2A

MC024
TOTAL SHEETS - 33

MT CARMEL
MUNICIPAL AIRPORT

TOWNSHIP: DENISON
SECTION: 14 & 15
COUNTY : LAWRENCE

DESIGN AIRCRAFT APPROACH CATEGORY: B
DESIGN AIRCRAFT GROUP: II

CALL J.U.L.I.E.
BEFORE EXCAVATING
1-800-892-0123

CONSTRUCTION PLANS
FOR
MT. CARMEL MUNICIPAL AIRPORT
MT. CARMEL, LAWRENCE COUNTY, ILLINOIS
REPLACE/INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

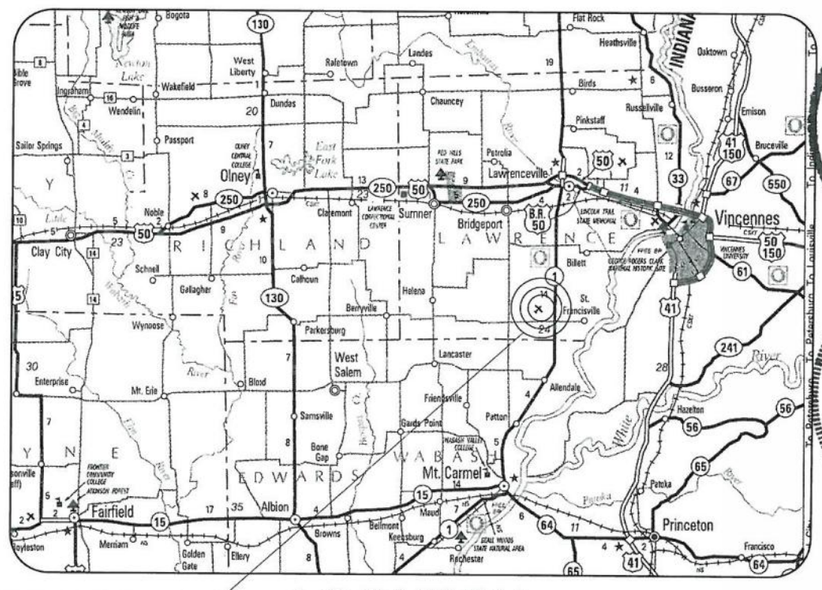
SCOPE OF WORK

THIS WORK SHALL CONSIST OF REMOVAL AND REPLACEMENT OF THE REILS AND PLASI SYSTEMS ON RUNWAY ENDS 4 AND 22, ADDITION OF OBSTRUCTION LIGHTING AND LIGHTNING PROTECTION TO THE AIRPORT ROTATING BEACON TOWER, INSTALLATION OF REILS AND A PLASI UNIT ON RUNWAY 13, AND THE ASSOCIATED CABLING, DUCT WORK AND VAULT WORK.

ADDITIVE ALTERNATE NO. 1: INSTALLATION OF A LIGHTED L-807 PRIMARY WIND CONE WITH THE ASSOCIATED CABLING AND DUCT WORK.

COVERING ELECTRICAL DESIGN

REVISED: 08/08/2011



MT. CARMEL MUNICIPAL AIRPORT

LOCATION

ILL. PROJ.:	AJG-4101
A.I.P. PROJ.:	3-17-0073-B17
LATITUDE:	38° 36' 24"
LONGITUDE:	87° 43' 36"
ELEVATION:	429.0' M.S.L.
DATE:	June 10, 2011

LOCATION OF COUNTY

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

LICENSED PROFESSIONAL ENGINEER
CHARLES A. HAGLOCH
062-37821
STATE OF ILLINOIS

HANSON
Hanson Professional Services Inc.
ELECTRICAL ENGINEER
Submitted by: Kevin N. Lightfoot ENG'R
Date Submitted AUGUST 8, 2011
Lics. Exp. Date NOVEMBER 30, 2011

HANSON
Hanson Professional Services Inc.
CIVIL ENGINEER
Submitted by: Charles A. Hagloch
Date Submitted AUGUST 8, 2011
Lics. Exp. Date NOVEMBER 30, 2011

CITY OF MT. CARMEL
Approved William O'Malley
Title MAYOR
Date AUGUST 10, 2011

BY	REVISION	DATE

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HSI Project No. 11A0009D
Filename REV - R-001CVR.DWG
Scale NO SCALE
Date 5-27-2011

LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

HANSON
Hansen Professional Services Inc.
1525 South Sixth Street
Springfield, Illinois 62703-2886
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

COVER SHEET

1
1 of 33 sheets

AUG 08, 2011 11:41 AM HAGLOO0352
E:\AIRPORTS\MTCARMEL\11A0009D\CADD\AIRPORT\SHEET\NEW SHEETS\REV - R-001CVR.DWG - COVER

SUMMARY OF QUANTITIES – BASE BID

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AR108654	3/C #4 600V UG CABLE IN UD	L.F.	4,650	–
AR108656	3/C #6 600V UG CABLE IN UD	L.F.	6,950	–
AR108658	3/C #8 600V UG CABLE IN UD	L.F.	5,650	–
AR109200	INSTALL ELECTRICAL EQUIPMENT	L.S.	1	–
AR110014	4" DIRECTIONAL BORE	L.F.	640	–
AR125610	REILS	PAIR	3	–
AR125630	PLASI	EACH	3	–
AR125907	REMOVE REILS	PAIR	2	–
AR125910	REMOVE PLASI	EACH	2	–
AR150510	ENGINEER'S FIELD OFFICE	L.S.	1	–
AR150520	MOBILIZATION	L.S.	1	–
AR800591	UPGRADE AIRPORT ROTATING BEACON	L.S.	1	–

SUMMARY OF QUANTITIES – ADDITIVE ALTERNATE NO. 1

ITEM NO.	DESCRIPTION	UNIT	TOTAL QUANTITIES	AS BUILT QUANTITIES
AS107712	L-807 WIND CONE – 12' LIGHTED	EACH	1	–
AS108656	3/C #6 600V UG CABLE IN UD	L.F.	770	–
AS110014	4" DIRECTIONAL BORE	L.F.	60	–
AS125565	SPLICE CAN	EACH	1	–

INDEX TO SHEETS

DATE	REVISION	BY
8/16/11	Corrected Item AS125565	KNL

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG-4101 A.I.P. PROJ.: 3-17-0073-B17

HEI Project No. 11A00009D
Filename R-002FLP.DWG
Scale NONE
Date 5-27-2011

LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

HANSON
Hanson Professional Services Inc.
1525 South Sixth Street
Springfield, Illinois 62703-2886
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

SUMMARY OF QUANTITIES AND INDEX TO SHEETS

AUG 16, 2011 1:38 PM HAGL000382
I:\AIRPORTS\MTCARMEL\11A0009D\CADD\AIRPORT\SHEET\NEW SHEETS\R-002FLP.DWG – QTY AND INDEX

SCOPE OF WORK

THIS WORK SHALL CONSIST OF REMOVAL AND REPLACEMENT OF THE REILS AND PLASI SYSTEMS ON RUNWAY ENDS 4 AND 22, ADDITION OF OBSTRUCTION LIGHTING AND LIGHTNING PROTECTION TO THE AIRPORT ROTATING BEACON TOWER, INSTALLATION OF REILS AND A PLASI UNIT ON RUNWAY 13, AND THE ASSOCIATED CABLING, DUCT WORK AND VAULT WORK.

ADDITIVE ALTERNATE NO. 1: INSTALLATION OF A LIGHTED L-807 PRIMARY WIND CONE WITH THE ASSOCIATED CABLING AND DUCT WORK.

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 ON PAGE 49 OF THE ILLINOIS STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS, ADOPTED NOVEMBER 2, 2009.

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

THE CONTRACTOR WILL FURNISH A CELL PHONE TO THE RESIDENT ENGINEER FOR HIS EXCLUSIVE USE FOR THE DURATION OF THIS PROJECT. THE RESIDENT ENGINEER WILL USE THIS PHONE FOR PROJECT BUSINESS ONLY. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL CHARGES ASSOCIATED WITH THIS CELL PHONE.

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

AIRPORT SECURITY NOTE

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

HEIGHT OF CONSTRUCTION EQUIPMENT

THE MAXIMUM ANTICIPATED HEIGHT OF THE CONSTRUCTION EQUIPMENT WILL BE 65 FEET, WHICH IS EXPECTED TO BE A CRANE OR 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 LINE TRUCK. THE CRANE OR 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 CRANE OR BUCKET TRUCK SHALL BE MARKED WITH THE 3' SQUARE CHECKERED FLAG.

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.

UTILITY NOTE

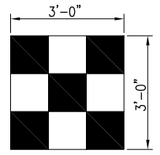
THE LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING UNDERGROUND AND/OR ABOVEGROUND UTILITIES INDICATED ON THE PLANS ARE NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY WHATEVER IN RESPECT TO THE ACCURACY, COMPLETENESS, OR SUFFICIENCY 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.

EROSION CONTROL

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

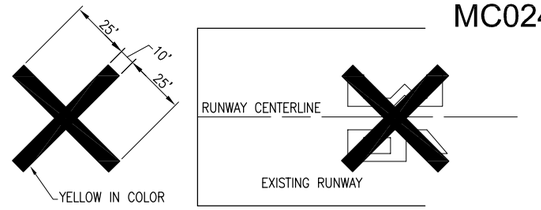
HAUL ROUTE AND VEHICLE PARKING

THE CONTRACTOR WILL USE THE EXISTING AIRPORT ENTRANCE ROAD AS HIS ACCESS TO THE CONSTRUCTION SITE. THE CONTRACTOR'S EMPLOYEES WILL PARK THEIR PERSONNEL VEHICLES IN THE AIRPORT PARKING LOT. ONLY CONTRACTOR VEHICLES WILL BE ALLOWED ONTO THE AIRFIELD. THE CONTRACTOR WILL BE ALLOWED A PROPOSED EQUIPMENT PARKING AND MATERIAL STORAGE AREA THAT WILL BE 50' X 150'. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE PROPOSED EQUIPMENT PARKING AND MATERIAL STORAGE AREA THROUGHOUT THE COURSE OF THE PROJECT. ANY AREAS DAMAGED OUTSIDE OF THIS AREA 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 EQUIPMENT PARKING AND MATERIAL STORAGE AREA AS NEEDED TO RESTORE IT TO ITS' ORIGINAL STATE. RESTORATION OF THE EQUIPMENT PARKING AND MATERIAL STORAGE AREA WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.



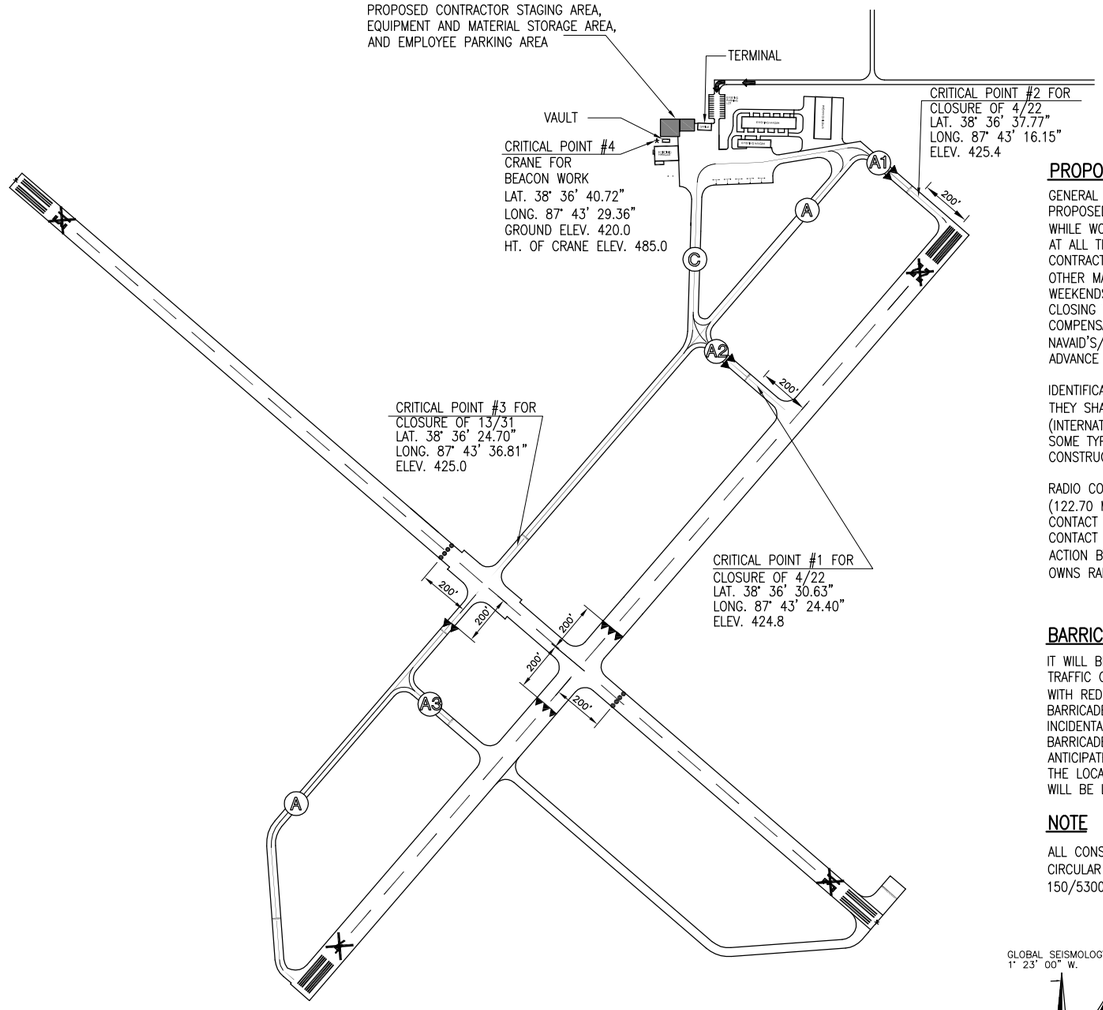
ORANGE AND WHITE

2/3 CONSTRUCTION EQUIPMENT AND TRUCK SIGNAL FLAG
N.T.S.



1/3 DETAIL OF CROSS FOR CLOSED RUNWAY
N.T.S.

NOTE:
COST OF CONSTRUCTION, PLACING, MAINTAINING AND REMOVING CROSSES WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. THE CROSSES WILL BE YELLOW IN COLOR AND SHALL BE MADE OF A SUITABLE MATERIAL AS APPROVED BY THE RESIDENT ENGINEER. THE PROPOSED CROSSES WILL BE PLACED WHEN THE RUNWAY IS CLOSED AND REMOVED WHEN THE RUNWAY IS RE-OPENED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE PLACEMENT AND REMOVAL OF THE CROSSES. NO ADDITIONAL COMPENSATION WILL BE ALLOWED.



LEGEND:
- BARRICADES RUNWAY 13-31 CLOSURE
- BARRICADES RUNWAY 4-22 CLOSURE
- ACCESS & HAUL ROUTE
- CONTRACTOR EQUIPMENT PARKING

PROPOSED SAFETY PLAN

GENERAL – THE MT CARMEL MUNICIPAL AIRPORT IS COMPRISED OF TWO RUNWAYS. THE PROPOSED CONSTRUCTION WILL REQUIRE BOTH RUNWAYS TO BE CLOSED AT DIFFERENT TIMES WHILE WORKING WITHIN 200' OF THE RUNWAY CENTERLINE. ONE RUNWAY MUST REMAIN OPEN AT ALL TIMES DURING THE PROJECT. PRIOR TO RE-OPENING A CLOSED RUNWAY, THE CONTRACTOR WILL ENSURE THERE ARE NO OPEN HOLES OR PILES OF EARTH, AGGREGATE OR OTHER MATERIAL WITHIN THE RUNWAY SAFETY AREA (75' FROM RUNWAY CENTERLINE). ON WEEKENDS, BOTH RUNWAYS WILL BE OPEN FOR USE. ALL WORK INCLUDED IN OPENING AND CLOSING THE RUNWAY WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. WHEN A RUNWAY IS CLOSED, ITS ASSOCIATED NAVAID'S/LIGHTED NAVAID'S MUST BE TURNED OFF AND NOTAM'D OUT OF SERVICE THROUGH ADVANCE COORDINATION WITH THE AIRPORT MANAGER.

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

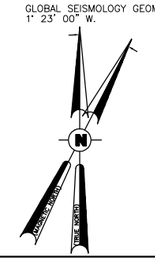
RADIO CONTROL – THE CONTRACTOR WILL BE REQUIRED TO BE IN TWO-WAY RADIO CONTACT (122.70 MHZ.) WITH THE AIRPORT UNICOM. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE MT CARMEL MUNICIPAL AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN CASE OF AN AERONAUTIC EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL. THE CONTRACTOR SHALL PROVIDE HIS OWNS RADIO(S) FOR THIS PURPOSE.

BARRICADES AND TRAFFIC CONES

IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE AND MAINTAIN BARRICADES AND TRAFFIC CONES AS DIRECTED BY THE AIRPORT DIRECTOR. THE BARRICADES WILL BE EQUIPPED WITH RED FLASHING OR STEADY BURN LIGHTS AND 20" SQUARE ORANGE FLAGS. THE BARRICADES, THEIR MAINTENANCE, PLACEMENT AND REMOVAL SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED. BARRICADES ARE DEPICTED FOR EACH POINT OF ANTICIPATED CLOSURE DUE TO THE ANTICIPATED CONSTRUCTION STAGING. THE NUMBER OF BARRICADES REQUIRED WILL VARY BY THE LOCATION OF THE WORK AND THE DEPICTION IS NOT INTENDED TO SUGGEST BARRICADES WILL BE LOCATED AT THE POINTS SHOWN THROUGHOUT THE PROJECT.

NOTE

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



DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HS Project No. 11A0009D
Filename R-003SFY.DWG
Scale 1" = 300'
Date 5-27-2011

LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

HANSON
Hanson Professional Services Inc.
1525 South Sixth Street
Springfield, Illinois 62703-2886
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED SAFETY PLAN

3
3 of 33 sheets

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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
	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. 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 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).

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

480 VAC, 1 PHASE, 2 WIRE

PHASE A	BLACK WITH BROWN TAPE
NEUTRAL	WHITE OR GRAY
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.

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HD Project No. 11A0009D
Filename E-001.DWG
Scale NO SCALE
Date 5-27-2011

LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

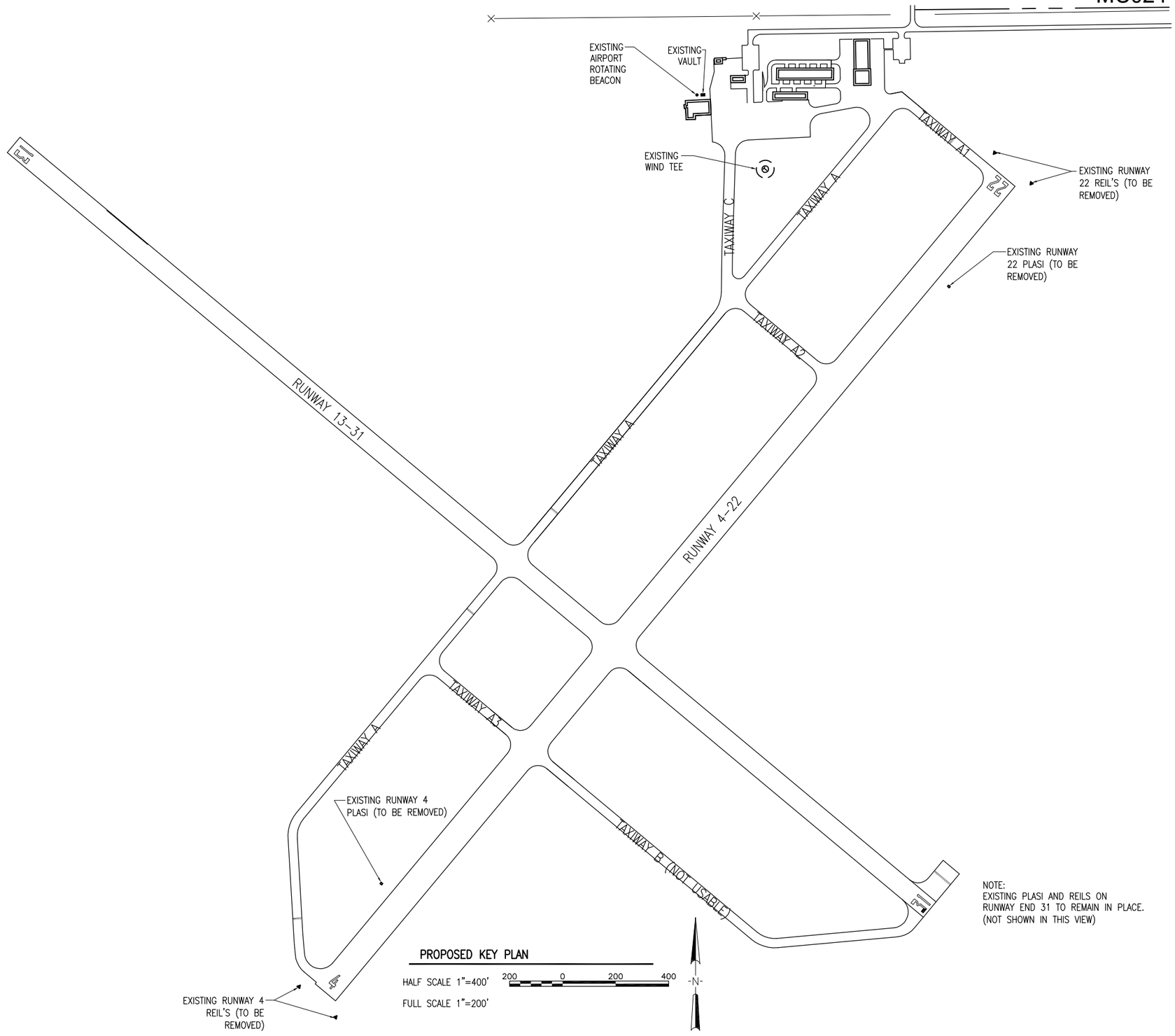
ELECTRICAL LEGENDS AND ABBREVIATIONS

PLASI REMOVAL NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING PLASI UNITS.
3. EXISTING PLASI UNITS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED AND SHALL BE TURNED OVER TO THE AIRPORT. THE CONCRETE FOUNDATIONS/BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE.
4. THE HOLE LEFT FROM THE FOUNDATION OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE EARTH MATERIAL WILL COME FROM OFF-SITE AND WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE PLASI REMOVAL. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
5. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH PLASI REMOVALS SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, AND ABANDONED IN PLACE ELSEWHERE.
6. POWER FOR THE PLASI SYSTEMS ON EACH RUNWAY SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO DISCONNECTING AND REMOVING THE RESPECTIVE PLASI SYSTEM. POWER FOR THE EXISTING PLASI SYSTEMS LOCATED ON RUNWAY 4-22 IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM RESPECTIVE POWER SOURCE FOR EACH PLASI SYSTEM.
7. REMOVAL OF PLASI WILL BE PAID FOR UNDER ITEM AR125910 "REMOVAL PLASI" PER EACH.
8. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

REIL REMOVAL NOTES

1. ALL WORK, POWER OUTAGES, AND/OR SHUT DOWN OF EXISTING SYSTEMS SHALL BE COORDINATED WITH THE AIRPORT DIRECTOR/MANAGER. ONCE SHUT DOWN, THE CIRCUITS SHALL BE LABELED AS SUCH TO PREVENT ACCIDENTAL ENERGIZING OF THE RESPECTIVE CIRCUITS. ALL PERSONNEL SHALL FOLLOW U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (OSHA) 29 CFR PART 1910 OCCUPATIONAL SAFETY & HEALTH STANDARDS FOR ELECTRICAL SAFETY AND LOCKOUT/TAGOUT PROCEDURES INCLUDING, BUT NOT LIMITED TO, 29 CFR SECTION 1910.147 THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).
2. CONTRACTOR SHALL FIELD VERIFY EXISTING SITE CONDITIONS. CONTRACTOR SHALL FIELD VERIFY RESPECTIVE CIRCUITS AND POWER SOURCES PRIOR TO REMOVING OR DISCONNECTING REILS.
3. EXISTING REILS THAT ARE DESIGNATED FOR REMOVAL SHALL BE REMOVED AND SHALL BE TURNED OVER TO THE AIRPORT. THE CONCRETE LIGHT BASES SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF THE AIRPORT SITE.
4. THE HOLE LEFT FROM THE LIGHT OR BASE REMOVAL SHALL BE FILLED IN WITH EARTH AND COMPACTED TO PREVENT FUTURE SETTLEMENT. THE EARTH MATERIAL WILL COME FROM OFF-SITE AND WILL BE CONSIDERED AS AN INCIDENTAL ITEM TO THE LIGHT REMOVAL. THE DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
5. THE EXISTING AIRFIELD LIGHTING CABLES ASSOCIATED WITH LIGHT AND/OR REIL REMOVALS SHALL ALSO BE REMOVED TO ACCOMMODATE NEW WORK, AND ABANDONED IN PLACE ELSEWHERE.
6. POWER FOR THE REIL SYSTEM ON EACH RUNWAY END SHALL BE DISCONNECTED AT THE RESPECTIVE POWER SOURCE PRIOR TO DISCONNECTING AND REMOVING THE RESPECTIVE REIL SYSTEM. POWER FOR THE EXISTING REIL SYSTEMS LOCATED ON RUNWAY 4-22 IS UNDERSTOOD TO BE POWERED FROM THE AIRPORT ELECTRICAL VAULT. CONTRACTOR SHALL FIELD VERIFY TO CONFIRM RESPECTIVE POWER SOURCE FOR EACH REIL SYSTEM.
7. REMOVAL OF REILS WILL BE PAID FOR UNDER ITEM AR125907 "REMOVAL REILS" PER PAIR.
8. NO CONNECTION TO AN ACTIVE LIGHTING, NAVAID, OR OTHER CIRCUIT SHALL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.



NOTE:
EXISTING PLASI AND REILS ON RUNWAY END 31 TO REMAIN IN PLACE. (NOT SHOWN IN THIS VIEW)

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MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HEI Project No. 11A00009D
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REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

EXISTING ELECTRICAL REMOVAL PLAN

5
5 of 33 sheets

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I:\AIRPORTS\MTCARMEL\11A00009D\CADD\AIRPORT\SHEET\NEW SHEETS\R-141ELE.DWG - PROP KEY PLAN

DUCT NOTES

1. THE CONTRACTOR SHALL INSTALL THE PROPOSED DUCTS AT THE LOCATIONS SHOWN ON THE PROPOSED LIGHTING PLAN AND IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS.

2. THE CONTRACTOR SHALL REPAIR THE DISTURBED AREAS TO THEIR ORIGINAL STATE. SEEDING WILL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

3. THE PROPOSED DUCTS INSTALLED BY DIRECTIONAL BORING WILL BE PAID FOR UNDER ITEM:
   AR110014 "4" DIRECTIONAL BORE" PER L.F.

AIRFIELD LIGHTING AND NAVAID NOTES

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

2. 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. IN AREAS WHERE THERE IS A CONGESTION OF CABLES OR WHERE THE PROPOSED CABLE CROSSES AN EXISTING CABLE, THE CONTRACTOR IS REQUIRED TO HAND DIG THE TRENCH NECESSARY FOR THE PROPOSED CABLE. AT OTHER LOCATIONS, THE PROPOSED CABLE MAY BE TRENCHED OR PLOWED INTO PLACE. HAND DIGGING, TRENCHING AND/OR PLOWING WILL BE CONSIDERED INCIDENTAL TO THE PROPOSED CABLES AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

4. THE CONTRACTOR SHALL SECURE, IDENTIFY AND PLACE ALL TEMPORARY EXPOSED WIRING IN CONDUIT, DUCT OR UNIT DUCT TO PREVENT ELECTROCUTION AND FIRE IGNITION SOURCES AS PER THE REQUIREMENTS OF FAA AC 150/5370-2E, PART 3-6, C. ALL LABOR, MATERIALS, AND TIME NECESSARY TO COMPLY WITH THIS REQUIREMENT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

5. EXISTING AIRFIELD LIGHTING CABLES IN AREAS OF NEW WORK SHALL BE DISCONNECTED & REMOVED WHERE IN CONFLICT WITH NEW CONSTRUCTION. IN OTHER AREAS CABLES MAY BE ABANDONED IN PLACE.

