

## ELECTRICAL GENERAL NOTES:

- THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO RELOCATE, MODIFY AND INSTALL THE AIRFIELD ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS. ITEMS NOT SHOWN BUT OBVIOUSLY NECESSARY FOR COMPLETION OF THE WORK SHALL BE INCLUDED.
- ITEMS SHOWN IN SCREEN (HALFTONE OR LIGHT) ARE EXISTING OR CIVIL ITEMS. ITEMS SHOWN IN SOLID (BOLD) ARE NEW TO BE INSTALLED UNDER THIS CONTRACT, UNLESS OTHERWISE NOTED.
- THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE, NATIONAL ELECTRICAL CODE, FEDERAL AVIATION ADMINISTRATION SPECIFICATIONS/ ADVISORY CIRCULARS AND APPLICABLE LOCAL BUILDING CODES.
- THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES, ETC., PRIOR TO COMMENCEMENT OF WORK. THE COST OF PERMITS, LICENSES, ETC., SHALL BE INCIDENTAL TO AND INCLUDED IN THE BID PRICE FOR THE RESPECTIVE PAY ITEMS.
- ALL MATERIALS SCHEDULED FOR REMOVAL SUCH AS EXISTING RUNWAY AND TAXIWAY LIGHTS, ISOLATION TRANSFORMERS, ETC., WHICH ARE DEEMED SALVAGABLE BY THE AIRPORT SHALL BE DELIVERED TO THE LOCATION ON AIRPORT PROPERTY AS INDICATED BY THE AIRPORT. ALL NON-SALVAGABLE MATERIALS REMOVED SUCH AS MANHOLES, HANDHOLES, CONCRETE FOUNDATIONS, CONDUIT, LIGHT BASES, CONDUCTORS, ETC. SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND LEGALLY DISPOSED OF OFF THE SITE BY THE CONTRACTOR.
- EXISTING CONDUIT, DUCTBANK, CIRCUITING AND UTILITY INFORMATION IS BASED ON AIRPORT "AS BUILT" AND "RECORD" DRAWINGS AND SITE VISITS BY THE UTILITY COMPANIES AND THE PROJECT ENGINEER. THE EXISTING UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND SHALL NOT BE SCALED FOR EXACT LOCATIONS. NOT ALL UTILITIES MAY BE SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE APPROPRIATE UTILITY/AGENCY PRIOR TO STARTING WORK, FOR THE LOCATION OF EXISTING UTILITIES, ANY INTERPRETATION OF AN EXISTING SYSTEM OR UTILITY SERVICE SHALL BE COORDINATED AND APPROVED BY THE UTILITY, AGENCY OR UTILITY HAVING JURISDICTION. PRIOR TO STARTING WORK, THE CONTRACTOR SHALL CONTACT ALL LOCAL UTILITIES TO ALLOW THEM TIME TO PROPERLY LOCATE ALL UTILITIES.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE AIRPORT, FEDERAL AVIATION ADMINISTRATION, UTILITY COMPANIES, AND RESIDENT PROJECT REPRESENTATIVE (RPR) PRIOR TO AND DURING CONSTRUCTION TO ENSURE THAT ALL ELECTRICAL CIRCUITS AND FACILITIES HAVE BEEN LOCATED, FLAGGED AND ACCOUNTED FOR AND THAT ALL NECESSARY CIRCUITS HAVE BEEN DETERMINED PRIOR TO INITIATING CONSTRUCTION IN ANY LOCATION.
