESPECTIVE AIR TRAFFIC CONTROL TOWER PERSONNEL, AND THE RESIDENT ENGINEER.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND PROPOSED RACEWAY ROUTES. EXISTING CONDUITS TO/FROM CONSTANT CURRENT REGULATORS MAY BE REUSED. PROVIDE CONDUIT EXTENSIONS, FITTINGS, JUNCTION BOXES, WIREWAYS, AND HARDWARE TO INTERFACE EXISTING SYSTEMS TO NEW EQUIPMENT.
3. CABLES SCHEDULED FOR REMOVAL SHALL BE TURNED OVER TO THE AIRPORT.
4. REMOVAL OF EQUIPMENT, CABLES, CONDUITS, AND ASSOCIATED MATERIALS WILL BE PAID FOR UNDER ITEM AR109902 REMOVE ELECTRICAL EQUIPMENT PER LUMP SUM.

KEYED NOTES

1. EXISTING MAIN DISCONNECT PANEL "A" TO REMAIN.
2. EXISTING AUTO TRANSFER SWITCH TO REMAIN.
3. EXISTING ENGINE GENERATOR SET TO REMAIN.
4. EXISTING MAIN DISTRIBUTION PANELBOARD "B" TO REMAIN.
5. EXISTING AUXILIARY PANELBOARD "C" TO REMAIN.
6. EXISTING LIGHTING CONTACTOR PANEL FOR AIRFIELD NAVAIDS & LIGHTING TO REMAIN.
7. EXISTING RELAY INTERFACE PANEL TO BE REPLACED.
8. EXISTING L-854 RADIO RECEIVER TO BE REPLACED.
9. EXISTING SPARE BACKUP CCR FOR RUNWAY 11-29; GS HEVI-DUTY ELECTRIC TYPE: FAA 30L828M1L6, PART NO. 6442313T200, 30 KW OUTPUT AT 20 AMPERES, INPUT: 208 VAC, 60 HZ, 156 AMPERES, OUTPUT CURRENT ADJUSTMENT: 20.0/15.8/12.4/10.3/8.5, CONTROL POWER: INTERNAL 120 VOLTS, 60 HZ, OIL: 66 GALLONS, SERIAL NO. 85GM-405953, APPROX. WEIGHT: 2200 LBS. CONTROL WIRING TO BE REMOVED AND REPLACED.
10. EXISTING RUNWAY 11-29 CCR; CROUSE HINDS ID: FAA L-828, INPUT: 208 VAC, 60 HZ, 165 AMPS, CONTROL: 120 VAC, 60 HZ, OUTPUT: 30 KW AT 20 AMPS. BRIGHTNESS STEPS: 5, OUTPUT CURRENT: 8.5, 10.3, 12.4, 15.8, 20.0, PART NO. 82860F2-208-31-5-S506B, SERIAL NO. 12L442. CONTROL WIRING TO BE REMOVED AND REPLACED.
11. EXISTING TAXIWAY A-EAST CCR; GS HEVI-DUTY ELECTRIC TYPE: FAA 15L828K1L6, PART NO. 6442311T200, 15 KW OUTPUT AT 6.6 AMPERES, INPUT: 208 VAC, 60 HZ, 78 AMPERES, OUTPUT CURRENT ADJUSTMENT: 6.6/5.5/4.8, CONTROL POWER: INTERNAL 120 VOLTS, 60 HZ, OIL: 40 GALLONS, SERIAL NO. 85GM-405954, APPROX. WEIGHT: 1575 LBS. CONTROL WIRING TO BE REMOVED AND REPLACED.
12. EXISTING TAXIWAY B CCR; MANAIRCO FAA L-828, PART NO. MR15L8283B-01-OVM-ETM, SERIAL NO. 900794A1, MFR. DATE: 12/09, WEIGHT: 850 LBS., INPUT: 208 VAC, 60 HZ, 77 AMPERES, INTERNAL/EXTERNAL CONTROL: 120 VAC, 60 HZ, OUTPUT RATING: 15 KW AT 2273 VOLTS AC, OUTPUT CURRENT STEPS: 4.8/5.5/6.6 AMPERES. CONTROL WIRING TO BE REMOVED AND REPLACED.
13. EXISTING RUNWAY 17-35 CCR; MANAIRCO FAA L-828, PART NO. MR15L8283B-01-OVM-ETM, SERIAL NO. 900794A2, MFR. DATE: 12/09, WEIGHT: 850 LBS., INPUT: 208 VAC, 60 HZ, 77 AMPERES, INTERNAL/EXTERNAL CONTROL: 120 VAC, 60 HZ, OUTPUT RATING: 15 KW AT 2273 VOLTS AC, OUTPUT CURRENT STEPS: 4.8/5.5/6.6 AMPERES. CONTROL WIRING TO BE REMOVED AND REPLACED.
14. EXISTING TAXIWAY C-SOUTH CCR; GS HEVI-DUTY ELECTRIC TYPE: CCR3B FAA-L-828 10E, PART NO. 6436300T200, 4 KW OUTPUT AT 6.6 AMPERES, INPUT: 240 VAC, 60 HZ, 17 AMPERES, OUTPUT CURRENT ADJUSTMENT: 6.6/5.5/4.8, CONTROL POWER: INT/EXT 115/120 VOLTS, 60 HZ, SERIAL NO. 85TS19751-07, APPROX. WEIGHT: 375 LBS. CONTROL WIRING TO BE REMOVED AND REPLACED.
15. EXISTING TAXIWAY C-NORTH CCR; GS HEVI-DUTY ELECTRIC TYPE: CCR3B FAA-L-828 10E, PART NO. 6436300T200, 4 KW OUTPUT AT 6.6 AMPERES, INPUT: 240 VAC, 60 HZ, 17 AMPERES, OUTPUT CURRENT ADJUSTMENT: 6.6/5.5/4.8, CONTROL POWER: INT/EXT 115/120 VOLTS, 60 HZ, SERIAL NO. 85TS19751-10, APPROX. WEIGHT: 375 LBS. CONTROL WIRING TO BE REMOVED AND REPLACED.
16. EXISTING TAXIWAY A-WEST CCR; GS HEVI-DUTY ELECTRIC TYPE: CCR3B FAA-L-828 10E, PART NO. 6436300T200, 4 KW OUTPUT AT 6.6 AMPERES, INPUT: 240 VAC, 60 HZ, 17 AMPERES, OUTPUT CURRENT ADJUSTMENT: 6.6/5.5/4.8, CONTROL POWER: INT/EXT 115/120 VOLTS, 60 HZ, SERIAL NO. 85TS19751-08, APPROX. WEIGHT: 375 LBS. CONTROL WIRING TO BE REMOVED AND REPLACED.
17. EXISTING TRANSIENT VOLTAGE SURGE SUPPRESSOR.
18. EXISTING CUTOUT INSTALLED IN A CUTOUT ENCLOSURE.
19. EXISTING LOW VOLTAGE WIREWAY. HIGH VOLTAGE WIREWAY LOCATED BELOW LOW VOLTAGE WIREWAY.
20. EXISTING CUTOUTS FOR RUNWAY 11-29 LIGHTING.
21. EXISTING 400 AMP, 208/120 VAC, 3PH, 4W FEEDER FROM SERVICE DISCONNECT TO BE REMOVED AND REPLACED. EXISTING FEEDER IS ROUTED THROUGH HANGAR NO. 2, EXISTING FEEDER CABLES SHALL BE REMOVED AND TURNED OVER TO THE AIRPORT.
22. EXISTING 3-600 MCM XHHW, 1-600 MCM XHHW NEUTRAL, 1 #2 GND IN 4" GRSC TO REMAIN.
23. EXISTING LOW VOLTAGE PULL BOX WITH THE FOLLOWING CKTS:
    - 6- 5/C #12 CONTROL CABLES FOR TXY A-EAST CCR, TXY A-WEST CCR, RWY 17/35 CCR, TXY B CCR, TXY C-SOUTH CCR & TXY C-NORTH CCR.
    - 2- 9/C #12 CONTROL CABLES FOR RWY 11/29 CCR TRANSFER RELAY PANEL & LTG CONTACTOR PANEL.
    - 1- 12/C #12 CONTROL CABLE FOR LTG CONTACTOR PANEL,
    - 1- 3/C #12 CONTROL CABLE FOR RELAY INTERFACE PANEL,
    - 3- #12 THWN FOR NDB 120VAC POWER,
    - 4- #4 THWN FOR RAMP LIGHTS CKT #1 & CKT #2,
    - 4- #8 THWN FOR BEACON POWER,
    - 2- #10 THWN FOR SIREN POWER,
    - 3- #4 THWN FOR PARKING LOT LIGHTING POWER.

    THESE CIRCUITS ROUTE THROUGH HANGAR NO. 2 AND SHALL BE REMOVED AND REPLACED.
24. EXISTING 400 AMP, 2P DTNFSS IN A NEMA 1 ENCLOSURE.
25. EXISTING POWER & CONTROL CABLES IN 4" GRSC TO HANGAR NO. 2 AND ON TO RESPECTIVE NAVAIDS, AIRFIELD RAMP LIGHTING, PARKING LOT LIGHTING, SIREN, AND ATCT L-821 PANEL. THESE CIRCUITS SHALL BE REMOVED AND REPLACED.
27. EXISTING TRANSFER RELAY PANEL FOR RUNWAY 11-29 CCR'S CONTROL WIRING.
28. EXISTING 208VAC TO 240VAC BOOST TRANSFORMER FOR RUNWAY 11 REILS.
29. EXISTING ENGINE GENERATOR REMOTE EMERGENCY SHUT DOWN PUSH BUTTON STATION.
30. EXISTING ROOF MOUNTED EXHAUST FAN TO REMAIN.

HANSON
Engineering | Planning | Allied Services
Offices Nationwide
www.hanson-inc.com
Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503
Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

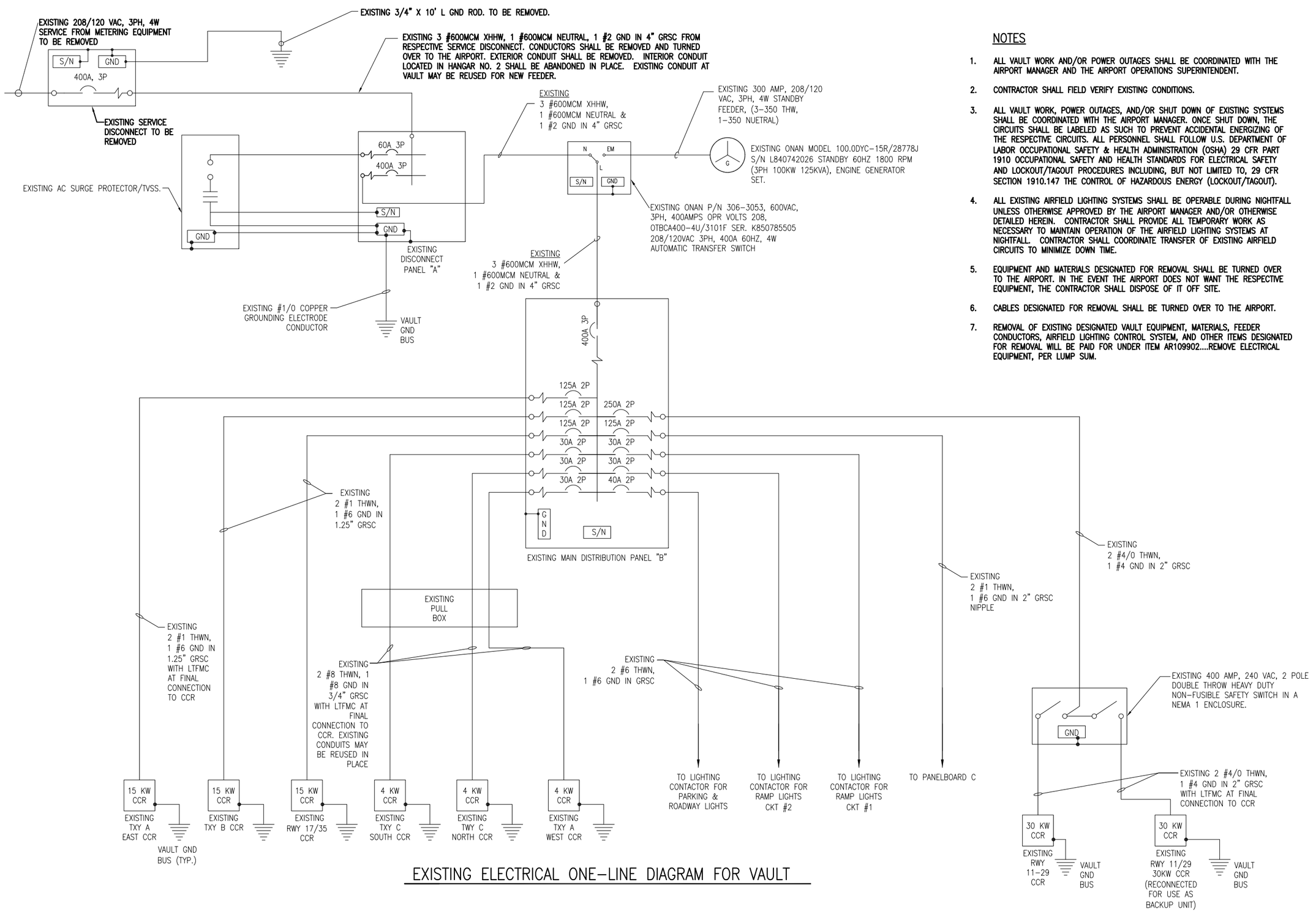
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: EP-101.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/29/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

EXISTING ELECTRICAL PLAN FOR AIRPORT VAULT



EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT

NOTES

1. ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND THE AIRPORT OPERATIONS SUPERINTENDENT.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS.
3. 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 AND 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. ALL EXISTING AIRFIELD LIGHTING SYSTEMS SHALL BE OPERABLE DURING NIGHTFALL UNLESS OTHERWISE APPROVED BY THE AIRPORT MANAGER AND/OR OTHERWISE DETAILED HEREIN. CONTRACTOR SHALL PROVIDE ALL TEMPORARY WORK AS NECESSARY TO MAINTAIN OPERATION OF THE AIRFIELD LIGHTING SYSTEMS AT NIGHTFALL. CONTRACTOR SHALL COORDINATE TRANSFER OF EXISTING AIRFIELD CIRCUITS TO MINIMIZE DOWN TIME.
5. EQUIPMENT AND MATERIALS DESIGNATED FOR REMOVAL SHALL BE TURNED OVER TO THE AIRPORT. IN THE EVENT THE AIRPORT DOES NOT WANT THE RESPECTIVE EQUIPMENT, THE CONTRACTOR SHALL DISPOSE OF IT OFF SITE.
6. CABLES DESIGNATED FOR REMOVAL SHALL BE TURNED OVER TO THE AIRPORT.
7. REMOVAL OF EXISTING DESIGNATED VAULT EQUIPMENT, MATERIALS, FEEDER CONDUCTORS, AIRFIELD LIGHTING CONTROL SYSTEM, AND OTHER ITEMS DESIGNATED FOR REMOVAL WILL BE PAID FOR UNDER ITEM AR109902....REMOVE ELECTRICAL EQUIPMENT, PER LUMP SUM.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 09/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