6. THE CONTRACTOR IS REQUIRED TO RESTORE DISTURBED AREAS AND FILL IN ALL HOLES AND DEPRESSIONS RESULTING FROM THE AIRFIELD LIGHTING WORK, WITH EARTH MATERIAL. THE AREAS SHALL BE COMPACTED TO PREVENT FUTURE SETTLEMENT AND FERTILIZED, SEEDED, AND MULCHED IN ACCORDANCE WITH ITEMS 901 AND 908 RESPECTIVELY.

7. CABLES AND/OR CABLE IN UNIT DUCT SHALL BE BURIED 42" MINIMUM BELOW GRADE WHERE LOCATED IN AREAS SUBJECT TO FARMING.

8. NO CONNECTION TO AN ACTIVE LIGHTING CIRCUIT WILL BE BROKEN UNTIL THE CIRCUIT HAS BEEN TURNED OFF IN ACCORDANCE WITH NOTE 1.

RUNWAY 4 REIL LOCATION NOTE

1. THE REILS ON RUNWAY 4 SHALL BE LOCATED 40 FEET DOWNWIND OF THE RUNWAY THRESHOLD & 75 FEET FROM THE RUNWAY EDGE TO COMPLY WITH FAA AC 150/5340-30E, FAA ORDER JO 6850.2B, AND ACCOMMODATE THE ADJACENT TAXIWAY AND THE RUNWAY 4 PLASI (PVASI) UNIT.

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.

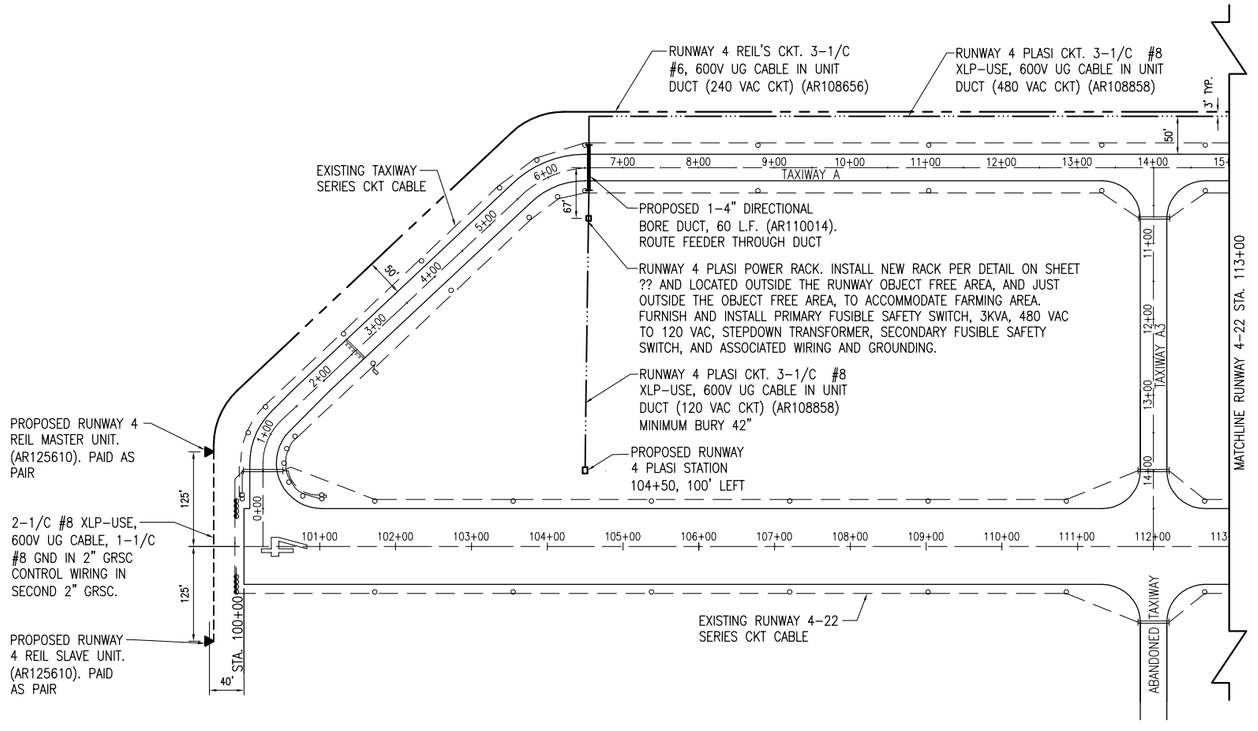
PROPOSED KEY PLAN

HALF SCALE 1"= 200' 100 0 100 200

FULL SCALE 1"= 100'

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING BASE MOUNTED LIGHT
- EXISTING STAKE MOUNTED LIGHT
- EXISTING THRESHOLD LIGHT
- EXISTING ELECTRICAL CABLE
- PROPOSED 3-1/C #4 AWG, XLPE-USE, 600 VOLT, UG CABLE IN UNIT DUCT
- PROPOSED 3-1/C #6 AWG, XLPE-USE, 600 VOLT, UG CABLE IN UNIT DUCT
- PROPOSED 3-1/C #8 AWG, XLPE-USE, 600 VOLT, UG CABLE IN UNIT DUCT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING ELECTRICAL VAULT
- EXISTING ELECTRICAL HANDHOLE
- R EXISTING REIL TO BE REMOVED
- PROPOSED REIL



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Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED RUNWAY END 4 PLASI AND REIL LOCATION

6

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MC024

MATCHLINE RUNWAY 13–31 STA. 12+00

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING BASE MOUNTED LIGHT
- EXISTING STAKE MOUNTED LIGHT
- EXISTING THRESHOLD LIGHT
- EXISTING ELECTRICAL CABLE
- PROPOSED 3–1/C #4 AWG, XLPE–USE, 600 VOLT, UG CABLE IN UNIT DUCT
- PROPOSED 3–1/C #6 AWG, XLPE–USE, 600 VOLT, UG CABLE IN UNIT DUCT
- PROPOSED 3–1/C #8 AWG, XLPE–USE, 600 VOLT, UG CABLE IN UNIT DUCT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING ELECTRICAL VAULT
- EXISTING ELECTRICAL HANDHOLE
- R EXISTING REIL TO BE REMOVED
- PROPOSED REIL
- EXISTING WIND TEE
- PROPOSED L–807 WIND CONE

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

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PROPOSED KEY PLAN

HALF SCALE 1"= 200' 100 0 100 200

FULL SCALE 1"= 100'

EXISTING RUNWAY 13–31 SERIES CKT CABLE

RUNWAY 13 REIL'S CKT. 3–1/C #6, 600V UG CABLE IN UNIT DUCT (240 VAC CKT) (AR108656) MINIMUM BURY 42"

RUNWAY 13 PLASI CKT. 3–1/C #4 XLP–USE, 600V UG CABLE IN UNIT DUCT (480 VAC CKT) (AR108858) MINIMUM BURY 42"

EXISTING ELECTRICAL MANHOLE

EXISTING CONDUIT TO REMAIN. REMOVE EXISTING LOW VOLTAGE CABLES SCHEDULED FOR REPLACEMENT FROM VAULT TO HANDHOLE. REMOVE EXISTING CABLES WHERE IN CONFLICT WITH NEW WORK & ABANDON ELSEWHERE.

EXISTING AIRPORT ROTATING BEACON WITH PROPOSED ADDITIONS OF OBSTRUCTION LIGHTING & LIGHTNING PROTECTION.

EXISTING ELECTRICAL VAULT. SEE "VAULT PLAN AND ELEVATIONS SHEETS" FOR PROPOSED WORK WITHIN THE VAULT

RUNWAY 22 REIL'S CKT. 3–1/C #8, 600V UG CABLE IN UNIT DUCT (240 VAC CKT) (AR108658)

RUNWAY 22 PLASI CKT. 3–1/C #4 XLP–USE, 600V UG CABLE IN UNIT DUCT (120 VAC CKT) (AR108654)

4#8 THWN OR XLP–USE, 600V, UG CABLE IN DUCT & CONDUIT TO AIRPORT ROTATING BEACON.

WIND CONE & WIND TEE CIRCUIT. 3–1/C #6, XLP–USE 600V UG CABLE IN UNIT DUCT (120 VAC CKT) (AR108656)

2–4" DIRECTIONAL BORE DUCT 120 L.F. (AR110014). 1–4" DIRECTIONAL BORE DUCT 60 L.F. FOR WIND CONE & WIND TEE CIRCUIT (AR110014). ROUTE FEEDERS THROUGH DUCT

SPLICE CAN (AS125565)

EXISTING WIND TEE

PROPOSED L–807 LIGHTED WIND CONE (AS107712). RUNWAY 4–22, STATION 134+44, 655' LEFT

2–4" DIRECTIONAL BORE DUCT 220 L.F. (AR110014). ROUTE FEEDERS THROUGH DUCT

EXISTING RUNWAY 13–31 LIGHTING SERIES CKT HOMERUN

RUNWAY 4 REIL'S CKT. 3–1/C #6, 600V UG CABLE IN UNIT DUCT (240 VAC CKT) (AR108656)

RUNWAY 4 PLASI CKT. 3–1/C #8 XLP–USE, 600V UG CABLE IN UNIT DUCT (480 VAC CKT) (AR108858)

3' TYP.

50'

TAXIWAY A

TAXIWAY C

TAXIWAY E

TAXIWAY A1

TAXIWAY A2

EXISTING TAXIWAY SERIES CKT CABLE

RUNWAY 13–31 (4500' x 75')

RUNWAY 4–22 (4000' X 100')

RUNWAY 22 REIL LOCATION NOTE

1. THE REILS ON RUNWAY 22 SHALL BE LOCATED 40 FEET DOWNWIND OF THE RUNWAY THRESHOLD & 75 FEET FROM THE RUNWAY EDGE TO COMPLY WITH FAA AC 150/5340–30E, FAA ORDER JO 6850.2B, AND ACCOMMODATE THE ADJACENT TAXIWAY AND THE RUNWAY 22 PLASI (PVASI) UNIT.

EXISTING RUNWAY 4–22 LIGHTING SERIES CKT HOMERUN

EXISTING SEGMENTED CIRCLE TO REMAIN. CONTRACTOR SHALL PROTECT DURING CONSTRUCTION

2–4" DIRECTIONAL BORE DUCT 120 L.F. (AR110014). ROUTE FEEDERS THROUGH DUCT

3–1/C #6, XLP–USE 600V UG CABLE IN UNIT DUCT (240 VAC CKT) (AS108656)

RUNWAY 22 REIL'S CKT. 3–1/C #8, 600V UG CABLE IN UNIT DUCT (240 VAC CKT) (AR108658)

3–1/C #6, XLP–USE 600V UG CABLE IN UNIT DUCT (120 VAC CKT) (AS108656)

RUNWAY 22 PLASI CKT. 3–1/C #4 XLP–USE, 600V UG CABLE IN UNIT DUCT (120 VAC CKT) (AR108654)

EXISTING TAXIWAY LIGHTING SERIES CKT HOMERUN

2–4" DIRECTIONAL BORE DUCT 120 L.F. (AR110014). ROUTE FEEDERS THROUGH DUCT

PROPOSED RUNWAY 22 REIL MASTER UNIT. (AR125610). PAID AS PAIR

2–1/C #8 XLP–USE, 600V UG CABLE, 1–1/C #8 GND IN 2" GRSC. CONTROL WIRING IN SECOND 2" GRSC.

PROPOSED RUNWAY 22 REIL SLAVE UNIT. (AR125610). PAID AS PAIR

EXISTING RUNWAY 4–22 SERIES CKT CABLE

PROPOSED RUNWAY 22 PLASI, STATION 135+50, 100' RIGHT

STA. 140+00

MATCHLINE RUNWAY 4–22 STA. 113+00

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REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

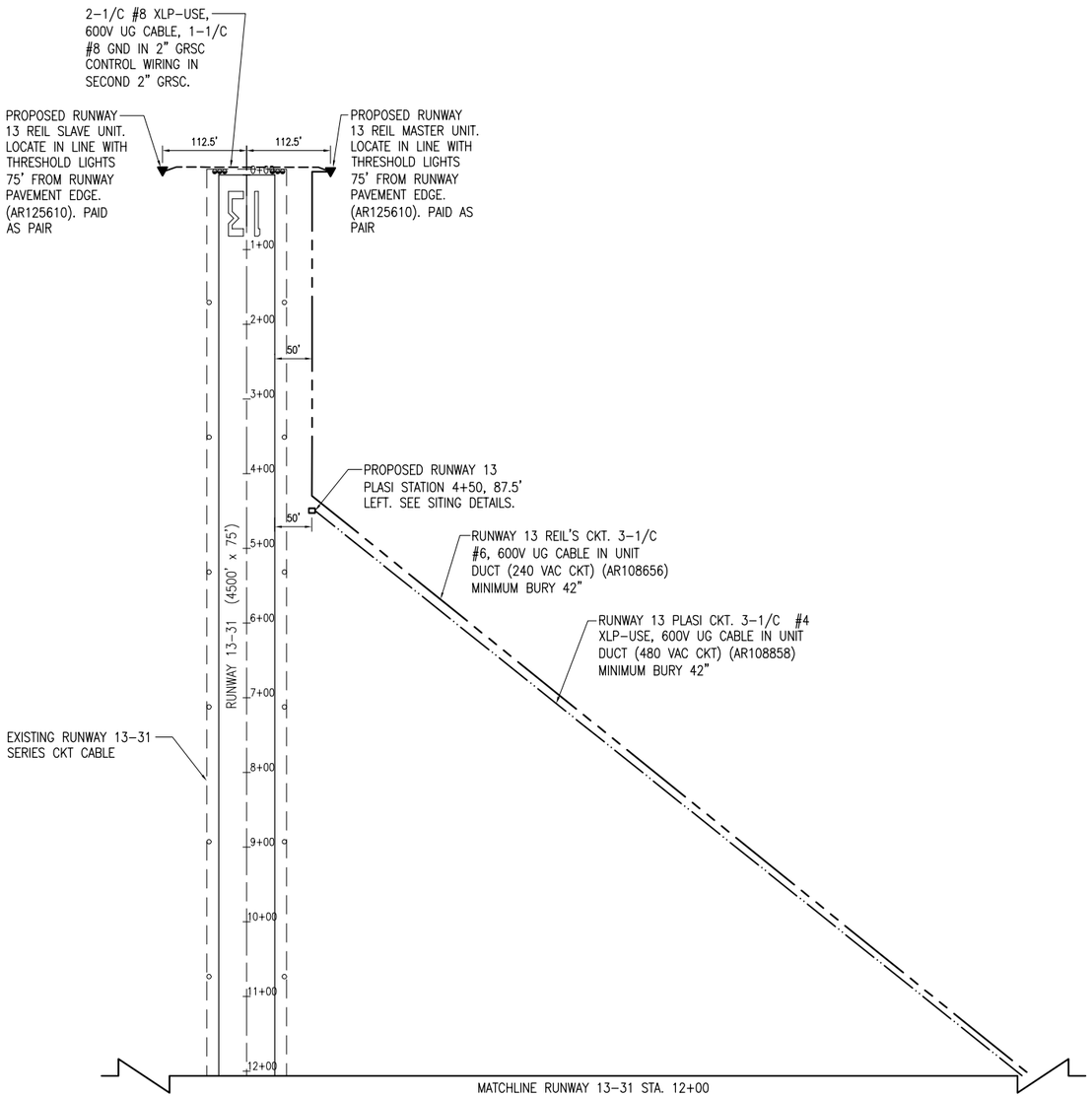
PROPOSED RUNWAY END 22 PLASI AND REIL LOCATION

7

7 of 33 sheets

RUNWAY 13 REIL LOCATION NOTE

1. THE REILS ON RUNWAY 13 SHALL BE LOCATED IN LINE WITH THE THRESHOLD LIGHTS & 75 FEET FROM THE RUNWAY EDGE TO COMPLY WITH FAA AC 150/5340-30E, FAA ORDER JO 6850.2B, AND TO ACCOMMODATE THE RUNWAY 13 PLASI (PVASI) UNIT.



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.

LEGEND

- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING BASE MOUNTED LIGHT
- EXISTING STAKE MOUNTED LIGHT
- EXISTING THRESHOLD LIGHT
- EXISTING ELECTRICAL CABLE
- PROPOSED 3-1/C #4 AWG, XLPE-USE, 600 VOLT, UG CABLE IN UNIT DUCT
- PROPOSED 3-1/C #6 AWG, XLPE-USE, 600 VOLT, UG CABLE IN UNIT DUCT
- PROPOSED 3-1/C #8 AWG, XLPE-USE, 600 VOLT, UG CABLE IN UNIT DUCT
- EXISTING ELECTRICAL DUCT
- PROPOSED ELECTRICAL DUCT
- EXISTING AIRPORT ROTATING BEACON
- EXISTING ELECTRICAL VAULT
- EXISTING ELECTRICAL HANDHOLE
- R EXISTING REIL TO BE REMOVED
- PROPOSED REIL

PROPOSED KEY PLAN

HALF SCALE 1"= 200'

FULL SCALE 1"= 100'

100 0 100 200

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

A.I.P. PROJ.: 3-17-0073-B17

IL. PROJ.: AJG-4101

HEI Project No. 11A0009D
Filename R-142ELE.DWG
Scale 1"= 100'
Date 5-27-2011

LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	KNL/CAH	8-09-2011

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Springfield, Illinois 62703-2886
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED RUNWAY END 13 PLASI AND REIL LOCATION

8

8 of 33 sheets

AUG 10, 2011 9:52 AM HAGLOOO382
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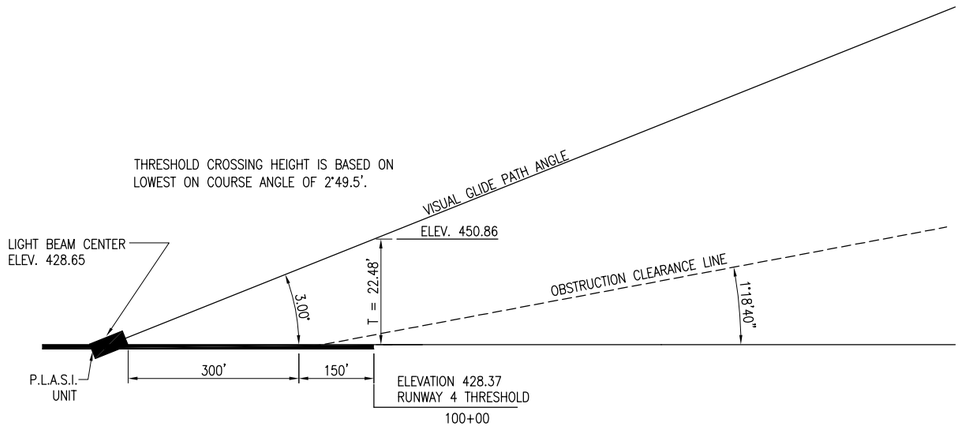
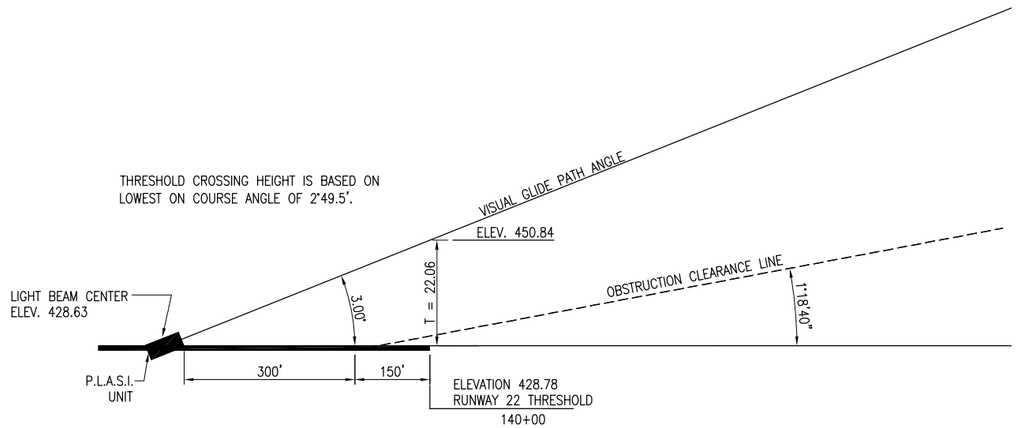


RUNWAY 4 P.L.A.S.I. AIMING DIAGRAM

NOT TO SCALE



RUNWAY 22 P.L.A.S.I. AIMING DIAGRAM

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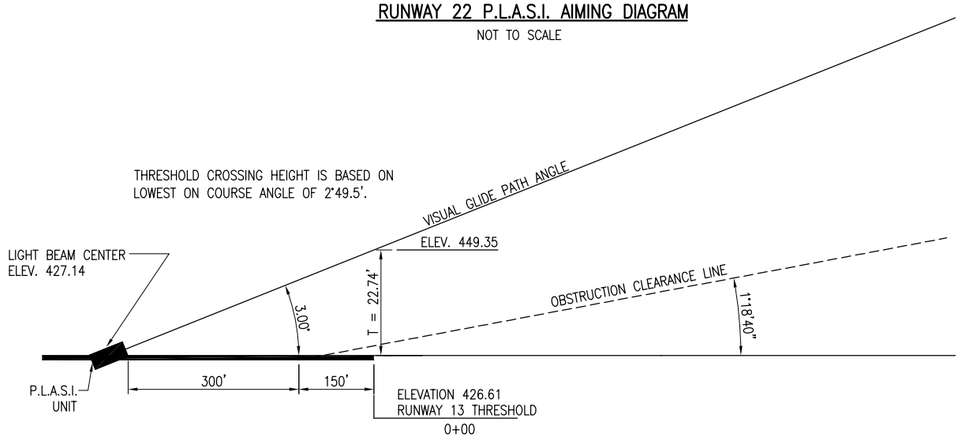

RUNWAY 13 P.L.A.S.I. AIMING DIAGRAM

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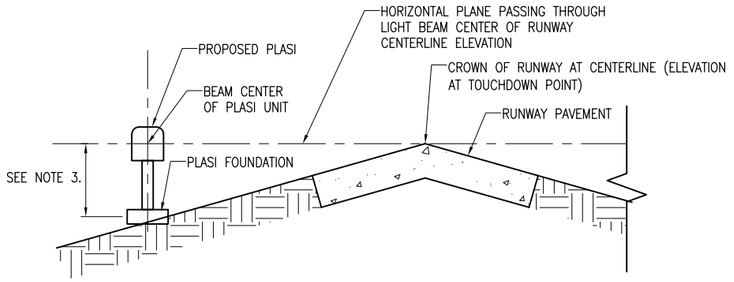
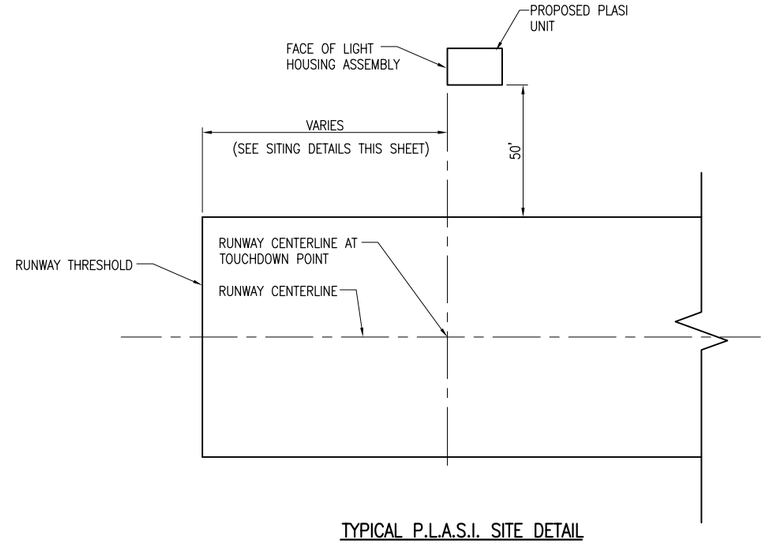


NOTES:

1. REFER TO PLASI AIMING DIAGRAM FOR LOCATION AND ORIENTATION INFORMATION FOR PROPOSED PLASI UNIT.
2. AFTER INSTALLATION OF PLASI, CONTRACTOR SHALL PROVIDE THE HEIGHT OF THE PLASI LIGHT HOUSING ASSEMBLY (BETWEEN CONCRETE PAD AND BOTTOM OF LHA) FOR AS-BUILT RECORDS.
3. REFER TO PLASI SITING TABLE FOR MOUNTING HEIGHTS OF EACH RESPECTIVE PLASI UNIT. MOUNTING HEIGHT HEIGHT SHALL BE MEASURED FROM THE CONCRETE PAD TO BEAM CENTERLINE OF PLASI UNIT. PLASI MOUNTING HEIGHT SHALL MATCH CENTER OF PROPOSED PLASI LIGHT HOUSING ASSEMBLY WITH RUNWAY & BEAM ELEVATION UNLESS NOTED OTHERWISE. CONTRACTOR SHALL MEASURE AND RECORD PLASI HEIGHT FOR RECORD DRAWINGS IN PRESENCE OF RESIDENT ENGINEER.

