CONSTRUCTION PLANS

FOR

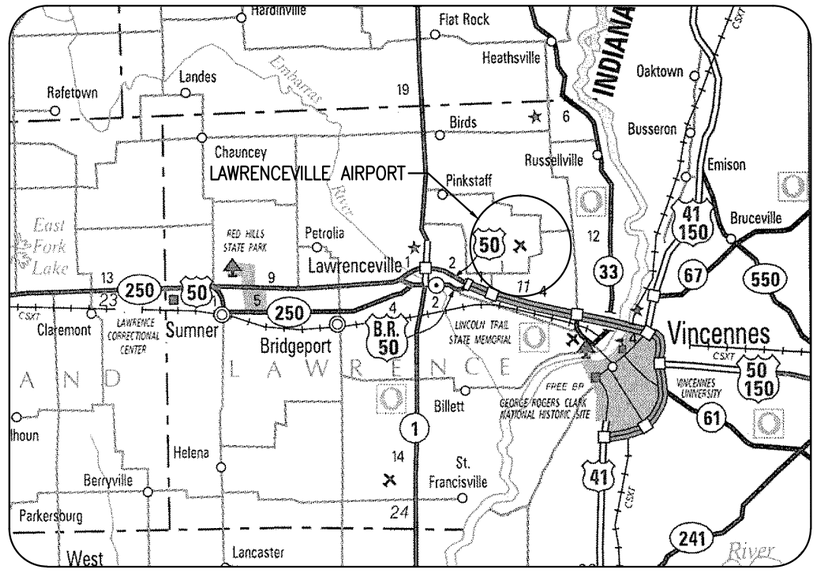
MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT

LAWRENCEVILLE, LAWRENCE COUNTY, ILLINOIS

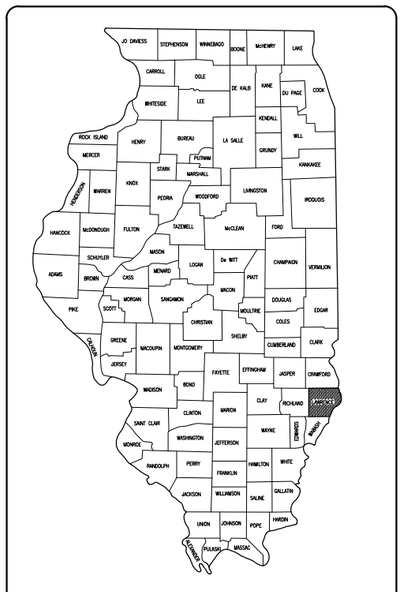
CONSTRUCT PARKING LOT FOR COMMUNITY HANGARS

SCOPE OF WORK

THIS PROJECT CONSISTS OF CONSTRUCTION OF A BITUMINOUS PARKING AREA TO SERVE 2 PUBLIC HANGARS. ASSOCIATED WORK ITEMS INCLUDE MARKING, DRAINAGE & LIGHTING.



LOCATION



LOCATION OF COUNTY

ILL. PROJ.:	LWV-4157
LATITUDE:	38° 45' 35"
LONGITUDE:	87° 36' 27"
ELEVATION:	429.0' M.S.L.
DATE:	APRIL 19, 2013

COVERING ELECTRICAL DESIGN

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

HANSON
Hanson Professional Services Inc.
ELECTRICAL ENGINEER
Submitted by: Kevin N. Lightfoot ENG'R
Date Submitted 4/15/2013
Lics. Exp. Date 11/30/2013

JEFFERY S. LITHERLAND
062-046891
LICENSED PROFESSIONAL ENGINEER
STATE OF ILLINOIS

HANSON
Hanson Professional Services Inc.
Submitted by: Jeff S. Litherland ENG'R
Date Submitted 4-15-13
Lics. Exp. Date 11-30-13

BI-STATE AUTHORITY
Approved E.J. Williams CHAIRMAN
Date 4-17-13
Approved Dana Terrell SECRETARY
Date 4-17-13

DATE | REVISION | BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS
IL. PROJ.: LWV-4157

Hanson Project No.	11A0164D	
Filename	R-001CVR.DWG	
Scale	NOT TO SCALE	
Date	04/19/2013	
LAYOUT	JSL	04/01/13
DRAWN	CWS	04/01/13
REVIEWED	JSL/KNL	04/11/13

HANSON
Hanson Professional Services Inc.
3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

CONSTRUCT PARKING LOT

COVER SHEET

1
1 of 17 sheets

APR 19, 2013 11:53 AM SCHUB01446
C:\AIRPORTS\LAWRENCE\11A0164D\CADD\AIRPORT\SHEET\R-001CVR.DWG — COVER

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AR106512	TYPE A AREA LIGHT POLE w/ 2 FIXTURES PER EACH	EA.	3	
AR109620	LIGHTING CONTROL SYSTEM	L.S.	1	
AR150510	FIELD OFFICE	L.S.	1	
AR152411	UNCLASSIFIED EXCAVATION	L.S.	1	
AR156532	EXCELSIOR BLANKET	S.Y.	500	
AR209510	CRUSHED AGGREGATE BASE COURSE	TON	980	
AR401613	BIT. SURFACE CSE. – METHOD I, SUPERPAVE	TON	475	
AR501604	4" PCC SIDEWALK	S.F.	160	
AR602510	BITUMINOUS PRIME COAT	GAL	830	
AR603510	BITUMINOUS TACK COAT	GAL	275	
AR620520	PAVEMENT MARKING – WATERBORNE	S.F.	663	
AR751411	INLET–TYPE A	EA.	1	
AR751415	INLET–SPECIAL	EA.	2	
AR754210	CONCRETE CURB	L.F.	230	
AR770945	ADJUST SANITARY MANHOLE	EA.	1	
AR800434	12" PP STORM SEWER	L.F.	216	
AR800435	15" PP STORM SEWER	L.F.	248	
AR901510	SEEDING	ACRE	0.1	
AR910230	HANDICAP SIGN	EA.	1	

INDEX TO SHEETS

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D
Filename R-002FLP.DWG
Scale NOT TO SCALE
Date 04/19/2013

LAYOUT	JSL	04/01/13
DRAWN	CWS	04/01/13
REVIEWED	JSL/KNL	04/11/13

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3125 New Era Road
Murphysboro, Illinois 62966
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CONSTRUCT PARKING LOT

SUMMARY OF QUANTITIES AND INDEX TO SHEETS

APR 19, 2013 11:53 AM SCHUB01446
C:\AIRPORTS\LAWRENCE\11A0164D\CADD\AIRPORT\SHEET\R-002FLP.DWG – SUMMARY OF QUANTITIES & INDEX TO SHEETS

SCOPE OF WORK

THIS PROJECT CONSISTS OF CONSTRUCTION OF A BITUMINOUS PARKING AREA TO SERVE 2 PUBLIC HANGARS. ASSOCIATED WORK ITEMS INCLUDE, MARKING, DRAINAGE & LIGHTS.

UTILITY NOTE

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

HEIGHT OF CONSTRUCTION EQUIPMENT

THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 25 FEET. THE TALLEST EQUIPMENT IS EXPECTED TO BE A DUMP TRUCK.

HAUL ROUTE AND VEHICLE PARKING

THE CONTRACTOR WILL USE THE DESIGNATED HAUL ROUTE AND PARKING AREA AS SHOWN ON THIS SHEET. THE PROPOSED PARKING AREA WILL BE 200' X 200'. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE PROPOSED HAUL ROUTE AND PARKING AREA THROUGHOUT THE COURSE OF THE PROJECT. ANY AREAS DAMAGED OUTSIDE OF THESE AREAS WILL BE REPAIRED BY THE CONTRACTOR AND AT THE CONTRACTOR'S OWN EXPENSE. AT THE CONCLUSION OF THE PROJECT THE CONTRACTOR WILL GRADE, FERTILIZE, SEED AND MULCH THE HAUL ROUTE AND PARKING AREA AS NEEDED TO RESTORE IT TO ITS' ORIGINAL STATE. RESTORATION OF THE HAUL ROUTE AND PARKING AREA WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

CONTRACTOR RESPONSIBILITIES

THE CONTRACTOR'S EQUIPMENT PARKING AND STORAGE AREA WILL BE AS SHOWN ON THIS SHEET. THE CONTRACTOR'S EMPLOYEES WILL PARK THEIR VEHICLES IN THIS AREA. ONLY CONTRACTOR VEHICLES WILL BE ALLOWED OUTSIDE THIS AREA.

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

BARRICADES AND TRAFFIC CONES

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

CERTIFIED PAYROLLS

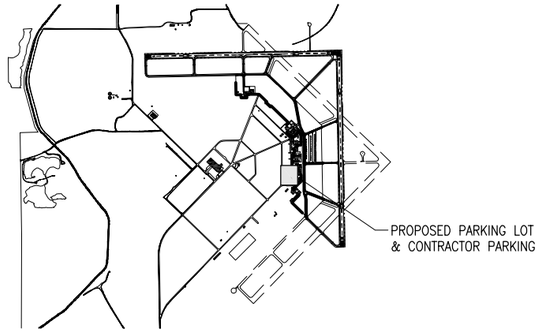
THE RESIDENT ENGINEER **CANNOT** FORWARD CONSTRUCTION REPORTS TO THE ILLINOIS DIVISION OF AERONAUTICS FOR PROCESSING UNTIL ALL **CERTIFIED PAYROLLS** FOR THE PERIOD HAVE BEEN RECEIVED.

MATERIAL CERTIFICATION

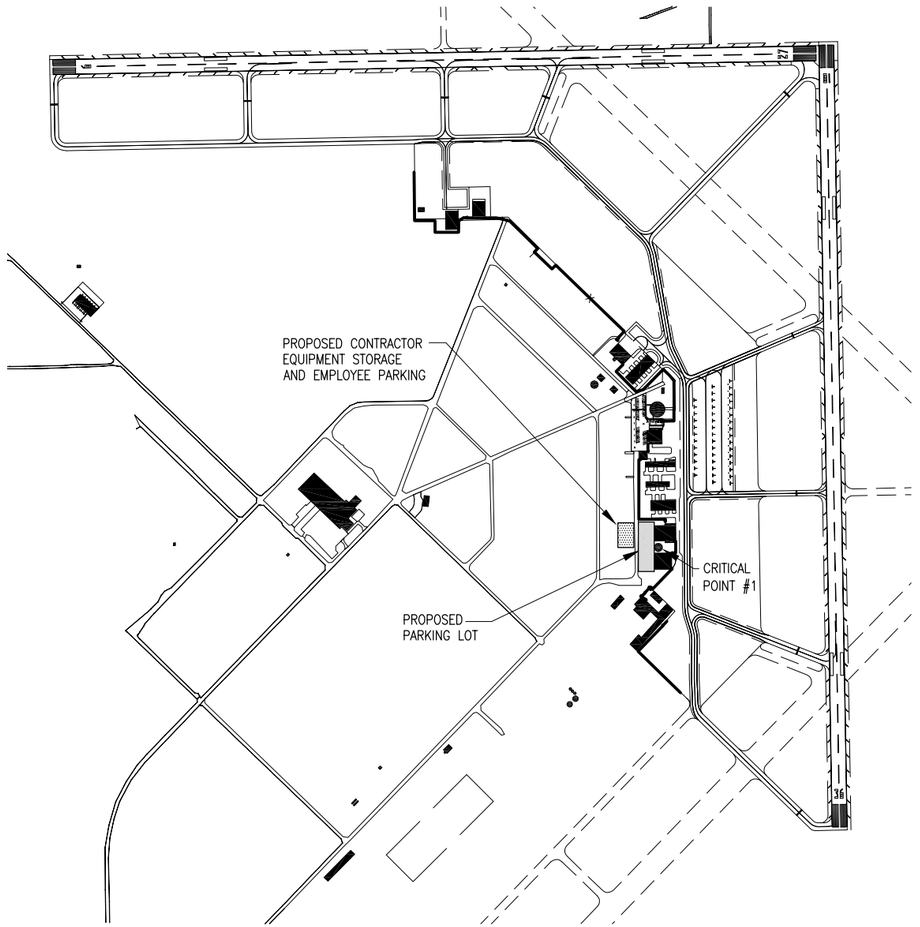
COMPLETED WORK **CANNOT** BE PLACED ON A CONSTRUCTION REPORT UNTIL ALL MATERIAL CERTIFICATIONS FOR THAT PAY ITEM HAVE BEEN RECEIVED, REVIEWED AND ACCEPTED BY THE RESIDENT ENGINEER.