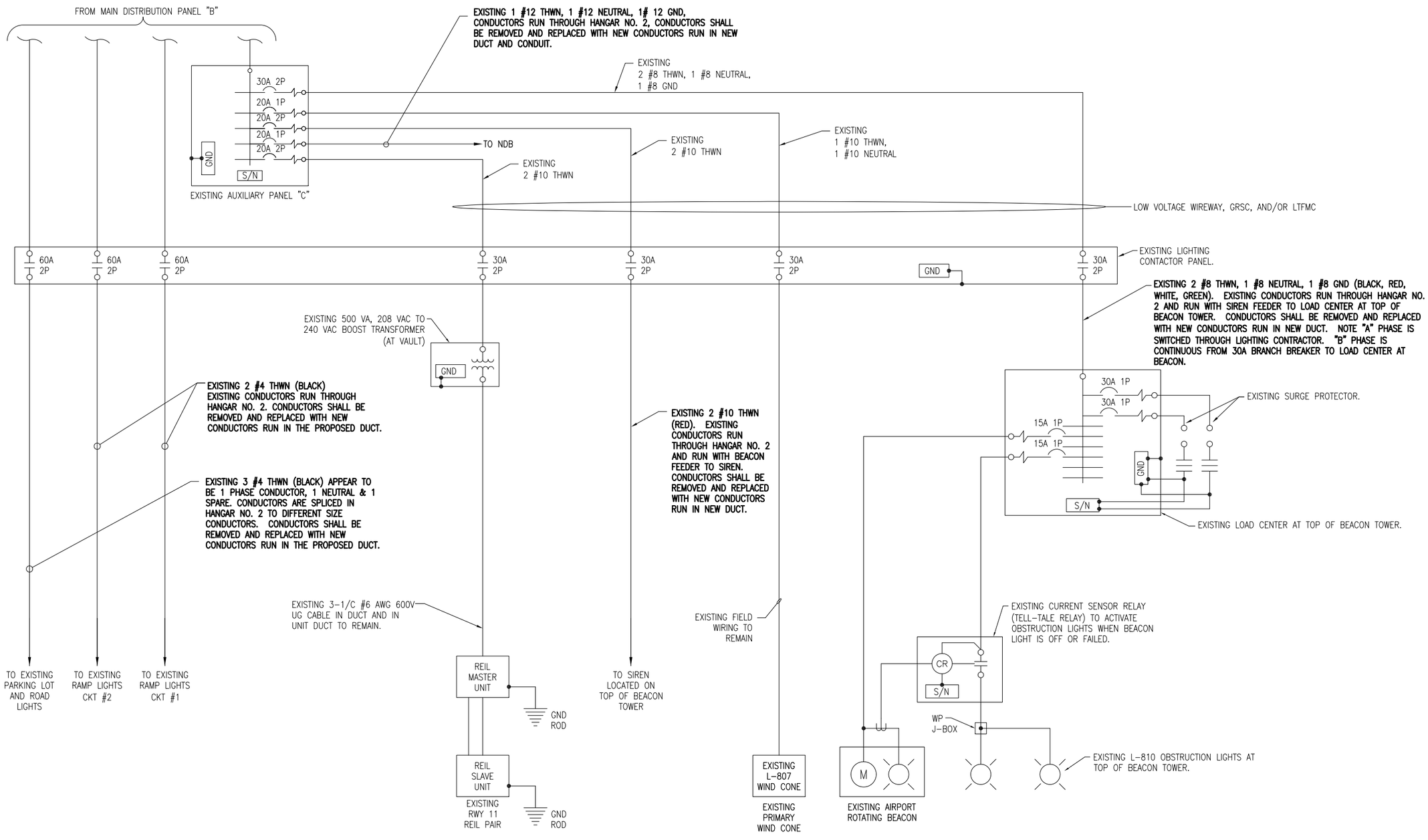
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-602.DWG
LAYOUT BY: KNL 07/21/2014
DRAWN BY: BCT 07/30/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT



EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

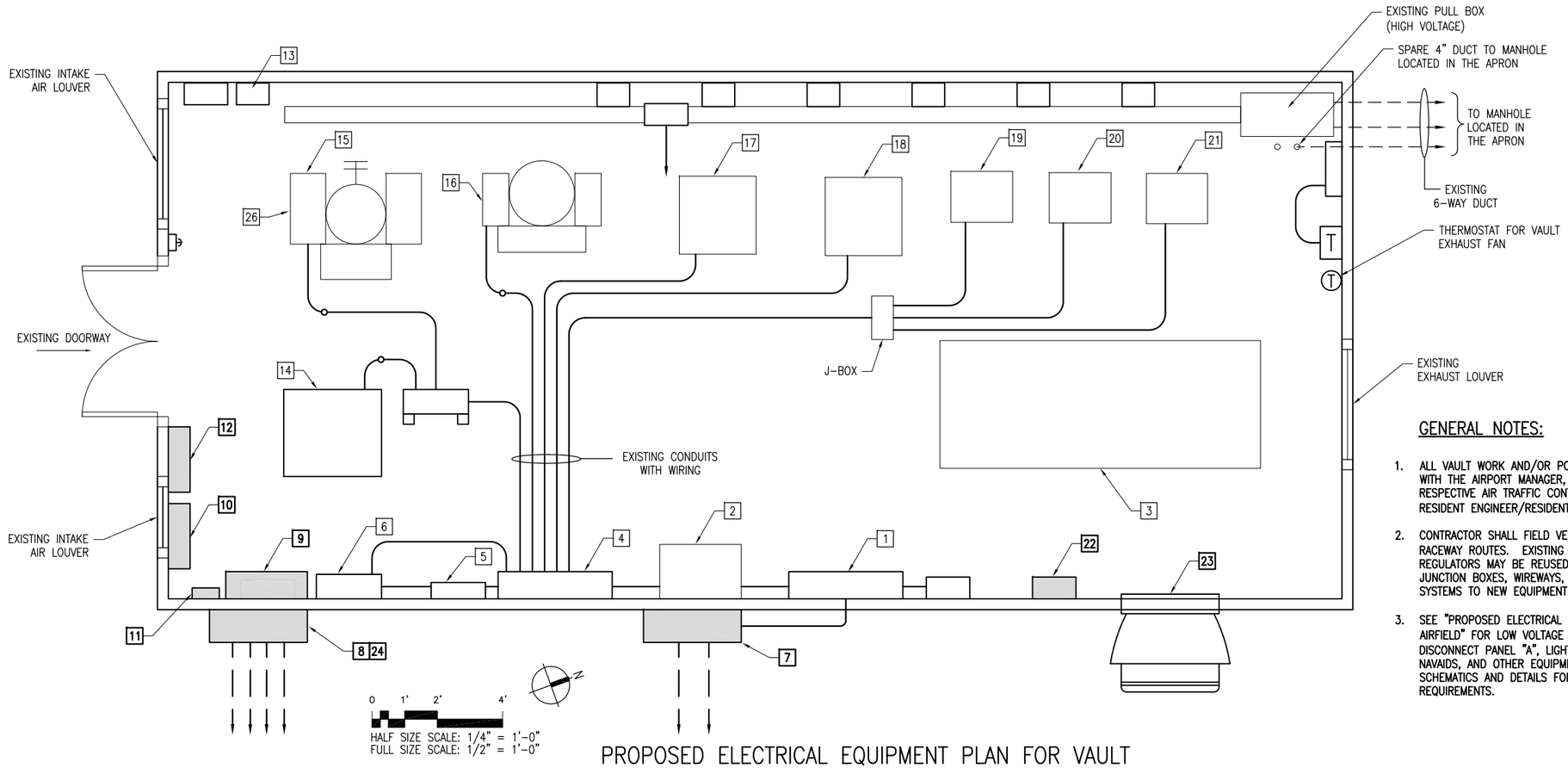
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-603.DWG
LAYOUT BY: KNL 07/21/2014
DRAWN BY: BCT 07/30/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

EXISTING ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD



PROPOSED ELECTRICAL EQUIPMENT PLAN FOR VAULT

KEYED NOTES

1. EXISTING MAIN DISCONNECT PANEL "A". FURNISH AND INSTALL NEW 400 AMP, 208/120 VAC, 3 PHASE, 4-WIRE FEEDER IN PROPOSED DUCT AND CONDUIT FROM VAULT SERVICE DISCONNECT TO MAIN DISCONNECT PANEL "A". (AR109924)
2. EXISTING AUTO TRANSFER SWITCH.
3. EXISTING ENGINE GENERATOR SET
4. EXISTING MAIN DISTRIBUTION PANELBOARD "B"
5. EXISTING AUXILIARY PANELBOARD "C"
6. EXISTING LIGHTING CONTACTOR PANEL FOR AIRFIELD NAVAIDS AND LIGHTING. INTERFACE NEW FEEDER CIRCUIT WIRING FOR PARKING LOT LIGHTING, RAMP LIGHTS CIRCUIT 1, RAMP LIGHTS CIRCUIT 2, SIREN, AND AIRPORT ROTATING BEACON TO LIGHTING CONTACTOR PANEL. (AR109924)
7. NEMA 4X STAINLESS STEEL PULL BOX WITH HINGED COVER AND PAD LOCK FEATURE (MINIMUM 36"HIGH BY 36"WIDE BY 12"DEEP). INSTALL ON VAULT EXTERIOR WALL. PROVIDE 2-4" GRSC FROM MANHOLE TO PULL BOX. INTERFACE 4" GRSC FROM PULL BOX TO MAIN DISCONNECT PANEL IN THE VAULT. (AR109924)
8. NEMA 4X STAINLESS STEEL PULL BOX WITH HINGED COVER AND PAD LOCK FEATURE (MINIMUM 36"HIGH BY 36"WIDE BY 12"DEEP). INSTALL ON VAULT EXTERIOR WALL. PROVIDE 4-4" GRSC FROM MANHOLE TO PULL BOX. INTERFACE GRSC FROM PULL BOX TO THE AIRFIELD LIGHTING CONTROL SYSTEM, LIGHTING CONTACTOR PANEL AND LOW VOLTAGE RACEWAY SYSTEM AT THE VAULT. (AR109924)
9. NEW TERMINAL AND TRANSFER RELAY PANEL. FIELD VERIFY LOCATION. INTERFACE WIREWAY, CONDUIT AND WIRING FROM L-821 PANELS AND RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL. (AR109620)
10. NEW RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL. FIELD VERIFY LOCATION. INTERFACE WIREWAY, CONDUIT AND WIRING TO AND FROM TERMINAL AND TRANSFER RELAY PANEL, L-854 RADIO RECEIVER, LIGHTING CONTACTOR PANEL, AND EACH CONSTANT CURRENT REGULATOR. (AR109620)
11. NEW L-854 RADIO RECEIVER CONTROLLER. FIELD VERIFY LOCATION. EXTEND RADIO ANTENNA AND CABLE IN 1"GRSC MINIMUM 2 FT ABOVE THE ADJACENT HANGAR ROOF LINE FOR PROPER OPERATION. PROVIDE SCHEDULE 40 PVC CONDUIT NIPPLE AT ENTRY TO THE VAULT. BOND EXTERIOR METAL CONDUIT TO EXTERIOR GROUND ROD/RING WITH PIPE CLAMP AND #2 AWG COPPER BONDING CONDUCTOR. (AR109620)
12. NEW L-821 CONTROL PANEL FOR VAULT. LOCATE ADJACENT TO DOORWAY ABOVE INTAKE LOUVERS. INTERFACE WIREWAY, CONDUIT AND WIRING FROM TERMINAL AND TRANSFER RELAY PANEL. (AR109620)
13. EXISTING RUNWAY 11-29 CCR CONTROL WIRING TRANSFER PANEL. FURNISH AND INSTALL CONTROL WIRING IN LOW VOLTAGE RACEWAY, GRSC, AND/OR LTFMC FROM RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL TO RUNWAY 11-29 CCR TRANSFER PANEL. (AR109620).
14. EXISTING RUNWAY 11-29 CCR.
15. EXISTING BACKUP CCR FOR RUNWAY 11-29.
16. EXISTING TAXIWAY A-EAST CCR. FURNISH AND INSTALL CONTROL WIRING IN LOW VOLTAGE RACEWAY, GRSC, AND/OR LTFMC FROM RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL TO TAXIWAY A-EAST CCR. (AR109620)
17. EXISTING TAXIWAY B CCR. FURNISH AND INSTALL CONTROL WIRING IN LOW VOLTAGE RACEWAY, GRSC, AND/OR LTFMC FROM RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL TO TAXIWAY B CCR. (AR109620)
18. EXISTING RUNWAY 17-35 CCR. FURNISH AND INSTALL CONTROL WIRING IN LOW VOLTAGE RACEWAY, GRSC, AND/OR LTFMC FROM RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL TO RUNWAY 17-35 CCR. (AR109620)
19. EXISTING TAXIWAY C-SOUTH CCR. FURNISH AND INSTALL CONTROL WIRING IN LOW VOLTAGE RACEWAY, GRSC, AND/OR LTFMC FROM RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL TO TAXIWAY C-SOUTH CCR. (AR109620)
20. EXISTING TAXIWAY C-NORTH CCR. FURNISH AND INSTALL CONTROL WIRING IN LOW VOLTAGE RACEWAY, GRSC, AND/OR LTFMC FROM RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL TO TAXIWAY C-NORTH CCR. (AR109620)
21. EXISTING TAXIWAY A-WEST CCR. FURNISH AND INSTALL CONTROL WIRING IN LOW VOLTAGE RACEWAY, GRSC, AND/OR LTFMC FROM RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL TO TAXIWAY A-WEST CCR. (AR109620)
22. NEW EXHAUST FAN MOTOR STARTER CONTROL PANEL. INTERFACE POWER AND CONTROL WIRING TO CONTROL PANEL, INTAKE AIR LOUVER/DAMPERS, THERMOSTAT AND ASSOCIATED CONTROLS. (AR109210)
23. NEW WALL MOUNTED DIRECT DRIVE EXHAUST FAN. SEE EXHAUST FAN DETAILS. (AR109210)
24. FURNISH AND INSTALL 3 SETS OF 24/C #12 600 VOLT TYPE TC CONTROL CABLE FROM THE VAULT TO THE EXISTING L-821 CONTROL PANEL LOCATED AT THE AIR TRAFFIC CONTROL TOWER. 24/C #12 600 VOLT TYPE TC CONTROL CABLE WILL BE PAID FOR UNDER ITEM AR108800 CONTROL CABLE PER LINEAL FOOT.