- IT SHALL BE THE CONTRACTORS' RESPONSIBILITY TO DETERMINE THAT ALL AIRFIELD LIGHTING CIRCUITS, EXCEPT THOSE THAT ARE SERVING CLOSED TAXIWAYS OR RUNWAYS, ARE COMPLETELY OPERATIONAL AT THE END OF EACH WORK SHIFT AND SHALL SO CERTIFY TO THE RESIDENT ENGINEER BEFORE THE END OF EACH SHIFT. **THE CONTRACTOR SHALL NOT LEAVE THE WORK SITE UNTIL CIRCUIT OPERATION HAS BEEN CONFIRMED BY THE RESIDENT ENGINEER.** TEMPORARY CABLE CONNECTIONS SHALL BE MADE IN AIRFIELD LIGHTING CIRCUITS WHEN PERMANENT WIRING CANNOT BE COMPLETED DURING THE WORK SHIFT. ALL AREAS NOT CLOSED FOR CONSTRUCTION (REFER TO PHASING PLAN) SHALL HAVE FULLY OPERABLE AIRFIELD LIGHTING DURING THE HOURS BETWEEN ONE HOUR BEFORE DUSK AND ONE HOUR AFTER DAWN. THE CONTRACTOR SHALL DISCUSS THE PROPOSED WIRING WITH THE RPR AND OBTAIN APPROVAL PRIOR TO COMMENCING WORK IN THAT AREA. ALL ELECTRICAL WIRING SHALL BE COMPLETED AND TESTED ONE (1) HOUR PRIOR TO THE ELECTRICAL MAINTENANCE DEPARTMENT'S END OF SHIFT.
- ALL EXISTING SYSTEMS/UTILITIES TO REMAIN SHALL BE PROTECTED FROM DAMAGE. REPLACEMENT OF ANY DAMAGED EXISTING SYSTEMS/UTILITIES SHALL BE AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGED ELECTRICAL SYSTEMS AND SHALL MAKE REPAIRS IMMEDIATELY AT THEIR OWN COST, IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS. DAMAGED ELECTRICAL SYSTEMS SHALL BE IMMEDIATELY REPORTED TO THE RPR. THE CONTRACTOR IS URGED TO TAKE EVERY PRECAUTION NECESSARY TO PROTECT ANY AND ALL CABLES FROM DAMAGE OF ANY SORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KNOWING THE DEPTH OF ANY CABLE IN THE PROXIMITY OF THE CONSTRUCTION AS WELL AS THE HORIZONTAL LOCATION.
- NOT USED.
- ALL EXCAVATION WITHIN 5 FEET OF ANY UNDERGROUND UTILITY SHALL BE PERFORMED BY HAND EXCAVATION METHODS.
- TAXIWAY EDGE LIGHTS SHALL BE INSTALLED 10 FEET FROM THE EDGE OF PAVEMENT OR AS OTHERWISE INDICATED. ALL STRAIGHT SECTIONS OF TAXIWAY EDGE LIGHTS SHALL BE ALIGNED TO DEVELOP A CONTINUOUS "IN-LINE" APPEARANCE OF THE LIGHTS WHEN VIEWED AT GROUND LEVEL FROM ONE END. ALL TAXIWAY EDGE LIGHTS ON STRAIGHT SECTIONS OF THE TAXIWAY SHALL BE LOCATED SUCH THAT A LINE BETWEEN LIGHTS ON OPPOSITE SIDES OF THE TAXIWAY IS PERPENDICULAR TO THE TAXIWAY CENTERLINE.
- CHANGES TO THE LOCATION OF THE TAXIWAY LIGHTS, SHALL BE SUBMITTED BY THE CONTRACTOR TO THE RPR FOR APPROVAL. CONFLICTS THAT MAY OCCUR DUE TO CHANGES IN THE LOCATION OF THE LIGHTS SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR.
