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THE CITY OF PERU, ILLINOIS ILLINOIS VALLEY REGIONAL AIRPORT WALTER DUNCAN FIELD CONSTRUCTION PLANS

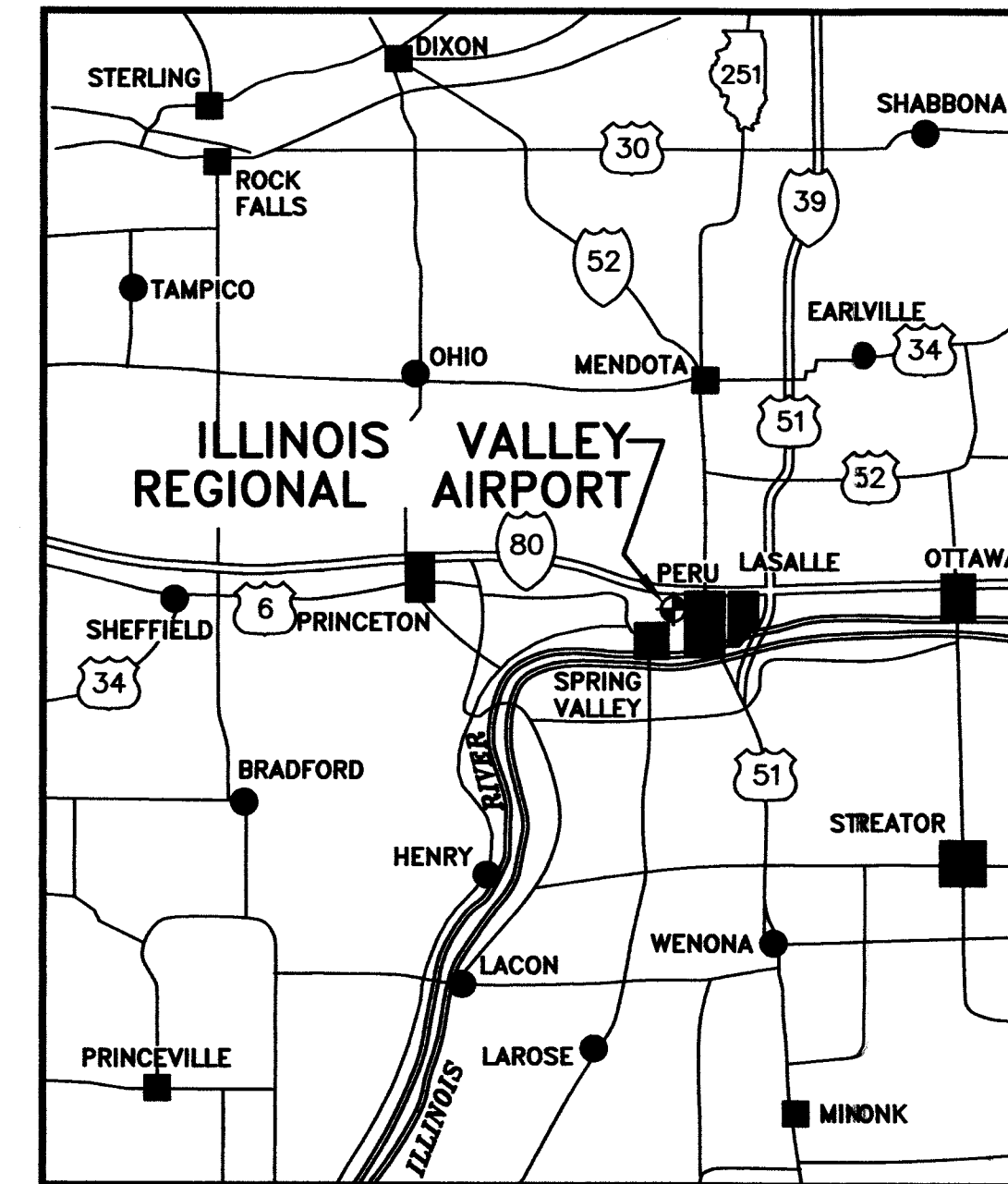
FOR
 SEPARATE RUNWAY CIRCUITS
 AND CONSTRUCT VAULT
 ILLINOIS PROJECT NO. VYS-4177
 A.I.P. PROJECT NO. 3-17-0060-B21
 LATITUDE: N 41°21'01", LONGITUDE: W 89°09'11"

ELEVATION 653.28

DATE: AUGUST, 2012
 RUNWAY 18/36 CATEGORY B, GROUP II
 RUNWAY 7/25 CATEGORY B, GROUP II

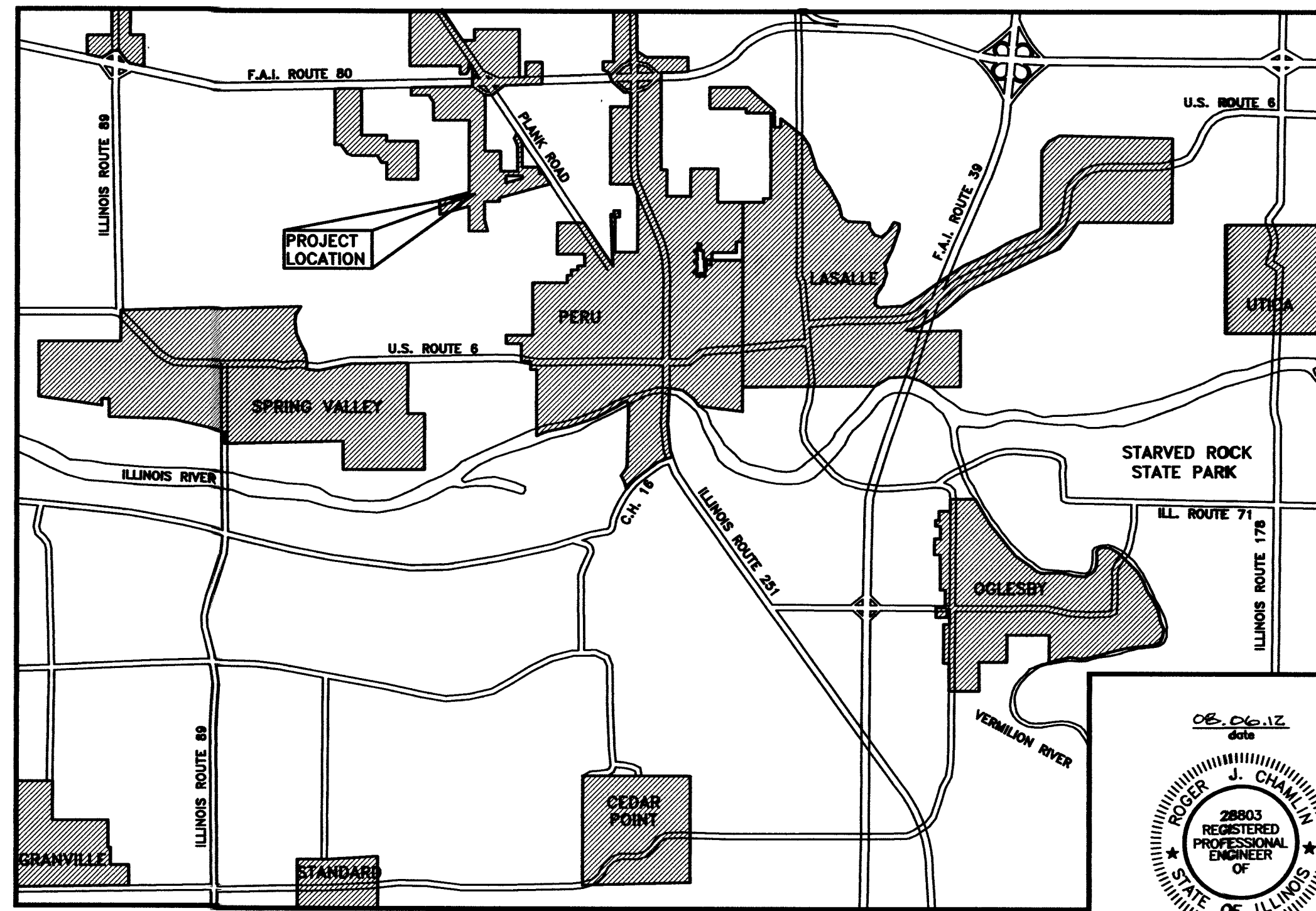
BENCHMARKS:

BM #184	WORD MUE ON TOP OF FIRE HYDRANT @ SOUTH EAST CORNER OF AIRPORT OFFICE. ELEV. = 652.64
BM "AA"	TOP OF 1" CAPPED PIPE 4' IN GROUND. STA. 246+02, 260' LT. ELEV. = 647.72
BM "BB"	TOP OF 1" CAPPED PIPE 4' IN GROUND. STA. 237+85, 229' RT. ELEV. = 646.57
BM "C"	SPIKE NAIL SET IN 6" WOOD FENCE POST SOUTH OF RUNWAY. STA. 220+13, 339' RT. ELEV. = 644.27

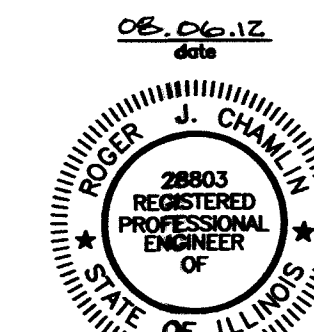
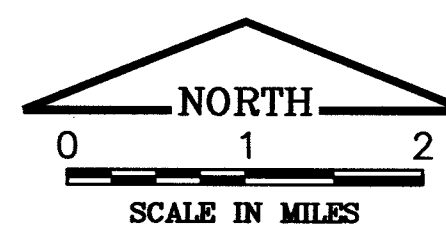


VICINITY MAP

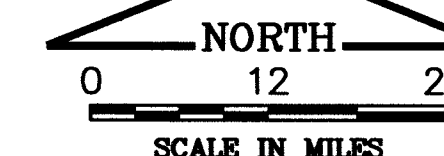
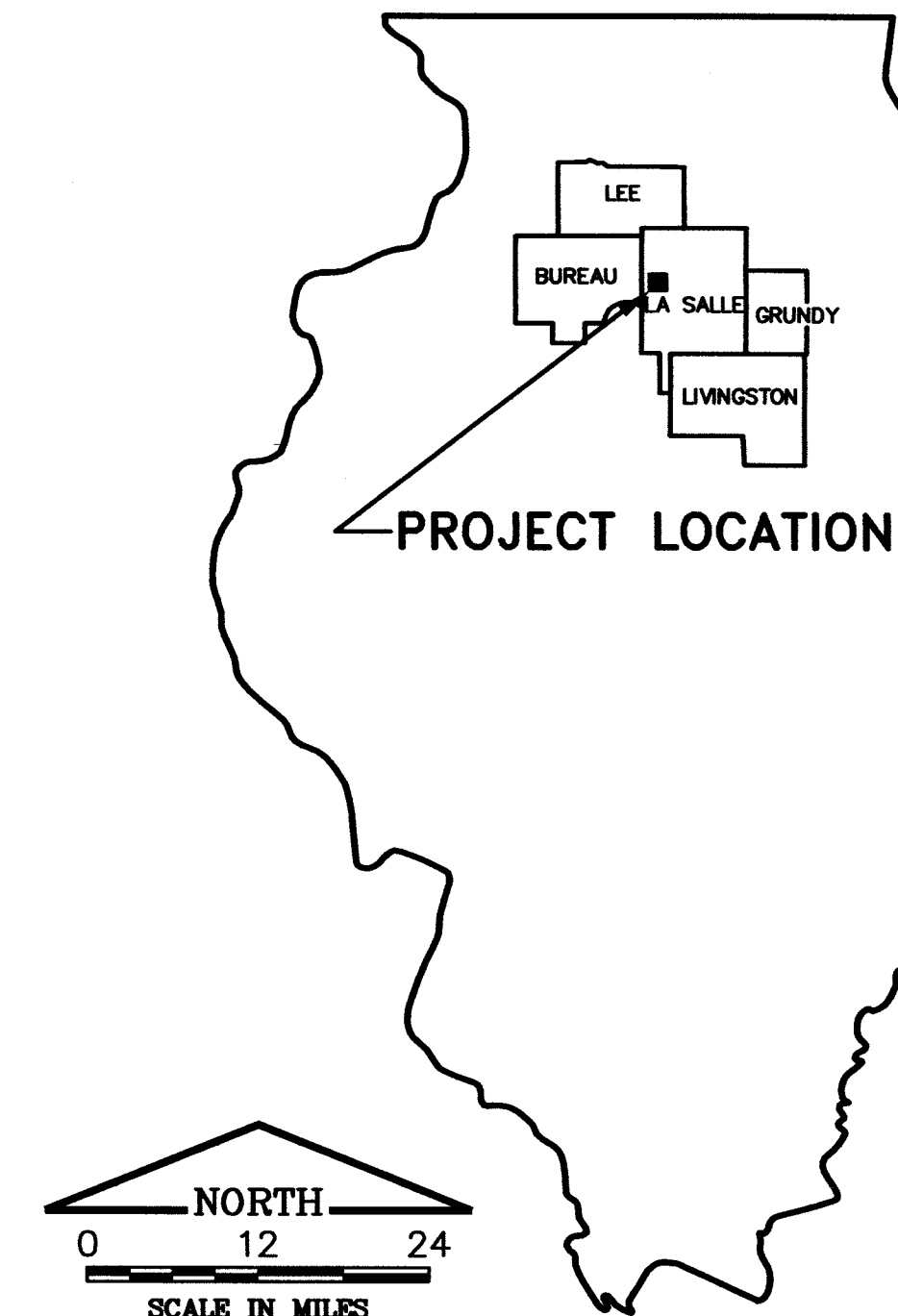
UTILITY SERVICE	CONTACT	TELEPHONE #
WATER	CITY OF PERU WATER DEPARTMENT JIM SITTLER	(815) 223-8615
ELECTRICAL POWER	CITY OF PERU ELECTRIC DEPARTMENT JIM POTTHOFF	(815) 223-0044
NATURAL GAS	J.U.L.I.E.	(800) 892-0123
PIPELINE	J.U.L.I.E.	(800) 892-0123
TELEPHONE	J.U.L.I.E.	(800) 892-0123
CABLE	J.U.L.I.E.	(800) 892-0123
SANITARY SEWER	CITY OF PERU SEWER DEPARTMENT GARY BLECK	(815) 223-2962



LOCATION MAP



ROGER J. CHAMLIN
 28803 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS
 expires 11-30-2013
 Signature: *Roger J. Chamlin*
 PROFESSIONAL DESIGN FIRM
 LICENSE NO. 184-001717



SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QUANTITY
AR108158	1/C #8 5KV UG CABLE IN UD	L.F.	6800
AR108560	2/C #10 600V UG CABLE IN UD	L.F.	100
AR109110	ERECT PREFABRICATED VAULT	LSUM	1
AR109321	10KW REGULATOR, STYLE 1	EACH	1
AR109341	20KW REGULATOR, STYLE 1	EACH	2
AR109962	RELOCATE ELECTRICAL EQUIPMENT	LSUM	1
AR110012	2" DIRECTIONAL BORE	L.F.	900
AR110610	ELECTRICAL HANDHOLE	EACH	12
AR125410	MITL - STAKE MOUNTED	EACH	10
AR125415	MITL - BASE MOUNTED	EACH	4
AR125505	MIRL - STAKE MOUNTED	EACH	15
AR125510	MIRL - BASE MOUNTED	EACH	6
AR162900	REMOVE CLASS E FENCE	L.F.	71
AR802933	DUCT MARKER IN PAVEMENT	EACH	16
AR801308	FIELD LIGHTNING ARRESTOR	EACH	6
AR801551	BUILDING DEMOLITION - OTHER STRUCTURE	LSUM	1

QUANTITIES NOTE:

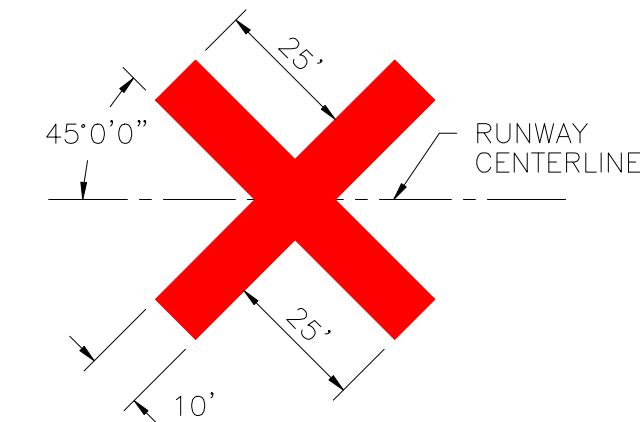
THE QUANTITIES LISTED ABOVE ARE ONLY PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR IS ENCOURAGED TO PERFORM HIS/HER OWN INDEPENDENT ESTIMATE OF QUANTITIES FOR BIDDING PURPOSES. SHOULD DISCREPANCIES BE NOTED BETWEEN THE ENGINEER'S ESTIMATE AND THE CONTRACTOR'S, THE CONTRACTOR IS ENCOURAGED TO CONTACT THE ENGINEER.

DESCRIPTION

ILLINOIS VALLEY REGIONAL AIRPORT
 TOWNSHIP 33 N., SECTION 7, RANGE 1 E.
 LA SALLE COUNTY, PERU TOWNSHIP

PLANS PREPARED BY: CHAMLIN ASSOCIATES PERU ILLINOIS MORRIS	CITY OF PERU, ILLINOIS
SUBMITTED BY: <i>Roger J. Chamlin</i> ENGR	APPROVED BY: <i>[Signature]</i> MAYOR
DATE: August 6, 2012	DATE: 08/06/12
	APPROVED BY: <i>[Signature]</i> CITY CLERK
	DATE: August 6, 2012

NOTE:
 1.) SIGN COST INCIDENTAL TO CONTRACT
 2.) BACKGROUND - ORANGE
 LETTERS - BLACK



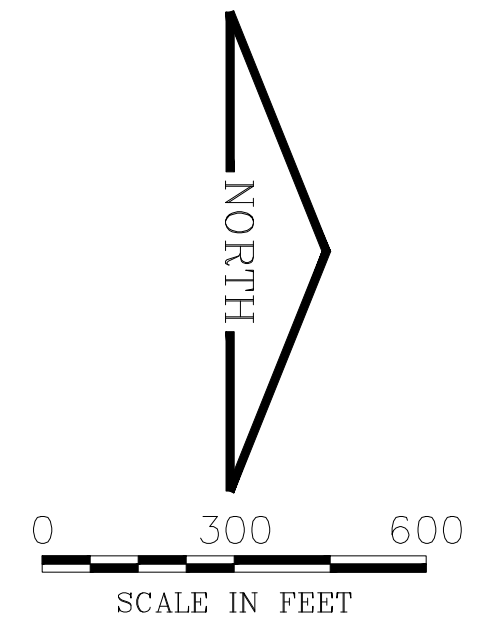
- NOTE:**
- 1.) CLOSED RUNWAY MARKERS SHALL BE YELLOW.
 - 2.) MARKERS SHALL BE DOUBLE LAYERED PAINTED SNOW FENCE, COLORED PLASTIC, PAINTED FLYWOOD OR OTHER MATERIAL APPROVED BY THE ENGINEER.
 - 3.) CONTRACTOR SHALL MAINTAIN MARKERS AS DIRECTED BY THE ENGINEER.
 - 4.) MARKERS SHALL BE PLACED OVER EXISTING RUNWAY NUMERALS AND AS DIRECTED BY THE ENGINEER.
 - 5.) COST OF FURNISHING, INSTALLING, MAINTAINING AND REMOVING MARKERS AND BARRICADES SHALL BE CONSIDERED INCIDENTAL TO CONTRACT. NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

TEMPORARY CLOSED RUNWAY MARKER DETAIL
 NOT TO SCALE

CRITICAL POINT DATA

PNT. LOCATION	LATITUDE	LONGITUDE	GRND. ELEV.	HEIGHT (AMSL)
RUNWAY 18/36 BARRICADES ①	N. 41° 20' 52.9"	W. 89° 09' 11.0"	647.40	649.90
TAXIWAY BARRICADES ②	N. 41° 20' 50.4"	W. 89° 09' 05.7"	645.50	648.00
TAXIWAY BARRICADES ③	N. 41° 20' 57.0"	W. 89° 09' 07.0"	645.40	647.90
TAXIWAY BARRICADES ④	N. 41° 20' 54.4"	W. 89° 09' 06.9"	647.45	649.95
RUNWAY 18/36 BARRICADES ⑤	N. 41° 20' 49.3"	W. 89° 09' 11.0"	646.75	649.25
TAXIWAY BARRICADES ⑥	N. 41° 21' 09.2"	W. 89° 09' 07.1"	649.40	651.90
RUNWAY 7/25 BARRICADES ⑦	N. 41° 20' 52.7"	W. 89° 09' 04.2"	646.02	648.52
RUNWAY 7/25 BARRICADES ⑧	N. 41° 20' 51.7"	W. 89° 09' 08.8"	646.62	649.12
RUNWAY 7/25 BARRICADES ⑨	N. 41° 20' 50.6"	W. 89° 09' 13.8"	646.76	649.26
CRANE AT EQUIP. SHELTER ⑩	N. 41° 21' 11.5"	W. 89° 08' 59.6"	651.10	721.10

* BARRICADES USED ON AIRPORT SURFACES SHALL BE LOW PROFILE WITH REFLECTIVE STRIPES & RED LIGHTS AS PER AC 150/5370-2E "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".