GENERAL NOTES:

1. ALL VAULT WORK AND/OR POWER OUTAGES SHALL BE COORDINATED WITH THE AIRPORT MANAGER, THE OPERATIONS SUPERINTENDENT, THE RESPECTIVE AIR TRAFFIC CONTROL TOWER PERSONNEL, AND THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND PROPOSED RACEWAY ROUTES. EXISTING CONDUITS TO/FROM CONSTANT CURRENT REGULATORS MAY BE REUSED. PROVIDE CONDUIT EXTENSIONS, FITTINGS, JUNCTION BOXES, WIREWAYS, AND HARDWARE TO INTERFACE EXISTING SYSTEMS TO NEW EQUIPMENT.
3. SEE "PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD" FOR LOW VOLTAGE POWER WIRING REQUIREMENTS TO MAIN DISCONNECT PANEL "A", LIGHTING CONTACTOR PANEL, AIRFIELD LIGHTING, NAVAIDS, AND OTHER EQUIPMENT. SEE RESPECTIVE CONTROL WIRING SCHEMATICS AND DETAILS FOR CCR AND AIRFIELD CONTROL WIRING REQUIREMENTS.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

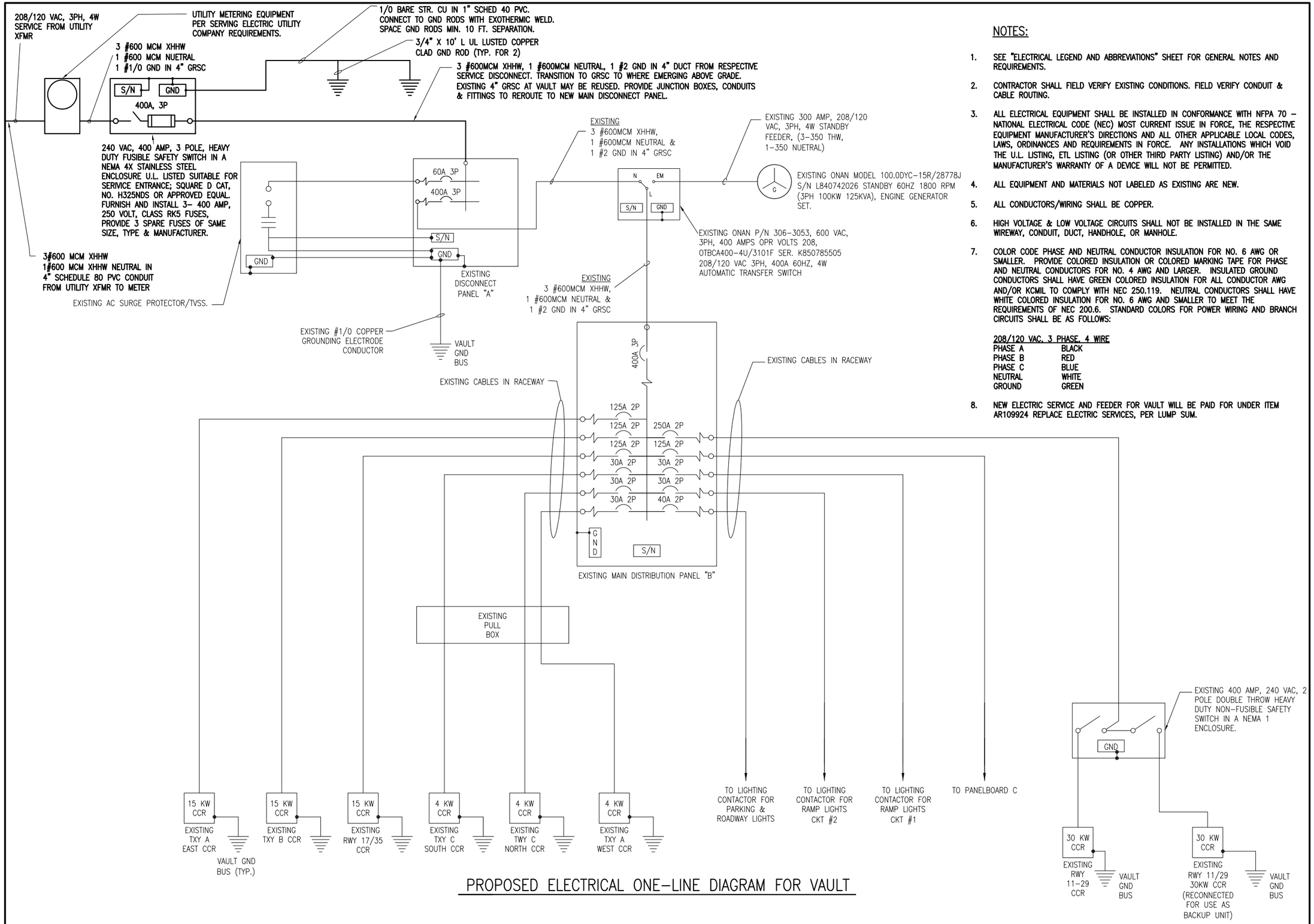
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: EP-102.DWG
LAYOUT BY: KNL 08/08/2014
DRAWN BY: BCT 08/08/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

PROPOSED ELECTRICAL PLAN FOR AIRPORT VAULT



PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT

NOTES:

1. SEE "ELECTRICAL LEGEND AND ABBREVIATIONS" SHEET FOR GENERAL NOTES AND REQUIREMENTS.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. FIELD VERIFY CONDUIT & CABLE ROUTING.
3. 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.
4. ALL EQUIPMENT AND MATERIALS NOT LABELED AS EXISTING ARE NEW.
5. ALL CONDUCTORS/WIRING SHALL BE COPPER.
6. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
7. 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:

208/120 VAC, 3 PHASE, 4 WIRE	
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUND	GREEN

8. NEW ELECTRIC SERVICE AND FEEDER FOR VAULT WILL BE PAID FOR UNDER ITEM AR109924 REPLACE ELECTRIC SERVICES, PER LUMP SUM.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 09/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

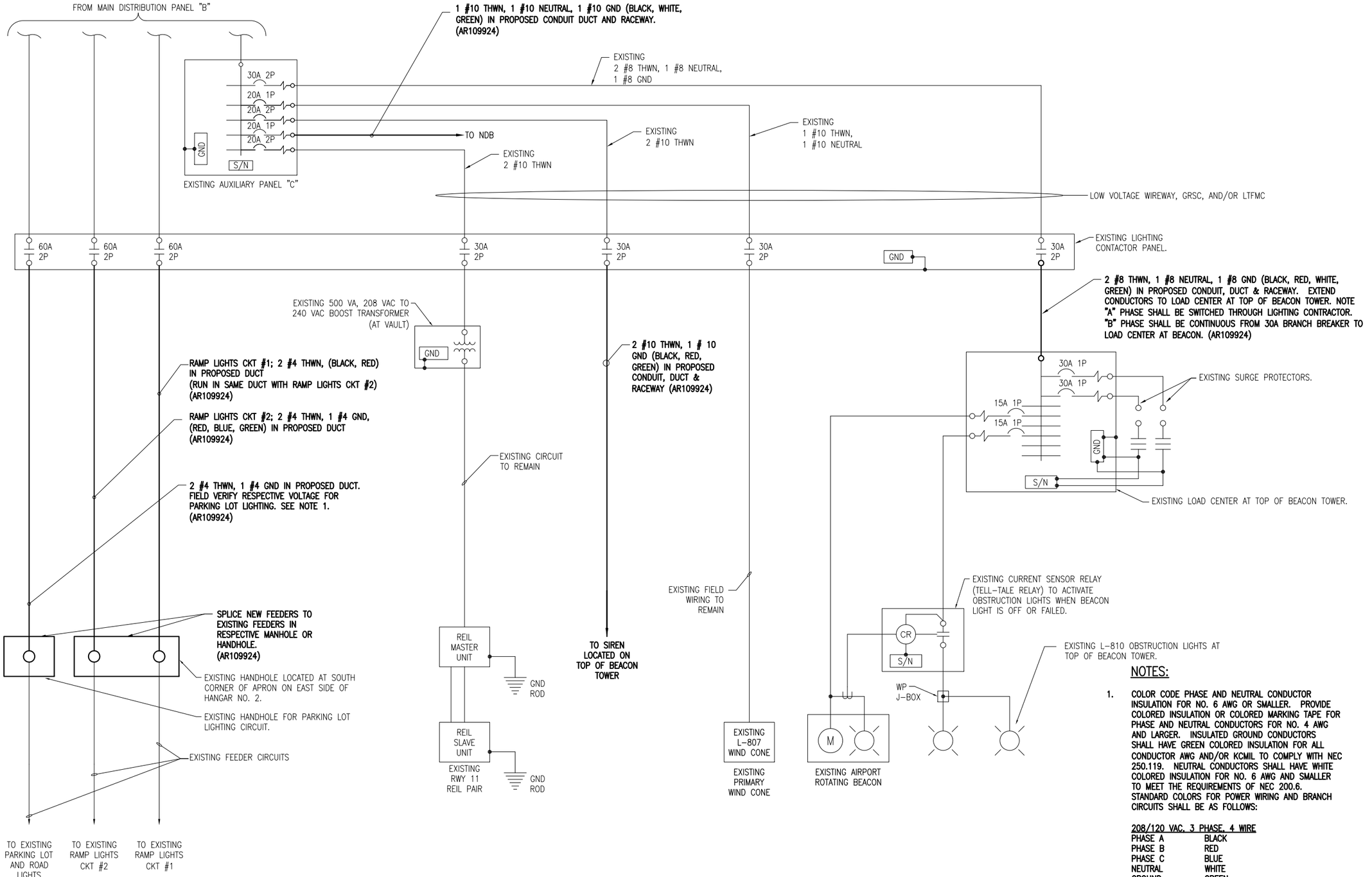
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-604.DWG
LAYOUT BY: KNL 07/21/2014
DRAWN BY: BCT 07/30/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT



PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD

NOTES:

1. 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:

208/120 VAC, 3 PHASE, 4 WIRE	
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUND	GREEN

2. PROVIDE CABLE TAGS TO IDENTIFY EACH CIRCUIT IN PULL BOXES, HANDHOLES, MANHOLES AND OTHER POINTS OF ACCESS.

3. NEW FEEDER CABLES FOR PARKING LOT LIGHTING, RAMP LIGHTS CIRCUIT 1, RAMP LIGHTS CIRCUIT 2, NDB, SIREN, AND AIRPORT ROTATING BEACON WILL BE PAID FOR UNDER ITEM AR109924 REPLACE ELECTRIC SERVICES, PER LUMP SUM.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 09/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

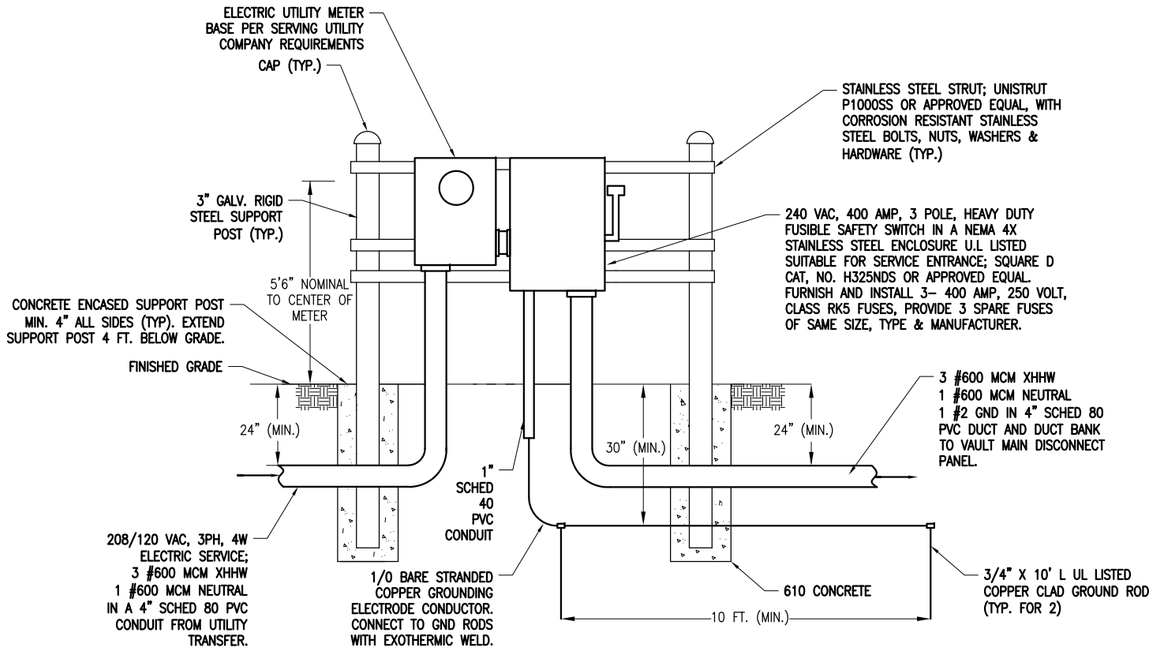
Contract No. SR088

NO.	DATE	DESCRIPTION		
			LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-605.DWG
LAYOUT BY: KNL 07/21/2014
DRAWN BY: BCT 07/30/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR VAULT AND AIRFIELD



SERVICE ENTRANCE ELEVATION
NOT TO SCALE

NOTES:

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND THE OPERATIONS SUPERINTENDENT. 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 OR LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70 – NATIONAL ELECTRICAL CODE (NEC) MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURE'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATIONS WHICH VOID THE U.L LISTING, ETL LISTING, (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE WILL NOT BE PERMITTED.
3. CONTRACTOR SHALL COORDINATE NEW ELECTRICAL SERVICE WITH THE SERVING ELECTRIC UTILITY AND THE AIRPORT MANAGER. CONTRACTOR SHALL CONFIRM REQUIREMENTS WITH SERVING ELECTRIC UTILITY COMPANY. THE SERVING ELECTRIC UTILITY IS AMEREN. PHONE 1-800-755-5000 OR 1-888-672-5252.
4. NEW SERVICE FOR THE AIRPORT ELECTRICAL VAULT IS A REPLACEMENT SERVICE. THE EXISTING LOADS FOR THE ELECTRICAL VAULT AND AIRFIELD LIGHTING ARE NOT SCHEDULED TO CHANGE FOR THIS PROJECT. THE EXISTING 400AMP, 208/120VAC, 3PH, 4-WIRE SERVICE WILL BE REPLACED WITH A NEW 400AMP, 208/120VAC, 3PH, 4-WIRE SERVICE.
5. CONDUIT ENTRIES INTO NEMA 4, 4X ENCLOSURES SHALL HAVE NEMA 4, 4X HUBS TO MAINTAIN THE NEMA 4, 4X RATING OF THE ENCLOSURE.
6. NEW ELECTRICAL SERVICE AND ASSOCIATED FEEDER CONDUCTORS FROM THE SERVICE DISCONNECT TO THE AIRPORT ELECTRICAL VAULT MAIN DISCONNECT PANEL WILL BE PAID FOR UNDER ITEM AR109924 REPLACE ELECTRIC SERVICES PER LUMP SUM.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