LEGEND

- EXISTING IMPROVEMENTS
- PROPOSED IMPROVEMENTS
- EXISTING BUILDINGS
- PROPOSED HAUL ROUTE AND EQUIPMENT PARKING AREA
- (1) PROPOSED BENCHMARK
- ▲ PROPOSED BARRICADES OR TRAFFIC CONES



KEY PLAN



UTILITY NOTE

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

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

J.U.L.I.E. INFORMATION

COUNTY_____LAWRENCE
CITY_____LAWRENCEVILLE
TOWNSHIP_____ALLISON
SECTION NO._____23 & 26
ADDRESS_____LAWRENCEVILLE-VINCENNES AIRPORT
RR# 4, BOX 195
LAWRENCEVILLE, ILLINOIS 62439

PROPOSED SAFETY PLAN

GENERAL - THE LAWRENCEVILLE-VINCENNES AIRPORT IS COMPRISED OF TWO RUNWAYS. THE PROPOSED CONSTRUCTION WILL NOT NECESSITATE CLOSING EITHER RUNWAY. ALL WORK WILL BE ON THE "LAND SIDE" OF THE AIRPORT PERIMETER FENCE.

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

150-ENGINEER'S FIELD OFFICE NOTES

THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE FURNISHED, MAINTAINED, AND REMOVED IN ACCORDANCE WITH ITEM AR150510 "ENGINEER'S FIELD OFFICE" AS STATED IN THE SPECIAL PROVISIONS.

THE LOCATION OF THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE DETERMINED AT THE PRE-CONSTRUCTION MEETING.

THE PROPOSED ENGINEER'S FIELD OFFICE WILL BE PAID FOR UNDER ITEMS:
AR150510 ENGINEER'S FIELD OFFICE ____ 1 L.S.

EROSION CONTROL

THIS PROJECT WILL DISTURB LESS THAN 1 ACRE OF LAND, THEREFORE WILL NOT REQUIRE A N.P.D.E.S. PERMIT.

CRITICAL POINT DATA

#1
LATITUDE: 38° 45' 32.03"
LONGITUDE: 87° 36' 18.41"
ELEVATION: 427.23 M.S.L.

0' 250' 500' 1000'
HALF SIZE SCALE: 1"= 1000'
FULL SIZE SCALE: 1"= 500'

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D
Filename R-003SFY.DWG
Scale 1"= 500'
Date 04/19/2013

LAYOUT	JSL	04/01/13
DRAWN	CWS	04/01/13
REVIEWED	JSL/KNL	04/11/13

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Hanson Professional Services Inc.
3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

CONSTRUCT PARKING LOT

PROPOSED SAFETY PLAN

3

EXISTING "PAINT SHOP" HANGAR

EXISTING "LADNER" HANGAR

GRADING AND SEEDING LIMITS.

EXISTING UTILITY POLE AND GUY WIRES TO REMAIN.

EXISTING CONCRETE WALK TO REMAIN.

EXISTING RAILROAD TIE PARKING BLOCKS TO BE REMOVED AND DISPOSED OF OFF SITE.

EXISTING GRAVEL AREA

EXISTING UTILITY POLE TO REMAIN.

ADJUST EXISTING SANITARY MANHOLE, FRAME AND LID TO BE FLUSH WITH PROPOSED PAVEMENT. CONTRACTOR TO VERIFY LOCATION AND ELEVATION. THIS WORK WILL BE PAID FOR UNDER – AR770945 ADJUST SANITARY MANHOLE.

GRADING AND SEEDING LIMITS.

EXISTING RAILROAD TIE PARKING BLOCKS TO BE REMOVED AND DISPOSED OF OFF SITE.

EXISTING GRAVEL AREA

REMOVE EXISTING DRYWELL

EXISTING 4" STEEL STORM DRAIN. REMOVE AND DISPOSE OFFSITE.

APPROX. LOCATION OF EXISTING GAS LINE. LOCATE AND AVOID.

REMOVE EXISTING 12" RCCP.

RELOCATE EXISTING ROAD SIGN AND POST.

RELOCATED SIGN AND POST.

REMOVE EXISTING DRYWELL & CLAY PIPE 27 L.F.

EXISTING 12" RCCP TO BE ABANDON.

APPROX. LOCATION OF EXISTING GAS LINE. LOCATE AND AVOID.

0+00

1+00

2+00

3+00

3+28

ROAD CENTERLINE

EXISTING PK NAIL IN PAVEMENT 0+00.

SAWCUT EXISTING PAVEMENT 3" DEEP. SAWCUT SHALL BE INCIDENTAL TO PROPOSED BITUMINOUS PAVEMENT.

EXISTING PK NAIL IN PAVEMENT 3+37.74

BP: 0+00.00

EP: 3+37.74

REMOVAL NOTES:

THE FOLLOWING ITEMS ARE CONSIDERED INCIDENTAL TO THE CONTRACT:

REMOVE EXISTING 4" STEEL PIPE 22 L.F. STA. 0+13.5
REMOVE EXISTING 12" RCCP 23.5 L.F. STA. 2+17.7
REMOVE EXISTING VCP 27 L.F. STA. 2+82.3
REMOVE EXISTING DRYWELLS 2 EACH STA. 1+60.5 & STA. 2+82.3
REMOVE EXISTING RAILROAD TIES STA. 0+46.8 TO STA. 1+27.6

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING ELECTRIC UTILITY POLE
- EXISTING WATER LINE
- EXISTING DITCH
- PROPOSED PARKING LOT
- PROPOSED GRADING AND SEEDING LIMITS

0' 5' 15' 30'
SCALE: 1"= 30'

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D
Filename C-101-EXST.DWG
Scale 1"= 30'
Date 04/19/2013

LAYOUT	JSL	04/01/13
DRAWN	CWS	04/09/13
REVIEWED	JSL/KNL	04/11/13

HANSON
Hanson Professional Services Inc.
3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

CONSTRUCT PARKING LOT

EXISTING CONDITIONS AND REMOVALS PLAN

4

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EXISTING "PAINT SHOP" HANGAR

EXISTING "LADNER" HANGAR

4" THICK PCC SIDE WALK
ON SUITABLE BASE.

5'

32'

PCC CURB
STA. 2+18.5
113.6' LEFT

PCC CURB
STA. 3+00
115' LEFT

CORNER OF PAVEMENT
STA. 2+08.5
113.4' LEFT

81.5'

6" PCC CURB, SEE DETAIL
THIS SHEET.

CORNER OF PAVEMENT
STA. 3+24
115.5' LEFT

PROPOSED TYPE A INLET
SEE DRAINAGE PLAN, SHEET 7.

39.17'

5' R

R.P. STA. 2+45.6
70' LEFT

6" PCC CURB, SEE DETAIL
THIS SHEET.

10'

26.5'

R.P. STA. 2+45.6
53.5' LEFT

PCC CURB
STA. 0+46.5
63.7' LEFT

6" PCC CURB, SEE DETAIL
THIS SHEET.

PCC CURB
STA. 1+27.5
63.7' LEFT

CORNER OF PAVEMENT
STA. 2+08.5
63.7' LEFT

CORNER OF PAVEMENT
STA. 0+19.2
63.8' LEFT

81'

X

X

PROPOSED PARKING LOT:
3" BITUMINOUS SURFACE COURSE –AR401613
6" CA6 CRUSHED AGGREGATE BASE COURSE AR209510

PROPOSED DRYWELL
SEE DRAINAGE PLAN,
SHEET 7.

PROPOSED DRYWELL
SEE DRAINAGE PLAN,
SHEET 7.

CORNER OF PAVEMENT
STA. 0+19.2
0.6' LEFT

CORNER OF PAVEMENT
STA. 3+24
0.6' LEFT

0+00

1+00

2+00

3+00

3+38

ROAD CENTERLINE

EXISTING PK NAIL IN
PAVEMENT 0+00.

SAWCUT EXISTING PAVEMENT 3" DEEP.
SAWCUT SHALL BE INCIDENTAL TO BITUMINOUS PAVEMENT.

EXISTING PK NAIL IN
PAVEMENT 3+37.74

BP: 0+00.00

EP: 3+37.74

PROPOSED CONCRETE CURB

VOID TO BE FILLED
BY OTHERS.

PROPOSED
3" BIT. SURFACE
COURSE

2"

4"

18"

PROPOSED
6" AGG BASE

UNDISTURBED EARTH
OR PROPERLY
COMPACTED FILL.

6"

CURB / PAVEMENT DETAIL
NOT TO SCALE

LEGEND

EXISTING PAVEMENT

EXISTING BUILDING

PROPOSED PARKING LOT

N

0' 5' 15' 30'

SCALE: 1"= 30'

APR 19, 2013 11:56 AM SCHUB01446
C:\AIRPORTS\LAWRENCE\11A01640\CADD\AIRPORT\SHEET\C-102-STK.DWG - STAKING PLAN

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A01640
Filename C-102-STK.DWG
Scale 1"= 30'
Date 04/19/2013

LAYOUT	JSL	04/01/13
DRAWN	CWS	04/01/13
REVIEWED	JSL/KNL	04/11/13

HANSON
Hanson Professional Services Inc.
3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

CONSTRUCT PARKING LOT

PROPOSED STAKING PLAN

5

EXISTING "PAINT SHOP" HANGAR

EXISTING "LADNER" HANGAR

PROPOSED TYPE A INLET
T.O.C. ELEV. = 426.80

PROPOSED 15" MITERED END
FL. 425.80

PROPOSED MITERED END
FL. 425.85

PROPOSED DRYWELL
T.O.C. ELEV. = 427.90

PROPOSED DRYWELL
T.O.C. ELEV. = 428.30

ROAD CENTERLINE

EXISTING PK NAIL IN
PAVEMENT 0+00.