TYPICAL P.L.A.S.I. ELEVATION DETAIL

NOT TO SCALE



TYPICAL P.L.A.S.I. SITE DETAIL

NOT TO SCALE

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

A.I.P. PROJ.: 3-17-0073-B17

IL. PROJ.: AJG-4101

HEI Project No. 11A0009D
Filename E-508.DWG
Scale NONE
Date 5-27-2011

LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	C.A.H./K.N.L.	6-3-2011

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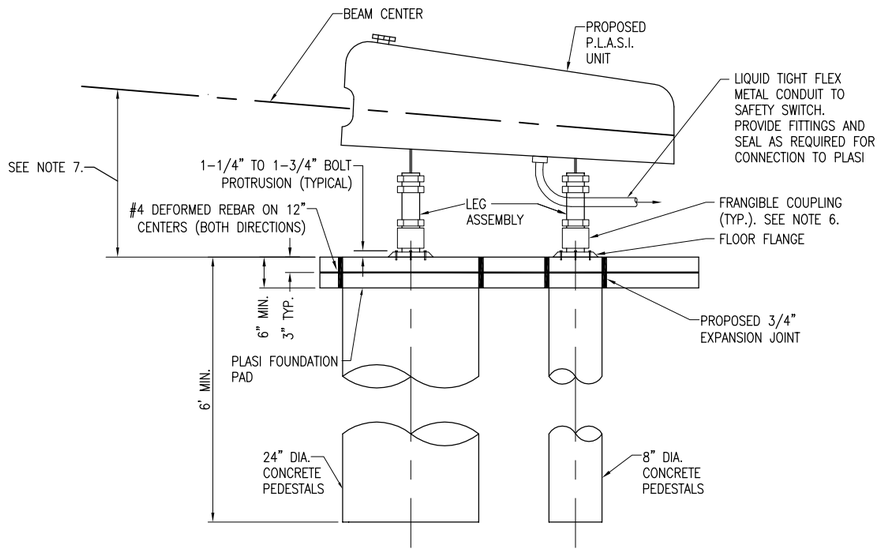
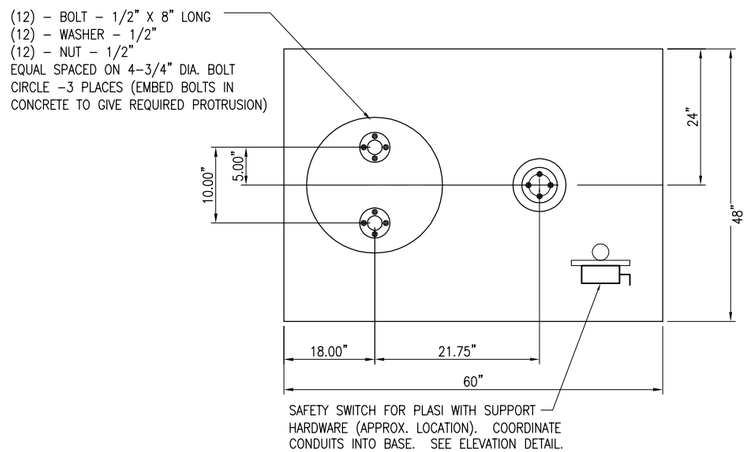
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED PLASI SITING DETAILS

9



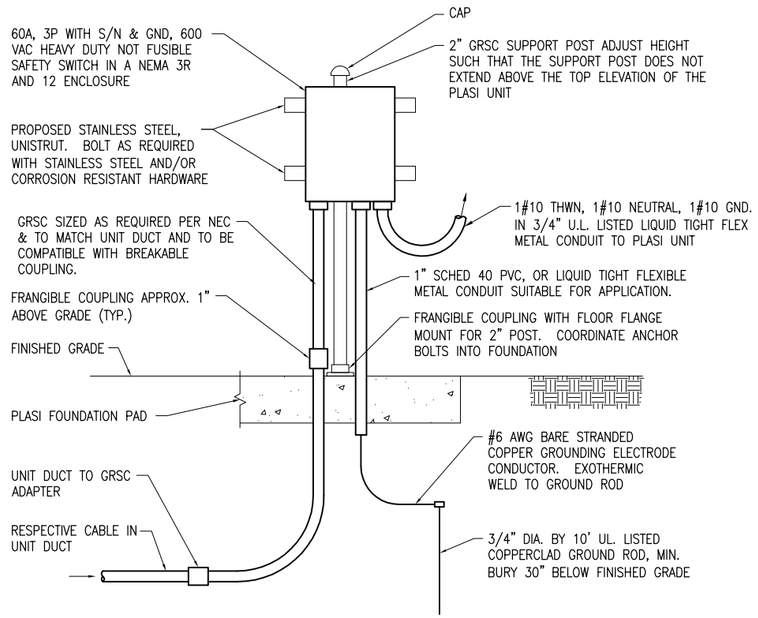
PLASI ELEVATION
"NOT TO SCALE"



PLASI FOUNDATION PAD PLAN
"NOT TO SCALE"

PLASI NOTES

1. FOR PROPOSED PLASI LOCATIONS, SEE PROPOSED PLASI SITING DETAILS SHEET.
2. THE PROPOSED PLASI CONCRETE BASE WILL BE CONSTRUCTED AS SHOWN IN THE DETAIL ON THIS SHEET. CONFIRM DIMENSIONS OF PLASI MOUNTING HARDWARE WITH PLASI MANUFACTURER.
3. THE CONCRETE FOR THE PROPOSED PLASI. BASE IN ACCORDANCE WITH ITEM 610.
4. THE POWER CABLES SHALL BE ROUTED AND PLACED A MINIMUM OF 18" BELOW THE FINISHED GRADE AND LOCATED AS SHOWN ON PROPOSED ELECTRICAL PLAN. PLASI CABLES ROUTED THROUGH AREAS SUBJECT TO FARMING SHALL BE BURIED 42" MINIMUM BELOW GRADE.
5. INSTALLATION OF THE PLASI UNIT, PLASI BASE, AND ALL INCIDENTALS WILL BE PAID FOR UNDER ITEM: AR125630.
6. FRANGIBLE COUPLINGS SHALL ADHERE TO REQUIREMENTS AS DESCRIBED IN FAA AC 5220-23, LATEST EDITION.
7. BEAM CENTER ELEVATION SEE PROPOSED PLASI SITING DETAILS SHEET FOR ADDITIONAL DETAILS
8. PRIOR TO FINAL ACCEPTANCE AND ACTIVATION, THE COMPLETE PLASI UNIT WILL BE GROUND CHECKED AND FLIGHT CHECKED BY FEDERAL AVIATION ADMINISTRATION AND/OR ILLINOIS DIVISION OF AERONAUTICS, AND IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO HAVE A REPRESENTATIVE PRESENT TO MAKE ANY NECESSARY ADJUSTMENTS IN THE AIMING OF THE PLASI UNITS.



NOTE: SEE ELECTRICAL ONE LINE DIAGRAM FOR PLASI FOR ADDITIONAL INFORMATION ON EQUIPMENT AND WIRING.

PLASI SAFETY SWITCH ELEVATION
"NOT TO SCALE"

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL PROJ.: AJG-4101

LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

HE Project No. 11A0009D
Filename E-507.DWG
Scale NONE
Date 5-27-2011

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Springfield, Illinois 62703-2886
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED PLASI INSTALLATION DETAILS

10
10 of 33 sheets

AUG 05, 2011 4:00 PM HAGL000382
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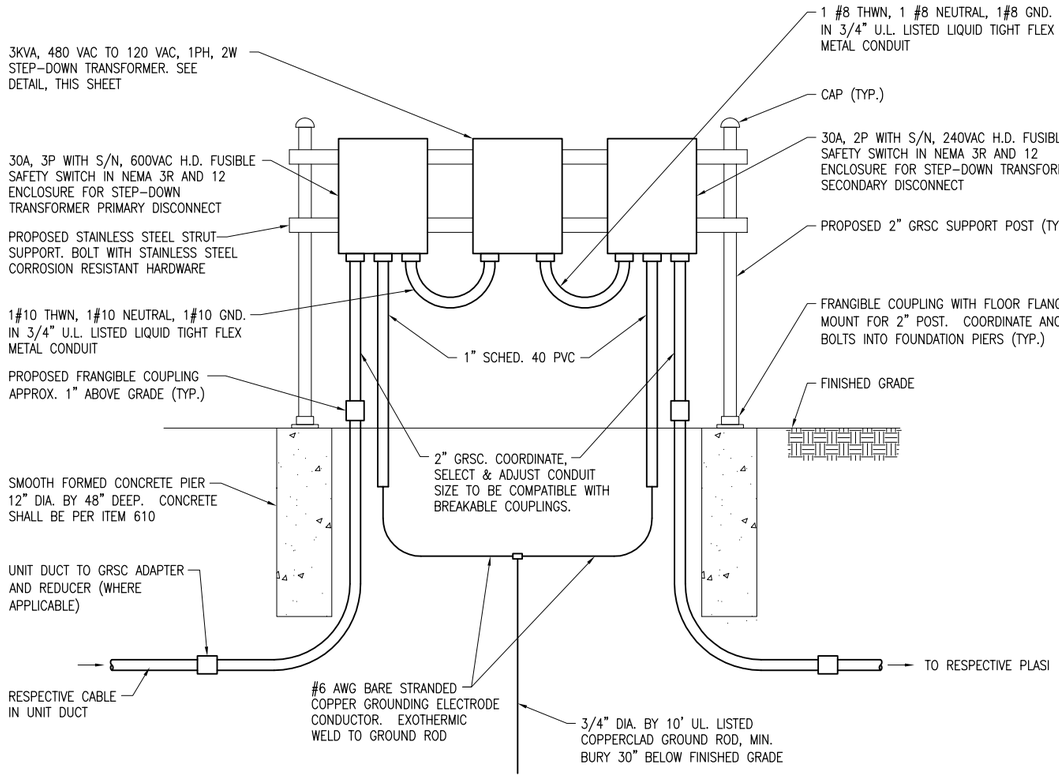
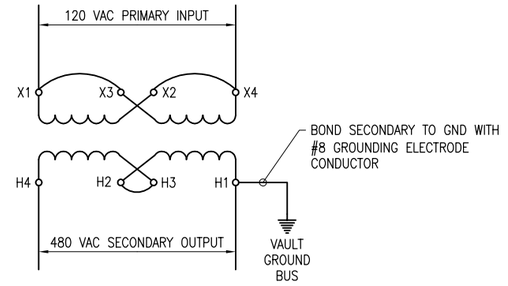


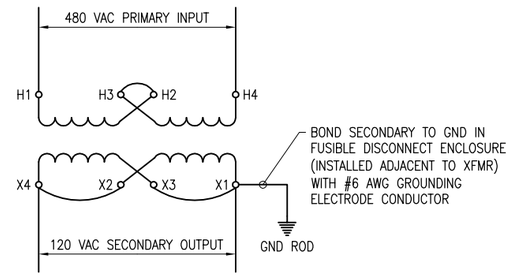
TYPICAL NAVAIDS STEP–DOWN TRANSFORMER ELEVATION

NOT TO SCALE



120 VAC TO 480 VAC STEP UP TRANSFORMER CONNECTION DIAGRAM

NOT SCALE



480 VAC TO 120 VAC STEP DOWN TRANSFORMER CONNECTION DIAGRAM

NOT SCALE

NOTES:

1. FOR LOCATIONS OF PROPOSED EQUIPMENT, SEE ELECTRICAL SITE PLANS.
2. FRANGIBLE COUPLINGS AND CONNECTIONS SHALL ADHERE TO FAA AC 150/5220–23, LATEST EDITION
3. SUPPORT STRUCTURE FOR STEP–DOWN TRANSFORMER SHALL BE LOCATED OUTSIDE THE OBJECT FREE AREA FOR THE RESPECTIVE RUNWAY AND ASSOCIATED TAXIWAY.

NOTES:

1. WIRING DIAGRAMS SHOWN ARE TYPICAL FOR MULTIPLE 120 x 240 VAC LOW VOLTAGE CONNECTION, 480 VAC HIGH VOLTAGE CONNECTION TRANSFORMERS FROM VARIOUS MANUFACTURERS. WIRING MAY VARY BETWEEN MANUFACTURERS. CONFIRM WIRING WITH RESPECTIVE TRANSFORMER MANUFACTURER.
2. TRANSFORMERS SHALL BE MANUFACTURED IN THE UNITED STATES TO COMPLY WITH THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT AND THE "BUY AMERICAN ACT"

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG-4101 A.I.P. PROJ.: 3-17-0073-B17

HEI Project No. 11A0009D
Filename E-509.DWG
Scale AS NOTED
Date 5-27-2011

LAYOUT	J.F.C./K.N.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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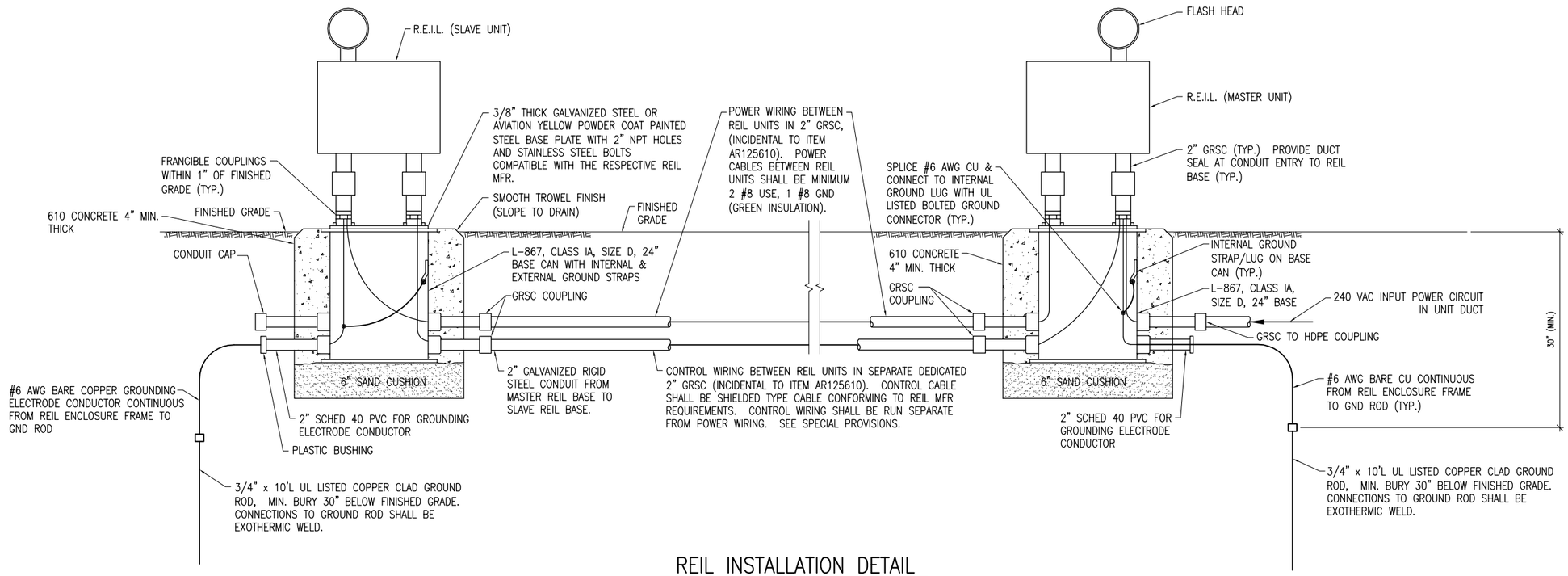
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

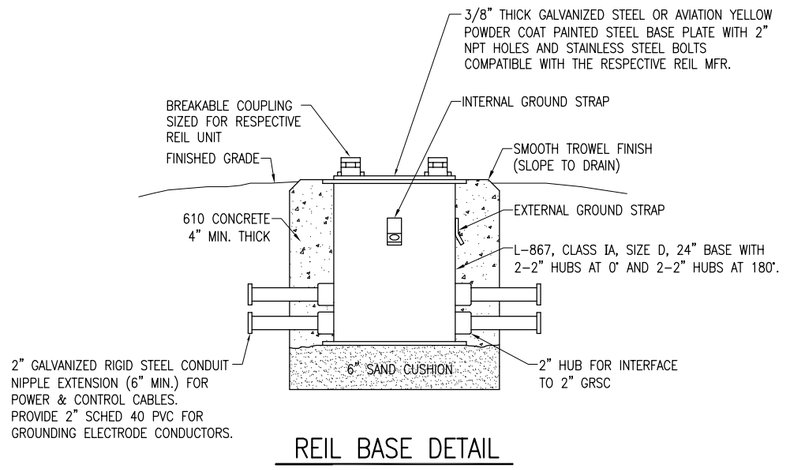
PLASI STEP-UP & STEP-DOWN TRANSFORMER DETAILS

11
11 of 33 sheets



REIL INSTALLATION DETAIL

NOT TO SCALE



REIL BASE DETAIL

NOT TO SCALE

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 150/5345-42F.

REIL INSTALLATION NOTES

1. REILS SHALL BE FAA APPROVED TYPE L-849V, STYLE A (UNIDIRECTIONAL, HIGH INTENSITY, ONE BRIGHTNESS STEP), 240 VAC, 60 HZ INPUT POWER. SEE SPECIAL PROVISION SPECS FOR ADDITIONAL REIL REQUIREMENTS.
2. REILS SHALL BE AIMED AT ANGLE 10 DEGREES VERTICALLY AND TOED OUT 15 DEGREES FROM THE LINE PARALLEL TO THE RUNWAY CENTERLINE.
3. REILS WILL BE PAID FOR UNDER ITEM AR125610 "REILS" PER PAIR.
4. ANY AND ALL TRENCHES AND DISTURBED AREAS WILL BE BACKFILLED AND RESTORED TO A SMOOTH GRADE AND SEEDED TO THE SATISFACTION OF THE ENGINEER. ALL TRENCH SETTLEMENT SHALL BE CORRECTED FOR A PERIOD OF ONE YEAR. RESTORATION, GRADING, SEEDING, AND MULCHING OF AREAS DISTURBED DURING THE REIL INSTALLATION AND ASSOCIATED CABLE WILL BE INCIDENTAL TO ITEM AR125610 REILS.
5. GROUNDING FOR REILS. GROUNDING FOR REILS SHALL CONFORM TO THE RESPECTIVE REIL MANUFACTURER'S INSTALLATION INSTRUCTIONS, AS DETAILED ON THE PLANS, AND AS SPECIFIED HEREIN. THE POWER CIRCUIT TO MASTER REIL UNIT, AND EACH SLAVE UNIT, SHALL INCLUDE AN EQUIPMENT GROUND WIRE OF THE SAME SIZE AND TYPE AS THE PHASE CONDUCTORS. FURNISH AND INSTALL A 3/4-INCH DIAMETER BY 10-FOOT LONG COPPER CLAD GROUND ROD AT EACH REIL UNIT. GROUND RODS SHALL BE BURIED 30" MINIMUM BELOW GRADE. BOND EACH REIL UNIT HOUSING AND THE REIL BASE CAN TO THE RESPECTIVE GROUND ROD IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WITH A #6 AWG BARE SOLID OR STRANDED (PER REIL MANUFACTURER REQUIREMENTS) COPPER GROUNDING ELECTRODE CONDUCTOR. ALL CONNECTIONS TO GROUND RODS SHALL BE EXOTHERMIC WELD AS MANUFACTURED BY CADWELD, THERMOWELD, ULTRAWELD OR APPROVED EQUAL. CONNECTIONS TO REIL UNIT FRAMES SHALL BE AS RECOMMENDED BY THE MANUFACTURER OR WITH UL LISTED GROUNDING CONNECTORS. PROVIDE MULTI TERMINAL EQUIPMENT GROUND BAR OR INDIVIDUAL GROUND LUGS TO TERMINATE EACH GROUND WIRE IN EACH REIL UNIT.
6. REFER TO PROPOSED ELECTRICAL SITE PLANS FOR SITING AND ORIENTATION OF REIL'S.
7. PRIOR TO FINAL ACCEPTANCE AND ACTIVATION, THE COMPLETE REIL INSTALLATION WILL BE GROUND CHECKED AND FLIGHT CHECKED BY FEDERAL AVIATION ADMINISTRATION AND/OR ILLINOIS DIVISION OF AERONAUTICS, AND IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO HAVE A REPRESENTATIVE PRESENT TO MAKE ANY NECESSARY ADJUSTMENTS IN THE AIMING OF THE REIL UNITS.

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HEI Project No. 11A00009D
Filename E-501.DWG
Scale AS NOTED
Date 5-27-2011

LAYOUT	J.F.C/K.N.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED REIL'S DETAILS AND NOTES

12
12 of 33 sheets

AUG 05, 2011 3:56 PM HAGLOOO382
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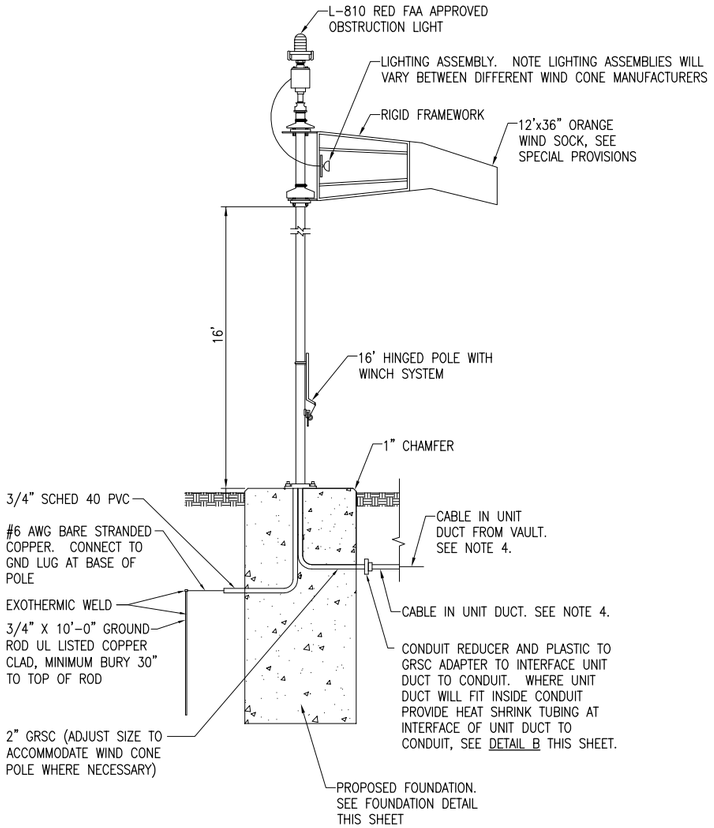
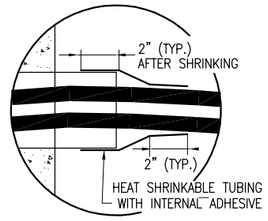


LIGHTED L-807 WIND CONE

NOT TO SCALE



DETAIL B

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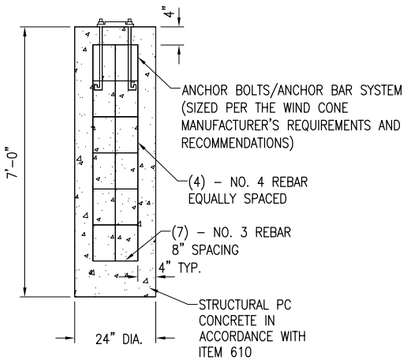

FOUNDATION DETAIL

NOT TO SCALE

ITEM AS107712, L-807 WIND CONE LIGHTED, IS UNDER ADDITIVE ALTERNATE NO. 1

NOTES

1. WIND CONE SHALL BE FAA APPROVED L-807, LIGHTED, SIZE 2 WITH ORANGE WIND SOCK, 120 VAC, & WITH L-810 RED TYPE OBSTRUCTION LIGHT, SEE SPECIAL PROVISION SPECS.
2. L-807 WIND CONE-12' LIGHTED WILL BE PAID FOR UNDER ITEM AS107712.
3. REBAR SHALL BE MANUFACTURED FROM 100% DOMESTIC STEEL. INCLUDE CERTIFICATION OF 100% DOMESTIC STEEL FOR REBAR WITH SHOP DRAWINGS SUBMITTAL.
4. REFER TO ELECTRICAL PLANS FOR CONDUIT & CABLING SIZES, TYPES, ROUTING, ETC.

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG-4101 A.I.P. PROJ.: 3-17-0073-B17

HEI Project No. 11A0009D
Filename E-502.DWG
Scale AS NOTED
Date 5-27-2011

LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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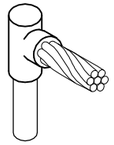
Offices Nationwide

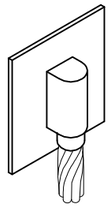
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED L-807 WIND CONE DETAILS AND NOTES

13
13 of 33 sheets



CABLE TO GROUND ROD



CABLE TO SURFACE

DETAIL NOTES

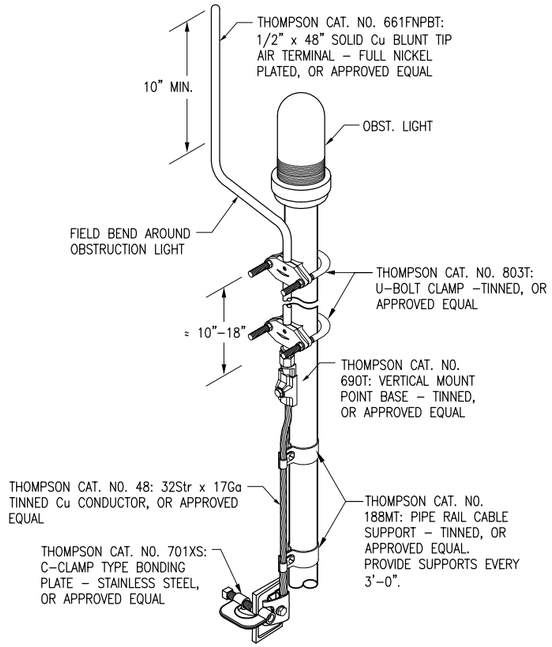
1. EXOTHERMIC WELDS SHALL BE CADWELD AS MANUFACTURED BY ERICO PRODUCTS, SOLON, OHIO, ULTRAWELD AS MANUFACTURED BY HARGER LIGHTNING PROTECTION & GROUNDING EQUIPMENT, GRAYSLAKE, IL, THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA OR APPROVED EQUAL. VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.

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. VERIFY EXOTHERMIC MOLDS ARE SUITABLE FOR USE WITH THE RESPECTIVE TYPE (SOLID OR STRANDED) & SIZE CONDUCTOR.

EXOTHERMIC WELD DETAILS

NOT TO SCALE



DETAIL A

NOT TO SCALE

NOTES

1. REFERENCES TO THOMPSON ARE THOMPSON LIGHTNING PROTECTION INC., 901 SIBLEY MEMORIAL HWY, ST. PAUL, MN 55188, PHONE: 651–455–7661, 800–777–1230, FAX: 651–455–2545.

2. VERIFY LIGHTNING PROTECTION COMPONENTS AND CATALOG NUMBERS WITH THE RESPECTIVE LIGHTNING PROTECTION EQUIPMENT MANUFACTURER.

AIRPORT ROTATING BEACON LOAD CENTER SCHEDULE

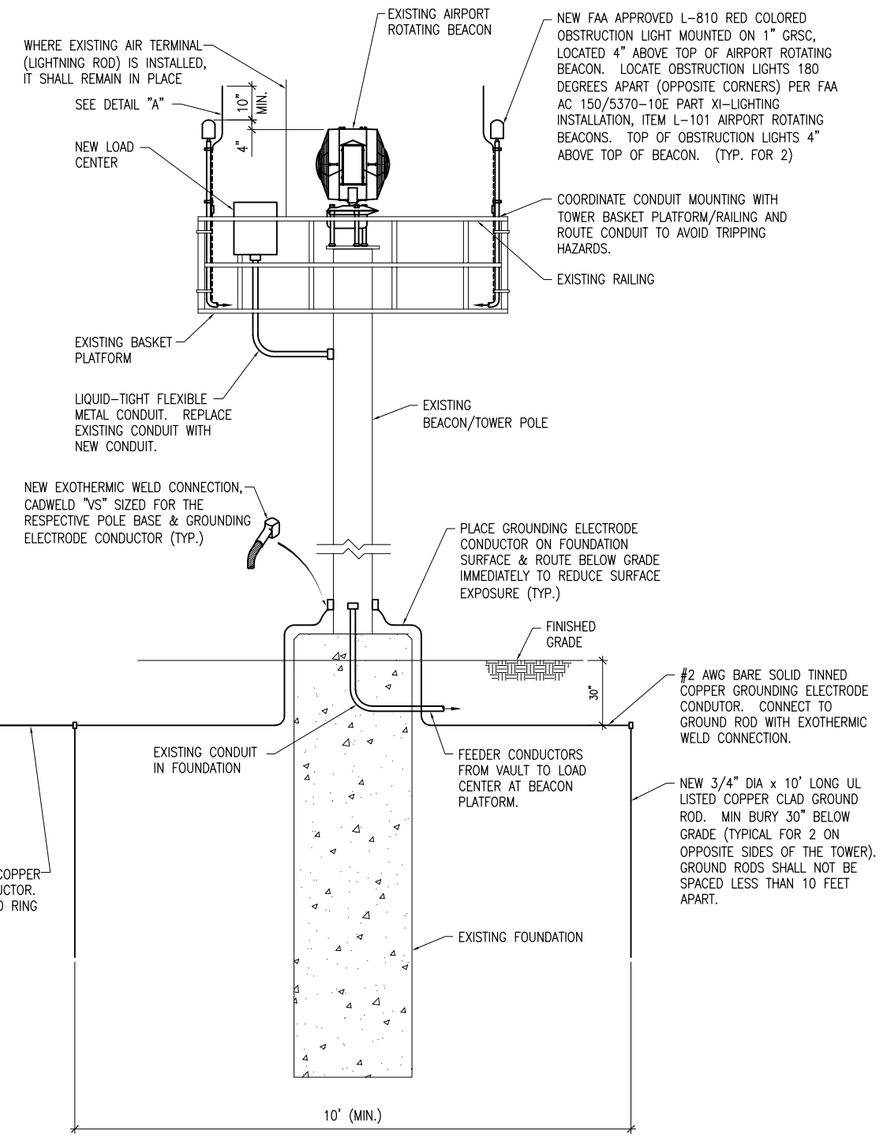
CKT #	DUTY	SIZE		SIZE	DUTY	CKT #
1	BLANK			30A 1P	SURGE PROTECTOR (PHASE A)	2
3	BLANK			30A 1P	SURGE PROTECTOR (PHASE B)	4
5	AIRPORT ROTATING BEACON	15A 1P			BLANK	6
7	OBSTRUCTION LIGHTS	15A 1P			BLANK	8
9	BLANK				BLANK	10
11	BLANK				BLANK	12

GND S/N

100 AMP, 120/240 VAC, 1 PHASE, 3 WIRE, 12 CIRCUIT LOAD CENTER WITH MAIN LUGS IN A NEMA 3R RAIN PROOF ENCLOSURE, SQUARE D CAT. NO. QO112L125GRB WITH EQUIPMENT GROUND BAR KIT OR APPROVED EQUAL.