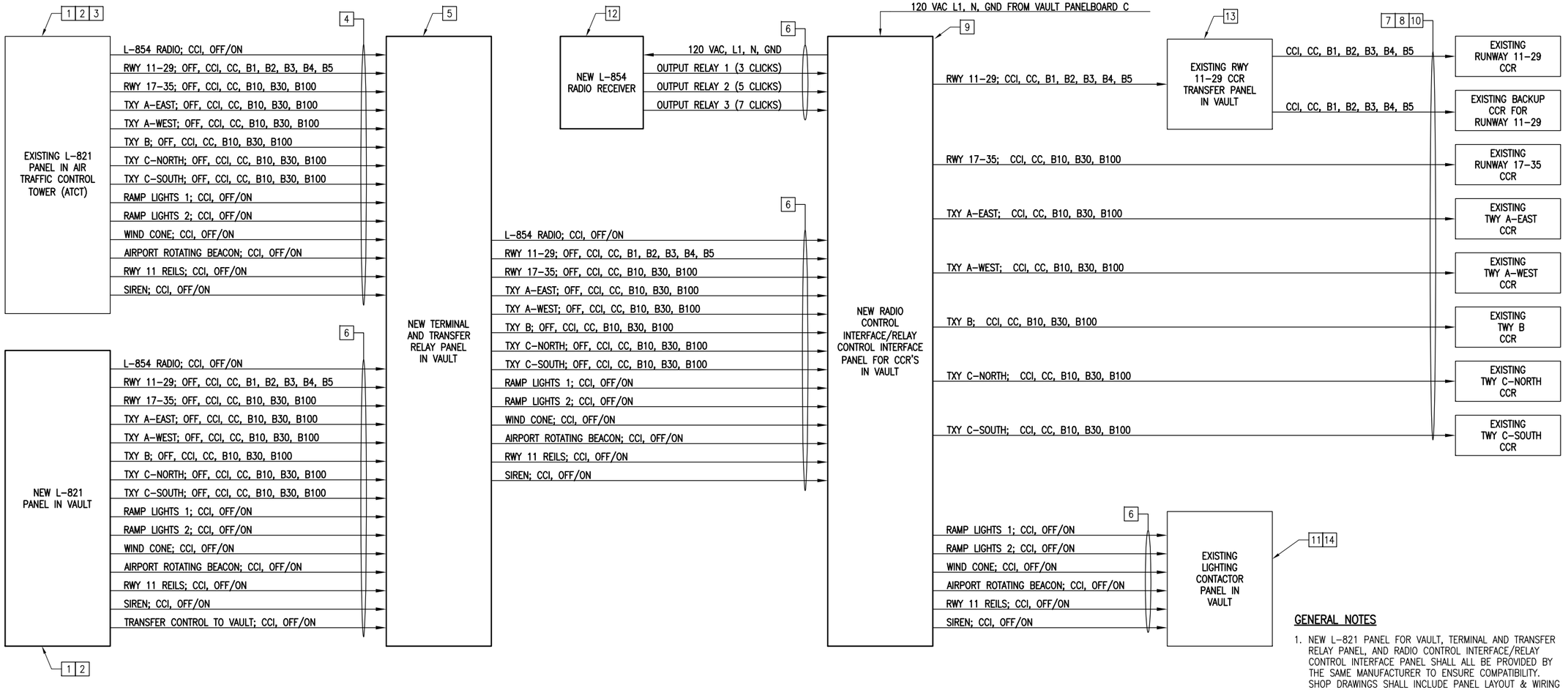
Contract No. SR088

NO.	DATE	DESCRIPTION		
			LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-506.DWG
LAYOUT BY: KNL 08/12/2014
DRAWN BY: BCT 08/13/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

ELECTRIC SERVICE ELEVATION DETAIL



CONTROL BLOCK DIAGRAM FOR AIRFIELD LIGHTING

KEYED NOTES

1. COORDINATE WORK AND INSTALLATION OF NEW L-821 CONTROL PANEL IN THE VAULT WITH FAA AIR TRAFFIC CONTROL TOWER PERSONNEL AND THE AIRPORT OPERATIONS SUPERINTENDENT. SEE "L-821 CONTROL PANEL FOR VAULT" SHEET FOR PANEL LAYOUT & REQUIREMENTS.

2. CCI FOR L-821 PANEL AT THE ATCT AND L-821 PANEL IN THE VAULT SHALL BE A 120 VAC, 10 AMP CIRCUIT FROM PANELBOARD "C" IN THE VAULT.

3. WHERE APPLICABLE, PROVIDE A TERMINAL BLOCK ENCLOSURE AT THE ATCT LOCATION TO TERMINATE OR SPLICE THE CONTROL WIRING CONDUCTORS. TERMINAL BLOCKS SHALL BE NEMA RATED 600 VOLT, 30 AMP, SUITABLE FOR THE RESPECTIVE WIRE SIZES, SQUARE D CLASS 9080, TYPE GK6 OR APPROVED EQUAL, HOUSED IN A NEMA 12 ENCLOSURE WITH HINGED COVER SIZED AS REQUIRED FOR THE CABLE AND TERMINATIONS. TERMINALS SHALL BE LABELED AND NUMBERED 1 THROUGH 74. EXTEND #12 THWN COPPER CONDUCTORS IN GRSC FROM TERMINAL PANEL TO L-821 PANEL AT ATCT. DO NOT USE INSULATION COLORS THAT ARE WHITE OR GREEN FOR CONTROL WIRING. WHITE INSULATED CONDUCTORS SHALL BE FOR NEUTRAL CONDUCTORS. GREEN INSULATED CONDUCTORS SHALL BE FOR GROUND WIRES. SEE SPECIAL PROVISION SPECS.

4. CONTROL WIRING FROM L-821 PANEL AT THE ATCT (AIR TRAFFIC CONTROL TOWER) TO THE VAULT SHALL BE 3 SETS OF 24/C #12 AWG, 600 VOLT TYPE TC CONTROL CABLE. CABLE SHALL BE SUITABLE FOR INSTALLATION IN CABLE TRAY, WIREWAYS, DUCT, CONDUIT, AND DIRECT BURIAL APPLICATIONS. PROVIDE CABLE SUPPORTS AND SLEEVES THROUGH WALL & FLOOR PENETRATIONS. INCLUDE FIRE STOP AT WALL & FLOOR PENETRATIONS. CABLES SHALL BE CONTINUOUS (WITHOUT SPLICES) FROM THE VAULT TO THE ATCT.

5. PROVIDE A TERMINAL AND TRANSFER RELAY PANEL AT THE VAULT LOCATION. ENCLOSURE SHALL BE ADEQUATELY SIZED TO TERMINATE OR SPLICE THE CONTROL WIRING CONDUCTORS. TERMINAL BLOCKS SHALL BE NEMA RATED 600V, 30 AMP, SUITABLE FOR THE RESPECTIVE WIRE SIZES, SQUARE D CLASS 9080, TYPE GK6 OR APPROVED EQUAL, HOUSED IN A NEMA 12 ENCLOSURE WITH HINGED COVER SIZED AS REQUIRED FOR THE CABLE, TERMINATIONS, RELAYS, AND COMPONENTS. TERMINALS FOR FIELD WIRING TO ATCT SHALL BE LABELED AND NUMBERED 1 THROUGH 74 CORRESPONDING TO THE SAME CABLE TERMINATIONS AT THE ATCT. PROVIDE TERMINAL NUMBERS TO CORRESPOND TO L-821 PANEL IN THE VAULT. EXTEND #12 THWN COPPER CONDUCTORS IN GRSC FROM TERMINAL AND TRANSFER RELAY PANEL TO RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL FOR CCR'S AND TO LIGHTING CONTACTOR PANEL FOR NAVAIDS. DO NOT USE INSULATION COLORS THAT ARE WHITE OR GREEN FOR CONTROL WIRING. WHITE INSULATED CONDUCTORS SHALL BE FOR NEUTRAL CONDUCTORS. GREEN INSULATED CONDUCTORS SHALL BE FOR GROUND WIRES.

6. CONTROL WIRING BETWEEN PANELS & EQUIPMENT LOCATED AT THE VAULT SHALL BE #12 AWG THWN COPPER IN WIREWAY & GRSC. DO NOT USE INSULATION COLORS THAT ARE WHITE OR GREEN FOR CONTROL WIRING. WHITE INSULATED CONDUCTORS SHALL BE FOR NEUTRAL CONDUCTORS. GREEN INSULATED CONDUCTORS SHALL BE FOR GROUND WIRES.

7. CCI FOR THE CONSTANT CURRENT REGULATORS SHALL BE FROM EACH RESPECTIVE CONSTANT CURRENT REGULATOR INTERNAL CONTROL VOLTAGE POWER SUPPLY.

8. ESTABLISH A COLOR CODING FOR THE CONTROL WIRING TO EACH CONSTANT CURRENT REGULATOR AND BE CONSISTENT FOR ALL REGULATORS. COLOR CODING SHALL BE AS FOLLOWS:

3-STEP		5-STEP	
CCI	-BLACK	CCI	-BLACK
CC	-RED	CC	-RED
10%	-ORANGE	B1-0.15%	-VIOLET
30%	-YELLOW	B2-1.2%	-BROWN
100%	-BLUE	B3-5%	-ORANGE
EQUIPT. GND	-GREEN	B4-25%	-YELLOW
		B5-100%	-BLUE
		EQUIPT. GND	-GREEN

ALSO TAG THE CONTROL WIRES WITH THE RESPECTIVE DESIGNATION (CCI, CC, 10%, 30%, 100%).

9. CONTROL RELAYS FOR THE RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL SHALL HAVE 10 AMP CONTACT RATINGS AT 240 VAC WITH 120 VAC COILS. PROVIDE SEPARATE RELAYS FOR EACH CONSTANT CURRENT REGULATOR. TERMINALS SHALL BE NEMA RATED TERMINAL BLOCKS. PROVIDE 3 SPARE RELAYS FOR EACH TYPE USED IN THE RELAY INTERFACE PANEL.

10. CONTROL WIRING FROM RESPECTIVE RELAY INTERFACE PANEL TO EACH RESPECTIVE CCR SHALL BE 5 #12 THWN (7 #12 THWN FOR RWY EACH 11-29 CCR), 1 #12 GND IN LOW VOLTAGE WIREWAY AND GRSC. PROVIDE LTFMC AT FINAL CONNECTIONS TO CCR'S. EXISTING CONTROL WIRING CONDUITS TO CCR'S MAY BE REUSED IN PLACE.

11. 120 VAC CONTROL POWER FOR LIGHTING CONTACTOR COILS SHALL BE THE SAME SOURCE AS FOR THE RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL.

12. L-854 RADIO RECEIVER SHALL BE POWERED "ON" 24 HRS PER DAY. PROVIDE INTERFACING RELAYS TO ACTIVATE/ENABLE OUTPUT OF L-854 RADIO WHEN L-821 PANEL AT THE ATCT OR WHEN L-821 PANEL AT THE VAULT SWITCHES TO RADIO CONTROL.

13. RUNWAY 11-29 CCR TRANSFER PANEL IS EXISTING.

14. SEE "LIGHTING CONTACTOR SCHEMATIC" SHEET AND "LIGHTING CONTACTOR SCHEMATIC" SHEET FOR DETAILS ON EXISTING LIGHTING CONTACTOR PANEL FOR NAVAIDS.

GENERAL NOTES

1. NEW L-821 PANEL FOR VAULT, TERMINAL AND TRANSFER RELAY PANEL, AND RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL SHALL ALL BE PROVIDED BY THE SAME MANUFACTURER TO ENSURE COMPATIBILITY. SHOP DRAWINGS SHALL INCLUDE PANEL LAYOUT & WIRING DIAGRAMS WITH TERMINAL BLOCK NUMBER DESIGNATIONS.

2. EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH BRANCH CIRCUIT & EACH CONTROL CIRCUIT.

3. 24/C #12 AWG, 600 VOLT CONTROL CABLES FROM THE VAULT TO THE ATCT WILL BE PAID FOR UNDER ITEM AR108800 CONTROL CABLE.

4. L-821 PANEL FOR VAULT, TERMINAL AND TRANSFER RELAY IN VAULT, L-854 RADIO RECEIVER, RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL, INTERFACE TO EXISTING CONTROL PANELS, AND ALL ASSOCIATED POWER & CONTROL WIRING, RACEWAYS, AND WORK AT THE VAULT WILL BE PAID FOR UNDER ITEM AR109620 LIGHTING CONTROL SYSTEM.

5. WHEN RADIO CONTROL IS ACTIVATED, RUNWAY 11-29 LIGHTING SYSTEM SHALL BE CONTROLLED AS FOLLOWS:

   3 CLICKS - PRESET LEVEL B1 OR B2 SET ON RESPECTIVE L-821 PANEL

   5 CLICKS - B3-5% BRIGHTNESS

   7 CLICKS - B5-100% BRIGHTNESS AND ACTIVATE RWY 11 REILS

6. WHEN RADIO CONTROL IS ACTIVATED, RUNWAY 17-35 AND TAXIWAYS LIGHTING SYSTEM SHALL BE CONTROLLED AS FOLLOWS:

   3 CLICKS - B10-10% BRIGHTNESS OR PRESET LEVEL (SHOULD BE B10) AS SET ON RESPECTIVE L-821 PANEL

   5 CLICKS - B30-30% BRIGHTNESS

   7 CLICKS - B100-100% BRIGHTNESS

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

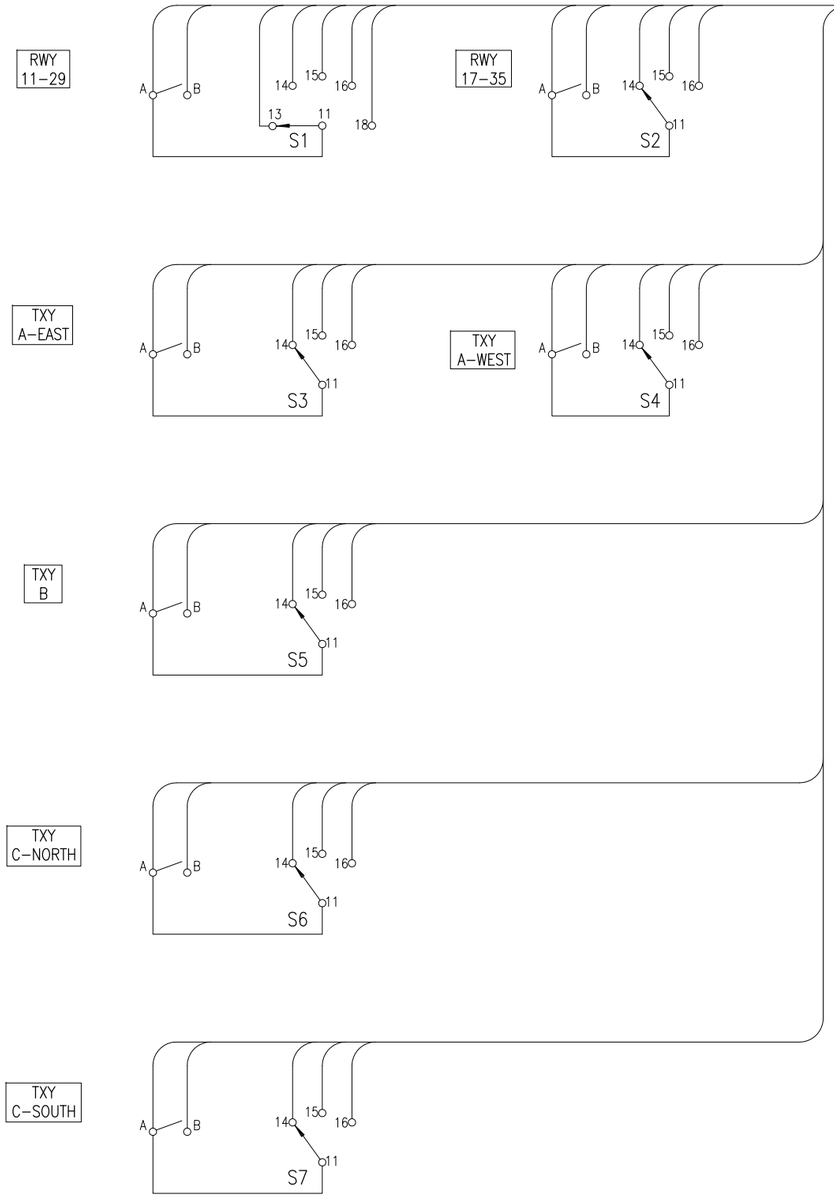
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-601.DWG
LAYOUT BY: KNL 07/21/2014
DRAWN BY: BCT 07/30/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

CONTROL BLOCK DIAGRAM FOR AIRFIELD LIGHTING



SWITCHES S1–S7 ARE 31301A ELECTRO.
SWITCHES S8–S12 ARE 8801 CUTLER HAMMER.
SWITCHES S13 & S14 ARE TWO POSITION TOGGLE SWITCHES, MANUFACTURER AND PART NUMBER ARE UNKNOWN.