EXISTING PK NAIL IN
PAVEMENT 3+37.74

BP: 0+00.00

EP: 3+37.74

0+00 1+00 2+00 3+00 3+38

W W W W W W

427.50 / 427.57 | 427.5 | 427.4 | 427.20 / 427.20 | 427.20 / 427.20 | 427.70 / 427.66 | 427.90 / 427.50 | 428.20 / 427.32 | 427.90 / 427.23 | 427.60 / 427.72 | 428.15 / 428.06

427.60 / 427.60 | 427.30 / 427.49 | 427.5 | 427.20 / 427.39 | 427.85 / 427.62 | 427.95 / 427.39 | 427.8 | 428.0

427.6 | 427.5 | 427.80 / 427.80 | 427.77 / 426.99 | 427.8 | 427.43 / 427.07 | 427.45 / 427.03 | 427.90 / 427.65 | 427.96 / 426.74 | 428.02 / 427.30 | 428.10 / 427.72 | 428.2 | 428.0

428.0 | 428.00 / 428.00 | 428.13 / 428.13 | 427.56 / 427.56 | 428.09 / 428.09 | 428.22 / 428.22 | 428.42 / 428.42 | 428.4 | 428.70 / 428.70 | 428.6 | 428.5

428.0 | 427.5 | 427.0 | 427.8 | 427.6 | 428.0 | 427.8 | 427.6 | 427.4 | 427.2 | 427.0 | 427.5 | 428.0 | 427.5 | 427.0 | 428.0 | 428.2 | 428.4 | 428.50 / 427.62 | 428.25 / 427.95 | 428.50 / 428.51 | 428.4 | 428.00 / 427.44 | 428.2

NOTE:
THE CONSTRUCTION OF THE PARKING LOT REQUIRES THE PLACEMENT OF 370 CUBIC YARDS OF FILL IN THE EXISTING FLOODPLAIN, AS RECOGNIZED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM). THE MITIGATION OF THIS FLOODPLAIN SHALL BE ACCOMPLISHED BY OTHERS (AIRPORT) OUTSIDE OF THIS CONTRACT.

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED PARKING LOT
- 428.70 / 428.70 — PROPOSED GRADE ELEVATION / EXISTING GRADE ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR

N

0' 5' 15' 30'
SCALE: 1"= 30'

DATE | REVISION | BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A01640
Filename C-103-GRD.DWG
Scale 1"= 40'
Date 04/19/2013

LAYOUT	JSL	04/01/13
DRAWN	CWS	04/01/13
REVIEWED	JSL/KNL	04/11/13

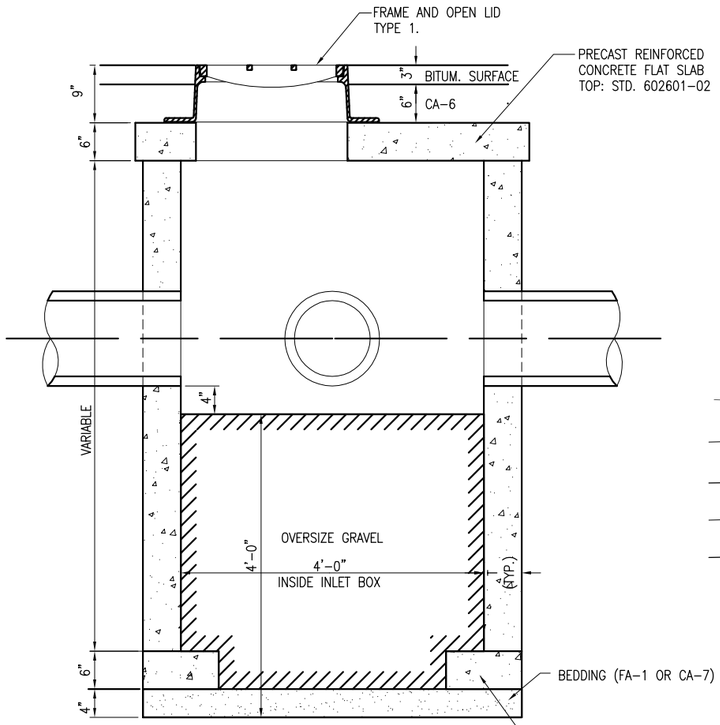
HANSON
Hanson Professional Services Inc.
3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

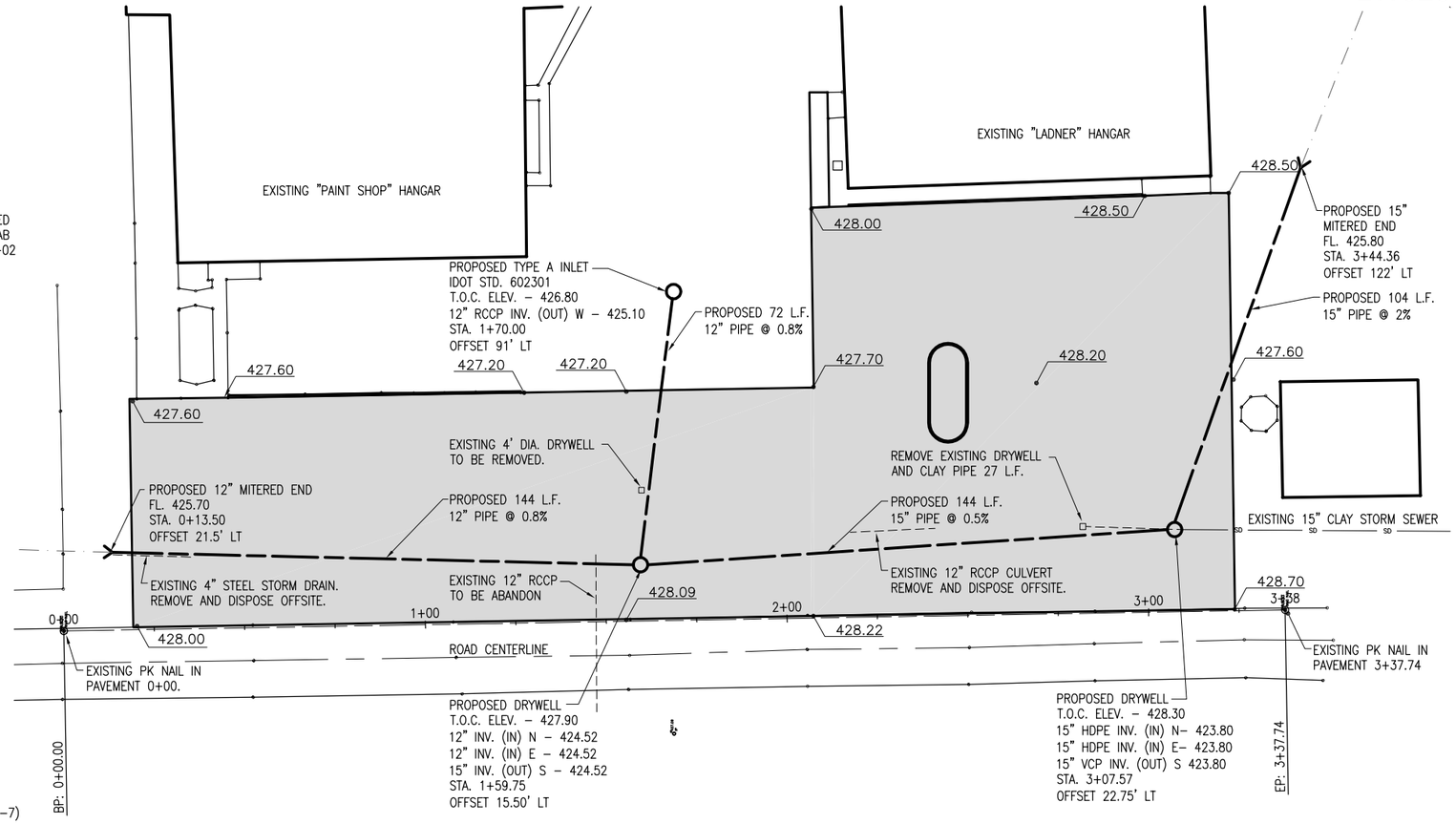
CONSTRUCT PARKING LOT

PROPOSED GRADING PLAN

6

APR 19, 2013 11:56 AM SCHUB01446
C:\AIRPORTS\LAWRENCE\11A01640\CADD\AIRPORT\SHEET\C-103-GRD.DWG - GRADING PLAN





NOTES:

1. THE CONTRACT UNIT PRICE FOR THE DRYWELL SHALL INCLUDE THE FRAME AND LID.
2. IDOT STANDARD 602401 (MODIFIED)

DRYWELL DETAIL

NOT TO SCALE

ALT. MATERIAL FOR WALLS	D	T
PRECAST REINFORCED CONC. SECTIONS	4'	4"
MONOLITHIC CONCRETE	4'	6"

TABLE 1

DRYWELL NOTES:

THE PROPOSED DRYWELLS SHALL REPLACE THE EXISTING DRYWELLS AT THE LOCATIONS SHOWN ON THE CONSTRUCTION PLANS. THE EXISTING DRYWELLS SHALL BE REMOVED AND DISPOSED OF OFF THE AIRPORT SITE.

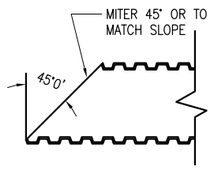
IF THE EXISTING CLAY PIPE IS DAMAGED DURING THE INSTALLATION OF THE PROPOSED DRYWELL; THE DAMAGED PIPE SHALL BE REPLACED AT THE CONTRACTOR'S OWN EXPENSE.

THE DRYWELL REMOVALS WILL BE CONSIDERED PART OF THE DRYWELL INSTALLATION AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

THE DRAINAGE BASE MATERIAL (OVERSIZE GRAVEL) TO BE PLACED INSIDE OF THE DRYWELL WILL BE CONSIDERED AS PART OF THE PROPOSED DRYWELL INSTALLATION AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

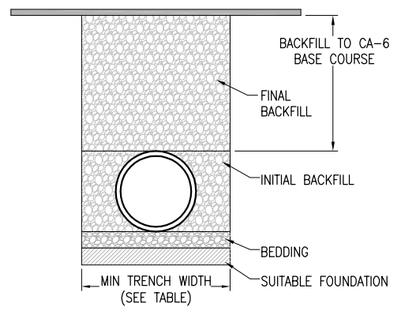
THE FRAME AND LID SHALL BE IDOT STD 604001 FRAME AND LIDS TYPE 1.

THE PROPOSED DRYWELLS SHALL BE PADE FOR UNDER:
ITEM AR751415 INLET-SPECIAL PER EACH



MITERED END DETAIL

NOT TO SCALE



STORM TRENCH DETAIL

NOT TO SCALE

MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN TRENCH WIDTH
12"	30"
15"	34"

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED PARKING LOT
- PROPOSED STORM SEWER
- 428.70 PROPOSED GRADE ELEVATION
- PROPOSED STRUCTURE

0' 10' 20' 40'

HALF SIZE SCALE: 1"= 40'
FULL SIZE SCALE: 1"= 20'

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A01640
Filename C-104-DRN.DWG
Scale 1"= 40'
Date 04/19/2013