NOTES

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



LIGHTNING PROTECTION DETAIL FOR AIRPORT ROTATING BEACON

NOT TO SCALE

BY	REVISION	DATE

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3–17–0073–B17
IL. PROJ.: AJG–4101

HEI Project No. 11A0009D
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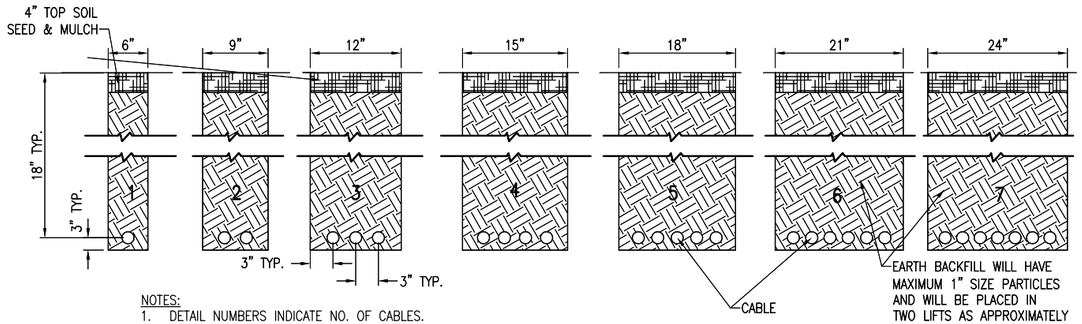
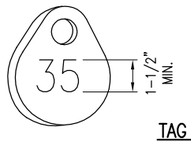
AIRPORT ROTATING BEACON UPGRADES DETAILS AND NOTES



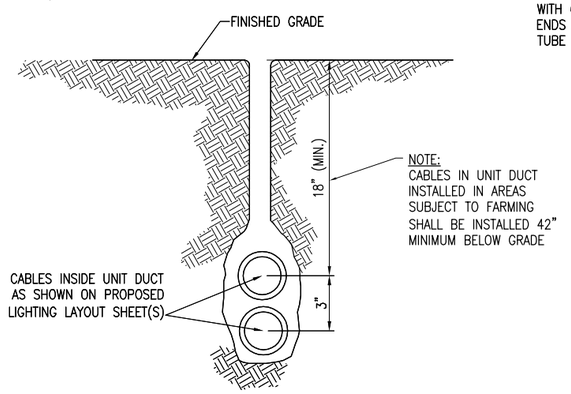
NOTES:
1. DETAIL NUMBERS INDICATE NO. OF CABLES.
2. TRENCHES WITH MORE THAN SEVEN CABLES SHALL BE INCREASED 3" IN WIDTH FOR EACH ADDITIONAL CABLE; IF SPECIFIED ON PLANS TWO PARALLEL TRENCHES MAY BE CONSTRUCTED.
3. DEPTH OF TRENCHES SHALL BE AS SHOWN ABOVE UNLESS OTHERWISE SPECIFIED ON THE PLANS. CABLES, DUCTS, & CABLES IN UNIT DUCT INSTALLED IN AREAS SUBJECT TO FARMING SHALL BE INSTALLED 42" MINIMUM BELOW GRADE
4. ALL DISTURBED SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. COST IS INCIDENTAL TO TRENCH, RESPECTIVE DUCT OR RESPECTIVE CABLE..

CABLE TRENCHES
(NOT TO SCALE)



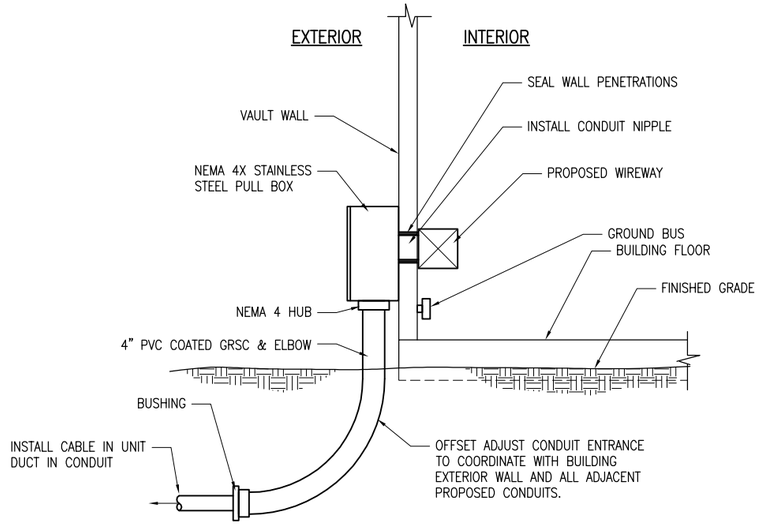
NOTE:
AFFIX NON-CORROSIVE TAG TO FIXTURE FACING RUNWAY WITH SET SCREW, WIRE TIE, OR METAL BAND. NUMERALS SHALL BE ENGRAVED FOR PERMANENT READABILITY.

TAG DETAIL
(NOT TO SCALE)

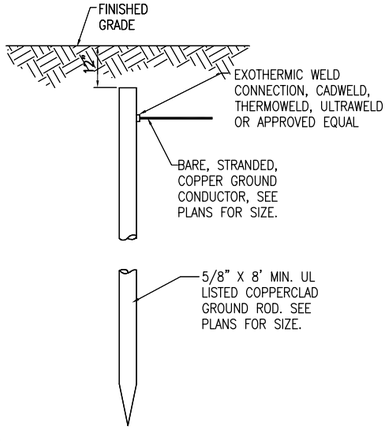


NOTE:
CABLES IN UNIT DUCT INSTALLED IN AREAS SUBJECT TO FARMING SHALL BE INSTALLED 42" MINIMUM BELOW GRADE

PLOWED CABLE
(NOT TO SCALE)



CONDUIT ENTRANCE DETAIL
NOT TO SCALE

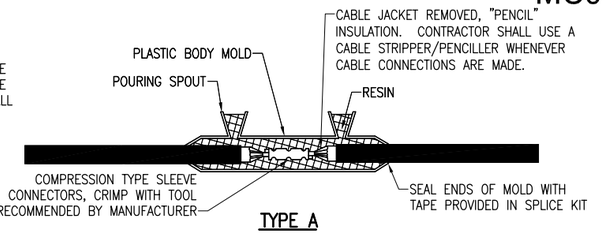


NOTES:
TYPE AND MINIMUM NUMBER OF GROUND RODS SHALL BE AS SPECIFIED ON THE PLAN.

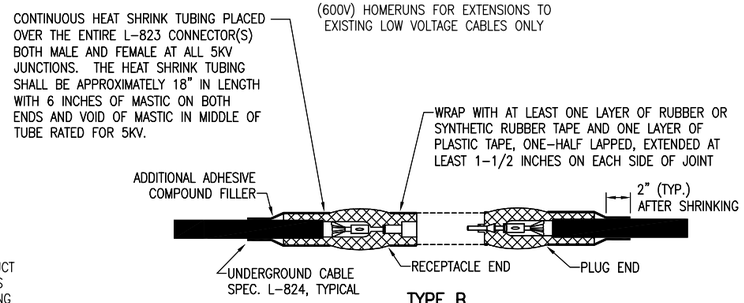
THE RESISTANCE TO GROUND OF THE GROUNDING SYSTEM SHALL NOT EXCEED 25 OHMS.

COST OF GROUND RODS IS INCIDENTAL TO THE ASSOCIATED ITEMS REQUIRING GROUNDING UNLESS OTHERWISE SPECIFIED.

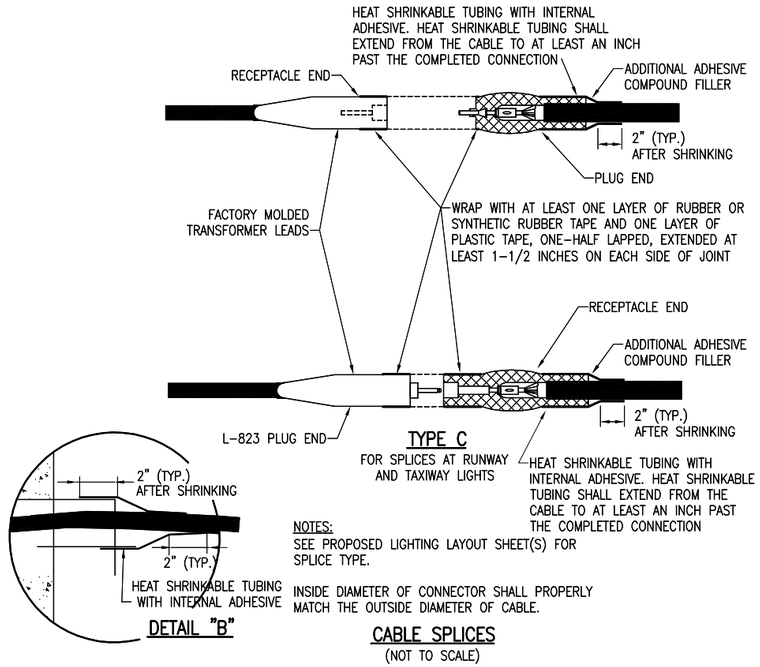
GROUND ROD
(NOT TO SCALE)



TYPE A
FOR SPLICES IN LOW VOLTAGE CABLE (600V) HOMERUNS FOR EXTENSIONS TO EXISTING LOW VOLTAGE CABLES ONLY



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

DETAIL "B"

NOTES:
SEE PROPOSED LIGHTING LAYOUT SHEET(S) FOR SPLICE TYPE.

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

CABLE SPLICES
(NOT TO SCALE)

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A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

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Filename E-504.DWG	DRAWN	R.L.L.	5-27-2011
Scale AS NOTED	REVIEWED	K.N.L.	6-3-2011
Date 5-27-2011			

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ELECTRICAL DETAILS SHEET 1

15
15 of 33 sheets

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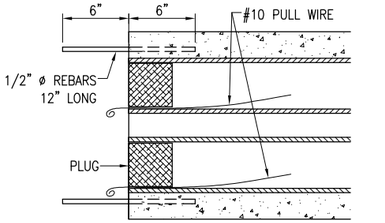
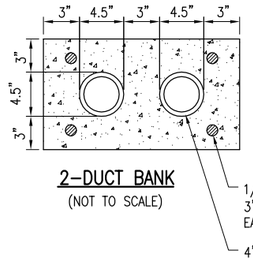
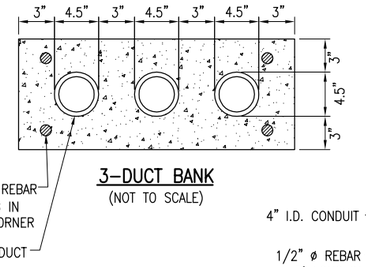


NOTE: INSTALL #10 PULL WIRE IN ALL SPARE DUCTS. FASTEN PULL WIRE AT EACH END OF EACH RUN. PULL WIRE SHALL BE INCIDENTAL TO DUCT BANK PAY ITEM.

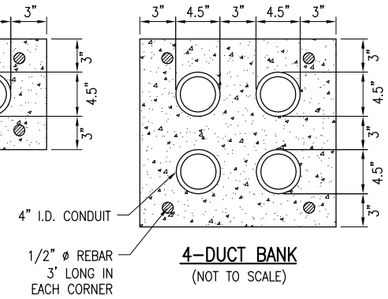
TYPICAL SECTION
(NOT TO SCALE)



2-DUCT BANK
(NOT TO SCALE)



3-DUCT BANK
(NOT TO SCALE)



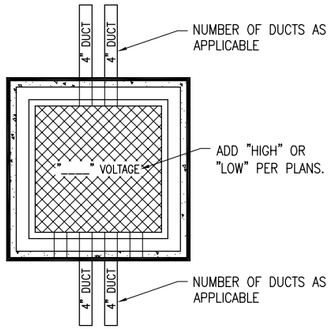
4-DUCT BANK
(NOT TO SCALE)

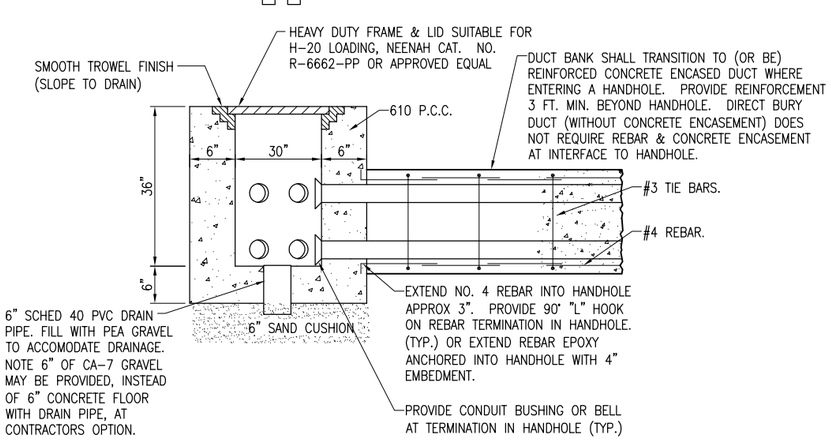
DUCT BANK NOTES:

1. DIMENSIONS FOR CONCRETE COVERAGE AND SEPARATION BETWEEN DUCTS ARE MINIMUM.
2. INCLUDE DUCT SPACERS AS MANUFACTURED BY UNDERGROUND DEVICES INC., OR APPROVED EQUAL TO MAINTAIN PROPER SEPARATION OF CONDUITS.
3. REBAR IS REQUIRED TO ACCOMMODATE FUTURE DUCT EXTENSIONS & INTERFACE AT DUCT BANK TERMINATIONS. CONCRETE ENCASED DUCT BANKS TERMINATING IN HANDHOLES REQUIRE REBAR AT TERMINATIONS.
4. CONDUITS FOR CONCRETE ENCASED DUCT SHALL BE SCHEDULE 40 PVC CONFORMING TO ITEM 110.
5. MINIMUM DEPTH OF TOP OF DUCT ENCASEMENT SHALL BE 18" BELOW FINISHED GRADE.
6. HIGH VOLTAGE AND LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME RACEWAY, CONDUIT, DUCT, HANDHOLE, OR MANHOLE.
7. HOMERUN CABLES FOR A RESPECTIVE CIRCUIT SHALL BE INSTALLED IN THE SAME RACEWAY OR DUCT.
8. DUCT INTERFACE TO HANDHOLES OR MANHOLES WILL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE DUCT PAY ITEM.
9. REFER TO ELECTRICAL AREA PLANS FOR SIZE AND ROUTING OF DUCT BANKS AND NUMBER OF DUCTS.

CABLE & DUCT MARKER NOTES:

1. THE COST OF ALL TURF AND PAVEMENT DUCT MARKERS SHALL BE INCIDENTAL TO THE DUCT. THE COST OF ALL CABLE MARKERS SHALL BE INCIDENTAL TO THE CABLE.
2. BITUMINOUS PAVEMENT DUCT MARKER AND CONCRETE DUCT MARKER TO BE PROVIDED AT EACH END OF EACH DUCT AS SHOWN ON THE LOCATION PLAN. FOR CONCRETE PAVEMENT, THE LETTER "D" SHALL BE IMPRESSED IN THE PAVEMENT INSTEAD OF THE MARKER. THE LETTER SHALL BE FORMED AS DESCRIBED IN NOTE 4.
3. CABLE MARKERS SHALL BE PLACED AT CHANGES OF DIRECTION AND APPROXIMATELY EVERY 200' ALONG CABLE RUNS.
4. CONCRETE CABLE MARKERS AND DUCT MARKERS SHALL HAVE LETTERS 4" HIGH, 3" WIDE WITH WIDTH OF STROKE ½" AND ¼" DEEP. ALL LETTERS, NUMBERS AND ARROWS TO BE IMPRESSED.

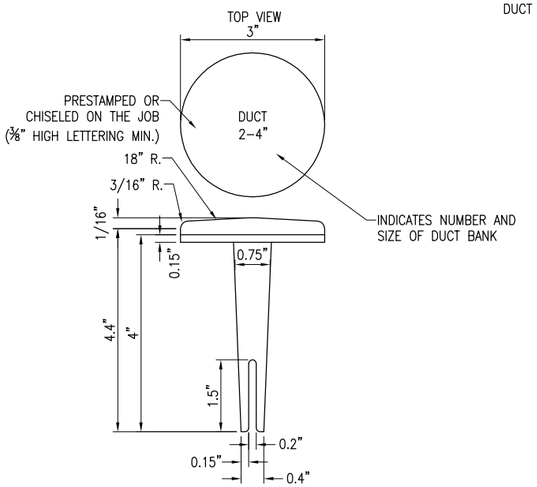




NOTES:

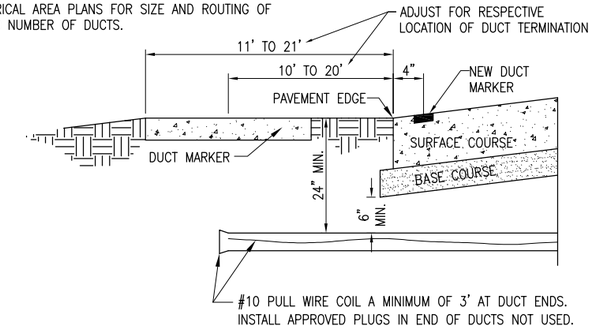
1. LIDS FOR LOW VOLTAGE HANDHOLES SHALL BE LABELED "LOW VOLTAGE". LIDS FOR HIGH VOLTAGE HANDHOLES SHALL BE LABELED "HIGH VOLTAGE". COORDINATE LETTERING WITH MFR.
2. HANDHOLES MAY BE CAST IN PLACE OR PRECAST. PRECAST MANUFACTURERS MUST BE ON THE IDOT (ILLINOIS DEPT. OF TRANSPORTATION) APPROVED LIST OF CERTIFIED PRECAST CONCRETE PRODUCERS. PRECAST HANDHOLES SHALL BE MANUFACTURERED IN THE UNSITED STATES OF AMERICA TO MEET THE AIRPORT IMPROVEMENT PROGRAM BUY AMERICAN REQUIREMENT.
3. ALL CORING, INTERFACE, AND LABOR ASSOCIATED WITH CONDUIT, DUCT, CABLE IN UNIT DUCT, AND / OR CABLE ENTRIES WILL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE HANDHOLE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
4. COORDINATE HANDHOLE ORIENTATION WITH DUCT BANK ROUTING ON AREA PLANS TO MINIMIZE CONDUIT BENDS.

ELECTRICAL HANDHOLE
"NOT TO SCALE"

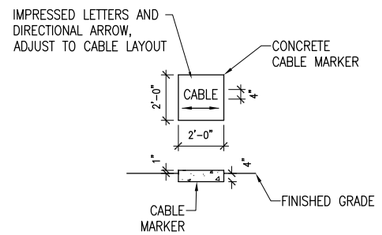


BITUMINOUS PAVEMENT DUCT MARKERS
"NOT TO SCALE"

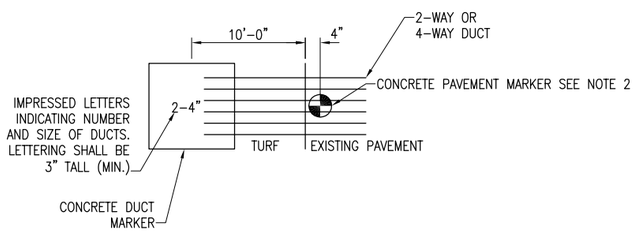
NOTE:
TOP OF MARKER SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MARKER MAY BE INSTALLED IN A DRILLED HOLE AND SECURED WITH EPOXY GLUE.



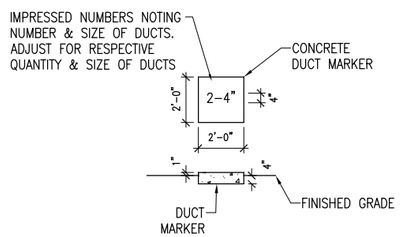
UNDERGROUND ELECTRICAL DUCT
(NOT TO SCALE)



TURF CABLE MARKERS
"NOT TO SCALE"



DUCT MARKER DETAIL
"NOT TO SCALE"



TURF DUCT MARKERS
"NOT TO SCALE"

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MT. CARMEL MUNICIPAL AIRPORT
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ELECTRICAL DETAILS SHEET 2

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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 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 REGARDING ANY CHANGES FROM THE PLANS AND SPECIFICATIONS.

9. A MINIMUM OF THREE COPIES OF THE INSTRUCTION BOOK SHALL BE SUPPLIED WITH EACH DIFFERENT TYPE OF EQUIPMENT. THE BOOKS DESCRIBING A MORE SOPHISTICATED TYPE OF EQUIPMENT, SUCH AS REGULATORS, PAPI, REIL, ETC. AS A MINIMUM SHALL CONTAIN THE FOLLOWING:

   A. A DETAILED DESCRIPTION OF THE OVERALL EQUIPMENT AND ITS INDIVIDUAL COMPONENTS.

   B. THEORY OF OPERATION INCLUDING THE FUNCTION OF EACH COMPONENT.

   C. INSTALLATION INSTRUCTION.

   D. START–UP INSTRUCTIONS.

   E. PREVENTATIVE MAINTENANCE REQUIREMENTS.

   F. CHART FOR TROUBLE–SHOOTING.

   G. COMPLETE POWER AND CONTROL DETAILED WIRING DIAGRAM(S), SHOWING EACH CONDUCTOR/CONNECTION/COMPONENT – "BLACK" BOXES ARE NOT ACCEPTABLE. THE DIAGRAM OF THE NARRATIVE SHALL SHOW VOLTAGE/CURRENTS/WAVE SHAPES AT STRATEGIC LOCATIONS TO BE USED WHEN CHECKING AND/OR TROUBLE–SHOOTING THE EQUIPMENT. WHEN THE EQUIPMENT HAS SEVERAL MODES OF OPERATION, SUCH AS SEVERAL BRIGHTNESS STEPS, THESE PARAMETERS SHALL BE INDICATED FOR ALL DIFFERENT MODES.

   H. PARTS LIST WHICH WILL INCLUDE ALL MAJOR AND MINOR COMPONENTS SUCH AS RESISTORS, DIODES, ETC. IT SHALL INCLUDE A COMPLETE NOMENCLATURE OF EACH COMPONENT AND, IF APPLICABLE, THE NAME OF ITS MANUFACTURER AND THE CATALOG NUMBER.

   I. SAFETY INSTRUCTIONS.

POWER AND CONTROL NOTES

1. PROVIDE LEGEND PLATES FOR ALL ELECTRICAL EQUIPMENT TO IDENTIFY FUNCTION, CIRCUIT VOLTAGE AND PHASE. WHERE THE EQUIPMENT CONTAINS FUSES, ALSO IDENTIFY THE FUSE OR FUSE LINK AMPERE RATING. WHERE THE EQUIPMENT DOES NOT HAVE SUFFICIENT AREA TO INSTALL LEGEND PLATES, THE LEGEND PLATES SHALL BE INSTALLED ON THE WALL NEXT TO THE UNIT. LEGEND PLATES SHALL BE WEATHERPROOF ENGRAVED PLASTIC OR PHENOLIC MATERIAL, 1/4" HIGH BLACK LETTERS ON A WHITE BACKGROUND UNLESS NOTED OTHERWISE. SECURE WITH WEATHERPROOF ADHESIVE AND MACHINE SCREWS. FURNISH ADDITIONAL LEGEND PLATES WHERE REQUIRED BY CODE, FOR ADDITIONAL EQUIPMENT, AS DETAILED HEREIN ON THE PLANS, AND AS NOTED IN THE SPECIAL PROVISION SPECIFICATIONS.

2. COLOR CODE ALL PHASE WIRING BY THE USE OF COLORED WIRE INSULATION AND/OR COLORED TAPE. WHERE TAPE IS USED, THE WIRE INSULATION SHALL BE BLACK. BLACK AND RED SHALL BE USED FOR PHASE CONDUCTORS ON 120/240VAC SINGLE–PHASE, THREE WIRE SYSTEMS AND BLACK, ORANGE (FOR HIGH LEG) AND BLUE SHALL BE USED FOR PHASE CONDUCTORS ON 240/120VAC THREE–PHASE, FOUR WIRE SYSTEMS. NEUTRAL CONDUCTORS, SIZE NO. 6 AWG OR SMALLER, SHALL BE IDENTIFIED BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH. NEUTRAL CONDUCTORS LARGER THAN NO. 6 AWG SHALL BE IDENTIFIED EITHER BY A CONTINUOUS WHITE OR NATURAL GRAY OUTER FINISH ALONG ITS ENTIRE LENGTH OR BY THE USE OF WHITE TAPE AT ITS TERMINATIONS AND INSIDE ACCESSIBLE WIREWAYS. INSULATED GROUND CONDUCTORS SHALL HAVE GREEN COLORED INSULATION FOR ALL CONDUCTOR SIZES (AWG OR KCMIL).

3. ALL BRANCH CIRCUIT CONDUCTORS CONNECTED TO A PARTICULAR PHASE SHALL BE IDENTIFIED WITH THE SAME COLOR. THE COLOR CODING SHALL BE EXTENDED TO THE POINT OF UTILIZATION.

4. IN CONTROL WIRING THE SAME COLOR SHALL BE USED THROUGHOUT THE SYSTEM FOR THE SAME FUNCTION, SUCH AS 10%, 30%, 100% BRIGHTNESS CONTROL, ETC.

5. LOW VOLTAGE (600 V.) AND HIGH VOLTAGE (5000 V.) CONDUCTORS SHALL BE INSTALLED IN SEPARATE WIREWAYS.

6. NEATLY LACE WIRING IN DISTRIBUTION PANELS, WIREWAYS, SWITCHES AND JUNCTION/PULL BOXES.

7. THE MINIMUM SIZE OF PULL/JUNCTION BOXES, REGARDLESS OF THE QUANTITY AND SIZE OF THE CONDUCTORS SHOWN, SHALL BE AS FOLLOWS:

   A. IN STRAIGHT PULLS THE LENGTH OF THE BOX SHALL NOT BE LESS THAN EIGHT TIMES THE TRADE DIAMETER OF THE LARGER CONDUIT. THE TOTAL AREA (INCLUDING THE CONDUIT CROSS–SECTIONAL AREA) OF A BOX END SHALL BE AT LEAST 3 TIMES GREATER THAN THE TOTAL TRADE CROSS–SECTIONAL AREA OF THE CONDUITS TERMINATING AT THE END.

   B. IN ANGLE PULLS OR 'U' PULLS THE DISTANCE BETWEEN EACH CONDUIT ENTRY INSIDE THE BOX AND THE OPPOSITE WALL OF THE BOX SHALL NOT BE LESS THAN SIX (6) TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT. THIS DISTANCE SHALL BE INCREASED FOR ADDITIONAL ENTRIES BY THE AMOUNT OF THE SUM OF THE DIAMETERS OF ALL OTHER CONDUIT ENTRIES ON THE SAME WALL AS THE BOX. THE DISTANCE BETWEEN CONDUIT ENTRIES ENCLOSING THE SAME CONDUCTOR SHALL NOT BE LESS THAN SIX TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT.

8. A RUN OF CONDUIT BETWEEN TERMINATIONS AT EQUIPMENT ENCLOSURES, SQUARE DUCTS AND PULL/JUNCTION BOXES, SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL), INCLUDING THOSE BENDS LOCATED IMMEDIATELY AT THE TERMINATIONS, CAST, CONDUIT TYPE OUTLETS SHALL NOT BE TREATED AS PULL/JUNCTION BOXES.

9. EQUIPMENT CABINETS SHALL NOT BE USED AS PULL/JUNCTION BOXES. ONLY WIRING TERMINATING AT THE EQUIPMENT SHALL BE BROUGHT INTO THESE ENCLOSURES.

10. SPLICES AND JUNCTION POINTS SHALL BE PERMITTED ONLY IN JUNCTION BOXES, DUCTS EQUIPPED WITH REMOVABLE COVERS, AND AT EASILY ACCESSIBLE LOCATIONS.

11. CIRCUIT BREAKERS IN POWER DISTRIBUTION PANEL(S) SHALL BE THERMAL–MAGNETIC MOLDED CASE, PERMANENT TRIP WITH 100 AMPERE, MINIMUM FRAME.