- ELECTRICAL DEMOLITION WORK SHALL BE LIMITED TO THE AREAS AND SCHEDULES IDENTIFIED IN THE DEMOLITION PLANS.
- ALL GROUND RODS AND OTHER UNDERGROUND GROUNDING CONNECTIONS SHALL BE CADWELDED OR APPROVED EQUIVALENT. CADWELD CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. THE PROPOSED COUNTERPOISE SYSTEM SHALL BE CONNECTED WITH THE EXISTING SYSTEM AT ALL CROSSING POINTS.
- CIVIL DATA IS SHOWN ON ELECTRICAL DRAWINGS FOR REFERENCE ONLY. REFER TO CIVIL DRAWINGS FOR DRAINAGE, PAVING DETAILS, PAVEMENT MARKING PLANS, ETC.
- THE CONTRACTOR SHALL UTILIZE A LOCATE SERVICE AS WELL AS HAVE A CABLE TRACER AVAILABLE TO LOCATE THE EXISTING CABLES WHEN HAND DIGGING SHALL BE UNDERTAKEN WITHIN TEN (10) FEET OF ANY KNOWN OR SUSPECTED EXISTING UNDERGROUND CABLES AND UTILITIES WHICH ARE NOT TO BE DISTURBED.
- SHOULD ANY RUNWAY OR TAXIWAY LIGHTING SYSTEM BE INOPERABLE DUE TO CONTRACTOR'S WORK, AND THE CONTRACTOR IS UNABLE TO RESTORE THE SYSTEM BY NIGHTFALL WITH PERMANENT REPAIRS, THE CONTRACTOR SHALL AT HIS OWN EXPENSE TAKE NECESSARY MEASURES TO ENSURE OPERATION OF THE SYSTEM DURING NIGHT HOURS. TEMPORARY WORK SHALL BE SUBJECT TO THE RPR'S APPROVAL. IF THE SYSTEM CANNOT BE RESTORED BY NIGHTFALL, THE CONTRACTOR SHALL INSTALL A TEMPORARY SYSTEM OF BATTERY OPERATED LIGHTS WITH THE APPROPRIATE COLORED LENSES FOR BOTH THRESHOLD AND RUNWAY EDGE LIGHTING TO ENSURE THE RUNWAY OPERATIONS CAN OCCUR. THE COST OF SUCH TEMPORARY LIGHTING SYSTEMS SHALL BE AT THE SOLE COST OF THE CONTRACTOR AND SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN OTHER ITEMS OF WORK.
- ALL MANHOLES, HANDHOLES, ETC., SHALL BE INSTALLED 25 FEET MINIMUM FROM THE EDGE OF THE FULL STRENGTH PAVEMENT UNLESS SHOWN OTHERWISE ON THE PLANS. COORDINATE FINAL LOCATION WITH GRADING AND DRAINAGE PLANS. WHEN EXTENDING EXISTING DUCT TO NEW MANHOLE, HANDHOLE, ETC., LOCATE STRUCTURE IN LINE WITH EXISTING DUCT. WHEN POSSIBLE DO NOT INSTALL STRUCTURES IN DITCHES OR SWALES OR WHERE WATER WILL POND ON TOP OF THE STRUCTURES.
- DEWATERING FOR THE INSTALLATION OF STRUCTURES AND/OR DUCTBANKS IS INCIDENTAL TO THE RESPECTIVE PAY ITEM. THE CONTRACTOR SHALL BE RESPONSIBLE TO PAY FOR AND OBTAIN ANY AND ALL PERMITS REQUIRED FOR DEWATERING.
- THE AIRPORT "LOCK/TAG/TRY" PROCEDURE AND NFPA 70E SHALL BE COMPLIED WITH BY THIS CONTRACTOR
- IF A LIGHT CAN IS INSTALLED INCORRECTLY, THE DUCT/CONDUIT IS PLUGGED/BROKEN, OR THE LIGHT CAN IS DAMAGED, PAVEMENT AROUND THE LIGHT CAN AND THE LIGHT SHALL BE REMOVED AND REPLACED AT THE CONTRACTORS' EXPENSE.

