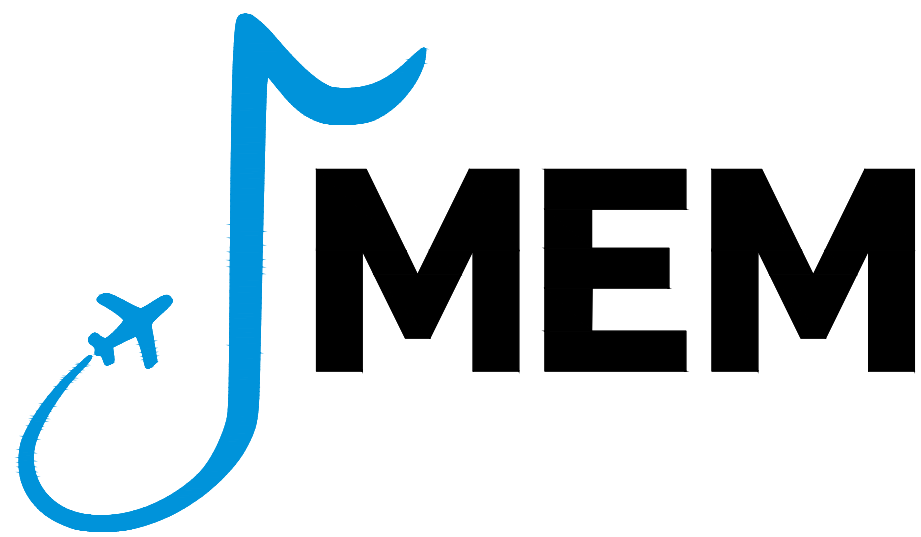




RUNWAY 18R PAPI INSTALLATION

FREDRICK W. SMITH INTERNATIONAL AIRPORT

MEMPHIS, TN

MSCAA PROJECT # 25-1486-01

ISSUED FOR BID SUBMITTAL - AUGUST 17, 2026

UTILITY AND EMERGENCY TELEPHONE NUMBERS

MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY	(MSCAA) - MEMPHIS, TENNESSEE
EMERGENCIES	(901) 922-8333
AIRPORT COMMUNICATION CENTER	(901) 922-8298
MSCAA OPERATIONS	(901) 922-8117
FAA AIR TRAFFIC CONTROL TOWER	(901) 842-8400
TENNESSEE CALL BEFORE YOU DIG (BUD)	811

OWNER CONTACT INFORMATION

BRIAN TENKHOFF, PE
DIRECTOR OF DEVELOPMENT
MEMPHIS-SHELBY COUNTY AIRPORT AUTHORITY (MSCAA)
2491 WINCHESTER ROAD, SUITE 113
MEMPHIS, TN 36116-3856
(901) 022-2297

ENGINEER CONTACT INFORMATION

JOSH MANN, PE - CLIENT DEVELOPMENT LEADER FOTH INFRASTRUCTURE & ENVIRONMENT, LLC 5100 POPLAR AVENUE CLARK TOWER, SUITE 2709A MEMPHIS, TN (515) 322-0069	ANDREW SNYDER, PE - LEAD CIVIL ENGINEER FOTH INFRASTRUCTURE & ENVIRONMENT, LLC 411 6TH AVE SE #400 CEDAR RAPIDS, IA 52338 (319) 297-2072
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PROJECT DESIGN CRITERIA

NEW PAPI DESIGN AND INSTALLATION FOR RUNWAY 18R. COMPLY WITH PAPI DESIGN STANDARDS IN FAA ORDER 6850.2C AND RSA REQUIREMENTS OF ADG-VI IN FAA AC 150/5300-13B CHANGE 1.

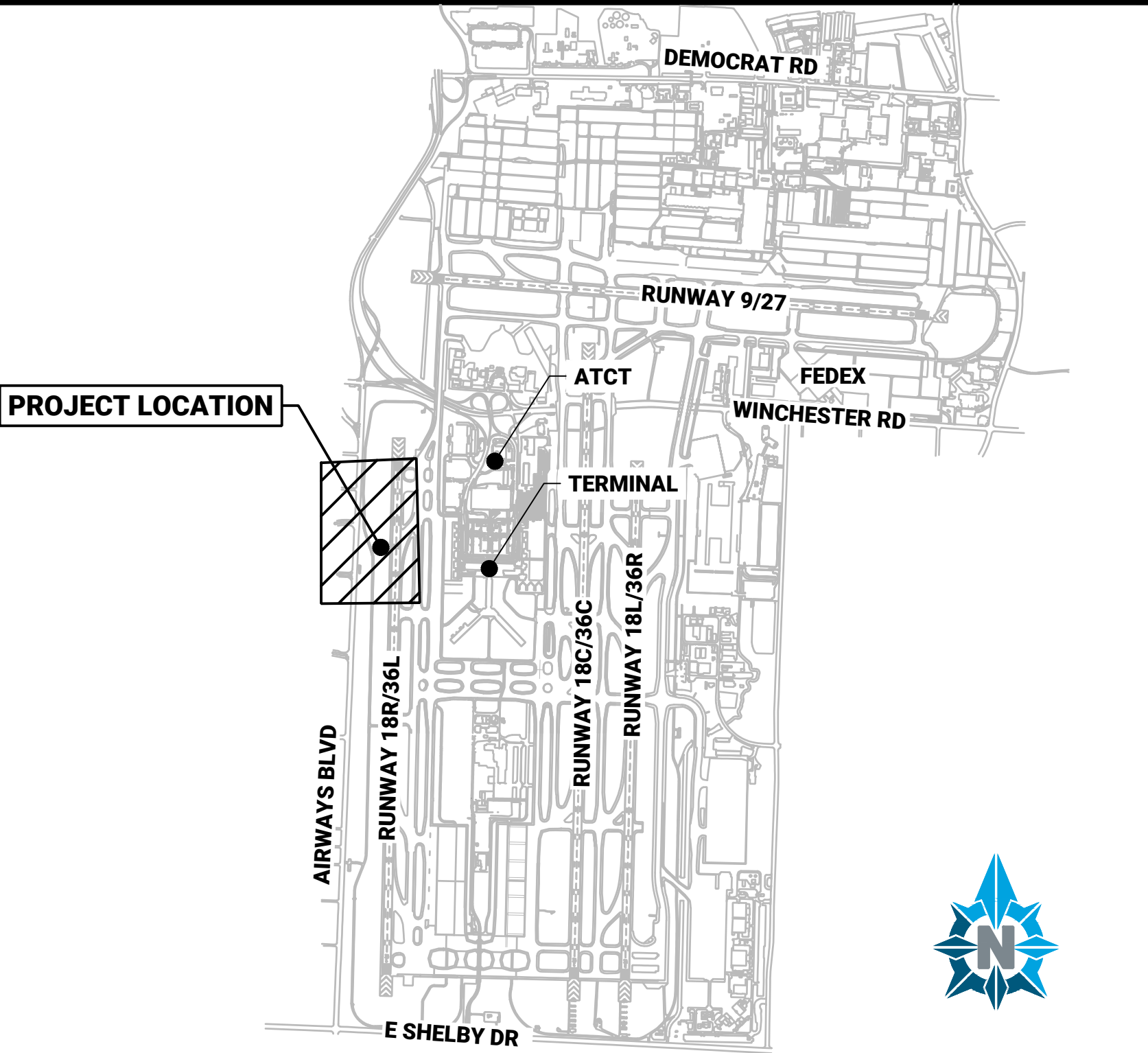
UTILITY NOTES

WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. THE CONTRACTOR SHALL AFFORD ACCESS TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND TO AVOID DAMAGE THERE TO. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR ANY INTERFERENCE OR DELAY CAUSED BY SUCH WORK.

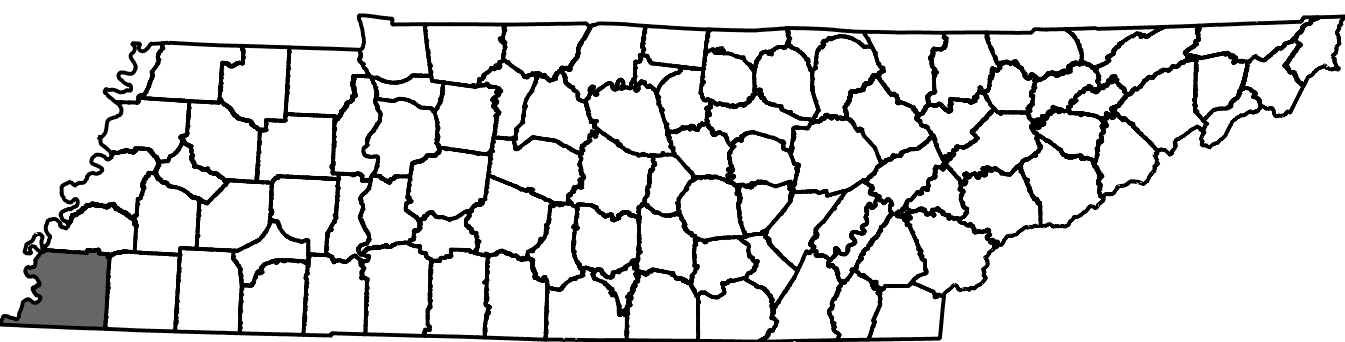
THE CONTRACTOR IS REQUIRED TO UTILIZE 811 ONE-CALL SERVICE AT (800) 351-1111 AT LEAST 48 HOURS PRIOR TO EXCAVATING ANYWHERE ON THE PROJECT. THE CONTRACTOR MUST ALSO CONTACT THE AIRPORT AND THE FAA AT LEAST 48 HOURS IN ADVANCE FOR LOCATES.

UTILITY CONFLICTS DISCOVERED DURING CONSTRUCTION WILL BE ADDRESSED AT THE TIME OF DISCOVERY.

LOCATION MAP



STATE & COUNTY LOCATION



COUNTY: TN COUNTY: SHELBY

FREDRICK W. SMITH INTERNATIONAL AIRPORT
PROJECT ADDRESS: 2491 WINCHESTER ROAD
MEMPHIS, TN

INDEX OF SHEETS

NUMBER	TITLE
GI001	COVER SHEET
GI002	SUMMARY OF QUANTITIES
GI003	ESTIMATE REFERENCE NOTES
GI100	OVERALL PAPI LAYOUT
GI101	PAPI LAYOUT, DETAILS, AND UTILITY INFORMATION
SP001	GENERAL SAFETY AND PHASING NOTES
SP002	SAFETY AND PHASING DETAILS
SP100	CONSTRUCTION SAFETY AND PHASING PLAN - OVERVIEW
SP101	CONSTRUCTION SAFETY AND PHASING PLAN - PHASE 1
SP102	CONSTRUCTION SAFETY AND PHASING PLAN - PHASE 2
CP101	PAPI GEOMETRY PLAN
CP501	PAPI PCC PAD AND PCA RACK PAD LAYOUT DETAILS
CP502	PCA RACK FOUNDATION DETAILS
CG301	EROSION CONTROL PLAN
CG501	DRAINAGE DETAILS
EP001	ELECTRICAL NOTES AND ABBREVIATIONS
EP002	ELECTRICAL NOTES - 2
EP003	ELECTRICAL SYMBOL LEGEND
EP101	OVERALL ELECTRICAL LAYOUT PLAN
EP102	GLIDE SLOPE SHELTER ELECTRICAL LAYOUT PLAN
EP201	PAPI LAMP HOUSING ASSEMBLY (LHA) CONDUIT CONFIGURATION PLAN
EP202	LAMP HOUSING ASSEMBLY EQUIPMENT INSTALLATION DETAILS - 1
EP203	LAMP HOUSING ASSEMBLY EQUIPMENT INSTALLATION DETAILS - 2
EP204	PAPI PCA RACK DETAILS
EP205	RWY 18R GLIDE SLOPE SHELTER INTERIOR PLAN AND ELEVATIONS
EP206	RWY 18R GLIDE SLOPE SHELTER NORTH SIDE EXTERIOR ELEVATION
EP207	RUNWAY 18R PAPI SYSTEM WIRING DIAGRAM
EP208	PAPI SYSTEM WIRING DIAGRAM
EP209	HANDHOLE DETAILS
EP210	TRENCH DETAILS
EP211	ARC FLASH LABELING DETAIL



SUMMARY OF QUANTITIES			
ITEM NO.	ITEM	UNIT	QUANTITY
1	EROSION CONTROL	LS	1
2	MOBILIZATION	LS	1
3	CONSTRUCTION ACCESS, PROJECT SAFETY AND SECURITY, AND STAGING AREA	LS	1
4	MAINTENANCE OF TRAFFIC	LS	1
5	6" PCC PAD AROUND PAPI FOUNDATIONS AND PCA FOUNDATION	SY	108
6	4' x 6' PCC PAPI FOUNDATION	EA	4
7	SODDING	SY	900
8	FURNISH AND INSTALL PAPI POWER, CONTROL, AND GROUND CONDUCTORS FROM GLIDE SLOPE SHELTER TO PCA RACK	LF	475
9	2 WAY - 2" SCHEDULE 80 PVC CONDUIT, DIRECT EARTH BURIED	LF	420
10	2 WAY - 2" SCHEDULE 80 PVC CONDUIT, CONCRETE ENCASED	LF	55
11	NON-AIRCRAFT-RATED ELECTRICAL AND COMMUNICATION HANDHOLE	EA	5
12	INSTALLATION OF OWNER-FURNISHED FAA 4-BOX PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM	LS	1
13	RUNWAY 18R GLIDE SLOPE SHELTER MODIFICATIONS / PAPI POWER CONNECTION	LS	1
14	PAPI PCA RACK AND PAPI SUPPORT SYSTEM	LS	1

The logo for JMEM (Journal of Management Education) features a stylized blue 'J' with a small airplane icon at its base, followed by the letters 'MEM' in a bold, black, sans-serif font.[illegible]

SUMMARY OF QUANTITIES



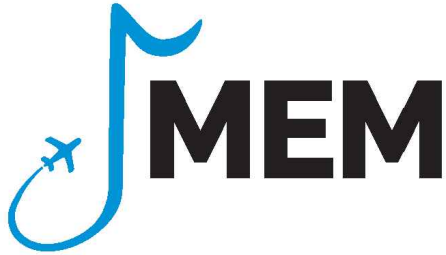
GI002

CAD FILE C:\USERS\ADS\DOCS\FOTH\MEM\RUNWAY 18R PAPI\26M300.25\PROJECT FILES\CAD\PLANS\G1003 - ESTIMATE REFERENCE NOTES.DWG Layout: G1003 By: SNYDER, ANDREW D

ESTIMATE REFERENCE NOTES		
ITEM NO.	ITEM CODE	DESCRIPTION
1	C-105-1	EROSION CONTROL A. THIS ITEM IS FOR THE INSTALLATION OF THE TWO (2) TDOT FILTER SOCKS SHOWN ON SHEET CG301, AS NEEDED. DETAIL IS SHOWN ON SHEET CG501.
2	C-105-1	MOBILIZATION A. MOBILIZATION FEE SHALL NOT EXCEED 10 PERCENT OF THE TOTAL PROJECT COST. PAYMENT WILL BE INCREMENTAL AS OUTLINED IN THE C-105 SPECIFICATION.
3	A-102-1	CONSTRUCTION ACCESS, PROJECT SAFETY AND SECURITY, AND STAGING AREA A. ITEM INCLUDES PREPARTION OF THE STAGING AREA LOCATED SOUTH OF THE GLIDE SLOPE SHETER, INSTALLATION OF ANY TEMPORARY HAUL ROADS AT THE PROJECT SITE, ESCORTING VEHICLES ONTO THE SITE, BADGING AND MANAGEMENT OF THE BADGING PROCESS, VEHICLE, INSPECTION, DECALS AND STICKERS B. THIS ITEM ALSO INCLUDES INSTALLATION OF ORANGE SAFETY FENCE AS SHOWN ON SHEETS SP101 AND SP102. REMOVAL OF SAFETY FENCE AT THE END OF THE PROJECT IS ALSO INCLUDED IN THIS ITEM. C. UPON COMPLETION OF THE PROJECT THE STAGING AREA SOUTH OF THE GLIDE SLOPE SHELTER SHALL BE RETURNED TO THE CONDITION BEFORE OCCUPANCY.
4	A-102-2	MAINTENANCE OF TRAFFIC A. ITEM INCLUDES INSTALLATION OF MSCAA-PROVDDED LIGHTED'X'S. 'X'S SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF PHASE 2 WHEN RUNWAY 18R-36L IS CLOSED DURING THE ALLOWED RUNWAY CLOSURES. THIS INCLUDES ADDING DIESEL FUEL AS NECESSARY. CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE LIGHTED 'X'S AT EACH END OF RUNWAY 18R-36L AT THE START OF EACH RUNWAY CLOSURE, AND REMOVING THE LIGHTED 'X' JUST PRIOR TO RE-OPENING THE RUNWAY AT THE END OF EACH RUNWAY CLOSURE. THE LIGHTED 'X'S SHALL BE STAGED AT THE STAGING AREA SE OF RUNWAY 36L. B. ITEM ALSO INCLUDES INSTALLATION AND REMOVAL OF TRAFFIC CONES AT THE HOLD LINE OF THE TAXIWAY M CONNECTING TAXIWAYS BETWEEN TAXIWAY M AND RUNWAY 18R-36L FOR THE RUNWAY 18R-36L CLOSURES DURING PHASE 2. CONES MUST BE INSTALLED AT THE START OF EACH RUNWAY 18R-36L CLOSURE, AND REMOVED JUST PRIOR TO RE-OPENING THE RUNWAY AT THE END OF EACH RUNWAY CLOSURE. 5 TOTAL CONES ARE REQUIRED AT EACH PERPENDICULAR TAXIWAY (NON-HIGH SPEED TAXIWAYS), AND 10 TOTAL CONES ARE REQUIRED AT EACH HIGH-SPEED TAXIWAY. CONES SHALL BE EQUALLY SPACED AT ALL LOCATIONS. C. SEE SHEETS SP100 - SP102 FOR ADDITIONAL INFORMATION.
5	P-610	6" PCC PAD AROUND PAPI FOUNDATIONS AND PCA RACK FOUNDATION A. THIS ITEM IS FOR THE INSTALLATION OF A 6" PCC PAVEMENT AROUND THE PAPI FOUNDATIONS, AND AROUND THE PCA RACK FOUNDATION. B. THIS ITEM ALSO INCLUDES EXCAVATION REQUIRED FOR THE 6" PAD AT BOTH LOCATIONS, AND THE 6" P-208 AGGREGATE BASE COURSE UNDER THE PAD AROUND THE PAPI FOUNDATIONS. THIS ITEM ALSO INLCUDES ALL THE JOINTS AN JOINT FILLER ON THE PCC PADS. C. CONCRETE SHALL CONFORM TO SPECIFICATION P-610. AGGREGATE SHALL CONFIRM TO SPECIFICATION P-208. D. SEE SHEETS CP101 FOR LAYOUT AND ANTICIPATED EXCAVATION FOR PCC PAD AND FOUNDATIONS. SEE SHEETS CP501 EP202 FOR DETAILS.
6	P-610	4' x 6' PCC PAPI FOUNDATION A. THIS ITEM IS FOR THE INSTALLATION OF THE 4' WIDE X 6' LONG X 3.5' DEEP FOUNDATION AT EACH OF THE 4 PAPI LIGHT HOUSE ASSEMBLIES (LHAs). B. THIS ITEMS ALSO INCLUDES EXCAVATION REQUIRED FOR THE FOUNDATIONS, AND THE 6" P-208 AGGREGATE BASE COURSE UNDER THE FOUNDATIONS. THE 15" DIAMETER, L-868C BASE CAN AT EACH FOUNDATION IS ALSO INCLUDED IN THE PRICE OF THE PAPI FOUNDATION. C. CONCRETE SHALL CONFORM TO SPECIFICATION P-610. AGGREGATE SHALL CONFIRM TO SPECIFICATION P-208. BASE CAN REQUIRED SHALL CONFORM TO SPECIFICATION L-115. D. SEE SHEETS CP101 FOR LAYOUT AND ANTICIPATED EXCAVATION FOR PCC PAD AND FOUNDATIONS. SEE SHEET CP501 FOR DETAILS.
7	T-904	SODDING A. THIS ITEM IS FOR THE INSTALLATION OF SODDING AT THE LOCATION OF ALL DISTURED AREAS. INCLUDES AREA NEXT TO THE NEW PAPI PCC PAD AND NEXT TO THE PAPI PCA RACK. ALSO INCLUDES SODDING INSTALLATION OVER THE DURECT BURIED CONDUIT DUCT BANKS. B. STRIPPING THE EXISTING TOPSOIL, STOCKPILING THE EXISTING TOPSOIL OUTSIDE THE RUNWAY OBJECT FREE AREA, AND REINSTALLING THE TOPSOIL WHEN THE SOD IS PLACED IS INCIDENTAL TO THIS ITEM. C. SEE SHEET CG301 FOR LAYOUT OF SODDING.
8	L-108-1	FURNISH AND INSTALL PAPI POWER, CONTROL, AND GROUND CONDUCTORS FROM GLIDE SLOPE SHELTER TO PCA RACK A. THIS ITEM IS FOR FURNISHING AND INSTALLING (3) 1/C #1 AWG CU XHHW-2 POWER CONDUCTORS AND (1) 1/C #1 AWG CU XHHW-2 GREEN EQUIPMENT GROUNDING CONDUCTOR IN ONE OF THE 2" CONDUITS BETWEEN THE GLIDE SLOPE SHELTER AND THE PAPI PCA RACK. THE SECOND 2" CONDUIT IS SPARE. B. ITEM INCLUDES PULLING THE CABLE, IDENTIFICATION OF THE CABLE, TERMINATIONS, CONNECTORS, GROUNDING CONDUCTORS INCLUDED WITH THE CIRCUIT, TESTING, REQUIRED SLACK, AND INCIDENTALS. C. SEE SHEETS EP101 AND EP102 FOR LAYOUT.

ESTIMATE REFERENCE NOTES		
ITEM NO.	ITEM CODE	DESCRIPTION
9	L-110-1	2 WAY 2" SCHEDULE 80 PVC CONDUITS, DIRECT EARTH BURIED A. ITEM IS FOR 2 - 2" SCHEDULE 80 PVC CONDUITS TO BE INSTALLED IN TURF BETWEEN THE GLIDE SLOPE SHELTER AND THE PAPI PCA RACK. B. ITEM INCLUDES INSTALLATION OF BOTH CONDUITS AS ONE 2-WAY ASSEMBLY, TRENCHING, EXCAVATION, BEDDING, SPACERS, BENDS/FITTINGS, RGS TRANSITIONS WHERE REQUIRED, WARNING TAPE, TRACER WIRE, PULL ROPE, PLUGS, MANDRELLING/CLEANING, BACKFILL, COMPACTION, AND TESTING. SODDING OVER THE DUCT BANK WILL BE PAID UNDER THE SODDING BID ITEM. C. SEE SHEETS EP101 AND EP102 FOR LAYOUT
10	L-110-2	2 WAY 2" SCHEDULE 80 PVC CONDUITS, CONCRETE ENCASED A. ITEM IS FOR 2 - 2" SCHEDULE 80 PVC CONCRETE ENCASED CONDUITS TO BE INSTALLED IN UNDER THE GRAVEL PAPI ACCESS DRIVE, AND UNDER THE GRAVELPARKING AREA ADJACENT TO THE GLIDE SLOPE SHELTER B. ITEM INCLUDES REMOVAL OF THE GRAVEL OVER THE CONDUIT INSTALLATION, EXCAVATION, INSTALLATION OF THE TWO CONDUITS, SPACERS, REINFORCING/SUPPORTS WHERE REQUIRED, CONCRETE ENCASEMENT, BENDS/FITTINGS, TRANSITIONS, WARNING TAPE AND TRACER WIRE WHERE APPLICABLE, PULL ROPE, PLUGS, MANDRELLING/CLEANING, BACKFILL, COMPACTION, GRAVEL ACCESS-DRIVE RESTORATION, TESTING, AND INCIDENTALS. C. SEE SHEETS EP101 AND EP102 FOR LAYOUT
11	L-115-1	NON-AIRCRAFT-RATED ELECTRICAL AND COMMUNICATION HANDHOLE A. ITEM IS FOR THE INSTALLTION OF NEW CONTRACTOR-PROVIDED ELECTRIC AND COMMUNICATIONS HANDHOLES AT THE LOCATIONS SHOWN ON SHEETS EP101, EP102, AND EP201. B. SEE SHEET EP209 FOR DETAILS.
12	L-125-1	INSTALLATION OF OWNER-FURNISHED FAA 4-BOX PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEM A. THIS ITEM IS FOR INSTALLATION OF THE FOUR (4) OWNER-FURNISHED FAA LED PAPI LAMP HOUSING ASSEMBLIES (LHAs) AT THE LOCATIONS SHOWN ON THE CONTRACT DRAWINGS. B. ITEM INCLUDES INSTALLATION OF THE LHA UNITS, FRANGIBLE COUPLINGS, MOUNTING HARDWARE, FINAL CONNECTIONS AT EACH PAPI, GROUNDING/BONDING ASSOCIATED WITH THE EQUIPMENT, PRELIMINARY ALIGNMENT, TESTING, FAA COMMISSIONING ASSISTANCE, FLIGHT INSPECTION ASSISTANCE, AND FINAL AIMING ADJUSTMENTS. C. SEE SHEET EP202 FOR CONNECTION DETAILS.
13	L-125-2	RUNWAY 18R GLIDE SLOPE SHELTER MODIFICATIONS / PAPI POWER CONNECTION A. ITEM IS FOR ALL MODIFICATIONS REQUIRED INSIDE THE GLIDE SLOPE SHELTER, AND IMMEDIATELY ASSOCIATED WITH THE EXISTING GLIDE SLOPE SHELTER TO ESTABLISH THE SOURCE CONNECTION TO THE PCA FOR THE NEW PAPI SYSTEM. B. ITEM INCLUDES REQUIRED SHUTDOWN/COORDINATION, EXISTING EQUIPMENT MODIFICATIONS, BREAKERS/DISCONNECTS OR OTHER POWER DISTRIBUTION MODIFICATIONS SHOWN ON THE PLANS, CONDUIT PENETRATIONS, SEALING/FIRESTOPPING/WEATHERPROOFING, TERMINATIONS WITHIN THE SHELTER, GROUNDING/BONDING, TESTING, LABELING, AND RESTORATION. C. SEE SHEET EP102 FOR LOCATION OF PENETRATION INTO GLIDE SLOPE SHELTER, EP205 AND EP206 FOR DETAILS, AND EP207 FOR ONE-LINE DIAGRAM.
14	L-125-3	PAPI PCA RACK AND PAPI SUPPORT SYSTEM A. THIS BID ITEM INCLUDES ALL THE ITEMS NOTED BELOW: - PCA RACK STRUCTURE. SEE SHEET EP204 FOR PAPI PCA RACK DETAILS. - PCA RACK PCC FOUNDATION AND AGGREGATE BELOW FOUNDATION. SEE SHEET CP502 FOR PCA RACK FOUNDATION DETAILS. PCC SHALL CONFORM TO THE P-610 SPECIFICATION. - MOUNTING HARDWARE AND SUPPORTS FOR THE PCA RACK. - GROUNDING AND BONDING. - CONNECTIONS AND TERMINATIONS AT THE OWNER-FURNISHED PCA. - ALL FITTINGS, CONNECTORS, SUPPORTS, TESTING, AND INCIDENTALS REQUIRED FOR A COMPLETE INSTALLATION OF THE PCA RACK. - 4 - 2" SCHEDULE 80 PVC POWER CONDUITS AND 4 - 2" SCHEDULE 80 PVC COMM CONDUITS BETWEEN THE PCA RACK AND THE PAPI LHA UNITS - CONDUIT INSTALLATION INCLUDES TRENCHING, EXCAVATION, BEDDING, SPACERS, BENDS/FITTINGS, RGS TRANSITIONS WHERE REQUIRED, WARNING TAPE AND TRACER WIRE WHERE APPLICABLE, PULL ROPE, PLUGS, MANDRELLING/CLEANING, BACKFILL, COMPACTION, AND TESTING. - POWER/CONTROL/GROUND WIRING FROM PCA RACK TO PAPI UNITS. 3-1/C #1 AWG, AND 1 - 1/C #1 AWG GREEN GROUND IN EACH POWER CONDUIT. 2PR 18AWG CONTROL CABLES IN EACH COMM CONDUIT. - RECEIVING, INSPECTION, UNLOADING, STORAGE, PROTECTION, ASSEMBLY AND INSTALLATION OF THE OWNER-FURNISHED PAPI POWER AND CONTROL ASSEMBLY (PCA). B. SEE SHEET EP101 AND EP201 FOR CONDUIT AND CABLE ROUTING BETWEEN THE PCA RACK AND THE PAPI UNITS. C. SODDING OVER THE CONDUIT DUCT BANKS WILL BE PAID UNDER THE SODDING BID ITEM.