12. DUAL LUGS SHALL BE USED WHERE TWO (2) WIRES, SIZE NO. 6 OR LARGER, ARE TO BE CONNECTED TO THE SAME TERMINAL.

13. ALL INTERIOR WALL MOUNTED EQUIPMENT ENCLOSURES SHALL BE MOUNTED ON HOT DIPPED GALVANIZED STEEL STRUT SUPPORT, OR STAINLESS STEEL STRUT SUPPORT, WITH CORROSION RESISTANT HARDWARE.

14. SUPPORT FOR EXTERIOR MOUNTED EQUIPMENT SHALL USE HOT DIPPED GALVANIZED STEEL STRUT SUPPORT OR STAINLESS STEEL STRUT SUPPORT WITH STAINLESS STEEL HARDWARE. PROVIDE ZINC RICH PAINT APPLIED TO FIELD CUTS OF GALVANIZED STEEL SUPPORT TO MINIMIZE THE POTENTIAL FOR CORROSION PER THE RESPECTIVE STRUT SUPPORT MANUFACTURER'S RECOMMENDATIONS.

15. CONDUITS FOR ELECTRIC SERVICE ENTRANCE AND FEEDERS SHALL BE AS DETAILED HEREIN ON THE PLANS. WHERE GALVANIZED RIGID STEEL CONDUIT IS SPECIFIED IT SHALL HAVE THREADED FITTINGS. SET SCREW TYPE FITTINGS WILL NOT BE ACCEPTABLE. CONDUITS FOR UNDERGROUND APPLICATIONS SHALL BE AS DETAILED HEREIN. CONDUITS FOR GROUNDING ELECTRODE CONDUCTORS OR INDIVIDUAL GROUNDING CONDUCTORS SHALL BE SCHEDULE 40 OR SCHEDULE 80 PVC.

16. PROVIDE LIQUID TIGHT FLEXIBLE METAL CONDUIT AT CONNECTIONS TO EQUIPMENT SUBJECT TO VIBRATION OR WHERE FLEXIBILITY IS REQUIRED. LIQUID TIGHT FLEXIBLE METAL CONDUIT AND ASSOCIATED FITTINGS SHALL BE U.L. LISTED TO MEET THE REQUIREMENTS OF NEC 350.6, SUITABLE FOR GROUNDING, SUNLIGHT RESISTANT, AND RESISTANT TO OIL, GASOLINE, AND GREASE. LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS USED FOR FLEXIBILITY (INCLUDING CONNECTIONS TO MOTORS, TRANSFORMERS, & CONSTANT CURRENT REGULATORS) SHALL REQUIRE AN EXTERNAL BONDING JUMPER OR INTERNAL EQUIPMENT GROUNDING CONDUCTOR PER NEC 350.60. DO NOT INSTALL LIQUID TIGHT FLEXIBLE METAL CONDUIT THAT IS NOT UL. LISTED. CONFIRM LIQUID–TIGHT FLEXIBLE METAL CONDUIT BEARS THE UL LABEL PRIOR TO INSTALLING IT.

17. UNLESS OTHERWISE SHOWN, ALL EXPOSED CONDUITS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES WITH THE LINES OF THE STRUCTURE.

18. ALL STEEL CONDUITS, FITTINGS, NUTS, BOLTS, ETC. SHALL BE GALVANIZED.

19. USE CONDUIT BUSHINGS AT EACH CONDUIT TERMINATION. WHERE NO. 4 AWG OR LARGER UNDERGROUND WIRE IS INSTALLED, USE INSULATED BUSHINGS.

20. USE DOUBLE LOCK NUTS AT EACH CONDUIT TERMINATION.

21. WRAP ALL PRIMARY AND SECONDARY POWER TRANSFORMER CONNECTIONS WITH SUFFICIENT LAYERS OF INSULATING TAPE (3M SCOTCH 23 ALL–VOLTAGE SPLICING TAPE, 3M SCOTCH 130C LINERLESS RUBBER SPLICING TAPE, OR APPROVED EQUAL) AND COVER WITH VINYL ELECTRICAL TAPE (3M SCOTCH 88 VINYL ELECTRICAL TAPE OR APPROVED EQUAL) FOR FULL VALUE OF CABLE INSULATION VOLTAGE.

22. UNLESS OTHERWISE NOTED, ALL SINGLE CONDUCTOR CONTROL WIRING SHALL BE NO. 12 AWG. COPPER 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

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG–4101 A.I.P. PROJ.: 3–17–0073–B17

HS Project No. 11A0009D
Filename E–002.DWG
Scale NONE
Date 5–27–2011

LAYOUT	J.F.C.	5–27–2011
DRAWN	R.L.L.	5–27–2011
REVIEWED	K.N.L.	6–3–2011

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1525 South Sixth Street
Springfield, Illinois 62703-2886
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

ELECTRICAL NOTES SHEET 1

17
17 of 33 sheets

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AIRFIELD LIGHTING NOTES

1. UNLESS OTHERWISE NOTED, ALL UNDERGROUND AIRFIELD LIGHTING SERIES CIRCUIT CONDUCTORS WHETHER DEB OR IN DUCT/CONDUIT SHALL BE FAA APPROVED 5000 VOLT L-824 TYPE. ALL UNDERGROUND FIELD POWER LOW VOLTAGE (600 VOLT & BELOW) CIRCUIT CONDUCTORS WHETHER DEB OR IN DUCT/CONDUIT SHALL BE UL LISTED 600 VOLT, TYPE XLP-USE-2 COPPER CONDUCTORS. CONDUCTOR SIZES SHALL BE AS SPECIFIED, HEREIN.

2. NO COMPONENTS OF PRIMARY CIRCUIT SUCH AS CABLE, CONNECTORS AND TRANSFORMERS SHALL BE BROUGHT ABOVE GROUND AT EDGE LIGHTS, SIGNS, REIL, PAPI, ETC.

3. THERE SHALL BE NO EXPOSED POWER/CONTROL CABLES BETWEEN THE POINT WHERE THEY LEAVE THE UNDERGROUND (DEB OR L-867 BASES) AND WHERE THEY ENTER THE EQUIPMENT (SUCH AS TAXIWAY SIGNS, PAPI, REIL, ETC.) ENCLOSURES. THESE CABLES SHALL BE ENCLOSED IN RIGID CONDUIT OR IN FLEXIBLE, WATERTIGHT CONDUIT WITH BREAKABLE COUPLING(S) AT THE GRADE OR THE HOUSING COVER, AS SHOWN IN APPLICABLE DETAILS.

4. THE JOINTS OF THE L-823 PRIMARY CONNECTORS SHALL BE WRAPPED WITH AT LEAST ONE LAYER OF RUBBER OR SYNTHETIC RUBBER TAPE AND ONE LAYER OF PLASTIC TAPE, ONE-HALF LAPPED, EXTENDING AT LEAST 1-1/2 INCHES ON EACH SIDE OF THE JOINT, AS SHOWN ON ELECTRICAL DETAILS SHEET 1.

5. THE CABLE ENTRANCE INTO THE FIELD-ATTACHED L-823 CONNECTORS SHALL BE ENCLOSED BY A HEAT-SHRINKABLE TUBING WITH CONTINUOUS INTERNAL ADHESIVE, AS SHOWN ON ELECTRICAL DETAILS SHEET 1.

6. L-823 TYPE II, TWO-CONDUCTOR SECONDARY CONNECTORS SHALL BE CLASS 'A' (FACTORY MOLDED).

7. THERE SHALL BE NO SPLICES IN THE SECONDARY CABLE(S) WITHIN THE STEMS OF A RUNWAY/TAXIWAY EDGE/THRESHOLD LIGHTING FIXTURE AND THE WIREWAYS LEADING TO TAXIWAY SIGNS AND PAPI/REIL EQUIPMENT.

8. ELECTRICAL INSULATING GREASE SHALL BE APPLIED WITHIN THE L-823, SECONDARY, TWO CONDUCTOR CONNECTORS TO PREVENT WATER ENTRANCE. THESE CONNECTORS SHALL NOT BE TAPED.

9. DEB ISOLATION TRANSFORMERS SHALL BE BURIED AT A DEPTH OF TEN (10") INCHES ON A LINE CROSSING THE LIGHT AND PERPENDICULAR TO THE RUNWAY/TAXIWAY CENTERLINE AT A LOCATION TWELVE (12") INCHES FROM THE LIGHT OPPOSITE FROM THE RUNWAY/TAXIWAY.

10. A SLACK OF THREE (3') FEET, MINIMUM, SHALL BE PROVIDED IN THE PRIMARY CABLE AT EACH TRANSFORMER/CONNECTOR TERMINATION. AT STAKE-MOUNTED LIGHTS, THE SLACK SHALL BE LOOSELY COILED IMMEDIATELY BELOW THE ISOLATION TRANSFORMER.

11. DIRECTION OF PRIMARY CABLES SHALL BE IDENTIFIED BY COLOR CODING AS FOLLOWS: WHEN FACING LIGHT WITH BACK TO PAVEMENT, CABLE TO THE LEFT IS CODED RED AND CABLE TO RIGHT IS CODED BLUE. THIS APPLIES TO STAKE MOUNTED LIGHTS AND BASE MOUNTED LIGHTS WHERE THE BASE HAS ONLY ONE ENTRANCE.

12. L-867 BASES SHALL BE SIZE B, 24" DEEP, CLASS I, UNLESS OTHERWISE NOTED.

13. BASE MOUNTED BREAKABLE COUPLINGS SHALL NOT HAVE WEEP HOLES TO THE OUTSIDE. PLUGGED UP HOLES SHALL NOT BE ACCEPTABLE. IT SHALL BE A 1/4" DIAMETER, MINIMUM, OR EQUIVALENT OPENING FOR DRAINAGE FROM THE SPACE AROUND THE SECONDARY CONNECTOR INTO THE L-867 BASE.

14. THE ELEVATION OF THE BREAKABLE COUPLING GROOVE SHALL NOT EXCEED 1-1/2" ABOVE THE EDGE OF THE COVER IN CASE OF BASE MOUNTED COUPLINGS, OR THE TOP OF THE STAKE IN CASE OF STAKE MOUNTED COUPLINGS.

15. WHERE THE BREAKABLE COUPLING IS NOT AN INTEGRAL PART OF THE LIGHT FIXTURE STEM OR MOUNTING LEG, A BEAD OF SILICON SEAL SHALL BE APPLIED COMPLETELY AROUND LIGHT STEM OR WIREWAY AT BREAKABLE COUPLING TO PROVIDE A WATERTIGHT SEAL.

16. TOPS OF THE STAKES SUPPORTING LIGHT FIXTURES SHALL BE FLUSH WITH THE SURROUNDING GRADE.

17. PLASTIC LIGHTING FIXTURE COMPONENTS, SUCH AS LAMP HEADS, STEMS, BREAKABLE COUPLINGS, BASE COVERS, BRACKETS, STAKES, SHALL NOT BE ACCEPTABLE.

18. THE TOLERANCE FOR THE HEIGHT OF RUNWAY/TAXIWAY EDGE LIGHTS SHALL BE: ONE (1) INCH. IN CASE OF STAKE MOUNTED LIGHTS, THE SPECIFIED LIGHTING FIXTURE HEIGHT SHALL BE MEASURED BETWEEN THE TOP OF THE STAKE AND THE TOP OF THE LENS. IN CASE OF BASE MOUNTED LIGHTS, THE SPECIFIED LIGHTING FIXTURE HEIGHT SHALL BE MEASURED BETWEEN THE TOP OF THE BASE FLANGE AND THE TOP OF THE LENS, THUS INCLUDING THE BASE COVER, THE FRANGIBLE COUPLING, THE STEM, THE LAMP HOUSING AND THE LENS.

19. THE TOLERANCE FOR THE LATERAL SPACING (LIGHT LANE TO RUNWAY/TAXIWAY CENTERLINE) OF RUNWAY/TAXIWAY EDGE LIGHTS SHALL BE ONE (1) INCH. THIS ALSO APPLIES AT INTERSECTIONS TO LATERAL SPACING BETWEEN LIGHTS OF A RUNWAY/TAXIWAY AND THE INTERSECTING RUNWAY/TAXIWAY.

20. ENTRANCES INTO L-867 BASES SHALL HAVE CONDUIT COUPLINGS OR REDUCERS TO INTERFACE UNIT DUCT/CONDUIT TO L-867 BASE HUBS, OR SHALL BE SEALED WITH HEAT SHRINK AS SHOWN IN DETAIL "B" ON ELECTRICAL DETAILS SHEET 1.

21. GALVANIZED/PAINTED EQUIPMENT/COMPONENT SURFACES SHALL NOT BE DAMAGED BY DRILLING, FILING, ETC. DRAIN HOLES IN METAL TRANSFORMER HOUSINGS SHALL BE MADE BEFORE GALVANIZING.

22. EDGE LIGHT NUMBERING TAGS SHALL BE FACING THE PAVEMENT.

23. CABLE/SPLICE/DUCT MARKERS SHALL BE PRECAST CONCRETE OF THE SIZE SHOWN. LETTERS/NUMBERS/ARROWS FOR THE LEGEND TO BE IMPRESSED INTO THE TOPS OF THE MARKERS SHALL BE PRE-ASSEMBLED AND SECURED IN THE MOLD BEFORE THE CONCRETE IS POURED. LEGEND INSCRIBED BY HAND IN WET CONCRETE SHALL NOT BE ACCEPTABLE.

24. ALL UNDERGROUND CABLE RUNS SHALL BE IDENTIFIED BY CABLE MARKERS AT 200 FEET MAXIMUM SPACING, WITH AN ADDITIONAL MARKER AT EACH CHANGE OF DIRECTION OF THE CABLE RUN. CABLE MARKERS SHALL BE INSTALLED IMMEDIATELY ABOVE THE CABLES.

25. THERE SHALL BE NO SPLICES BETWEEN THE ISOLATION TRANSFORMERS. L-823 CONNECTORS ARE ALLOWED AT TRANSFORMER CONNECTIONS ONLY, UNLESS OTHERWISE SHOWN.

26. APPLY AN OXIDE INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS AND BREAKAGE COUPLING THREADS.

27. LOCATIONS OF ENDS OF ALL UNDERGROUND DUCTS SHALL BE IDENTIFIED BY DUCT MARKERS.

28. WHERE A PARALLEL, CONSTANT VOLTAGE PAPI SYSTEM IS PROVIDED, THE "T" SPLICES SHALL BE OF THE CAST TYPE.

29. CONCRETE USED FOR SLABS, FOOTINGS, BACKFILL AROUND TRANSFORMER HOUSINGS, MARKINGS, ETC. SHALL BE 3500 PSI, AIR-ENTRAINED.

30. ALL POWER AND CONTROL CABLES IN MAN/HAND HOLES SHALL BE TAGGED. USE EMBOSSED COPPER STRIPS TO BE ATTACHED AT BOTH ENDS TO THE CABLE BY THE USE OF PLASTIC STRAPS. MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A MAN/HAND HOLE-ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT.

31. 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 J.U.L.I.E. FOR UTILITY INFORMATION AT 1-800-892-0123.** 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.

32. WHEN PREPARING CABLE FOR SPLICES, THE CONTRACTOR SHALL USE A CABLE STRIPPER/PENCILLER WHENEVER CABLE CONNECTIONS ARE MADE.

GROUNDING NOTES FOR AIRFIELD LIGHTING

1. GROUNDING FOR RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS SHALL BE AS DETAILED ON THE PLANS AND AS SPECIFIED HEREIN. PER FAA AC 150/5340-30E DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS, CHAPTER 12, PART 12.6; A GROUND MUST BE INSTALLED AT EACH LIGHT FIXTURE. THE PURPOSE OF THE LIGHT BASE GROUND IS TO PROVIDE A DEGREE OF PROTECTION FOR MAINTENANCE PERSONNEL FROM POSSIBLE CONTACT WITH AN ENERGIZED LIGHT BASE OR MOUNTING STAKE THAT MAY RESULT FROM A SHORTED POWER CABLE OR ISOLATION TRANSFORMER. A LIGHT BASE GROUND SHALL BE INSTALLED AT EACH TRANSFORMER BASE/LIGHT CAN ASSOCIATED WITH RUNWAY LIGHTS, TAXIWAY LIGHTS, AND LIGHTED TAXI GUIDANCE SIGNS. A LIGHT BASE GROUND SHALL ALSO BE INSTALLED AT EACH STAKE MOUNTED LIGHT FIXTURE. A LIGHT BASE GROUND SHALL BE INSTALLED AND CONNECTED TO THE METAL FRAME OF EACH TAXI GUIDANCE SIGN AS DETAILED ON THE PLANS AND IN ACCORDANCE WITH THE RESPECTIVE TAXI GUIDANCE SIGN MANUFACTURER RECOMMENDATIONS. THE LIGHT BASE GROUND SHALL BE A #6 AWG BARE COPPER CONDUCTOR BONDED TO THE GROUND LUG ON THE RESPECTIVE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE AND A 5/8-INCH DIAMETER BY 8-FOOT LONG (MINIMUM) UL LISTED COPPER CLAD GROUND ROD. CONNECTIONS TO GROUND LUGS ON THE L-867 TRANSFORMER BASE/LIGHT CAN OR MOUNTING STAKE SHALL BE WITH A UL LISTED GROUNDING CONNECTOR. CONNECTIONS TO GROUND RODS SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE: 800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE: 918-663-1440), ULTRAWELD BY HARGER, GRAYSLAKE, ILLINOIS (PHONE: 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. TOP OF GROUND RODS SHALL BE BURIED 12 INCHES MINIMUM BELOW GRADE, UNLESS SPECIFIED OTHERWISE HEREIN, FOR RESPECTIVE APPLICATIONS.

2. CLEAN ALL METAL SURFACES BEFORE MAKING GROUND CONNECTIONS. METALLIC SURFACES TO BE JOINED SHALL BE PREPARED BY THE REMOVAL OF ALL NON-CONDUCTIVE MATERIAL PER 2008 NATIONAL ELECTRICAL CODE ARTICLE 250-12.

3. PER FAA 150/5340-30E THE RESISTANCE TO GROUND OF THE RESPECTIVE MOUNTING STAKE OR LIGHT BASE (WITH GROUND ROD CONNECTED) MUST BE 25 OHMS OR LESS.

4. GROUNDING FOR PLASI. GROUNDING FOR PLASI SHALL CONFORM TO THE RESPECTIVE PLASI MANUFACTURER'S INSTALLATION INSTRUCTIONS, AS DETAILED ON THE PLANS, AND AS SPECIFIED HEREIN. THE POWER CIRCUIT TO THE PLASI UNIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. TO COMPLY WITH THE REQUIREMENTS ON NATIONAL ELECTRIC CODE AND THE PLASI MANUFACTURER'S INSTALLATION INSTRUCTIONS A SAFETY SWITCH/DISCONNECT SHALL BE INSTALLED AT THE PLASI. THE 120 VAC FEEDER CONDUCTORS FROM THE VAULT SHALL TERMINATE ON THIS SAFETY SWITCH/DISCONNECT. FURNISH AND INSTALL A 3/4-INCH DIAMETER BY 10-FOOT LONG COPPER CLAD GROUND ROD AT THE SITE OF THE PLASI UNIT. TOP OF GROUND ROD SHALL BE 30 INCHES BELOW GRADE. ALL CONNECTIONS TO THE GROUND ROD SHALL BE EXOTHERMIC WELD AS MANUFACTURED BY CADWELD, THERMOWELD, ULTRAWELD, OR APPROVED EQUAL. CONNECT THE SAFETY SWITCH ENCLOSURE FRAME/GROUND BAR TO THE GROUND ROD WITH A #6 AWG STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR. FROM THE LOAD SIDE OF THE SAFETY SWITCH INSTALL 1#10 THWN, 1#10 THWN NEUTRAL, AND 1#10 EQUIPMENT GROUND IN 3/4-INCH LIQUID TIGHT FLEXIBLE METAL CONDUIT TO THE PLASI UNIT. TERMINATE THE EQUIPMENT GROUND WIRE ON THE RESPECTIVE GROUND LUG INSIDE THE PLASI UNIT OR ON THE PLASI UNIT METAL FRAME.

5. GROUNDING FOR REILS. GROUNDING FOR REILS SHALL CONFORM TO THE RESPECTIVE REILS MANUFACTURER'S INSTALLATION INSTRUCTIONS, AS DETAILED ON THE PLANS, AND AS SPECIFIED HEREIN. FURNISH AND INSTALL A 3/4-INCH DIAMETER BY 10-FOOT LONG COPPER CLAD GROUND ROD AT EACH REIL UNIT. BOND EACH REIL UNIT HOUSING AND THE REIL BASE CAN TO THE RESPECTIVE GROUND ROD IN ACCORDANCE THE MANUFACTURER'S INSTRUCTIONS WITH A #6 AWG BARE SOLID OR STRANDED (PER REIL MANUFACTURER REQUIREMENTS) COPPER GROUNDING ELECTRODE CONDUCTOR. TOP OF GROUND ROD SHALL BE 30 INCHES BELOW GRADE. ALL CONNECTIONS TO THE GROUND ROD SHALL BE EXOTHERMIC WELD AS MANUFACTURED BY CADWELD, THERMOWELD, ULTRAWELD, OR APPROVED EQUAL. CONNECTIONS TO REIL UNIT FRAMES SHALL BE AS RECOMMENDED BY THE MANUFACTURER OR WITH A UL LISTED GROUNDING CONDUCTOR. PROVIDE MULTI-TERMINAL GROUND BAR OR INDIVIDUAL GROUND LUGS TO TERMINATE EACH GROUND WIRE IN EACH REIL UNIT

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG-4101 A.I.P. PROJ.: 3-17-0073-B17

HEI Project No. 11A0009D
Filename E-003.DWG
Scale NONE
Date 5-27-2011

LAYOUT	K.N.L.	5-27-2011
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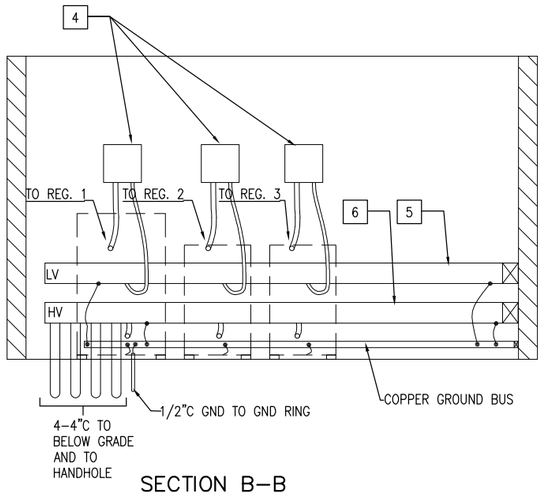
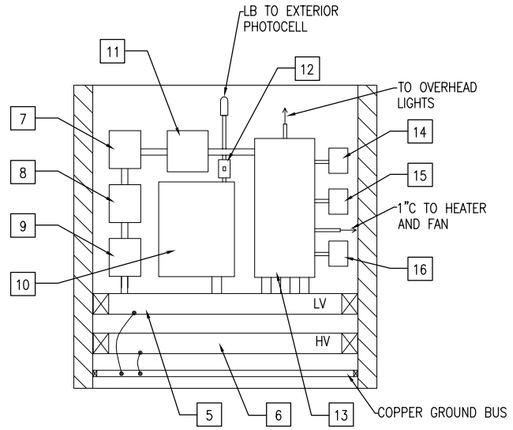
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

ELECTRICAL NOTES SHEET 2



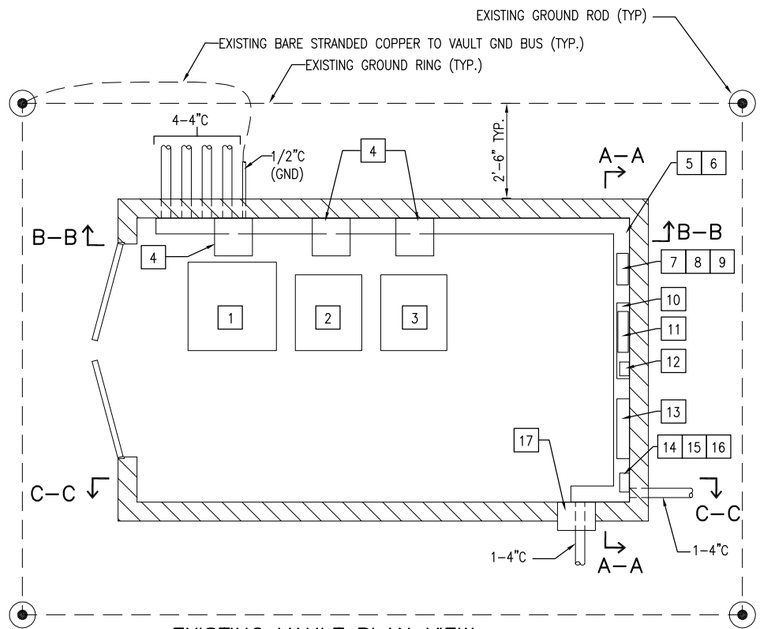
SECTION B–B

HALF SIZE SCALE 1/4"=1'–0"
FULL SIZE SCALE 1/2"=1'–0"



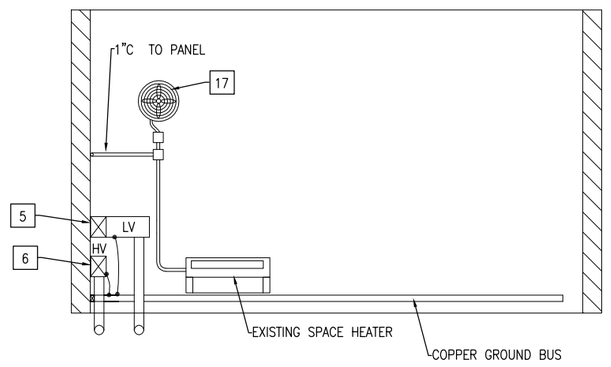
SECTION A–A

HALF SIZE SCALE 1/4"=1'–0"
FULL SIZE SCALE 1/2"=1'–0"



EXISTING VAULT PLAN VIEW

HALF SIZE SCALE 1/4"=1'–0"
FULL SIZE SCALE 1/2"=1'–0"



SECTION C– C

HALF SIZE SCALE 1/4"=1'–0"
FULL SIZE SCALE 1/2"=1'–0"

GENERAL NOTES

1. WHERE IS EQUIPMENT IS SHOWN TO BE MODIFIED, OR REMOVED/REPLACED, CONTRACTOR SHALL REMOVE ANY ASSOCIATED CONDUITS AND CABLING MADE OBSOLETE BY SCOPE OF. ALL RESULTING PENETRATIONS IN WIREWAYS SHALL BE CLEANED AND EVALUATED FOR RE–USE WITH PROPOSED WORK. CONTRACTOR SHALL FURNISH AND INSTALL CAPS WIREWAYS MAY LEAVE OPENINGS OTHERWISE.
2. RELAY PANEL TO BE REPLACED. SEE LIGHTING CONTACTOR PANEL DETAILS.
3. SEE "VAULT DISTRIBUTION PANELBOARD SCHEDULE" SHEET.