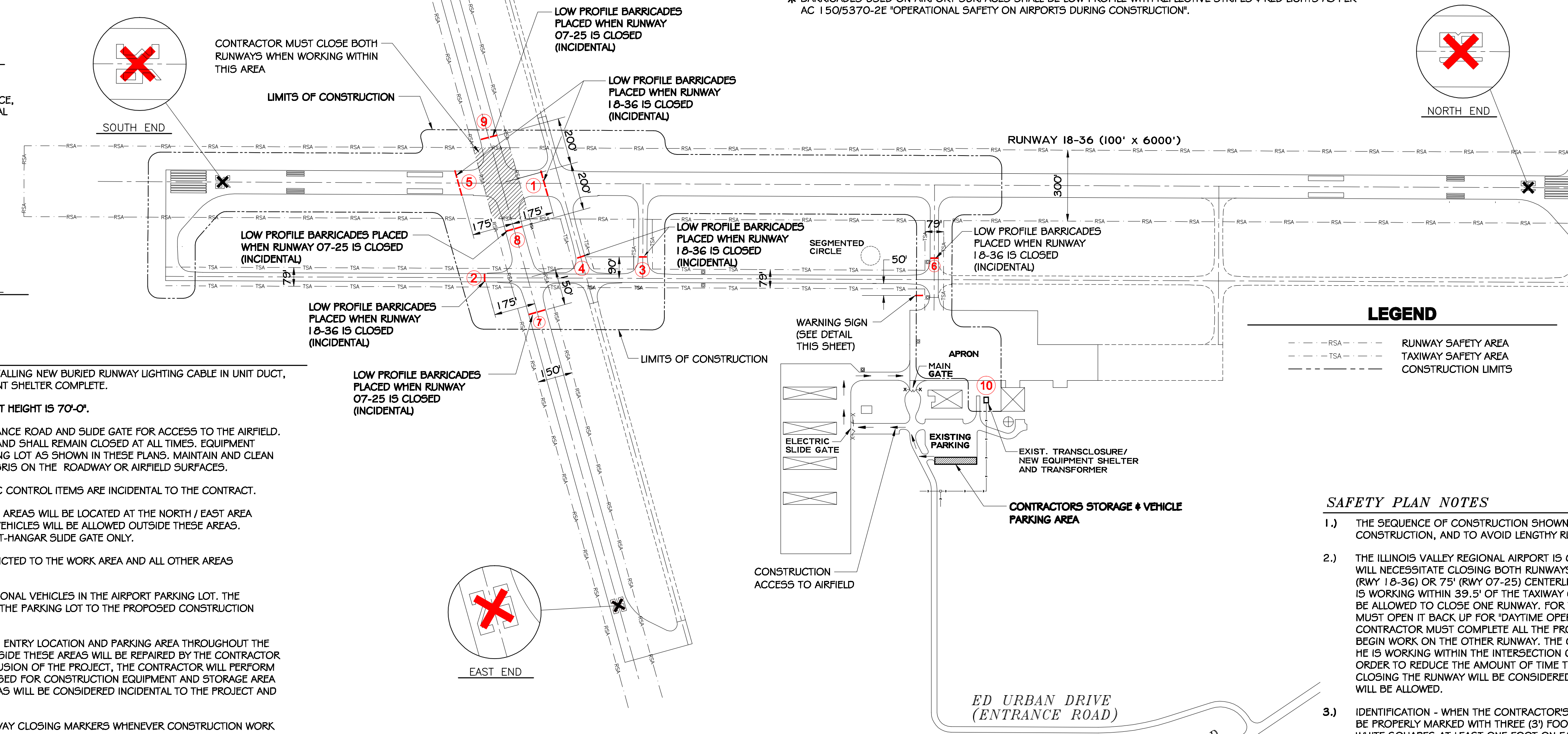


GENERAL NOTES:

- 1.) SCOPE OF WORK: THE PROJECT WILL CONSIST OF INSTALLING NEW BURIED RUNWAY LIGHTING CABLE IN UNIT DUCT, 2-WAY CONDUIT RUNWAY CROSSINGS & NEW EQUIPMENT SHELTER COMPLETE.
- 2.) THE MAXIMUM ANTICIPATED CONSTRUCTION EQUIPMENT HEIGHT IS 70'-0".
- 3.) CONTRACTOR SHALL USE THE EXISTING AIRPORT ENTRANCE ROAD AND SLIDE GATE FOR ACCESS TO THE AIRFIELD. GATE SHALL BE USED FOR CONSTRUCTION USE ONLY AND SHALL REMAIN CLOSED AT ALL TIMES. EQUIPMENT STORAGE SHALL BE CONFINED TO THE EXISTING PARKING LOT AS SHOWN IN THESE PLANS. MAINTAIN AND CLEAN ROADS REGULARLY TO AVOID ANY CONSTRUCTION DEBRIS ON THE ROADWAY OR AIRFIELD SURFACES.
- 4.) ALL RUNWAY MARKERS, LATHE, FLAGGING, AND TRAFFIC CONTROL ITEMS ARE INCIDENTAL TO THE CONTRACT.
- 5.) THE CONTRACTOR'S EQUIPMENT AND VEHICLE PARKING AREAS WILL BE LOCATED AT THE NORTH / EAST AREA OF THE EXISTING PARKING LOT. ONLY CONTRACTOR'S VEHICLES WILL BE ALLOWED OUTSIDE THESE AREAS. CONTRACTOR SHALL ENTER THE AIRFIELD AREA AT THE T-HANGAR SLIDE GATE ONLY.
- 6.) THE CONTRACTOR AND HIS EMPLOYEES WILL BE RESTRICTED TO THE WORK AREA AND ALL OTHER AREAS OF THE AIRPORT ARE "OFF LIMITS" TO THEM.
- 7.) THE CONTRACTOR'S EMPLOYEES WILL PARK THEIR PERSONAL VEHICLES IN THE AIRPORT PARKING LOT. THE CONTRACTOR WILL TRANSPORT HIS EMPLOYEES FROM THE PARKING LOT TO THE PROPOSED CONSTRUCTION AREA.
- 8.) THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN THE ENTRY LOCATION AND PARKING AREA THROUGHOUT THE COURSE OF THE PROJECT. ANY AREAS DAMAGED OUTSIDE THESE AREAS WILL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S OWN EXPENSE. AT THE CONCLUSION OF THE PROJECT, THE CONTRACTOR WILL PERFORM ANY AND ALL WORK NECESSARY TO RESTORE AREAS USED FOR CONSTRUCTION EQUIPMENT AND STORAGE AREA TO ITS ORIGINAL STATE. RESTORATION OF THESE AREAS WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- 9.) THE CONTRACTOR SHALL INSTALL & MAINTAIN ALL RUNWAY CLOSING MARKERS WHENEVER CONSTRUCTION WORK IS TO BE PERFORMED WITHIN THE RUNWAY SAFETY AREA (RSA). LOCATION OF SAID MARKERS SHALL BE AS SHOWN ON THE PLANS AND AS DIRECTED BY THE AIRPORT MANAGER AND ENGINEER. MARKERS SHALL BE PLACED AND REMOVED WHEN SO DIRECTED BY THE OWNER THROUGH THE ENGINEER. ALSO AS PART OF THIS WORK, THE CONTRACTOR SHALL WORK WITH THE OWNER AS NECESSARY TO DEACTIVATE THE AIRPORT RUNWAY LIGHTING SYSTEM. THE OWNER SHALL BE RESPONSIBLE FOR NOTIFYING THE FLIGHT SERVICE STATION REGARDING RUNWAY CLOSURE.
- 10.) THE LOCATIONS OF THE EXISTING CABLES ARE ONLY APPROXIMATE AND FOR THE CONTRACTOR'S INFORMATION ONLY. BEFORE CABLE PLACEMENT BEGINS, THE CONTRACTOR MUST FIRST LOCATE ALL EXISTING UTILITIES AND CABLES (SHOWN OR NOT). ANY DAMAGE TO ANY EXISTING UTILITIES AND CABLES WILL BE IMMEDIATELY REPAIRED TO THE SATISFACTION OF THE ENGINEER AND AT THE CONTRACTOR'S OWN EXPENSE.
- 11.) THE PROPOSED CABLES WILL BE HAND DUG IN HEAVILY CONGESTED AREAS AND CROSSING WITH EXISTING UTILITIES OR CABLES.
- 12.) 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.
- 13.) 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.
- 14.) THE CONTRACTOR AND HIS EMPLOYEES SHALL RESTRICT THEIR ACTIVITIES TO THE WORK AREAS ONLY. THE CONTRACTOR SHALL PROVIDE HIS OWN RESTROOM FACILITY ON SITE FOR HIS EMPLOYEE USE.

CONSTRUCTION SEQUENCE & SAFETY

- A. INSTALL WARNING SIGN AND COORDINATE FUTURE CLOSINGS WITH AIRPORT MANAGER.
- B. INSTALL NEW RUNWAY / TAXIWAY CROSSINGS (CLOSE AIRPORT AS REQUIRED)
- C. MODIFY THE EXISTING ELECTRIC LIGHTING SYSTEM AS REQUIRED TO PROVIDE SAFE WORKING CONDITIONS FOR PROPOSED CONSTRUCTION. LIGHTING SYSTEM OUTAGES ARE ACCEPTABLE DURING DAYLIGHT HOURS PROVIDING THAT THE SYSTEM IS WORKING PROPERLY FOR NIGHT TIME USE (NOTAM MUST BE ISSUED IF LIGHTING SYSTEM IS NOT OPERABLE).
- D. INSTALL NEW CIRCUIT "HOMERUNS" AND RELATED CABLE TO DESIGNATED LOCATIONS.
- E. CONSTRUCT NEW EQUIPMENT SHELTER AND PREPARE FOR FINAL CONNECTIONS.
- F. CLOSE RUNWAYS AS REQUIRED.
- G. CONNECT THE NEWLY INSTALLED RUNWAY CABLE TO THE EXISTING CIRCUITS, RE-ENERGIZE AIRPORT SYSTEM AND CHECK OPERATIONS.
- H. RE-OPEN RUNWAY AIRPORT FOR GENERAL USE.
- I. REMOVE PREVIOUS ELECTRIC EQUIPMENT SHELTER AND RELATED EQUIPMENT.



LEGEND

- RSA --- RUNWAY SAFETY AREA
- TSA --- TAXIWAY SAFETY AREA
- --- CONSTRUCTION LIMITS

SAFETY PLAN NOTES

- 1.) THE SEQUENCE OF CONSTRUCTION SHOWN ON THIS SHEET IS INTENDED TO ALLOW ORDERLY AND SAFE CONSTRUCTION, AND TO AVOID LENGTHY RUNWAY CLOSINGS.
- 2.) THE ILLINOIS VALLEY REGIONAL AIRPORT IS COMPRISED OF TWO RUNWAYS. THE PROPOSED CONSTRUCTION WILL NECESSITATE CLOSING BOTH RUNWAYS. ANY TIME THE CONTRACTOR IS WORKING WITHIN 150' OF (RWY 18-36) OR 75' (RWY 07-25) CENTERLINES THE RUNWAY SHALL BE CLOSED. ANY TIME THE CONTRACTOR IS WORKING WITHIN 39.5' OF THE TAXIWAY CENTERLINE, THE TAXIWAY SHALL BE CLOSED. THE CONTRACTOR WILL BE ALLOWED TO CLOSE ONE RUNWAY. FOR THE WEEK HOWEVER, AT THE END OF THE CONSTRUCTION WEEK HE MUST OPEN IT BACK UP FOR "DAYTIME OPERATIONS ONLY" (IF RUNWAY LIGHTING IS NOT COMPLETE). THE CONTRACTOR MUST COMPLETE ALL THE PROPOSED WORK ON THAT RUNWAY BEFORE BEING ALLOWED TO BEGIN WORK ON THE OTHER RUNWAY. THE CONTRACTOR WILL BE ALLOWED TO CLOSE BOTH RUNWAYS WHEN HE IS WORKING WITHIN THE INTERSECTION OF BOTH RUNWAYS. THE CONTRACTOR WILL EXPEDITE THIS WORK IN ORDER TO REDUCE THE AMOUNT OF TIME THE AIRPORT IS CLOSED. ALL WORK INCLUDED IN OPENING AND CLOSING THE RUNWAY WILL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- 3.) IDENTIFICATION - WHEN THE CONTRACTOR'S VEHICLES AND EQUIPMENT ARE ON THE AIRPORT, THEY SHALL BE PROPERLY MARKED WITH THREE (3) FOOT SQUARE CHECKERED FLAGS (INTERNATIONAL ORANGE AND WHITE SQUARES AT LEAST ONE FOOT ON EACH SIDE) OR ROTATING YELLOW BEACON PLACED ON THE UPPERMOST PART OF THE VEHICLE.
- 4.) RADIO CONTROL - THE CONTRACTOR WILL BE REQUIRED TO BE IN TWO-WAY RADIO CONTACT (123.0 MHZ) WITH THE AIRPORT CTAF. THIS WILL KEEP THE CONTRACTOR IN CONSTANT CONTACT WITH THE ILLINOIS VALLEY REGIONAL AIRPORT AND ENABLE THE AIRPORT TO IMMEDIATELY CONTACT THE CONTRACTOR IN THE CASE OF AN AERONAUTICAL EMERGENCY THAT WOULD REQUIRE ACTION BY THE CONTRACTOR AND/OR HIS PERSONNEL.
- 5.) THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND AGENCIES THAT HAVE LINES OR CONDUITS WITH THE PROPOSED WORK AREA. ALL LINES AND CONDUITS SHALL BE LOCATED AND IDENTIFIED FOR DEPTH BEFORE ANY EXCAVATION BEGINS. THE CONTRACTOR WILL CALL J.U.L.I.E. (1-800-892-0123) TO ACCOMPLISH THE ABOVE.
- 6.) AIRPORT SECURITY WILL BE MAINTAINED AT ALL TIMES. THE SLIDE GATE IN THE ACCESS ROUTE SHALL BE CLOSED AT ALL TIMES.

POINT OF CONTACT
 CHUCK STUDER
 ILL. VALLEY REG. AIRPORT
 4150 PLANK ROAD
 PERU, IL 61354
 (815) 223-2003

CHAMLIN & ASSOCIATES, INC. © 2012
 Director: Norman G. Morris, V.P. (618) 223-2003
 Safety Planning: Lost Modified on: Aug 07, 2012 - 3:12pm
 Plotted on: Aug 07, 2012 - 3:14pm by: fhm

DRAWN BY: Tim H	REVISIONS			
CHECKED BY: RJC	LEVEL	BY	DATE	DESCRIPTION
DATE: JUNE 2012				

CHAMLIN ASSOCIATES
 PERU MORRIS ILLINOIS

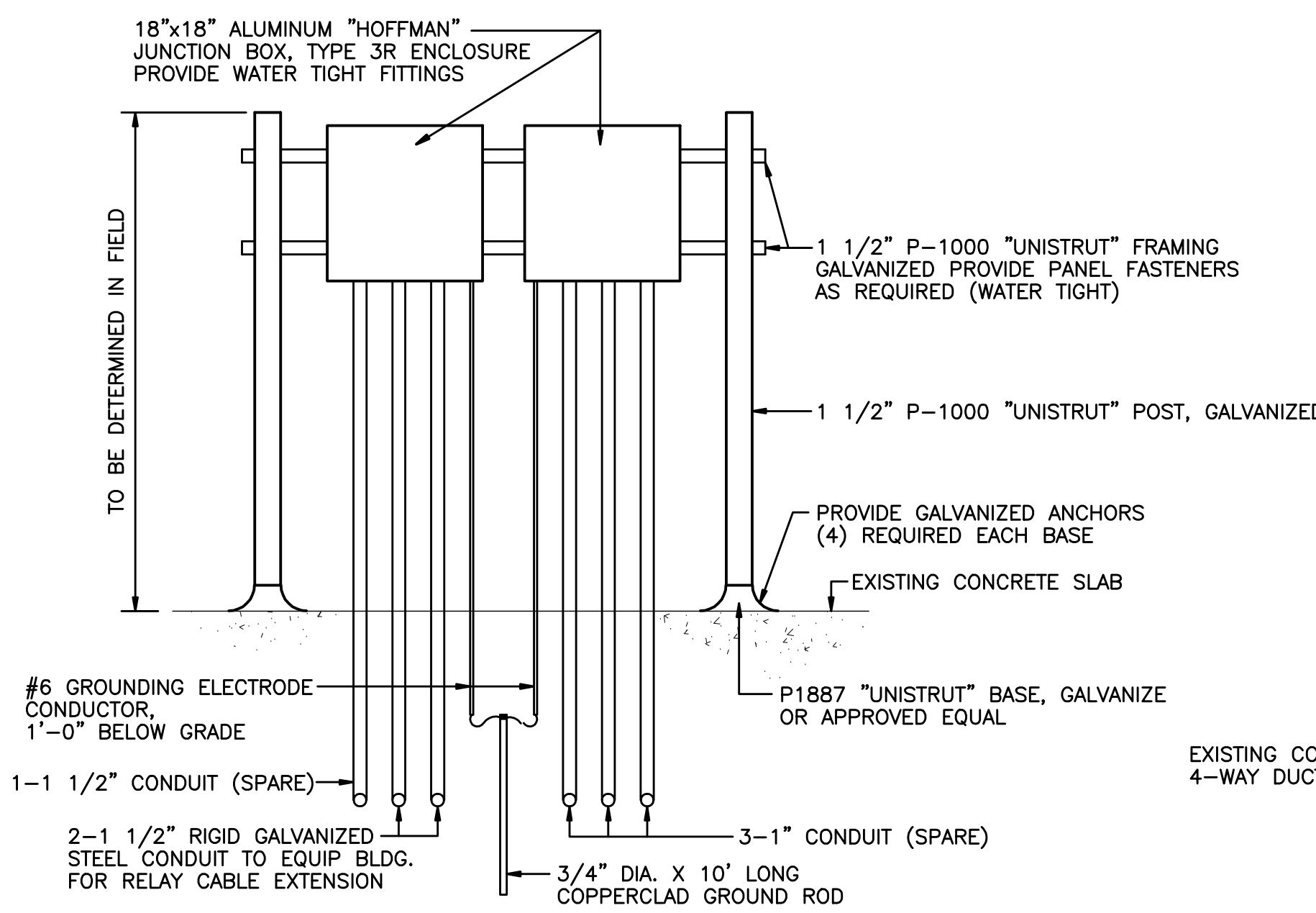
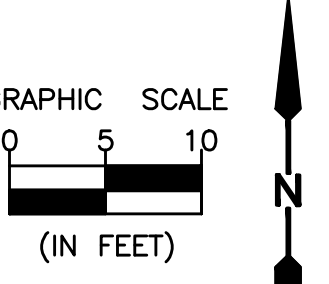
**ILLINOIS VALLEY REGIONAL AIRPORT (VYS)
 SEPARATE RUNWAY CIRCUITS
 AND CONSTRUCT VAULT
 PERU, ILLINOIS**