PREPARED FOR:



PREPARED BY:



KEY MAP:

NO																			
DATE																			
BY																			
REVISION DESCRIPTION																			

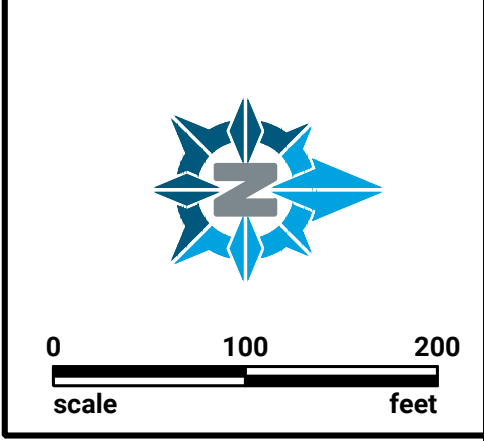
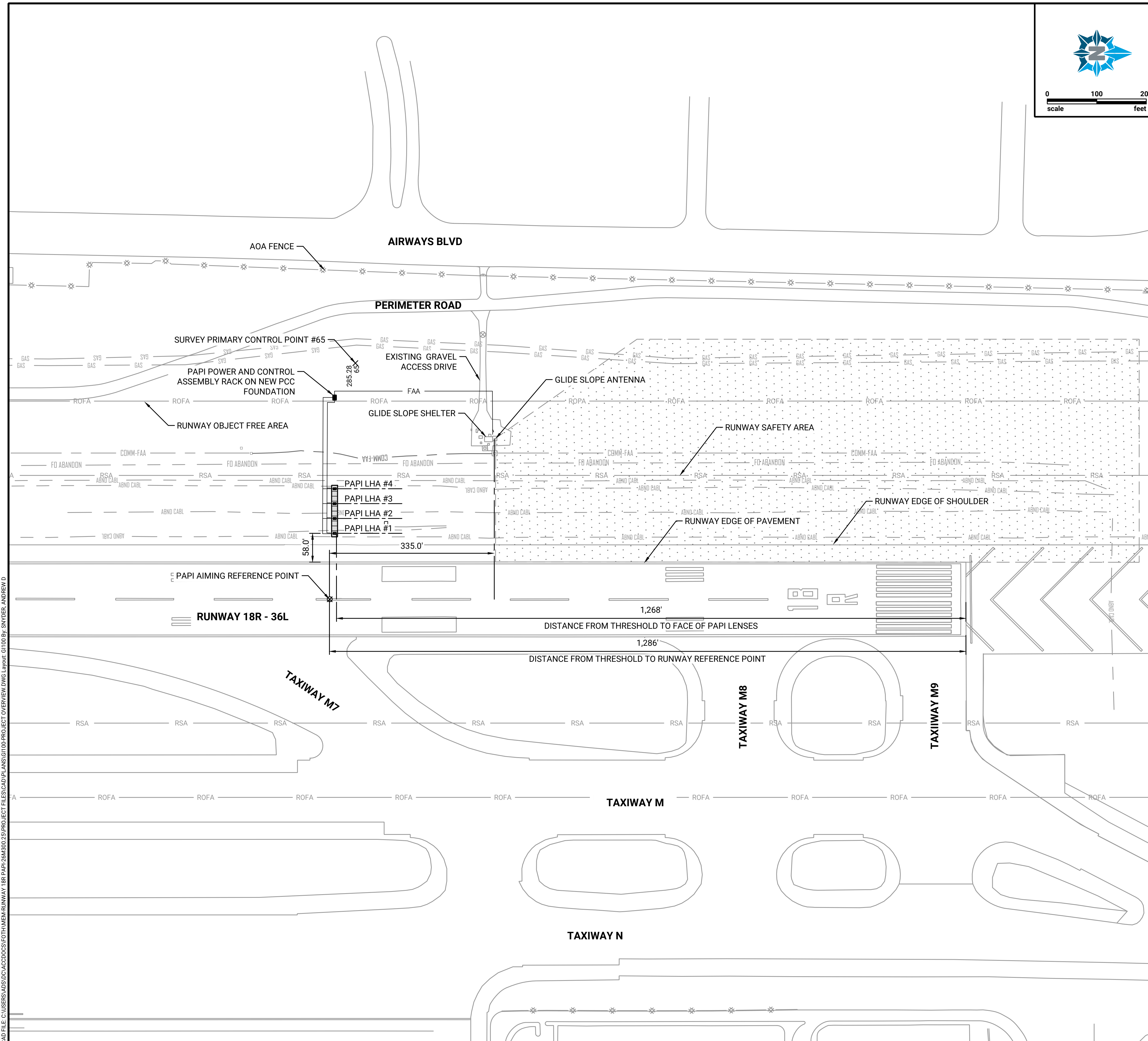
RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

ESTIMATE REFERENCE NOTES



DESIGNED: ADS	DRAWN: AJI	CHECKED: WUH
PROJECT NO: 0026M300.25		
PRINT DATE: 8/18/2026		
SHEET NO.		

G1003



LEGEND

- | | |
|---|----------------------------------|
| — FAA — | PROPOSED ELECTRIC - UNDERGROUND |
| — COMM-FAA — | EXISTING FAA FIBER - UNDERGROUND |
| — GAS — | EXISTING VALERO PETROLEUM LINE |
| — ABND CABL — | ABANDONED UTILITIES |
|  | GLIDE SLOPE CRITICAL AREA |
|  | PROPOSED CONCRETE |
| — RSA — | RUNWAY SAFETY AREA |
| — ROFA — | RUNWAY OBJECT FREE AREA |
| — ❄ — | AOA FENCE |

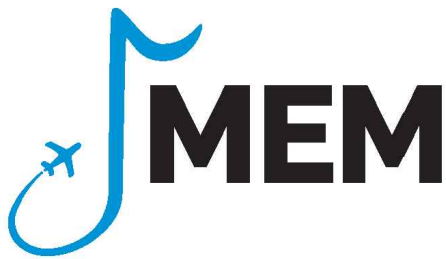
CONDITIONS REQUIRED TO START:

1. CONTRACTOR SHALL PROTECT THE CONTROL POINTS SHOWN DURING CONSTRUCTION
2. PROJECT DATUM NAD83, TENNESSEE US SURVEY FOOT.
3. CONTRACTOR SHALL VERIFY CONTROL POINT LOCATIONS AND ELEVATIONS USING MSCAA'S PAC'S OR SACC'S PRIOR TO CONSTRUCTION
4. SURVEY CONDUCTED BY ALLWORLD PROJECT MANAGEMENT, LLC ON 06/01/2026.
5. SEE SHEET SP100 - CONSTRUCTION SAFETY AND PHASING PLAN - OVERVIEW, FOR CONTROL POINT LOCATIONS.

CONTROL POINTS				
CP#	NORTHING	EASTING	ELEV.	DESCRIPTION
68*	275696.94	774506.08	315.29'	ALUMINUM DISK SET IN CONCRETE
65	283779.61	774751.26	285.28'	ALUMINUM DISK SET IN CONCRETE
MEM Q*	280158.36	774689.07	295.54'	SECONDARY AIRPORT CONTROL STATION
REFERENCE POINT	283717.91	775226.59	291.03'	18R PAPI AIMING REFERENCE POINT

* SEE NOTE 5

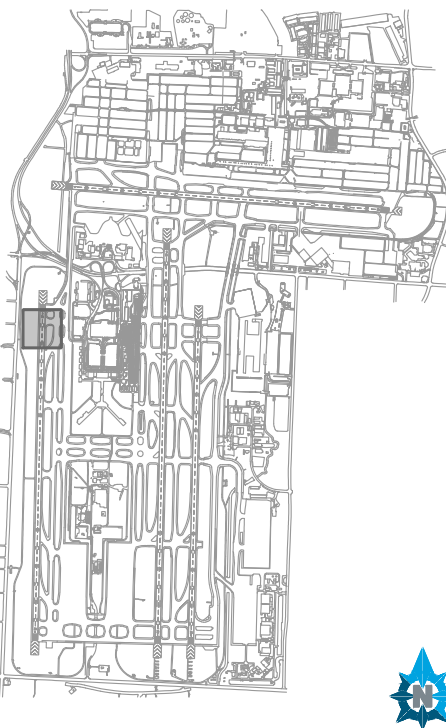
PREPARED FOR:



PREPARED BY:

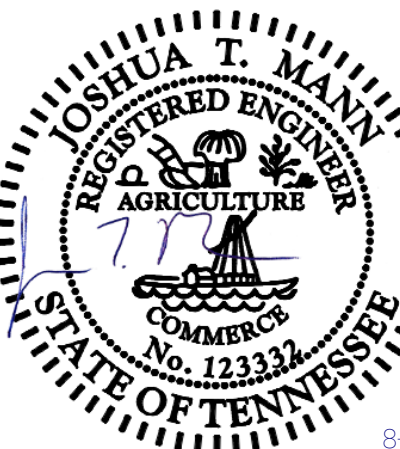


KEY MAP:

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**RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN**

OVERALL PAPI LAYOUT



8-18-26

DESIGNED: ADS	DRAWN: AJI	CHECKED WUH
PROJECT NO: 0026M300.25		
PRINT DATE: 8/18/2026		
SHEET NO.		

GI100

GI101

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GENERAL SAFETY AND PHASING NOTES

THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING PROVISIONS. ALL COSTS FOR MATERIAL, LABOR, EQUIPMENT, ETC., TO COMPLY WITH THESE PROVISIONS SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT. NO DIRECT PAYMENT FOR THIS WORK WILL BE MADE EXCEPT FOR WHERE SPECIFICALLY STATED IN THE PLANS AND/OR SPECIFICATIONS.

GENERAL NOTES

1.

UTILITY AND EMERGENCY TELEPHONE NUMBERS
- AIRPORT EMERGENCY: (901) 922-8333
- TENNESSEE ONE-CALL: (800) 351-1111
- MSCAA COMMUNICATION/NON-EMERGENCY (901) 922-8298
- MSCAA AIRPORT OPERATIONS CENTER (901) 922-8117
2.

IN THE EVENT OF A MEDICAL OR POLICE EMERGENCY, THE CONTRACTOR SHALL CALL AIRPORT EMERGENCY FIRST AND THE AIRPORT OPERATIONS CENTER IMMEDIATELY THEREAFTER. THE OPERATIONS CENTER WILL COORDINATE ANY EMERGENCY RESPONSE.
3.

IN THE EVENT OF A DECLARED AIRCRAFT EMERGENCY, AIRPORT OPERATIONS PERSONNEL MAY REQUEST THE CONTRACTOR TO TEMPORARILY SUSPEND OPERATIONS AND VACATE THE PREMISE UNTIL THE EMERGENCY EVENT IS SATISFACTORILY ADDRESSED.
4.

IN THE EVENT OF A DECLARED SEVERE WEATHER EVENT, INCLUDING AN EVENT REQUIRING LOW VISIBILITY OPERATIONS/SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM (LVO/SMGCS) PROCEDURES, AIRPORT OPERATIONS PERSONNEL MAY REQUEST THE CONTRACTOR TEMPORARILY SUSPEND OPERATIONS AND VACATE THE PREMISE UNTIL THE EVENT IS OVER.
5.

NO SMOKING IS ALLOWED WITHIN THE RESTRICTED AREAS OF THE AIRPORT. NO OPEN FLAMES ALLOWED EXCEPT BY SPECIAL PERMISSION FROM AIRPORT OPERATIONS PERSONNEL. WORK ASSOCIATED WITH TAR KETTLES TO MELT JOINT SEALANT SHALL REMAIN A MINIMUM OF 50 FEET FROM AIRCRAFT AND FUEL VEHICLES.
6.

THE AIR OPERATIONS AREA (AOA), CONSISTS OF ALL AREAS OF THE AIRPORT LOCATED WITHIN THE PERIMETER SECURITY FENCE. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER AT LEAST 48 HOURS PRIOR TO ANY WORK ON THIS PROJECT.
7.

THE CONTRACTOR SHALL COORDINATE ALL OPERATIONS WITH THE PROJECT ENGINEER AND SHALL SUBMIT A PROPOSED SCHEDULE AT LEAST 5 DAYS PRIOR TO THE PRECONSTRUCTION MEETING. REFER TO THE FRONT END DOCUMENTS FOR ADDITIONAL INFORMATION.
8.

ALL WASTE AND REMOVED ITEMS SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE AIRPORT AND DISPOSED OF OFFSITE, UNLESS OTHERWISE NOTED IN THE PLANS.
9.

ALL UNDERGROUND STRUCTURES (MANHOLES, CATCH BASINS, ETC) ARE CONSIDERED CONFINED SPACE ENTRY. THE CONTRACTOR SHALL TAKE ALL REQUIRED PRECAUTIONS AND COMPLETE THE REQUIRED PERMITS FOR CONFINED SPACE ENTRY.
10.

IN THE EVENT OF NIGHTTIME OPERATIONS, THE CONTRACTOR MUST SHIELD ALL LIGHTS, KEEP LIGHTS POINTED AWAY FROM THE ATCT, AND INCOMING AND DEPARTING AIRCRAFT.
11.

THE AIRPORT MAY TEMPORARILY SUSPEND CONTRACTOR OPERATIONS IN CERTAIN AREAS TO ADDRESS EMERGENCIES.
12.

THE PROJECT PHASING PLAN DOES NOT RELIEVE THE CONTRACTOR FROM FOLLOWING OSHA SAFETY REQUIREMENTS.
13.

CONTRACTOR IS RESPONSIBLE FOR THE ACTIONS OF THEIR EMPLOYEES AS WELL AS THE ACTIONS OF THEIR SUB-CONTRACTOR'S EMPLOYEES. ANY REQUIREMENT REFERENCE HEREIN TO THE CONTRACTOR'S EMPLOYEES SHALL ALSO MEAN THE REQUIREMENT EXTENDS TO THE SUB-CONTRACTOR'S EMPLOYEES.
14.

CONTRACTOR SHALL COORDINATE ANY CRANE USAGE AND ALL EQUIPMENT OVER 60 FEET WITH MSCAA 45 DAYS IN ADVANCE. IF CONTRACTOR ELECTS TO EXCEED THIS HEIGHT, THE CONTRACTOR IS REQUIRED TO SUBMIT FAA FORM 7460 REGARDING CONSTRUCTION EQUIPMENT HEIGHT AND OBTAIN APPROVAL PRIOR TO STARTING CONSTRUCTION WORK ASSOCIATED WITH THIS EQUIPMENT. SUBMITTAL REVIEW A RECEIVING A RESPONSE FROM THE FAA TYPICALLY TAKES 60-90 DAYS AND APPROVAL OF THE REQUEST IS NOT ALWAYS GUARANTEED.

COORDINATION

1.

WEEKLY CONSTRUCTION PROGRESS MEETINGS WILL BE HELD THROUGHOUT THE DURATION OF THE PROJECT. AT A MINIMUM, REQUIRED ATTENDEES WILL INCLUDE PROJECT SUPERINTENDENT AND FOREMAN OF PRIME CONTRACTOR, AS WELL AS THE PROJECT FOREMAN FOR EACH SUBCONTRACTOR WITH WORK OCCURRING DURING THE CURRENT PERIOD. CONSTRUCTION PHASING AND SAFETY WILL BE A STANDING AGENDA ITEM AT THE WEEKLY CONSTRUCTION PROGRESS MEETINGS.
2.

THE CONTRACTOR SHALL PROVIDE, PRIOR TO START OF CONSTRUCTION, THE NAME(S) AND 24 HOUR CONTACT PHONE NUMBERS OF THE FIELD FOREMAN WHO WILL BE IN CHARGE.
3.

AT ALL TIMES WHEN CONSTRUCTION ACTIVITIES ARE BEING PERFORMED ON THIS PROJECT THE PRIME CONTRACTOR MUST HAVE A FOREMAN ON-SITE OR IMMEDIATELY AVAILABLE WHO IS AUTHORIZED TO MAKE DECISIONS REGARDING THE OPERATIONS AND SAFETY OF ALL PERSONNEL EMPLOYED BY THE CONTRACTOR AND SUBCONTRACTORS. EACH DAY THE DESIGNATED FOREMAN MUST COORDINATE THEIR ACTIVITIES WITH THE PROJECT ENGINEER FOR THE DAYS WORK.
4.

CONTRACTOR SHALL COORDINATE WITH THE PROJECT ENGINEER AND OPERATIONS MANAGER FOR ALL PAVEMENT CLOSURES AND CONSTRUCTION EFFORTS IMPACTING AIRPORT AND AIRCRAFT OPERATIONS. ADVANCE NOTICE REQUIREMENTS ARE DETAILED ON THE FOLLOWING PAGES AND IN THE CONTRACT DOCUMENTS.
5.

CONTRACTOR SHALL COORDINATE WITH AIRPORT OPERATIONS MANAGER A MINIMUM OF 48 HOURS PRIOR TO THE ISSUANCE OF ALL NOTAMS RELATED TO THE PROJECT CONSTRUCTION. AIRPORT AND FAA SHALL GENERATE AND ISSUE NOTAMS BASED ON CONTRACTOR CONSTRUCTION SCHEDULE AND FACILITY IMPACTS.
6.

CONTRACTOR MUST PERFORM THIS WORK IN ACCORDANCE WITH THE PROVISIONS INCLUDED WITHIN THE CONTRACT DOCUMENTS.

INSPECTION REQUIREMENTS

1.

CONTRACTOR MUST CONDUCT DAILY INSPECTIONS OF APPLICABLE SAFETY PLAN MEASURES FOR THE CURRENT WORK THIS SHOULD INCLUDE A CHECK OF ALL BARRICADE LOCATIONS, OPERATION, AND CONDITION PRIOR TO STARTING AND ENDING DAILY CONSTRUCTION. THIS ALSO INCLUDES A REQUIREMENT TO IMMEDIATELY CORRECT ANY DISCOVERED DEFICIENCIES.
2.

PRIOR TO OPENING WORK AREAS AND PAVEMENT AT THE END OF PROJECT, THE CONTRACTOR MUST COORDINATE WITH AIRPORT OPERATIONS FOR INSPECTION OF WORK AREA. PAVEMENTS MUST BE FREE OF ALL DIRT, SAND, GRAVEL, WIRE BRISTLES OR ANY OTHER OBJECTS THAT COULD CAUSE DAMAGE TO AIRCRAFT ENGINES. ALL SOIL AREAS MUST BE FREE OF DIRT CLOUDS, RUTS, OR SURFACE IRREGULARITIES THAT COULD DAMAGE AN AIRCRAFT SHOULD IT LEAVE THE PAVEMENT.

CONTRACTOR ACCESS

1.

NO CONTRACTOR'S VEHICLES AND EQUIPMENT WILL BE ALLOWED ON ANY OPEN OR CLOSED TAXIWAY OR RUNWAY PAVEMENT, OR ACTIVE SAFETY AREAS, THROUGHOUT THE DURATION OF THE RPOJECT. INCURSION ONTO OR ACROSS AN ACTIVE RUNWAY, TAXIWAY, OR RUNWAY APPROACHES WITHOUT PRIOR APPROVAL IS A SERIOUS VIOLATION THAT WILL SUBJECT THE CONTRACTOR TO THE MAXIMUM FINE ALLOWED.
2.

THE CONTRACTOR SHALL MEET THE SECURITY AND ACCESS REQUIREMENTS LISTED IN THE CONTRACT DOCUMENTS. REFER TO THE PHASING PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3.

CONTRACTOR SHALL NOT ENTER INTO, OR PLACE STOCKPILES OR STORE MATERIALS AND FUEL IN THE RUNWAY OBJECT FREE AREA OF ANY ACTIVE RUNWAY WITHOUT PRIOR COORDINATION WITH AIRPORT OPERATIONS STAFF.
4.

VEHICLES DRIVING ON THE AIRPORT MUST GIVE WAY TO ALL AIRCRAFT. DO NOT DRIVE UNDER AIRCRAFT BOARDING BRIDGES. FOLLOW POSTED SPEED LIMIT SIGNS AND NOT DRIVE IN A RECKLESS MANNER, AND DRIVE ONLY ON DESIGNATED VEHICLE ROUTES. ALL VEHICLE AND AIRCRAFT INCIDENTS, PERSONAL INJURY AND PROPERTY DAMAGE TO AIRPORT OPERATIONS MUST BE REPORTED IMMEDIATELY.
5.

THE CONTRACTOR MUST LIMIT OPERATION OF THEIR EQUIPMENT AND VEHICLES TO THE DEFINED CONSTRUCTION AREAS. DURING NON-CONSTRUCTION PERIODS, THE CONTRACTOR MUST REMOVE EQUIPMENT AND VEHICLES FROM THE WORK AREA WITHIN THE RUNWAY OBJECT FREE AREA. MATERIAL AND EQUIPMENT LESS THEN 10 FEET TALL MAY BE STAGED OUTSIDE THE RUNWAY OBJECT FREE AREA ADJACENT TO THE PROJECT. CONTRACTOR MAY ALSO STAGE EQUIPMENT AND MATERIALS AT THE STAGING AREA SE OF RUNWAY 36L. SEE THE PHASING PLANS FOR LOCATIONS.
6.

CONTRACTOR ACCESS ONTO THE AOA IS LIMITED TO THE GATES SHOWN ON THE PROJECT SAFETY AND PHASING PLANS. NO PERSON SHALL ENTER THE AOA, OR ANY OTHER RESTRICTED AREA, EXCEPT AUTHORIZED BADGED PERSONNEL OR ESCORTED BY AN APPROPRIATELY BADGED ESCORT. CONTRACTOR OPERATIONS WITHIN THE AOA ARE LIMITED TO THE AREAS SHOWN ON THE PROJECT SAFETY AND PHASING PLANS. CONSTRUCTION VEHICLES AND PERSONNEL MUST NOT LEAVE THE PROJECT AREAS AT ANY TIME WITHOUT AN APPROVED ESCORT.
7.

CONTRACTOR EMPLOYEE PERSONAL VEHICLES MAY NOT BE PARKED OR DRIVEN IN THE AOA. APPROVED CONTRACTOR VEHICLES AND EQUIPMENT ARE ALLOWED INSIDE OF THE PROJECT WORK AREA WITHIN THE AOA. CONTRACTOR VEHICLES AND EQUIPMENT SHALL BE PARKED NO CLOSER THAN 10 FEET FROM ANY SECURITY FENCE.
8.

THE PHASING PLAN SHEETS DEPICT HAUL ROUTES AND SITE ACCESS FROM SURROUNDING PUBLIC ROADWAYS AND HAUL ROUTES TO THE PROJECT WORK AREA THROUGH THE AIRPORT PERIMETER FENCE. CONTRACTOR ACCESS AND HAULING OPERATIONS ARE STRICTLY LIMITED TO THE HAUL ROUTES SHOWN. CONTRACTOR IS RESPONSIBLE FOR ANY PERMITS, IMPROVEMENTS, AND MAINTENANCE TO HAUL ROUTES AS NEEDED TO EFFICIENTLY PERFORM CONSTRUCTION ACTIVITIES, UNLESS SHOWN OTHERWISE ON THE PLANS. FOLLOWING COMPLETION OF CONSTRUCTION, CONTRACTOR IS REQUIRED TO RESTORE ANY TEMPORARY HAUL ROUTES AND TEMPORARY STAGING AND STORAGE AREAS TO THEIR ORIGINAL CONDITION.
9.

DRIVING PRIVILEGES INSIDE THE AOA ARE LIMITED TO VEHICLES AND PERSONNEL WITH AN OPERATIONAL NECESSITY AND WHO HAVE BEEN BADGED AND APPROVED BY THE BADGING OFFICE. TO DRIVE ON ANY PART OF THE AIRPORT OTHER THAN THE WORK AREAS AS DEFINED IN THE PROJECT PHASING PLANS, THE CONTRACTOR MUST FIRST COORDINATE WITH AIRPORT OPERATIONS PERSONNEL. ALL VEHICLES OPERATING OUTSIDE OF THE PROJECT WORK AREA MUST BE ESCORTED BY BADGED PERSONNEL. VEHICLE OPERATORS ARE EXPECTED TO FAMILIARIZE THEMSELVES WITH AIRPORT SIGNS AND MARKINGS.
10.

THE PROJECT PLANS SHOW THE ENTRY POINT(S), CONTRACTOR'S STAGING AREA, AND WORK AREA. THE CONTRACTOR SHALL PROVIDE SECURITY FOR THESE AREAS. . THE CONTRACTOR SHOULD NOT RELY ON AIRPORT PERSONNEL TO PROVIDE FULL-TIME SECURITY.
11.

RPR AND MSCAA SECURITY WILL PROVIDE AOA ACCESS THROUGH GATE CD-9. CONTRACTOR SHALL COORDINATE WORK/SHIFT SCHEDULE IN 72-HRS IN ADVANCE OF STARTING THE WORK. EACH DAY, CONTRACTOR SHALL CALL MSCAA COMMUNICATIONS DESK AT 901-922-8298 ABOUT 30 MINUTES PRIOR DESIRED ACCESS TO AOA AT GATE CD-9. MSCAA SECURITY WILL THEN DRIVE TO THE GATE TO LET CONTRACTOR INTO GATE CD-9. CONTRACTOR TO CALL SAME NUMBER TO BE LET OUT OF GATE CD-9 AT THE END OF THE WORK DAY. ACCESS REQUESTS OUTSIDE OF THE SCHEDULE WILL BE ACCOMMODATED, BUT CANNOT GUARANTEE RESPONSE TIME.
12.

CONTRACTOR TO BE PROVIDED LOCK FOR GATE CD-9A (LOCATED ALONG SOUTH PERIMETER ROAD, JUST WEST OF GATE CD-9) FROM THE MSCAA. CONTRACTOR MUST KEEP CD-9A LOCKED AT ALL TIMES WHEN NOT IN USE. GATE CD-9A IS NOT AN AOA GATE.
13.

LICENSED VEHICLES ARE REQUIRED TO DISPLAY THE FOLLOWING SAFETY & SECURITY ITEMS IN ACCORDANCE WITH THE LATEST VERSION OF FAA AC 150/5210-5:

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SIGNS: COMPANY SIGNS ARE REQUIRED AT ALL TIMES. COMPANY SIGNS MUST BE AFFIXED TO BOTH SIDES OF THE VEHICLE, INCLUDE THE COMPANY LOGO IN A CONTRASTING COLOR, BE A MINIMUM OF 200 SQUARE INCHES, AND BE APPROVED BY THE AIRPORT.

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BEACONS: BEACONS ARE REQUIRED AT ALL TIMES. A SINGLE BEACON SHALL BE AFFIXED TO THE UPPERMOST PART OF EACH VEHICLE. BEACONS SHALL BE YELLOW/AMBER ROTATING LIGHTS VISIBLE FROM ANY DIRECTION, INCLUDING THE AIR.

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FLAGS: CONSTRUCTION WARNING FLAGS ARE NOT REQUIRED FOR LICENSED VEHICLES THAT ARE IN CONSTANT TWO-WAY RADIO COMMUNICATION WITH THE ATCT AND PROPERLY EQUIPPED TO OPERATE IN THE AOA WITH SIGNS AND A BEACON.

STOCKPILE MATERAIL

1.

CONTRACTOR IS LIMITED TO PLACEMENT OF STOCKPILED MATERIALS OUTSIDE THE OBJECT FREE AREA AT THE LOCATION SHOWN ON THE PLANS. NO STOCKPILES MAY BE PLACED INSIDE THE SAFETY AREA OR OBJECT FREE AREA DUE TO RUNWAY 18R-36L REOPENING AT NIGHT..
2.

CONTRACTOR TO MANAGE STOCKPILES SO THAT THEY DO NOT ATTRACT WILDLIFE. CONTRACTOR TO MANAGE STOCKPILES SO THAT THEY DO NOT CREATE FOD.
3.

STOCKPILES SHALL BE NO CLOSER THAN 10 FEET TO A SECURITY FENCE AND SHALL BE NO HIGHER THAN 10'.

WILDLIFE MANAGEMENT

1.

FOOD SCRAPS MUST BE COLLECTED FROM CONSTRUCTION PERSONNEL ACTIVITY.
2.

ANY ACTIVITY TAKING PLACE THAT CREATES A STANDING BODY OF WATER MUST BE REMEDIED WITHIN 24 HOURS.
3.

MOWING SCHEDULES HAVE BEEN ESTABLISHED TO MAINTAIN, WHEN POSSIBLE, A HEIGHT OF 6 TO 10 INCHES, TO HELP PREVENT WILDLIFE FROM BECOMING A HAZARD. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH AND MAINTAIN A SCHEDULE THAT ALLOWS A MAXIMUM GRASS HEIGHT OF 10 INCHES WITHIN THE CONSTRUCTION WORK AREA.