- ALL DUCT LOCATED IN OR UNDER THE PAVEMENT AND WITHIN 5 FEET OF THE EDGE OF THE SHOULDER PAVEMENT SHALL BE CONCRETE ENCASED DUCT. ALL OTHER 2" DUCT SHALL BE DIRECT BURIED.
- THE DIMENSION BETWEEN LIGHTS SHOWN ON A RADIUS IS DEFINED AS THE CHORD LENGTH. LOCATIONS SHOWN ARE TO THE CENTER OF THE LIGHTING FIXTURE.
- PROJECT PAY ITEMS: THE PROJECT PAY ITEMS ARE PROVIDED TO BE INCLUSIVE OF ALL WORK TO BE PERFORMED AS SHOWN IN THESE PLANS. ALL WORK TO BE IDENTIFIED WITH A SPECIFIC PAY ITEM IS TO BE CONSIDERED REQUIRED WORK TO COMPLETE THE PROJECT AND IS TO BE SUBSIDIARY TO THE COST OF PROJECT PAY ITEMS PROVIDED.
- EXISTING AIRFIELD SIGNS TO REMAIN PROVIDING DIRECTIONS TO CLOSED AREAS SHALL BE COVERED. ALL AREAS CLOSED TO AIRCRAFT SHALL NOT BE LIGHTED. ADEQUATE LIGHTING IN THE OPINION OF THE RPR SHALL BE PROVIDED TO DELINEATE THE ACTIVE AND CLOSED AREAS OF THE AOA. THE ABOVE ITEMS ARE INCLUDED IN THE L-105 PAY ITEM.
- THIS CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO STARTING WORK.
- THE CONTRACTOR SHALL CONDUCT GROUND RESISTANCE TESTS (MEGGER) ON EACH CIRCUIT AFFECTED BY THIS WORK BEFORE COMMENCING WORK ON THAT CIRCUIT. CONTRACTOR SHALL PREPARE AND FORWARD TO THE RESIDENT ENGINEER A WRITTEN REPORT, BY CIRCUIT, OF THESE RESULTS. THE CONTRACTOR SHALL REPEAT THIS TEST ON EACH AFFECTED CIRCUIT AFTER COMPLETION OF THE WORK. RESULTS OF BOTH TESTS SHALL BE PROVIDED TO THE RESIDENT ENGINEER.
- THE IDENTITY AND ROUTING OF ALL CABLES SHOWN ON THE PLANS SHALL BE VERIFIED IN THE FIELD. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE RPR AND RECORDED IN THE AS-BUILT DRAWINGS TO PROVIDE AN ACCURATE RECORD OF CONDITIONS. THE CONTRACTOR SHALL COORDINATE INFORMATION SHOWN ON THE PLAN SHEETS WITH EXISTING RECORD INFORMATION AVAILABLE THROUGH THE AIRPORT MAINTENANCE STAFF. THESE PLANS DO NOT PURPORT TO SHOW ALL EXISTING CABLES AND CONCEALED UTILITIES WHICH WILL REQUIRE STAKE OUT PRIOR TO CONSTRUCTION. CONTRACTOR SHALL VERIFY EXISTING CIRCUIT ROUTING PRIOR TO COMMENCING WORK.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH THE SAFETY, SECURITY AND PHASING PLANS.
- WHENEVER, IN THE CONTRACT DOCUMENTS, THE WORDS "PROVIDE", "FURNISH", "INSTALL", "FURNISH AND INSTALL", OR OTHER WORDS OF LIKE IMPORT ARE USED, IT SHALL BE UNDERSTOOD THAT THE INTENT OF THE CONTRACT DOCUMENTS IS TO PROVIDE FOR THE CONSTRUCTION AND COMPLETION IN EVERY DETAIL OF THE WORK DESCRIBED. IT IS FURTHER INTENDED THAT THE CONTRACTOR SHALL FURNISH ALL LABOR, SUPERVISION, MATERIALS, EQUIPMENT, TOOLS, TRANSPORTATION, SUPPLIES, TESTING AND INCIDENTALS REQUIRED TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL COMPLETELY SURVEY AND STAKE OUT EACH AREA'S LIGHTING LAYOUT PRIOR TO STARTING ANY INSTALLATION. SHOULD ANY IRREGULARITIES OCCUR IN THE LIGHTING LAYOUT, THE RPR SHALL BE NOTIFIED IMMEDIATELY. THE BID ITEM PRICE SHALL INCLUDE THE NECESSARY LAYOUT FOR EACH FIXTURE AND THE COST FOR ANY ADDITIONAL ADJUSTMENT OF THE LOCATION OF THE FIXTURES, DUE TO THE EXISTING GEOMETRIC CONDITIONS. THE NEW LIGHTING INSTALLATION SHALL BE COORDINATED WITH AND BLEND INTO THE EXISTING INSTALLATION AS REQUIRED.
- THERE ARE A NUMBER OF AIRPORT, PUBLIC UTILITIES AND FAA LIGHTING, COMMUNICATIONS, UNDERGROUND CABLES AND PIPES TRAVERSING THE AIRFIELD. THE PROJECT ENGINEER HAS MADE EVERY ATTEMPT TO SHOW THE APPROXIMATE LOCATION OF ALL ITEMS. HOWEVER, THE PROJECT ENGINEER IS NOT RESPONSIBLE FOR SHOWING OR LOCATING EVERY ITEM CURRENTLY IN PLACE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE EVERY ITEM LOCATED, FLAGGED AND IDENTIFIED PRIOR TO START OF CONSTRUCTION. ANY DAMAGE DONE TO ANY OF THE EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL REPAIR ANY ITEM DAMAGED, CAUSED BY HIS ACTIONS, WITH NO ADDITIONAL COMPENSATION.
- THE CONTRACTOR SHALL THOROUGHLY INSPECT ALL AIRFIELD LIGHTING, SIGNS, AND MATERIALS UPON ARRIVAL AT THE PROJECT SITE FOR ANY DAMAGE THAT OCCURRED DURING SHIPPING OR FOR MATERIAL DEFECTS.
- ALL WORK SHOWN TO BE DEMOLISHED ON THE DRAWINGS IS BASED ON FIELD OBSERVATION OF THE ACTUAL EXISTING CONDITIONS AND ON EXISTING "AS-BUILT" DRAWINGS OF THE AREAS AFFECTED. THEY ARE THEREFORE CONSIDERED TO BE SCHEMATIC. IT IS THE INTENT OF THE DEMOLITION DRAWINGS THAT ALL EQUIPMENT, DEVICES, FIXTURES, WIRING MATERIALS, SYSTEMS AND APPURTENANCES, ETC. WHICH ARE NO LONGER REQUIRED AS A RESULT OF THE PROJECT BE REMOVED.