CONSTRUCTION SAFETY PLAN

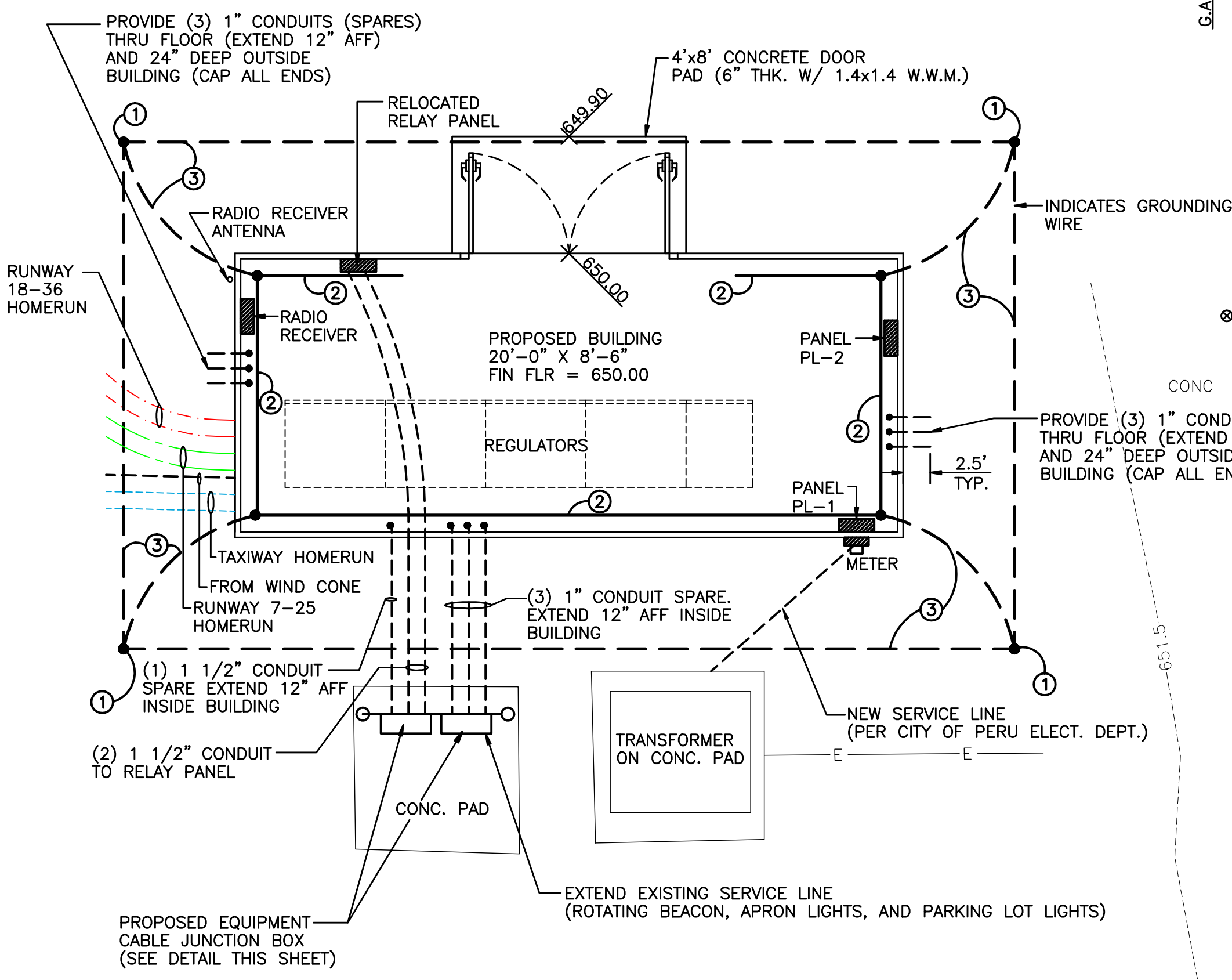
CONSTRUCTION PLANS

CURRENT AS OF: 08/2012	
SCALE: As Noted	SHEET 2
FILE NO.: 1000.96 Y-	OF 10

NOTE:
ALL REQUIRED TOPSOIL, SEEDING, AND MULCH METHOD
SHALL BE INCIDENTAL TO PROPOSED BUILDING.

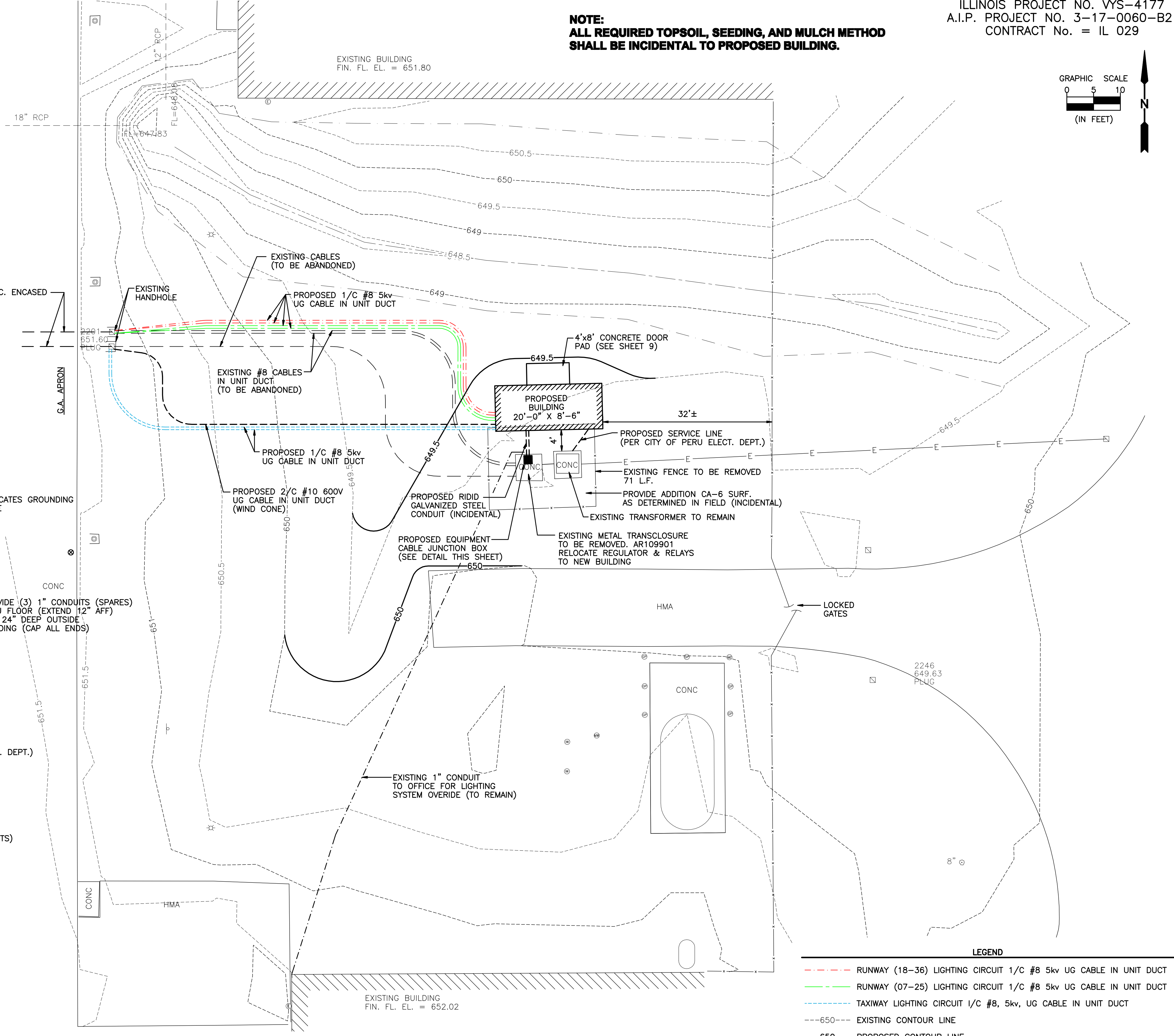


EQUIPMENT CABLE JUNCTION BOX
 NOT TO SCALE



- KEYED NOTES**
- ① 3/4" DIAMETER x 10' LONG COPPERCLAD GROUND ROD. MINIMUM BURY: 30". BOND GROUND WIRES TO GROUND RODS USING EXOTHERMIC WELD, COLDWELD, OR EQUIVALENT. CLAMPED CONNECTIONS SHALL NOT BE ACCEPTABLE.
 - ② VAULT GROUND BUS, 1/4" x 3/4" COPPER BUS BAR, STAND-OFF MOUNTED 6" MINIMUM ABOVE FLOOR.
 - ③ #2/0 BARE COPPER GROUND WIRE, MINIMUM BURY: 30"

PROPOSED SITE AND GROUNDING RING LAYOUT
 NOT TO SCALE



LEGEND

---	RUNWAY (18-36) LIGHTING CIRCUIT 1/C #8 5kv UG CABLE IN UNIT DUCT
---	RUNWAY (07-25) LIGHTING CIRCUIT 1/C #8 5kv UG CABLE IN UNIT DUCT
---	TAXIWAY LIGHTING CIRCUIT 1/C #8, 5kv, UG CABLE IN UNIT DUCT
---	EXISTING CONTOUR LINE
---	PROPOSED CONTOUR LINE

CHAMLIN & ASSOCIATES, INC. © 2012. CHAMLIN & ASSOCIATES, INC. 10309 35th Street, Mokena, IL 60449. Final Plans 003-SITE PLAN.dwg. Last Modified: Aug 06, 2012, 11:51am. Plotted on: Aug 06, 2012, 3:20pm by nick

REVISIONS	DATE	BY	LEVEL	DESCRIPTION

DRAWN BY: ARR
 CHECKED BY: RJC
 DATE: 6/12

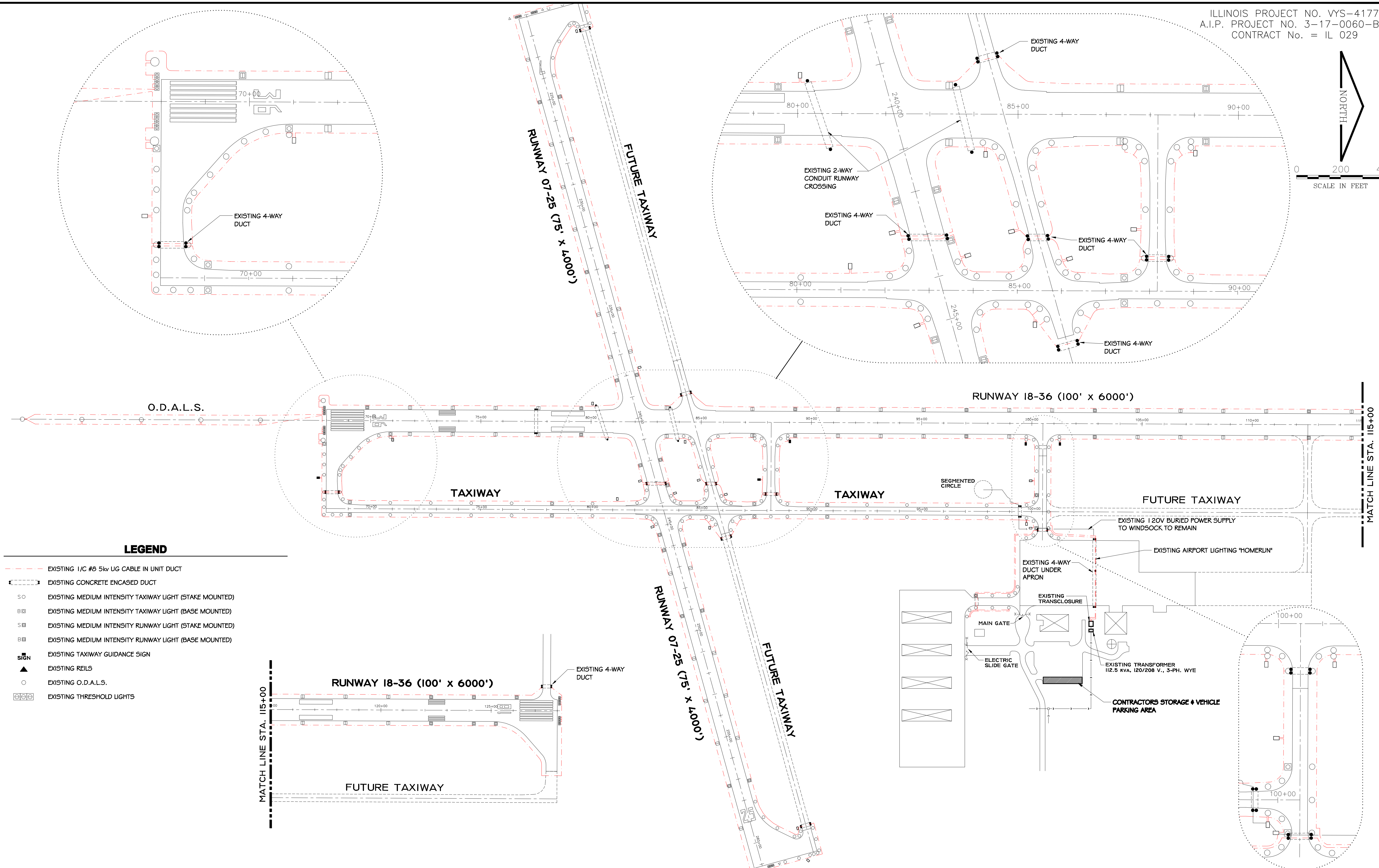
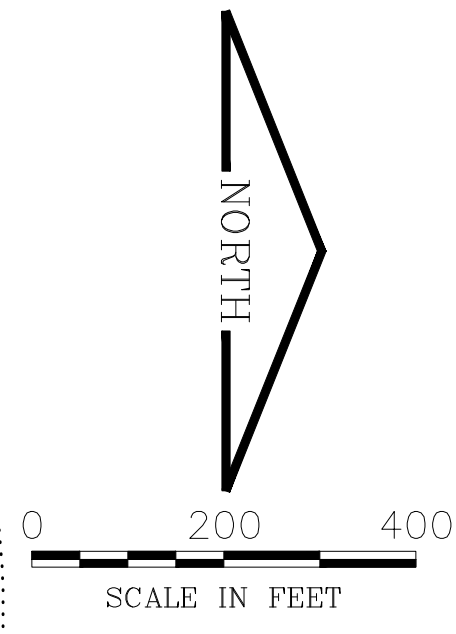
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ILLINOIS VALLEY REGIONAL AIRPORT (VYS)
SEPARATE RUNWAY CIRCUITS
AND CONSTRUCT VAULT
 PERU, ILLINOIS

PROPOSED EQUIPMENT BUILDING
SITE PLAN

CONSTRUCTION PLANS

CURRENT AS OF: 08/2012	SHEET 3
SCALE: As Noted	OF 10
FILE NO.: 1000.96 Y-	



LEGEND

- EXISTING 1/2" #8 5kv UG CABLE IN UNIT DUCT
- EXISTING CONCRETE ENCASED DUCT
- EXISTING MEDIUM INTENSITY TAXIWAY LIGHT (STAKE MOUNTED)
- ⊗ EXISTING MEDIUM INTENSITY TAXIWAY LIGHT (BASE MOUNTED)
- ⊗ EXISTING MEDIUM INTENSITY RUNWAY LIGHT (STAKE MOUNTED)
- ⊗ EXISTING MEDIUM INTENSITY RUNWAY LIGHT (BASE MOUNTED)
- SIGN EXISTING TAXIWAY GUIDANCE SIGN
- ▲ EXISTING REILS
- EXISTING O.D.A.L.S.
- ⊗ EXISTING THRESHOLD LIGHTS

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 C:\Users\jrc\Documents\Projects\Illinois Valley Regional Airport (VYS) - Separate Runway Circuits and Construct Vault - PERU, ILLINOIS
 Drawn by: Tim H. Checked by: RJC. Date: 06/2012.

DRAWN BY: Tim H	REVISIONS			
CHECKED BY: RJC	LEVEL	BY	DATE	DESCRIPTION
DATE: 06/2012				

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**ILLINOIS VALLEY REGIONAL AIRPORT (VYS)
 SEPARATE RUNWAY CIRCUITS
 AND CONSTRUCT VAULT
 PERU, ILLINOIS**

EXISTING AIRPORT LIGHTING LAYOUT PLAN

CONSTRUCTION PLANS

CURRENT AS OF: 08/2012

SCALE: As Noted SHEET 4 OF 11

FILE NO.: 1000.96 Y- OF 11

PROJECT ELECTRICAL NOTES

- 1) INSTALL FIELD LIGHTNING ARRESTORS AS INDICATED AND WHERE SHOWN ON PLANS (SEE PROPOSED AIRPORT LIGHTING LAYOUT PLANS) PROVIDE NEW FIELD LIGHTNING ARRESTOR AR801308 WITHIN EXISTING MITL OR MRL BASE FIXTURES. PROVIDE REQUIRED CONNECTORS AND HEAT SHRINK AS REQUIRED. THEY SHALL BE RATED FOR 25,000 A PEAK, INSUL RESISTANCE 2 GΩ.
- 2) CONTRACTOR SHALL SCHEDULE AN ON SITE VISIT FROM THE REGULATOR/EQUIP. MANUFACTURER PRIOR TO ENERGIZING SYSTEM. MANUFACTURER SHALL EVALUATE, CALIBRATE, MONITOR AND TEST ALL SYSTEM EQUIPMENT TO VERIFY PROPER OPERATION. IN ADDITION, HE SHALL EVALUATE AND CALIBRATE AND PROVIDE ALL NECESSARY REPAIRS TO THE EXISTING (SPARE) REGULATOR TO ASSURE THAT IT IS IN PROPER WORKING CONDITION FOR FUTURE USE.