FOREIGN OBJECT DEBRIS (FOD)

FOREIGN OBJECT DEBRIS AT AIRPORTS INCLUDES ANY OBJECT FOUND IN AN INAPPROPRIATE LOCATION THAT CAN DAMAGE AIRCRAFT, EQUIPMENT, OR AIRPORT PERSONNEL. ON CONSTRUCTION SITES FOD TYPICALLY IS COMPRISED OF LOOSE GRAVEL, BLOWING SAND, WIRE BRISTLES FROM SWEEPER HEADS, FOOD WRAPPERS, MATERIAL PACKAGING. THE PRESENCE OF FOD ON AN AIRPORT'S AOA POSES A SIGNIFICANT THREAT TO THE SAFETY OF AIR TRAVEL. FOD HAS THE POTENTIAL TO DAMAGE AIRCRAFT DURING CRITICAL PHASES OF FLIGHT, WHICH CAN LEAD TO CATASTROPHIC LOSS OF LIFE AND AIRFRAME, AND AT THE VERY LEAST INCREASED MAINTENANCE AND OPERATING COSTS.

METHODS OF FOD CONTROL:

1.

CONTRACTOR SHALL PROVIDE TRAINING TO ALL EMPLOYEES WORKING WITHIN THE AOA ON EFFECTIVE FOD MANAGEMENT. TRAINING SHALL INCLUDE DESCRIPTION AND CONSEQUENCES OF FOD, FOD AWARENESS, AND HOUSEKEEPING PROCEDURES.
2.

PREVENTING FOD FROM OCCURRING IS THE MOST EFFECTIVE FORM OF FOD MANAGEMENT. CONTRACTOR MUST MONITOR CONSTRUCTION ACTIVITIES AND PROACTIVELY DEVELOP A PLAN TO PREVENT FOD FROM OCCURRING. TYPICAL FOD PREVENTION MEASURES INCLUDE THE USE OF COVERED TRASH CONTAINERS, COVERED LOADS, ZERO TOLERANCE OF LITTERING, AND TYING DOWN ITEMS WHICH MAY BE EASILY WIND BLOWN.
3.

CONTRACTOR MUST HAVE EFFECTIVE EQUIPMENT FOR FOD CONTROL ON SITE AT ALL TIMES. EQUIPMENT MAY INCLUDE BUT IS NOT LIMITED TO HAND BROOMS, SWEEPERS, WATER TRUCK, AND VACUUM SWEEPER TRUCK ON TO IMMEDIATELY REMOVE ANY DEBRIS FROM ACTIVE AIRFIELD AND HAUL ROUTE PAVEMENTS THAT RESULTS FROM CONSTRUCTION ACTIVITY.
4.

CONTRACTOR MUST ACTIVELY IMPLEMENT DUST CONTROL MEASURES TO MINIMIZE THE AMOUNT OF DUST ORIGINATING FROM THE WORK AREA, HAUL ROUTES, AND STAGING AND STORAGE AREAS. DUST ON THE AIRFIELD PAVEMENTS WILL NOT BE TOLERATED. IF PROPER MEASURES ARE NOT IMPLEMENTED TO CONTROL DUST, WORK WILL BE STOPPED UNTIL PROPER MEASURES ARE IMPLEMENTED.
5.

PRIOR TO OPENING SECTIONS OF PAVEMENT WITHIN A WORK AREA, THE CONTRACTOR WILL BE REQUIRED TO CLEAN THE ENTIRE PAVEMENT SURFACE. METAL BRISTLED BROOMS ARE KNOWN TO CREATE FOD, THE CONTRACTOR WILL BE REQUIRED TO CLEAN ALL BRISTLES FROM THE PAVEMENT. THE PROJECT ENGINEER WILL INSPECT AREAS TO BE OPENED PRIOR TO OPENING.

NAVIGATIONAL AID (NAVAID) FACILITIES

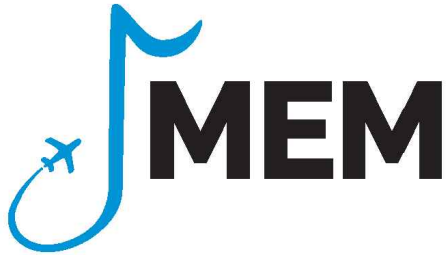
1.

AIRCRAFT NAVIGATIONAL AIDS (NAVAIDS) PROVIDE VISUAL AND ELECTRONIC INFORMATION WHICH IS USED BY PILOTS WHO OPERATE AND LAND AIRCRAFT AT THE AIRPORT. CONSTRUCTION ACTIVITIES CAN HAVE NEGATIVE IMPACTS ON THE FUNCTIONALITY AND SERVICEABILITY OF NAVAIDS. THE CONTRACTOR MUST COORDINATE THEIR WORK EFFORT AND LIMIT THEIR OPERATIONS SO THAT NAVAIDS ARE NOT IMPACTED. THE ONLY NAVAID IMPACTED BY THIS PROJECT IS THE RUNWAY 18R GLIDESLOPE WHEN RUNWAY 18R-36L IS OPEN. CONTRACTOR MAY NOT STORE EQUIPMENT OR MATERIALS WITHIN THE RUNWAY 18R GLIDE SLOPE CRITICAL AREA WHEN RUNWAY 18R-36L IS OPEN. CONTRACTOR IS NOT ALLOWED IN GS SHELTER WITHOUT FAA PRESENT AT ALL TIMES. WORK SHOULD BE PLANNED AND COMMUNICATED SO FAA IS PRESENT.
2.

CONTRACTOR MUST LIMIT OPERATIONS SO THAT MATERIAL, EQUIPMENT, AND PERSONNEL DO NOT ENTER NAVAID CRITICAL AREAS OR DISTURB POWER TO NAVAID FACILITIES WITHOUT PRIOR COORDINATION WITH THE MSCAA OPERATIONS MANAGER AND MSCAA PROJECT ENGINEER.
3.

PLANNED NAVAID IMPACTS MUST BE ADDRESSED IN THE CONTRACTORS CONSTRUCTION SCHEDULE. CONTRACTOR IS REQUIRED TO PROVIDE A 45 DAY NOTICE AS WELL AS A MINIMUM 72 HOUR NOTICE BEFORE ANTICIPATED CLOSURE OF RUNWAY 18R-36L TO THE MSCAA OPERATIONS MANAGER AND THE MSCAA PROJECT ENGINEER.

PREPARED FOR:



PREPARED BY:

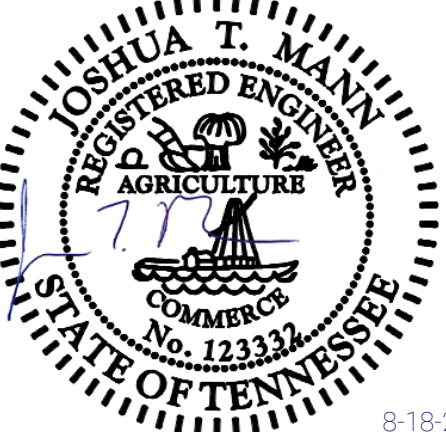


KEY MAP:

NO	DATE	BY	REVISION DESCRIPTION																	

RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

GENERAL SAFETY AND PHASING NOTES

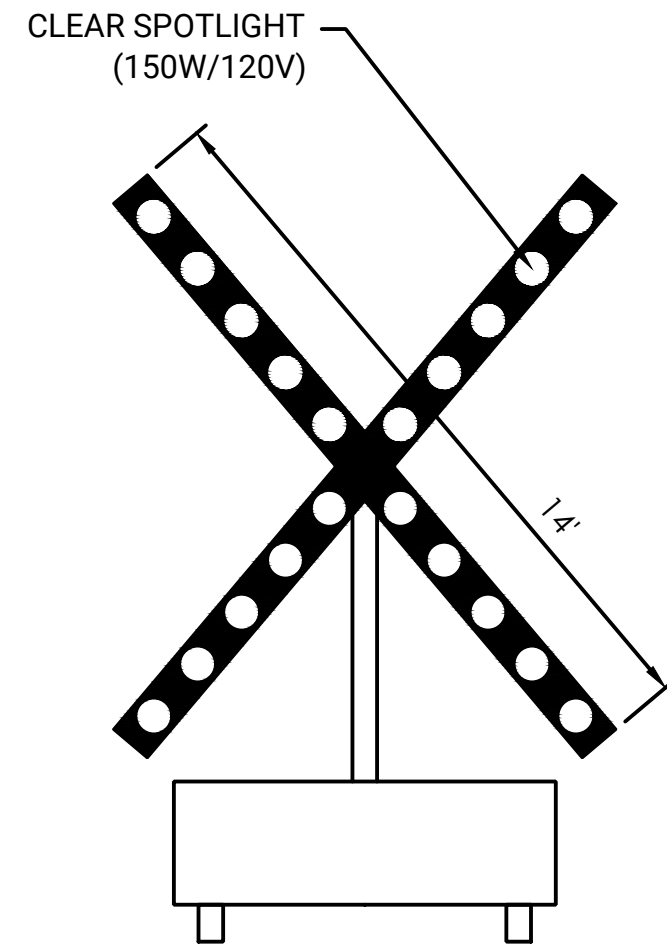


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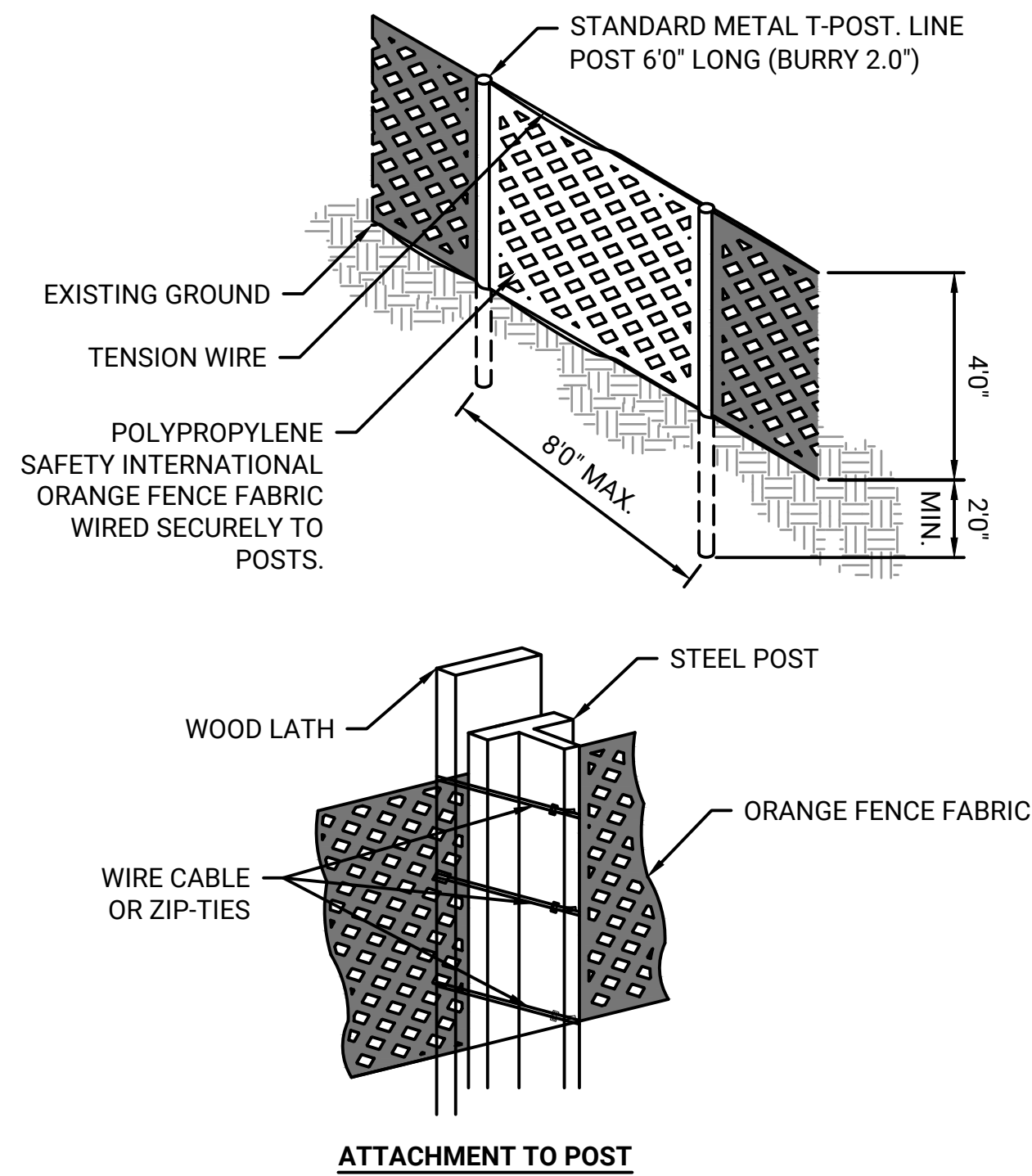
DESIGNED: ADS	DRAWN: AJI	CHECKED: WUH
PROJECT NO: 0026M300.25		
PRINT DATE: 8/18/2026		
SHEET NO.		

SP001

1. LIGHTED X'S SHALL BE PROVIDED BY MSCAA AND MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF PHASE 2 OF THE PROJECT WHEN RUNWAY 18R-36L IS CLOSED DURING THE ALLOWED RUNWAY CLOSURES. CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE LIGHTED 'X'S AT THE START OF EACH RUNWAY CLOSURE, AND REMOVING THE LIGHTED 'X'S JUST PRIOR TO RE-OPENING THE RUNWAY AT THE END OF EACH RUNWAY CLOSURE.
2. MSCAA PROVIDED LIGHTED 'X'S RISE ON TOP OF AND ARE POWERED BY A TOW BEHIND DIESEL FUELED GENERATOR. CONTRACTOR RESPONSIBLE FOR MAINTAINING THE LIGHTED 'X' THROUGHOUT THE DURATION OF THE PROJECT, WHICH INCLUDES ADDING DIESEL FUEL AS NECESSARY.
3. ALL COSTS FOR LIGHTED X PLACEMENT, MAINTENANCE, RELOCATION, AND REMOVAL SHALL BE INCLUDED IN THE MAINTENANCE OF TRAFFIC BID ITEM.

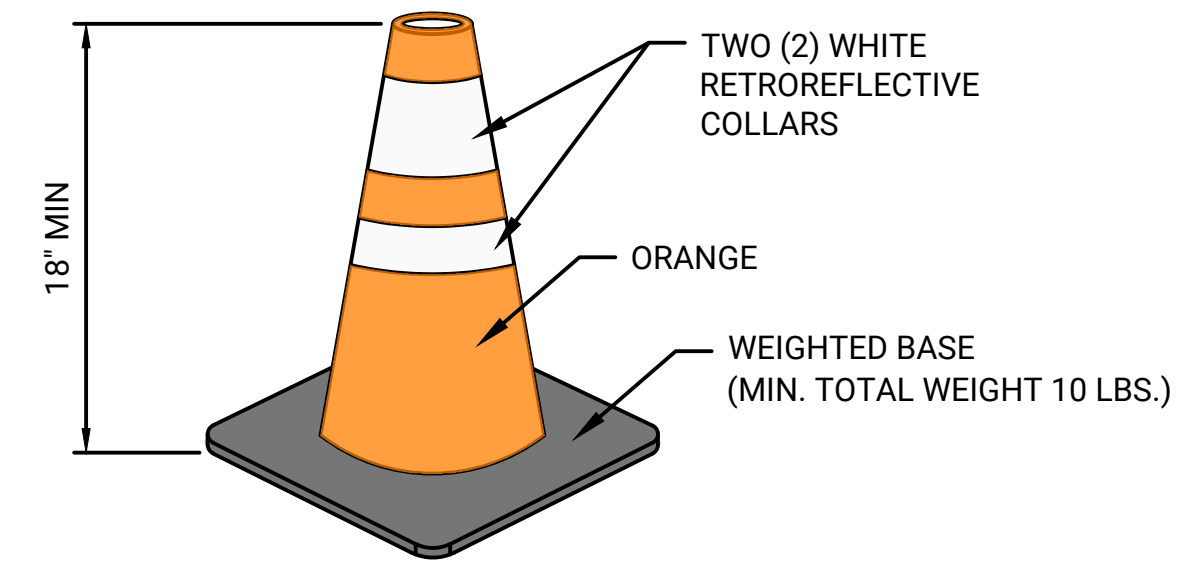


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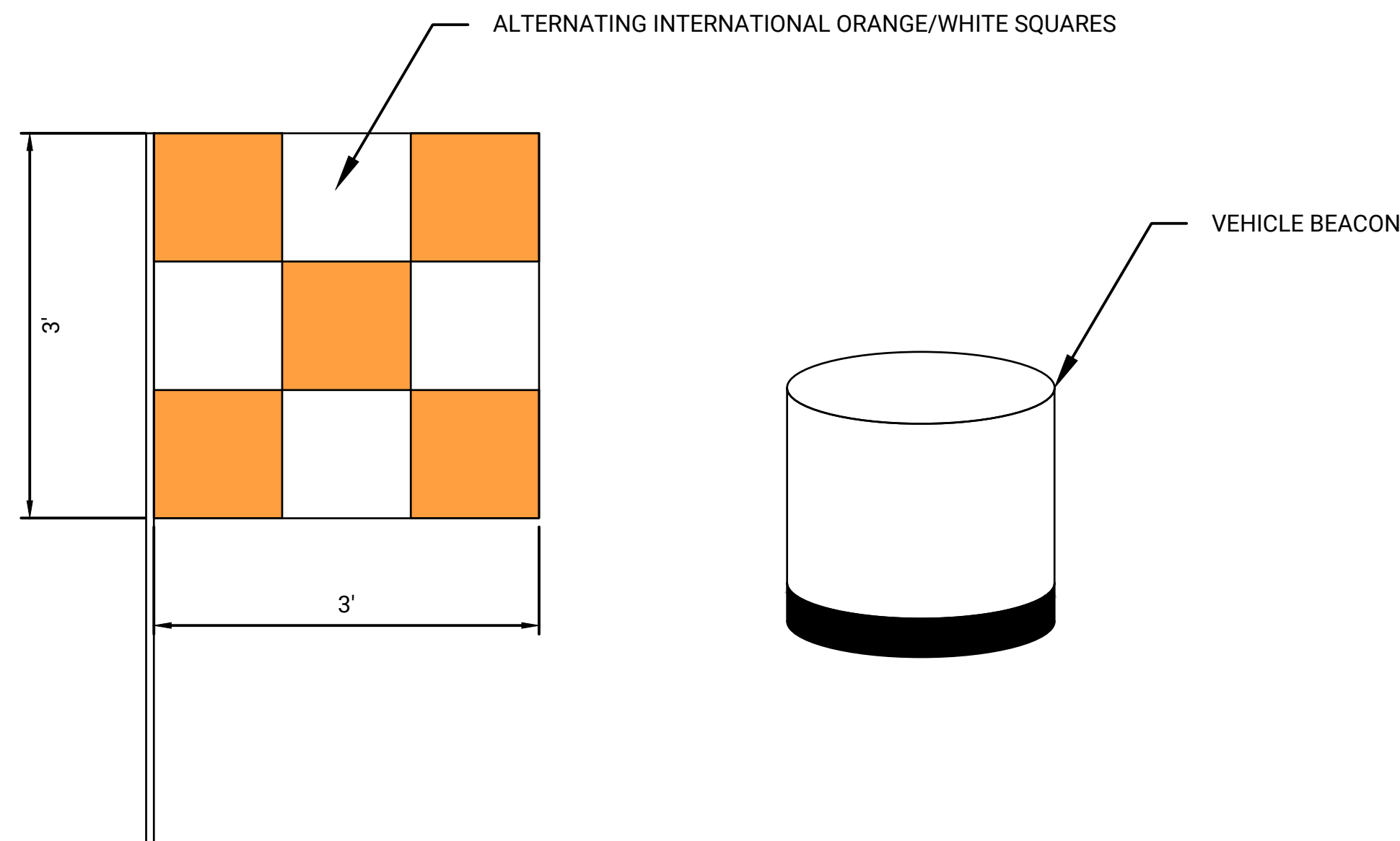
■ **SCALE:** NONE

1. ORANGE CONSTRUCTION SAFETY FENCE AND STAKES ARE TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR AT ALL LOCATIONS AS SHOWN ON SHEETS SP101 AND SP102.
2. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE. IF THE CONTRACTOR DEVIATES FROM THE SAFETY AND PHASING PLAN, ADDITIONAL FENCE MAY BE NEEDED. THE CONTRACTOR SHALL GAIN APPROVAL FROM THE PROJECT ENGINEER ON ANY NEW FENCE LOCATIONS.
3. FENCE SHALL BE INSTALLED WITH THE FABRIC ON THE CONTRACTOR'S WORK AREA SIDE OF THE POST.
4. AT PROJECT COMPLETION, ALL FENCE POSTS AND FABRIC SHALL BE REMOVED FROM AIRPORT PROPERTY AND SHALL REMAIN THE PROPERTY OF CONTRACTOR.
5. THE CONTRACTOR IS REQUIRED TO ENSURE THAT CONSTRUCTION SAFETY FENCE IS ADEQUATELY SECURED AND STABLE ENOUGH TO WITHSTAND THE ENVIRONMENT WITHOUT BEING DISLODGED.
6. THE CONTRACTOR SHALL INSTALL, REMOVE AND/OR RELOCATE CONSTRUCTION FENCE, AS NECESSARY, FOR ALL PROJECT AREA BOUNDARIES BY PHASE. ALL COSTS FOR FENCE INSTALLATION, RELOCATION, AND REMOVAL SHALL BE INCLUDED IN THE MAINTENANCE OF TRAFFIC BID ITEM.
7. TURF THAT IS DISTURBED DUE TO THE INSTALLATION, RELOCATION, OR REMOVAL OF THE CONSTRUCTION FENCE SHALL BE RESTORED TO ITS ORIGINAL CONDITION UPON REMOVAL. TURF RESTORATION RELATED TO THE FENCE INSTALLATION IS INCLUDED IN THE MAINTENANCE OF TRAFFIC BID ITEM.



1. TRAFFIC CONES SHALL BE INSTALLED AT HOLD LINE OF THE TAXIWAY M CONNECTING TAXIWAYS BETWEEN TAXIWAY M AND RUNWAY 18R-36L FOR THE RUNWAY 18R-36L CLOSURES DURING PHASE 2.
2. 5 TOTAL CONES ARE REQUIRED AT EACH PERPENDICULAR TAXIWAY (NON-HIGH SPEED TAXIWAYS), AND 10 TOTAL CONES ARE REQUIRED AT EACH HIGH-SPEED TAXIWAY.
3. IF THE CONTRACTOR DEVIATES FROM THE SAFETY AND PHASING PLAN, ADDITIONAL TRAFFIC CONES MAY BE NEEDED. NO ADDITIONAL COSTS SHALL BE MADE FOR ADDITIONAL TRAFFIC CONES.
4. CONES MUST BE INSTALLED AT THE START OF EACH RUNWAY 18R-36L CLOSURE, AND REMOVED JUST PRIOR TO RE-OPENING THE RUNWAY AT THE END OF EACH RUNWAY CLOSURE.

SCALE: NONE



1. EACH CONTRACTOR LICENSED VEHICLE MUST HAVE A YELLOW/AMBER ROTATING BEACON AFFIXED TO THE UPPERMOST PART OF THE VEHICLE. LIGHT MUST BE VISIBLE FROM ANY DIRECTION, INCLUDING THE AIR.
2. CONSTRUCTION EQUIPMENT DOES NOT REQUIRE ROTATING BEACON LIGHTS UNLESS WORKING DURING HOURS OF DARKNESS AND/OR LOW VISIBILITY. IF A ROTATING BEACON IS NOT PROVIDED OR FEASIBLE, CONSTRUCTION EQUIPMENT MUST DISPLAY CONSTRUCTION VEHICLE WARNING FLAG AFFIXED TO THE UPPERMOST PART OF THE VEHICLE DURING ALL PHASES. CONSTRUCTION VEHICLE FLAGS SHALL BE ACCEPTABLE DURING DAYTIME OPERATIONS ONLY.

SCALE: NONE

[illegible]

**RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN**

SAFETY AND PHASING DETAILS



DESIGNED: ADS	DRAWN: AJI	CHECKED: WUH
PROJECT NO: 0026M300.25		
PRINT DATE: 8/18/2026		
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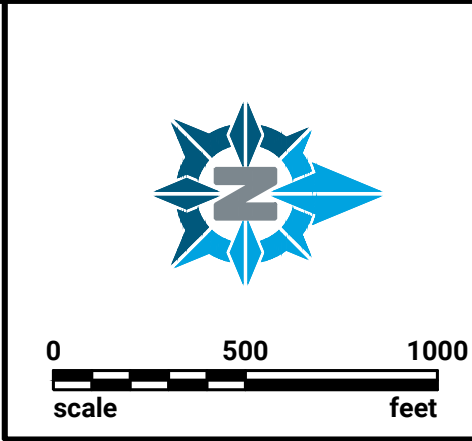
SP002

AIRFIELD PHASING CLOSURE

PHASE	DURATION	CLOSURES
1	34 CALENDAR DAYS - ANTICIPATED START DATE SUNDAY, OCTOBER 11	NONE
2	20 CALENDAR DAYS - ANTICIPATED START DATE SUNDAY, OCTOBER 11	RUNWAY 18R/36L TAXIWAY M CONNECTING TAXIWAYS BETWEEN RUNWAY 18R/36L AND TAXIWAY M
TOTAL	34 CALENDAR DAYS	

CONDITIONS REQUIRED TO START:

1. NOTICE-TO-PROCEED ISSUED FROM THE MSCAA PROJECT ENGINEER.
2. APPROVED SUBMITTALS AND SHOP DRAWINGS.
3. APPROVED CONSTRUCTION SCHEDULE
4. TWO WEEK NOTICE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.



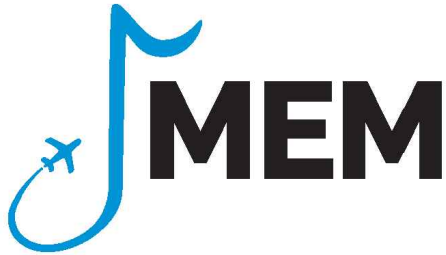
LEGEND

- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- ✱ EXISTING AOA FENCE
- ■ — CONSTRUCTION SAFETY FENCE
- PHASE 1 WORK AREA
- PHASE 2 WORK AREA
- ▨ STAGING AREA
- ↔↔ HAUL ROUTE
- ▼ ESCORT RALLY POINT
- TRAFFIC CONE
- ✱ LIGHTED RUNWAY CLOSURE 'X'
- ✱ EXISTING AOA FENCE

NOTES

1. THE CONTRACTOR MUST COMPLETE THE PROJECT WITHIN 34 CALENDAR DAYS.
2. A CALENDAR DAY IS DEFINED AS ANY DAY ON THE CALENDAR. IT INCLUDES SATURDAYS, SUNDAYS, HOLIDAYS, AND NON-WORK DAYS. CONTRACT TIME BASED ON CALENDAR DAYS WILL BEGIN ON THE EFFECTIVE DATE IN THE NOTICE TO PROCEED.
3. RUNWAY 18R/36L CLOSURES DURING PHASE 2 ARE LIMITED TO THE FOLLOWING TIMES: 6:00 PM SUNDAY - 9:00 PM MONDAY (27-HOUR CLOSURE) AND TUESDAY - FRIDAY: 6:00 AM - 3:30 PM (9.5-HOUR CLOSURE EACH DAY). CONSTRUCTION INSIDE THE RUNWAY SAFETY AREA DURING PHASE 2 MAY NOT OCCUR OUTSIDE THESE TIMES.
4. LIQUIDATED DAMAGES WILL BE ASSESSED FOR THE REQUIREMENTS DESCRIBED IN THE SPECIFICATIONS. CONTRACT TIME FOR THE INDIVIDUAL PHASES WILL BE SUBJECT TO LIQUIDATED DAMAGES.
5. PHASING LIMITS SHOWN ARE APPROXIMATE. ANY PROPOSED CHANGES OR DEVIATIONS TO THE PHASE WORK AREAS OR DURATIONS MUST HAVE PRIOR COORDINATION AND APPROVAL FROM THE MSCAA PROJECT ENGINEER.
6. THE CONTRACTOR MUST COORDINATE ALL OPERATIONS WITH THE MSCAA PROJECT ENGINEER AND MUST SUBMIT A PROPOSED SCHEDULE AT LEAST FIVE (5) CALENDAR DAYS PRIOR TO THE PRECONSTRUCTION MEETING. THE SCHEDULE MUST BE UPDATED ON A BIWEEKLY BASIS PRIOR TO SCHEDULING PROGRESS MEETINGS.
7. THE MSCAA PROJECT ENGINEER MUST BE PROVIDED A MINIMUM OF 48 HOURS NOTICE TO ANY WORK DAY TO ALLOW FOR SCHEDULING OF PERSONNEL FOR OBSERVATION AND TESTING.
8. STAGING AREAS SHOWN ON THE PLANS ARE APPROXIMATE. THE MSCAA PROJECT ENGINEER WILL DETERMINE THE FINAL LOCATION AND SIZE IN THE FIELD. THE CONTRACTOR IS RESPONSIBLE FOR STORAGE AND SECURITY OF THEIR MATERIALS. STAGING AREA AT THE PROJECT SITE MUST BE OUTSIDE THE RUNWAY OBJECT FREE AREA.
9. CONTRACTOR'S STORED MATERIALS MUST MAINTAIN A MINIMUM OF 5' DISTANCE FROM THE RUNWAY OBJECT FREE AREA.
10. FOR PHASE 2, APPROXIMATELY 5 CONES ARE NEEDED FOR EACH CONNECTING TAXIWAY CLOSURE, AND 10 FOR EACH HIGH-SPEED CLOSURES. AT THE DIRECTION OF THE PROJECT ENGINEER, MORE CONES MAY BE REQUIRED.
11. PHASE 1 DOES NOT REQUIRE RUNWAY 18R/36L TO BE CLOSED. THEREFORE, PHASE 1 CONSTRUCTION CAN OCCUR CONCURRENTLY WITH PHASE 2.
12. PHASE 2 CONSTRUCTION INSIDE THE RUNWAY SAFETY AREA WILL REQUIRE RUNWAY 18R/36L CLOSURES. PHASE 2 HAS A DURATION OF 20 CALENDAR DAYS. RUNWAY CLOSURES ARE LIMITED TO THE DAYS AND TIMES SHOWN IN NOTE 2.
13. AIRPORT-PROVIDED LIGHTED X's MUST BE PLACED AT BOTH ENDS OF RUNWAY 18R/36L AT THE BEGINNING OF EACH RUNWAY CLOSURE. CONTRACTOR-PROVIDED TRAFFIC CONES MUST ALSO BE PLACED ON THE TAXIWAY M CONNECTING TAXIWAYS AT THE RUNWAY HOLD LINE AT THE START OF THE RUNWAY CLOSURE. BOTH LIGHTED X's AND THE CONES MUST BE REMOVED PRIOR TO REOPENING THE RUNWAY. CONES AND LIGHTED 'X' MAY BE STORED AT EITHER THE STAGING AREA AT THE PROJECT SITE, OR THE STAGING AREA SE OF RUNWAY 36L.
14. SEE SHEET G1100 - OVERALL PAPI LAYOUT, FOR CONTROL POINT DESCRIPTIONS, ELEVATIONS, NORTHINGS, AND EASTINGS.
15. CONTRACTOR IS NOT ALLOWED IN THE GLIDE SLOPE SHELTER WITHOUT FAA PRESENT AT ALL TIMES. WORK SHOULD BE PLANNED AND COMMUNICATED SO FAA IS PRESENT.
16. RPR AND MSCAA SECURITY WILL PROVIDE AOA ACCESS THROUGH GATE CD-9. CONTRACTOR SHALL COORDINATE WORK/SHIFT SCHEDULE IN 72-HRS IN ADVANCE OF STARTING THE WORK. EACH DAY, CONTRACTOR SHALL CALL MSCAA COMMUNICATIONS DESK AT 901-922-8298 ABOUT 30 MINUTES PRIOR DESIRED ACCESS TO AOA AT GATE CD-9. MSCAA SECURITY WILL THEN DRIVE TO THE GATE TO LET CONTRACTOR INTO GATE CD-9. CONTRACTOR TO CALL SAME NUMBER TO BE LET OUT OF GATE CD-9 AT THE END OF THE WORK DAY. ACCESS REQUESTS OUTSIDE OF THE SCHEDULE WILL BE ACCOMMODATED, BUT CANNOT GUARANTEE RESPONSE TIME.