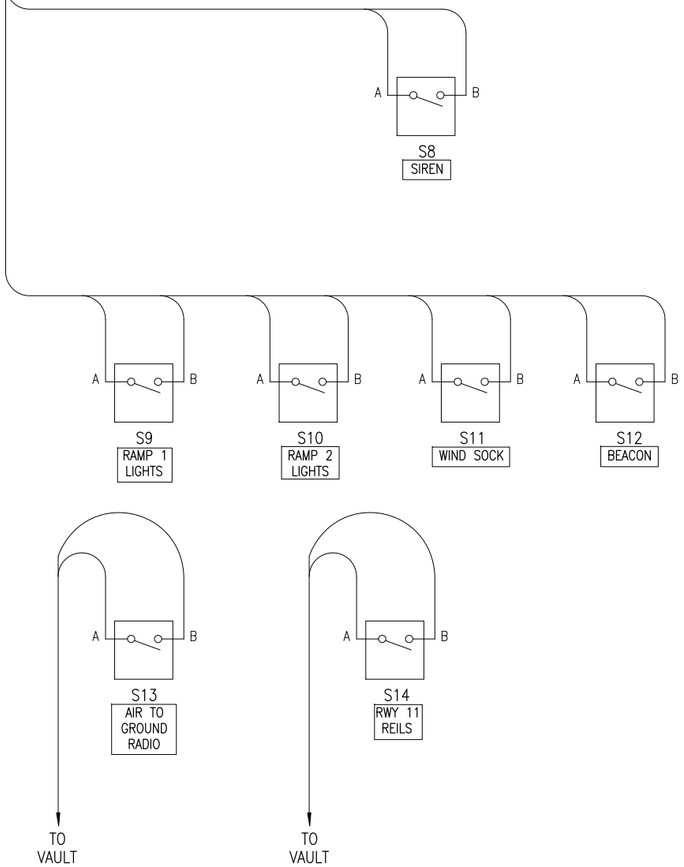
S1' A	1	CC
S1 13	2	B1
S1 14	3	B2
S1 15	4	B3
S1 16	5	B4
S1 17	6	B5
S2' A	7	CC
S2 14	8	B10
S2 15	9	B30
S2 16	10	B100
S3' A	11	CC
S3 14	12	B10
S3 15	13	B30
S3 16	14	B100
S4' A	15	CC
S4 14	16	B10
S4 15	17	B30
S4 16	18	B100
S5' A	19	CC
S5 14	20	B10
S5 15	21	B30
S5 16	22	B100
S6' A	23	CC
S6 14	24	B10
S6 15	25	B30
S6 16	26	B100
S7' A	27	CC
S7 14	28	B10
S7 15	29	B30
S7 16	30	B100
S8 A	31	SOURCE
S8 B	32	SIREN
S9 A	33	SOURCE
S9 B	34	RMP 1
S10 A	35	SOURCE
S10 B	36	RMP 2
S11 A	37	SOURCE
S11 B	38	WIND SOCK
S12 A	39	SOURCE
S12 B	40	BEACON
S1' B	41	CC1
S2' B	42	CC1
S3' B	43	CC1
S4' B	44	CC1
S5' B	45	CC1
S6' B	46	CC1
S7' B	47	CC1
	48	

TERMINAL BLOCK

11–29
17–35
A E
A W
B
C N
C S

NOTES:

1. THE EXISTING L–821 CONTROL PANEL LOCATED IN THE AIR TRAFFIC CONTROL TOWER CAB WAS MANUFACTURED BY UNIVERSE INCORPORATED, NORMAL, ILLINOIS. ESTIMATED DATE OF MANUFACTURE IS 1985, THE EXISTING L–821 PANEL IS A TYPE II, CLASS F, STYLE I, MODE I. CONTRACTOR SHALL FIELD VERIFY EXISTING CONTROL PANEL AND SITE CONDITIONS.
2. THE NEW AIRFIELD LIGHTING CONTROL SYSTEM SHALL BE COMPATIBLE WITH THE EXISTING L–821 PANEL AT THE ATCT, THE EXISTING CONSTANT CURRENT REGULATORS IN THE VAULT, AND THE EXISTING LIGHTING CONTACTOR PANEL IN THE VAULT.



EXISTING ATCT L–821 PANEL WIRING SCHEMATIC

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 09/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

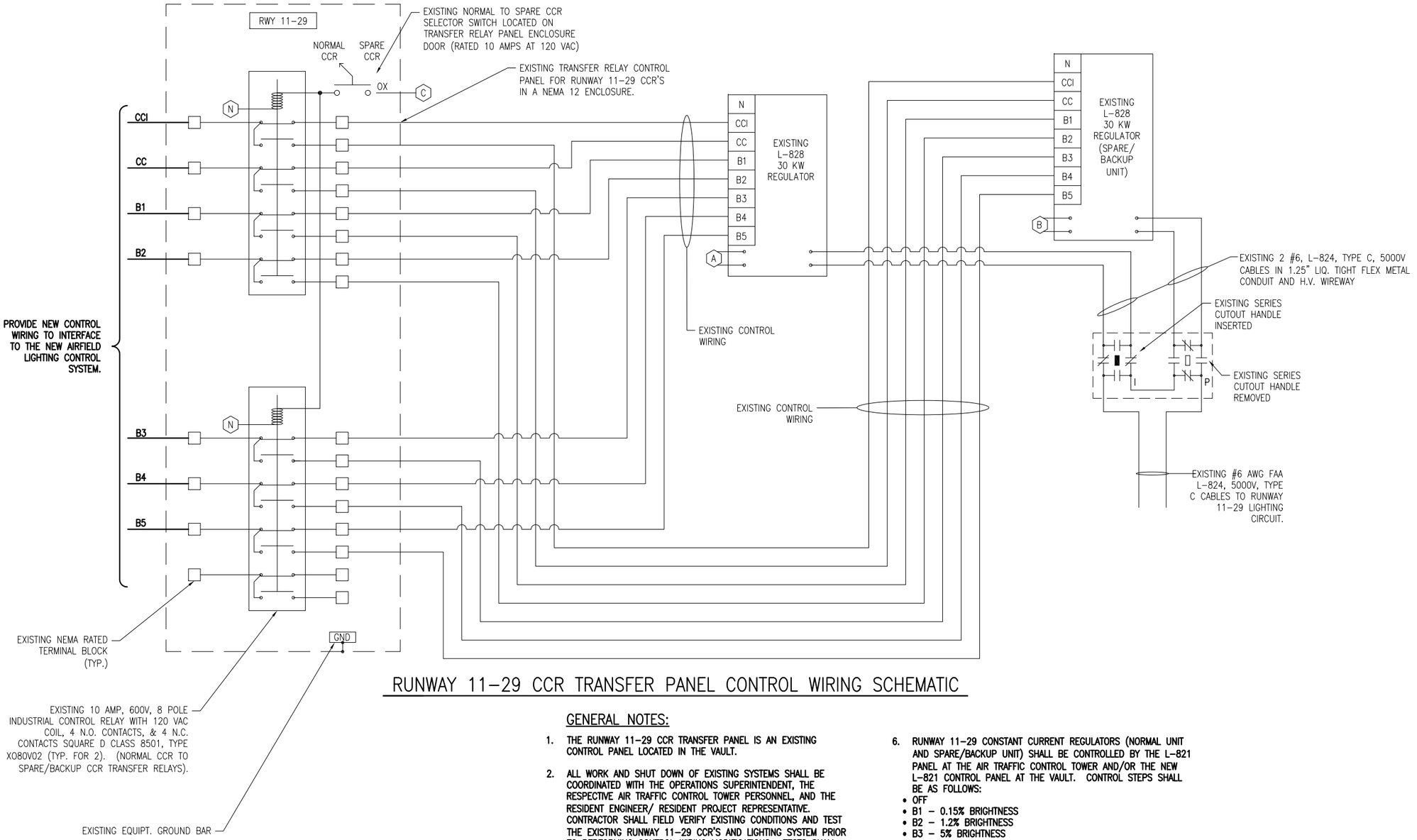
NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-606.DWG
LAYOUT BY: KNL 07/31/2014
DRAWN BY: BCT 07/31/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

EXISTING ATCT L-821 PANEL WIRING SCHEMATIC

SEP 27, 2014 9:52 PM HARRI01115
pw:\\spi-svr306.hanson.dom\Hanson Projects\Documents\13Jobs\13A0086\13A0086D\CAD\Airport\Sheet\E-606



RUNWAY 11-29 CCR TRANSFER PANEL CONTROL WIRING SCHEMATIC

SHEET LEGEND:

- (A) OUTPUT POWER NORMAL POSITION FROM MANUAL TRANSFER SWITCH FOR RWY 11-29 REGULATORS.
- (B) OUTPUT POWER BACKUP POSITION FROM MANUAL TRANSFER SWITCH FOR RWY 11-29 REGULATORS.
- (C) 120 VAC CONTROL POWER FROM AUXILIARY PANELBOARD "C".
- (N) N DESIGNATES NEUTRAL FROM PANEL THAT POWERS THE DEVICE.

GENERAL NOTES:

1. THE RUNWAY 11-29 CCR TRANSFER PANEL IS AN EXISTING CONTROL PANEL LOCATED IN THE VAULT.
2. ALL WORK AND SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE OPERATIONS SUPERINTENDENT, THE RESPECTIVE AIR TRAFFIC CONTROL TOWER PERSONNEL, AND THE RESIDENT ENGINEER/ RESIDENT PROJECT REPRESENTATIVE. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND TEST THE EXISTING RUNWAY 11-29 CCR'S AND LIGHTING SYSTEM PRIOR TO PERFORMING CONTROL WIRING MODIFICATIONS. TESTS SHALL INCLUDE ATCT CONTROL AND MANUAL CONTROL OF THE CCR OUTPUT STEPS (8.5A, 10.3A, 12.4A, 15.8A, AND 20.0A). ALSO TEST L-854 RADIO RECEIVER CONTROL SYSTEM. RECORD TEST RESULTS. CONTRACTOR SHALL CONFIRM AND RECORD EXISTING CONTROL WIRING TO THE EXISTING RUNWAY 11-29 CCR'S PRIOR TO DISCONNECTING THE EXISTING CONTROL WIRING. CONTRACTOR SHALL PERFORM CONTROL WIRING MODIFICATIONS AND UPGRADES TO ACCOMMODATE THE NEW AIRFIELD LIGHTING CONTROL SYSTEM.
3. ALL CONTROL CABLE SHALL BE NO. 12 AWG, 600 VOLT, COPPER CABLE.
4. ALL ELECTRICAL EQUIPMENT SHALL BE PROPERLY LABELED AND ALL ELECTRICAL CABLES SHALL BE TAGGED.
5. ALL ELECTRICAL CABLES INSIDE THE VAULT SHALL BE IN CONDUIT OR DUCT.
6. RUNWAY 11-29 CONSTANT CURRENT REGULATORS (NORMAL UNIT AND SPARE/BACKUP UNIT) SHALL BE CONTROLLED BY THE L-821 PANEL AT THE AIR TRAFFIC CONTROL TOWER AND/OR THE NEW L-821 CONTROL PANEL AT THE VAULT. CONTROL STEPS SHALL BE AS FOLLOWS:
   - OFF
   - B1 – 0.15% BRIGHTNESS
   - B2 – 1.2% BRIGHTNESS
   - B3 – 5% BRIGHTNESS
   - B4 – 25% BRIGHTNESS
   - B5 – 100% BRIGHTNESS

HANSON
Engineering | Planning | Allied Services
Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT
ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

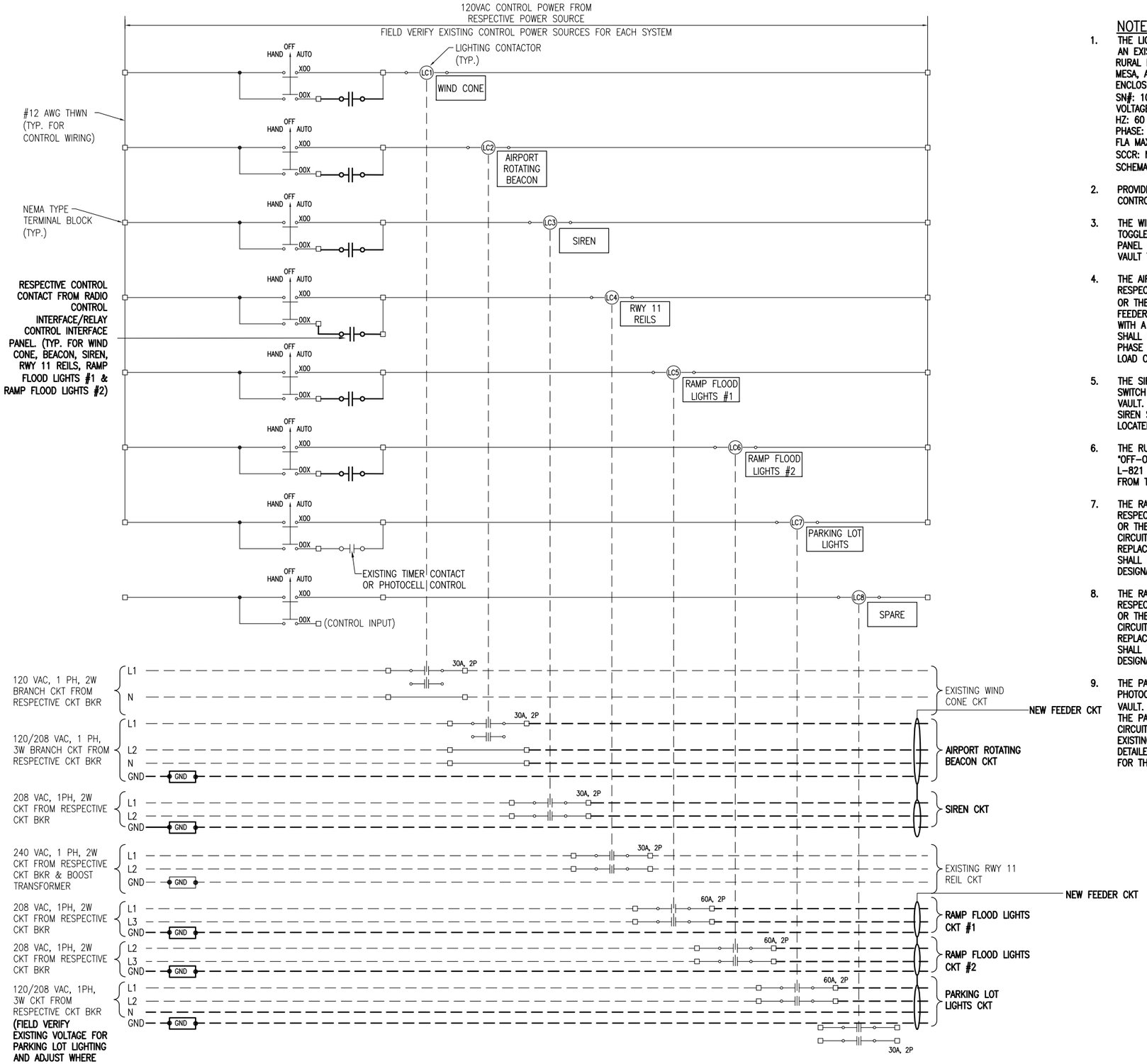
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-607.DWG
LAYOUT BY: KNL 07/31/2014
DRAWN BY: BCT 07/31/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