ELECTRICAL NOTES (AC 150/5340-30; APPENDIX 5)

GENERAL

- (1) THE ELECTRICAL INSTALLATION, AS A MINIMUM, MUST MEET THE NEC AND LOCAL REGULATIONS.
- (2) THE CONTRACTOR MUST 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 NON-COMPATIBLE COMPONENTS FURNISHED BY THIS CONTRACTOR MUST BE REPLACED BY THE CONTRACTOR 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.
- (3) IN CASE THE CONTRACTOR SELECTS TO FURNISH AND INSTALL AIRPORT LIGHTING EQUIPMENT REQUIRING ADDITIONAL WIRING, TRANSFORMERS, ADAPTERS, MOUNTINGS, ETC., TO THOSE SHOWN ON THE DRAWINGS AND/OR LISTED IN THE SPECIFICATIONS, ANY COST FOR THESE ITEMS MUST BE INCIDENTAL TO THE EQUIPMENT COST.
- (4) THE CONTRACTOR-INSTALLED EQUIPMENT (INCLUDING FAA APPROVED) MUST 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 MUST BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST WITH EQUIPMENT MEETING THE APPLICABLE SPECIFICATIONS AND NOT GENERATING ANY INTERFERENCE.
- (5) WHEN A SPECIFIC TYPE, STYLE, CLASS, ETC., OF FAA APPROVED EQUIPMENT IS SPECIFIED ONLY THAT TYPE, STYLE, CLASS, ETC., WILL BE ACCEPTABLE, EVEN THOUGH EQUIPMENT OF OTHER TYPES, STYLE, CLASS, ETC., MAY BE FAA APPROVED.
- (6) ANY AND ALL INSTRUCTIONS FROM THE ENGINEER TO THE CONTRACTOR REGARDING CHANGES IN, OR DEVIATIONS FROM, THE PLANS AND SPECIFICATIONS MUST BE IN WRITING WITH COPIES SENT TO THE AIRPORT SPONSOR AND THE FAA FIELD OFFICE (ADO/AFO). THE CONTRACTOR MUST NOT ACCEPT ANY VERBAL INSTRUCTIONS FROM THE ENGINEER REGARDING ANY CHANGES FROM THE PLANS AND SPECIFICATIONS.
- (7) A MINIMUM OF THREE COPIES OF INSTRUCTION BOOKS MUST BE SUPPLIED WITH EACH DIFFERENT TYPE OF EQUIPMENT. THE BOOKS DESCRIBING A MORE SOPHISTICATED TYPE OF EQUIPMENT, SUCH AS REGULATORS, PAPI, REIL, ETC., AT A MINIMUM MUST 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 INSTRUCTIONS.
 - (D) START-UP INSTRUCTIONS.
 - (E) PREVENTATIVE MAINTENANCE REQUIREMENTS.
 - (F) CHART FOR TROUBLESHOOTING.
 - (G) COMPLETE POWER AND CONTROL DETAILED WIRING DIAGRAM(S), SHOWING EACH CONDUCTOR/CONNECTION/COMPONENT. "BLACK" BOXES ARE NOT ACCEPTABLE. THE DIAGRAM OR THE NARRATIVE MUST SHOW VOLTAGES/CURRENTS/WAVE SHAPES AT STRATEGIC LOCATIONS TO BE USED WHEN CHECKING AND/OR TROUBLESHOOTING THE EQUIPMENT. WHEN THE EQUIPMENT HAS SEVERAL BRIGHTNESS STEPS, THESE PARAMETERS MUST BE INDICATED FOR ALL THE DIFFERENT MODES.
 - (H) PARTS LIST WILL INCLUDE ALL MAJOR AND MINOR COMPONENTS, SUCH AS RESISTORS, DIODES, ETC. IT MUST 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

- (1) STENCIL ALL ELECTRICAL EQUIPMENT TO IDENTIFY FUNCTION, CIRCUIT VOLTAGE AND PHASE. WHERE THE EQUIPMENT CONTAINS FUSES, ALSO STENCIL THE FUSE OR FUSE LINK AMPERE RATING. WHERE THE EQUIPMENT DOES NOT HAVE SUFFICIENT STENCILING AREA, THE STENCILING MUST BE DONE ON THE WALL NEXT TO THE UNIT. THE LETTERS MUST BE ONE INCH HIGH AND PAINTED IN WHITE OR BLACK PAINT TO PROVIDE THE HIGHEST CONTRAST WITH THE BACKGROUND.
- (2) COLOR CODE ALL PHASE WIRING BY THE USE OF COLORED WIRE INSULATION AND/OR COLORED TAPE. WHERE TAPE IS USED, THE WIRE INSULATION MUST BE BLACK, BLACK AND RED MUST BE USED FOR SINGLE-PHASE, THREE WIRE SYSTEMS AND BLACK, RED AND BLUE MUST BE USED FOR THREE-PHASE SYSTEMS. NEUTRAL CONDUCTORS, SIZE NO. 6 AWG OR SMALLER, MUST BE IDENTIFIED BY A CONTINUOUS WHITE OR NATURAL CONDUCTORS LARGER THAN NO. 6 AWG MUST 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.
- (3) ALL BRANCH CIRCUIT CONDUCTORS CONNECTED TO A PARTICULAR PHASE MUST BE IDENTIFIED WITH THE SAME COLOR. THE COLOR CODING MUST EXTEND TO THE POINT OF UTILIZATION.
- (4) IN CONTROL WIRING THE SAME COLOR MUST BE USED THROUGHOUT THE SYSTEM FOR THE SAME FUNCTION, SUCH AS 10%, 30%, 100% BRIGHTNESS CONTROL, ETC.

- (5) ALL POWER AND CONTROL CIRCUIT CONDUCTORS MUST BE COPPER; ALUMINUM WILL NOT BE ACCEPTED. THIS INCLUDES WIRE, CABLE, BUSSES, TERMINALS, SWITCH/PANEL COMPONENTS, ETC.
- (6) LOW VOLTAGE (600 V.) AND HIGH VOLTAGE (5000 V.) CONDUCTORS MUST BE INSTALLED IN SEPARATE WIREWAYS.
- (7) NEATLY LACE WIRING IN DISTRIBUTION PANELS, WIREWAYS, SWITCHES AND PULL/JUNCTION BOXES.
- (8) THE MINIMUM SIZE OF PULL/JUNCTION BOXES, REGARDLESS OF THE QUANTITY AND THE SIZE OF THE CONDUCTORS SHOWN, MUST BE AS FOLLOWS:
 - (A) IN STRAIGHT PULLS THE LENGTH OF THE BOX MUST NOT BE LESS THAN EIGHT TIMES AND THE OPPOSITE WALL OF THE BOX MUST NOT BE LESS THAN SIX TIMES THE TRADE DIAMETER THE TRADE DIAMETER OF THE LARGER CONDUIT. THE TOTAL AREA (INCLUDING THE CONDUIT CROSS-SECTIONAL AREA) OF A BOX END MUST BE AT LEAST 3 TIMES GREATER THAN THE TOTAL TRADE CROSS-SECTIONAL AREA OF THE CONDUITS TERMINATING AT THE END. THE DISTANCE BETWEEN CONDUIT ENTRIES ENCLOSING THE SAME CONDUCTOR MUST
 - (B) IN ANGLE OR U-PULLS THE DISTANCE BETWEEN EACH CONDUIT ENTRY INSIDE THE BOX OF THE LARGEST CONDUIT, THIS DISTANCE MUST BE INCREASED FOR ADDITIONAL ENTRIES BY THE AMOUNT OF THE SUM OF THE DIAMETERS OF ALL OTHER CONDUIT ENTRIES ON THE SAME WALL NOT BE LESS THAN SIX TIMES THE TRADE DIAMETER OF THE LARGEST CONDUIT.
- (9) A RUN OF CONDUIT BETWEEN TERMINATIONS AT EQUIPMENT ENCLOSURES, SQUARE DUCTS AND PULL/JUNCTION BOXES, MUST 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 MUST NOT BE TREATED AS PULL/JUNCTION BOXES.
- (10) EQUIPMENT CABINETS MUST NOT BE USED AS PULL/JUNCTION BOXES. ONLY WIRING TERMINATING AT THE EQUIPMENT MUST BE BROUGHT INTO THESE ENCLOSURES.
- (11) SPLICES AND JUNCTION POINTS WILL BE PERMITTED ONLY IN JUNCTION BOXES, DUCTS EQUIPPED WITH REMOVABLE COVERS, AND AT EASILY ACCESSIBLE LOCATIONS.
- (12) CIRCUIT BREAKERS IN POWER DISTRIBUTION PANEL(S) MUST BE THERMAL-MAGNETIC, MOLDED CASE, PERMANENT TRIP WITH 100-AMPERE, MINIMUM, FRAME.
- (13) DUAL LUGS MUST BE USED WHERE TWO WIRES, SIZE NO. 6 OR LARGER, ARE TO BE CONNECTED TO THE SAME TERMINAL.
- (14) ALL WALL MOUNTED EQUIPMENT ENCLOSURES MUST BE MOUNTED ON WOODEN MOUNTING BOARDS.
- (15) WOODEN EQUIPMENT MOUNTING BOARDS MUST BE PLYWOOD, EXTERIOR TYPE, 3/4 INCH MINIMUM THICKNESS, BOTH SIDES PAINTED WITH ONE COAT OF PRIMER AND TWO COATS OF GRAY, OIL-BASED PAINT.
- (16) RIGID STEEL CONDUIT MUST BE USED THROUGHOUT THE INSTALLATION UNLESS OTHERWISE SPECIFIED. THE MINIMUM TRADE SIZE SHALL BE 3/4 INCH.
- (17) ALL RIGID CONDUIT MUST BE TERMINATED AT CONSTANT CURRENT REGULATORS WITH A SECTION (10" MINIMUM) OF FLEXIBLE CONDUIT.
- (18) UNLESS OTHERWISE SHOWN, ALL EXPOSED CONDUITS SHALL BE RUN PARALLEL TO, OR AT RIGHT ANGLES WITH, THE LINES OF THE STRUCTURE.
- (19) ALL STEEL CONDUITS, FITTINGS, NUTS, BOLTS, ETC., SHALL BE GALVANIZED.
- (20) USE CONDUIT BUSHINGS AT EACH CONDUIT TERMINATION. WHERE NO. 4 AWG OR LARGER UNGROUNDED WIRE IS INSTALLED, USE INSULATED BUSHINGS.
- (21) USE DOUBLE LOCK NUTS AT EACH CONDUIT TERMINATION.
- (22) WRAP ALL PRIMARY AND SECONDARY POWER TRANSFORMER CONNECTIONS WITH SUFFICIENT LAYERS OF INSULATING TAPE AND COVER WITH INSULATING VARNISH FOR FULL VALUE OF CABLE INSULATION VOLTAGE.
- (23) UNLESS OTHERWISE NOTED, ALL INDOOR SINGLE CONDUCTOR CONTROL WIRING MUST BE NO. 12 AWG.
- (24) BOTH ENDS OF EACH CONTROL CONDUCTOR SHALL BE TERMINATED AT A TERMINAL BLOCK. THE TERMINAL BLOCK MUST BE OF PROPER RATING AND SIZE FOR THE FUNCTION INTENDED AND BE LOCATED IN EQUIPMENT ENCLOSURES OR SPECIAL TERMINAL CABINETS.
- (25) ALL CONTROL CONDUCTOR TERMINATORS MUST BE OF THE OPEN-EYE CONNECTOR/SCREW TYPE. SOLDERED, CLOSED-EYED TERMINATORS, OR TERMINATORS WITHOUT CONNECTORS ARE NOT ACCEPTABLE.
- (26) IN TERMINAL BLOCK CABINETS THE MINIMUM SPACING BETWEEN PARALLEL TERMINAL BLOCKS SHALL BE 6 INCHES. THE MINIMUM SPACING BETWEEN TERMINAL BLOCK SIDES/ENDS OR CABINET SIDES/BOTTOM/TOP SHALL BE 5 INCHES. THE MINIMUM SPACING WILL BE INCREASED AS REQUIRED BY THE NUMBER OF CONDUCTORS. ADDITIONAL SPACING MUST BE PROVIDED AT CONDUCTOR ENTRANCES.
- (27) BOTH ENDS OF ALL CONTROL CONDUCTORS MUST BE IDENTIFIED AS TO THE CIRCUIT, TERMINAL, BLOCK, AND TERMINAL NUMBER. ONLY STICK-ON LABELS SHALL BE USED.
- (28) A SEPARATE AND CONTINUOUS NEUTRAL CONDUCTOR SHALL BE INSTALLED AND CONNECTED FOR EACH BREAKER CIRCUIT IN THE POWER PANEL(S) FROM THE NEUTRAL BAR TO EACH POWER/CONTROL CIRCUIT.
- (29) THE FOLLOWING WILL APPLY TO RELAY/CONTACTOR PANEL/ENCLOSURES:
 - (A) ALL COMPONENTS SHALL BE MOUNTED IN DUST PROOF ENCLOSURES WITH VERTICALLY HINGED COVERS.
 - (B) THE ENCLOSURES MUST HAVE AMPLE SPACE FOR THE CIRCUIT COMPONENTS, TERMINAL BLOCKS, AND INCOMING INTERNAL WIRING.
 - (C) ALL INCOMING/OUTGOING WIRING SHALL BE TERMINATED AT TERMINAL BLOCKS.
 - (D) EACH TERMINAL ON TERMINAL BLOCKS AND ON CIRCUIT COMPONENTS MUST BE CLEARLY IDENTIFIED.
 - (E) ALL CONTROL CONDUCTOR TERMINATIONS MUST BE OF THE OPEN-EYE CONNECTOR/SCREW TYPE. SOLDERED, CLOSED-EYE CONNECTORS, OR TERMINATIONS WITHOUT CONNECTORS ARE NOT ACCEPTABLE.

- (F) WHEN THE ENCLOSURE COVER IS OPENED, ALL CIRCUIT COMPONENTS, WIRING, AND TERMINALS MUST BE EXPOSED AND ACCESSIBLE WITHOUT ANY REMOVAL OF ANY PANELS, COVERS, ETC., EXCEPT THOSE COVERING HIGH VOLTAGE COMPONENTS.
- (G) ACCESS TO, OR REMOVAL OF, A CIRCUIT COMPONENT OR TERMINAL BLOCK SHALL NOT REQUIRE THE REMOVAL OF ANY OTHER CIRCUIT COMPONENT OR TERMINAL BLOCK.
- (H) EACH CIRCUIT COMPONENT MUST BE CLEARLY IDENTIFIED INDICATING ITS CORRESPONDING NUMBER SHOWN ON THE DRAWING AND ITS FUNCTION.
- (I) A COMPLETE WIRING DIAGRAM (NOT A SCHEMATIC DIAGRAM) MUST BE MOUNTED ON THE INSIDE OF THE COVER. THE DIAGRAM MUST REPRESENT EACH CONDUCTOR BY A SEPARATE LINE.
- (J) THE DIAGRAM MUST IDENTIFY EACH CIRCUIT COMPONENT AND NUMBERING AND COLOR OF EACH INTERNAL CONDUCTOR AND TERMINAL.
- (K) ALL WIRING MUST BE NEATLY TRAINED AND LACED.
- (L) MINIMUM WIRE SIZE SHALL BE NO. 12 AWG.

FIELD LIGHTING

- (1) UNLESS OTHERWISE NOTIFIED, ALL UNDERGROUND FIELD POWER MULTIPLE AND SERIES CIRCUIT CONDUCTORS WHETHER DIRECT EARTH BURIAL (DEB) OR IN DUCT/CONDUIT MUST BE FAA APPROVED L-824 TYPE. INSULATION VOLTAGE AND SIZE AS SPECIFIED.
- (2) NO COMPONENTS OF PRIMARY CIRCUIT SUCH AS CABLE, CONNECTORS AND TRANSFORMERS WILL BE BROUGHT ABOVE GROUND AT EDGE LIGHTS, SIGNS, REILS, ETC.
- (3) THERE MUST 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, REILS, ETC.) ENCLOSURES. THESE CABLES SHALL BE ENCLOSED IN RIGID CONDUIT OR IN FLEXIBLE WATERTIGHT CONDUIT WITH FRANGIBLE COUPLING(S) AT GRADE OR THE HOUSING COVER, AS SHOWN IN APPLICABLE DETAILS.
- (4) THE JOINTS OF THE L-823 PRIMARY CONNECTORS SHALL BE WRAPPED WITH 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 IN FIGURE 122 OF AC 150/5340-30.
- (5) THE CABLE ENTRANCE INTO THE FIELD ATTACHED L-823 CONNECTORS MUST BE ENCLOSED BY A HEAT-SHRINKABLE TUBING WITH CONTINUOUS INTERNAL ADHESIVE AS SHOWN IN FIGURE 122 OF AC 150/5340-30.
- (6) THE ID OF THE PRIMARY L-823 FIELD ATTACHED CONNECTORS MUST MATCH THE CABLE ID TO PROVIDE A WATERTIGHT CABLE ENTRANCE. THIS ENTRANCE SHALL BE ENCAPSULATED IN A HEAT SHRINKABLE TUBING WITH CONTINUOUS FACTORY APPLIED INTERNAL ADHESIVE, AS SHOWN IN FIGURE 122 OF AC 150/5340-30.
- (7) L-823 TYPE 11, TWO-CONDUCTOR SECONDARY CONNECTOR SHALL BE CLASS "A" (FACTORY MOLDED).
- (8) THERE SHALL BE NO SPLICES IN THE SECONDARY CABLE(S) WITHIN THE STEMS OF A RUNWAY/TAXIWAY EDGE/THRESHOLD LIGHTING FIXTURES AND THE WIREWAYS LEADING TO TAXIWAY SIGNS AND PAPI/REIL EQUIPMENT.
- (9) ELECTRICAL INSULATING GREASE SHALL BE APPLIED WITHIN THE L-823, SECONDARY, TWO CONDUCTOR CONNECTORS TO PREVENT WATER ENTRANCE. THESE CONNECTORS SHALL NOT BE TAPED.
- (10) DEB ISOLATION TRANSFORMERS SHALL BE BURIED AT A DEPTH OF 10 INCHES ON A LINE CROSSING THE LIGHT AND PERPENDICULAR TO THE RUNWAY/TAXIWAY CENTERLINE AT A LOCATION 12 INCHES FROM THE LIGHT OPPOSITE FROM THE RUNWAY/TAXIWAY.
- (11) DEB PRIMARY CONNECTORS SHALL BE BURIED AT A DEPTH OF 10 INCHES NEAR THE ISOLATION TRANSFORMER. THEY MUST BE ORIENTATED PARALLEL WITH THE RUNWAY/TAXIWAY CENTERLINE. THERE SHALL BE NO BENDS IN THE PRIMARY CABLE 6 INCHES, MINIMUM, FROM THE ENTRANCE INTO THE FIELD-ATTACHED PRIMARY CONNECTION.
- (12) A SLACK OF 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.
- (13) DIRECTION OF PRIMARY CABLES SHALL BE IDENTIFIED BY COLOR CODING AS FOLLOWS: WHEN FACING LIGHT WITH BACK FACING PAVEMENT, CABLE TO THE LEFT IS CODED RED AND CABLE TO THE RIGHT IS CODED BLUE, THIS APPLIES TO THE STAKE-MOUNTED LIGHTS AND BASE-MOUNTED LIGHTS WHERE THE BASE HAS ONLY ONE ENTRANCE.
- (14) L-867 BASES SHALL BE SIZE B, 24" DEEP CLASS 1 UNLESS OTHERWISE NOTED.
- (15) BASE-MOUNTED FRANGIBLE COUPLINGS SHALL NOT HAVE WEEP HOLES TO THE OUTSIDE. PLUGGED UP HOLES WILL NOT BE ACCEPTABLE. IT MUST HAVE A 1/4" DIAMETER MINIMUM OR EQUIVALENT OPENING FOR DRAINAGE FROM THE SPACE AROUND THE SECONDARY CONNECTOR INTO THE L-867 BASE.
- (16) THE ELEVATION OF THE FRANGIBLE 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.
- (17) WHERE THE FRANGIBLE COUPLING IS NOT AN INTEGRAL PART OF THE LIGHT FIXTURE STEM OR MOUNTING LEG, A BEAD OF SILICON SEAL MUST BE APPLIED COMPLETELY AROUND THE LIGHT STEM OR WIREWAY AT FRANGIBLE COUPLING TO PROVIDE A WATERTIGHT SEAL.
- (18) TOPS OF THE STAKES SUPPORTING LIGHT FIXTURES SHALL BE FLUSH WITH THE SURROUNDING GRADE.
- (19) PLASTIC LIGHTING FIXTURE COMPONENTS, SUCH AS LAMP HEADS, STEMS, FRANGIBLE COUPLINGS, BASE COVERS, BRACKETS, STAKES, WILL NOT BE ACCEPTABLE. L-867 PLASTIC TRANSFORMER HOUSINGS ARE ACCEPTABLE. THE METAL THREADED FITTING SHALL BE SET IN THE FLANGE DURING THE CASTING PROCESS. BASE COVER BOLTS SHALL BE FABRICATED FROM 18-8 STAINLESS STEEL.
- (20) THE TOLERANCE FOR THE HEIGHT OF RUNWAY/TAXIWAY EDGE LIGHTS IS ± 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.