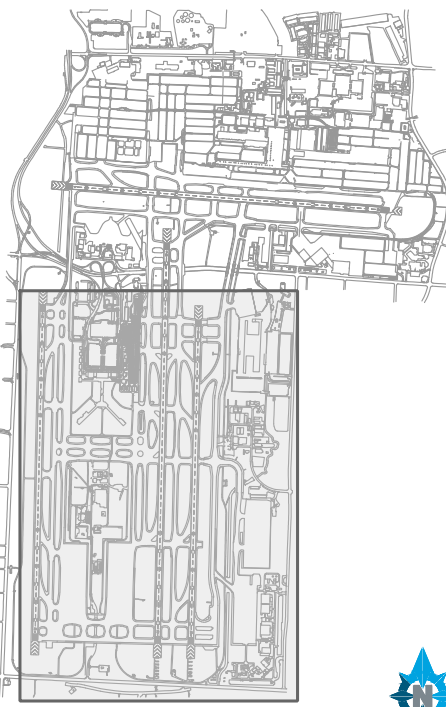
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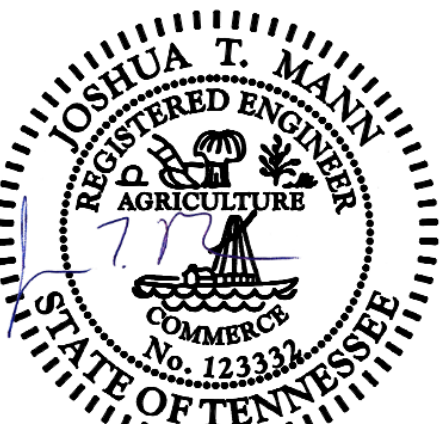
KEY MAP:



NO	DATE	BY	REVISION DESCRIPTION

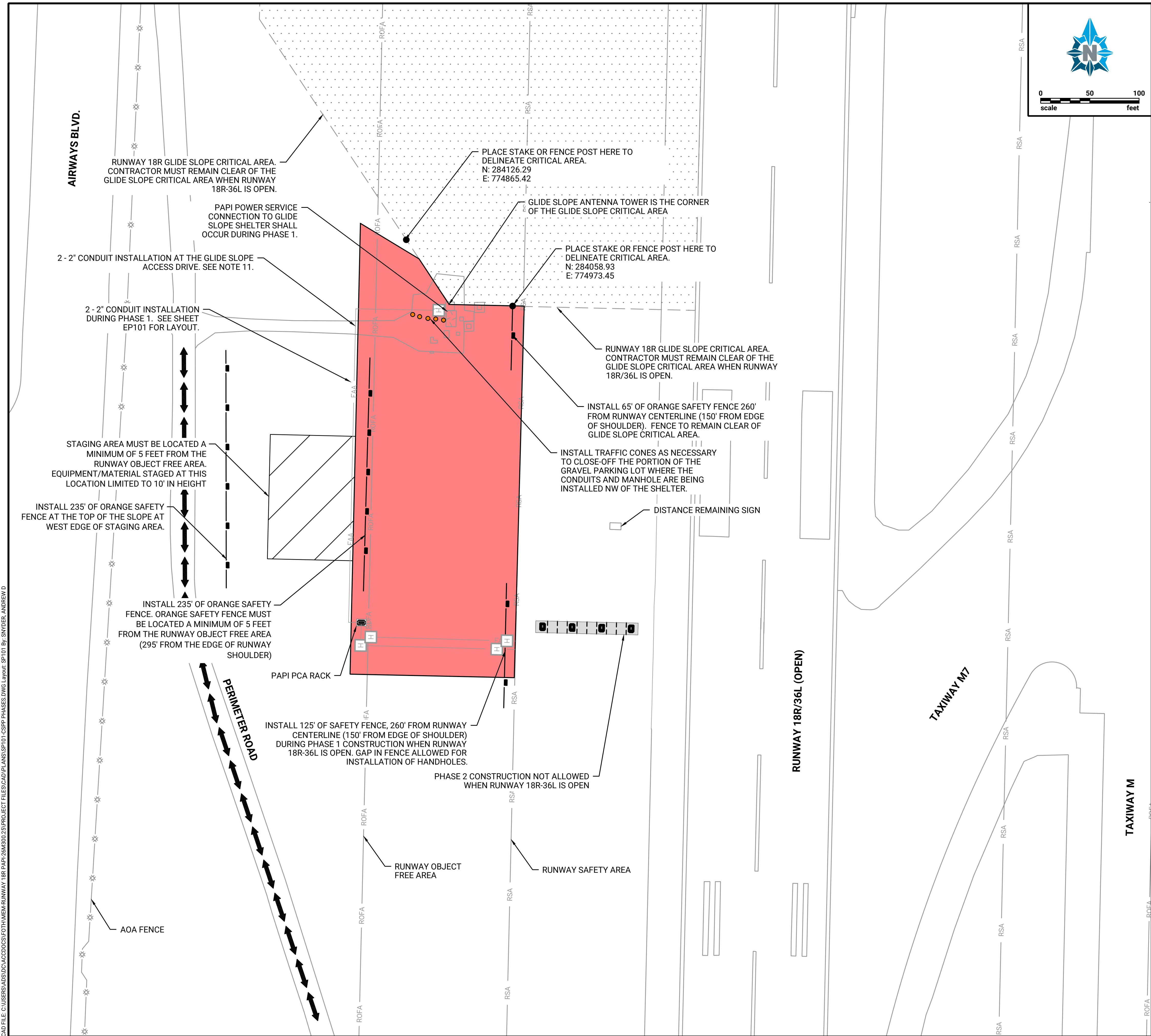
RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

CONSTRUCTION SAFETY AND PHASING PLAN
- OVERVIEW

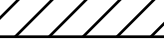


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PROJECT NO: 0026M300.25		
PRINT DATE: 8/18/2026		
SHEET NO.		
SP100		

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LEGEND

- | | | |
|---|------|-------------------------------|
|  | RSA | RUNWAY SAFETY AREA |
|  | ROFA | RUNWAY OBJECT FREE AREA |
|  | | CONSTRUCTION SAFETY FENCE |
|  | | PHASE 1 WORK AREA |
|  | | STAGING AREA |
|  | | 18R GLIDE SLOPE CRITICAL AREA |
|  | | HAUL ROUTE |
|  | | TRAFFIC CONE |
|  | | EXISTING AOA FENCE |

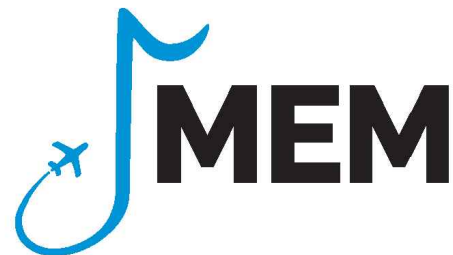
PHASE 1 NOTES

1. THE CONTRACTOR MUST COMPLETE THE PROJECT (PHASE 1 AND PHASE 2) WITHIN 34 CALENDAR DAYS.
2. PHASE 1 HAS AN ANTICIPATED START DATE OF SUNDAY OCTOBER 11, 2026 (PENDING ISSUANCE OF NOTICE TO PROCEED). PHASE 1 HAS A DURATION OF 34 CALENDAR DAYS, WHICH IS THE SAME DURATION AS THE OVERALL PROJECT DURATION. PHASE 1 CONSTRUCTION MY OCCUR 7 DAYS A WEEK.
3. A CALENDAR DAY IS DEFINED AS ANY DAY ON THE CALENDAR. IT INCLUDES SATURDAYS, SUNDAYS, HOLIDAYS, AND NON-WORK DAYS. CONTRACT TIME BASED ON CALENDAR DAYS WILL BEGIN ON THE EFFECTIVE DATE IN THE NOTICE TO PROCEED.
4. LIQUIDATED DAMAGES WILL BE ASSESSED FOR THE REQUIREMENTS DESCRIBED IN THE SPECIFICATIONS. CONTRACT TIME FOR THE INDIVIDUAL PHASES WILL BE SUBJECT TO LIQUIDATED DAMAGES.
5. PHASING LIMITS SHOWN ARE APPROXIMATE. ANY PROPOSED CHANGES OR DEVIATIONS TO THE PHASE WORK AREAS OR DURATIONS MUST HAVE PRIOR COORDINATION AND APPROVAL FROM THE MSCAA PROJECT ENGINEER.
6. THE CONTRACTOR MUST COORDINATE ALL OPERATIONS WITH THE MSCAA PROJECT ENGINEER AND MUST SUBMIT A PROPOSED SCHEDULE AT LEAST FIVE (5) CALENDAR DAYS PRIOR TO THE PRECONSTRUCTION MEETING. THE SCHEDULE MUST BE UPDATED ON A BIWEEKLY BASIS PRIOR TO SCHEDULING PROGRESS MEETINGS.
7. THE MSCAA PROJECT ENGINEER MUST BE PROVIDED A MINIMUM OF 48 HOURS NOTICE TO ANY WORK DAY TO ALLOW FOR SCHEDULING OF PERSONNEL FOR OBSERVATION AND TESTING.
8. STAGING AREAS SHOWN ON THE PLANS ARE APPROXIMATE. THE MSCAA PROJECT ENGINEER WILL DETERMINE THE FINAL LOCATION AND SIZE IN THE FIELD. THE CONTRACTOR IS RESPONSIBLE FOR STORAGE AND SECURITY OF THEIR MATERIALS. STAGING AREA AT THE PROJECT SITE MUST BE OUTSIDE THE RUNWAY SAFETY AREA.
9. CONTRACTOR'S STORED MATERIALS MUST MAINTAIN A MINIMUM OF 5' DISTANCE FROM THE RUNWAY OBJECT FREE AREA.
10. FOR PHASE 1, CONTRACTOR IS NOT ALLOWED IN THE GLIDE SLOPE SHELTER WITHOUT FAA PRESENT AT ALL TIMES. WORK SHOULD BE PLANNED AND COMMUNICATED SO FAA IS PRESENT.
11. 2 - 2" CONDUIT INSTALLATION AT THE GLIDE SLOPE ACCESS DRIVE SHALL BE COMPLETED IN 24 HOURS. TRENCH RESTORATION SHALL INCLUDE REINSTALLATION OF THE GRAVEL. CONTRACTOR HAS THE OPTION BORE THE CONDUIT UNDER THE ACCESS DRIVE. CONTRACTOR TO PROVIDE 48 HOUR NOTICE PRIOR TO INSTALLATION OF THE CONDUIT AT THE ACCESS DRIVE

AIRFIELD PHASING CLOSURE

PHASE	DURATION	CLOSURES
1	34 CALENDAR DAYS	NONE

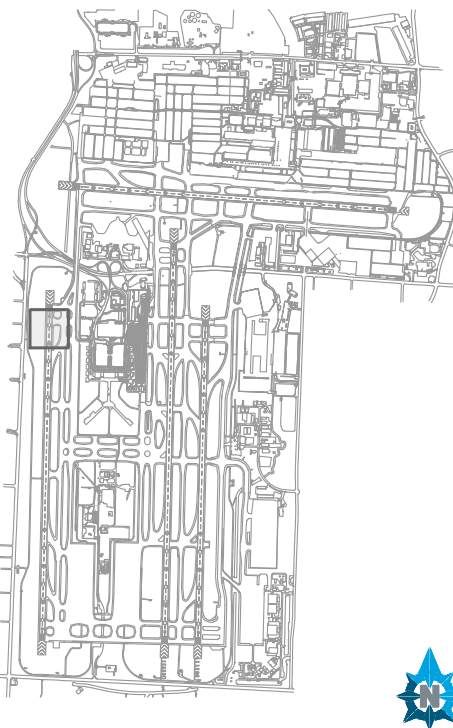
PREPARED FOR:



PREPARED BY:



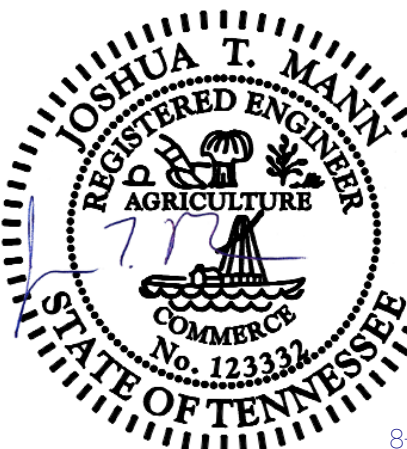
KEY MAP:

[illegible]

**RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN**

CONSTRUCTION SAFETY AND PHASING

PLAN - PHASE 1

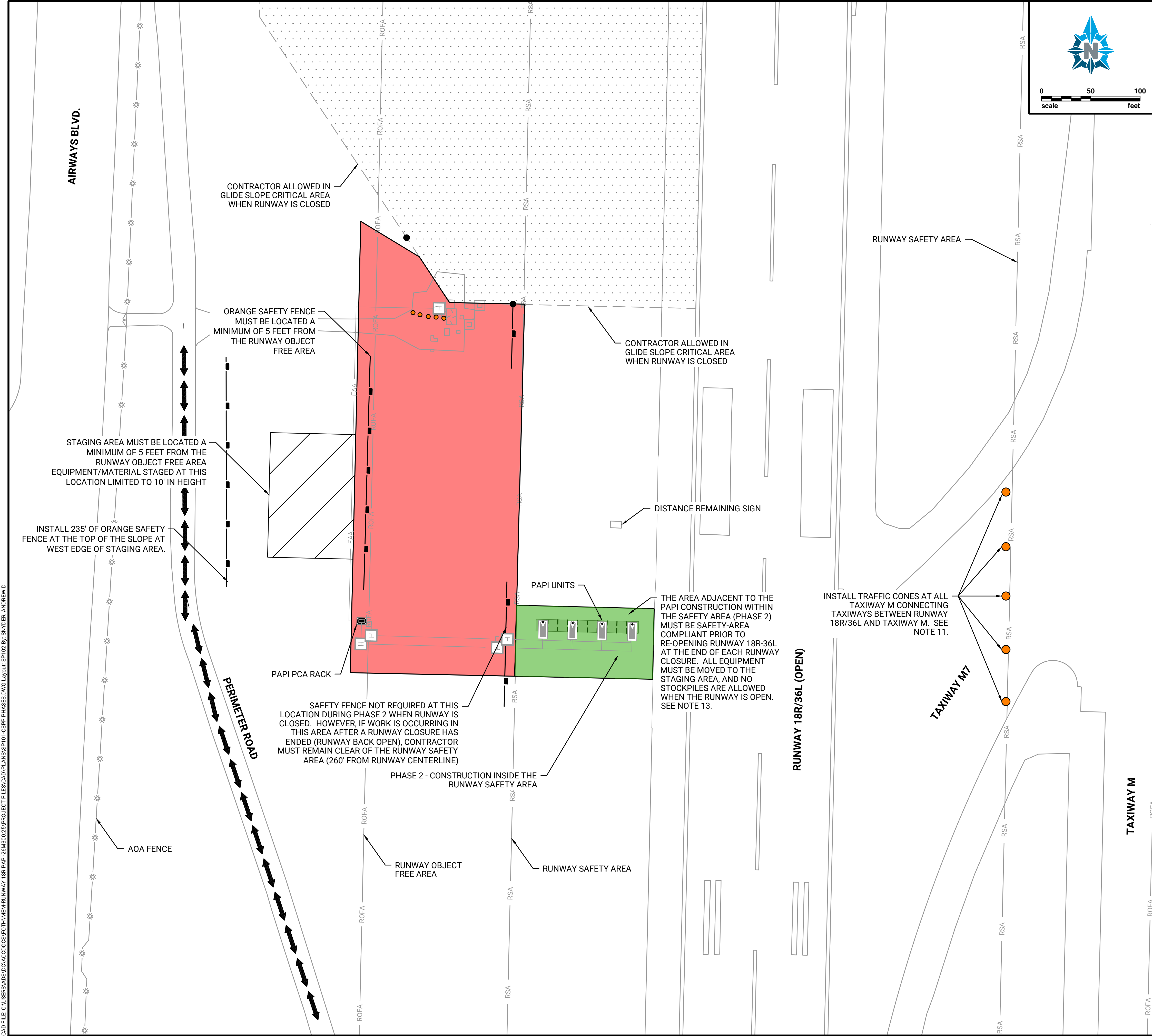


8-18-26

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SP101

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LEGEND

- RSA RUNWAY SAFETY AREA
- ROFA RUNWAY OBJECT FREE AREA
- CONSTRUCTION SAFETY FENCE
- PHASE 1 WORK AREA
- PHASE 2 WORK AREA
- STAGING AREA
- 18R GLIDE SLOPE CRITICAL AREA
- HAUL ROUTE
- TRAFFIC CONE
- EXISTING AOA FENCE

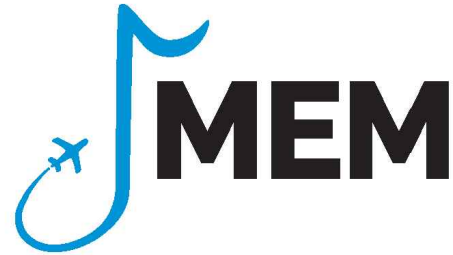
PHASE 2 NOTES

1. THE CONTRACTOR MUST COMPLETE THE PROJECT (PHASE 1 AND PHASE 2) WITHIN 34 CALENDAR DAYS.
2. PHASE 2 HAS AN ANTICIPATED START DATE OF SUNDAY OCTOBER 11, 2026 (PENDING ISSUANCE OF NOTICE TO PROCEED). THIS IS THE SAME START DATE AS PHASE 1. PHASE 2 HAS A DURATION OF 20 CALENDAR DAYS, WHICH CORRESPONDS TO A COMPLETION DATE OF OCTOBER 30, 2026.
3. A CALENDAR DAY IS DEFINED AS ANY DAY ON THE CALENDAR. IT INCLUDES SATURDAYS, SUNDAYS, HOLIDAYS, AND NON-WORK DAYS. CONTRACT TIME BASED ON CALENDAR DAYS WILL BEGIN ON THE EFFECTIVE DATE IN THE NOTICE TO PROCEED.
4. RUNWAY 18R/36L CLOSURES ARE LIMITED TO THE FOLLOWING TIMES: 6:00 PM SUNDAY - 9:00 PM MONDAY (27-HOUR CLOSURE) AND TUESDAY - FRIDAY: 6:00 AM - 3:30 PM (9.5-HOUR CLOSURE EACH DAY). 3 TOTAL 27-HOUR CLOSURES ARE AVAILABLE WITHIN THE PHASE 2, 20 CALENDAR DAY DURATION
5. LIQUIDATED DAMAGES WILL BE ASSESSED FOR THE REQUIREMENTS DESCRIBED IN THE SPECIFICATIONS. CONTRACT TIME FOR THE INDIVIDUAL PHASES WILL BE SUBJECT TO LIQUIDATED DAMAGES.
6. PHASING LIMITS SHOWN ARE APPROXIMATE. ANY PROPOSED CHANGES OR DEVIATIONS TO THE PHASE WORK AREAS OR DURATIONS MUST HAVE PRIOR COORDINATION AND APPROVAL FROM THE MSCAA PROJECT ENGINEER.
7. THE CONTRACTOR MUST COORDINATE ALL OPERATIONS WITH THE MSCAA PROJECT ENGINEER AND MUST SUBMIT A PROPOSED SCHEDULE AT LEAST FIVE (5) CALENDAR DAYS PRIOR TO THE PRECONSTRUCTION MEETING. THE SCHEDULE MUST BE UPDATED ON A BI-WEEKLY BASIS PRIOR TO SCHEDULING PROGRESS MEETINGS.
8. THE MSCAA PROJECT ENGINEER MUST BE PROVIDED A MINIMUM OF 48 HOURS NOTICE TO ANY WORK DAY TO ALLOW FOR SCHEDULING OF PERSONNEL FOR OBSERVATION AND TESTING.
9. STAGING AREAS SHOWN ON THE PLANS ARE APPROXIMATE. THE MSCAA PROJECT ENGINEER WILL DETERMINE THE FINAL LOCATION AND SIZE IN THE FIELD. THE CONTRACTOR IS RESPONSIBLE FOR STORAGE AND SECURITY OF THEIR MATERIALS.
10. CONTRACTOR'S STORED MATERIALS MUST MAINTAIN A MINIMUM OF 5' DISTANCE FROM THE RUNWAY OBJECT FREE AREA.
11. APPROXIMATELY 5 EQUALLY-SPACED CONES ARE NEEDED FOR EACH CONNECTING TAXIWAY CLOSURE, AND 10 EQUALLY-SPACED CONES FOR EACH HIGH-SPEED CLOSURES. AT THE DIRECTION OF THE PROJECT ENGINEER, MORE CONES MAY BE REQUIRED.
12. PHASE 1 DOES NOT REQUIRE RUNWAY 18R/36L TO BE CLOSED. THEREFORE, PHASE 1 CONSTRUCTION CAN OCCUR CONCURRENTLY WITH PHASE 2. HOWEVER, PHASE 2 CONSTRUCTION CANNOT OCCUR LONGER THAN 21 DAYS, AND REQUIRES RUNWAY 18R/36L TO BE CLOSED.
13. ALL TRENCHES AND EXCAVATIONS WITHIN THE RUNWAY SAFETY AREA (RSA) MUST NOT BE LEFT OPEN ONCE THE RUNWAY REOPENS. TRENCHES MUST BE BACKFILLED AND COMPACTED TO MATCH THE EXISTING GRADE BEFORE LEAVING THE SITE. STEEL PLATES MAY BE USED AS AN ALTERNATIVE PROVIDED THE LIP BETWEEN THE STEEL PLATE AND ADJACENT GROUND IS 3" OR LESS. IT IS RECOMMENDED THAT THE CONTRACTOR MUST NOT EXCAVATE MORE THAN CAN BE BACKFILLED AND COMPACTED DURING ONE WORK DAY. THIS INCLUDES FOUNDATIONS FOR THE PAPI UNITS.
14. CONTRACTOR IS NOT ALLOWED IN THE GLIDE SLOPE SHELTER WITHOUT FAA PRESENT AT ALL TIMES. WORK SHOULD BE PLANNED AND COMMUNICATED SO FAA IS PRESENT.