## ELECTRICAL LEGEND

- R EXISTING L-861T TAXIWAY ELEVATED EDGE LIGHT, ISOLATION TRANSFORMER AND ASSOCIATED EQUIPMENT ON A L-867 BASE CAN, 'R' INDICATES TO BE REMOVED.
- PROPOSED L-861T TAXIWAY ELEVATED EDGE LIGHT, ISOLATION TRANSFORMER AND ASSOCIATED EQUIPMENT ON A L-867 BASE CAN.
- PROPOSED COMMUNICATIONS HANDHOLE
- PROPOSED POWER HANDHOLE
- PROPOSED L-858 SINGLE FACE, INTERNALLY ILLUMINATED, TAXI GUIDANCE SIGN
- PROPOSED 2" PVC CONDUIT, FURNISH AND INSTALL SERIES LIGHTING CIRCUIT CABLES WHERE INDICATED. NUMERAL INDICATES THE NUMBER OF 1/C #8, 5KV SERIES LIGHTING CABLES, TYPE L-824. 'CKT3' INDICATES CIRCUIT DESIGNATION.
- PROPOSED CONCRETE-ENCASED DUCTBANK, QUANTITY AND SIZE OF DUCTS AS INDICATED. FURNISH AND INSTALL SERIES LIGHTING CABLE WHERE INDICATED. NUMERAL INDICATES THE NUMBER OF 1/C #8 5KV SERIES LIGHTING CABLES. 'TW' INDICATES CIRCUIT DESIGNATION.
- PROPOSED DUCTBANK CROSS SECTION.

2-CKT3

2-TW

4-WAY, 4"



## ABBREVIATIONS

AOA - AIRCRAFT OPERATIONS AREA  
 AWG - AMERICAN WIRE GAUGE  
 ± - BASELINE  
 BSD - BARE SOFT DRAWN SOLID COPPER  
 CL - CENTERLINE  
 C - CONDUIT  
 CONC - CONCRETE  
 Ø, DIA - DIAMETER  
 DWG - DRAWING  
 E - EASTING  
 EL/ELEV - ELEVATION  
 EOP - EDGE OF PAVEMENT  
 ES - EQUAL SPACES  
 EX/EXST/EXIST - EXISTING  
 FAA - FEDERAL AVIATION ADMINISTRATION  
 FOD - FOREIGN OBJECT DEBRIS  
 GND - GROUND  
 GS - GLIDE SLOPE ANTENNA  
 I/C - NUMBER OF CONDUCTORS/CONDUCTOR  
 I/E/INV - INVERT ELEVATION / INVERT  
 ILS - INSTRUMENT LANDING SYSTEM  
 kV - KILOVOLT  
 LF - LINEAR FEET  
 LT - LEFT  
 MAX - MAXIMUM  
 MCB - MAIN CIRCUIT BREAKER  
 MIN - MINIMUM  
 N - NORTHING  
 NAD - NORTH AMERICAN DATUM  
 NGVD - NATIONAL GEODETIC VERTICAL DATUM  
 NOTAM - NOTICE TO AIRMEN  
 NTS - NOT TO SCALE  
 OC - ON CENTER  
 OFA - OBJECT FREE AREA  
 PAPI - PRECISION APPROACH PATH INDICATOR  
 PC - POINT OF CURVATURE  
 PCC - PORTLAND CEMENT CONCRETE  
 PG - PROPOSED GRADE  
 PT - POINT OF TANGENCY  
 PVC - POLYVINYL CHLORIDE  
 RPR - RESIDENT PROJECT REPRESENTATIVE  
 R/W - RUNWAY  
 RPZ - RUNWAY PROTECTION ZONE  
 RSA - RUNWAY SAFETY AREA  
 RT - RIGHT  
 SCH - SCHEDULE  
 SGN - SIGN  
 SIDA - SECURITY IDENTIFICATION DISPLAY AREA  
 SS - STAINLESS STEEL  
 STA - STATION  
 STD - STANDARD  
 T/L - TAXILANE  
 T/W - TAXIWAY  
 TBR - TO BE REMOVED  
 TDZ - TOUCHDOWN ZONE  
 TSA - TAXIWAY SAFETY AREA  
 TYP. (TYP) - TYPICAL  
 UC - UNDERGROUND ELECTRICAL DUCT  
 W - WATER

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SHEET TITLE

ELECTRICAL  
 LEGEND,  
 ABBREVIATIONS  
 AND  
 NOTES

SHEET NUMBER

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ISSUED FOR  
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