RUNWAY 11-29 CCR TRANSFER PANEL CONTROL WIRING SCHEMATIC



CONTROL PANEL FOR AIRFIELD NAVAIDS & LIGHTING SCHEMATIC

NOTES:

1. THE LIGHTING CONTACTOR PANEL FOR AIRFIELD LIGHTING AND NAVAIDS IS AN EXISTING CONTROL PANEL. NAMEPLATE DATA IS AS FOLLOWS:
   RURAL ELECTRIC INC.
   MESA, AZ USA
   ENCLOSURE TYPE: 1
   SN#: 1041131-1
   VOLTAGE: 120VAC
   HZ: 60
   PHASE: 1
   FLA MAX: 10A
   SCCR: N/A
   SCHEMATIC#: 1041131-1
2. PROVIDE NEW CONTROL WIRING TO INTERFACE THE NEW AIRFIELD LIGHTING CONTROL SYSTEM TO THE EXISTING LIGHTING CONTACTOR PANEL.
3. THE WIND CONE SHALL BE CONTROLLED BY THE RESPECTIVE "OFF-ON" TOGGLE SWITCH ON THE L-821 PANEL IN THE ATCT OR THE L-821 PANEL IN THE VAULT. THE EXISTING 120 VAC FEEDER CIRCUIT FROM THE VAULT TO THE WIND CONE SHALL REMAIN IN PLACE.
4. THE AIRPORT ROTATING BEACON SHALL BE CONTROLLED BY THE RESPECTIVE "OFF-ON" TOGGLE SWITCH ON THE L-821 PANEL IN THE ATCT OR THE L-821 PANEL IN THE VAULT. THE EXISTING 120/208 VAC FEEDER CIRCUIT FROM THE VAULT TO THE BEACON SHALL BE REPLACED WITH A NEW FEEDER CIRCUIT. THE AIRPORT ROTATING BEACON CIRCUIT SHALL HAVE PHASE "A" SWITCHED THROUGH THE LIGHTING CONTACTOR. PHASE "B" SHALL BE UNSWITCHED FROM THE POWER SOURCE TO THE LOAD CENTER AT THE AIRPORT ROTATING BEACON.
5. THE SIREN SHALL BE CONTROLLED BY THE RESPECTIVE "OFF-ON" TOGGLE SWITCH ON THE L-821 PANEL IN THE ATCT OR THE L-821 PANEL IN THE VAULT. THE EXISTING 208 VAC FEEDER CIRCUIT FROM THE VAULT TO THE SIREN SHALL BE REPLACED WITH A NEW FEEDER CIRCUIT. THE SIREN IS LOCATED ON TOP OF THE BEACON TOWER.
6. THE RUNWAY 11 REILS SHALL BE CONTROLLED BY THE RESPECTIVE "OFF-ON" TOGGLE SWITCH ON THE L-821 PANEL IN THE ATCT OR THE L-821 PANEL IN THE VAULT. THE EXISTING 240 VAC FEEDER CIRCUIT FROM THE VAULT TO THE RUNWAY 11 REILS SHALL REMAIN IN PLACE.
7. THE RAMP FLOOD LIGHTS CIRCUIT 1 SHALL BE CONTROLLED BY THE RESPECTIVE "OFF-ON" TOGGLE SWITCH ON THE L-821 PANEL IN THE ATCT OR THE L-821 PANEL IN THE VAULT. THE EXISTING 208 VAC FEEDER CIRCUIT FROM THE VAULT TO THE RAMP FLOOD LIGHTS SHALL BE REPLACED WITH A NEW FEEDER CIRCUIT. THE NEW FEEDER CIRCUIT SHALL INTERCEPT AND SPLICE TO THE EXISTING FEEDER CIRCUIT AT THE DESIGNATED HANDHOLE OR MANHOLE AS DETAILED ON THE PLANS.
8. THE RAMP FLOOD LIGHTS CIRCUIT 2 SHALL BE CONTROLLED BY THE RESPECTIVE "OFF-ON" TOGGLE SWITCH ON THE L-821 PANEL IN THE ATCT OR THE L-821 PANEL IN THE VAULT. THE EXISTING 208 VAC FEEDER CIRCUIT FROM THE VAULT TO THE RAMP FLOOD LIGHTS SHALL BE REPLACED WITH A NEW FEEDER CIRCUIT. THE NEW FEEDER CIRCUIT SHALL INTERCEPT AND SPLICE TO THE EXISTING FEEDER CIRCUIT AT THE DESIGNATED HANDHOLE OR MANHOLE AS DETAILED ON THE PLANS.
9. THE PARKING LOT LIGHTS SHALL BE CONTROLLED BY THE RESPECTIVE PHOTOCELL OR TIME CLOCK CONTROLLER CONTACT LOCATED AT THE VAULT. THE EXISTING 120/208 VAC FEEDER CIRCUIT FROM THE VAULT TO THE PARKING LOT LIGHTS SHALL BE REPLACED WITH A NEW FEEDER CIRCUIT. THE NEW FEEDER CIRCUIT SHALL INTERCEPT AND SPLICE TO THE EXISTING FEEDER CIRCUIT AT THE DESIGNATED HANDHOLE OR MANHOLE AS DETAILED ON THE PLANS. FIELD VERIFY THE EXISTING VOLTAGE SYSTEM FOR THE PARKING LOT LIGHTS.

HANSON Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
Kevin N. Lightfoot 09/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

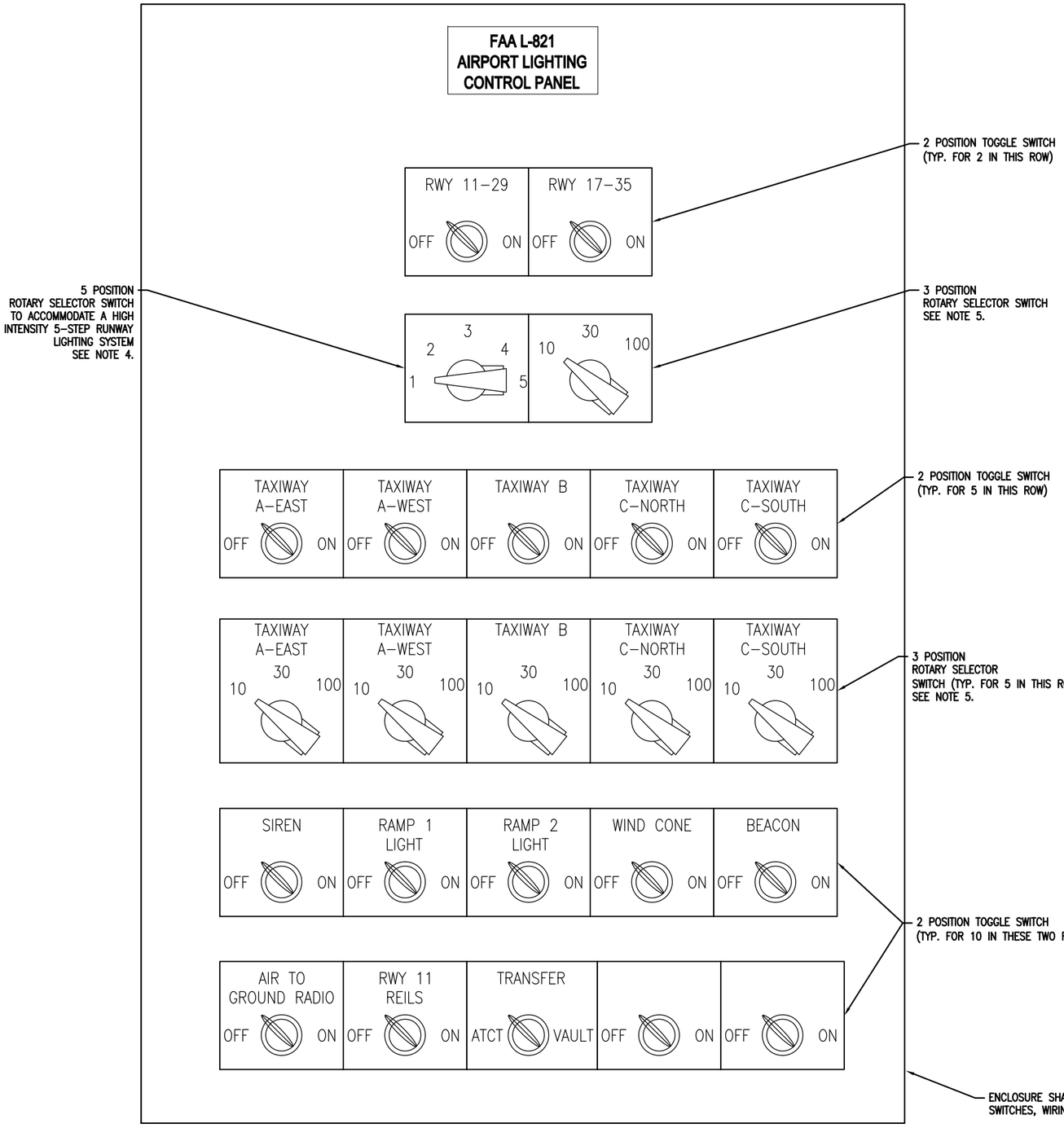
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-608.DWG
LAYOUT BY: KNL 07/31/2014
DRAWN BY: BCT 07/31/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

LIGHTING CONTACTOR SCHEMATIC



NEW L–821 CONTROL PANEL FOR VAULT

NOTES:

1. THE NEW L–821 CONTROL PANEL SHALL BE INSTALLED IN THE AIRPORT ELECTRICAL VAULT. THE NEW L–821 PANEL SHALL BE COMPATIBLE WITH THE EXISTING L–821 CONTROL PANEL LOCATED IN THE ATCT AND THE NEW AIRFIELD LIGHTING CONTROL SYSTEM. THE NEW L–821 CONTROL PANEL SHALL BE AN FAA SPEC. TYPE I; CONVENTIONAL PANEL, CLASS S; SURFACE MOUNTED PANEL, STYLE 1,; UNLIGHTED, MODE 1; GENERIC PANEL, AND SHALL BE MANUFACTURED BY AN FAA APPROVED L–821 CONTROL PANEL MANUFACTURER.
2. THE NEW L–821 PANEL FOR VAULT, TERMINAL AND TRANSFER RELAY PANEL, AND RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL SHALL BE PROVIDED BY THE SAME MANUFACTURE TO ENSURE COMPATIBILITY. SHOP DRAWINGS SHALL INCLUDE PANEL LAYOUT AND WIRING DIAGRAMS WITH TERMINAL BLOCK NUMBER DESIGNATIONS.
3. THE L–821 PANEL FOR VAULT, TERMINAL AND TRANSFER RELAY IN VAULT, L–854 RADIO RECEIVER, RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANELS, AND ALL ASSOCIATED POWER AND CONTROL WIRING, RACEWAYS, AND WORK AT THE VAULT WILL BE PAID FOR UNDER ITEM AR109620 LIGHTING CONTROL SYSTEM.
4. A SIX POSITION "OFF–B1–B2–B3–B4–B5" SWITCH MAY BE USED IN PLACE OF AN "OFF–ON" TOGGLE SWITCH AND A FIVE POSITION "B1–B2–B3–B4–B5" SWITCH FOR THE RUNWAY 11–29 LIGHTING CONTROL.
5. A FOUR POSITION "OFF–B10–B30–B100" SWITCH MAY BE USED IN PLACE OF AN "OFF–ON" TOGGLE SWITCH AND A 3 POSITION "B10–B30–B100" SWITCH FOR THE RUNWAY 17–35 AND TAXIWAYS LIGHTING CONTROL.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE
ELECTRICAL VAULT
SERVICE

IDA No: ALN-4294

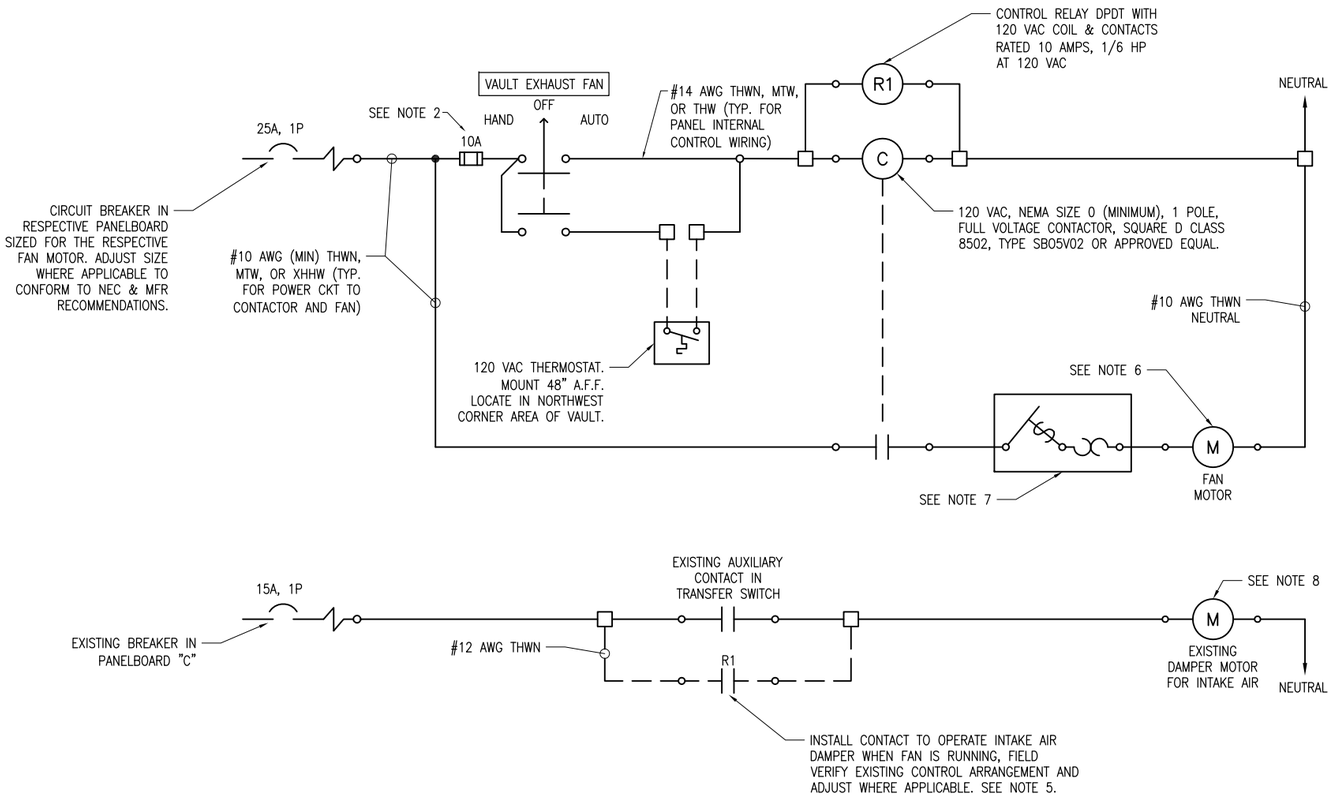
Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-609.DWG
LAYOUT BY: KNL 08/04/2014
DRAWN BY: BCT 08/07/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