AIRFIELD PHASING CLOSURE

PHASE	DURATION	CLOSURES
2	20 DAYS	RUNWAY 18R/36L TAXIWAY M CONNECTING TAXIWAYS BETWEEN RUNWAY 18R/36L AND TAXIWAY M

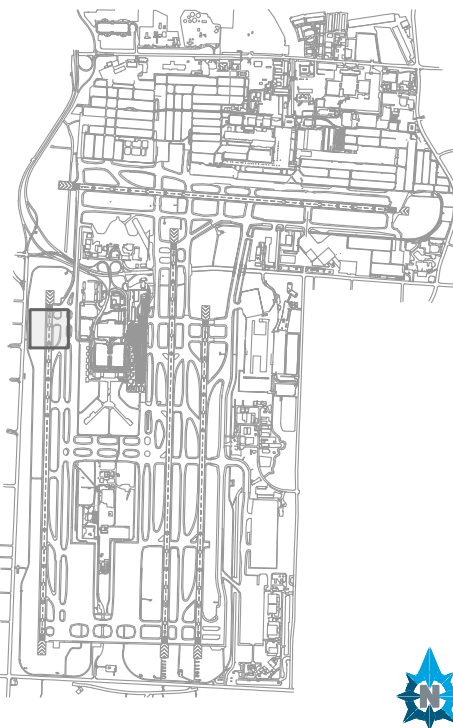
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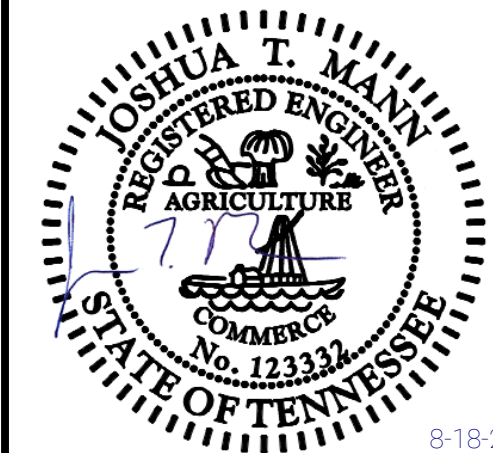
KEY MAP:



NO	DATE	BY	REVISION DESCRIPTION

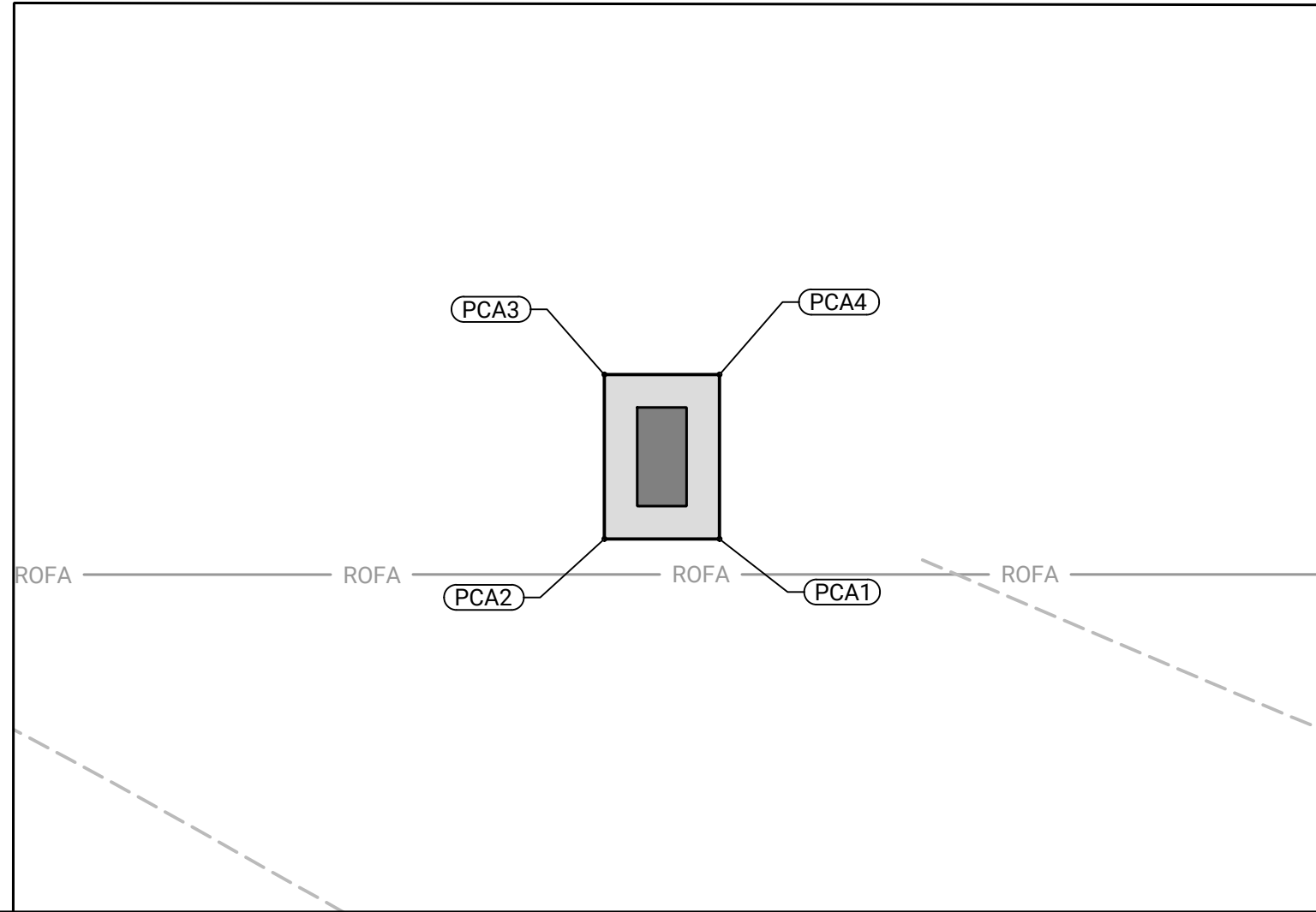
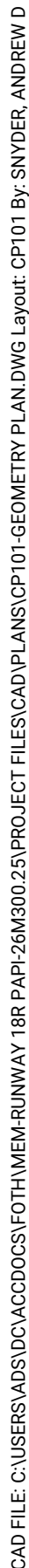
RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

CONSTRUCTION SAFETY AND PHASING
PLAN - PHASE 2



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SP102



— UGE —	EXISTING ELECTRIC - UNDERGROUND
— COMM-AIR —	EXISTING AIRPORT FIBER CABLES - UNDERGROUND
— UGE-FAA —	EXISTING FAA ELECTRIC - UNDERGROUND
- - - XX,X - - -	EXISTING CONTOUR
— ABND CABL —	ABANDONED UTILITIES
	PROPOSED 42" DEEP PAPI CONCRETE FOUNDATION
	PROPOSED 6" CONCRETE PAVEMENT
— RSA —	RUNWAY SAFETY AREA

1. UTILITIES SHOWN ON PLANS ARE APPROXIMATE AND SHALL BE LOCATED BEFORE EXCAVATING.
2. COORDINATION WITH MSCAA OR THE PROJECT ENGINEER, TO POWER OFF CIRCUIT(S), MUST OCCUR BEFORE THE CONTRACTOR BEGINS EXCAVATION.
3. ADJUSTMENTS TO FOUNDATION LOCATIONS MAY NEED OCCUR IF POWER AND/OR COMMUNICATION LINES ARE CLOSER THAN 3 FEET TO A PAPI FOUNDATION.
4. ANTICIPATED EXCAVATION FOR THE PAPI PCA RACK IS APPROXIMATELY 2.1 CUBIC YARDS (56 CUBIC FEET).
5. ANTICIPATED EXCAVATION FOR THE FOUR (4) PAPI FOUNDATIONS AND SURROUNDING PCC PAVEMENT IS APPROXIMATELY 54.4 CUBIC YARDS (1,472 CUBIC FEET).
6. ALL DIMENSIONS, ELEVATIONS, CONTOURS, AND HEIGHTS INDICATED ARE APPROXIMATE AND MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR.

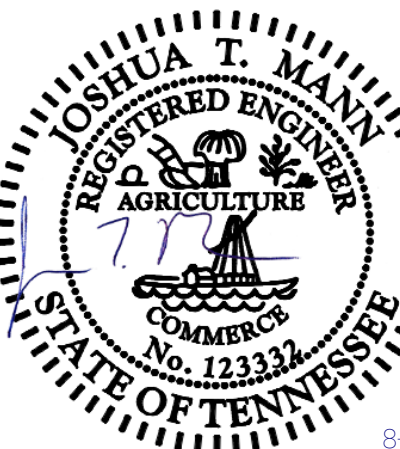
POINT TABLE			
POINT NUMBER	NORTHING	EASTING	FINISHED ELEVATION
W1	283736.70	775100.94	288.95
W2	283724.70	775100.73	288.95
W3	283727.08	774996.75	287.97
W4	283739.08	774997.03	287.97
LHA1-1	283733.81	775095.94	288.90
LHA1-2	283727.82	775095.80	288.90
LHA1-3	283727.91	775091.80	288.90
LHA1-4	283733.91	775091.94	288.90
LHA2-1	283734.50	775065.94	288.67
LHA2-2	283728.50	775065.81	288.67
LHA2-3	283728.60	775061.81	288.67
LHA2-4	283734.59	775061.94	288.67
LHA3-1	283735.19	775035.95	288.38
LHA3-2	283729.19	775035.81	288.38
LHA3-3	283729.28	775031.81	288.38
LHA3-4	283735.28	775031.95	288.38
LHA4-1	283735.88	775005.96	288.10
LHA4-2	283729.88	775005.82	288.10
LHA4-3	283729.97	775001.82	288.10
LHA4-4	283735.97	775001.96	288.10
PCA1	283740.57	774824.87	286.50
PCA2	283733.57	774824.71	286.50
PCA3	283733.80	774814.71	286.50
PCA4	283740.80	774814.87	286.50

ANTICIPATED EXCAVATION	
LOCATION	CUBIC YARDS
PAPI WALKWAY & FOUNDATION	54.5
PCA RACK WALKWAY & FOUNDATION	2.1
TOTAL	56.6

[illegible]

**RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN**

PAPI GEOMETRY PLAN



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CP101

CP501

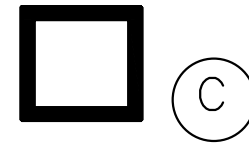
EROSION CONTROL NOTES

1. SEE SHEET CP101 (GEOMETRY PLAN) FOR PAPI LHA AND PCA RACK FOUNDATION ELEVATION INFORMATION.
2. THE CONTRACTOR MUST WATER THE SOD IN ACCORDANCE WITH SPECIFICATION T-904. IF PROPER WATERING IS NOT DONE, THE OWNER MAY SUPPLEMENT THE WATER EFFORTS OF THE CONTRACTOR AND CHARGE THE CONTRACTOR THE EXPENSE.
3. THE ESTIMATED QUANTITY OF SOD SHOWN ON THIS PLAN SHEET IS 900 SY. THIS DOES NOT INCLUDE SODDING REQUIRED DUE TO ANY TEMPORARY HAUL ROADS TO THE PROJECT SITE, AND RESTORATION OF THE STAGING AREA. SODDING REQUIRED FOR RESTORATION OF HAUL ROADS AND STAGING AREA SHALL BE INCLUDED IN THE COST OF THE CONSTRUCTION ACCESS, PROJECT SAFETY AND SECURITY, AND STAGING AREA BID ITEM
4. TOPSOILING FOR THE SODDED AREAS SHALL INCLUDE STRIPPING THE EXISTING TOPSOIL, STOCKPILING THE TOPSOIL OUTSIDE THE RUNWAY OBJECT FREE AREA, AND REINSTALLING THE TOPSOIL WHEN THE SODDING IS INSTALLED. TOPSOILING IS INCIDENTAL TO THE SODDING BID ITEM.

[illegible]

[illegible]

EROSION CONTROL PLAN LEGEND: CATCH BASIN
PROTECTION (TYPE C)



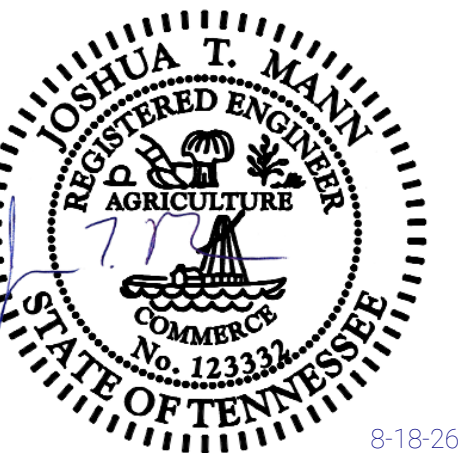
01 FILTER SOCK CHECK DAM (TYPE C)

SCALE: NONE

[illegible]

**RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN**

EROSION CONTROL DETAILS



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CG501

CAD FILE: J:\ACTIVE\18026\001 - MEM - 18R PAPI (FOTH)\S.DESIGNS\BIM\CAD\01\18R PAPI - GENERAL.DWG Layout: EP001 By: EARL M. CARTER

ELECTRICAL ABBREVIATIONS

(NOT ALL ABBREVIATIONS MAY BE USED IN THIS PROJECT)

Ø	-	DIAMETER
#	-	NUMBER
#/C	-	CONDUCTORS PER CABLE (1/C = 1 CONDUCTOR/CABLE)
A, AMP	-	AMPERE(S)
ABAN	-	ABANDON / ABANDONED
AC	-	FAA ADVISORY CIRCULAR
ACP	-	ASPHALTIC CONCRETE PAVEMENT (FLEXIBLE PAVEMENT)
AEV	-	AIRFIELD ELECTRICAL VAULT
AEIC	-	ASSOCIATION OF EDISON ILLUMINATING COMPANIES
AFF	-	ABOVE FINISHED FLOOR
AFG	-	ABOVE FINISHED GRADE
AFL	-	AIRFIELD LIGHTING
AGL	-	ABOVE GROUND LEVEL
AHJ	-	AUTHORITY HAVING JURISDICTION
AIC	-	AMPERE SYMMETRICAL INTERRUPTING CAPACITY RMS
ALCS	-	AIRFIELD LIGHTING CONTROL SYSTEM
ALCMS	-	AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM
ALT	-	ALTERNATE
ALV	-	AIRFIELD LIGHTING VAULT
ANSI	-	AMERICAN NATIONAL STANDARDS INSTITUTE
AOA	-	AIR OPERATIONS AREA
APPROX	-	APPROXIMATE
ASTM	-	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATS	-	AUTOMATIC TRANSFER SWITCH
AUX	-	AUXILIARY
AWG	-	AMERICAN WIRE GAUGE
BFG	-	BELOW FINISHED GRADE
BIT	-	BITUMINOUS
BLDG	-	BUILDING
BSDC	-	BARE SOFT DRAWN COPPER
C	-	CONDUIT
CB	-	CIRCUIT BREAKER; CATCH BASIN
CCR	-	CONSTANT CURRENT REGULATOR
CKT	-	CIRCUIT
¢, CL	-	CENTERLINE
CLR	-	CLEAR
CLSM	-	CONTROLLED LOW STRENGTH MATERIAL (FLOWABLE FILL)
COMM	-	COMMUNICATION
CONC	-	CONCRETE
CP	-	COUNTERPOISE
CSPP	-	CONSTRUCTION SAFETY AND PHASING PLAN
DAC/ DAQ	-	DATA ACQUISITION SYSTEM
DB, DEB	-	DIRECT EARTH BURIED
DEMO	-	DEMOLISH
DIA, Ø	-	DIAMETER
DOA	-	DIVISION OF AVIATION
DWG	-	DRAWING
EA	-	EACH
E	-	EASTING
EB	-	ENGINEERING BRIEF
E.G.	-	EXEMPLI GRATIA, 'FOR EXAMPLE'
EGC	-	EQUIPMENT GROUNDING CONDUCTOR
EL	-	ELEVATION
ELEC	-	ELECTRICAL
ELEV	-	ELEVATION
EMI	-	ELECTROMAGNETIC INTERFERENCE
EMT	-	ELECTRIC METALLIC TUBE CONDUIT
EOP	-	EDGE OF (AIRCRAFT RATED) PAVEMENT
EQ	-	EQUALLY SPACED
ERGL	-	ELEVATED RUNWAY GUARD LIGHTS
ETC	-	ETCETERA, "AND OTHER SIMILAR THINGS", "AND SO FORTH"
ETR	-	EXISTING TO REMAIN
EX	-	EXISTING
EXIST	-	EXISTING
FAA	-	FEDERAL AVIATION ADMINISTRATION
FLV	-	FIELD LIGHTING VAULT
FMC	-	FLEXIBLE METALLIC CONDUIT
FO	-	FIBER OPTIC
FOD	-	FOREIGN OBJECT DEBRIS/DAMAGE
G, GND	-	GROUND
GEC	-	GROUNDING ELECTRODE CONDUCTOR
GFCI	-	GROUND FAULT CIRCUIT INTERRUPTER
GFM	-	GOVERNMENT FURNISHED MATERIALS
GFI	-	GROUND FAULT CIRCUIT INTERRUPTER
GRS	-	GALVANIZED RIGID STEEL (SEE RGS)
GS	-	GLIDE SLOPE (NAVAID)
HH	-	HANDHOLE
ICEA	-	THE INSULATING CABLE ENGINEERS ASSOCIATION
I.G.	-	ID EST, "IN OTHER WORDS"
IEEE	-	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
IES	-	ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA
IFR	-	INSTRUMENT FLIGHT RULES
ILS	-	INSTRUMENT LANDING SYSTEM
IMC	-	INTERMEDIATE METAL CONDUIT
INV	-	INVERT ELEVATION
IP	-	INGRESS PROTECTION (NUMBER INDICATES RATING)
IP	-	INTERSECTION POINT
IRGL	-	IN-PAVEMENT RUNWAY GUARD LIGHTS
ISO	-	ISOLATION
JB	-	JUNCTION BOX
JCB	-	JUNCTION CAN PLAZA
KAIC	-	1,000 AMPERE SYMMETRICAL INTERRUPTING CAPACITY RMS

KCMIL	-	1,000 CIRCULAR MILS (MCM)
KV	-	KILOVOLT
KVA	-	KILOVOLT-AMPERES
KW	-	KILOWATTS
LED	-	LIGHT EMITTING DIODE
LF	-	LINEAR FEET
LIR	-	LOW-IMPACT RESISTANCE
LFMC	-	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
LOC	-	LOCALIZER (NAVAID)
LS	-	LUMP SUM
LTG	-	LIGHTING
MAX	-	MAXIMUM
MH	-	MANHOLE
MIN	-	MINIMUM
MISC	-	MISCELLANEOUS
MLO	-	MAIN LUGS ONLY
MOCP	-	MAXIMUM OVERCURRENT PROTECTION
MOD	-	MODIFY
N	-	NORTHING
N, NEU	-	NEUTRAL
N/A	-	NOT APPLICABLE, NOT AVAILABLE
NAVAID	-	NAVIGATIONAL AID
NEC	-	NFPA 70 - NATIONAL ELECTRICAL CODE
NECA	-	NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
NEMA	-	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NESC	-	NATIONAL ELECTRIC SAFETY CODE
NFPA	-	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	-	NOT IN CONTRACT
NOTAM	-	NOTICE TO AIRMEN (FAA ORDER 7930.2)
NRTL	-	NATIONALLY RECOGNIZED TESTING LABORATORY
NTS	-	NOT TO SCALE
OC	-	ON CENTER
OFA	-	OBJECT FREE AREA
OSHA	-	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
P	-	POLE
PCC	-	PORTLAND CEMENT CONCRETE (RIGID PAVEMENT)
PH	-	PHASE
PPE	-	PERSONAL PROTECTIVE EQUIPMENT
PR	-	PAIR
PSI	-	POUNDS PER SQUARE INCH
PT	-	POTENTIAL TRANSFORMER
PT	-	POINT OF TANGENCY
PVC	-	POLYVINYL CHLORIDE CONDUIT
PWR	-	POWER
QTY	-	QUANTITY
RGS/ RGSC	-	RIGID GALVANIZED STEEL CONDUIT (SEE RMC)
RGL	-	RUNWAY GUARD LIGHTS
RMC	-	RIGID METALLIC CONDUIT
RMS	-	ROOT MEAN SQUARE
ROFA	-	RUNWAY OBJECT FREE AREA
RPR	-	RESIDENT PROJECT REPRESENTATIVE
RPU	-	REMOTE PROCESSING UNIT, REMOTE POWER UNIT
RPZ	-	RUNWAY PROTECTION ZONE
RSA	-	RUNWAY SAFETY AREA
RVR	-	RUNWAY VISUAL RANGE
RW,R/W	-	RUNWAY
SS	-	STAINLESS STEEL
TELECOM	-	TELECOMMUNICATIONS
TEMP	-	TEMPORARY
TOC	-	TOP OF CONCRETE
TOD	-	TOP OF DUCT
TOFA	-	TAXIWAY OBJECT FREE AREA
TP	-	TAPER POINT
TSA	-	TAXIWAY SAFETY AREA
TW, T/W	-	TAXIWAY
TYP	-	TYPICAL
UCDS	-	UNIVERSAL CABLING DISTRIBUTION SYSTEM
UG	-	UNDERGROUND
UL	-	UNDERWRITERS' LABORATORIES, INC.
UNI	-	UNI-DIRECTIONAL
UON	-	UNLESS OTHERWISE NOTED
V	-	VOLTAGE, VOLTS
VA	-	VOLT-AMPERES
W	-	WIRE, WATT
W/	-	WITH
WP	-	WEATHERPROOF EQUIPMENT PROTECTION
XFMR	-	TRANSFORMER

REFER TO THE FOLLOWING REFERENCES FOR ADDITIONAL ABBREVIATIONS NOT DEFINED ABOVE.

- FAA (<https://www.faa.gov/airports/resources/acronyms/>)
- FAA ADVISORY CIRCULAR AC 150/5340-30J APPENDIX C
- NFPA 70 NATIONAL ELECTRICAL CODE (NEC) (<https://www.nfpa.org>)
- NECA 100 (<https://necanet.org>)

ELECTRICAL NOTES

ITEMS AND REQUIREMENTS INCLUDED IN THESE ELECTRICAL NOTES ARE INCIDENTAL TO THE COST OF THIS PROJECT AND SHALL NOT BE CONSIDERED SEPARATE PAY ITEMS, UON.

GENERAL:

1. REFER TO SPECIFICATION L-100 "ELECTRICAL WORK, GENERAL PROVISIONS, AND REQUIREMENTS" FOR DEFINITION OF TERMS.
2. PROVIDE ALL WORK, TOOLS, EQUIPMENT, TRANSPORTATION, SERVICES, LABOR, SUPERVISION, LAYOUT, AND MATERIALS FOR THE INSTALLATION OF COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEMS AS DESCRIBED OR IMPLIED BY THE CONTRACT DOCUMENTS. ITEMS NOT SHOWN BUT NECESSARY FOR COMPLETION OF THE WORK SHALL BE INCLUDED.
3. ELECTRICAL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST APPLICABLE EDITION OF THE FOLLOWING CODES AND GUIDELINES:
 - a. NFPA 70 - NATIONAL ELECTRICAL CODE (NEC)
 - b. NFPA 70E - STANDARD FOR "ELECTRICAL SAFETY IN THE WORKPLACE"
 - c. ALL APPLICABLE NETA STANDARDS
 - d. IEEE C2 - NATIONAL ELECTRIC SAFETY CODE (NESC)
 - e. ELECTRICAL UTILITY GUIDELINES
 - f. FAA-STD-19G - LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING, AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT
 - g. FAA JO 3900.64A - AIR TRAFFIC ORGANIZATION ELECTRICAL SAFETY PROGRAM
 - h. FAA-C-1217H - ELECTRICAL WORK, PREMISES WIRING
 - i. FAA-C-1391f - INSTALLATION, TERMINATION, SPLICING, AND TRANSIENT/SURGE PROTECTION OF UNDERGROUND ELECTRICAL DISTRIBUTION SYSTEM POWER CABLES
 - j. FAA ORDER 6850.2C - VISUAL GUIDANCE LIGHTING SYSTEMS
 - k. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) 29 CFR 1910 GENERAL INDUSTRY SAFETY-RELATED WORK PRACTICES
 - l. ALL OTHER APPLICABLE STANDARDS AND CODES NOT LISTED WHERE REQUIREMENTS OF THE CONTRACT DOCUMENTS ARE IN EXCESS OF THE ABOVE CODE REQUIREMENTS, THE CONTRACT DOCUMENTS SHALL GOVERN. THE LATEST EDITION SHALL BE THE MOST RECENT PUBLICATION DATE IN EFFECT AS OF THE DATE OF THE ADVERTISEMENT FOR BIDS, EXCEPT WHEN A SPECIFIC PUBLICATION DATE IS SPECIFIED.
4. BEARINGS, COORDINATES, AND NORTH ARROWS SHOWN ARE BASED ON TENNESSEE STATE PLANE COORDINATE SYSTEM, USING THE NORTH AMERICAN DATUM OF 1983 (NAD 83) AND NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). REFER TO CIVIL DRAWINGS FOR SURVEY CONTROL MONUMENTS.
5. DARK OR HEAVY LINES AND SYMBOLS INDICATE ELECTRICAL MATERIALS AND EQUIPMENT TO BE FURNISHED, INSTALLED, PROVIDED, OR EXISTING ELECTRICAL INSTALLATION TO BE REMOVED, MODIFIED, ADJUSTED, OR REINSTALLED. DARK OR HEAVY LINES AND SYMBOLS ALSO INDICATE EQUIPMENT SPECIFIED ON OTHER NON-ELECTRICAL DRAWINGS THAT SHALL BE INSTALLED, CONNECTED, AND/OR COMMISSIONED PER ELECTRICAL DRAWINGS AND SPECIFICATIONS.
6. LIGHT OR HALFTONE LINE AND SYMBOLS INDICATE EXISTING ELECTRICAL MATERIALS AND EQUIPMENT TO REMAIN. NON-ELECTRICAL MATERIALS AND EQUIPMENT TO BE FURNISHED, INSTALLED, PROVIDED, OR DEMOLISHED UNDER THIS CONTRACT SHOWN ON OTHER DRAWINGS MAY NOT BE SHOWN OR SHOWN AS LIGHT / HALFTONE LINES AND SYMBOLS. REFER TO NON-ELECTRICAL DRAWINGS FOR ASSOCIATED SCOPE OF WORK.
7. UNLESS DIMENSIONED OR SCHEDULED, LOCATIONS INDICATED FOR DEVICES AND EQUIPMENT ARE APPROXIMATE AND SHALL BE FIELD VERIFIED AND COORDINATED WITH THE ENGINEER. DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO INCLUDE EVERY DETAIL OF CONSTRUCTION, PHASING, MATERIALS, METHODS OF INSTALLATION, CIRCUITRY, EQUIPMENT, OR EXACT ROUTING OF CIRCUITRY. TAKE ACTUAL FIELD MEASUREMENTS AT THE JOB SITE IN LIEU OF SCALING THE DRAWINGS.
8. CONDUCT SURVEY AND FIELD MEASUREMENTS OF EXISTING CONDITIONS (DIMENSIONS, ELEVATIONS) AS REQUIRED TO LOCATE AND ALIGN NEW FIXTURES, STRUCTURES, DEVICES, AND OTHER EQUIPMENT. FIELD MEASUREMENTS SHALL BE PERFORMED PRIOR TO THE PREPARATION OF SHOP DRAWINGS, MANUFACTURING, FABRICATION, AND INSTALLATION OF EQUIPMENT TO BE INSTALLED. NOTIFY THE ENGINEER OF ANY CONFLICTS WITH THE CONTRACT DRAWING REQUIREMENTS AND EXISTING CONDITIONS PRIOR TO THE PREPARATION OF SHOP DRAWINGS.
9. MAINTAIN A SINGLE CLEAN MASTER MARK-UP SET OF DRAWINGS ON THE JOB SITE AT ALL TIMES, SHOWING AS-BUILT CONDITIONS AND MAKE AVAILABLE FOR PERIODIC REVIEW. ALL CHANGES OR CLARIFICATIONS TO THE INSTALLATION MADE IN THE FIELD SHALL BE REFLECTED ON THE MASTER SET WITHIN 24 HOURS OF MAKING ANY CHANGES FROM THE CONSTRUCTION DOCUMENTS. TURN IN THE MASTER MARKUP SET TO THE ENGINEER AT THE END OF CONSTRUCTION.
10. REPORT ANY DISCOVERED CONFLICTS WITHIN THE CONTRACT DOCUMENTS OR WITH EXISTING CONDITIONS IN THE FIELD TO THE ENGINEER WITHIN 24 HOURS. SUBMIT PHOTOGRAPHS AND/OR SKETCHES TO CLARIFY CONDITIONS UPON REQUEST.

11. MAINTAIN ALL EXISTING AIRFIELD LIGHTING SYSTEMS IN OPERATIONAL CONDITION UNLESS OTHERWISE APPROVED. COORDINATE ALL OUTAGES WITH THE ENGINEER, OWNER, AND FAA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED IMMEDIATELY AT NO ADDITIONAL COST.
12. ANY DAMAGE TO EXISTING CIRCUITS CAUSED BY THE CONTRACTOR'S EQUIPMENT OR PERSONNEL SHALL BE REPAIRED IMMEDIATELY AND OPERATIONAL WITHIN 24 HOURS BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER AND ENGINEER.
13. MAINTAIN ELECTRICAL SERVICE TO ALL EQUIPMENT AFFECTED BY THE SCOPE OF THE PROJECT. ANY REQUIREMENTS FOR TEMPORARY ELECTRICAL POWER SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

SAFETY:

14. COORDINATE ALL WORK WITH THE CONSTRUCTION SAFETY AND PHASING PLANS (CSPP).
15. COMPLY WITH FAA ADVISORY CIRCULAR AC 150/5370-2G (LATEST EDITION), "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
16. PERFORM ALL WORK IN CONFORMANCE WITH ALL STATE, FEDERAL, UTILITY AND CONTRACT REQUIREMENTS. DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL COMPLY WITH ALL APPLICABLE OSHA CODE OF FEDERAL REGULATIONS 29 SECTION 1926.
17. LOCKOUT/TAGOUT: THE CONTRACTOR SHALL COMPLY WITH OSHA 29 CFR 1910, NFPA 70E, AND FAA REQUIREMENTS FOR ALL LOCKOUT/TAGOUT PROCEDURES. PROVIDE AND MAINTAIN A LOCKOUT/TAGOUT KIT ON SITE AT ALL TIMES. COORDINATE ALL LOCKOUT/TAGOUT ACTIVITIES A MINIMUM OF 72 HOURS IN ADVANCE WITH THE ENGINEER, OWNER, FAA SSC, AND AIRPORT OPERATIONS, AS APPLICABLE. NO WORK SHALL BE PERFORMED ON ENERGIZED FAA ELECTRICAL CIRCUITS. ALL LOCKOUT/ TAGOUT PROCEDURES ON FAA CIRCUITS TO BE PERFORMED BY SSC. IMMEDIATELY NOTIFY THE ENGINEER, OWNER, AND AIRPORT OPERATIONS WHEN CIRCUITS ARE DE-ENERGIZED, RE-ENERGIZED, OR RETURNED TO NORMAL OPERATION.
18. METERS SHALL BE TRUE RMS TYPE, CALIBRATED, AND RATED FOR MAXIMUM POSSIBLE VOLTAGE PRESENT ON CIRCUIT METERED. 5KV CONSTANT CURRENT CIRCUITS SHALL NOT BE MANUALLY METERED WHILE ENERGIZED.
19. UNDERGROUND STRUCTURES (MANHOLES AND HANDHOLES) MAY BE FILLED WITH WATER AND NOXIOUS FUMES. DEWATER ENCLOSURES, PROVIDE GAS-FREE TESTING, AND PROVIDE WORKERS WITH SAFETY EQUIPMENT FOR CONFINED SPACE OPERATIONS WHEN ENTERING MANHOLES AND HANDHOLES. COMPLY WITH LOCAL AND OSHA SAFETY REQUIREMENTS FOR ENTERING CONFINED SPACES AND OBTAIN ANY AND ALL PERMITS REQUIRED FOR DEWATERING AND CONFINED SPACE ENTRY.
20. CONTACT UTILITIES PRIOR TO STARTING WORK AND UTILIZE A UTILITY LOCATING SERVICE TO IDENTIFY ALL UNDERGROUND SERVICES WITHIN THE LIMITS OF CONSTRUCTION.
21. THE CONTRACTOR SHALL HAVE A TONE GENERATOR TYPE CABLE TRACER ON SITE AT ALL TIMES.
22. MAINTAIN ALL UTILITY MARKINGS WITHIN THE LIMITS OF CONSTRUCTION.
23. PROVIDE MULTIPLE SAFETY ACCESS AND STRUCTURAL SHEETING/SHORING IN TRENCHES AND EXCAVATIONS AS REQUIRED BY OSHA GUIDELINES FOR TRENCH WORKER SAFETY.
24. AT THE END OF EACH WORKDAY, BACKFILL ALL EXCAVATIONS. IF BACKFILLING EXCAVATIONS IS IMPRACTICAL, SECURE STRUCTURAL PLATE OVER EXCAVATIONS CAPABLE OF WITHSTANDING WEIGHT OF HEAVIEST AIRCRAFT OR VEHICULAR TRAFFIC WITHOUT DAMAGING AIRCRAFT OF VEHICLE. UNCOVERED OPEN EXCAVATIONS ARE PROHIBITED WHEN CONTRACTOR LEAVES WORK SITE.
25. INSTALLATIONS WITHIN FOUR (4) FEET OF ANY KNOWN OR SUSPECTED UNDERGROUND UTILITY SHALL BE HAND DUG.