LAYOUT	JSL	04/01/13
DRAWN	CWS	04/01/13
REVIEWED	JSL/KNL	04/11/13

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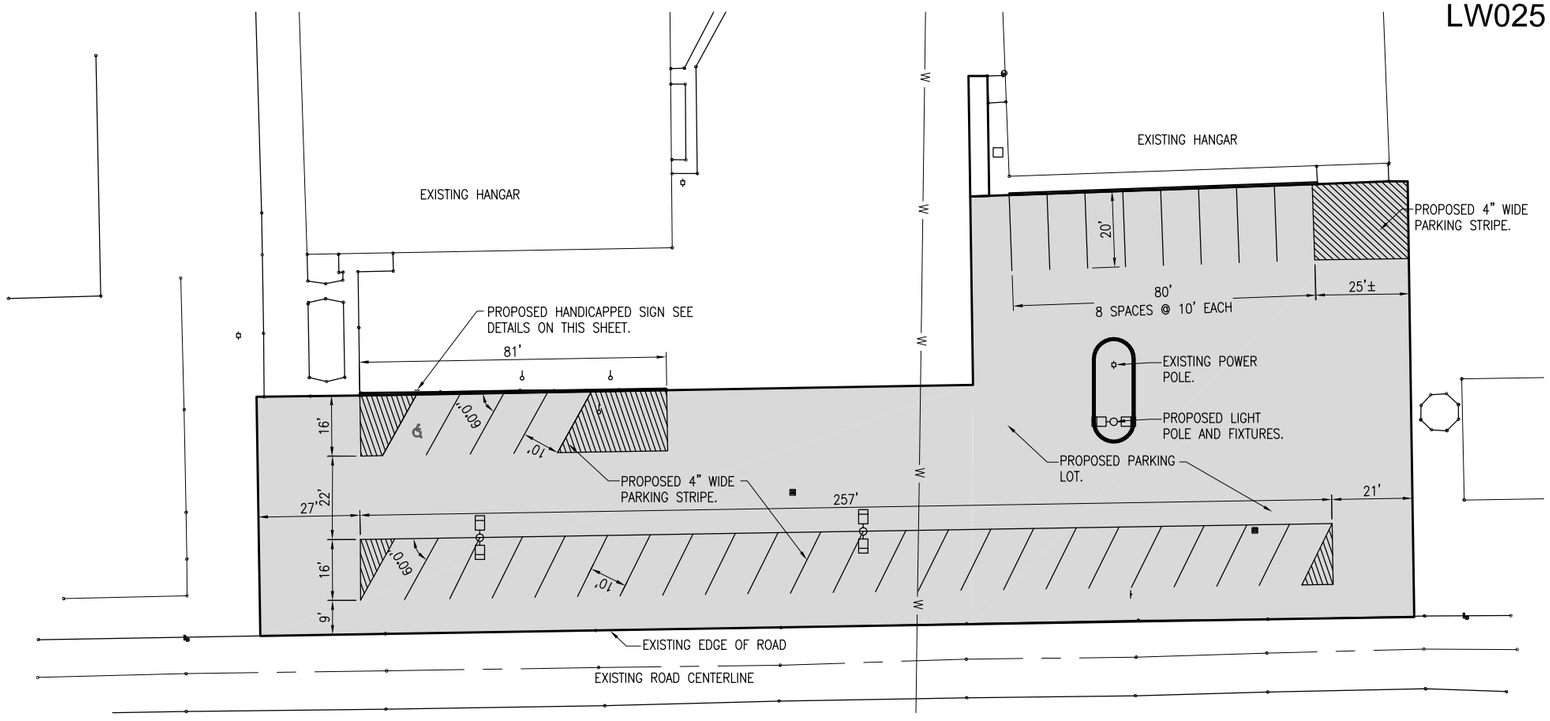
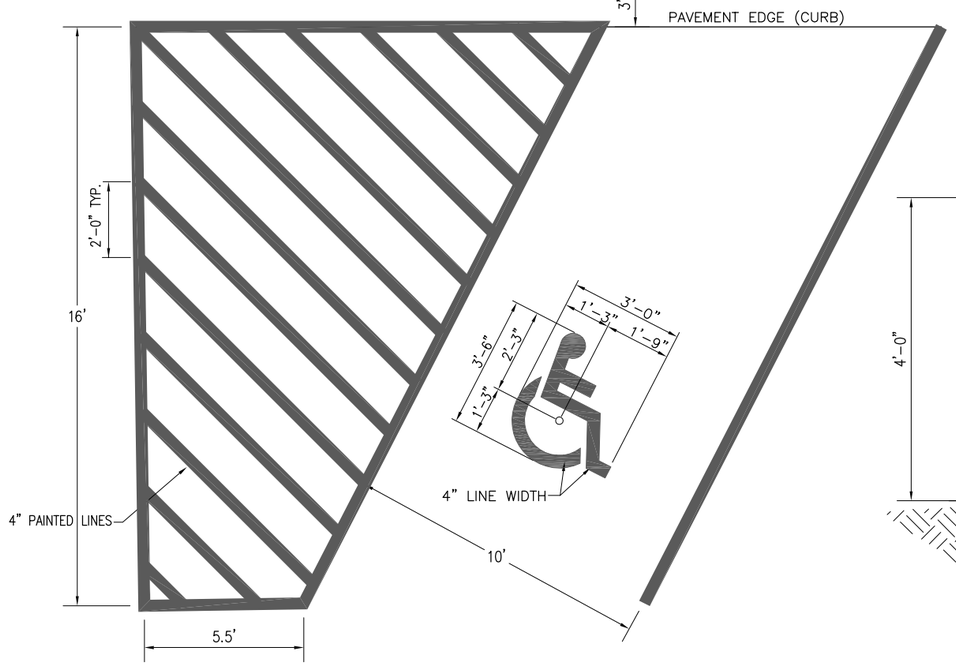
CONSTRUCT PARKING LOT

PROPOSED DRAINAGE PLAN

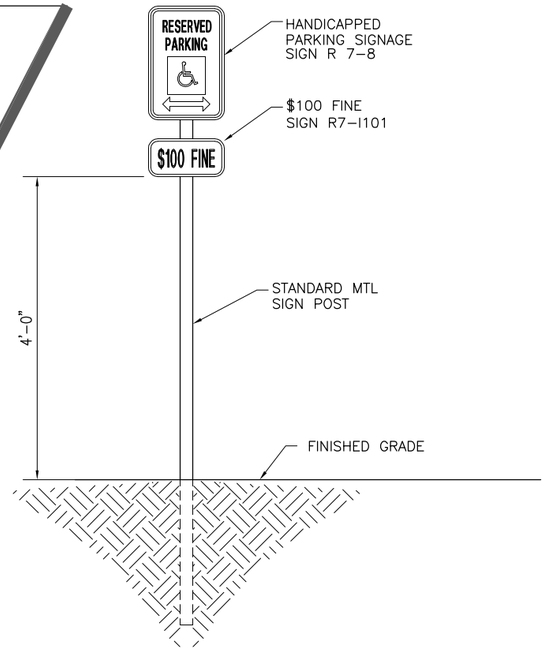




TYPICAL HANDICAP PARKING SPACE PAINT STRIPING

"NOT TO SCALE"

NOTE: CENTER SYMBOL IN STALL.



HANDICAPPED SIGNAGE

"NOT TO SCALE"

NOTE:

PROPOSED HANDICAPPED PARKING SIGN SHALL BE CONSIDERED INCIDENTAL TO THE PAVEMENT MARKINGS.

THE HANDICAPPED PARKING SIGNS SHALL CONFORM TO THE UPRIGHT R7-8 ADOPTED BY THE U.S. DEPARTMENT OF TRANSPORTATION. A "$100 FINE" SIGN (ILLINOIS STANDARD R7-1101) SHALL BE MOUNTED DIRECTLY BELOW THE HANDICAPPED PARKING SIGN. THE SIGNS SHALL BE A DISTANCE OF 4' ABOVE THE FINISHED GRADE TO THE BOTTOM OF THE SIGN. THE SIGNS SHALL BE PLACES AS INDICATED ON THE DRAWINGS.

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- PROPOSED PARKING LOT
- PROPOSED CONC. CURB TO BE PAINTED YELLOW.

MARKING NOTES

1. ALL MARKING SHALL BE YELLOW IN COLOR.
2. ALL MARKING WILL HAVE A REFLECTIVE MEDIA. APPLICATION RATES WILL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. "CUT-OFF" SHEETS SHALL BE USED TO INSURE STRAIGHT EDGES.
4. THE PROPOSED MARKING WILL BE PAID FOR UNDER ITEM: AR620520 "PAVEMENT MARKING" WATERBORNE PER SQUARE FOOT.

QUANTITY OF MARKING ON THIS SHEET.
ACCESSIBLE PARKING SYMBOL_ _ _ _ _ 3 SQ. FT.
PARKING STRIPES_ _ _ _ _ _ _ _ _ _ 660 SQ.FT.

TOTAL 663 SQ. FT.

0' 5' 10' 20'

HALF SIZE SCALE: 1"= 20'
FULL SIZE SCALE: 1"= 10'

APR 19, 2013 11:58 AM SCHUB01446
C:\AIRPORTS\LAWRENCE\11A0164D\CADD\AIRPORT\SHEET\C-105-MRK.DWG - MARKING PLAN

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D
Filename C-105-MRK.DWG
Scale 1"= 40'
Date 04/19/2013

LAYOUT	JSL	04/01/13
DRAWN	CWS	04/01/13
REVIEWED	JSL/KNL	04/11/13

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CONSTRUCT PARKING LOT

PROPOSED MARKING PLAN

8

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

ELECTRICAL LEGEND – ONE–LINE DIAGRAM	
	CABLE TERMINATOR/LUG, TERMINAL BLOCK, OR SPLICE
	TRANSFORMER
	DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
	CIRCUIT BREAKER
	THERMAL MAGNETIC CIRCUIT BREAKER
	NORMALLY OPEN (N.O.) CONTACT
	NORMALLY CLOSED (N.C.) CONTACT
	TOGGLE SWITCH / 2 POSITION SWITCH
	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 OR TERMINALS
XXX	EQUIPMENT, XXX = DEVICE DESCRIPTION
GND	GROUND BAR, GROUND BUS OR GROUND TERMINAL
S/N	SOLID NEUTRAL, NEUTRAL BUS, OR NEUTRAL TERMINAL
	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: N = NORMAL EM = EMERGENCY L = LOAD
G	ENGINE GENERATOR SET

ELECTRICAL LEGEND – PLANS	
	CONDUIT (EXPOSED)
	CONDUIT OR UNIT DUCT (CONCEALED OR BURIED)
	DUCT
	DUCT
E	BURIED/UNDERGROUND ELECTRIC
OHE	OVERHEAD ELECTRIC
	TOGGLE SWITCH
	PUSH BUTTON STATION
	WALL OR CEILING MT'D. JUNCTION BOX. CONFIGURATION VARIES WITH USE
	SINGLE THROW DISCONNECT SWITCH
	SINGLE THROW, FUSIBLE DISCONNECT SWITCH
CB	ENCLOSED CIRCUIT BREAKER
M	MOTOR
T	TRANSFORMER
	ELECTRIC UTILITY METER
	ENCLOSURE
	CIRCUIT BREAKER PANEL–SEE SCHEDULES
	CONTROL PANEL
	GROUND ROD
	POLE WITH CAMERA

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

3. COLOR CODE PHASE AND NEUTRAL CONDUCTOR INSULATION FOR NO. 6 AWG OR SMALLER. PROVIDE COLORED INSULATION OR COLORED MARKING TAPE FOR PHASE AND NEUTRAL CONDUCTORS FOR NO. 4 AWG AND LARGER. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR AWG AND/OR KCMIL TO COMPLY WITH NEC 250.119. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION FOR NO. 6 AWG AND SMALLER TO MEET THE REQUIREMENTS OF NEC 200.6. STANDARD COLORS FOR POWER WIRING AND BRANCH CIRCUITS SHALL BE AS FOLLOWS:

120/240 VAC, 1 PHASE, 3 WIRE

PHASE A	BLACK
PHASE B	RED
NEUTRAL	WHITE
GROUND	GREEN

240/120 VAC, 3 PHASE, 4 WIRE

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

4. SEE RESPECTIVE SITE PLANS FOR SITE LEGEND INFORMATION.

5. LTFMC DENOTES LIQUID TIGHT FLEXIBLE METAL CONDUIT UL LISTED, SUNLIGHT RESISTANT, & SUITABLE FOR GROUNDING. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO CCR'S & TRANSFORMERS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. EXTERNAL BONDING JUMPERS USED WITH CCR INSTALLATIONS SHALL BE #6 AWG COPPER (MINIMUM). DO NOT INSTALL LTFMC THAT IS NOT UL LISTED. CONFIRM LTFMC BEARS THE UL LABEL PRIOR TO INSTALLATION.