KEYED NOTES

1. EXISTING TAXIWAY REGULATOR 1:
L–828 MANAIRCO MR10L8283B–02, 10KW OUTPUT, 6.6A @ 1515VAC
3 STEP 4.8/5.5/6.6, SER. #9901200B, MFR. DATE: 12/99,
ONE PHASE INPUT: 240V, 60HZ, 44A, INT/EXT CONTROL: 120V, 60HZ
2. EXISTING REGULATOR 2:
L–828 MANAIRCO MR07L8283B–01, 7.5KW OUTPUT, 6.6A @ 1135VAC
3 STEP 4.8/5.5/6.6,
ONE PHASE INPUT: 208/220/230/240/250/460/480V, 60HZ,
36/34/33/31/30/17/16A, INT/EXT CONTROL: 120V, 60HZ
3. EXISTING REGULATOR 3:
L–828 MANAIRCO MR07L8283B–01, 7.5KW OUTPUT, 6.6A @ 1135VAC
3 STEP 4.8/5.5/6.6,
ONE PHASE INPUT: 208/220/230/240/250/460/480V, 60HZ,
36/34/33/31/30/17/16A, INT/EXT CONTROL: 120V, 60HZ
4. EXISTING SERIES PLUG CUTOUT (TYPE S–1) WITH ENCLOSURE
5. EXISTING 6" H x 6" D LOW VOLTAGE WIREWAY
6. EXISTING 6" H x 6" D HIGH VOLTAGE WIREWAY
7. EXISTING RUNWAY 4–22 REGULATOR RADIO INTERFACE PANEL
8. EXISTING RUNWAY 13–31 REGULATOR RADIO INTERFACE PANEL
9. EXISTING TAXIWAY REGULATOR RADIO INTERFACE PANEL
10. **RELAY PANEL TO BE REPLACED. SEE NOTE 2.**
11. EXISTING L–854 RADIO CONTROL UNIT
12. EXISTING SWITCH
13. **EXISTING SERIVCE DISTRIBUTION PANEL, SEE NOTE 3**
14. **EXISTING BOOST XFMR FOR RUNWAY 4 PLASI; SQUARE D CAT #500SV43B 0.5KVA TO BE REMOVED**
15. **EXISTING BOOST XFMR FOR RUNWAY 22 PLASI; SQUARE D CAT #500SV43B 0.5KVA TO BE REMOVED**
16. **EXISTING BOOST XFMR FOR RUNWAY 31 PLASI; SQUARE D CAT #500SV43B 0.5KVA TO BE RELOCATED**
17. EXISTING EXHAUST FAN

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG–4101 A.I.P. PROJ.: 3–17–0073–B17

LAYOUT	J.F.C.	5–27–2011
DRAWN	R.L.L.	5–27–2011
REVIEWED	K.N.L.	6–3–2011

HEI Project No. 11A0009D
Filename E–201.DWG
Scale AS NOTED
Date 5–27–2011

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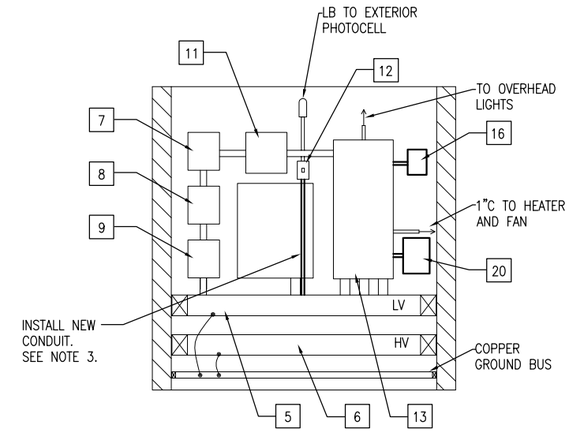
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

EXISTING VAULT PLAN AND ELEVATIONS

AUG 05, 2011 3:54 PM HAGLOOO382
I:\AIRPORTS\MTCARMEL\11A0009D\CADD\AIRPORT\SHEET\NEW SHEETS\E–201.DWG – EXIST VAULT



SECTION A–A

HALF SIZE SCALE 1/4"=1'–0"
FULL SIZE SCALE 1/2"=1'–0"

2' 0 2' 4'

GENERAL NOTES

1. SEE "PROPOSED AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC" SHEET.
2. SEE "PROPOSED ELECTRICAL ONE–LINE DIAGRAMS FOR VAULT AND AIRFIELD" SHEETS.
3. CONTRACTOR SHALL IDENTIFY EXISTING WIRING TO EXTERNALLY MOUNTED PHOTOCELL. CONTRACTOR SHALL DISCONNECT WIRING AND PREP FOR RECONNECTION UPON REMOVAL OF RELAY PANEL [10]. PROVIDE NEW 1/2" GRSC CONDUIT TO CONNECT SWITCH [12] TO LOW–VOLTAGE WIREWAY. PROVIDE FITTINGS AND SEALS FOR CONNECTIONS AS NEEDED FOR COMPLETE INSTALLATION. EXTEND NEW MATCHING CABLING AND SPLICE AT SWITCH AND WIREWAY.
4. CORE DRILL EXISTING LOW VOLTAGE WIREWAY AND CONNECT PROPOSED WIREWAY TO EXISTING LOW VOLTAGE WIREWAY BY 4" GRSC NIPPLE. PROVIDE FITTINGS AS REQUIRED. COORDINATE NIPPLE LENGTH AND ORIENTATION WITH FINAL PLACEMENT OF PROPOSED WIREWAY AND EXISTING CONDUIT FEED TO EXISTING SPACE HEATER.
5. COORDINATE PLACEMENT OF PROPOSED WIREWAY WITH EXISTING SPACE HEATER AND EXISTING WALL VENTILLATION FAN. BOTTOM OF PROPOSED WIREWAY SHALL BE 8" (MINIMUM) ABOVE TOP OF HEATER. LIGHTING CONTACTOR PANEL 1 SHALL BE CLEAR OF VENTILATION FAN BY 12" (MINIMUM).
6. CONTRACTOR SHALL RELOCATE BOOST TRANSFORMER FOR RUNWAY 31 PLASI. EXISTING CONDUIT CONNECTIONS SHALL BE REPLACED. CONTRACTOR SHALL RELOCATE TRANSFORMER TO EXISTING RUNWAY 4 PLASI TRANSFORMER ([14]) LOCATION.
7. CONTRACTOR SHALL INSTALL FOUR (4) 4 INCH PVC COATED GRSC WITH ELBOWS FOR CONNECTION TO CONDUITS AS SHOWN IN AREA PLANS. CONTRACTOR SHAL CORE DRILL EXTERIOR OF SHELTER FOR CONDUIT PENETRATION INTO PROPOSED WIREWAY. EXTEND PROPOSED STUBS THROUGH SHELTER WALL. PROVIDE FITTINGS AS NECESSARY. SEAL ALL PENETRATIONS IN SHELTER WALL TO PREVENT ANY INFILTRATION. PROVIDE A NEMA 4X STAINLESS STEEL PULL BOX (MIN. 36"x36"x12"D). SEE DETAIL ON SHEET 28.

KEYED NOTES

[1] EXISTING TAXIWAY REGULATOR 1:
L–828 MANAIRCO MR10L8283B–02, 10KW OUTPUT, 6.6A @ 1515VAC
3 STEP 4.8/5.5/6.6, SER. #9901200B, MFR. DATE: 12/99,
ONE PHASE INPUT: 240V, 60HZ, 44A, INT/EXT CONTROL: 120V, 60HZ

[2] EXISTING REGULATOR 2:
L–828 MANAIRCO MR07L8283B–01, 7.5KW OUTPUT, 6.6A @ 1135VAC
3 STEP 4.8/5.5/6.6, ONE PHASE INPUT: 208/220/230/240/250/460/480V, 60HZ,
36/34/33/31/30/17/16A, INT/EXT CONTROL: 120V, 60HZ

[3] EXISTING REGULATOR 3:
L–828 MANAIRCO MR07L8283B–01, 7.5KW OUTPUT, 6.6A @ 1135VAC
3 STEP 4.8/5.5/6.6, ONE PHASE INPUT: 208/220/230/240/250/460/480V, 60HZ,
36/34/33/31/30/17/16A, INT/EXT CONTROL: 120V, 60HZ

[4] EXISTING SERIES PLUG CUTOUT (TYPE S–1) WITH ENCLOSURE

[5] EXISTING 6" H x 6" D LOW VOLTAGE WIREWAY

[6] EXISTING 6" H x 6" D HIGH VOLTAGE WIREWAY

[7] EXISTING RUNWAY 4–22 REGULATOR RADIO INTERFACE PANEL

[8] EXISTING RUNWAY 13–31 REGULATOR RADIO INTERFACE PANEL

[9] EXISTING TAXIWAY REGULATOR RADIO INTERFACE PANEL

[10] NOT USED

[11] EXISTING L–854 RADIO CONTROL UNIT

[12] EXISTING SWITCH. SEE NOTE 3.

[13] **EXISTING SERIVCE DISTRIBUTION PANEL. SEE "VAULT DISTRIBUTION PANELBOARD SCHEDULES" FOR ADDITIONS & MODIFICATIONS.**

[14] **120 VAC TO 480 VAC STEP–UP TRANSFORMER FOR RUNWAY 4 PLASI**

[15] NOT USED

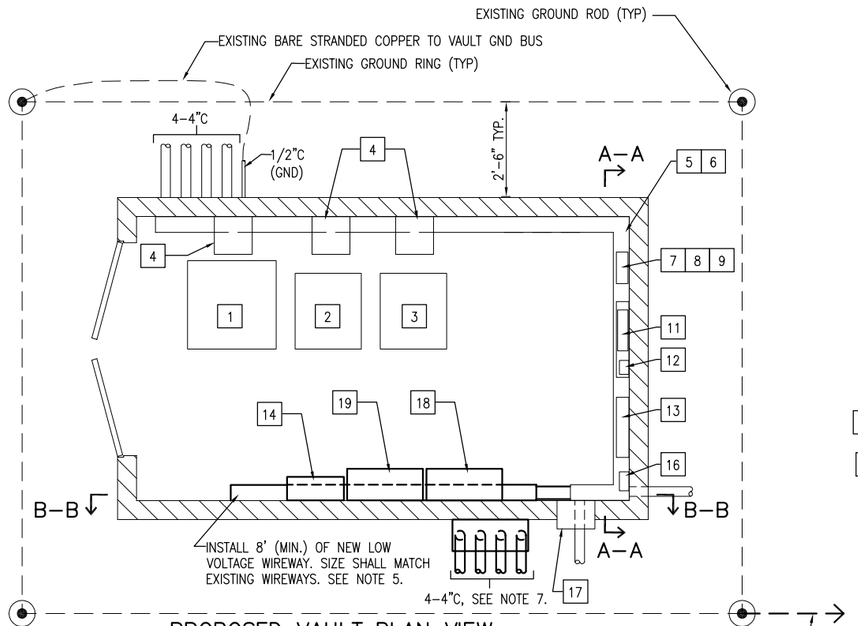
[16] **RELOCATED BOOST TRANSFORMER FOR RUNWAY 31 PLASI; SQUARE D CAT #500SV43B 0.5KVA , 1 PH, 60HZ**

[17] EXISTING EXHAUST FAN

[18] **FURNISH & INSTALL NEW LIGHTING CONTACTOR PANEL 1.**

[19] **FURNISH & INSTALL NEW LIGHTING CONTACTOR PANEL 2.**

[20] **AC SURGE PROTECTOR SUITABLE FOR 120/240 VAC, 1 PH, 3 W PLUS GROUND SYSTEM WITH SURGE CURRENT RATING OF 240 KVA.; LIGHTNING PROTECTION CORP. MODEL LPC 2020–8U–5G OR APPROVED EQUAL.**

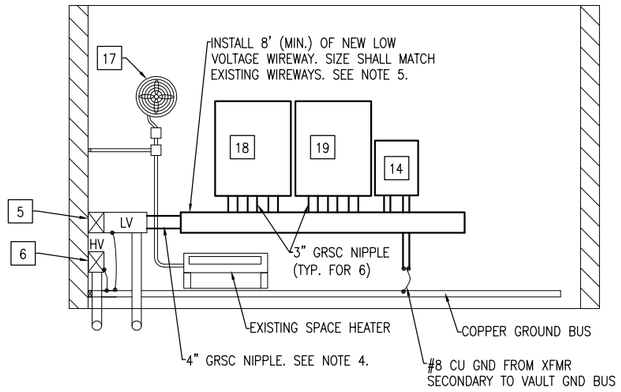


PROPOSED VAULT PLAN VIEW

HALF SIZE SCALE 1/4"=1'–0"
FULL SIZE SCALE 1/2"=1'–0"

2' 0 2' 4'

#2 AWG BARE SOLID TINNED COPPER GROUNDING ELECTRODE CONDUCTOR. CONNECT TO EXISTING GROUND ROD AT VAULT BUILDING AND TO GROUND ROD AT AIRPORT ROTATING BEACON TOWER.



SECTION B–B

HALF SIZE SCALE 1/4"=1'–0"
FULL SIZE SCALE 1/2"=1'–0"

2' 0 2' 4'

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I:\AIRPORTS\MTCARMEL\11A0009D\CADD\AIRPORT\SHEET\NEW SHEETS\E–202.DWG – PROP VAULT

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG–4101 A.I.P. PROJ.: 3–17–0073–B17

HEI Project No. 11A0009D
Filename E–202.DWG
Scale AS NOTED
Date 5–27–2011

LAYOUT	J.F.C.	5–27–2011
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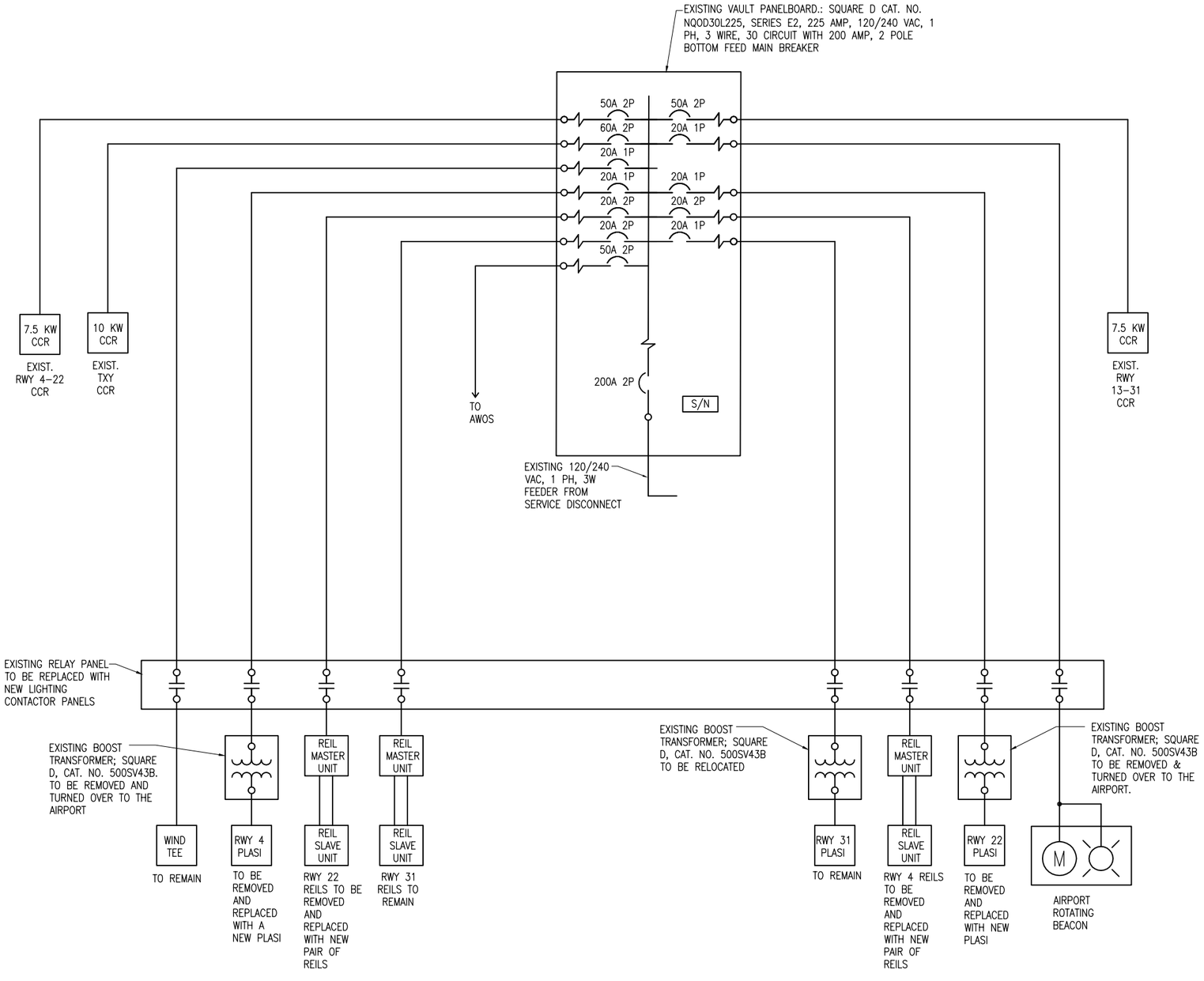
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED PLAN AND ELEVATIONS FOR VAULT



NOTES

1. ALL VAULT WORK, AND/OR POWER OUTAGES, SHALL BE COORDINATED WITH THE AIRPORT MANAGER AND THE AIRPORT DIRECTOR OF OPERATIONS
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 (THAT ARE NOT SCHEDULED FOR REMOVAL AND REPLACEMENT) 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 DOWNTIME.
5. EQUIPMENT DESIGNATED FOR REMOVAL SHALL BE TURNED OVER TO THE AIRPORT. IN THE EVENT THE AIRPORT DOES NOT WANT THE RESPECTIVE EQUIPMENT, THE CONTRACTOR SHALL DISPOSE OF IT OFF SITE.
6. THE EXISTING PLASI SYSTEMS ON RUNWAY 4–22 SHALL BE REMOVED AND REPLACED WITH NEW PLASI SYSTEMS ON EACH RUNWAY APPROACH (RUNWAY 4 & RUNWAY 22). REMOVAL OF EXISTING PLASI SYSTEMS WILL BE PAID FOR UNDER ITEM AR125910, REMOVE PLASI PER EACH.
7. THE EXISTING REILS ON RUNWAY 4–22 SHALL BE REMOVED AND REPLACED WITH NEW REILS AT EACH RUNWAY END (RUNWAY 4 & RUNWAY 22). REMOVAL OF EXISTING REILS SYSTEMS WILL BE PAID FOR UNDER ITEM AR125907, REMOVE REILS PER PAIR.
8. EXISTING AIRPORT ROATING BEACON SHALL REMAIN. THE BEACON TOWER WILL BE UPGRADED WITH THE ADDITION OF OBSTRUCTION LIGHTING AND LIGHTNING PROTECTION.

EXISTING ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HS Project No. 11A0009D
Filename E-601.DWG
Scale NONE
Date 5-27-2011

LAYOUT	K.N.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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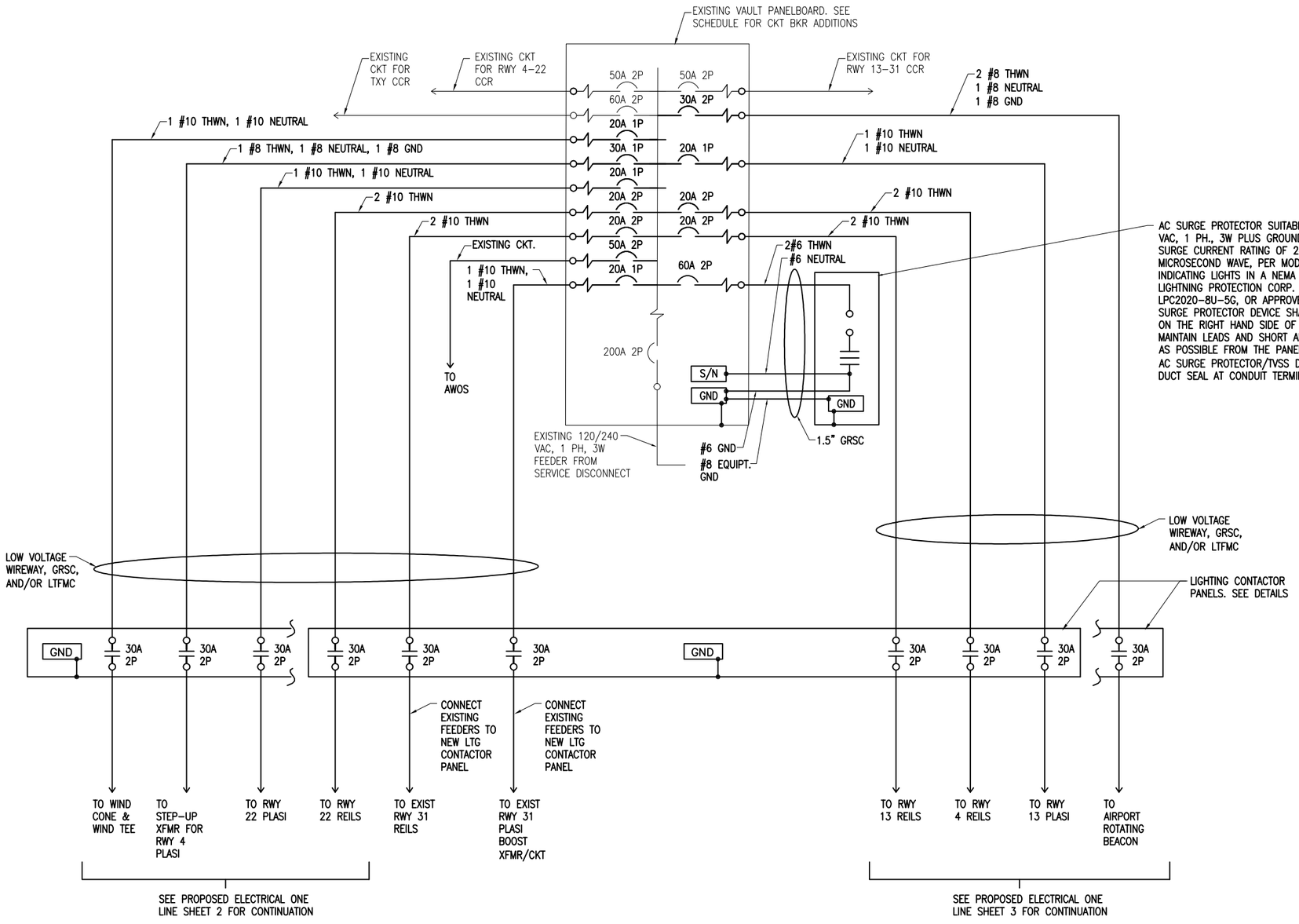
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

EXISTING ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD

21

NOTES
1 ALL EQUIPMENT AND MATERIALS NOT LABELED AS EXISTING IS NEW.



PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD SHEET 1

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DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
IL. PROJ.: AJG-4101 A.I.P. PROJ.: 3-17-0073-B17

HEI Project No.	11A0009D	
Filename	E-602.DWG	
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PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD - SHEET 1

SEE PROPOSED ELECTRICAL ONE LINE SHEET 1 FOR CONTINUATION

3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT. (120 VAC CKT). CONDUCTOR INSULATION SHALL BE PHASE A-BLACK, NEUTRAL-WHITE, GROUND-GREEN. (ITEM AS108656)

IN THE EVENT THAT THE ADDITIVE ALTERNATE IS NOT AWARDED, CONNECT THE EXISTING WIND TEE FEEDER TO THE NEW LIGHTING CONTACTOR PANEL

3-1/C #6 XLP-USE 600V UG CABLE IN UNIT DUCT. (120 VAC CKT). CONDUCTOR INSULATION SHALL BE PHASE A-BLACK, NEUTRAL-WHITE, GROUND-GREEN. (ITEM AS108656)

#6 AWG BARE STRANDED COPPER FROM WIND CONE SUPPORT POLE TO GROUND ROD

WIND CONE

L-807 WIND CONE (AS107712)

10'L x 3/4" DIA. UL LISTED COPPERCLAD GND ROD. MIN. BURY 30" BELOW GRADE.

L-867 SIZE B, 24" DEEP SPLICE CAN WITH INTERNAL AND EXTERNAL GROUND STRAPS & 3/8" THICK STEEL COVER PLATE (AS125565)

EXIST. WIND TEE

EXIST. WIND TEE

#6 AWG CU FROM WIND TEE TO GND ROD

10'L x 3/4" DIA. UL LISTED COPPERCLAD GND ROD. MIN. BURY 30" BELOW GRADE. (AR109200)

3-1/C #8 XLP-USE 600V UG CABLE IN UNIT DUCT. PROVIDE 1" LTFMC FROM XFMR TO LOW VOLTAGE WIREWAY. CONDUCTOR INSULATION SHALL BE PHASE A-BLACK, NEUTRAL-WHITE, GROUND-GREEN. (480 VAC CKT) (ITEM AR108858)

1 #10 THWN, 1 #10 NEUTRAL, 1 3#10 GND IN 3/4" LTFMC

3 KVA, 120 VAC TO 480 VAC STEP-UP XFMR

GND

#8 AWG CU

VAULT GND BUS

S/N

30A 2P

GND

(1) 15A

30 AMP, 3 POLE, 600 VAC, UL LISTED, HEAVY DUTY SAFETY SWITCH IN A IN A NEMA 3R & 12 ENCLOSURE, WITHOUT KNOCKOUTS, SQUARE D CLASS H361AWK WITH NEUTRAL AND GROUND KIT OR APPROVED EQUAL.
PROVIDE 1-15 AMP, 600V, CLASS RK5 FUSE, BUSSMAN FRS-R-15, OR APPROVED EQUAL. INCLUDE 2 SPARE FUSES OF SAME SIZE AND TYPE.

#6 AWG BARE STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR IN 1" SCHED 40 PVC CONNECT TO GROUND ROD WITH EXOTHERMIC WELD

2 #10 THWN, 1 #10 GND IN 3/4" LISTED LTFMC

GND

3 KVA, 120 VAC TO 480 VAC, 1 PHASE, 2 WIRE, 60 HZ, STEP-DOWN XFMR IN A WEATHERPROOF HOUSING

1 #8 THWN, 1 #8 NEUTRAL, 1 #8 GND IN 3/4" LISTED LTFMC

BOND NEUTRAL TO GROUND WITH #6 AWG CU BONDING JUMPER OR BONDING SCREW IN CONFORMANCE WITH 2011 NEC 250.30

S/N

30A 2P

GND

(1) 20A

30 AMP, 2 POLE WITH SOLID NEUTRAL, 240 VAC, UL LISTED, HEAVY DUTY SAFETY SWITCH IN A IN A NEMA 3R & 12 ENCLOSURE, WITHOUT KNOCKOUTS, SQUARE D CLASS 3110, CAT. H221AWK WITH H60SN NEUTRAL ASSEMBLY, INCLUDE GROUND KIT.
PROVIDE 1-20 AMP, 250V, CLASS RK5 FUSE, BUSSMAN FRN-R-20, OR APPROVED EQUAL. INCLUDE 2 SPARE FUSES OF SAME SIZE AND TYPE.

10'L x 3/4" DIA. UL LISTED COPPERCLAD GND ROD. MIN. BURY 30" BELOW GRADE. ALL CONNECTIONS TO GND ROD SHALL BE EXOTHERMIC WELD. (TYP. FOR EACH WIND CONE, PLASI, REIL UNIT)

3-1/C #8 XLP-USE 600V UG CABLE IN UNIT DUCT. (120 VAC CKT) (ITEM AR108658)

S/N

60A 2P

GND

HEAVY DUTY 60 AMP, 600 VAC, 2 POLE OR 3 POLE WITH S/N & GND, NOT FUSIBLE SAFETY SWITCH IN A NEMA 3R & 12 ENCLOSURE, SQUARE D CLASS 3110, CAT. NO. HU362AWK WITH SNO610 & GTK0610, OR APPROVED EQUAL. INSTALL AT PLASI.

1 #10 THWN, 1 #10 NEUTRAL, 1 #10 GND INN 3/4" LTFMC

PLASI

RWY 4 PLASI (AR125630)

#6 AWG BARE STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR IN 1" SCHED 40 PVC

#6 AWG BARE CU

10'L x 3/4" DIA. UL LISTED COPPERCLAD GND ROD. MIN. BURY 18" BELOW GRADE. ALL CONNECTIONS TO GND ROD SHALL BE EXOTHERMIC WELD.

3-1/C #4 XLP-USE 600V UG CABLE IN UNIT DUCT. (120 VAC CKT) (ITEM AR108654)

S/N

60A 2P

GND

HEAVY DUTY 60 AMP, 600 VAC, 2 POLE OR 3 POLE WITH S/N & GND, NOT FUSIBLE SAFETY SWITCH IN A NEMA 3R & 12 ENCLOSURE, SQUARE D CLASS 3110, CAT. NO. HU362AWK WITH SNO610 & GTK0610, OR APPROVED EQUAL. INSTALL AT PLASI.