MATERIALS:

26. MANUFACTURER'S NAMES AND MODEL NUMBERS MAY BE GIVEN FOR DESCRIPTIVE PURPOSES, TO INDICATE A LEVEL OF QUALITY AND ARE NOT INTENDED TO LIMIT PRODUCTS TO A SINGLE MANUFACTURER. PRODUCTS MUST BE DEEMED "EQUAL" AND APPROVED BY THE ENGINEER DURING SUBMITTAL REVIEW PRIOR TO PURCHASE.
27. IDENTIFY LONG LEAD PRODUCTS AND MATERIALS (E.G. DISTRIBUTION EQUIPMENT, L-824 CABLING, LIGHT FIXTURES, BASE CANS, CONDUIT, ETC) THAT ARE CRITICAL FOR SUCCESSFUL COMPLETION OF PROJECT WITHIN PROJECT DEADLINES. SUBMIT LONG LEAD /CRITICAL PATH PRODUCTS AND MATERIALS WITHIN 30 CALENDAR DAYS OF CONTRACT AWARD.

PREPARED FOR:



PREPARED BY:



KEY MAP:

NO	DATE	BY	REVISION DESCRIPTION

RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

ELECTRICAL NOTES AND
ABBREVIATIONS



DESIGNED: COO	DRAWN: COO	CHECKED: VER
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PROJECT NO: 0026M300.25

PRINT DATE: 8/17/2026

SHEET NO.

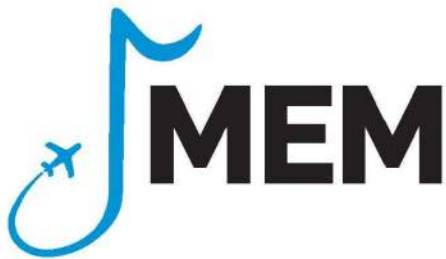
EP001

ELECTRICAL SYMBOL LEGEND

(NOT ALL SYMBOLS MAY BE USED FOR THIS PROJECT)

SYMBOL LEGEND NOTES		
SUFFIXES "(XX)" TYP TO ALL SYMBOLS, UON. NO SUFFIX = "EX" (DEFAULT), "NN" OR "RR" (DEFAULT IF SYMBOL IS BOLD) EX = EXISTING TO REMAIN NN = NEW FIXTURE/SIGN ON NEW FOUNDATION/BASE SUFFIX "[#####]" = UNIQUE FIXTURE ID - SURVEY NORTHING/EASTING OR BASELINE STATION/OFFSET LOCATION POINT IS CENTER OF SYMBOL, UON - REFER TO SHEETS EP201-EP210 FOR DETAILS - REFER TO CIVIL SHEETS AND STANDARD NECA 100-2013 FOR SYMBOLS NOT DEFINED ON THIS SHEET		
TRENCH / CONDUIT / DUCTBANK LABEL LEGEND		
(XX) [#####] (XX) LOCATION POINT (XX) B A 4 BOX PRECISION APPROACH PATH INDICATOR (PAPI) LIGHT HOUSING ASSEMBLY (LHA); INTEGRAL BAFFLES; L-867B (12"Ø) CLASS 1A BASE; UON. LOCATION POINT = CENTER OF PAPI LHA LENS. EXISTING= L-880/1NEW= L-880/1(L) LED TYPE FA-30200 EXISTING= L-858	(XX) ZZZZ H ZZZZ [#####] H NON-AIRCRAFT RATED ELECTRICAL 3'X3'X3' HAND HOLE, UON SUFFIX "ZZZZ" NO SUFFIX = AIRFIELD LTG CKTS "AFL" (DEFAULT) AFL = AIRFIELD LTG CKTS COMM = TELECOMMUNICATIONS/ CONTROLS ELEC = ELECTRICAL FO = FIBER OPTIC HV = HIGH VOLTAGE (XX) EXISTING TO NEW CONDUIT/DUCTBANK CONNECTION POINT (XX) EXISTING TO NEW CABLE SPLICE POINT (XX) OR 3/4" x 10'-0" COPPER CLAD GROUND ROD (EXOTHERMIC BOND) (XX) DIRECT EARTH BURIED CABLE TRENCH, UON (XX) CONDUIT TRENCH (CONCRETE ENCASED 1-2"PVC SCHEDULE 40), UON (XX) CONCRETE ENCASED DUCTBANK, UON (XX) DIRECTIONAL BORE CONDUIT (HDPE SDR 11), UON (XX) FIBER OPTIC CABLE/CONDUIT/DUCTBANK (XX) FAA CABLE/CONDUIT/DUCTBANK (XX) DRAINAGE CONDUIT CONNECTION TO DRAINAGE STRUCTURE. COORDINATE WITH CIVIL LAYOUT DRAWINGS, INCIDENTAL TO ASSOCIATED STRUCTURES. (XX) DRAINAGE CONDUIT (1-2"PVC SCHEDULE 40), INCIDENTAL TO ASSOCIATED STRUCTURE, UON (XX) ABANDONED CONDUIT/CABLE (XX) GENERAL FAA AREA DESIGNATIONS "XXX" DEFINITIONS RSA = RUNWAY SAFETY AREA ROFA = RUNWAY OBJECT FREE AREA TSA = TAXIWAY SAFETY AREA TOFA = TAXIWAY OBJECT FREE AREA GS CA = GLIDE SLOPE CRITICAL AREA LOC CA = LOCALIZER CRITICAL AREA RPZ = RUNWAY PROTECTION ZONE APCH = RUNWAY PROTECTION ZONE APPROACH DEP = RUNWAY PROTECTION ZONE DEPARTURE (XX) CONSTANT CURRENT REGULATOR (CCR). VOLTAGE AND CURRENT RATINGS AS INDICATED. (XX) CIRCUIT BREAKER. RATINGS AS INDICATED. (XX) TRANSFORMER. RATINGS AS INDICATED. (XX) FUSED CUTOUT SWITCH	

PREPARED FOR



PREPARED BY:



KEY MAP:

[illegible]

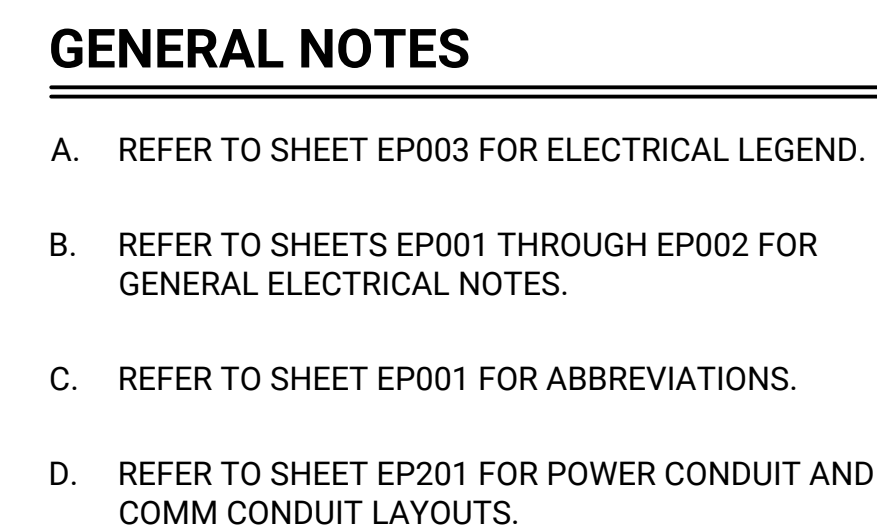
**RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN**

ELECTRICAL SYMBOL LEGEND



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PROJECT NO: 0026M300.25		
PRINT DATE: 8/17/2026		
SHEET NO.		

EP003



PREPARED BY:

 **ARORA®**

KEY MAP:

[illegible]

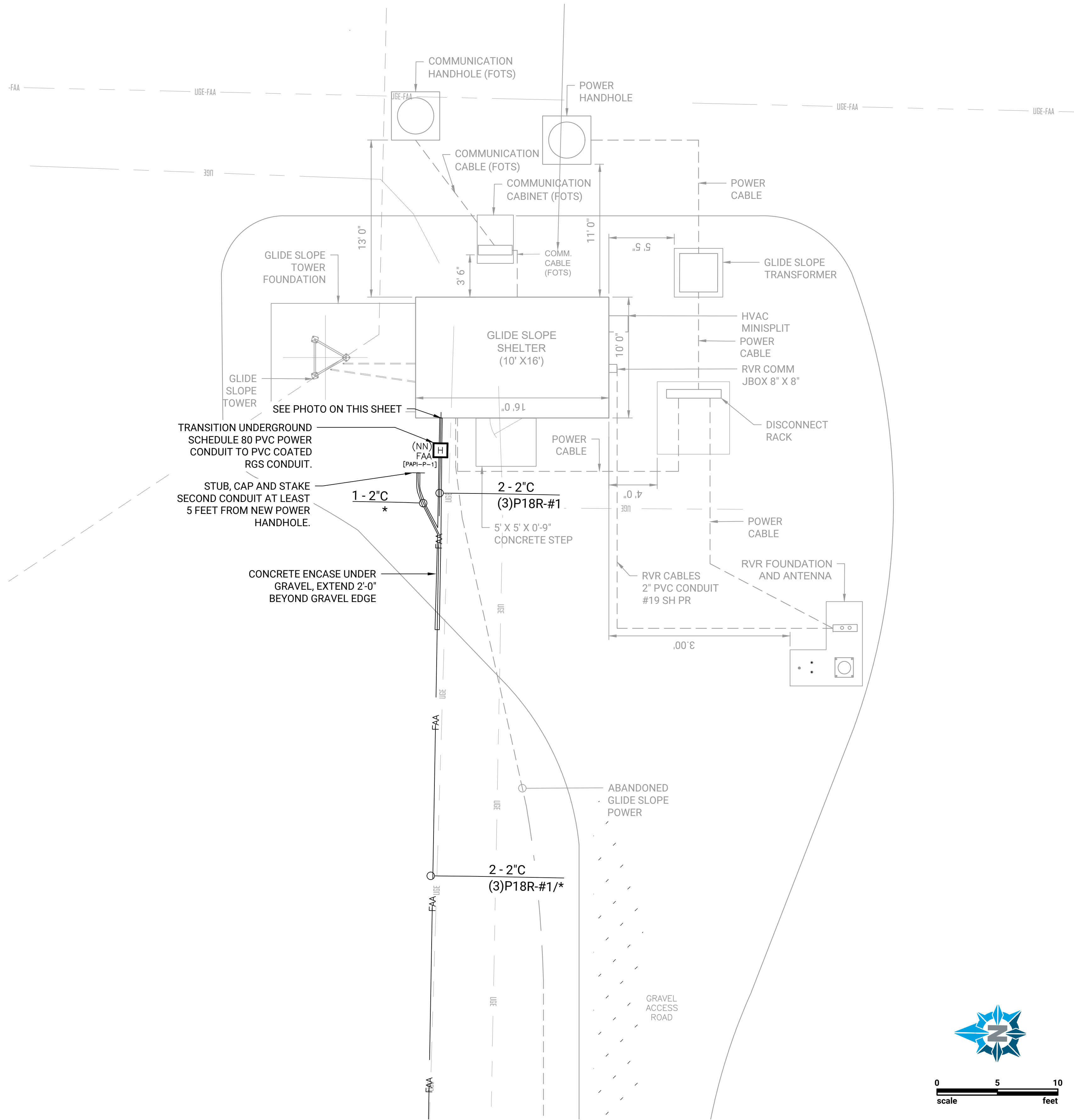
**RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN**



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PROJECT NO: 0026M300.25		
PRINT DATE: 8/17/2026		
SHEET NO.		

EP101

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1 GLIDE SLOPE SHELTER ELECTRICAL LAYOUT PLAN

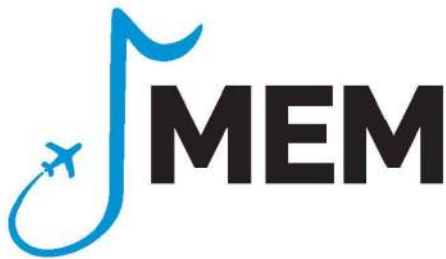


2 CONDUIT CONNECTION LOCATION PHOTO
SCALE: NONE

GENERAL NOTES

- A. REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- B. REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- C. REFER TO SHEET EP001 FOR ABBREVIATIONS.
- D. CONTRACTOR IS NOT ALLOWED IN THE GLIDE SLOPE SHELTER WITHOUT FAA PRESENT AT ALL TIMES. WORK SHOULD BE PLANNED AND COMMUNICATED SO FAA IS PRESENT.
- E. REFER TO DRAWING EP101 FOR CONTINUATION OF CIRCUITRY AND ADDITIONAL INFORMATION.
- F. CONTRACTOR SHALL LOCATE AND PROTECT THE EXISTING EES AND GROUND RING AROUND THE FAA SHELTER FROM DAMAGE OR DISTURBANCE. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY APPURTENANCES TO ENSURE THE EXISTING GROUNDING SYSTEM IS COMPLETE, FULLY FUNCTIONAL, AND COMPLIANT WITH APPLICABLE FAA STANDARDS.

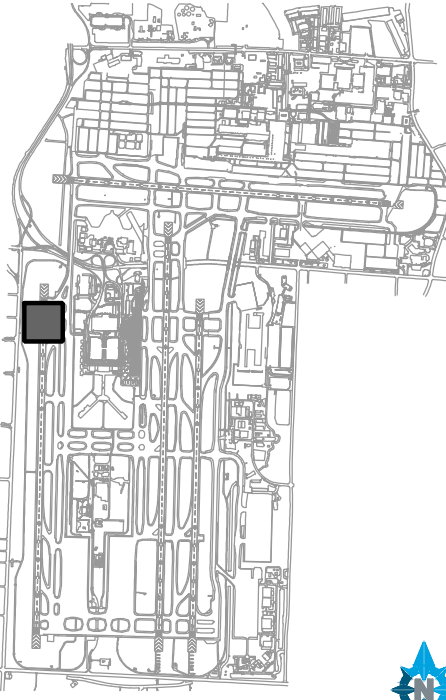
PREPARED FOR:



PREPARED BY:



KEY MAP:



NO	DATE	BY	REVISION DESCRIPTION

RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

GLIDE SLOPE SHELTER
ELECTRICAL LAYOUT PLAN



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PROJECT NO: 0026M300.25		
PRINT DATE: 8/17/2026		
SHEET NO.		

EP102



NO	DATE	BY	REVISION DESCRIPTION
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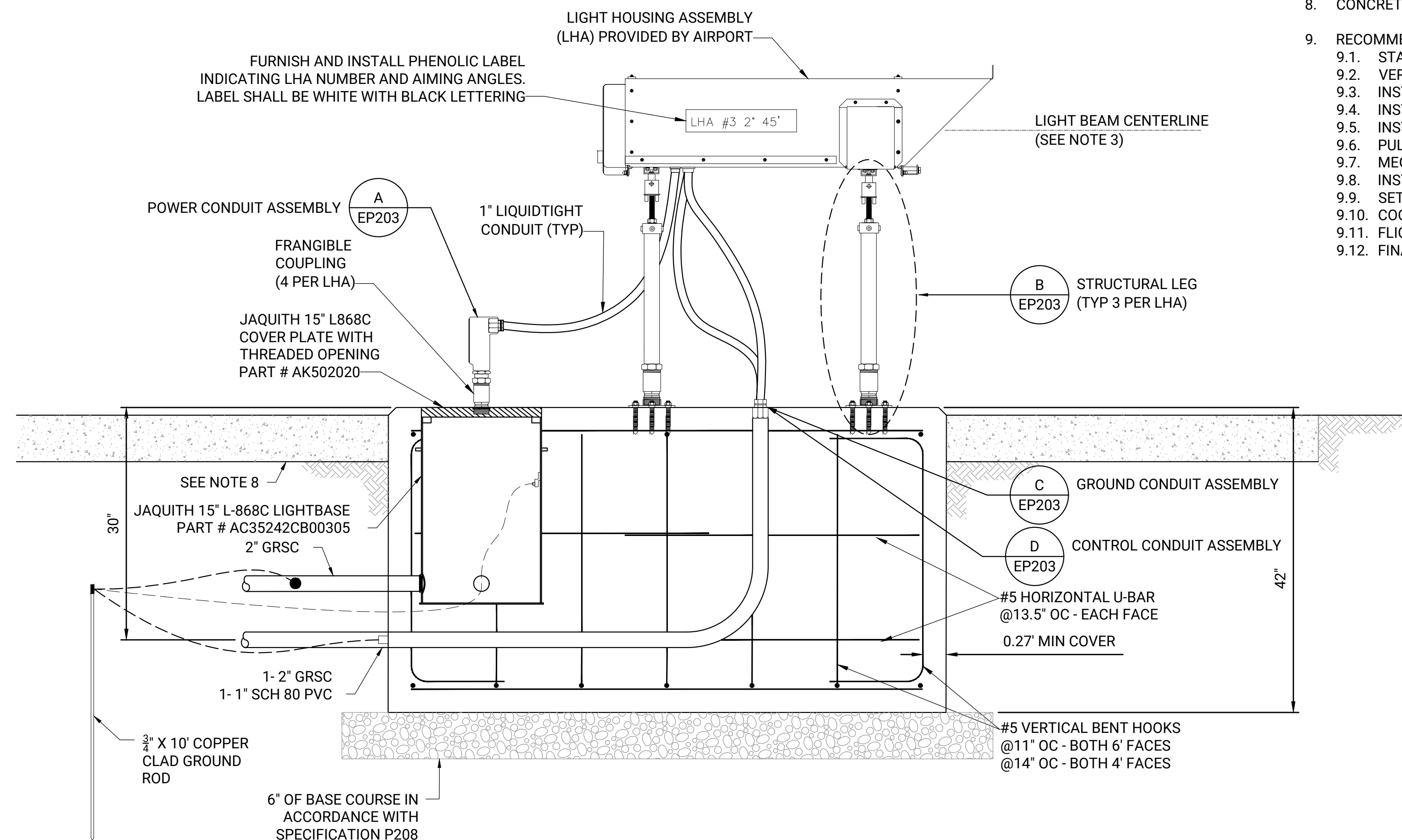
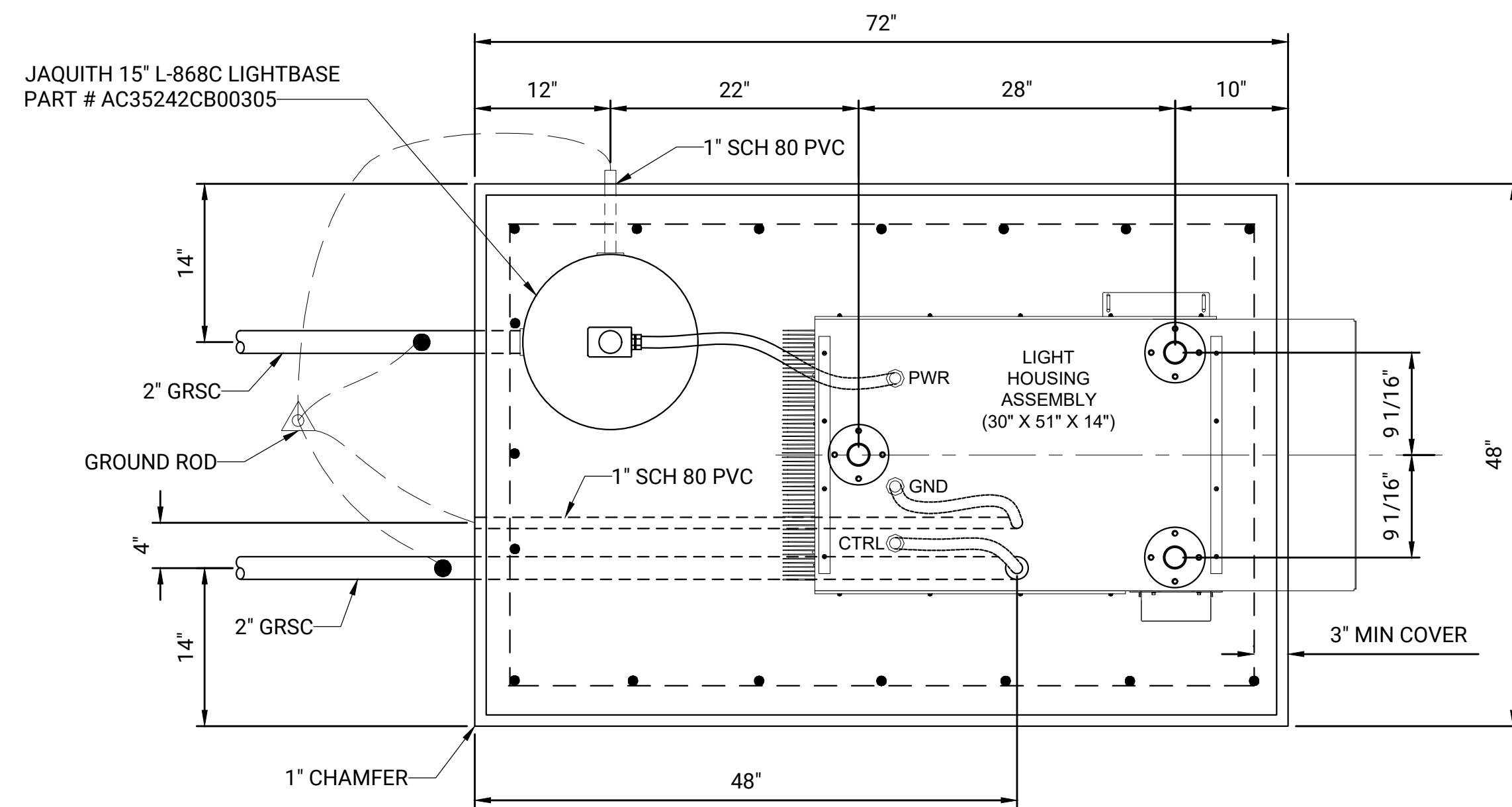
PAPI LAMP HOUSING ASSEMBLY (LHA) CONDUIT CONFIGURATION PLAN



EP201

- A. REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- B. REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- C. REFER TO SHEET EP001 FOR ABBREVIATIONS.





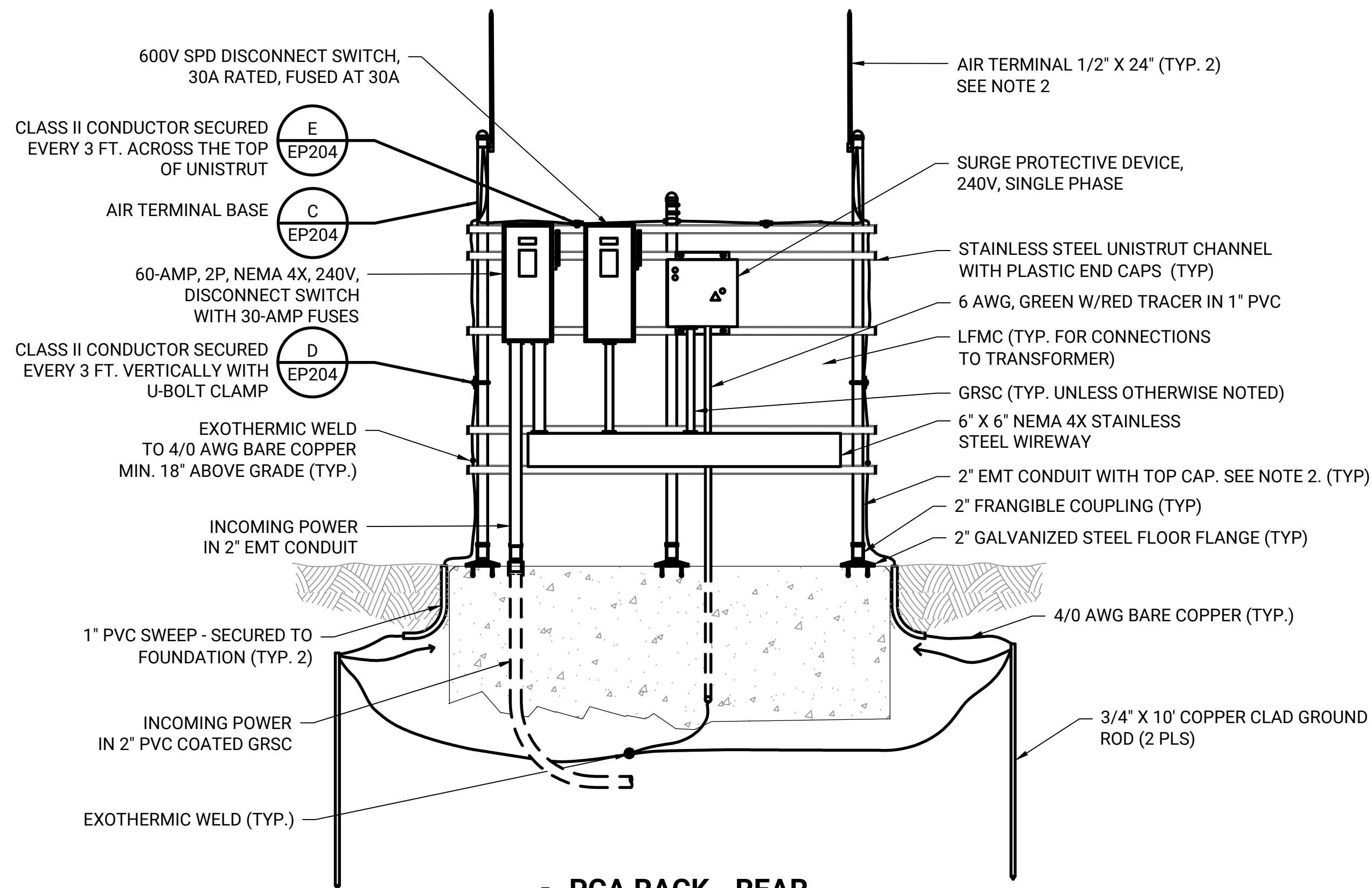
EP202



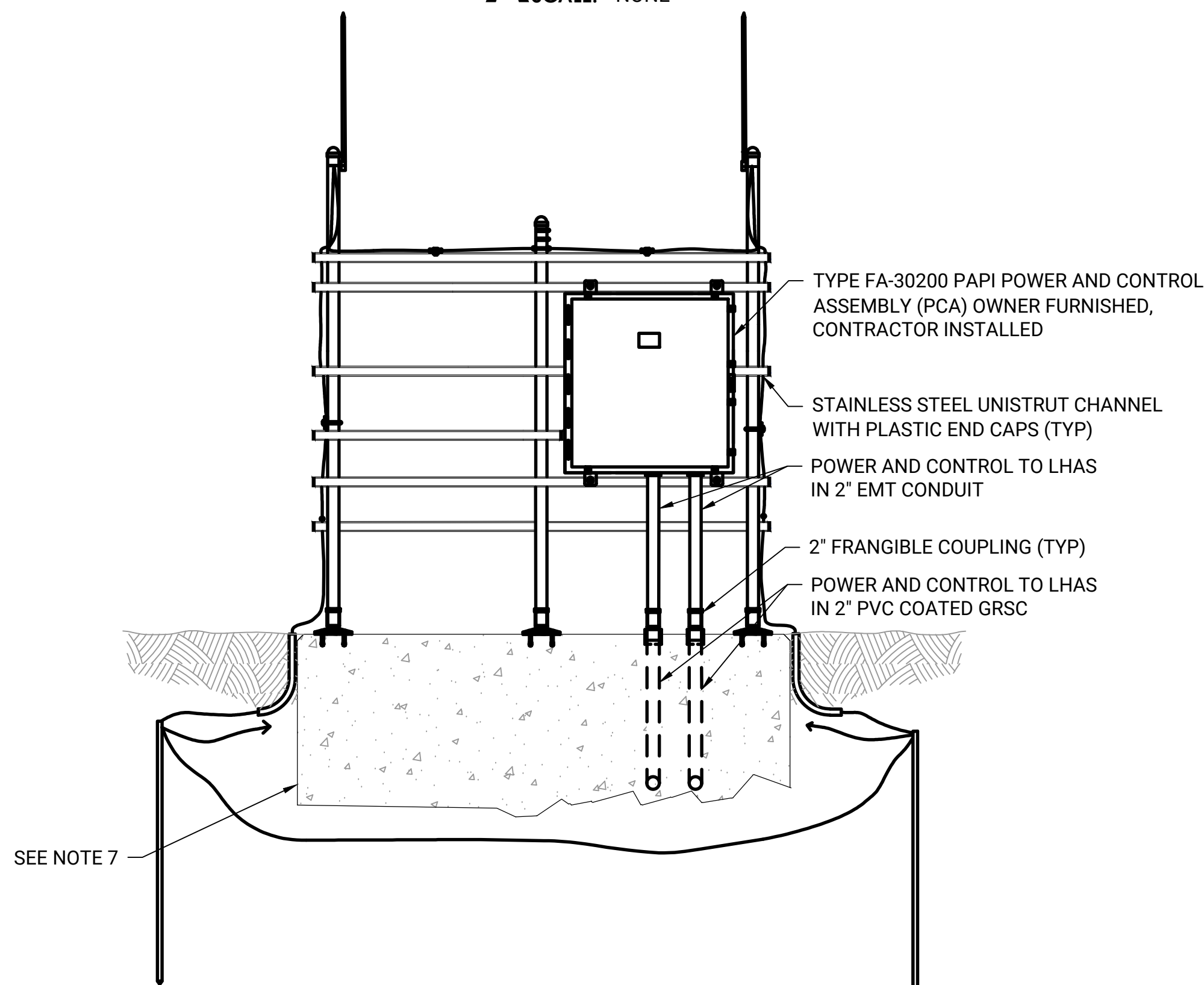
- A. REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- B. REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- C. REFER TO SHEET EP001 FOR ABBREVIATIONS.