- (21) THE TOLERANCE FOR THE LATERAL SPACING (LIGHT LANE TO RUNWAY/TAXIWAY CENTERLINE) OF RUNWAY/TAXIWAY EDGE LIGHTS IS ± ONE (1) INCH. THIS ALSO APPLIES AT INTERSECTIONS TO LATERAL SPACING BETWEEN LIGHTS OF A RUNWAY/TAXIWAY AND THE INTERSECTING RUNWAY/TAXIWAY.
- (22) SOIL PERMITTING, THE L-867 BASES SHALL NOT BE PRE-CAST IN CONCRETE. CONCRETE AROUND THE BASES MUST BE USED AS A BACKFILL.
- (23) ENTRANCES INTO L-867 BASES SHALL BE PLUGGED FROM THE INSIDE WITH DUCT SEAL.
- (24) GALVANIZED/PAINTED EQUIPMENT/COMPONENT SURFACES SHALL NOT BE DAMAGED BY DRILLING, FILING, ETC. DRAIN HOLES IN METAL TRANSFORMER HOUSINGS SHALL BE MADE BEFORE GALVANIZED.
- (25) EDGE LIGHT NUMBERING TAGS SHALL BE FACING THE PAVEMENT.
- (26) CABLE/SPLICE/DUCT MARKERS MUST BE PRE-CAST CONCRETE OF THE SIZE SHOWN. LETTERS/NUMBERS/ARROWS FOR THE LEGEND TO BE IMPRESSED INTO THE TOPS OF THE MARKERS MUST BE PRE-ASSEMBLED AND SECURED IN THE MOLD BEFORE THE CONCRETE IS Poured. LEGEND INSCRIBED BY HAND IN WET CONCRETE WILL NOT BE ACCEPTABLE.
- (27) 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 CABLE.
- (28) LOCATIONS OF ALL DEB UNDERGROUND CABLE SPLICE/CONNECTIONS, EXCEPT THOSE AT ISOLATION TRANSFORMERS, SHALL BE IDENTIFIED BY SPLICE MARKERS. SPLICE MARKERS SHALL BE PLACED IMMEDIATELY ABOVE THE SPLICE/CONNECTIONS.
- (29) THE CABLE AND SPLICE MARKERS MUST IDENTIFY THE CIRCUITS WHICH THE CABLES BELONG TO, SUCH AS RWY 4-22, PAPI-4, PAPI-22, ETC.
- (30) LOCATIONS OF ENDS OF ALL UNDERGROUND DUCTS MUST BE IDENTIFIED BY DUCT MARKERS.
- (31) THE PREFERRED MOUNTING METHOD OF RUNWAY AND TAXIWAY SIGNS IS BY THE USE OF A SINGLE ROW OF LEGS. HOWEVER, TWO ROWS WILL BE ACCEPTABLE.
- (32) THE PREFERRED METHOD TO BRING THE POWER CABLE INTO AN L-858 SIGN IS METHOD A, AS SHOWN IN FIGURE 126 OF AC 150/5340-30, HOWEVER, METHOD B WILL ALSO BE ACCEPTABLE.
- (33) STENCIL HORIZONTAL AND VERTICAL AIMING ANGLES ON EACH REIL FLASH HEAD OR EQUIPMENT ENCLOSURE. THE NUMERALS MUST BE BLACK AND ONE INCH MINIMUM HEIGHT.
- (34) ALL POWER AND CONTROL CABLES IN MAN/HAND HOLES MUST BE TAGGED. USE EMBOSSED COPPER STRIPS ATTACHED AT BOTH ENDS TO THE CABLE BY THE USE OF PLASTIC STRAPS. MINIMUM OF TWO TAGS MUST BE PROVIDED ON EACH CABLE IN A MAN/HAND HOLE - ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT.
- (35) APPLY AN OXIDE INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS AND FRANGIBLE COUPLING THREADS.
- (36) THERE SHALL BE NO SPLICES BETWEEN THE ISOLATION TRANSFORMERS. L-823 CONNECTORS ARE ALLOWED AT TRANSFORMER CONNECTIONS ONLY, UNLESS OTHERWISE SHOWN.
- (37) DEB SPLICES IN HOME RUNS SHALL BE OF THE CAST TYPE A, UNLESS OTHERWISE SHOWN. SEE FIG. 120 OF AC 150/5340-30 FOR DETAILS.
- (38) CONCRETE USED FOR SLABS, FOOTING, OR BACKFILL AROUND TRANSFORMER HOUSINGS, MARKERS, ETC., SHALL BE 3000 PSI, MIN., AIR-ENTRAINED.
- (39) HIGH AND LOW VOLTAGE CABLE SHALL BE RUN IN SEPARATE UNDERGROUND DUCTS.
- (40) WHEN HIGH AND LOW VOLTAGE CABLES ARE IN A HANDHOLE OR MANHOLE, PROTECTION SHALL BE MADE AROUND THE HIGH VOLTAGE CABLE. THE METHOD OF PROTECTION SHALL BE BY SPLIT DUCT ANCHOR CLIPPED TO THE WALL.

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PERU MORRIS
 ILLINOIS

ILLINOIS VALLEY REGIONAL AIRPORT (VYS)
SEPARATE RUNWAY CIRCUITS
AND CONSTRUCT VAULT
 PERU, ILLINOIS

ELECTRICAL NOTES

CONSTRUCTION PLANS	CURRENT AS OF: 08/2012	
	SCALE: As Noted	SHEET 6
	FILE NO.: 1000.96 Y-	OF 10

GROUNDING NOTES:

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUND AS MAY BE NECESSARY OR REQUIRED TO MAKE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE LATEST NATIONAL ELECTRIC CODE (NFPA 70) IN FORCE AND AS DETAILED HEREIN. THE RELIABILITY OF THE GROUNDING SYSTEM IS DEPENDING 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 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, CADWELDED BY ERICO PRODUCTS, INC., SOLON, OHIO, (PHONE 18-800-248-9353), 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 10 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 ELECTRIC CODE ARTICLE 250-12. ALL COPPER BUS BARS MUST BE CLEANED PRIOR TO MAKING CONNECTIONS TO REMOVE SURFACE OXIDATION.
7. METALLIC RACEWAY FITTINGS SHALL BE MADE UP TIGHT TO PROVIDE A PERMANENT LOW IMPEDANCE PATH FOR ALL CIRCUITS. METAL CONDUIT TERMINATIONS IN ENCLOSURES SHALL BE BONDED TO THE ENCLOSURE WITH UL-LISTED FITTINGS SUITABLE FOR GROUNDING. PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING SERVICE EQUIPMENT (METER BASE, CT CABINET, MAIN SERVICE BREAKER ENCLOSURE, ETC.). PROVIDE GROUNDING BUSHINGS WITH BONDING JUMPERS FOR ALL METAL CONDUITS ENTERING AN ENCLOSURE THROUGH CONCENTRIC OR ECCENTRIC KNOCKOUTS THAT ARE PUNCHED OR OTHERWISE FORMED SO AS TO IMPAIR THE ELECTRICAL CONNECTION TO GROUND. STANDARD LOCKNUTS OR BUSHINGS SHALL NOT BE THE SOLE MEANS FOR BONDING WHERE A CONDUIT ENTERS AN ENCLOSURE THROUGH A CONCENTRIC OR ECCENTRIC KNOCKOUT.
8. ALL CONNECTIONS, LOCATED ABOVE GRADE, BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS SHALL BE MADE USING UL-LISTED DOUBLE COMPRESSION CRIMP TYPE CONNECTORS OR UL-LISTED BOLTED GROUND CONNECTORS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, THOMAS AND BETTS, OR EQUAL. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES IN UL STANDARD 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
9. ALL METAL EQUIPMENT ENCLOSURES, CONDUITS, CABINETS, BOXES, RECEPTACLES, MOTORS, ETC. SHALL BE BONDED TO THE RESPECTIVE GROUNDING SYSTEM.
10. PROVIDE ALL BOXES FOR PROPOSED OUTLETS, SWITCHES, CIRCUIT BREAKERS, ETC. WITH GROUNDING SCREWS. PROVIDE ALL PANELBOARD, SWITCHGEAR, ETC., ENCLOSURES WITH GROUNDING BARS WITH INDIVIDUAL SCREWS, LUGS, CLAMPS, ETC. FOR EACH OF THE GROUNDING CONDUCTORS THAT ENTER THEIR RESPECTIVE ENCLOSURES.
11. EACH NEW FEEDER CIRCUIT AND/OR BRANCH CIRCUIT SHALL INCLUDE AN EQUIPMENT GROUND WIRE. METAL RACEWAY OR CONDUIT SHALL NOT MEET THIS REQUIREMENT. THE EQUIPMENT GROUND WIRE FROM EQUIPMENT SHALL NOT BE SMALLER THAN ALLOWED BY 2011 NEC TABLE 250-122 "MINIMUM SIZE CONDUCTORS OR GROUNDING RACEWAY AND EQUIPMENT." WHEN CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT-GROUNDING CONDUCTORS SHALL BE ADJUSTED PROPORTIONATELY ACCORDING TO CIRCULAR MIL AREA. ALL EQUIPMENT GROUND WIRES SHALL BE COPPER, EITHER BARE OR INSULATED GREEN IN COLOR. WHERE THE EQUIPMENT GROUNDING CONDUCTORS ARE INSULATED, THEY SHALL BE IDENTIFIED BY THE COLOR GREEN, AND SHALL BE THE SAME INSULATION TYPE AS THE PHASE CONDUCTORS.
12. ALL EXTERIOR METAL CONDUIT, WHERE NOT ELECTRICALLY CONTINUOUS BECAUSE OF MANHOLES, HANDHOLES, NON-METALLIC JUNCTION BOXES, ETC. SHALL BE BONDED TO ALL OTHER METAL CONDUIT IN THE RESPECTIVE DUCT RUN, AND AT EACH END, WITH A COPPER-BONDING JUMPER SIZED IN CONFORMANCE WITH 2011 NEC 250-102. WHERE METAL CONDUITS TERMINATE IN AN ENCLOSURE (SUCH AS A MOTOR CONTROL CENTER, SWITCHBOARD, ETC.) WHERE THERE IS NOT ELECTRICAL CONTINUITY WITH THE CONDUIT AND THE RESPECTIVE ENCLOSURE, PROVIDE A BONDING JUMPER FROM THE RESPECTIVE ENCLOSURE GROUND BUS TO THE CONDUIT SIZED PER 2011 NEC 250-102.
13. IT IS THE INTENT OF THIS SPECIFICATION THAT ALL ELECTRICAL EQUIPMENT ENCLOSURES, PANEL HOUSINGS, CONDUITS, BOXES, ETC. HAVE A CONTINUOUS COPPER WIRE GROUND CONNECTION AND SHALL BE POSITIVELY BONDED TO THE RESPECTIVE GROUNDING SYSTEM. CONDUIT CONNECTORS WILL NOT BE CONSIDERED AS ADEQUATE GROUNDING.
14. PROVIDE A POSITIVE GROUND BOND FOR ALL OUTLET BOXES, ELECTRICAL EQUIPMENT ENCLOSURES, GROUNDING RECEPTACLES, TOGGLE SWITCHES, ETC. INSTALL A GROUNDING CONDUCTOR IN ALL WIRE AND CABLE RACEWAYS. GROUND CONDUCTOR TO HAVE 600-VOLT INSULATION AND BE IDENTIFIED BY A CONTINUOUS GREEN COLOR COATING. THEY SHALL BE USED SOLELY FOR GROUNDING PURPOSES AND BE ENTIRELY SEPARATE FROM WHITE GROUND NEUTRAL CONDUCTOR, EXCEPT AT SUPPLY SIDE OF SERVICE DISCONNECTING MEANS, WHERE GROUNDING AND NEUTRAL SYSTEMS ARE TO BE CONNECTED TO SERVICE GROUND.
15. EACH AND ALL GROUND CASED AND METAL PARTS ASSOCIATED WITH ELECTRICAL EQUIPMENT SHALL BE TESTED FOR CONTINUITY OF CONNECTION WITH GROUND BUS SYSTEM BY CONTRACTOR IN PRESENCE OF OWNER'S REPRESENTATIVE.
16. ALL CONNECTIONS BETWEEN THE DIFFERENT TYPES OF GROUNDING CONDUCTORS ABOVE GRADE SHALL BE MADE USING BOLTED GROUND CONNECTORS. GROUND LUGS SHALL BE PROVIDED IN ALL ENCLOSURES AND WIRING TERMINATION JUNCTION BOXES. EQUIPMENT GROUNDS AND GROUNDING CONDUCTOR SHALL BE CONNECTED TO THESE GROUND LUGS. FOR GROUND CONNECTIONS TO ENCLOSURES, CASES AND FRAMES OF ELECTRICAL EQUIPMENT NOT SUPPLIED WITH GROUND LUGS, THE CONTRACTOR SHALL DRILL REQUIRED HOLES FOR MOUNTING A BOLTED GROUND CONNECTOR. ALL BOLTED GROUND CONNECTORS SHALL BE BURNDY, OR EQUAL.
17. BOND ALL NONCURRENT-CARRYING PARTS OF METAL EQUIPMENT TO GROUND SYSTEM.
18. BUILDING STRUCTURAL STEEL SYSTEM SHALL BE BONDED TO ELECTRICAL GROUND SYSTEM.
19. INSTALL GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS AND SEPARATE GROUND CONDUCTORS IN SCHEDULE 40 OR SCHEDULE 80 PVC CONDUIT OR EXPOSED WHERE ACCEPTABLE TO LOCAL CODES. WHERE GROUNDING ELECTRODE CONDUCTORS, LIGHTNING PROTECTION DOWN CONDUCTORS OR INDIVIDUAL GROUND CONDUCTORS ARE RUN IN PVC CONDUIT, DO NOT COMPLETELY ENCIRCLE CONDUIT WITH FERROUS AND/OR MAGNETIC MATERIALS. USE NON-METALLIC REINFORCED FIBERGLASS STRUT SUPPORT. WHERE METAL CONDUIT CLAMPS ARE INSTALLED, USE NYLON BOLTS, NUTS, WASHERS AND SPACERS TO INTERRUPT A COMPLETE METALLIC PATH FROM ENCIRCLING THE CONDUIT. THIS IS REQUIRED TO AVOID GIRDLING OF GROUND CONDUCTORS. GIRDLING OF A GROUND CONDUCTOR IS THE RESULT OF PLACING THE CONDUCTOR IN A RING OF MAGNETIC MATERIAL. THIS RING COULD BE A METALLIC CONDUIT, U-BOLT OR STRUT SUPPORT PIPE CLAMP, OR OTHER SUPPORT HARDWARE. THE RESULT OF GIRDLING GROUND CONDUCTORS SIGNIFICANTLY INCREASES THE INDUCTIVE IMPEDANCE OF THE GROUND CONDUCTOR. INDUCTIVE AND CAPACITIVE IMPEDANCE IS A TYPE OF RESISTANCE THAT OPPOSES THE FLOW OF ALTERNATING CURRENT. ANY INCREASE IN THE IMPEDANCE OF A GROUND CONDUCTOR REDUCES ITS ABILITY TO EFFECTIVELY MITIGATE RADIO FREQUENCY NOISE IN THE GROUND SYSTEM. THE CONDITION WHERE A GROUND CONDUCTOR IS GIRDLING DURING A LIGHTNING STRIKE RESULTS IN PHENOMENA KNOWN AS SURGE IMPEDANCE LOADING. SURGE IMPEDANCE LOADING IS A RESULT OF VOLTAGE AND CURRENT REACHING 500,000 VOLTS AND 10,000 AMPS FOR A SHORT DURATION. GIRDLING FURTHER INCREASES THE IMPEDANCE AT LIGHTNING FREQUENCIES OF 100 KILOHERTZ TO 100 MEGAHERTZ. AT THESE POWER AND FREQUENCY LEVELS, ANY INCREASE IN THE IMPEDANCE OF THE GROUND CONDUCTOR MUST BE CONTROLLED. DURING LIGHTNING DISCHARGE CONDITIONS, A LOW INDUCTIVE IMPEDANCE PATH IS MORE IMPORTANT THAN A LOW DC RESISTANCE PATH.
20. IF LOCAL CODES DICTATE THAT INDIVIDUAL GROUNDING CONDUCTORS MUST BE RUN IN METAL CONDUIT OR RACEWAY, THEN THE CONDUIT OR RACEWAY MUST BE BONDED AT EACH END OF THE RUN WITH A BONDING JUMPER SIZED EQUAL TO THE INDIVIDUAL GROUNDING CONDUCTOR OR AS REQUIRED BY 2011 NEC 250-102. NOTE THIS DOES NOT APPLY TO AC EQUIPMENT GROUNDING CONDUCTORS RUN WITH AC CIRCUITS.
21. WHERE A CONFLICT IS DETERMINED WITH RESPECT TO GROUNDING REQUIREMENTS PER MANUFACTURER INSTALLATION INSTRUCTIONS, NEC, AND/OR THE CONTRACT DOCUMENTS, CONTACT THE RESIDENT ENGINEER OR PROJECT ENGINEER FOR FURTHER DIRECTIONS.
22. GROUND ALL NON-CURRENT-CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT BY USING NO. 6 AWG BARE COPPER WIRE TO BE RUN INSIDE CABINETS AND IN CONDUITS TOGETHER WITH OTHER WIRES. WHERE THIS IS NOT FEASIBLE, RUN THE EXPOSED GROUNDING WIRE PARALLEL OR AT RIGHT ANGLES TO THE BUILDING LINE AND SECURE IT AT LEAST EVERY 24 INCHES AND WITHIN 6 INCHES FROM BEND OR JUNCTION. THE EXPOSED WIRE MAY BE NO. 6 AWG IF IT IS NOT SUBJECTED TO PHYSICAL ABUSE, OTHERWISE NO. 4 AWG SHALL BE USED.
23. ALL GROUND CONNECTIONS TO GROUND RODS, BUSSES, PANELS, ETC., MUST BE MADE WITH PRESSURE TYPE SOLDERLESS LUGS AND GROUND CLAMPS. SOLDERED OR BOLT AND WATER TYPE CONNECTIONS ARE NOT ACCEPTABLE. CLEAN ALL METAL SURFACES BEFORE MAKING GROUND CONNECTIONS.
24. TOPS OF GROUND RODS SHALL BE A MIN. 12" INCHES BELOW GRADE.
25. THE RESISTANCE TO GROUND OF THE COUNTERPOISE SYSTEM, OR AT ISOLATION LOCATIONS, SUCH AS AIRPORT BEACON MUST NOT EXCEED 25 OHMS.