1 #10 THWN, 1 #10 NEUTRAL, 1 #10 GND INN 3/4" LTFMC

#6 AWG BARE STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR IN 1" SCHED 40 PVC

PLASI

RWY 22 PLASI (AR125630)

#6 AWG BARE CU

10'L x 3/4" DIA. UL LISTED COPPERCLAD GND ROD. MIN. BURY 30" BELOW GRADE. ALL CONNECTIONS TO GND ROD SHALL BE EXOTHERMIC WELD. (TYP. FOR EACH WIND CONE, PLASI, REIL UNIT)

3-1/C #8 AWG, 600V, UG CABLE IN UNIT DUCT. (240 VAC CKT). CABLE INSULATION SHALL BE PHASE A-BLACK, PHASE B-RED, GROUND-GREEN (AR108658)

NOTES:

1. STEP-UP AND STEP-DOWN TRANSFORMERS AND ASSOCIATED DISCONNECTS, WIRING, CONDUITS, & SUPPORTS WILL BE PAID FOR UNDER ITEM AR109200. INSTALL ELECTRICAL EQUIPMENT PER LUMP SUM.

REIL MASTER UNIT

#6 AWG BARE CU

GND ROD

CONTROL WIRING IN SEPARATE 2" GRSC

2 #8 XLP-USE, 600V CABLE, 1 #8 GND IN 2" GRSC

REIL SLAVE UNIT

#6 AWG CU

RWY 22 REIL PAIR (AR125610)

VAULT GND BUS

PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD SHEET 2

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL PROJ.: AJG-4101

HEI Project No. 11A0009D
Filename E-603.DWG
Scale NONE
Date 5-27-2011

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DRAWN	R.L.L.	5-27-2011
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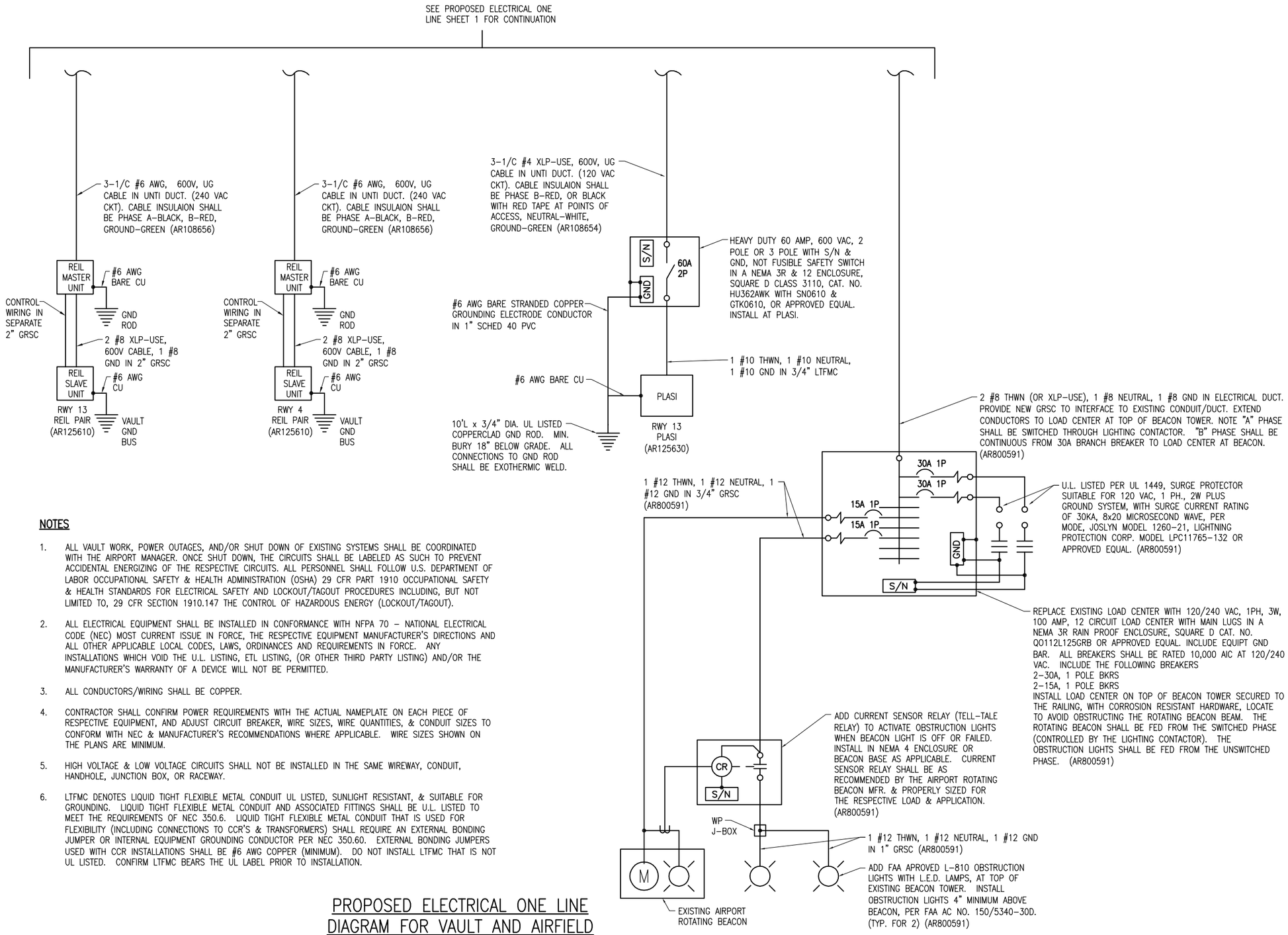
PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD - SHEET 2

23



NOTES

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

2. ALL ELECTRICAL EQUIPMENT 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 CONDUCTORS/WIRING SHALL BE COPPER.

4. CONTRACTOR SHALL CONFIRM POWER REQUIREMENTS WITH THE ACTUAL NAMEPLATE ON EACH PIECE OF RESPECTIVE EQUIPMENT, AND ADJUST CIRCUIT BREAKER, WIRE SIZES, WIRE QUANTITIES, & CONDUIT SIZES TO CONFORM WITH NEC & MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE. WIRE SIZES SHOWN ON THE PLANS ARE MINIMUM.

5. HIGH VOLTAGE & LOW VOLTAGE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME WIREWAY, CONDUIT, HANDHOLE, JUNCTION BOX, OR RACEWAY.

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

PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD SHEET 3

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL PROJ.: AJG-4101

HSI Project No. 11A0009D	LAYOUT	K.N.L. 5-27-2011
Filename E-604.DWG	DRAWN	R.L.L. 5-27-2011
Scale NONE	REVIEWED	K.N.L. 6-3-2011
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Springfield, Illinois 62703-2886
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REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED ELECTRICAL ONE LINE DIAGRAM FOR VAULT AND AIRFIELD - SHEET 3

24
24 of 33 sheets

AUG 05, 2011 4:09 PM HAGLOOO382
I:\AIRPORTS\MTCARMEL\11A0009D\CADD\AIRPORT\SHEET\NEW SHEETS\E-604.DWG – PROP ONE LINE SHEET 3

EXISTING VAULT PANEL

CKT #	DUTY				DUTY	CKT #
1	RUNWAY 4–22 CCR	50A 2P		50A 2P	RUNWAY 13–31 CCR	2
3		---		---		4
5	TAXIWAY CCR	60A 2P		15A 1P	PHOTOCELL	6
7		---		20A 1P	AIRPORT ROTATING BEACON	8
9	WIND TEE	20A 1P		30A 1P	INTERFACE RELAY	10
11	RUNWAY 4 PLASI	20A 1P		20A 1P	RUNWAY 22 PLASI	12
13	RADIO CONTROL POWER	25A 1P		20A 1P	VAULT LIGHTS & RECEPT.	14
15	EXHAUST FAN	20A 1P		20A 2P	VAULT HEATER	16
17	RUNWAY 22 REIL	20A 2P		---		18
19		---		20A 2P	RUNWAY 4 REIL	20
21	RUNWAY 31 REIL	20A 2P		---		22
23		---		20A 1P	RUNWAY 31 PLASI	24
25	AWOS	50A 2P			BLANK	26
27		---			BLANK	28
29	BLANK				BLANK	30

200A 2P

S/N

EXISTING VAULT PANEL IS A SQUARE D NQOD30L225, SERIES E2, 225 AMPS, 120/240V 1 PH, 3W, 30 CIRCUIT, WITH A 200A, 2 POLE BOTTOM FEED MAIN CIRCUIT BREAKER

EXISTING VAULT PANEL WITH ADDITIONS

CKT #	DUTY				DUTY	CKT #
1	RUNWAY 4–22 CCR	50A 2P		50A 2P	RUNWAY 13–31 CCR	2
3		---		---		4
5	TAXIWAY CCR	60A 2P		**10A 1P**	**PHOTOCELL, RADIO & CONTROL PANEL**	6
7		---		**30A 2P**	AIRPORT ROTATING BEACON	8
9	WIND TEE **& WIND CONE**	20A 1P		---		10
11	RUNWAY 4 PLASI	**30A 1P**		20A 1P	RUNWAY 13 PLASI	12
13	**RUNWAY 22 PLASI**	**20A 1P**		20A 1P	VAULT LIGHTS & REC	14
15	EXHAUST FAN	20A 1P		20A 2P	VAULT HEATER	16
17	RUNWAY 22 REIL	20A 2P		---		18
19		---		20A 2P	RUNWAY 4 REIL	20
21	RUNWAY 31 REIL	20A 2P		---		22
23		---		**20A 2P**	**RUNWAY 13 REIL**	24
25	AWOS	50A 2P		---		26
27		---		**60A 2P**	**SURGE PROTECTIVE DEVICE**	28
29	**RUNWAY 31 PLASI**	**20A 1P**		---		30

200A 2P

S/N GND

EXISTING VAULT PANEL IS A SQUARE D NQOD30L225, SERIES E2, 225 AMPS, 120/240V 1 PH, 3W, 30 CIRCUIT, WITH A 200A, 2 POLE BOTTOM FEED MAIN CIRCUIT BREAKER

NOTES:

1. REPLACE THE 15 AMP, 1–POLE BREAKER (FOR THE PHOTOCELL) IN POSITION 6 WITH A NEW 10 AMP, 1–POLE BOLT–ON BREAKER WITH 10,000 AIC AT 120 VAC; SQUARE D CAT. NO. QOB110.
2. REPLACE THE CIRCUIT BREAKERS IN POSITIONS 8 AND 10 WITH A 30 AMP, 2–POLE BOLT–ON BREAKER WITH 10,000 AIC AT 120/240 VAC; SQUARE D CAT. NO. QOB230, TO POWER THE AIRPORT ROTATING BEACON.
3. ADD THE WIND CONE TO THE WIND TEE CIRCUIT.
4. REPLACE THE 20 AMP, 1–POLE BREAKER (FOR THE RUNWAY 4 PLASI) IN POSITION 11 WITH A NEW 30 AMP, 1–POLE BOLT–ON BREAKER WITH 10,000 AIC AT 120 VAC; SQUARE D CAT. NO. QOB130, TO RUNWAY 4 PLASI STEP–UP TRANSFORMER.
5. REPLACE THE 25 AMP, 1–POLE BREAKER (PREVIOUSLY FOR THE RADIO) IN POSITION 13 WITH A NEW 20 AMP, 1–POLE BOLT–ON BREAKER WITH 10,000 AIC AT 120 VAC; SQUARE D CAT. NO. QOB120 TO POWER THE RUNWAY 22 PLASI.
6. FURNISH AND INSTALL A 20 AMP, 2–POLE BOLT–ON BREAKER WITH 10,000 AIC AT 120/240 VAC; SQUARE D CAT. NO. QOB220, TO POWER THE RUNWAY 13 REILS.
7. RELOCATE THE 20 AMP, 1–POLE BREAKER (FOR THE RUNWAY 31 PLASI) FROM POSITION 24 TO POSITION 29.
8. FURNISH AND INSTALL A 60 AMP, 2–POLE BOLT–ON BREAKER WITH 10,000 AIC AT 120/240 VAC; SQUARE D CAT. NO. QOB260 IN POSITIONS 28 AND 30 FOR THE SURGE PROTECTIVE DEVICE. LEADS TO THE SURGE PROTECTIVE DEVICE SHALL BE AS SHORT AND AS STRAIGHT AS POSSIBLE.
9. CONNECT RUNWAY 13 PLASI CIRCUIT TO THE 20 AMP, 1 POLE BREAKER IN POSITION 12.
10. ALL EXISTING BREAKERS SCHEDULE FOR REPLACEMENT SHALL REMAIN AIRPORT PROPERTY.
11. UPDATE CIRCUIT DIRECTORY TO REFLECT ALL ADDITIONS AND CHANGES.
12. FURNISH AND INSTALL A COPPER EQUIPMENT GROUND BAR TO ACCOMMODATE ALL GROUND WIRES TO AND FROM THE PANELBOARD.
13. CONTRACTOR SHALL CONFIRM CIRCUIT BREAKER PART NUMBERS WITH THE RESPECTIVE MFR.

BY	REVISION	DATE

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG-4101 A.I.P. PROJ.: 3-17-0073-B17

HEI Project No. 11A0009D
Filename E-611.DWG
Scale NONE
Date 5-27-2011

LAYOUT	K.N.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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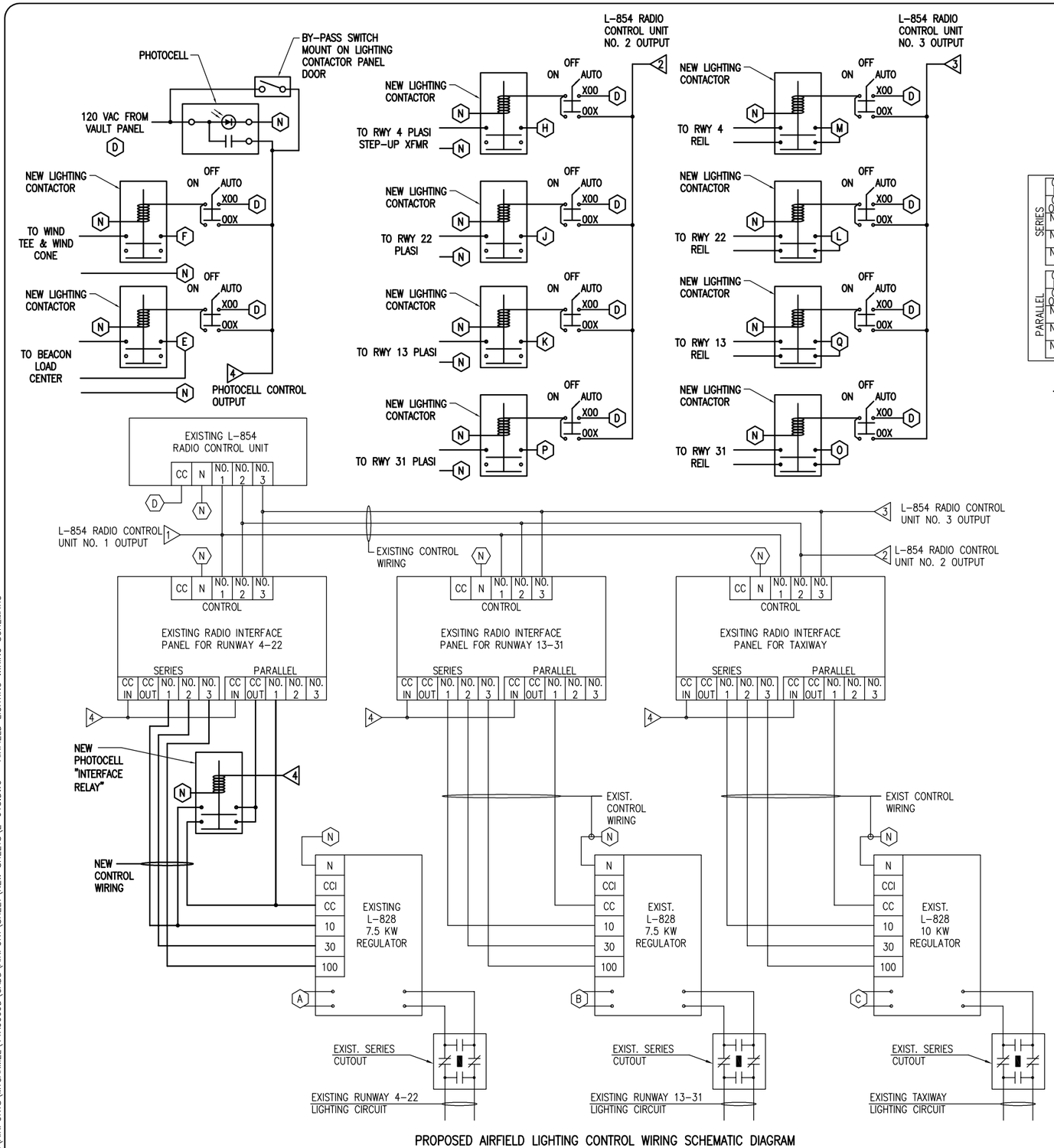
Offices Nationwide

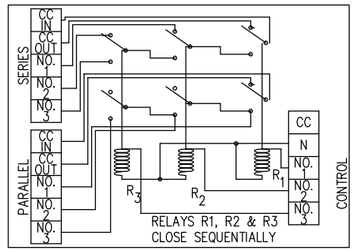
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

VAULT DISTRIBUTION PANELBOARD SCHEDULES

25



PROPOSED AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC DIAGRAM



TYP. INTERFACE PANEL DETAIL

SHEET LEGEND

- (A) VAULT PANEL CKT 1, 3 (RWY 4-22 CCR)
- (B) VAULT PANEL CKT 2, 4 (RWY 13-31 CCR)
- (C) VAULT PANEL CKT 5, 7 (TAXIWAY CCR)
- (D) VAULT PANEL CKT 6 (PHOTOCELL, L-854 RADIO & CONTROL)
- (E) VAULT PANEL CKT 8,10 (AIRPORT ROTATING BEACON)
- (F) VAULT PANEL CKT 9 (WIND TEE & WIND CONE)
- (G) RESERVED
- (H) VAULT PANEL CKT 11 (RWY 4 PLASI)
- (J) VAULT PANEL CKT 13 (RWY 13 PLASI)
- (K) VAULT PANEL CKT 12 (RWY 12 PLASI)
- (L) VAULT PANEL CKT 17,19 (RWY 22 REIL)
- (M) VAULT PANEL CKT 20,22 (RWY 4 REIL)
- (N) N DESIGNATES NEUTRAL FROM THE RESPECTIVE PANEL THAT POWERS THE DEVICE. FOR CONTROL CIRCUIT INPUTS TO CCR'S N SHALL BE FROM THE RESPECTIVE INTERFACE PANEL CIRCUIT NEUTRAL CONNECTION.
- (O) VAULT PANEL CKT 21, 23 (RWY 31 REIL)
- (P) VAULT PANEL CKT 29 (RWY 31 PLASI)
- (Q) VAULT PANEL CKT 24,26 (RWY 13 REIL)
- (R) VAULT PANEL CKT 28,30 (SURGE PROTECTIVE DEVICE)

NOTES

1. ALL ELECTRICAL EQUIPMENT WILL BE WIRED IN ACCORDANCE WITH THE SCHEMATIC WIRING DIAGRAM AND ALL APPLICABLE CODES.
2. ALL CONTROL CABLE WILL BE NO. 12 AWG, 600 VOLT COPPER CABLE.
3. ALL ELECTRICAL EQUIPMENT SHALL BE PROPERLY LABELED AND ALL ELECTRICAL CABLES SHALL BE TAGGED.
4. ALL ELECTRICAL CABLES INSIDE THE VAULT SHALL BE IN CONDUIT OR DUCT.
5. THE RUNWAY/TAXIWAY CIRCUITS WILL BE CONTROLLED BY THE L-854 RADIO CONTROL UNIT & PHOTOCELL IN THE FOLLOWING MANNER:
   PHOTOCELL - ACTIVATES RADIO CONTROL & 10% BRIGHTNESS FOR RUNWAY 4-22
   3 CLICKS - 10% BRIGHTNESS
   5 CLICKS - 30% BRIGHTNESS
   7 CLICKS - 100% BRIGHTNESS
6. THE PLASI UNITS SHALL BE CONTROLLED BY THE L-854 RADIO RECEIVER IN THE FOLLOWING MANNER:
   3 CLICKS - OFF
   5 CLICKS - ON
   7 CLICKS - REMAIN ON
7. THE REIL UNITS SHALL BE CONTROLLED BY THE L-854 RADIO RECEIVER IN THE FOLLOWING MANNER:
   3 CLICKS - OFF
   5 CLICKS - OFF
   7 CLICKS - ON
8. EQUIPMENT GROUND WIRES SHALL BE INCLUDED WITH EACH NEW BRANCH CIRCUIT & EACH NEW CONTROL CIRCUIT
9. EXISTING WIRING IS BASED ON RECORD DRAWINGS & FIELD SURVEY DATA. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS.

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL PROJ.: AJG-4101

HEI Project No.	11A0009D	
Filename	E-613.DWG	
Scale	NONE	
Date	5-27-2011	
LAYOUT	K.N.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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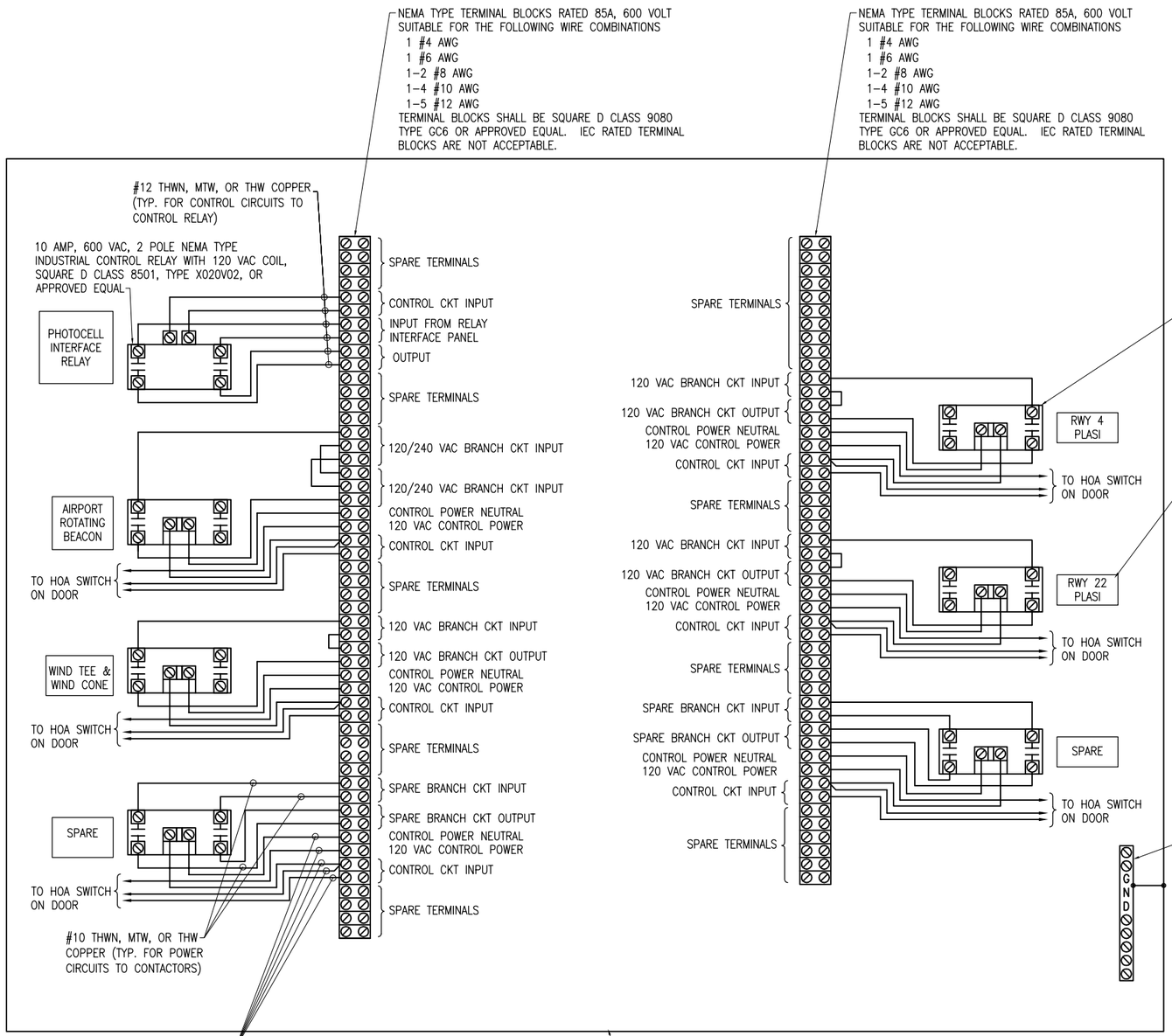
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

PROPOSED AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC

26
26 of 33 sheets

AUG 05, 2011 4:18 PM HAGL000382
I:\AIRPORTS\MTCARMEL\11A0009D\CADD\AIRPORT\SHEET\NEW SHEETS\E-613.DWG - AIRFIELD LIGHTING WIRING SCHEMATIC



LIGHTING CONTACTOR PANEL 1 DETAIL

NOTES

1. 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
2. INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
3. FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
4. PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
5. PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "AIRPORT ROTATING BEACON" OR "RWY 4 PLASI").
6. SEE "LIGHTING CONTACTOR SCHEMATIC" SHEET FOR ADDITIONAL INFORMATION ON WIRING. ALSO SEE "AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC" SHEET FOR INFORMATION ON WIRING.
7. INCLUDE LEGEND PLATE LABELED "NOTICE: CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME".
8. 120/240 VAC PHASE "A" CONDUCTORS SHALL HAVE BLACK COLORED INSULATION. 120/240 VAC PHASE "B" CONDUCTORS SHALL HAVE RED COLORED INSULATION. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION. INSULATED EQUIPMENT GROUND WIRES SHALL HAVE GREEN COLORED INSULATION.
9. CONTROL PANEL FOR AIRFIELD LIGHTING AND NAVAIDS 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 REQUIREMENT AND THE "BUY AMERICAN ACT". GUS BERTHOLD ELECTRIC (1900 WEST CARROLL AVENUE, CHICAGO, IL 60612, PHONE: 312-243-5767) IS AN APPROVED UL 508 INDUSTRIAL CONTROL PANEL BUILDER.
10. ALL FEEDER AND/OR BRANCH CIRCUIT CONDUCTORS OF THE SAME CIRCUIT (INCLUDING NEUTRAL CONDUCTORS AND EQUIPMENT GROUNDING CONDUCTORS) SHALL BE CONTAINED WITHIN THE SAME RACEWAY, AUXILIARY GUTTER, OR WIREWAY TO COMPLY WITH NEC 300.3(B). FOR VOLTAGE POWERED CIRCUITS TO AIRFIELD DEVICES, ROUTE ALL PHASE, NEUTRAL, AND EQUIPMENT GROUNDING CONDUCTORS FROM THE VAULT PANELBOARD TO THE RELAY/CONTACTOR PANEL AND THEN TO THE RESPECTIVE AIRFIELD DEVICE.