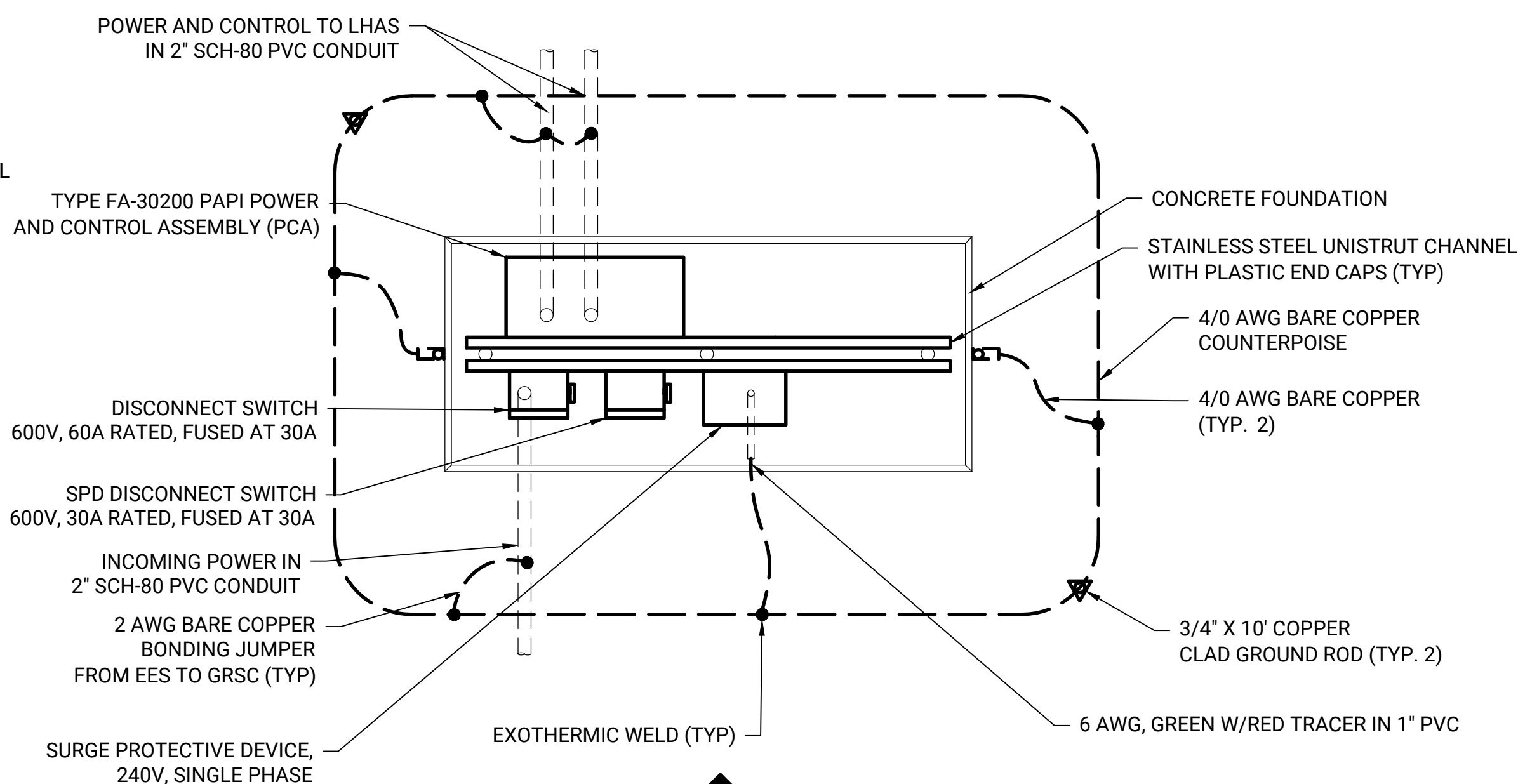
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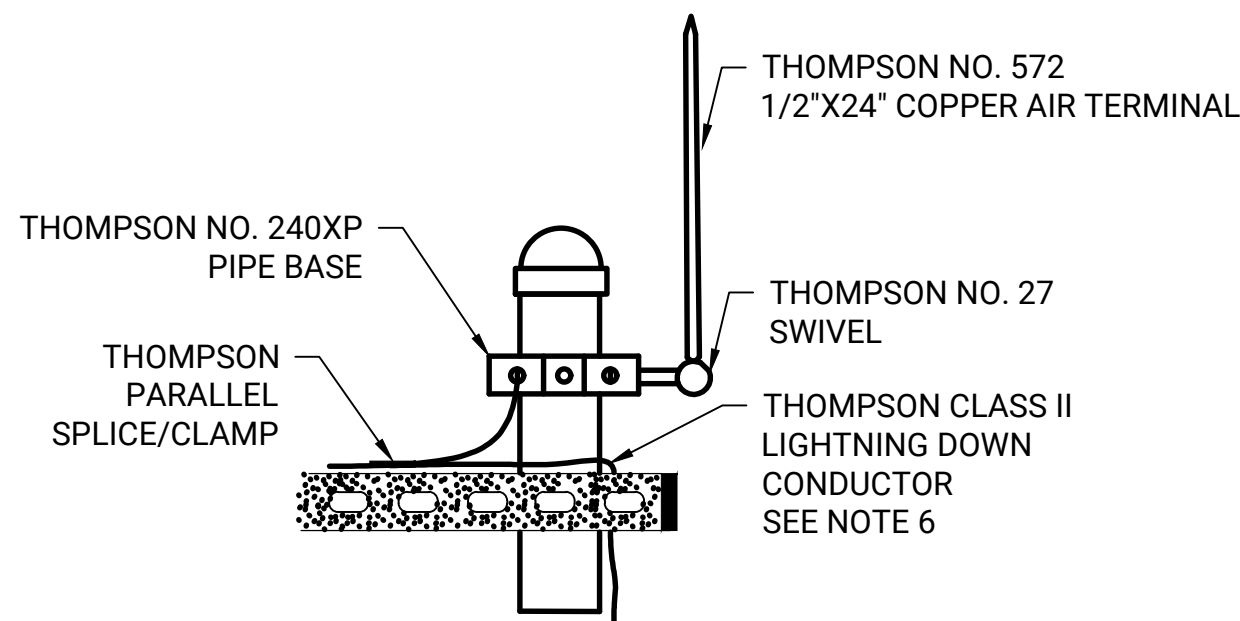
A PCA RACK - REAR
SCALE: NONE



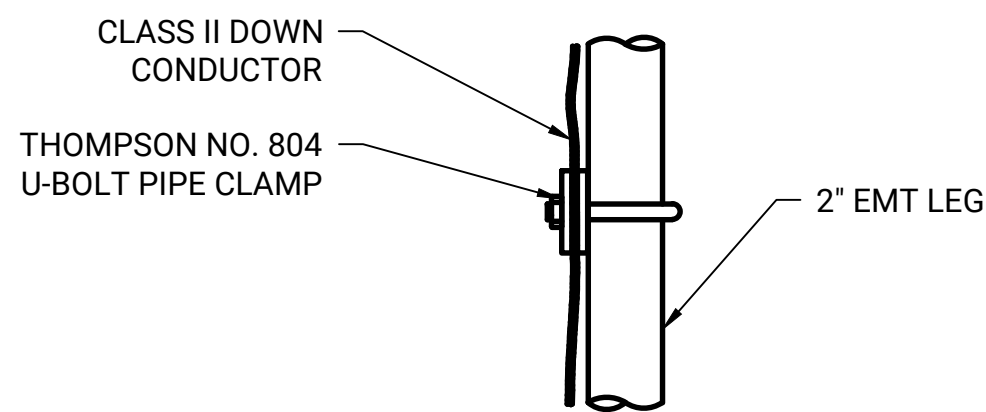
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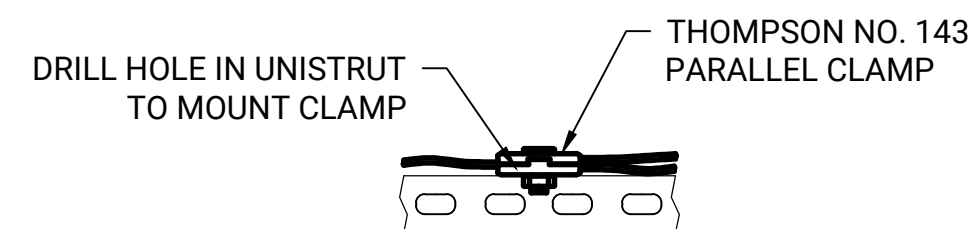
1 PCA RACK - PLAN
SCALE: NONE



C AIR TERMINAL
SCALE: NONE



D CLASS II DOWN CONDUCTOR U-BOLT
SCALE: NONE



E CLASS II DOWN CONDUCTOR PARALLEL
SCALE: NONE

GENERAL NOTES

- REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- REFER TO SHEET EP001 FOR ABBREVIATIONS.

DETAIL NOTES:

- DUCT SEAL ALL CONDUITS COMING FROM UNDERGROUND AND ALL CONDUITS ENTERING SPD.
- AIR TERMINALS MUST EXTEND AT LEAST 10' ABOVE THE EQUIPMENT AND ANTENNAS BEING PROTECTED. ESTABLISH THE OVERALL HEIGHT OF THE RACK SUPPORT POSTS WITH RESPECT TO THIS REQUIREMENT.
- USE STAINLESS STEEL, WATER RESISTANT HUBS WHERE CONDUITS PENETRATE ENCLOSURES. HUBS SHALL HAVE CAPTIVE O-RING GASKETS TO ASSURE POSITIVE WATER AND DUST TIGHT INSTALLATIONS. HUBS SHALL HAVE GROUNDING SCREW ON LOCKNUT.
- SEE ONE-LINE DIAGRAM ON SHEET EP207 FOR DETAILED EQUIPMENT INFORMATION AND CONDUIT SIZES BETWEEN EQUIPMENT.
- USE LIGHTNING PROTECTION COMPONENTS SHOWN OR APPROVED EQUALS UL LISTED FOR LIGHTING PROTECTION (UL96).
- ALL UNDERGROUND RIGID STEEL CONDUIT SHALL BE PVC COATED, INCLUDING ALL SWEEPS TO ABOVE GRADE.
- REFER TO CIVIL SHEET CP502 FOR PCA RACK FOUNDATION DETAILS.

PREPARED FOR:



PREPARED BY:



KEY MAP:

REVISION DESCRIPTION	BY	DATE	NO

RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

PAPI PCA RACK DETAILS



DESIGNED: COO DRAWN: COO CHECKED: MKA

PROJECT NO: 0026M300.25

PRINT DATE: 8/17/2026

SHEET NO.

EP204



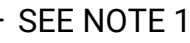
■ **SCALE:** NONE



A SCALE: NONE



C INTERIOR
SCALE: NONE



D SCALE: NONE



D INTERIOR
SCALE: NONE

DETAIL NOTES:

1. UTILIZE POLE POSITIONS 17 AND 19 TO PROVIDE (1) 2P 30AMP CIRCUIT BREAKER WITH MAXIMUM COMPATIBLE SIZE CONDUCTORS APPROPRIATE FOR EXISTING DISTRIBUTION PANEL.
2. PROVIDE (1) 2" ELECTRICAL METALLIC TUBING CONNECTING THE EXTERIOR 2" CONDUIT TO THE 6" X 6" WIRE TROUGH THROUGH THE NEW WALL PENETRATION.
3. ROUTE NEW CIRCUIT CABLES THROUGH NEW CONDUIT AND EXISTING WIRE TROUGH TO EXISTING WALL PENETRATION ON NORTH SIDE WALL. SPLICE #1 AWG CONDUCTORS TO THE NEW CIRCUIT CONDUCTORS FROM THE NEW 30-AMP CIRCUIT BREAKER IN WIRE TROUGH.
4. SEE SHEET EP206 FOR EXTERIOR CONDUIT ROUTING OF NEW PAPI CIRCUIT.

- A. REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- B. REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- C. REFER TO SHEET EP001 FOR ABBREVIATIONS.

[illegible]

RWY 18R GLIDE SLOPE SHELTER INTERIOR PLAN AND ELEVATIONS



EP205



NO	DATE	BY	REVISION DESCRIPTION
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**RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN**

RWY 18R GLIDE SLOPE SHELTER NORTH SIDE EXTERIOR ELEVATION



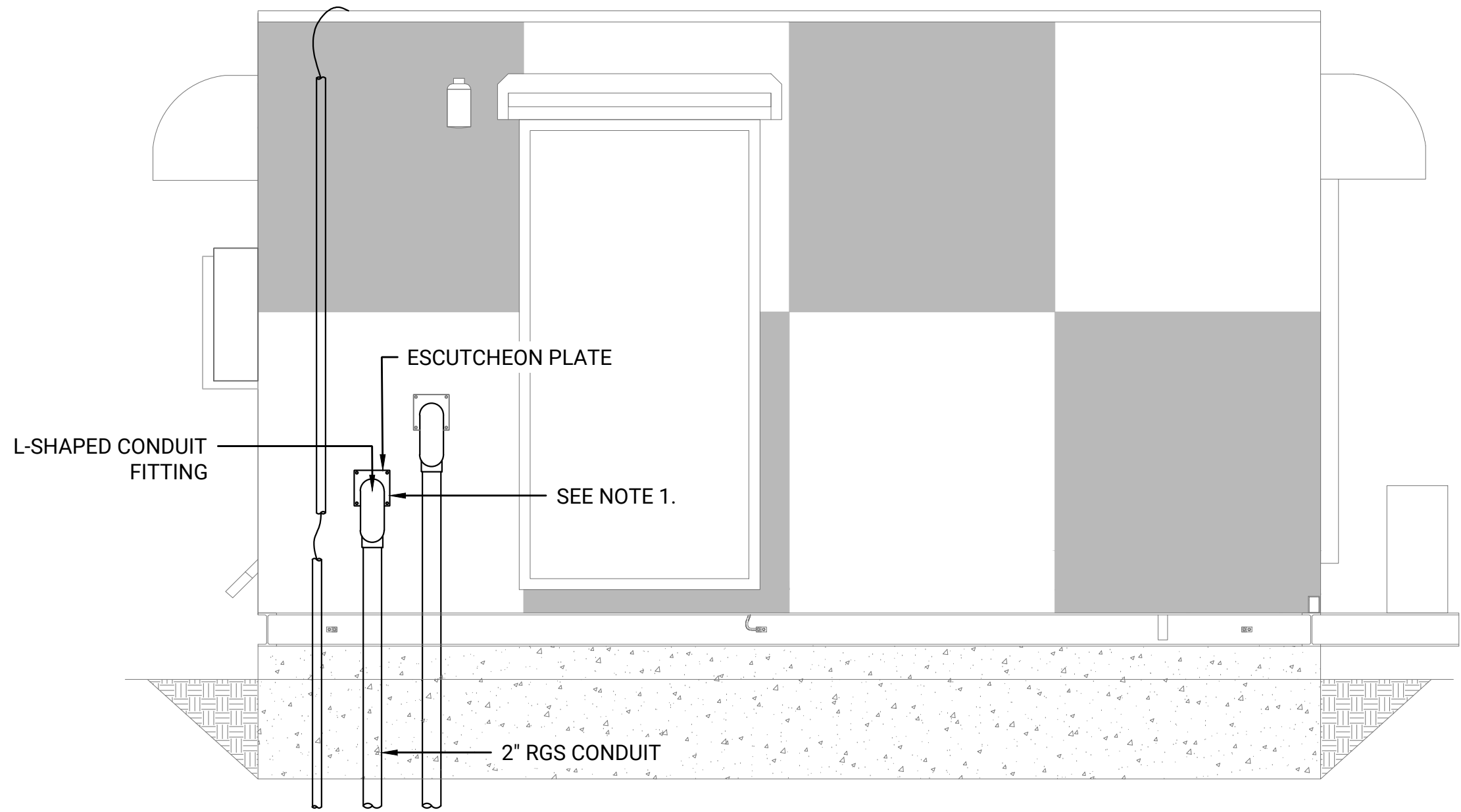
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PROJECT NO: 0026M300.25

PRINT DATE: 8/17/2026

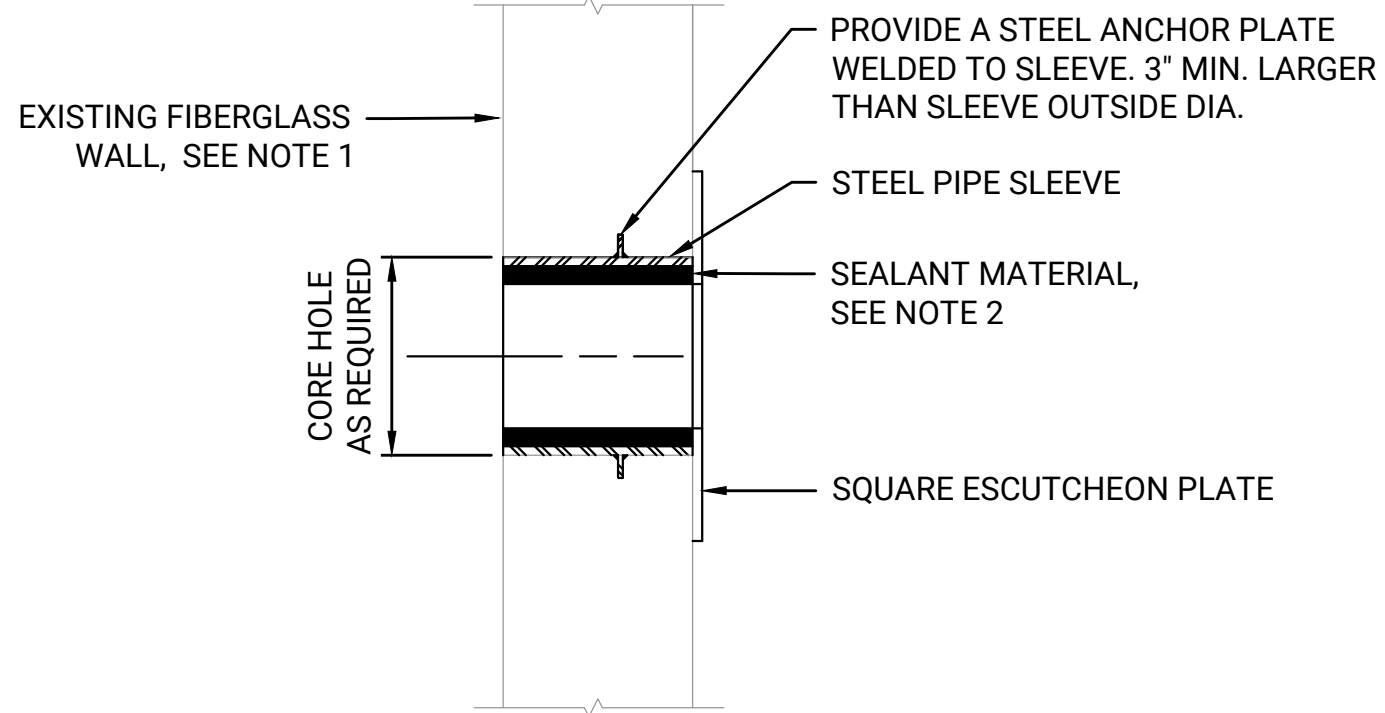
EP206

- A. REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- B. REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- C. REFER TO SHEET EP001 FOR ABBREVIATIONS.
- D. CONTRACTOR IS NOT ALLOWED IN THE GLIDE SLOPE SHELTER WITHOUT FAA PRESENT AT ALL TIMES. WORK SHOULD BE PLANNED AND COMMUNICATED SO FAA IS PRESENT.



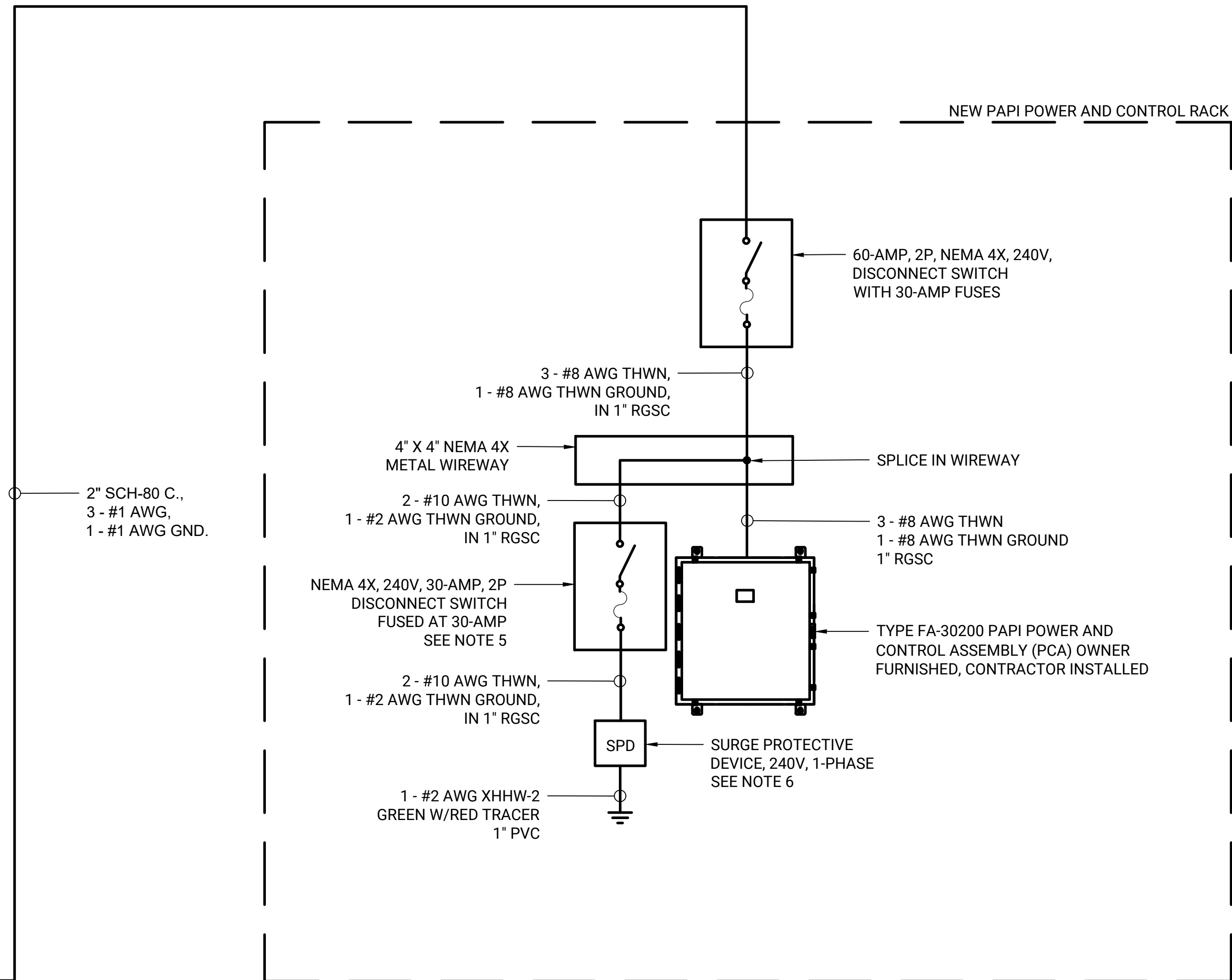
1. PROVIDE A ROUND CONDUIT PENETRATION THROUGH THE EXISTING FIBERGLASS SHELTER WALL, LOCATED UNDERNEATH INTERIOR WIRE TROUGH. ROUTE 2" RGS CONDUIT THROUGH EXTERIOR WEST SIDE WALL. RUN CONDUIT SOUTH ALONG EXTERIOR WEST SIDE WALL TO GRAVEL. ROUTE NEW PAPI CONTROL UNIT CIRCUIT THROUGH NEW 2" RGS CONDUIT. CONTRACTOR SHALL VERIFY EXACT LOCATION IN THE FIELD PRIOR TO CORING.
2. TRANSITION 2" RGS CONDUIT TO PVC COATED RGS CONDUIT AT GRADE. RUN PVC COATED RGS CONDUIT TO NEW POWER HANDHOLE.
3. CONCRETE ENCASE ALL UNDERGROUND CONDUITS UNDERNEATH GLIDE SLOPE SHELTER DRIVEWAY PAVEMENT. SEE SHEET EP210 FOR UNDERGROUND CONDUIT TRENCH DETAILS.

SCALE: NONE



1. REFER TO FAA PROVIDED DRAWINGS FOR WALL MATERIAL AND DIMENSIONS.
2. PROVIDE UL LISTED WATERTIGHT SEALING MATERIAL.
3. PROVIDE EXTERIOR ESCUTCHEON PLATE FLUSH AGAINST WALL OF SIZE TO COMPLETELY COVER OPENING IN EXPOSED AREAS ONLY.

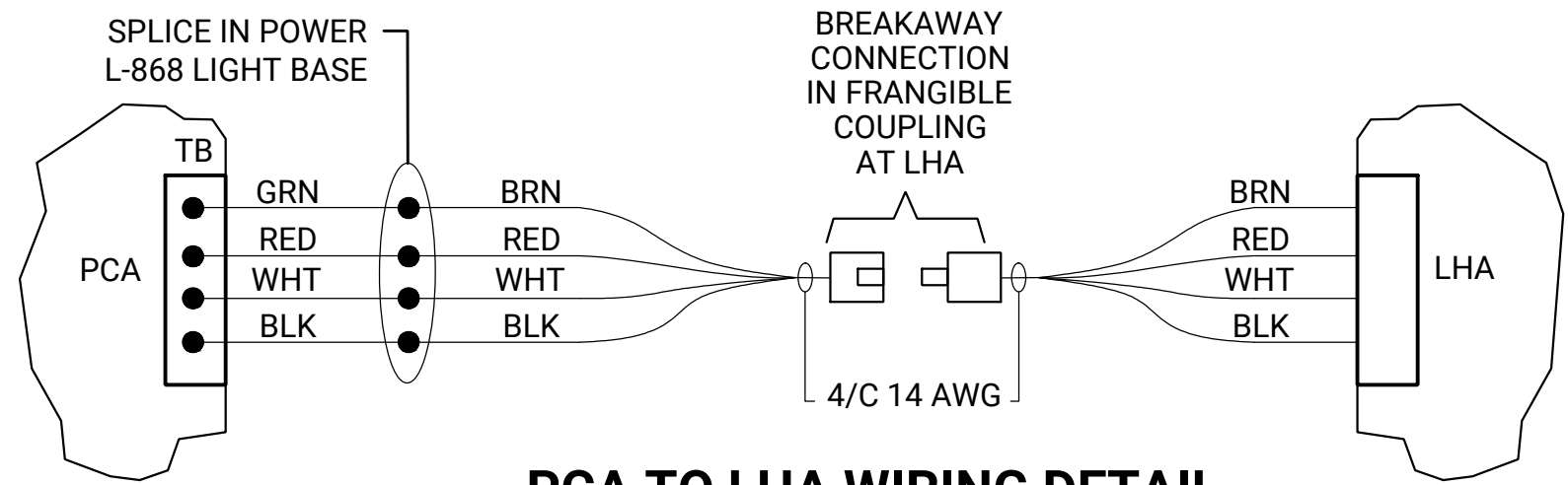
SCALE: NONE



- A. REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- B. REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- C. REFER TO SHEET EP001 FOR ABBREVIATIONS.