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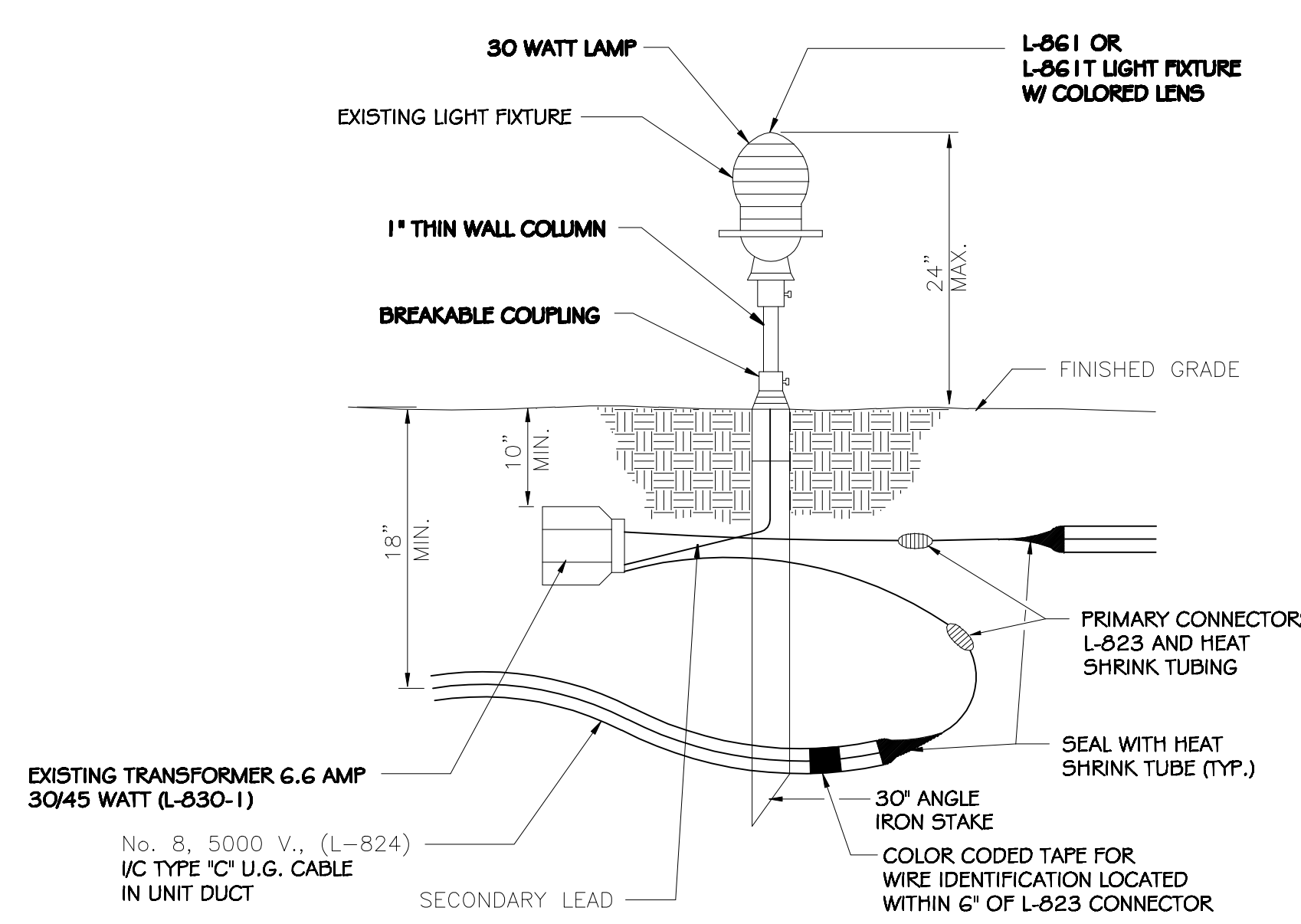
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**ILLINOIS VALLEY REGIONAL AIRPORT (VYS)
 SEPARATE RUNWAY CIRCUITS
 AND CONSTRUCT VAULT
 PERU, ILLINOIS**

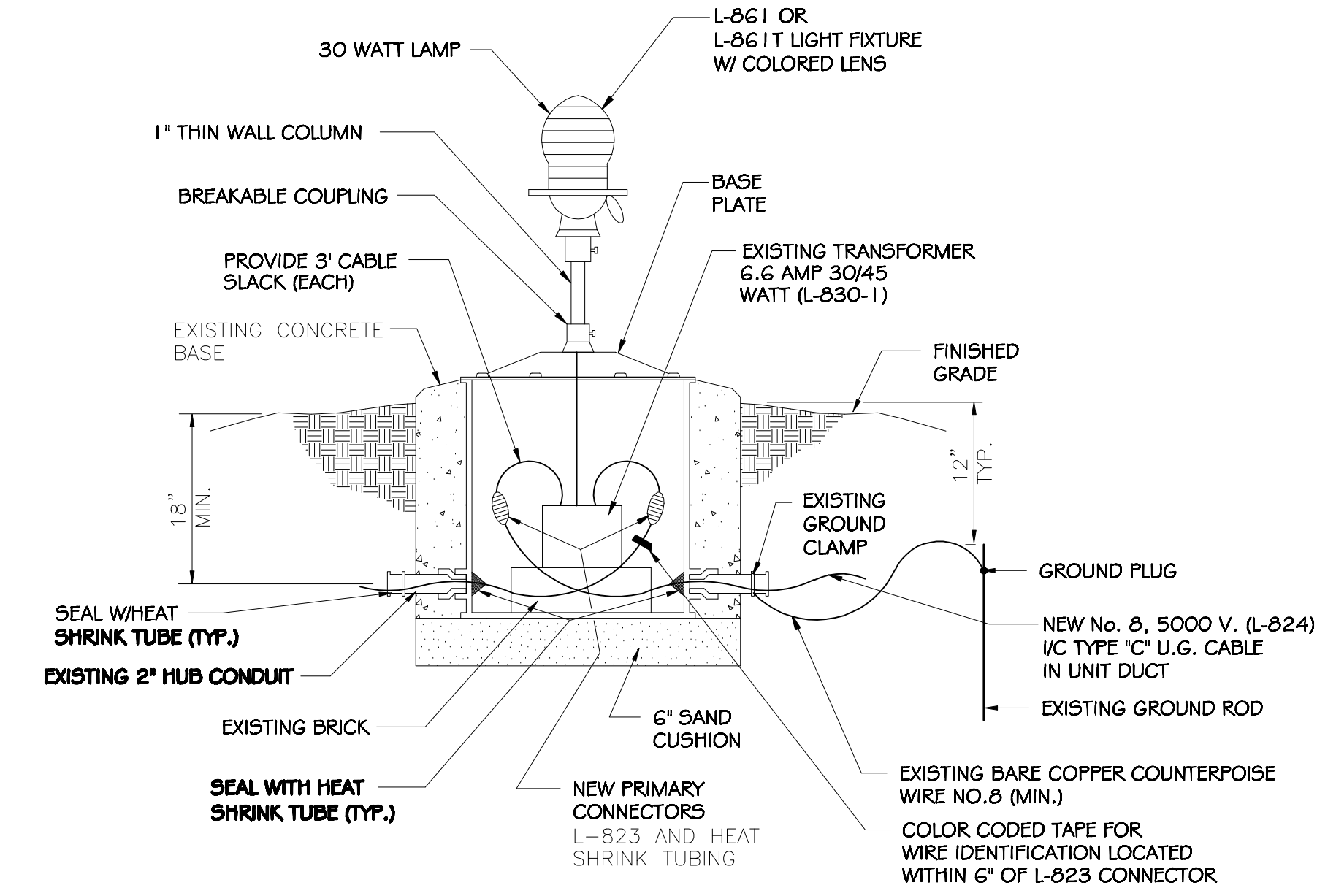
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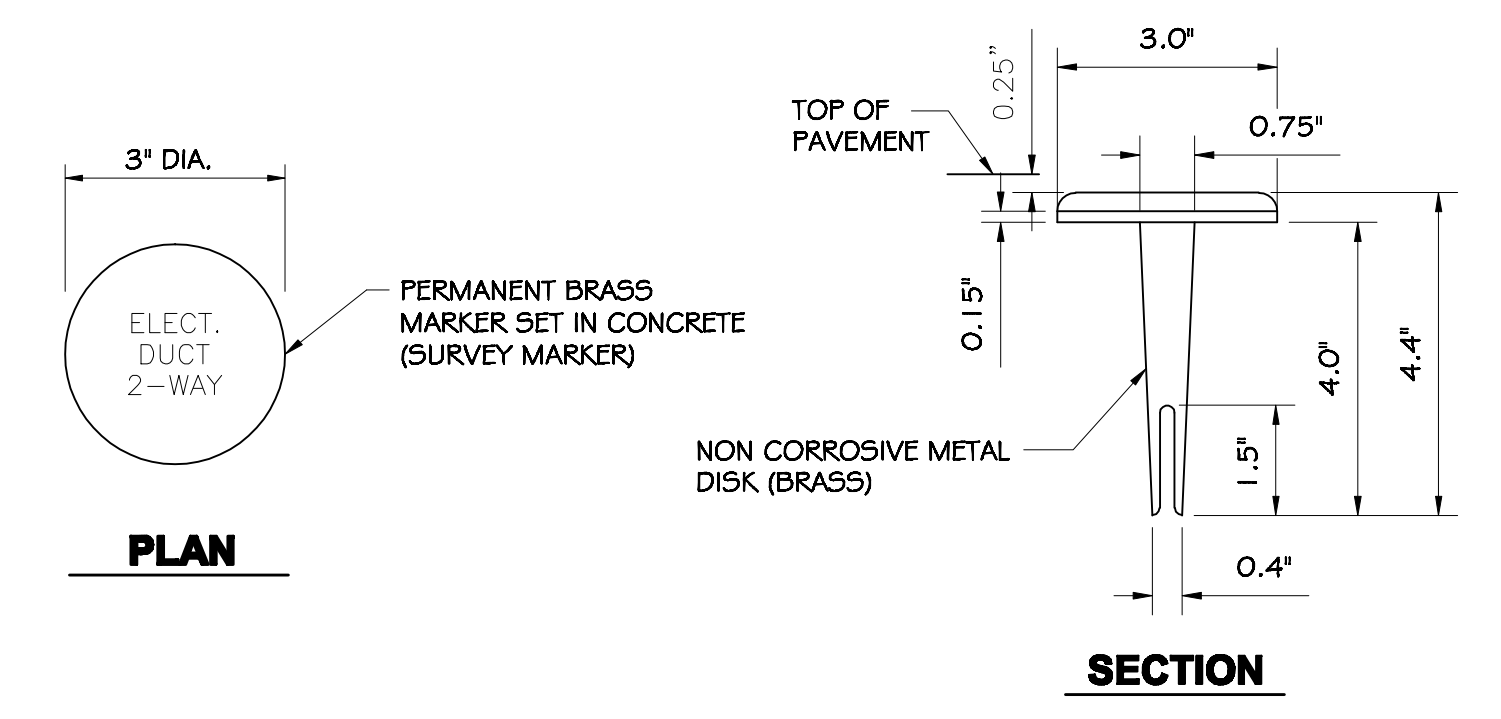
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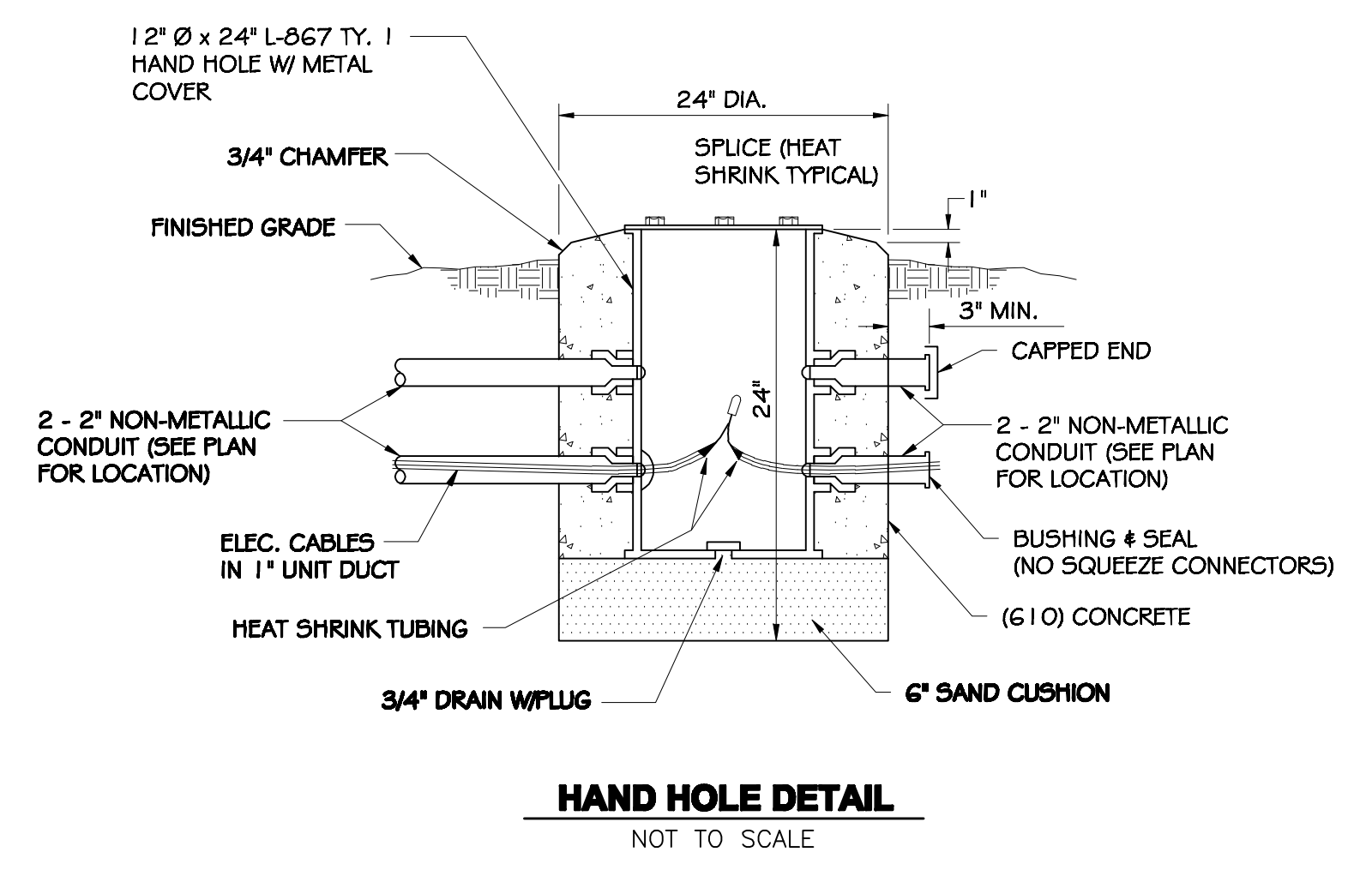
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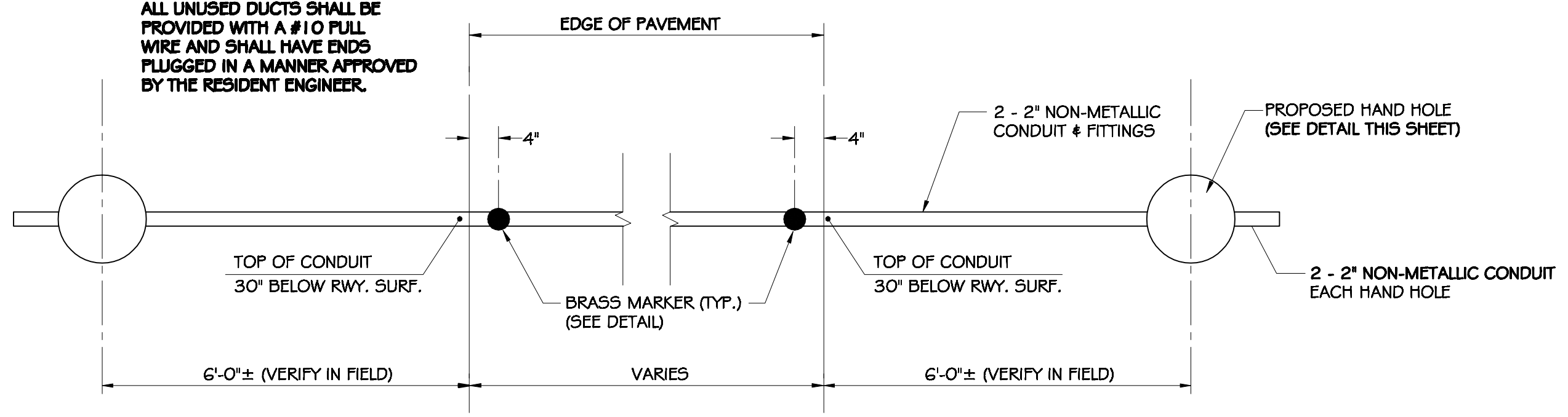