L-821 CONTROL
PANEL FOR VAULT



EXHAUST FAN CONTROL SCHEMATIC

NOTES:

1. CONTROL PANEL FOR VAULT FAN SHALL BE MANUFACTURED BY A UL 508 INDUSTRIAL CONTROL PANEL BUILDER OR AN FAA APPROVED L-821 PANEL BUILDER, AND SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCES REQUIREMENT. WHERE THE PANEL IS MANUFACTURED BY AN L-821 PANEL BUILDER IT SHALL BE LABELED AS AN L-821 PANEL.
2. FUSING FOR FAN CIRCUIT CONTROL WIRING SHALL BE 10 AMP, 600 VAC, BUSSMAN CATALOG FNQ-R-10, OR APPROVED EQUAL, WITH FUSE BLOCKS, WITH BOX LUG TERMINALS, SIZED AS REQUIRED FOR THE RESPECTIVE APPLICATION. INCLUDE HARDWARE FOR MOUNTING. PROVIDE ONE BOX (5 MINIMUM QUANTITY) OF EACH TYPE AND SIZE OF FUSE, UPON COMPLETION OF THE JOB FOR USE AS SPARES.
3. PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR FAN CONTACTOR & MOUNT ON CONTROL PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, OR APPROVED EQUAL. INCLUDE LEGEND PLATE LABELED "VAULT EXHAUST FAN".
4. INCLUDE LEGEND PLATE ON CONTROL PANEL ENCLOSURE OUTER DOOR LABELED "NOTICE: CONTACTOR HAS REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME."
5. FIELD VERIFY CONTROL OF EXISTING DAMPER MOTOR FOR INTAKE AIR. IF DAMPER MOTOR IS POWERED TO OPEN, CONNECT R1 NORMALLY OPEN CONTACT IN PARALLEL WITH EXISTING AUXILIARY CONTACT. IF DAMPER MOTOR IS POWERED TO CLOSE, CONNECT R1 NORMALLY CLOSED CONTACT IN SERIES WITH EXISTING AUXILIARY CONTACT.
6. EXHAUST FAN, EF-1, 3375 CFM (MINIMUM) AT 0.25" STATIC PRESSURE, WITH 3/4 HP (MINIMUM), 120 VAC MOTOR, COOK MODEL NUMBER 180W10D, OR APPROVED EQUAL. INCLUDE BACK DRAFT DAMPER, WALL MOUNT BRACKET, AND HARDWARE TO INTERFACE TO BUILDING. PROVIDE 120 VAC THERMOSTAT AT 48" AFF. SEE EXHAUST FAN CONTROL SCHEMATIC FOR WIRING REQUIREMENTS. FAN SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCES REQUIREMENT.
7. PROVIDE FRACTIONAL HORSEPOWER MOTOR MANUAL STARTER, SQUARE D MANUAL STARTER WITH HANDLE/GUARD/LOCK OFF, IN NEMA 4 ENCLOSURE CLASS 2510, TYPE FG5 OR APPROVED EQUAL FOR FAN MOTOR. INCLUDE MELTING ALLOY TYPE THERMAL OVERLOADS SIZED AS REQUIRED TO PROTECT THE RESPECTIVE MOTOR. 120 VAC MOTORS SHALL HAVE SINGLE POLE STARTERS.
8. THE NAMEPLATE DATA FOR THE EXISTING INTAKE AIR DAMPER MOTOR AS FOLLOWS:

   CONSTRUCTION SPECIALTIES INC./LTD
   CRANFORD N.J./TORONTO, CANADA

   CAT. NO.: EX-110
   INPUT: 115V-60HZ-1PH
   RATING MOTOR: 0.5A
   CONTACTS: 15A

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION		

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-611.DWG
LAYOUT BY: KNL 8/20/2014
DRAWN BY: RAD 8/20/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

EXHAUST FAN DETAILS

LEGEND PLATE SCHEDULE

DEVICE	LABEL
SERVICE DISCONNECT FOR VAULT (SEE NOTE 2)	VAULT SERVICE DISCONNECT 208/120 VAC, 3PH, 4W
SERVICE DISCONNECT FOR VAULT (SEE NOTE 2)	NOTE: ENGINE GENERATOR NEUTRAL IS ALSO BONDED TO GROUND AT SERVICE DISCONNECT
SERVICE DISCONNECT FOR VAULT (SEE NOTE 5)	MAX AVAILABLE FAULT CURRENT CALCULATED TO BE ____ AMPS LINE TO LINE ____ AMPS LINE TO NEUTRAL ON (DATE)
PULL BOX FOR ELECTRIC FEED TO VAULT	208/120 VAC 3PH, 4W FEEDER
VAULT MAIN DISTRIBUTION PANELBOARD "B"	208/120 VAC FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE IDENTIFIED WITH COLOR CODING AS FOLLOWS: PHASE A – BLACK PHASE B – RED PHASE C – BLUE NEUTRAL – WHITE GROUND – GREEN
PULL BOX FOR CONTROL CABLES AND FEEDER CIRCUITS TO AIRFIELD LIGHTING AND NAVAIDS	CONTROL CABLES AND AIRFIELD LIGHTING CIRCUITS
TERMINAL AND TRANSFER RELAY PANEL	TERMINAL AND TRANSFER RELAY PANEL
RADIO CONTROL INTERFACE/RELAY CONTROL INTERFACE PANEL	RADIO CONTROL INTERFACE/ RELAY CONTROL INTERFACE PANEL
L–821 CONTROL PANEL FOR VAULT	L–821 PANEL (INCLUDE MANUFACTURER'S NAMEPLATE)
MOTOR STARTER FOR VAULT EXHAUST FAN	EXHAUST FAN CONTROLLER

CABLE TAG SCHEDULE

DEVICE	LABEL
208/120 VAC, 3 PH, 4W FEEDER FOR VAULT	VAULT FEED
PARKING LOT LIGHTING FEEDER CIRCUIT	PARKING LOT LTG
RAMP LIGHTING FEEDER CIRCUIT NO. 1	RAMP LIGHTS 1
RAMP LIGHTING FEEDER CIRCUIT NO. 2	RAMP LIGHTS 2
AIRPORT ROTATING BEACON FEEDER CIRCUIT	BEACON
SIREN FEEDER CIRCUIT	SIREN
NON–DIRECTIONAL BEACON FEEDER CIRCUIT	NDB
CONTROL CABLES FROM VAULT TO AIR TRAFFIC CONTROL TOWER	ATCT CONTROL

GENERAL NOTES

1. LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH WHITE LETTERS ON A RED 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. LEGEND PLATES FOR EQUIPMENT THAT IS NOT BACKED UP BY THE ENGINE GENERATOR SET SHALL HAVE 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND.

3. 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.

4. ALL POWER AND CONTROL CABLES IN HANDHOLES, MANHOLES, AND JUNCTION BOXES SHALL BE TAGGED TO IDENTIFY THE RESPECTIVE CABLE. A MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A MANHOLE; ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT. CABLE TAGS SHALL BE STAMPED BRASS TAGS OR OTHER WEATHERPROOF/WATERPROOF CORROSION RESISTANT MATERIAL.

5. FAULT CURRENT INFORMATION TO BE PROVIDED BY SERVING ELECTRIC UTILITY COMPANY. CONTACT PROJECT ENGINEER TO CONFIRM FAULT CURRENT CALCULATIONS.

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St. Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

LICENSED PROFESSIONAL ENGINEER
KEVIN N. LIGHTFOOT
062-047643
STATE OF ILLINOIS
EXPIRES: 11/30/2015
9/26/2014

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

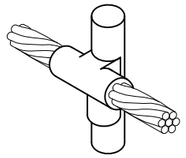
Contract No. SR088

NO.	DATE	DESCRIPTION		
			LAY	DWN	REV

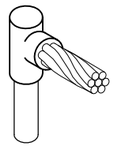
ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-610.DWG
LAYOUT BY: KNL 08/18/2014
DRAWN BY: BCT 08/12/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

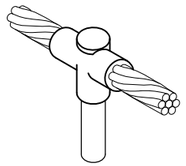
LEGEND PLATE SCHEDULES



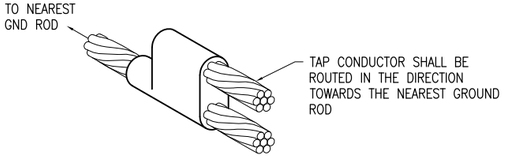
CABLE TO GROUND ROD



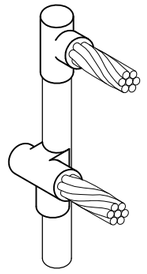
CABLE TO GROUND ROD



CABLE TO GROUND ROD



CABLE TO CABLE
HORIZONTAL PARALLEL TAP



CABLES TO GROUND ROD

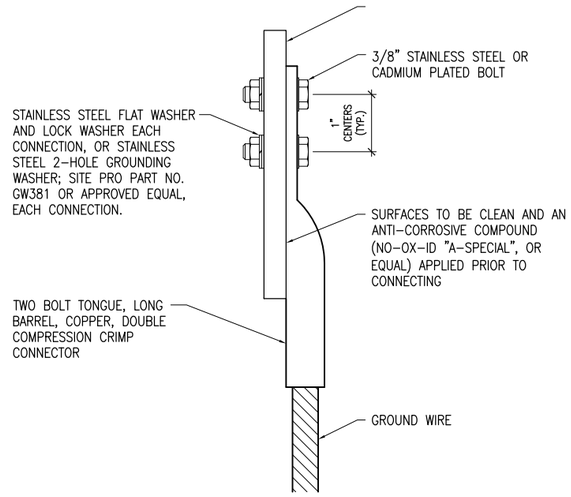
DETAIL NOTES

1. ALL BELOW GRADE CONNECTIONS TO GROUND RODS & GROUND RING CONDUCTORS SHALL BE EXOTHERMIC WELD TYPE CONNECTIONS. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, OR THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.

2. FOR APPLICATIONS TO GALVANIZED STEEL OR PAINTED STEEL, REMOVE GALVANIZING AND/OR PAINT & CLEAN THE SURFACE TO EXPOSE BARE STEEL BEFORE MAKING EXOTHERMIC WELD CONNECTION.

3. INDIVIDUAL GROUNDING ELECTRODE CONDUCTORS SHALL NOT BE INSTALLED IN METAL CONDUIT. INSTALL GROUNDING ELECTRODE CONDUCTORS IN SCHED 40 PVC CONDUIT AS REQUIRED IN FOUNDATIONS, FOR PROTECTION, WHERE ENTERING ENCLOSURES, ETC. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENCIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT.

EXOTHERMIC WELD DETAILS



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

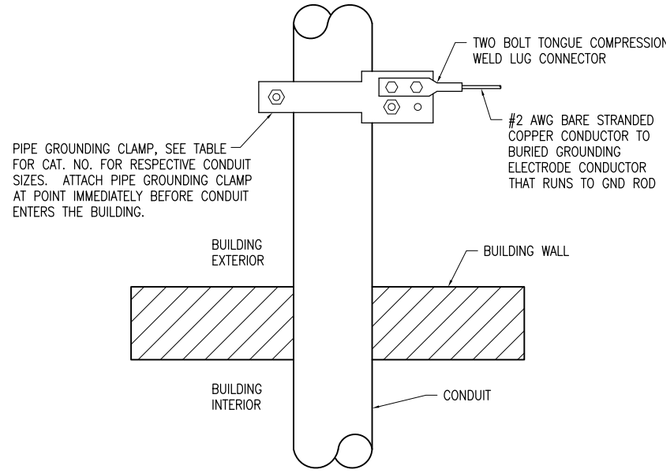
1. ALL CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.

2. GROUND WIRE CONNECTIONS TO EQUIPMENT SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE DEVICE OR WITH THE RESPECTIVE EQUIPT MANUFACTURER'S LUG OR TERMINAL WHERE APPLICABLE.

3. GROUNDING ELECTRODE CONDUCTORS, BONDING JUMPERS, & INDIVIDUAL GROUND WIRES SHALL NOT BE INSTALLED IN METAL CONDUIT. WHERE PLASTIC CONDUIT IS USED FOR INDIVIDUAL GROUND WIRES, DO NOT COMPLETELY ENCIRCLE THE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. WHERE METAL CLAMPS ARE INSTALLED USE NYLON BOLTS, NUTS, WASHERS, & SPACERS TO INTERRUPT A COMPLETE METALLIC APTH FROM ENCIRCLING THE CONDUIT.

4. ALL CONNECTIONS SHALL BE COATED WITH A CORROSION PREVENTATIVE COMPOUND (SANCHEM INC. NO-OX-ID "A-SPECIAL", BURNDY PENETROX E, OR EQUAL) BEFORE JOINING. ALL COPPER BUS BARS SHALL BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION. CLEAN SURFACES, OF RESPECTIVE DEVICES TO BE BONDED, TO BARE METAL, PER NEC 250-12.

GROUNDING LUG CONNECTION DETAIL



PIPE GROUNDING CLAMP TABLE	
BURNDY CAT. NO.	CONDUIT SIZE
GAR3902TC	1/2" - 1"
GAR3903TC	1 1/4" - 2"
GAR3904TC	2 1/2" - 3 1/2"
GAR3905TC	4" - 5"
GAR3906TC	6"
GAR3907TC	8"

NOTES

1. EXTERIOR CONDUIT GROUNDING IS REQUIRED FOR THE PHOTOCELL CONDUIT, RADIO ANTENNA CONDUIT, & OTHER CONDUITS EXTENDING TO THE ROOF LEVEL.