6. 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.

7. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, DUCT, OR HANDHOLE.

8. PER NEC 513 THE ENTIRE AREA OF A HANGAR INCLUDING ANY ADJACENT AND COMMUNICATING AREAS NOT SUITABLY CUT OFF FROM THE HANGAR, SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 HAZARDOUS LOCATION UP TO A LEVEL 18 INCHES ABOVE THE FLOOR, PER NEC 513.3(C) "VICINITY OF AIRCRAFT", THE AREA WITHIN 5 FT. HORIZONTALLY FROM AIRCRAFT POWER PLANTS OR AIRCRAFT FUEL TANKS SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 LOCATION THAT SHALL EXTEND UPWARD FROM THE FLOOR TO A LEVEL 5FT. ABOVE THE UPPER SURFACE OF WINGS AND OF ENGINE ENCLOSURES. ALL ELECTRICAL INSTALLATIONS IN CLASSIFIED HAZARDOUS LOCATIONS SHALL BE AVOIDED UNLESS SPECIFICALLY APPROVED FOR SUCH LOCATIONS AND INSTALLED IN CONFORMANCE WITH NEC 500, 501, AND 513 AS WELL AS OTHER APPLICABLE CODES AND REQUIREMENTS.

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A01640
Filename E-001.DWG
Scale NO SCALE
Date 04/19/2013

LAYOUT	KNL	04/04/13
DRAWN	CWS	04/05/13
REVIEWED	JSL/KNL	04/11/13

HANSON
Hanson Professional Services Inc.
3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

CONSTRUCT PARKING LOT

ELECTRICAL LEGEND AND ABBREVIATIONS

9

APR 19, 2013 11:59 AM SCHUB01446
C:\AIRPORTS\LAWRENCE\11A01640\CADD\AIRPORT\SHEET\E-001.DWG – ELECTRICAL LEGEND AND ABBREVEATIONS

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.

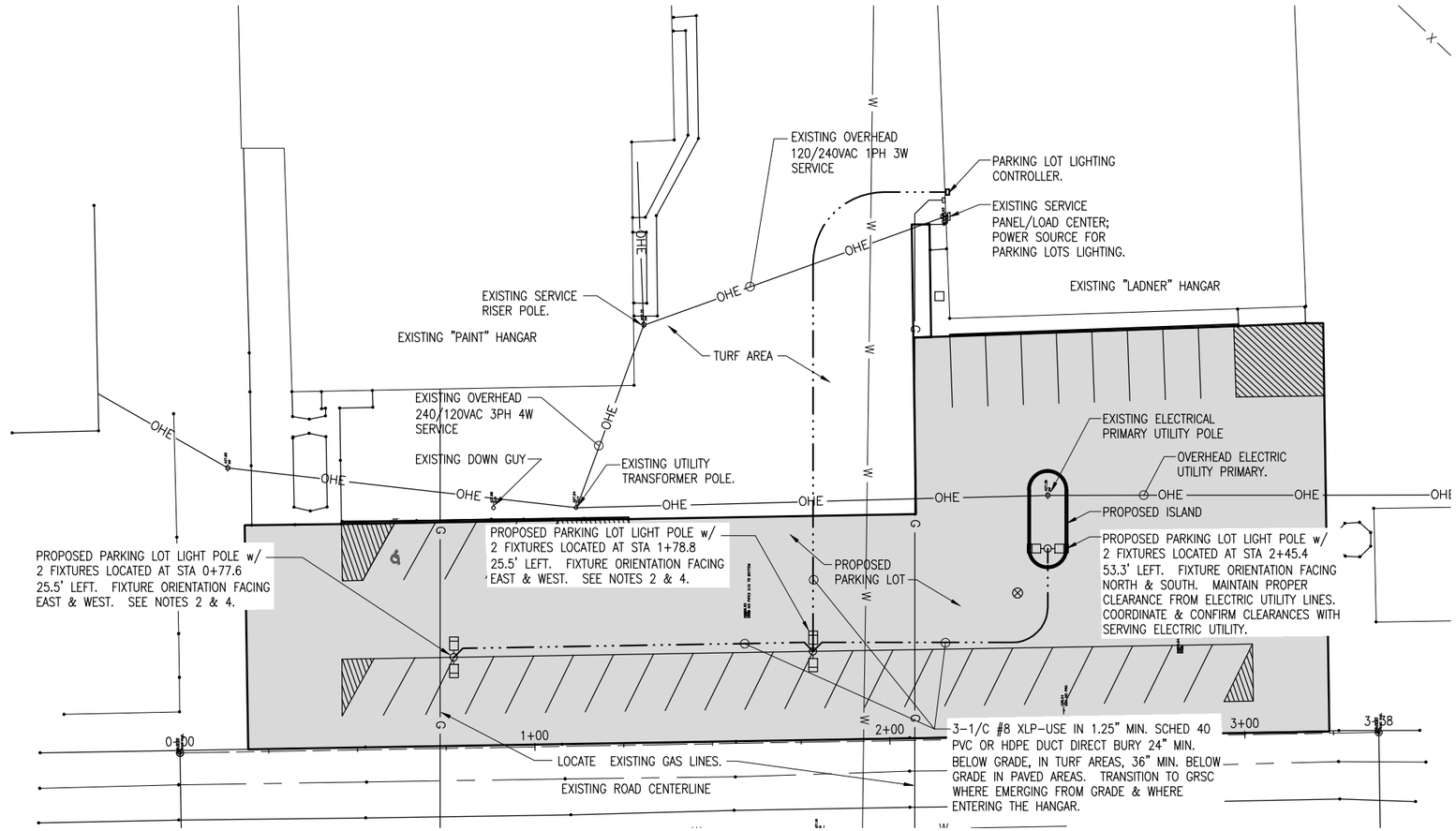
ELECTRICAL NOTES:

1. ALL WORK AND POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND THE RESPECTIVE AIRPORT PERSONNEL. 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 CONFIRM REQUIRED CLEARANCES & COORDINATE PARKING LOT LIGHTING INSTALLATIONS WITH THE SERVING ELECTRIC UTILITY;
   AMEREN ILLINOIS UTILITIES;
   501 S. EATON ST.
   ROBINSON, IL 62454,
   ATTN. MR. STEVE BRUNER
   PHONE: 618-546-0239,
   CELL PHONE: 618-562-6439,
   FAX: 618-546-0206
   EMAIL: SBRUNER@AMEREN.COM

3. CABLES, CONDUITS & DUCTS FOR PARKING LOT LIGHTING SYSTEM SHALL BE INCLUDED WITH ITEM AR109620 LIGHTING CONTROL SYSTEM PER LUMP SUM.

4. CONTRACTOR SHALL CONFIRM LOCATION OF GAS LINES. ADJUST LOCATION OF POLE FOUNDATION(S) TO AVOID INTERFERENCE WITH GAS LINES WHERE APPLICABLE. COORDINATE ANY ADJUSTMENTS TO POLE LOCATION WITH THE AIRPORT MANAGER & THE RESIDENT ENGINEER/RESIDENT PROJECT REPRESENTATIVE.



LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING ELECTRIC UTILITY POLE
- PROPOSED PARKING LOT
- PROPOSED PARKING LOT LIGHT POLE w/ 2 FIXTURES
- PROPOSED 3-1/C #8 XLP-USE 600V CABLE IN 1.25" MIN. SCHED 40 PVC OR HDPE DUCT.

0' 10' 20' 40'

HALF SIZE SCALE: 1"= 40'
FULL SIZE SCALE: 1"= 20'

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D	LAYOUT	KNL	04/10/13
Filename E-101-PLN.DWG	DRAWN	CWS	04/11/13
Scale 1"= 40'	REVIEWED	JSL/KNL	04/11/13
Date 04/19/2013			

HANSON
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3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

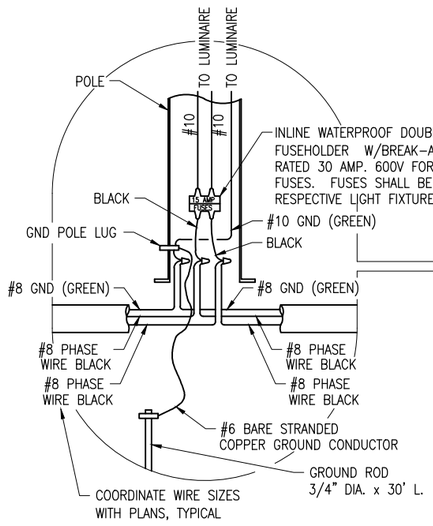
CONSTRUCT PARKING LOT

PROPOSED ELECTRICAL SITE PLAN

APR 19, 2013 12:01 PM SCHUB01446
C:\AIRPORTS\LAWRENCE\11A0164D\CADD\AIRPORT\SHEET\E-101-PLN.DWG - ELECTRICAL PLAN

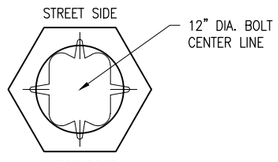
LIGHTING NOTES

1. IN ALL AREAS WHERE THERE IS A CONGESTION OF BURIED CABLE OR WHERE THE PROPOSED DUCT CROSSES AN EXISTING CABLE, THE CONTRACTOR WILL BE REQUIRED TO HAND DIG THE PROPOSED DUCT INTO PLACE.
2. PROPOSED DUCT OR CABLE IN DUCT SHALL BE INSTALLED 24" BELOW FINISHED GRADE IN TURF AREAS, AND 36" BELOW FINISHED GRADE IN PAVED AREAS..
3. THE PROPOSED POWER/FEEDER CABLE FOR THE POLE LIGHTS SHALL BE 2#8 XLP-USE, 1#8 GND (GREEN INSULATION) IN 1.25" MINIMUM SCHED 40 PVC OR SCHED 40 HDPE.
4. THE PROPOSED POLE LIGHTS SHALL BE CONSTRUCTED AT THE LOCATIONS SHOWN ON THE ELECTRICAL SITE PLAN AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
5. PROVIDE CERTIFICATION THAT POLE IS MANUFACTURED FROM 100% DOMESTIC STEEL. PROVIDE CERTIFICATION THAT REBAR IS MANUFACTURED FROM 100% DOMESTIC STEEL.
6. USE OF TEMPORARY STEEL CASING MAY BE NECESSARY TO SEAL OUT GROUND WATER AND SLOUGHING SOILS FROM SHAFT EXCAVATION.
7. PARKING LOT LIGHT POLE WITH 2 FIXTURES WILL BE PAID FOR UNDER ITEM AR106512 TYPE A AREA LIGHT POLE w/ 2 FIXTURES.