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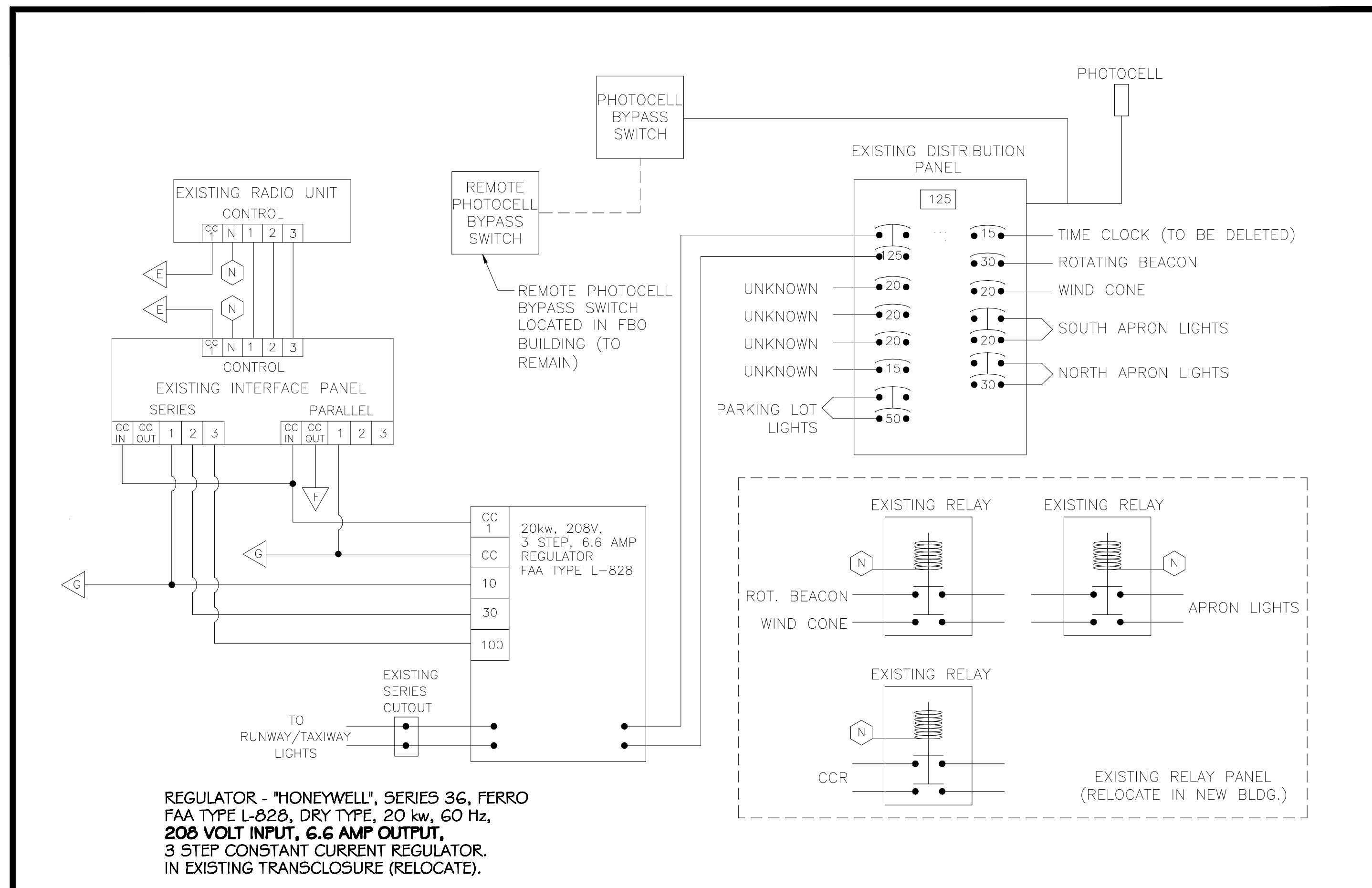


HAND HOLE DETAIL
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NOTES:
 TOP OF CONDUIT TO BE NOT LESS THAN 30" BELOW FINISHED RWY SURFACE.
 ALL UNUSED DUCTS SHALL BE PROVIDED WITH A #10 FULL WIRE AND SHALL HAVE ENDS PLUGGED IN A MANNER APPROVED BY THE RESIDENT ENGINEER.



2-WAY DUCT
 NOT TO SCALE



EXISTING VAULT EQUIPMENT SCHEMATIC WIRING DIAGRAM
 NOT TO SCALE

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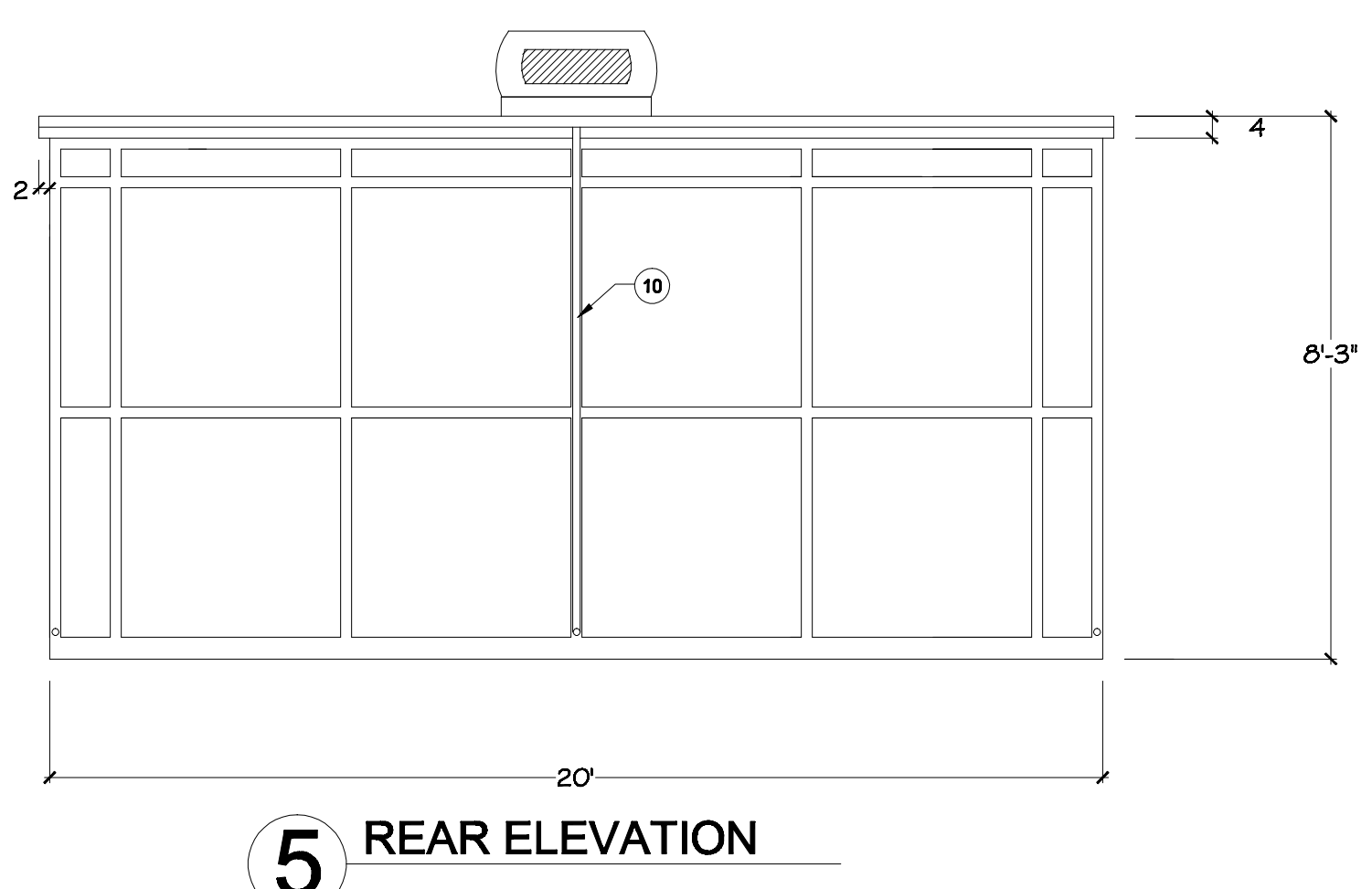
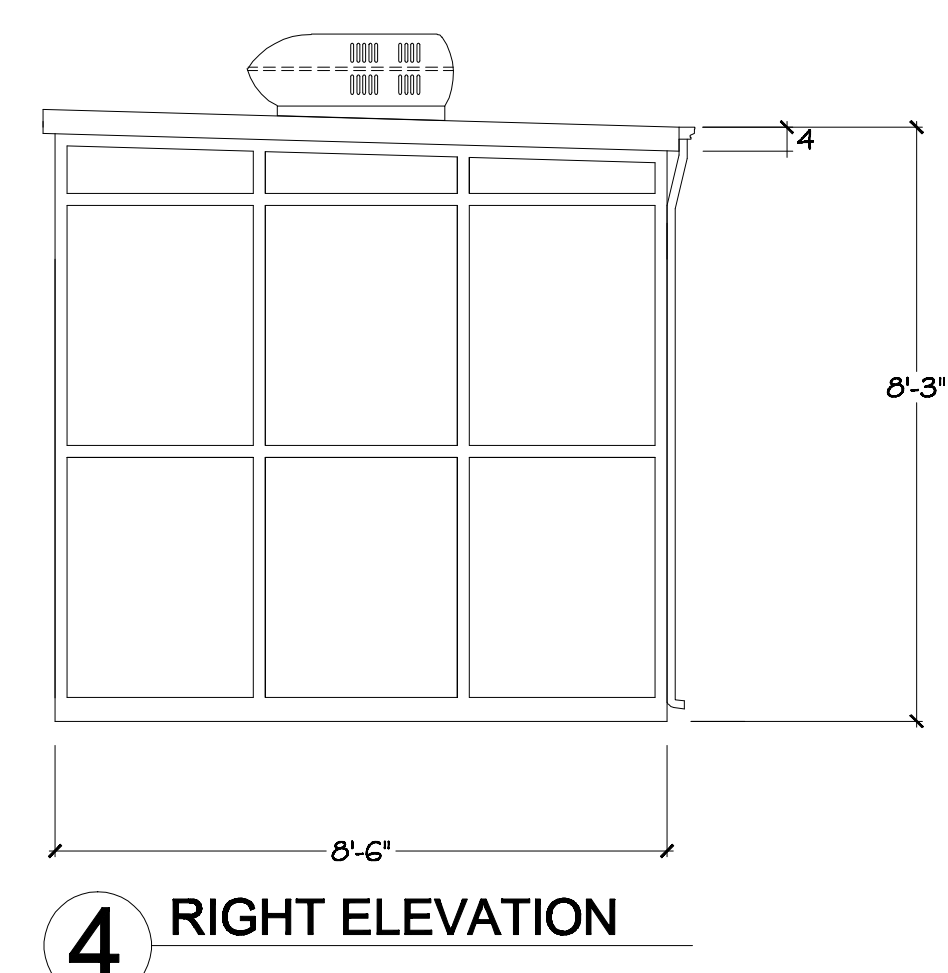
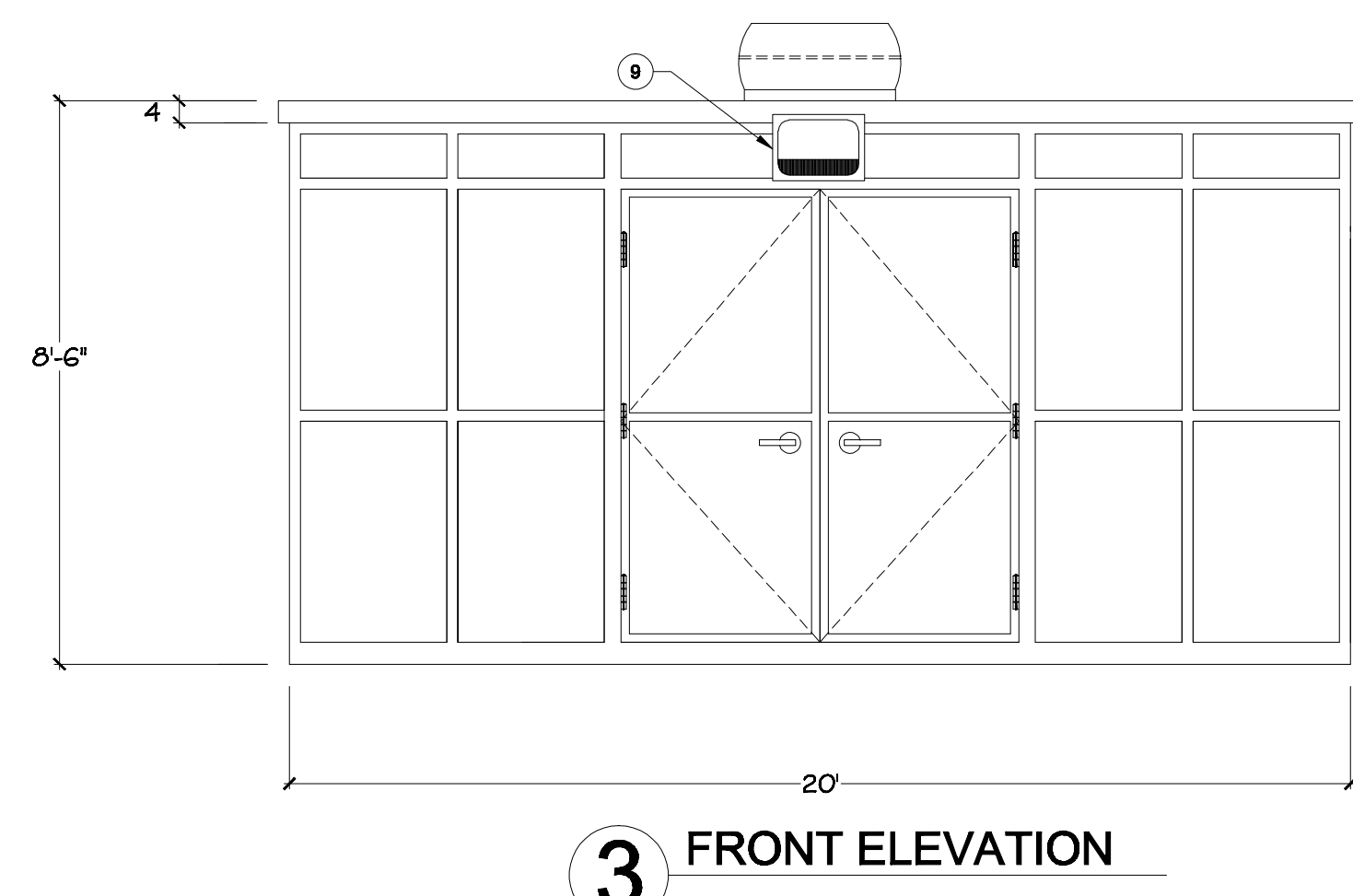
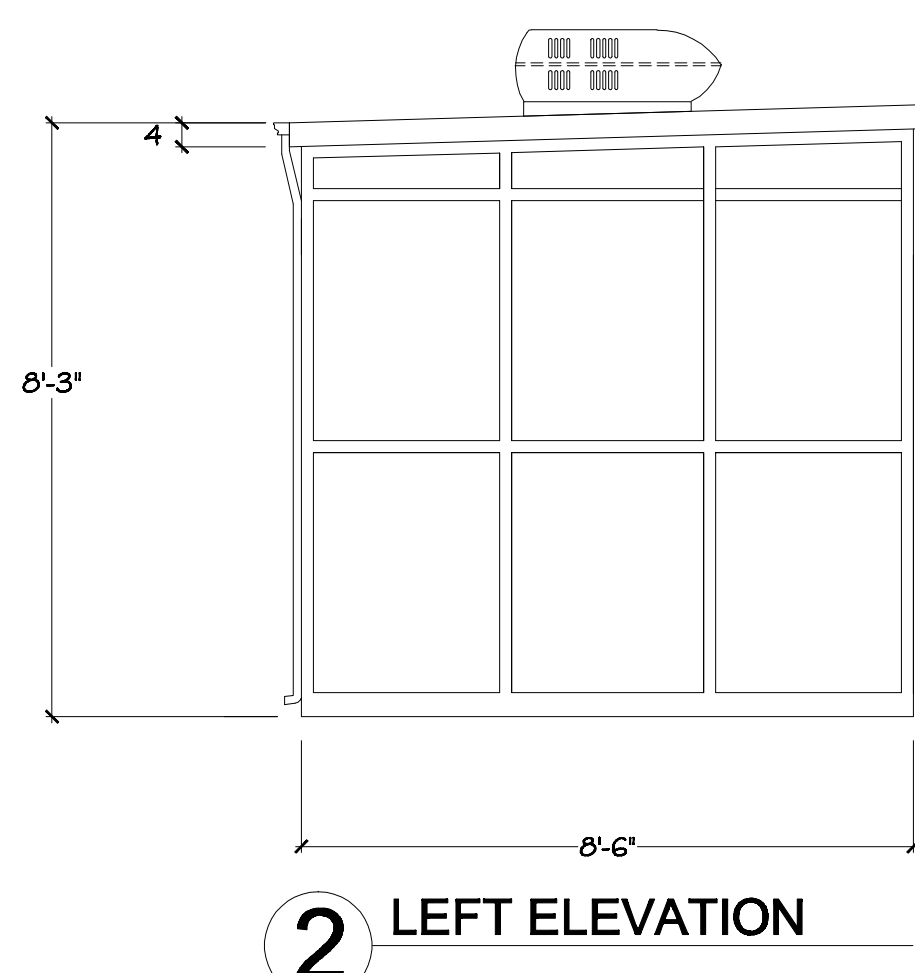
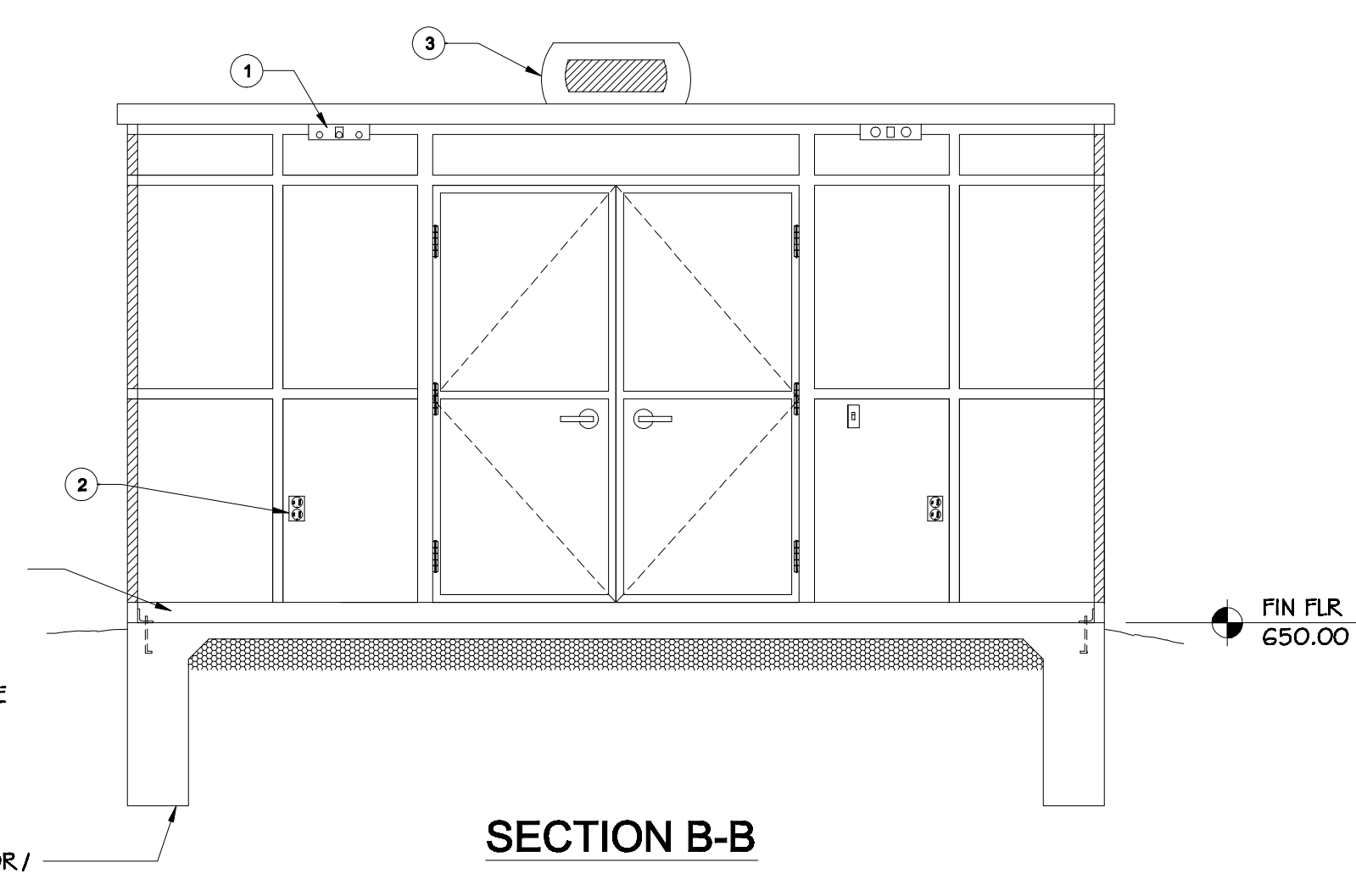
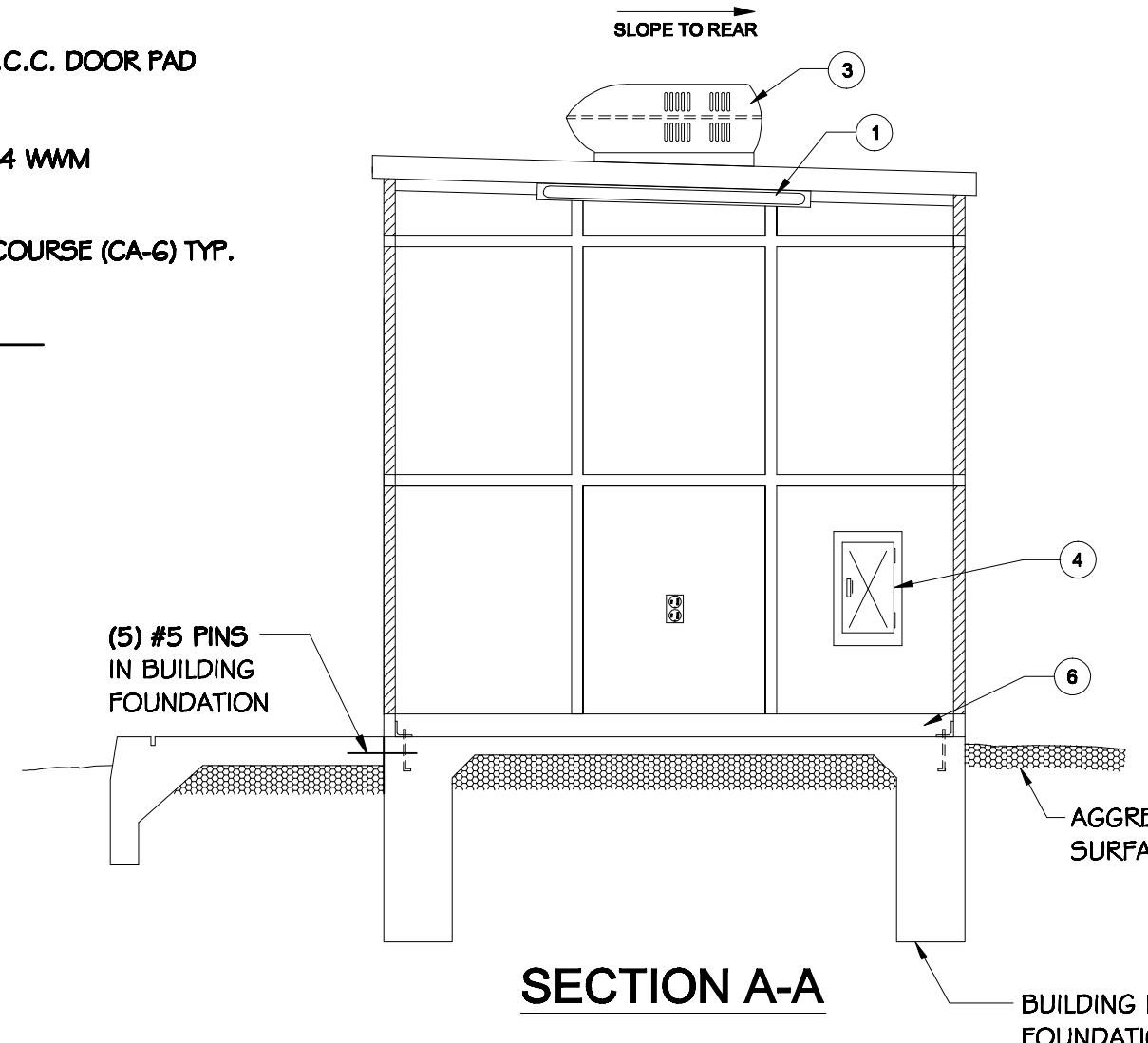
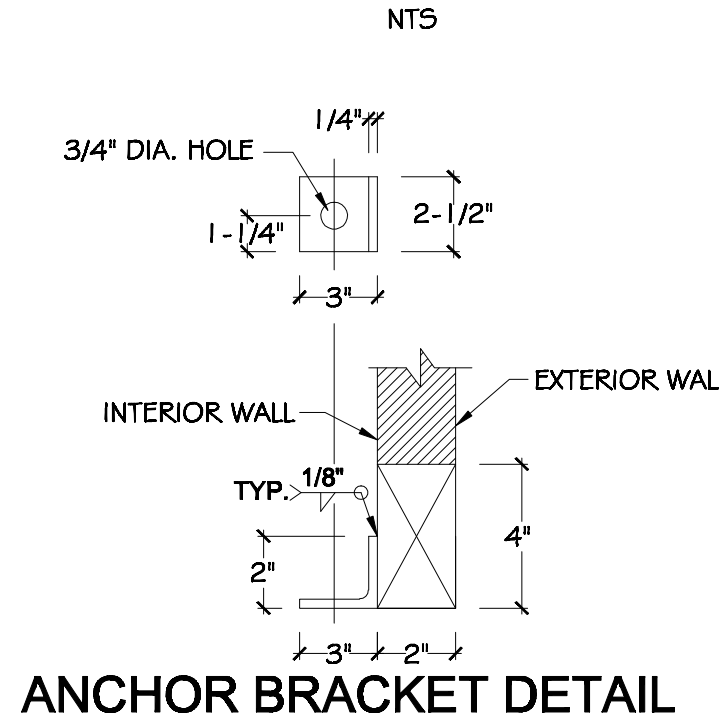
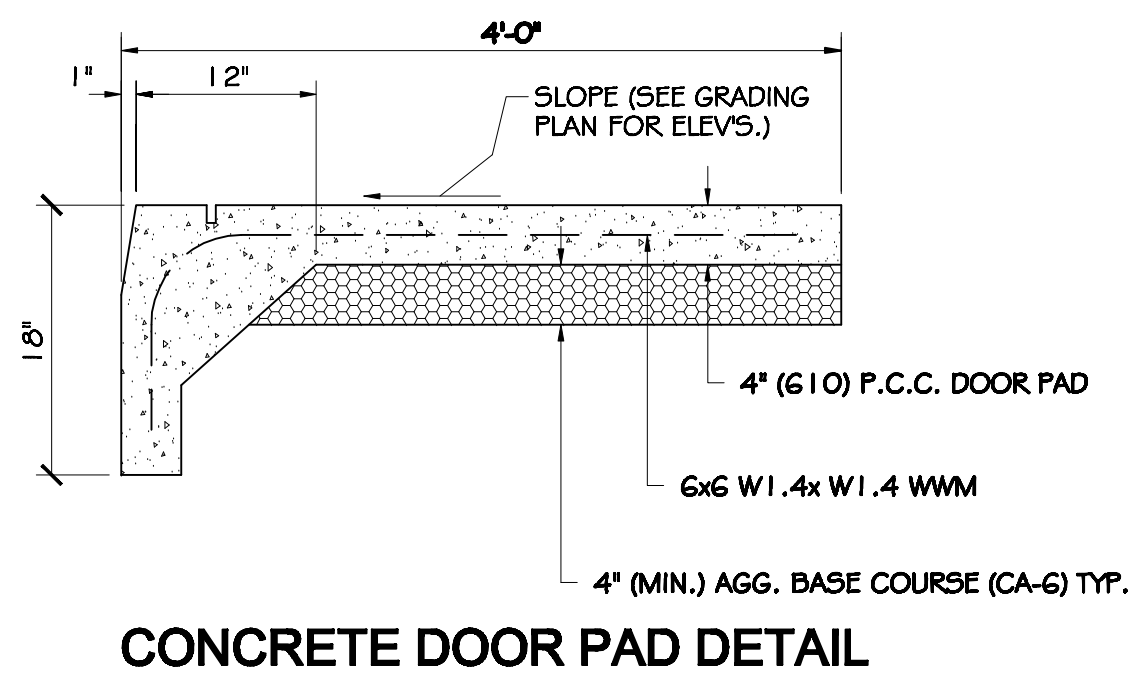
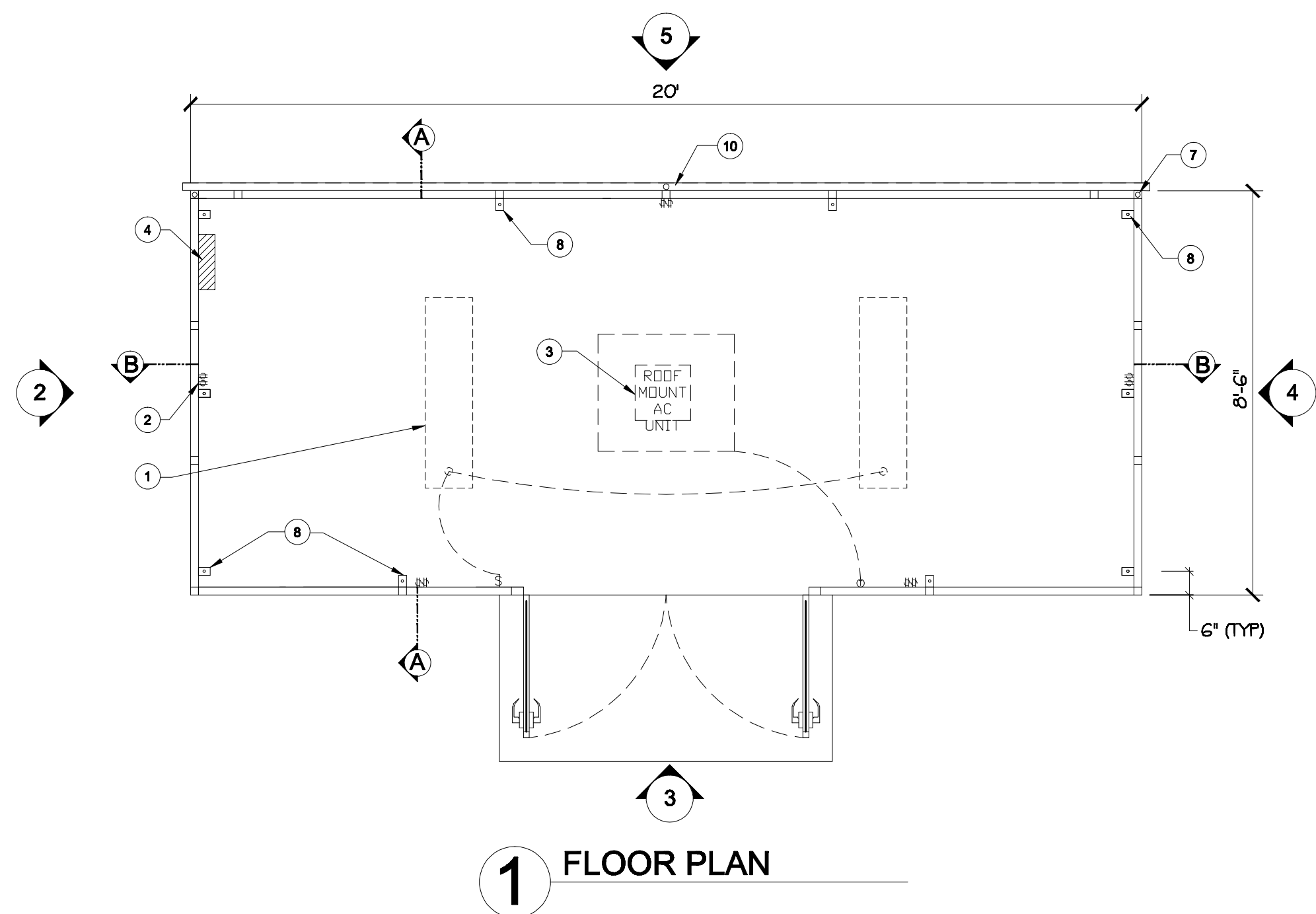
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ILLINOIS VALLEY REGIONAL AIRPORT (VYS) SEPARATE RUNWAY CIRCUITS AND CONSTRUCT VAULT
 PERU, ILLINOIS