2. CONNECTIONS TO BURIED GROUNDING ELECTRODE CONDUCTOR SHALL BE EXOTHERMIC WELD.

EXTERIOR CONDUIT GROUNDING DETAIL

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-505.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/30/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

GROUNDING DETAILS

GROUNDING NOTES

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUNDING AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70) IN FORCE AND FAA–STD–019e (LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING, AND SHEILDING 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 SHALL BE MINIMUM 3/4–IN. DIAMETER BY 10–FT LONG, UL–LISTED, COPPER CLAD WITH 10–MIL MINIMUM COPPER COATING, UNLESS DETAILED OTHERWISE HEREIN. 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 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, SANCHEM INC. "NO–OX–ID "A–SPECIAL" COMPOUND, BURNDY PENETROX E, OR APPROVED 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 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

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 GROUNDED NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.

15. EACH AND ALL GROUNDED CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.

16. ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, OR APPROVED EQUAL.

17. BOND ALL NONCURRENT–CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.

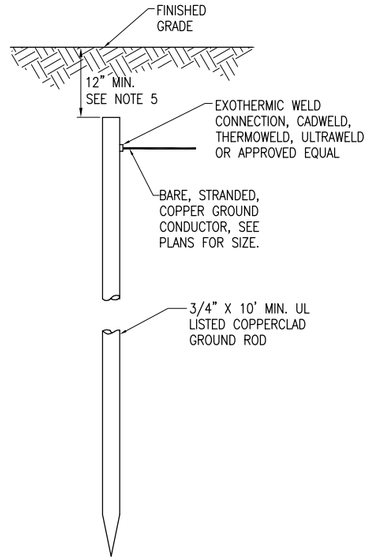
18. BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.

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 2011 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 MANUFACTURER 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. THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.
3. COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.
4. GROUND RODS SHALL BE SPACED AS DETAILED ON THE PLANS AND SHALL NOT BE SPACED LESS THAN ONE ROD LENGTH APART.
5. TOP OF GROUND RODS SHALL BE 12" MINIMUM BELOW GRADE UNLESS DETAILED OTHERWISE HEREIN. TOP OF GROUND RODS FOR VAULT ELECTRIC SERVICE ENTRANCE SHALL BE 30" MINIMUM BELOW GRADE.

GROUND RODS
(NOT TO SCALE)

HANSON
Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

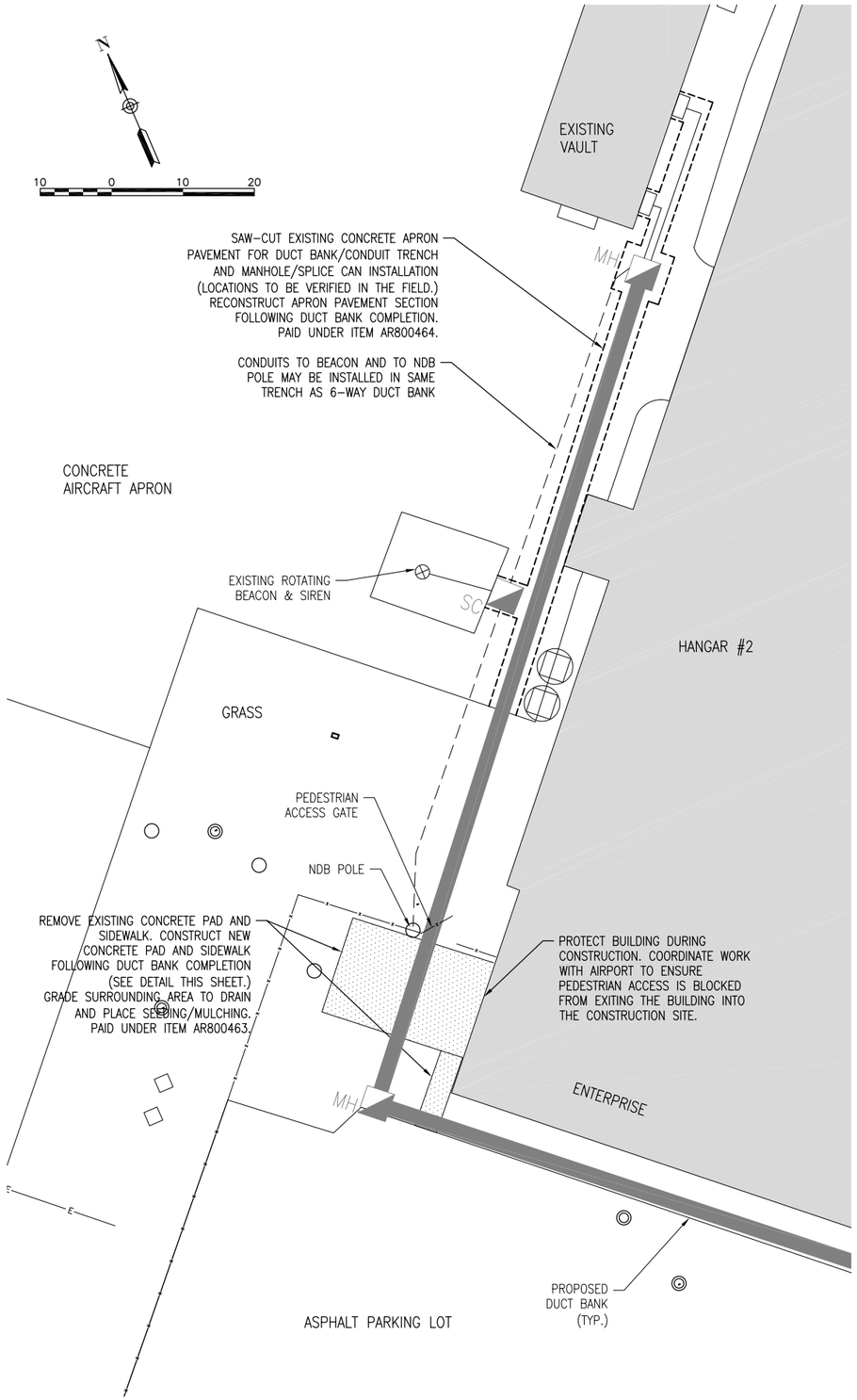
Contract No. SR088

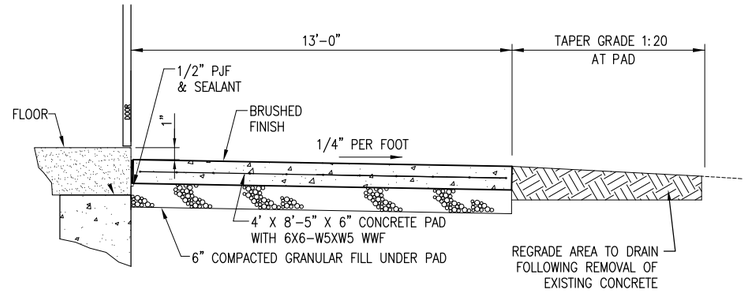
NO.	DATE	DESCRIPTION		
		LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: E-004.DWG
LAYOUT BY: KNL 07/28/2014
DRAWN BY: BCT 07/30/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

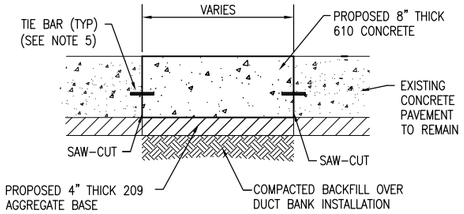
GROUNDING NOTES





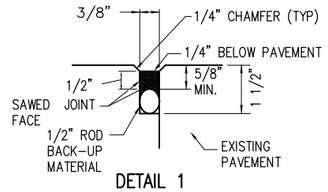
PROPOSED CONCRETE PAD DETAIL

NOT TO SCALE

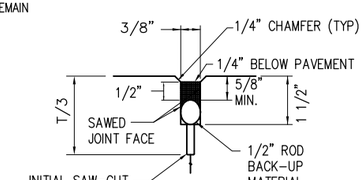


APRON PAVEMENT RECONSTRUCTION

NOT TO SCALE



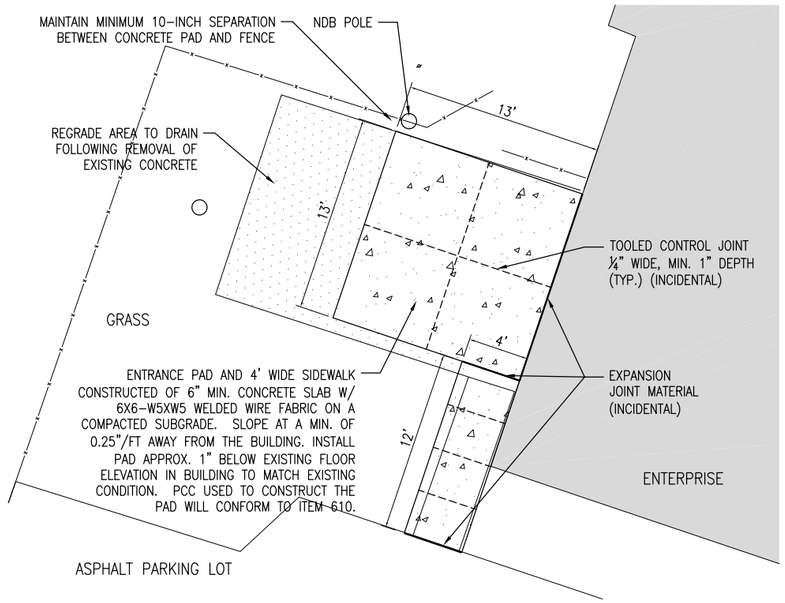
DETAIL 1



DETAIL 2

JOINT SEALING DETAILS

NOT TO SCALE



PROPOSED CONCRETE PAD AND SIDEWALK

1" = 5' FULL SIZE

LEGEND

- EXISTING IMPROVEMENTS
- EXISTING BUILDINGS
- x EXISTING FENCE

PAVEMENT RECONSTRUCTION NOTES:

1. PAVEMENT DESIGNATED TO BE REMOVED SHALL BE REMOVED IN SUCH A WAY AS TO NOT DAMAGE THE ADJACENT PAVEMENT TO REMAIN. ANY DAMAGE TO PAVEMENT WHICH IS TO REMAIN SHALL BE REPAIRED TO THE OWNER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
2. WHILE EXCAVATING FOR THE PROPOSED ELECTRICAL DUCT SYSTEM, THE CONTRACTOR SHALL TAKE SPECIAL CARE AS TO NOT UNDERMINE THE ADJACENT PAVEMENT TO REMAIN.
3. THE CONTRACTOR SHALL SAW-CUT FULL DEPTH (8") ALONG ALL PAVEMENT TO BE REMOVED. EXISTING DOWEL BARS SHALL BE CUT OFF FLUSH AT THE SAW-CUT LIMITS.
4. THE NEW PAVEMENT SHALL BE CONSTRUCTED TO THE GRADES OF THE PAVEMENT TO BE REMOVED AND TO DRAIN WITHOUT CREATING PONDING CONDITIONS.
5. NEW 610 CONCRETE PAVEMENT SHALL BE TIED TO EXISTING CONCRETE PAVEMENT. ALL TIE BARS SHALL BE PLACED AT A POINT NOT LESS THAN 6" OR MORE THAN 15" FROM A TRANSVERSE OR EXPANSION JOINT. TIE BARS SHALL BE 1/2" DIA., 18" IN LENGTH AND SPACED 30" CENTER TO CENTER. THE CONTRACTOR IS REQUIRED TO DRILL AND EPOXY THE PROPOSED TIE-BARS IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS. THE EPOXY MATERIAL MUST BE APPROVED BY THE DIVISION OF AERONAUTICS PRIOR TO USE.
6. THE LONGITUDINAL CONSTRUCTION JOINTS CREATED BY THE SAW CUTTING OPERATIONS SHALL BE TIED PER NOTE 5 ABOVE AND SAWED AND SEALED PER DETAIL 1 ON THIS SHEET. THE EXISTING TRANSVERSE JOINTS SHALL CONTINUE THEIR EXISTING ALIGNMENT THROUGH THE NEW PAVEMENT WITHOUT DOWELS OR TIE BARS AND SAWED AND SEALED PER DETAIL 2 ON THIS SHEET. PROPOSED SILICONE JOINT SEALANT SHALL BE DOW 888 OR APPROVED EQUAL.
7. THE COST OF ALL TIE-BARS, SAWING AND SEALING SHALL BE INCLUDED IN THE COST OF ITEM AR800464.

WORK AREA NOTES

1. BARRICADES SHALL BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
2. DUE TO THE QUANTITIES OF EXISTING UTILITIES AND LINES IN THE PROPOSED AREAS OF WORK, THE CONTRACTOR WILL NEED TO CAREFULLY EXCAVATE TO EXPOSE AND PROTECT THESE UTILITIES AND LINES BY HYDRO EXCAVATION OR OTHER APPROVED METHOD PRIOR TO INSTALLING THE TRENCHES FOR THE PROPOSED DUCT BANK SYSTEM.
3. CLEAN EARTH BACKFILL FOR TRENCHES IS AVAILABLE ON AIRPORT PROPERTY BUT IS NOT SHOWN ON THIS PLAN VIEW. ACCESS MUST BE COORDINATED WITH THE AIRPORT.
4. AT ALL TIMES, ANY OPEN TRENCHES (NOT BEING ACTIVELY WORKED ON) ACROSS PAVEMENTS MUST BE COVERED BY STEEL PLATES TO ALLOW FOR VEHICLE/PEDESTRIAN TRAFFIC THROUGH THE WORK AREA. PRIOR TO RE-OPENING THE PAVEMENTS TO VEHICLE/PEDESTRIAN TRAFFIC, THE PAVEMENTS SHALL BE LEFT IN A CONDITION SATISFACTORY TO THE OWNER AND RESIDENT ENGINEER AT NO ADDITIONAL COST TO THE CONTRACT.
5. AT ALL TIMES, ANY OPEN TRENCHES ACROSS TURF AREAS MUST BE PROMINENTLY MARKED WITH LIGHTED BARRICADES/BARRELS, SNOW FENCE, ETC., TO PREVENT PEDESTRIAN ACCESS.

HANSON Engineering | Planning | Allied Services

Offices Nationwide
www.hanson-inc.com

Hanson Professional Services Inc.
1525 S. 6th Street
Springfield, IL 62703
phone: 217-788-2450
fax: 217-788-2503

Illinois Licensed
Professional Service Corporation
#184-001084

St.Louis Regional AIRPORT

ST. LOUIS REGIONAL AIRPORT AUTHORITY

ST. LOUIS REGIONAL AIRPORT
8 TERMINAL DRIVE
EAST ALTON, ILLINOIS

STATE OF ILLINOIS
BARRY S. STOLZ
062-057281
LICENSED PROFESSIONAL ENGINEER
EXP 11-30-15
9-26-14

RELOCATE ELECTRICAL VAULT SERVICE

IDA No: ALN-4294

Contract No. SR088

NO.	DATE	DESCRIPTION		
			LAY	DWN	REV

ISSUE: SEPTEMBER 26, 2014
PROJECT NO: 13A0086D
CAD FILE: C-101-CON.DWG
LAYOUT BY: BSS 08/07/2014
DRAWN BY: MLH 08/08/2014
REVIEWED BY: CAH 09/04/2014

SHEET TITLE

CONCRETE SITE WORK PLAN

SEP 27, 2014 9:47 PM HARRI01115
pw:\\spi-sv306.hanson.dom:Hanson Projects\Documents\13Jobs\13A0086\13A0086D\CAD\Airport\Sheet\C-101-CON