POLE WIRING DETAIL

SCALE: NONE



PLAN

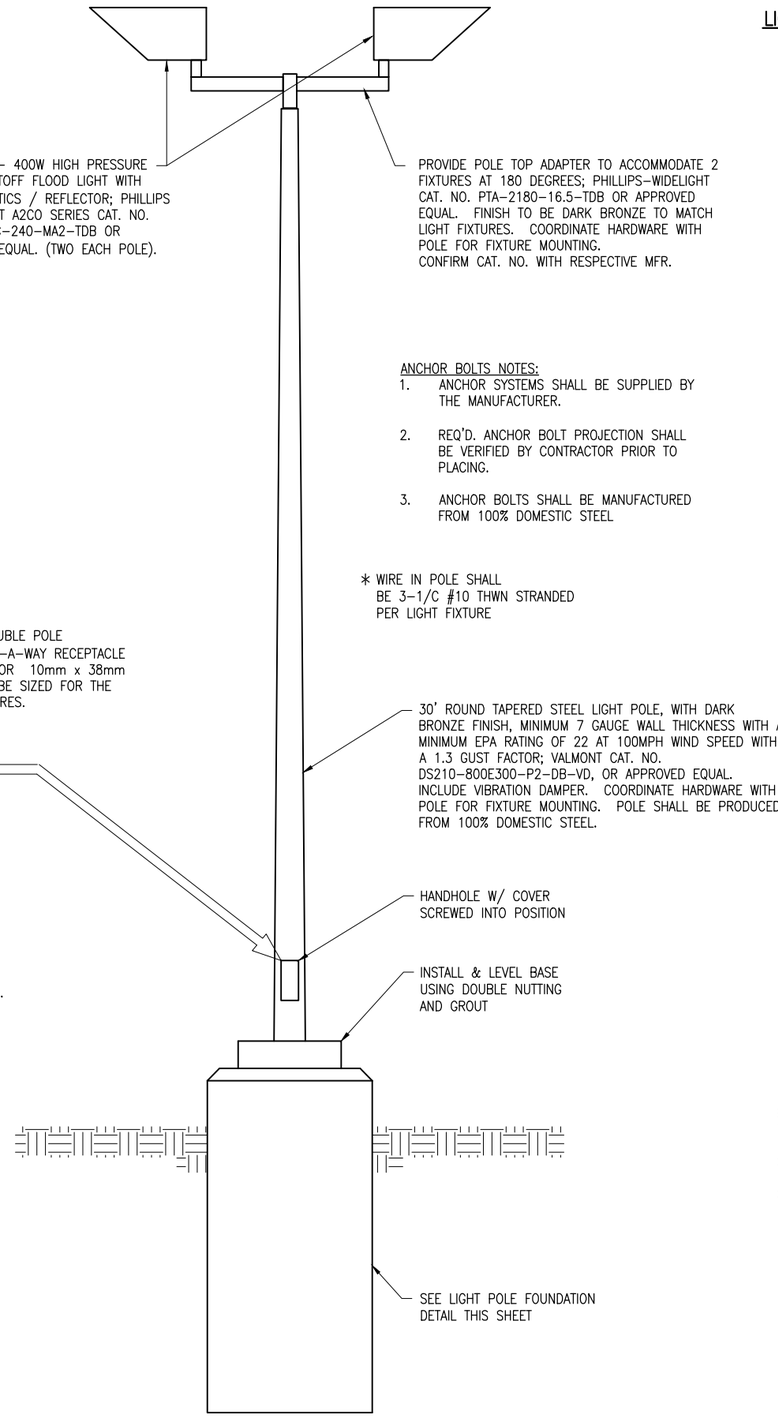
BOLT CIRCLE DETAIL

SCALE: NONE

ANCHOR BOLTS NOTES:

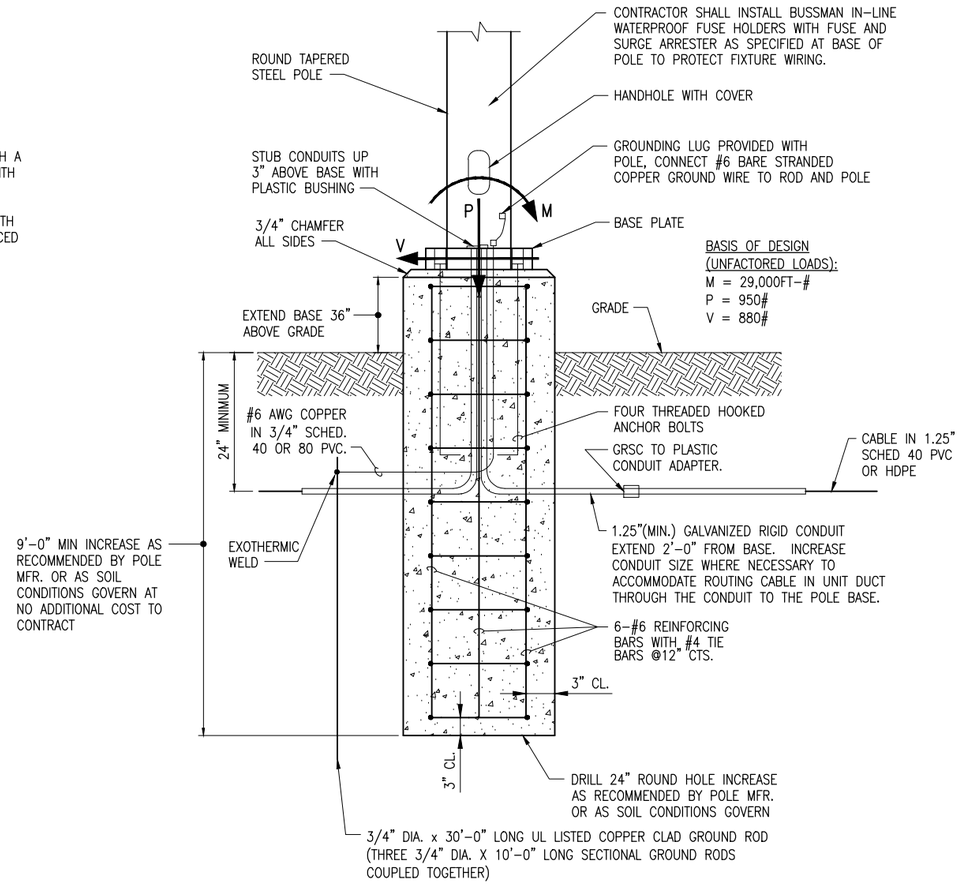
1. ANCHOR SYSTEMS SHALL BE SUPPLIED BY THE MANUFACTURER.
2. REQ'D. ANCHOR BOLT PROJECTION SHALL BE VERIFIED BY CONTRACTOR PRIOR TO PLACING.
3. ANCHOR BOLTS SHALL BE MANUFACTURED FROM 100% DOMESTIC STEEL

* WIRE IN POLE SHALL BE 3-1/C #10 THWN STRANDED PER LIGHT FIXTURE



LIGHT POLE AND FIXTURE DETAIL - PARKING LOT LIGHTS

SCALE: NONE



LIGHT POLE FOUNDATION DETAIL

SCALE: NONE

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D
Filename E-503.DWG
Scale NO SCALE
Date 04/19/2013

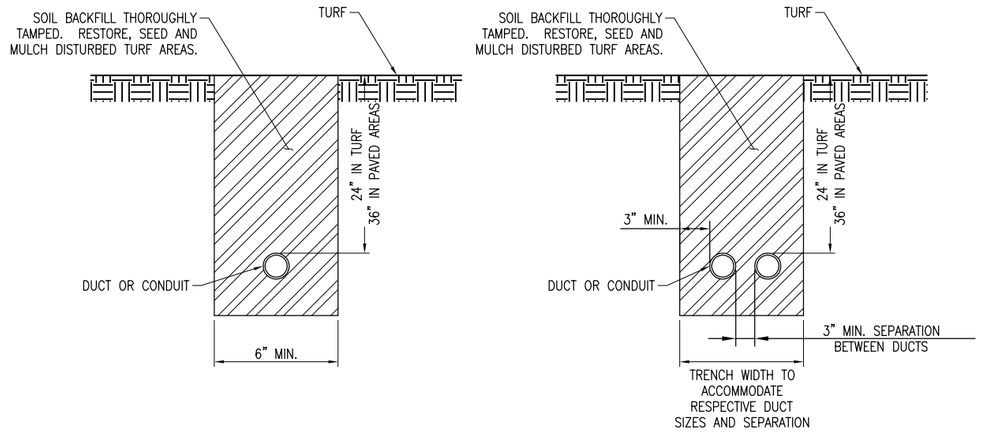
LAYOUT	KNL	04/05/13
DRAWN	CWS	04/05/13
REVIEWED	JSL/KNL	04/11/13

HANSON

Hanson Professional Services Inc.
3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

CONSTRUCT PARKING LOT

PROPOSED LIGHTING DETAILS 30 FOOT POLE



SINGLE DUCT

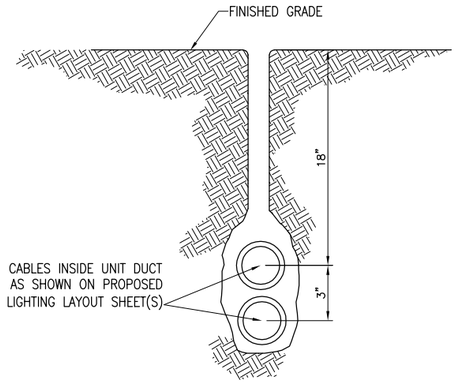
TWO DUCTS

NOTES:

1. DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH AND/OR RESPECTIVE CABLE OR DUCT WORK.

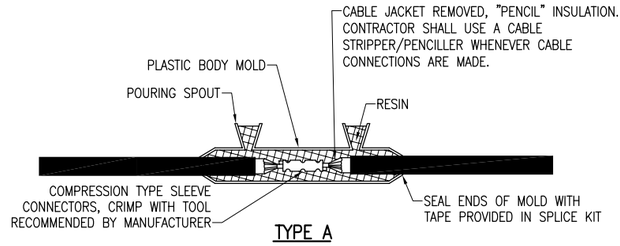
CONDUIT IN TRENCH

NOT TO SCALE



PLOWED CABLE

(NOT TO SCALE)



TYPE A

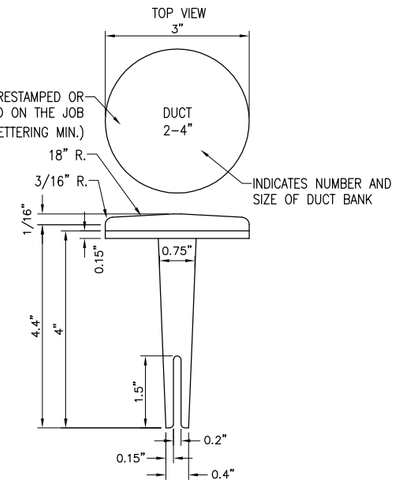
FOR SPLICES IN LOW VOLTAGE CABLE (600V) HOMERUNS FOR EXTENSIONS TO EXISTING LOW VOLTAGE CABLES ONLY. TYPE A SPLICES SHALL BE MADE IN SPLICE CANS, HANDHOLES, MANHOLES, OR JUNCTIONS BOXES

LOW VOLTAGE (600V) CABLE SPLICE

(NOT TO SCALE)

UNDERGROUND ELECTRICAL DUCT

(NOT TO SCALE)

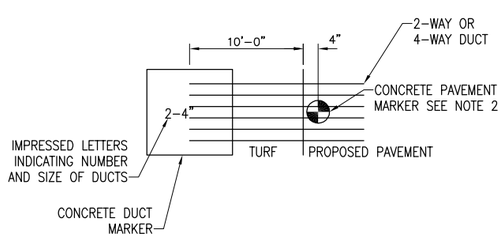


BITUMINOUS PAVEMENT DUCT MARKERS

"NOT TO SCALE"

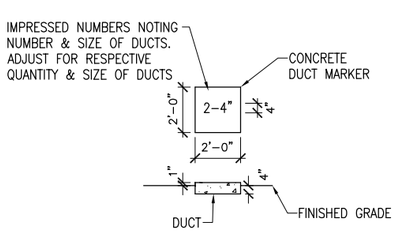
NOTE:

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



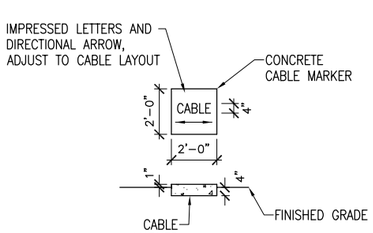
DUCT MARKER DETAIL

"NOT TO SCALE"



TURF DUCT MARKERS

"NOT TO SCALE"



TURF CABLE MARKERS

"NOT TO SCALE"

CABLE & DUCT MARKER NOTES:

1. THE COST OF ALL TURF AND PAVEMENT DUCT MARKERS SHALL BE INCIDENTAL TO THE DUCT. THE COST OF ALL CABLE MARKERS SHALL BE INCIDENTAL TO THE CABLE.
2. BITUMINOUS PAVEMENT DUCT MARKER AND CONCRETE DUCT MARKER TO BE PROVIDED AT EACH END OF EACH DUCT AS SHOWN ON THE LOCATION PLAN. FOR CONCRETE PAVEMENT, THE LETTER "D" SHALL BE IMPRESSED IN THE PAVEMENT INSTEAD OF THE MARKER. THE LETTER SHALL BE IMFORMED 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 THE LEGEND IS REQUIRED:
   A. REDUCE LETTER SIZE TO 3" HIGH, 2" WIDE.
   B. INCREASE THE MARKER SIZE TO 30" X 30".
   C. PROVIDE ADDITIONAL MARKERS PLACED SIDE BY SIDE.