ELECTRICAL DETAILS AND EXISTING ELECTRICAL SCHEMATIC

CONSTRUCTION PLANS
 CURRENT AS OF: 08/2012
 SCALE: As Noted SHEET 8
 FILE NO.: 1000.96 Y- OF 10

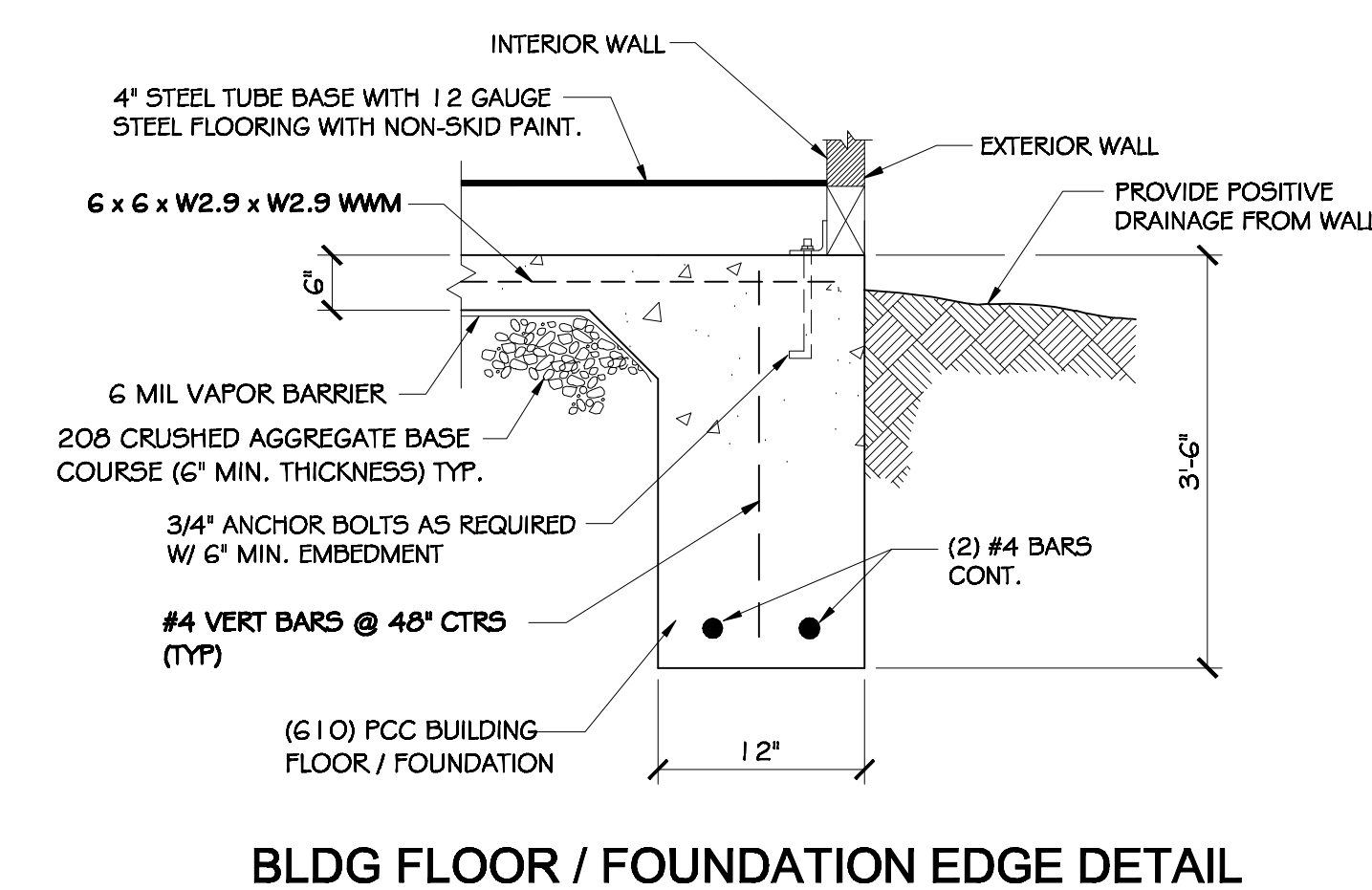


SHEET NOTES:

- 1 TWO (3) THREE-TUBE, 32 WATT, 120 VOLT, FLUORESCENT LIGHT FIXTURE TO BE SURFACE MOUNTED AND OPERATED BY A SINGLE POLE WALL SWITCH.
- 2 FIVE (5) 20 AMP, 120 VOLT, QUAD WALL OUTLETS, TO BE LOCATED AS SHOWN ON THE PLAN.
- 3 ONE (1) 13,500 BTU, 120 VOLT, ROOF MOUNTED AIR CONDITIONING UNIT TO BE OPERATED BY A WALL MOUNTED THERMOSTAT CONTROL.
- 4 PRE-WIRED 125 AMP MAX., 120/240 VOLT, SINGLE PHASE, 3 WIRE 8/16 PANEL TO BE SURFACED MOUNTED.
- 5 TWO (3) INSULATED REINFORCED STEEL DOORS (16 GA.) W/ 16 GA. STEEL FRAME, 1 1/2 PAIR BUTTS, LEVER HANDLES WITH CYLINDER LOCK (RIGHT LEAF). 1 1/2 PAIR BUTTS, HEAD & FOOT BOLT (LEFT LEAF). PROVIDE SURFACE MOUNTED CLOSERS, WEATHER STRIP, BOTTOM DOOR SWEEPS (EACH LEAF) AND THRESHOLD & CENTER ASTRAGAL.
- 6 4\"/>

GENERAL NOTES:

- A. SHELTER SHALL BE PRE-ASSEMBLED, DESIGNED AND STRUCTURALLY ENGINEERED UNIT, TO WITHSTAND 50-LB/SQ.FT LIVE LOAD AND 30-LB/SQ.FT WIND LOAD, READY TO BE SHIPPED FOR OFF-LOADING AND INSTALLATION BY OTHERS.
- B. CONSTRUCTED WITH 14 GAUGE SQUARE TUBING, USUALLY 2\"/>



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**ILLINOIS VALLEY REGIONAL AIRPORT (VYS)
 SEPARATE RUNWAY CIRCUITS
 AND CONSTRUCT VAULT**
 PERU, ILLINOIS

PROPOSED EQUIPMENT BUILDING

CONSTRUCTION PLANS
 CURRENT AS OF: 08/2012
 SCALE: As Noted SHEET 9
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