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG-4101 A.I.P. PROJ.: 3-17-0073-B17

HG Project No. 11A00009D
Filename E-606.DWG
Scale NONE
Date 5-27-2011

LAYOUT	J.M.V./R.L.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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Springfield, Illinois 62703-2886
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REPLACE / INSTALL PLASIS, REIL'S AND UPGRADE BEACON

LIGHTING CONTACTOR PANEL 1 DETAIL

27
27 of 33 sheets

AUG 05, 2011 4:11 PM HAGL000382
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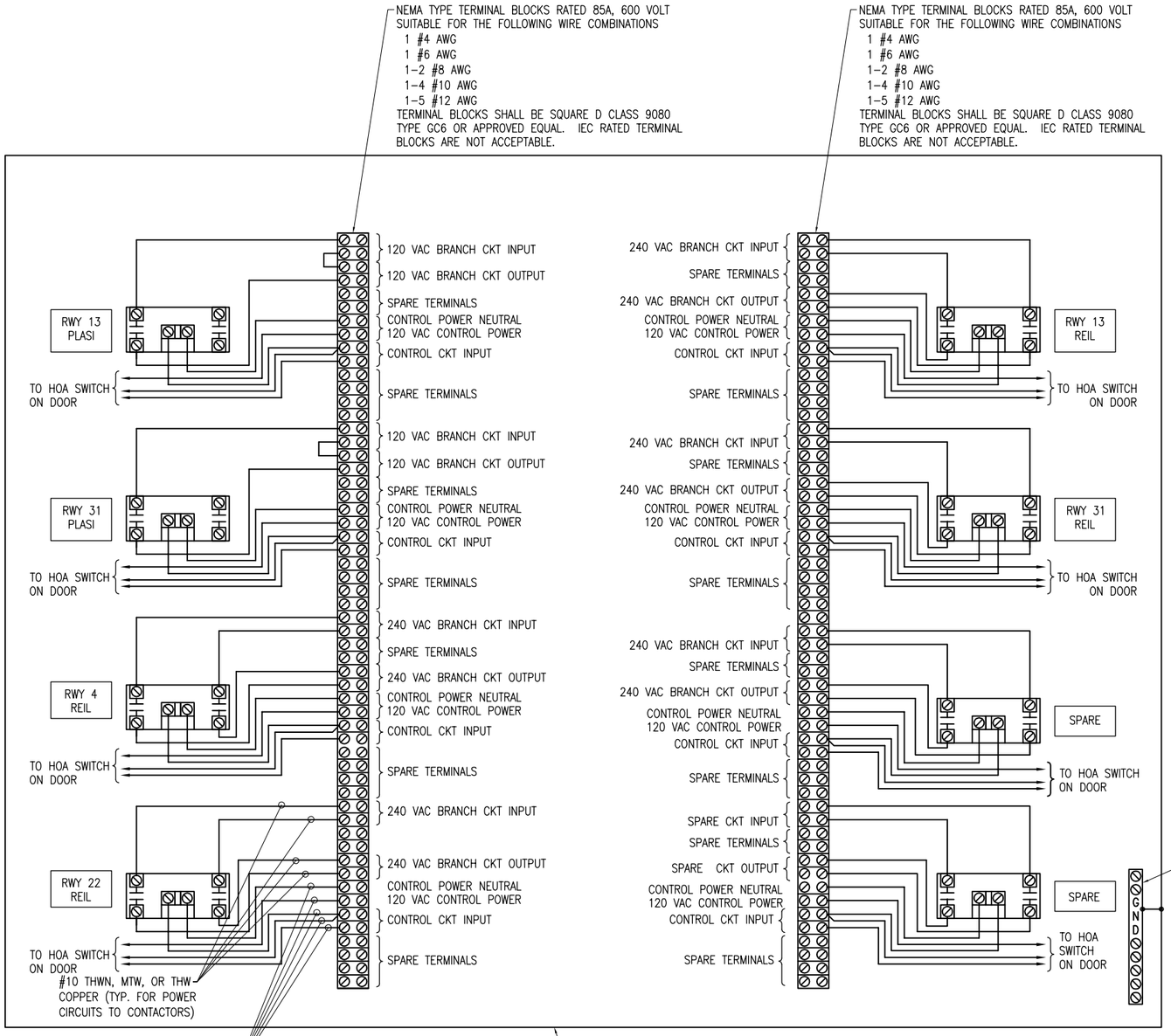

NOTES

1. 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
2. INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
3. FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
4. PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
5. PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "RWY 13 REILS" OR "RWY 31 PLASI").
6. SEE "LIGHTING CONTACTOR SCHEMATIC" SHEET FOR ADDITIONAL INFORMATION ON WIRING. ALSO SEE "AIRFIELD LIGHTING CONTROL WIRING SCHEMATIC" SHEET FOR INFORMATION ON WIRING.
7. INCLUDE LEGEND PLATE LABELED "NOTICE: CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME".
8. 120/240 VAC PHASE "A" CONDUCTORS SHALL HAVE BLACK COLORED INSULATION. 120/240 VAC PHASE "B" CONDUCTORS SHALL HAVE RED COLORED INSULATION. NEUTRAL CONDUCTORS SHALL HAVE WHITE COLORED INSULATION. INSULATED EQUIPMENT GROUND WIRES SHALL HAVE GREEN COLORED INSULATION.
9. CONTROL PANEL FOR AIRFIELD LIGHTING AND NAVAIDS 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 REQUIREMENT AND THE "BUY AMERICAN ACT". GUS BERTHOLD ELECTRIC (1900 WEST CARROLL AVENUE, CHICAGO, IL 60612, PHONE: 312-243-5767) IS AN APPROVED UL 508 INDUSTRIAL CONTROL PANEL BUILDER.
10. ALL FEEDER AND/OR BRANCH CIRCUIT CONDUCTORS OF THE SAME CIRCUIT (INCLUDING NEUTRAL CONDUCTORS AND EQUIPMENT GROUNDING CONDUCTORS) SHALL BE CONTAINED WITHIN THE SAME RACEWAY, AUXILIARY GUTTER, OR WIREWAY TO COMPLY WITH NEC 300.3(B). FOR VOLTAGE POWERED CIRCUITS TO AIRFIELD DEVICES, ROUTE ALL PHASE, NEUTRAL, AND EQUIPMENT GROUNDING CONDUCTORS FROM THE VAULT PANELBOARD TO THE RELAY/CONTACTOR PANEL AND THEN TO THE RESPECTIVE AIRFIELD DEVICE.

LIGHTING CONTACTOR PANEL 2 DETAIL

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT
A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HEI Project No.	11A0009D	
Filename	E-608.DWG	
Scale	NONE	
Date	5-27-2011	
LAYOUT	J.M.V./R.L.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
REVIEWED	K.N.L.	6-3-2011

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Hanson Professional Services Inc.
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Springfield, Illinois 62703-2888
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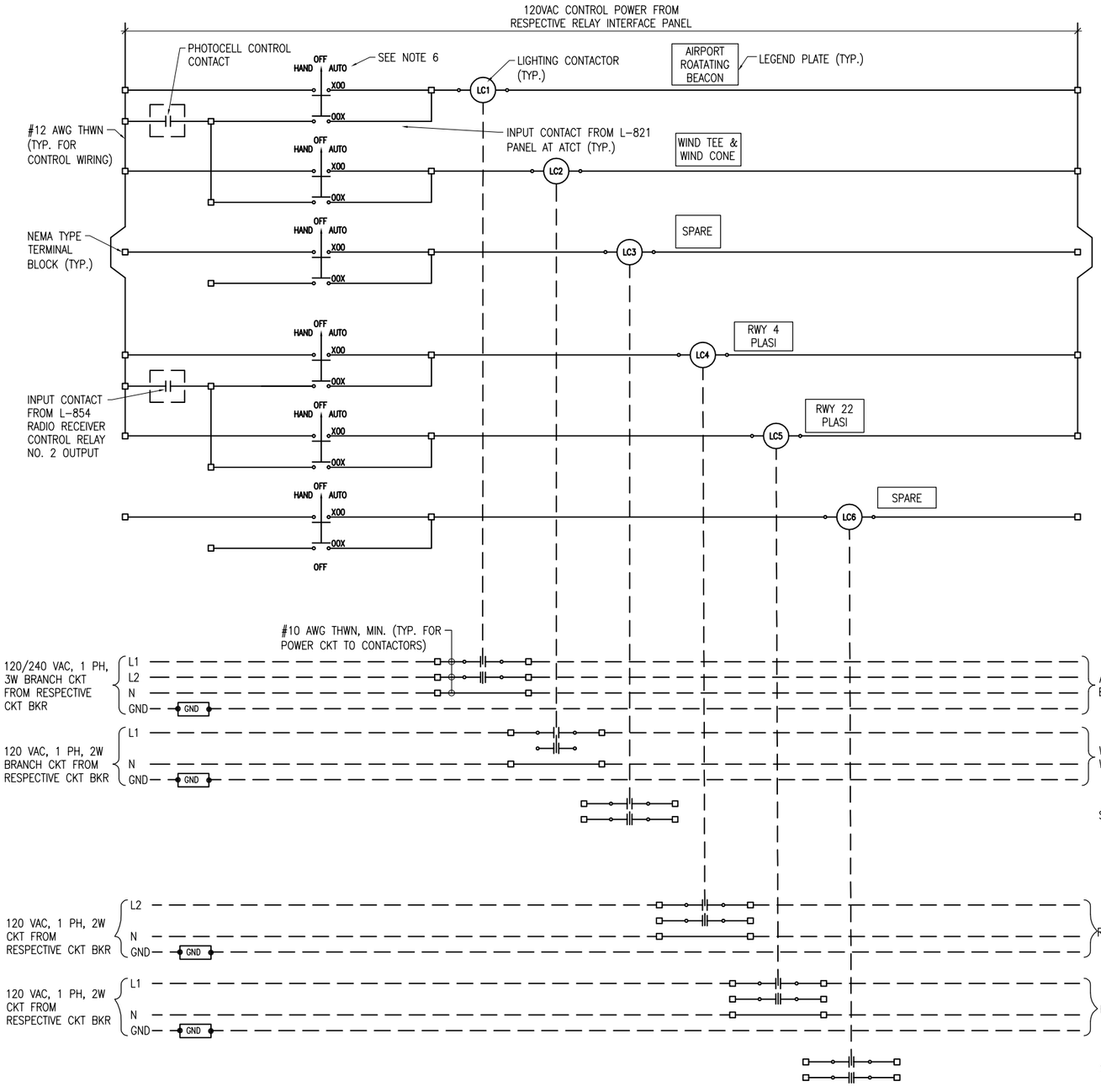
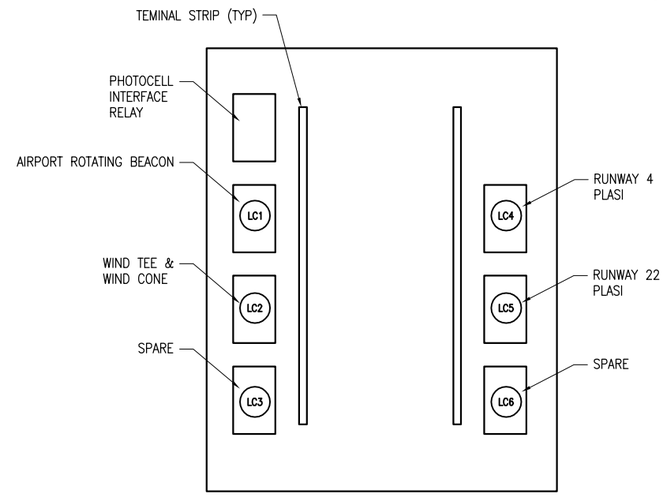
REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

LIGHTING CONTACTOR PANEL 2 DETAIL



LIGHTING CONTACTOR PANEL 1 SCHEMATIC



LIGHTING CONTACTOR PANEL 1

NOT TO SCALE

NOTES

1. 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 25 AMP AND 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
2. INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
3. FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
4. 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. PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
6. PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "WIND CONE" OR "AIRPORT ROTATING BEACON").

BY	REVISION	DATE

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HEI Project No. 11A0009D
Filename E-607.DWG
Scale NONE
Date 5-27-2011

LAYOUT	J.M.V./R.L.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
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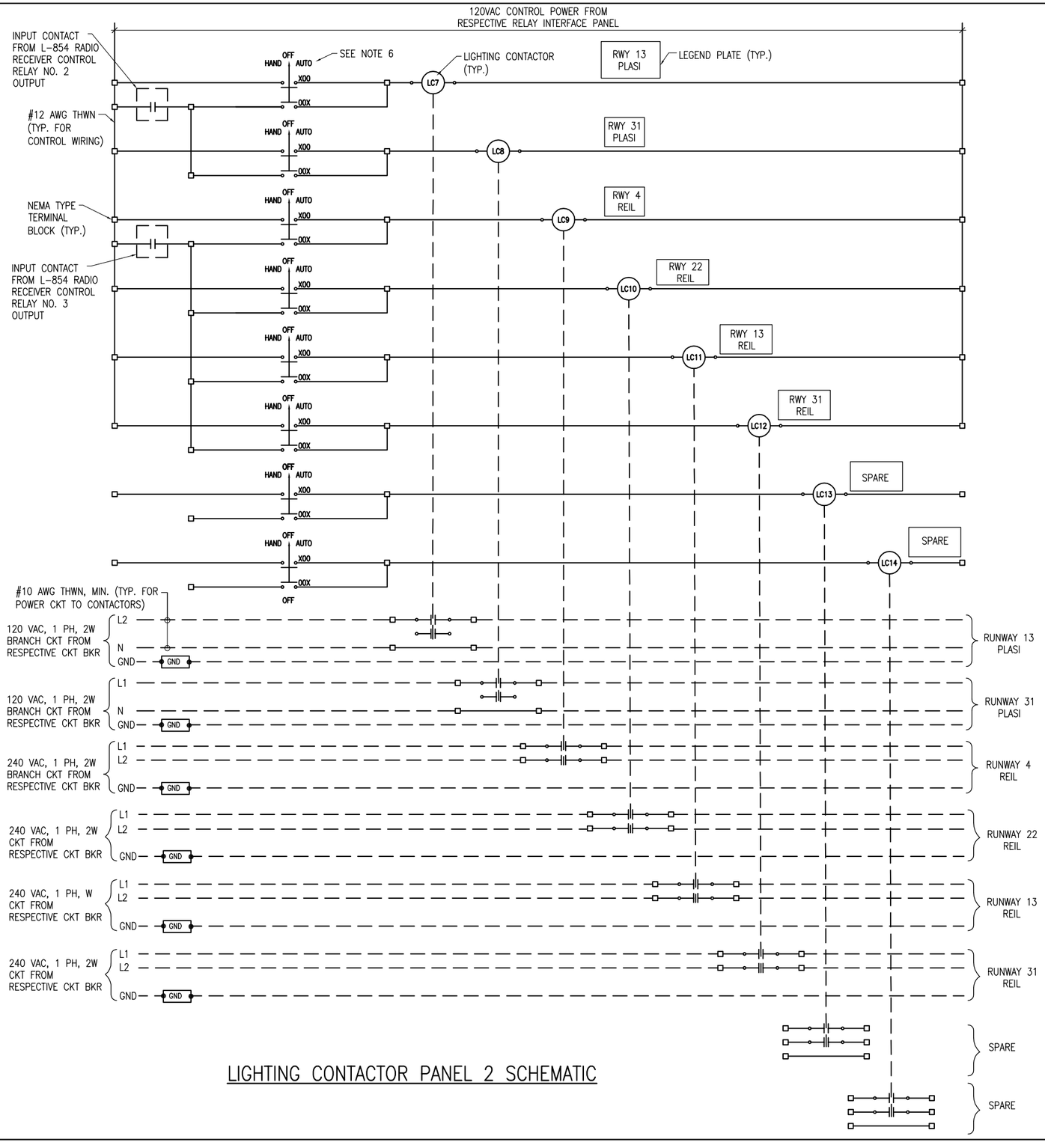
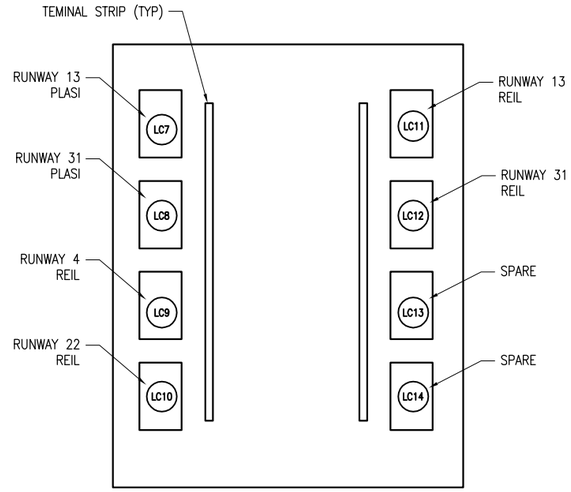
HANSON
Hanson Professional Services Inc.
1525 South Sixth Street
Springfield, Illinois 62703-2886
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

LIGHTING CONTACTOR PANEL 1 SCHEMATIC



LIGHTING CONTACTOR PANEL 2 SCHEMATIC



LIGHTING CONTACTOR PANEL 2

NOT TO SCALE

NOTES

1. 15 AMP & 20 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #10 AWG COPPER THWN FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL. 25 AMP AND 30 AMP INPUT POWER/BRANCH CIRCUITS SHALL BE #8 AWG COPPER THWN (MIN.) FROM THE RESPECTIVE POWER SOURCE TO THE LIGHTING CONTACTOR/RELAY PANEL.
2. INPUT CONTROL CIRCUITS SHALL BE #12 AWG COPPER THWN.
3. FOR 120 VAC BRANCH CIRCUITS THE NEUTRAL CONDUCTOR SHALL NOT BE SWITCHED THROUGH THE RELAY CONTACTS. USE TERMINAL BLOCKS TO TRANSITION FROM VAULT BRANCH CIRCUIT WIRING TO FIELD WIRING.
4. PROVIDE #10 AWG COPPER BONDING JUMPER FROM PANEL ENCLOSURE FRAME TO ENCLOSURE DOOR.
5. PROVIDE 3-POSITION MAINTAINED CONTACT "HAND-OFF-AUTO" SELECTOR SWITCH FOR EACH LIGHTING CONTACTOR & MOUNT ON LIGHTING CONTACTOR PANEL ENCLOSURE DOOR. SELECTOR SWITCH SHALL BE SQUARE D CLASS 9001, TYPE KS43FBH13, OR APPROVED EQUAL. INCLUDE LEGEND PLATE TO IDENTIFY THE DEVICE CONTROLLED (EX: "WIND CONE" OR "AIRPORT ROTATING BEACON").

BY	REVISION	DATE

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

A.I.P. PROJ.: 3-17-0073-B17
IL. PROJ.: AJG-4101

HEI Project No. 11A0009D		
Filename E-609.DWG		
Scale NONE		
Date 5-27-2011		
LAYOUT	J.M.V./R.L.L.	5-27-2011
DRAWN	R.L.L.	5-27-2011
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Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

LIGHTING CONTACTOR PANEL 2 SCHEMATIC

LEGEND PLATE SCHEDULE	
DEVICE	**LABEL**
RUNWAY 4–22 CCR	RUNWAY 4–22
RUNWAY 4 PLASI STEP–UP TRANSFORMER	120 TO 480 VAC STEP–UP TRANSFORMER FOR RUNWAY 4 PLASI
RUNWAY 31 PLASI BOOST TRANSFORMER	BOOST TRANSFORMER FOR RUNWAY 31 PLASI
EACH CUT OUT ENCLOSURE (3 LEGEND PLATES)	CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF
EACH CUTOUT INPUT SIDE CONNECTION (3 LEGEND PLATES)	INPUT
EACH CUTOUT OUTPUT SIDE CONNECTION (3 LEGEND PLATES)	OUTPUT
EACH CONTROL PANEL FOR AIRFIELD LIGHTING AND NAVAIDS (2 LEGEND PLATES)	NOTICE CONTACTORS HAVE REMOTE LOCATED CONTROLS AND MAY ACTIVATE AT ANY TIME
RUNWAY 13–31 CCR	RUNWAY 13–31
TAXIWAY CCR	TAXIWAY
LOW VOLTAGE WIREWAY (PROVIDE 3 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND)	LOW VOLTAGE
HIGH VOLTAGE WIREWAY (PROVIDE 3 LEGEND PLATES 1/2" HIGH BLACK LETTERS WHITE BACKGROUND)	HIGH VOLTAGE
L–854 RADIO CONTROLLER	L–854 RADIO CONTROLLER
RADIO INTERFACE RELAY FOR RUNWAY 4–22 CCR	RUNWAY 4–22 CCR RADIO INTERFACE
RADIO INTERFACE RELAY FOR RUNWAY 13–31 CCR	RUNWAY 13–31 CCR RADIO INTERFACE
RADIO INTERFACE RELAY FOR TAXIWAY CCR	TAXIWAY CCR RADIO INTERFACE
AC / SURGE PROTECTOR / TVSS	CAUTION HIGH VOLTAGE SURGE PROTECTOR

"DANGER – HIGH VOLTAGE KEEP OUT" SIGN

PROVIDE WARNING SIGN ON VAULT EXTERIOR DOORS LABELED "DANGER – HIGH VOLTAGE – KEEP OUT" PER THE REQUIREMENTS OF NEC 110.34 (C). PROVIDE MINIMUM OF 2 SIGNS (ONE ON EACH DOOR TO THE VAULT).

"DANGER – HIGH VOLTAGE" SIGN

FURNISH AND INSTALL "DANGER – HIGH VOLTAGE" LABELS/SIGNS FOR EACH CUTOUT ENCLOSURE, EACH CONSTANT CURRENT REGULATOR, AND THE HIGH VOLTAGE WIREWAY, TO COMPLY WITH FAA AC 150/5340–26B "MAINTENANCE OF AIRPORT VISUAL AID FACILITIES".

NOTES

1. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR EACH CONSTANT CURRENT REGULATOR (EXISTING & NEW) NOTING THE RUNWAY AND/OR TAXIWAY SERVED.
2. EACH PLUG CUTOUT CABINET SHALL BE FURNISHED WITH A PHENOLIC ENGRAVED LEGEND PLATE THAT IDENTIFIES THE RESPECTIVE RUNWAY OR TAXIWAY CIRCUIT OR REGULATOR. INCLUDE AN ADDITIONAL LEGEND PLATE LABELED "CAUTION OPERATE CUTOUTS WITH CCR SHUT OFF".
3. PROVIDE PHENOLIC ENGRAVED LEGEND PLATES FOR THE CUTOUTS TO IDENTIFY THE RESPECTIVE REGULATOR OUTPUT CONNECTION AND THE RESPECTIVE CIRCUIT LOAD CONNECTION.

LEGEND PLATE NOTES:

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 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 & 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

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG–4101 A.I.P. PROJ.: 3–17–0073–B17

HEI Project No. 11A0009D
Filename E–610.DWG
Scale NOT TO SCALE
Date 5–27–2011

LAYOUT	J.F.C.	5–27–2011
DRAWN	R.L.L.	5–27–2011
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HANSON

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1525 South Sixth Street
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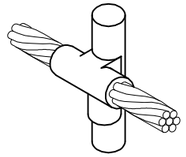
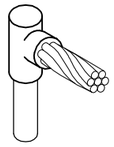
Offices Nationwide

REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

LEGEND PLATE SCHEDULE



CABLE TO GROUND ROD



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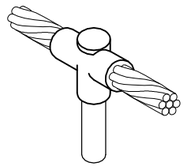
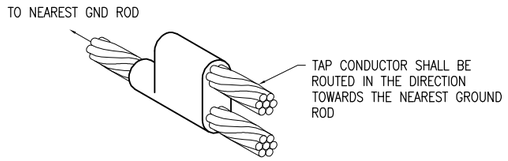
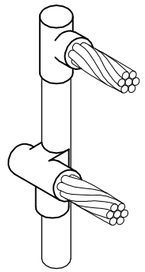


CABLE TO GROUND ROD



CABLE TO CABLE
HORIZONTAL PARALLEL TAP



CABLES TO GROUND ROD

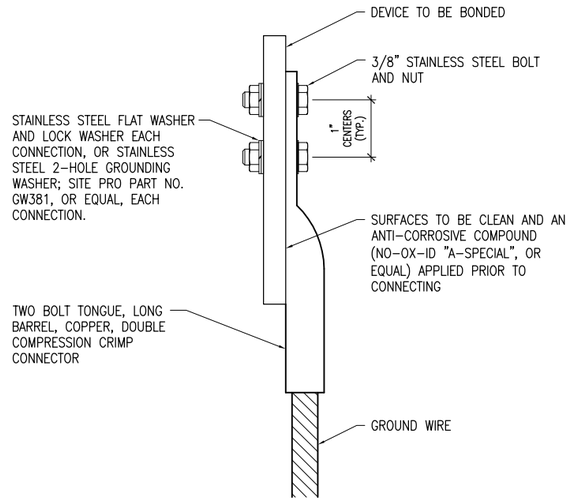
DETAIL NOTES

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, THERMOWELD AS MANUFACTURED BY CONTINENTAL INDUSTRIES, TULSA, OKLAHOMA, OR APPROVED EQUAL VERIFY PROPER SIZES, MOLDS, TYPES, AND REQUIREMENTS FOR THE RESPECTIVE APPLICATION WITH THE MANUFACTURER, AND INSTALL PER THEIR DIRECTIONS.

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

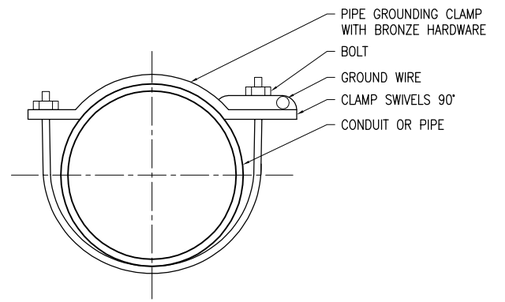
1. ALL CONNECTIONS TO GROUND BUS BAR SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE BUS BAR.

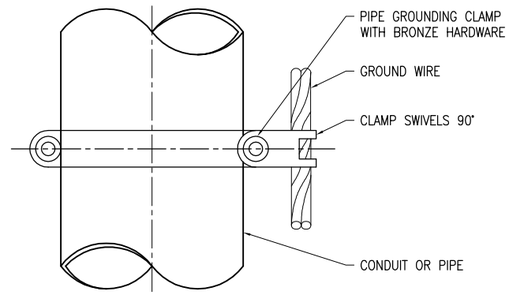
2. GROUND WIRE CONNECTIONS TO EQUIPMENT SHALL BE WITH 2 HOLE TONGUE LONG BARREL COMPRESSION LUGS BOLTED TO THE DEVICE OR WITH THE RESPECTIVE EQUIPT MANUFACTURER'S LUG OR TERMINAL WHERE APPLICABLE.

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.	PIPE SIZE
GAR3902-BU	1/2" - 1"
GAR3903-BU	1 1/4" - 2"
GAR3904-BU	2 1/2" - 3 1/2"
GAR3905-BU	4" - 5"
GAR3906-BU	6"

NOTES

1. PIPE GROUNDING CLAMPS SHALL HAVE BRONZE HARDWARE, BE CORROSION RESISTANT, SUITABLE FOR DIRECT BURIAL IN EARTH OR CONCRETE, & UL467 LISTED.

PIPE/CONDUIT GROUNDING CLAMP DETAIL

DATE	REVISION	BY
5-27-2011		
5-27-2011		
6-3-2011		

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

A.I.P. PROJ.: 3-17-0073-B17
IL PROJ.: AJG-4101

HS Project No. 11A0009D
Filename E-506.DWG
Scale NONE
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LAYOUT	J.F.C.	5-27-2011
DRAWN	R.L.L.	5-27-2011
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REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

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 AIRFIELD LIGHTING (RUNWAY LIGHTING, TAXIWAY LIGHTING, TAXI GUIDANCE SIGNS, & DISTANCE REMAINING SIGNS) SHALL BE MINIMUM 5/8-IN. DIAMETER BY 8-FT LONG, UL-LISTED COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS FOR OTHER APPLICATIONS SHALL BE MINIMUM 3/4-IN. DIAMETER BY 10-FT LONG, UL-LISTED, COPPER CLAD WITH 10-MIL MINIMUM COPPER COATING. GROUND RODS SHALL BE SPACED OR AS DETAILED ON THE RESPECTIVE PLANS, AND IN NO CASE SPACED LESS THAN ONE ROD LENGTH APART. ALL CONNECTIONS TO GROUND RODS AND THE GROUND RING SHALL BE MADE WITH EXOTHERMIC WELD TYPE CONNECTORS, CADWELD BY ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE 1-800-248-9353), THERMOWELD BY CONTINENTAL INDUSTRIES, INC., TULSA, OKLAHOMA (PHONE 918-663-1440), 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 ENGINEER FOR FURTHER DIRECTION. COPIES OF GROUND FIELD TEST RESULTS SHALL BE FURNISHED TO THE RESIDENT ENGINEER, UPON REQUEST, FOR REVIEW AND RECORD PURPOSES.

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. 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.

13. 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.

14. 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.

15. 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.

16. 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.

17. 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.

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

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

20. 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.

21. 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.

22. 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.

23. 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.

DATE	REVISION	BY

THE CITY OF Mount Carmel
MT. CARMEL MUNICIPAL AIRPORT

IL. PROJ.: AJG-4101 A.I.P. PROJ.: 3-17-0073-B17

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REPLACE / INSTALL PLASI'S, REIL'S AND UPGRADE BEACON

GROUNDING NOTES

33
33 of 33 sheets