DETAILS SHOWN ARE NOT TO SCALE

BY	REVISION	DATE

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

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CONSTRUCT PARKING LOT

ELECTRICAL CABLE AND DUCT 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 AND/OR OTHER EQUIPMENT 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 OR OTHER 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. 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 AN NUMBERING AND COLOR OF EACH TERMINAL CONDUCTOR AND TERMINAL.

   I. ALL WIRING SHALL BE NEATLY TRAINED AND LACED.

   J. MINIMUM WIRE SIZE SHALL BE NO. 12 AWG.

24. FURNISH & INSTALL A WEATHERPROOF WARNING LABEL FOR EACH METER SOCKET, SERVICE DISCONNECT, SAFETY SWITCH, CUTOUT, PANELBOARD, & CONTROL PANEL TO WARN PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS, PER THE REQUIREMENTS OF NEC 110.16 "FLASH PROTECTION".

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D
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HANSON
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3125 New Era Road
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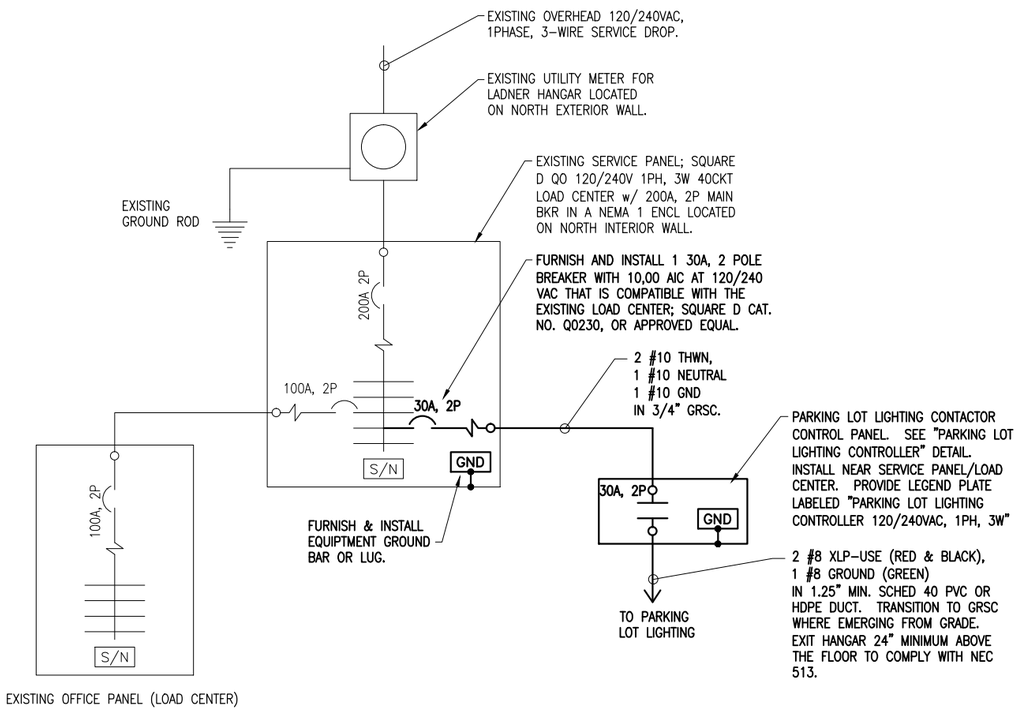
CONSTRUCT PARKING LOT

ELECTRICAL NOTES



PROPOSED ELECTRICAL ONE-LINE DIAGRAM FOR PARKING LOT LIGHTING

NOTES

1. CONTRACTOR SHALL EXAMINE THE SITE TO DETERMINE EXISTING CONDITIONS.
2. SEE "ELECTRICAL LEGEND AND ABBREVIATIONS" SHEET FOR GENERAL NOTES AND REQUIREMENTS.
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 SHOWN NOT LABELED AS EXISTING IS NEW.
5. ALL FIXED WIRING IN THE RESPECTIVE HANGAR SHALL BE IN METAL RACEWAYS TO COMPLY WITH THE REQUIREMNTS OF NEC 513.7.
6. PER NEC 513 THE ENTIRE AREA OF A HANGAR INCLUDING ANY ADJACENT AND COMMUNICATING AREAS NOT SUITABLY CUT OFF FROM THE HANGAR, SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 HAZARDOUS LOCATION UP TO A LEVEL 18 INCHES ABOVE FLOOR, PER NEC 513.3(C) "VICINITY OF AIRCRAFT", THE AREAS WITHIN 5 FT. HORIZONTALLY FROM AIRCRAFT POWER PLANTS OR AIRCRAFT FUEL TANKS SHALL BE CLASSIFIED AS A CLASS I, DIVISION 2 LOCATION THAT SHALL EXTEND UPWARD FROM THE FLOOR TO A LEVEL 5FT. ABOVE THE UPPER SURFACE OF WINGS AND OF ENGINE ENCLOSURE. ALL ELECTRICAL INSTALLATIONS IN CLASSIFIED HAZARDOUS LOCATIONS SHALL BE AVOIDED UNLESS SPECIFICALLY APPROVED FOR SUCH LOCATIONS AND INSTALLED IN CONFORMANCE WITH NEC 500, 501, AND 513 AS WELL A OTHER APPLICABLE CODES AND REQUIREMENTS.
7. ALL WORK SHOWN ON THIS SHEET WILL BE PAID FOR UNDER ITEM AR109620 LIGHTING CONTROL SYSTEM PER LUMP SUM. ALL CONDUITS, FITTINGS, DUCTS AND CABLING FROM THE POWER SOURCE TO THE POLE LIGHTS SHALL BE INCLUDED WITH ITEM AR109620 AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

LEGEND PLATE SCHEDULE	
DEVICE	LABEL
PARKING LOT LIGHTING CONTACTOR CONTROL PANEL	PARKING LOT LIGHTING CONTROLLER 120/240VAC 1PH, 3W
PARKING LOT LIGHTING CONTACTOR CONTROL PANEL	WARNING KEEP 5FT CLEAR OF AIRCRAFT ENGINES AND FUEL TANK AREAS.

NOTE:

1. 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/OR 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. FURNISH AND 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.

DATE	REVISION	BY

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LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

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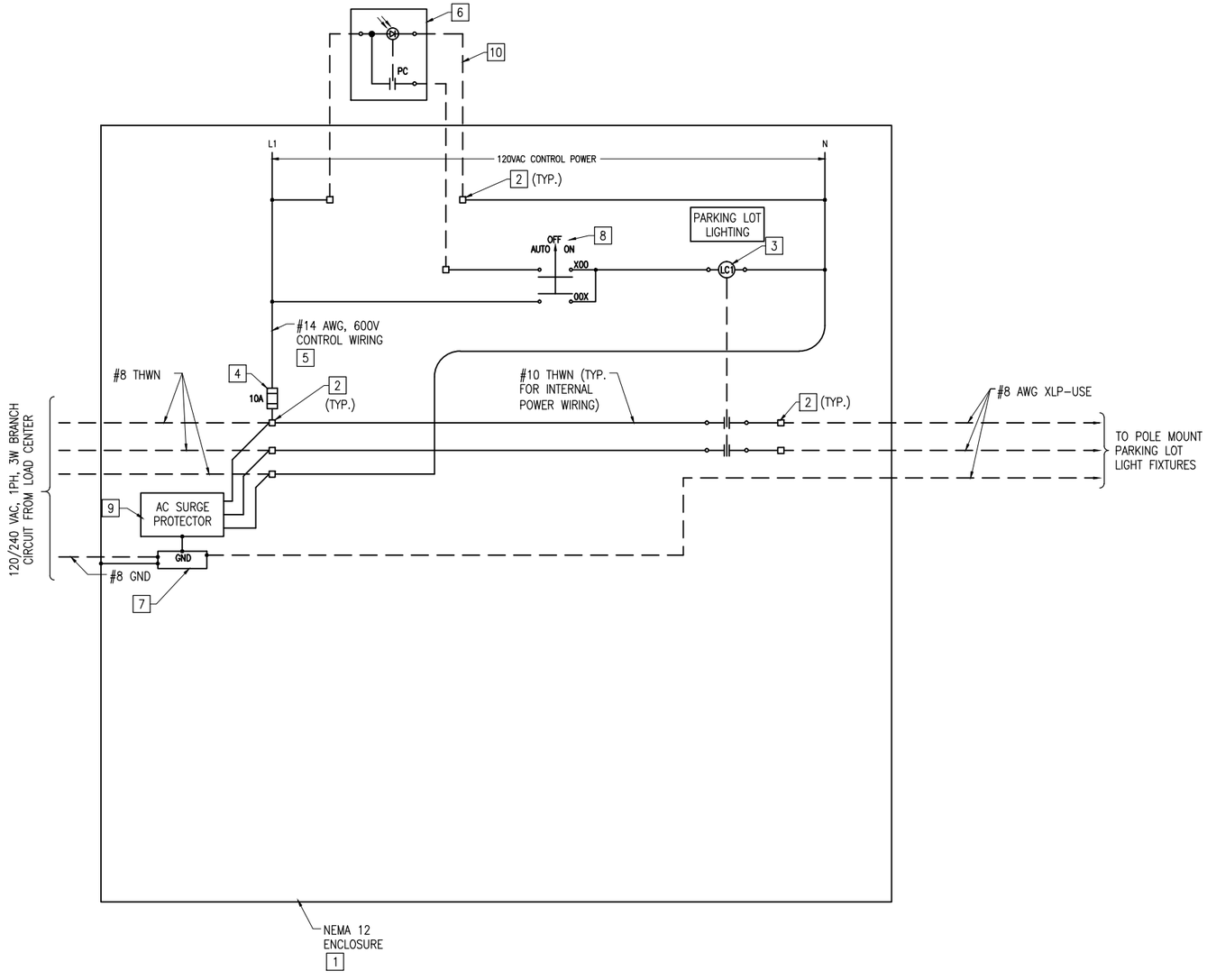
CONSTRUCT PARKING LOT

PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR PARKING LOT LIGHTING



PARKING LOT LIGHTING CONTROLLER

NOTES:

1. CONTROL PANEL FOR PARKING LOT SHALL BE MANUFACTURED BY AN FAA APPROVED L-821 PANEL MANUFACTURER OR UL 508 INDUSTRIAL CONTROL PANEL BUILDER OR APPROVED EQUIVALENT AND SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA OR TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN PREFERENCE REQUIREMENTS. WHERE PANEL IS MANUFACTURED BY AN L-821 PANEL MANUFACTURER IT SHALL BE LABELED AS AN L-821 PANEL.

KEYED NOTES:

1. UL LISTED NEMA 12 PAINTED STEEL CONTROL PANEL ENCLOSURE WITH HINGED COVER ADEQUATELY SIZED TO HOLD THE RESPECTIVE COMPONENTS AND EQUIPMENT. INCLUDE LEGEND PLATES LABELED "PARKING LOT LIGHTING CONTROLLER, 120/240VAC, 1PH, 3W", AND "WARNING KEEP 5FT CLEAR OF AIRCRAFT ENGINES AND FUEL TANK AREAS". LEGEND PLATES SHALL BE WEATHERPROOF AND ABRASION RESISTANT PHENOLIC MATERIALS. LETTERING SHALL BE BLACK ON WHITE BACKGROUND, UNLESS OTHERWISE NOTED.
2. TERMINAL BLOCKS FOR POWER & CONTROL WIRING SHALL BE NEMA RATED 600 VOLT, WITH AMPERAGE RATINGS IN CONFORMANCE WITH NEC TABLE 310-16 USING 75 DEGREE C WIRE FOR THE RESPECTIVE WIRE LUG RANGE, BOX LUG TYPE, SQUARE D CLASS 9080, TYPE GC6, OR APPROVED EQUAL. IEC RATED TERMINAL BLOCKS ARE NOT ACCEPTABLE.
3. LIGHTING CONTACTOR: LIGHTING CONTACTOR SHALL BE 30 AMP, 2-POLE, ELECTRICALLY HELD CONTACTOR SUITABLE OF FOR LIGHTING LOADS, WITH 120 VAC, 60 HZ COIL, SQUARE D CLASS 8903, TYPE SMO1V02, OR APPROVED EQUAL.
4. FUSING FOR CONTROL WIRING SHALL BE 10 AMP, 600 VAC, BUSSMANN CATALOG FNQ-R-10, OR APPROVED EQUAL, WITH FUSE BLOCKS, WITH BOX LUG TERMINALS SIZED AS REQUIRED FOR THE RESPECTIVE APPLICATION. INCLUDE HARDWARE FOR MOUNTING. PROVIDE ONE BOX (5 MINIMUM QUANTITY) OF EACH TYPE AND SIZE OF FUSE, UPON COMPLETION OF THE JOB FOR USE AS SPARES.
5. CONTROL WIRING SHALL BE SIZED AS REQUIRED PER NEC MINIMUM #14 AWG TYPE MTW, THW, OR THWN COPPER.
6. PHOTOCELL RATED 2000 WATTS AT 120 VAC, WITH OFF DELAY, AND -40 DEGREE C TO 60 DEGREE C OPERATING TEMPERATURE RANGE, TORK MODEL NO. 2101, INTERMATIC MODEL K4121M, OR APPROVED EQUAL. PROVIDE MOUNTING HARDWARE, JUNCTION BOX AND WATERTIGHT HUBS FOR INTERFACE TO THE LIGHTING CONTROLLER ENCLOSURE. PHOTOCELL SHALL FACE NORTH. ADJUST LOCATION WHERE APPLICABLE FOR PROPER OPERATION.
7. EQUIPMENT GROUNDING BAR: PROVIDE A GROUNDING BAR MOUNTED AND BONDED INSIDE THE PANEL ENCLOSURE, ADEQUATELY SIZED TO ACCOMMODATE ALL GROUND CONDUCTORS TO OR FROM THE LIGHTING CONTROLLER, ILSCO CAT. NO. D167-4 OR APPROVED EQUAL.
8. THREE-POSITION MAINTAINED "HAND-OFF-AUTO" SELECTOR SWITCH FOR LIGHTING CONTROL, HEAVY DUTY, WATERTIGHT/OIL TIGHT (NEMA 4/13), SQUARE D CLASS 9001, TYPE KS43FBH13 OR APPROVED EQUAL. INCLUDE LEGEND PLATES LABELED "AUTO-OFF-ON" & "PARKING LOT LIGHTING". MOUNT SELECTOR SWITCH ON PANEL DOOR.
9. AC SURGE PROTECTOR, UL 1449 SECOND EDITION LISTED, SURGE CURRENT RATING OF 40KA, SUITABLE FOR USE ON A 120/240 VAC, 1 PHSE, 3 WIRE SYSTEM WITH LED INDICATING OPERATIONAL STATUS, JOSLYN MODEL 1265-21, SQUARE D CAT. NO. TVS120XR50S OR APPROVED EQUAL. INCLUDE MOUNTING BRACKET.
10. PHOTOCELL WIRING SHALL BE 2 #14 THWN, 1 #14 NEUTRAL IN 3/4" GRSC. PROVIDE WATER SEAL OR DRAIN FITTING FOR CONDUIT TO PREVENT WATER ACCUMULATION IN PANEL ENCLOSURE.

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A01640
Filename E-602.DWG
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Date 04/19/2013

LAYOUT	KNL	04/05/13
DRAWN	CWS	04/05/13
REVIEWED	JSL/KNL	04/11/13

HANSON
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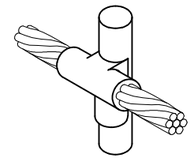
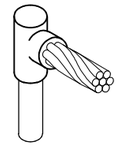
CONSTRUCT PARKING LOT

PARKING LOT LIGHTING CONTROLLER



CABLE TO GROUND ROD



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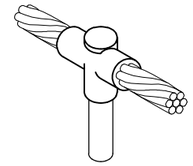

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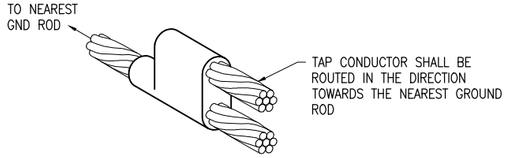
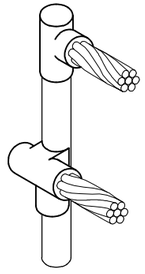


CABLE TO CABLE HORIZONTAL PARALLEL TAP



CABLES TO GROUND ROD

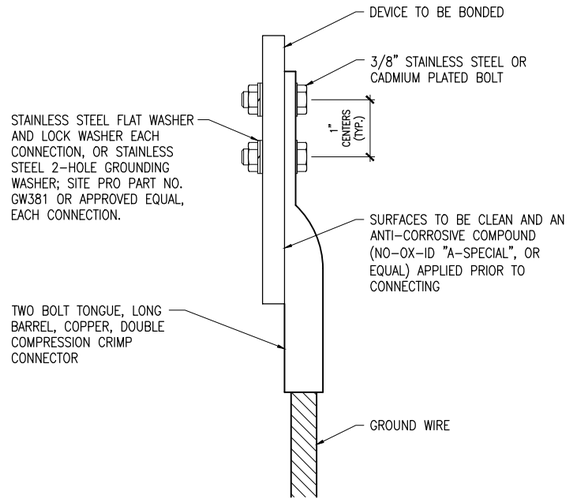
DETAIL NOTES

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
#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

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D
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DRAWN	CWS	04/05/13
REVIEWED	JSL/KNL	04/11/13

HANSON
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CONSTRUCT PARKING LOT

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 FOR LIGHT POLES SHALL BE MINIMUM 3/4-IN. DIAMETER BY 30-FT LONG, UL-LISTED COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING (THREE 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED, COPPER CLAD SECTIONAL GROUND RODS COUPLED TOGETHER). GROUND RODS FOR OTHER APPLICATIONS SHALL BE AS DETAILED HEREN FOR THE RESPECTIVE APPLICATION. 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), 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 EQUAL.

6. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL, PER 2011 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 2011 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 2011 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 2011 NEC 250-102.

13. IT IS THE INTENT OF THIS SPECIFICATION THAT ALL MOTOR FRAMES, PUMP BASES ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.

14. PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUNDED NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.

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

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

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

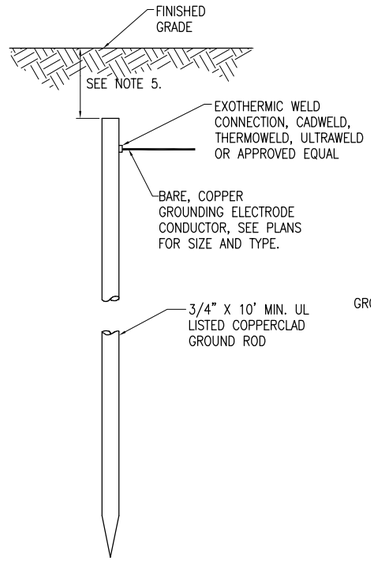
18. BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.

19. INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY 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.

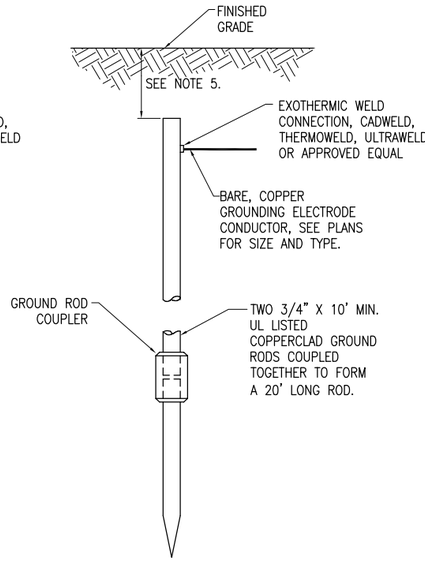
20. IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2011 NEC 250-102. NOTE THIS DOES NOT APPLY 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.

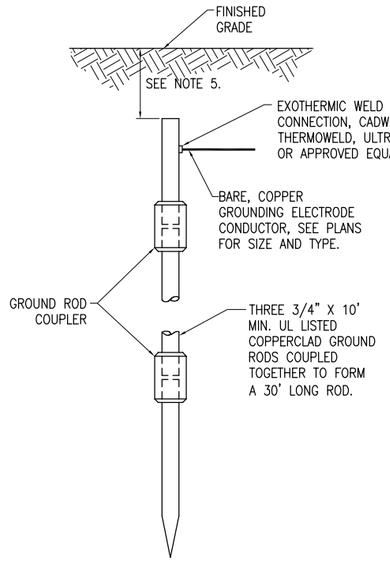
22. GROUND RODS SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENTS. STEEL USED TO MANUFACTURER GROUND RODS SHALL BE 100 PERCENT DOMESTIC STEEL.



10 FT. GROUND ROD



20 FT. GROUND ROD



30 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.
6. GROUND RODS FOR PARKING LOT LIGHT POLES SHALL BE 3/4 INCH DIAMETER BY 30 FOOT LONG, TO ACCOMMODATE SOIL CONDITIONS.

GROUND RODS

(NOT TO SCALE)

DATE	REVISION	BY

MID-AMERICAN AIR CENTER
LAWRENCEVILLE-VINCENNES AIRPORT
LAWRENCEVILLE, ILLINOIS

IL. PROJ.: LWV-4157

Hanson Project No. 11A0164D
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LAYOUT	KNL	04/04/13
DRAWN	CWS	04/05/13
REVIEWED	JSL/KNL	04/11/13

HANSON
Hanson Professional Services Inc.
3125 New Era Road
Murphysboro, Illinois 62966
Offices Nationwide

CONSTRUCT PARKING LOT

GROUNDING NOTES AND DETAILS

17
17 of 17 sheets