1. SEE DRAWING EP208 FOR PAPI SYSTEM WIRING DIAGRAM.
2. CONDUIT SIZES SHOWN ARE MINIMUMS.
3. ALL ABOVE GROUND POWER WIRING SHALL BE THWN-2 OR APPROVED EQUAL, UNLESS OTHERWISE NOTED.
4. ALL UNDERGROUND POWER WIRING SHALL BE XHHW-2 OR APPROVED EQUAL, UNLESS OTHERWISE NOTED.
5. HEAVY DUTY FUSIBLE SAFETY SWITCH, 600V, 30A 2P, 30A FUSED. STANDARD SQUARE D NEMA 4X OR APPROVED EQUAL.
6. SURGE PROTECTIVE DEVICE, 240V, 1-PHASE. RAYVOSS STRIKESORB 80-B OR APPROVED EQUAL.
7. ALL EQUIPMENT AND WIRING SHOWN IS TO BE PROVIDED NEW UNLESS OTHERWISE NOTED.

EP207



PCA TO LHA WIRING DETAIL
SCALE: NONE

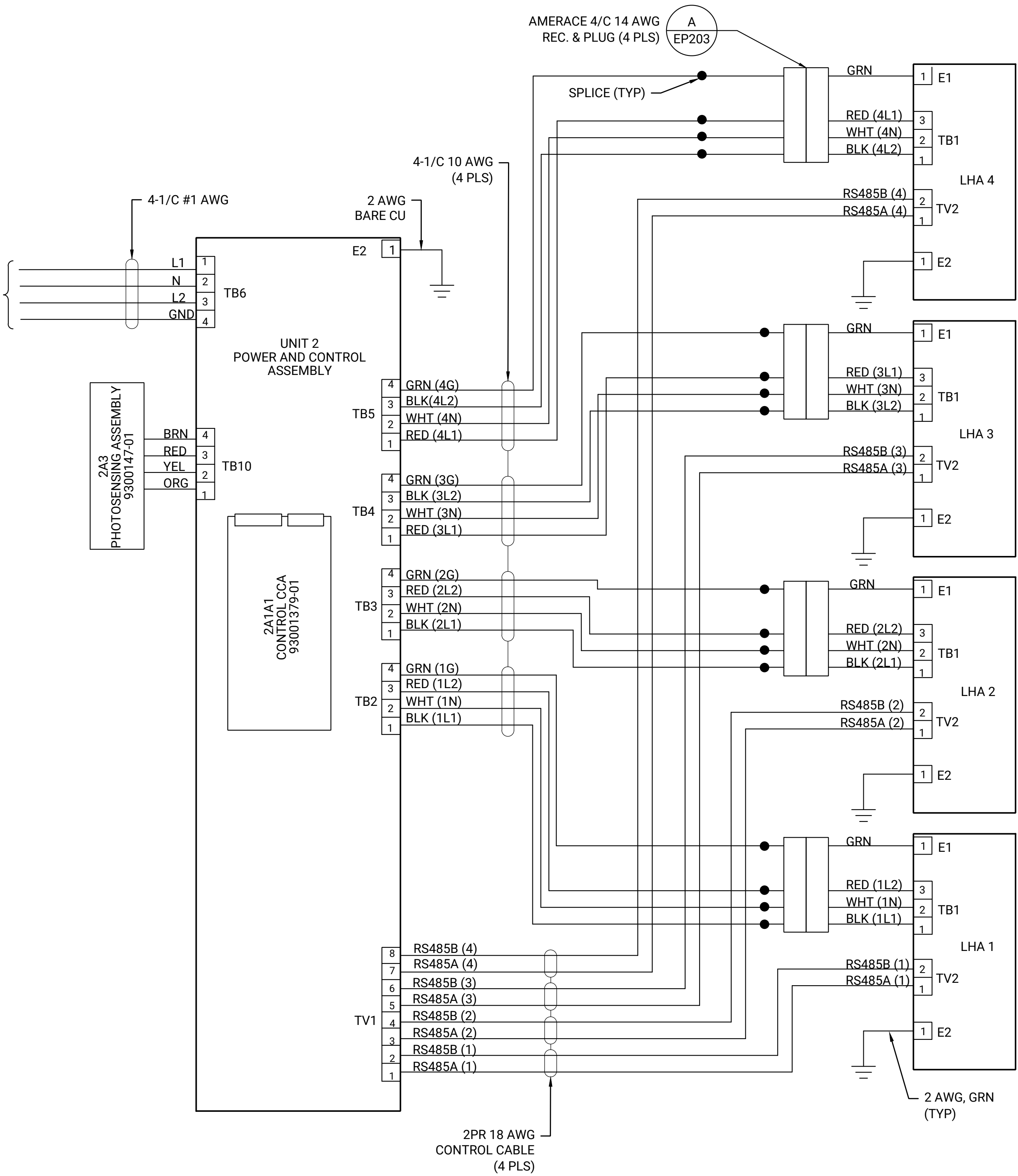
GENERAL NOTES

- REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- REFER TO SHEET EP001 FOR ABBREVIATIONS.

DETAIL NOTES:

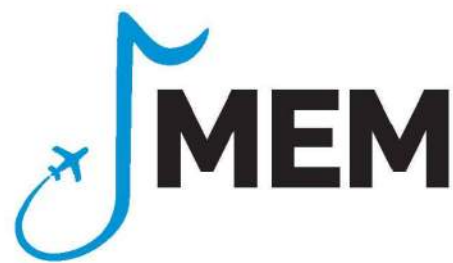
- ALL WIRING SHALL MEET LATEST EDITION OF NFPA 70, THE NATIONAL ELECTRICAL CODE (NEC), AND FAA STD-019G: LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT.
- TWO SETS OF SPARE FUSES SHALL BE FURNISHED FOR EACH FUSIBLE DEVICE.
- EACH CIRCUIT SHALL MAINTAIN AN INDIVIDUAL NEUTRAL AND GROUND CONDUCTOR.
- UNDERGROUND CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 80 PVC CONDUIT OR PVC COATED GALVANIZED RIGID STEEL CONDUIT (GRSC). A 1/0 BARE COPPER STRANDED GUARD WIRE SHALL BE PROVIDED FOR ALL BURIED CABLES AND CONDUCTORS NOT ROUTED IN FERROUS CONDUIT. CONDUIT WITH GROUNDING CONDUCTORS ONLY ARE SCHEDULE 40 PVC. POWER CONDUCTORS ABOVE GROUND SHALL BE 600 VOLT RATED, TYPE THWN-2 UNLESS OTHERWISE SPECIFIED. POWER CONDUCTORS BELOW GROUND SHALL BE 600 VOLT RATED, TYPE XHHW-2 UNLESS OTHERWISE SPECIFIED.
- INSULATION OF ALL CONDUCTORS #6 AWG AND SMALLER SHALL BE COLORED AS INDICATED. COLORS IN SPLICE CAN TO BE CODED GRN & RED AS SHOWN.
- GROUND TERMINATIONS SHOWN ARE DIAGRAMMATIC ONLY; MULTIPLE GROUNDING CONDUCTORS SHALL NOT BE TERMINATED IN SINGLE CONDUCTOR GROUND LUGS. USE APPROVED GROUNDING CONNECTORS (BURNDY #YCHC OR EQUAL) AS REQUIRED.
- ALL UNUSED CONDUCTORS SHALL BE GROUNDED AT BOTH ENDS. ALL CABLE OVERALL SHIELDS SHALL BE GROUNDED AT BOTH ENDS. ALL INDIVIDUAL SHIELDS SHALL BE GROUNDED AT ONE END ONLY.
- GROUND BUS BARS SHALL BE ADDED TO THE PCA AND LHAS AS NEEDED TO ACCOMMODATE ADDITIONAL GROUND CONNECTIONS. CONNECT BUS BARS TO EQUIPMENT GROUND LUG WITH A 6 AWG, GREEN WIRE.
- CONTRACTOR SHALL DUCT SEAL ALL CONDUITS ENTERING THE POWER DISCONNECTS AND ALL EQUIPMENT DEVICE ENCLOSURES.
- CONTROL CABLE BETWEEN PCA AND LHA SHALL BE 18 AWG, SHIELDED, TWISTED PAIR, WITH WATERBLOCK TAPE SUCH AS BELDEN 5340F1 OR EQUAL SUITABLE FOR WET LOCATIONS. CABLE MAY BE ONE CABLE OF TWO PAIRS, OR TWO SEPARATE ONE PAIR CABLES TO EACH LHA. THE SECOND PAIR IN EACH RUN IS A SPARE.
- THE PAPI PHOTOCELL SHALL BE MOUNTED AND AIMED TO MAGNETIC NORTH. THE MOUNTING LOCATION SHALL PROVIDE AN UNOBSTRUCTED VIEW. ADDITIONAL CABLE MAY BE NEEDED TO EXTEND PHOTOCELL WIRING BACK TO THE PCA.
- INSTALL A GROUNDING BUSHING AT BOTH ENDS OF ALL METALLIC CONDUITS IN ALL ENCLOSURES.
- CABLE AND CONDUIT SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, APPLICABLE FAA STANDARDS, AND THE REFERENCED SPECIFICATIONS. ALL CABLE TESTING SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER AND FAA REPRESENTATIVE.
- INSTALL A #2 AWG GREEN WIRE FROM THE GROUND ROD TO A GROUND LUG IN THE ENCLOSURE.
- GROUND TERMINALS SHOWN AT MULTIPLE LOCATIONS FOR DRAWING CLARITY.
- FACTORY PROVIDED JUMPERS TO BE FIELD INSTALLED BY FAA. CONTROL SWITCH SHALL BE SET TO "PARALLEL".

SEE DRAWING EP207
FOR INCOMING POWER DETAILS



1 FA-30200 WIRING DIAGRAM
SCALE: NONE

PREPARED FOR:



PREPARED BY:



KEY MAP:

NO	DATE	BY	REVISION DESCRIPTION

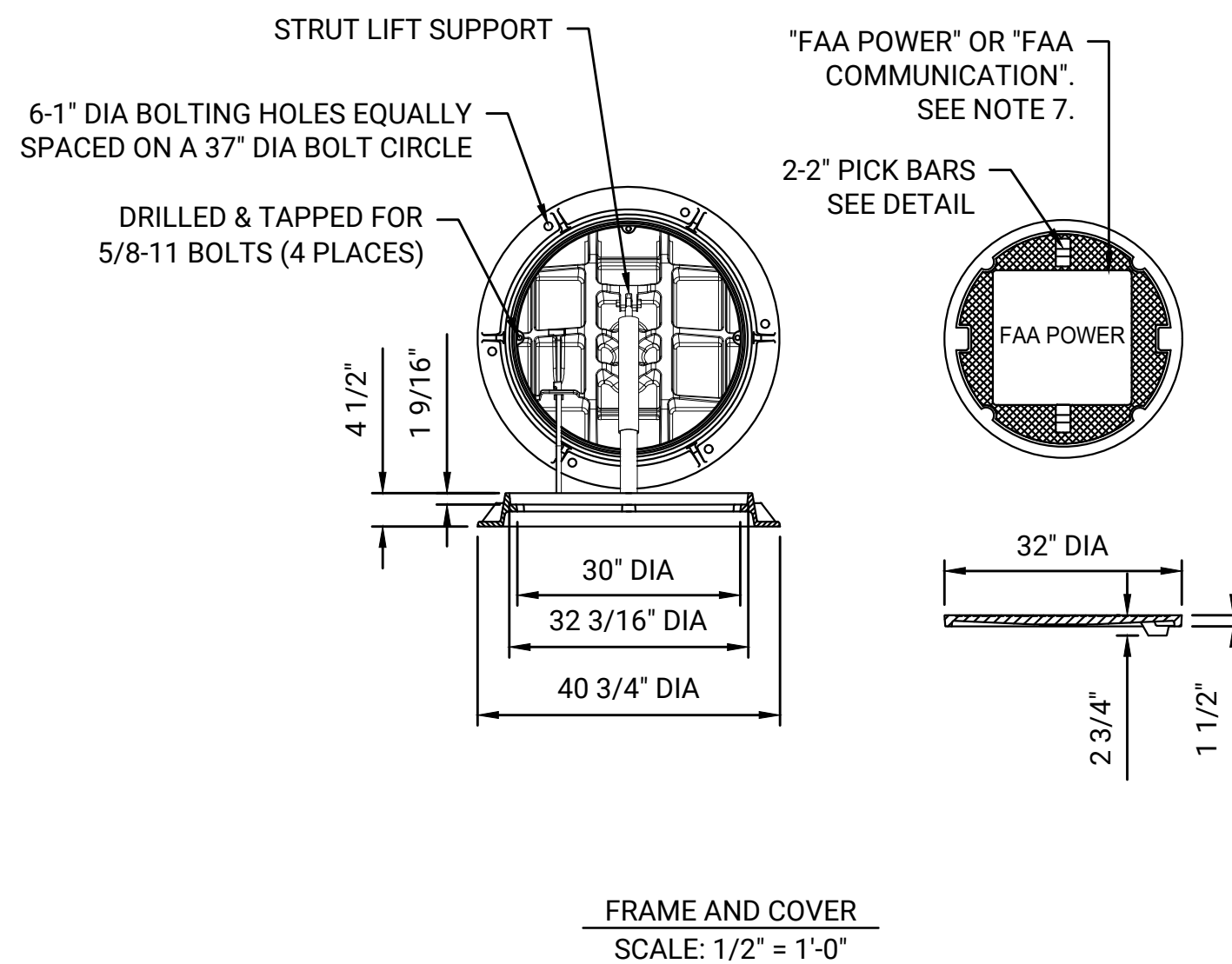
RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

PAPI SYSTEM WIRING DIAGRAM



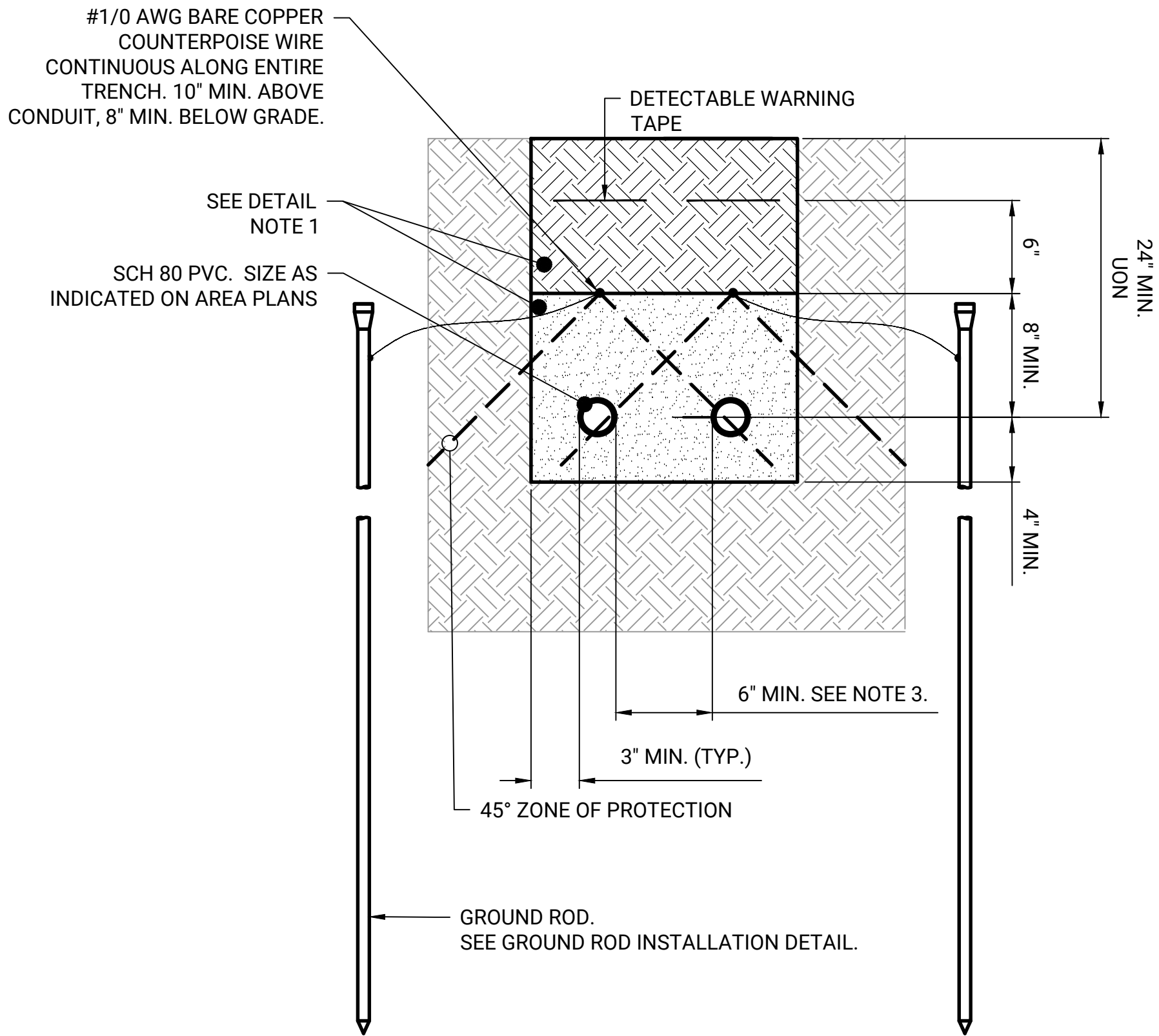
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PROJECT NO: 0026M300.25		
PRINT DATE: 8/17/2026		
SHEET NO.		

EP208



- ## EP209

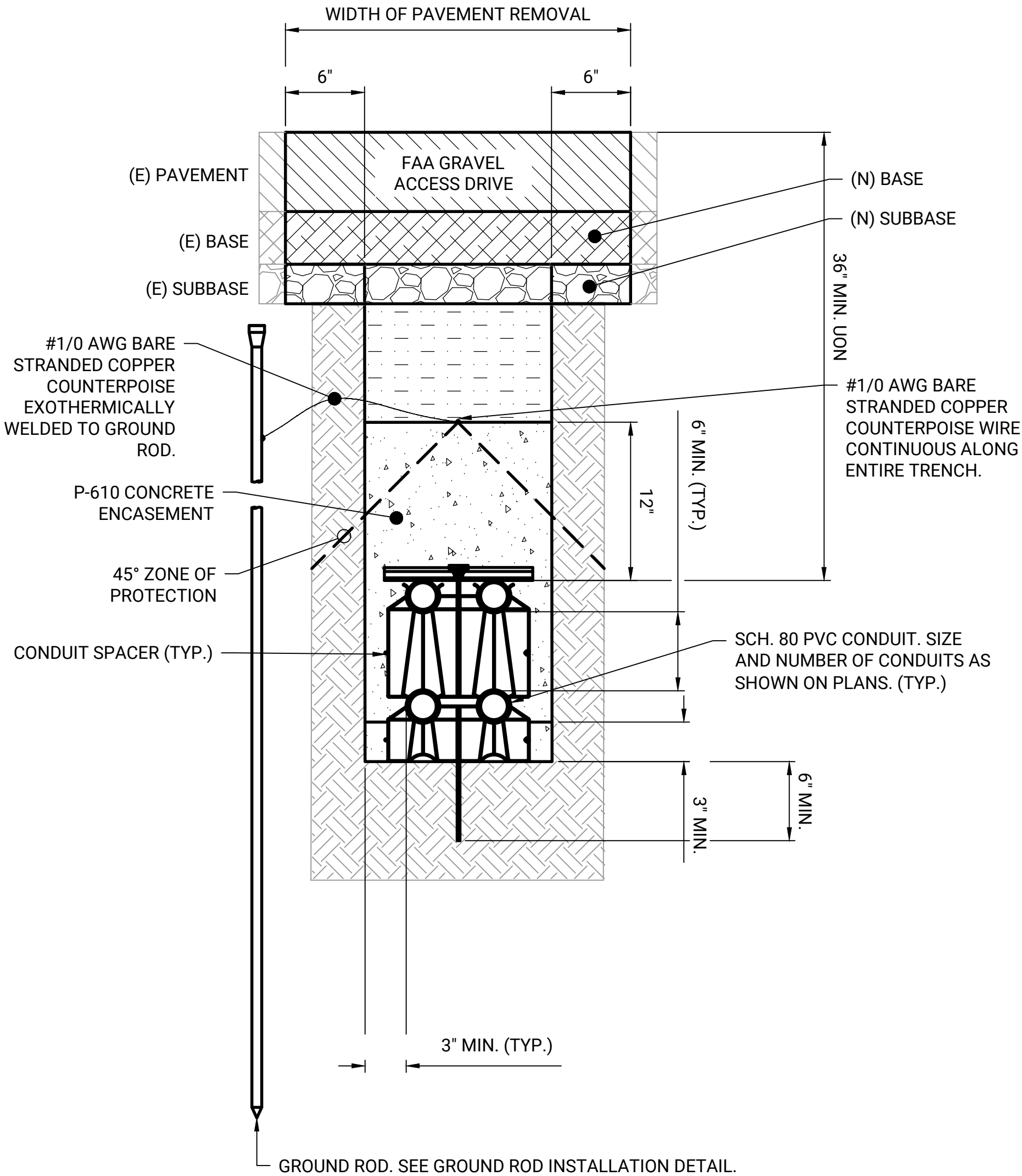
CAD FILE: J:\ACTIVE\180026\001 - MEM - 18R PAPI (FOTH)\3.DESIGNS\5.BIM\CAD\CAD\1.EP21005 - DETAILS.DWG Layout: EP210 By: EARL M. CARTER



DETAIL NOTES:

- BACKFILL PER ITEM L-110, COMPACT PER ITEM P-152.
- PROVIDE A 3" DETECTABLE WARNING TAPE FOR SINGLE CONDUIT RUNS. PROVIDE A 6" DETECTABLE WARNING TAPE FOR MULTIPLE CONDUIT RUNS AND OR DUCT BANKS. FOR DUCT BANKS GREATER THAN 24" IN WIDTH, UTILIZE MORE THAN ONE TAPE FOR COVERAGE. REFER TO FAA-C-1391f-4.16 FOR WARNING TAPE REQUIREMENTS.
- MAINTAIN A MINIMUM OF 6" SEPARATION BETWEEN ELECTRICAL AND COMMUNICATION CONDUITS.
- SEPARATE GUARD WIRES ARE NOT REQUIRED FOR (2) PARALLEL RUNNING CONDUITS IF THEY FALL WITHIN THE 45° ZONE OF PROTECTION.

1 FAA TRENCH IN TURF WITH COUNTERPOISE
SCALE: NONE



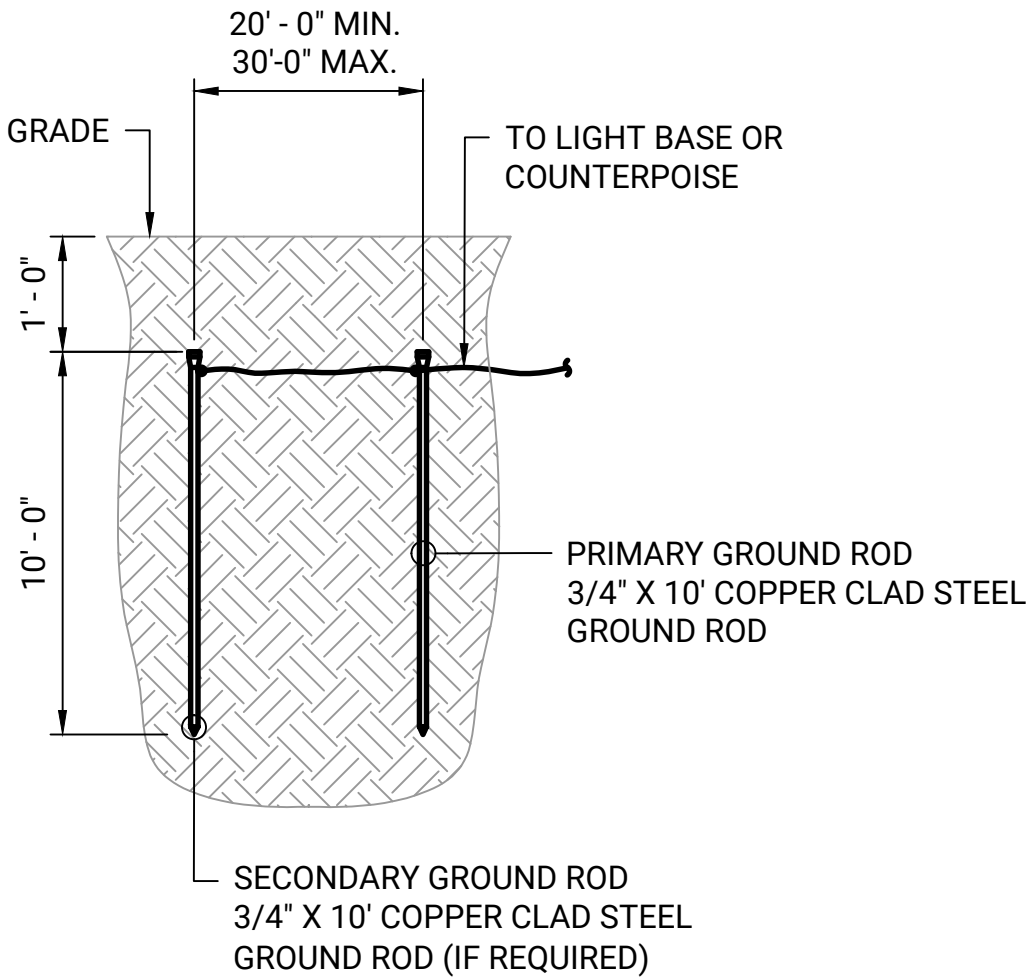
DETAIL NOTES:

- PROVIDE #4 REINFORCING BARS DRIVEN 6" MIN. INTO SOIL BELOW. REFER TO FAA STD 19G FOR ADDITIONAL INFORMATION.
- CONDUITS SHALL BE INSTALLED USING CONDUIT SPACERS SPACED AT 5' INTERVALS. SPACERS SHALL BE FASTENED TO THE REINFORCING BARS WITH LOCKING COLLARS.
- BACKFILL PER ITEM L-110, COMPACT PER ITEM P-152. AFTER CONCRETE HAS CURED, THE REMAINING TRENCH SHALL BE BACKFILLED AND COMPACTED PER ITEM P-152 "EXCAVATION AND EMBANKMENT" EXCEPT THAT THE MATERIAL USED FOR BACKFILL SHALL BE SELECT MATERIAL NOT LARGER THAN 4 INCHES IN DIAMETER.

2 CONCRETE ENCASED FAA TRENCH THROUGH EXISTING GRAVEL ACCESS DRIVE WITH COUNTERPOISE
SCALE: NONE

GENERAL NOTES

- REFER TO SHEET EP003 FOR ELECTRICAL LEGEND.
- REFER TO SHEETS EP001 THROUGH EP002 FOR GENERAL ELECTRICAL NOTES.
- REFER TO SHEET EP001 FOR ABBREVIATIONS.
- PROVIDE CONTINUOUS INSULATED COPPER TRACER WIRE WITH ALL NEW UNDERGROUND NON-METALIC CONDUIT SYSTEMS. PROVIDE ACCESSIBLE TERMINATIONS AT HANDHOLES AND EQUIPMENT LOCATIONS. SEE SPECIFICATION L-110/

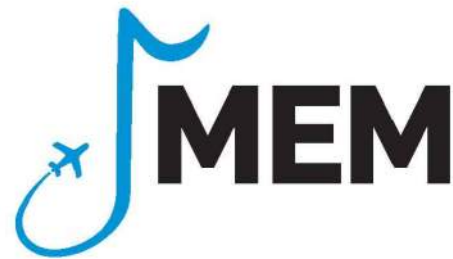


DETAIL NOTES:

- PROVIDE GROUND RODS PER STD 19G-4.4.4.1.
- TOP OF GROUND ROD SHALL BE A MIN. OF 12" BELOW FINISHED GRADE.
- WHERE ROCK IS AN ISSUE, GROUND RODS SHALL BE DRIVEN AT 90-DEGRESS VERTICAL ORIENTATION TO FINISH GRADE. IF GROUND RODS CANNOT BE DRIVE VERTICALLY TO FULL LENGTH, THEN INSTALL GROUNDING DISSIPATION PLATES APPROVED BY THE ENGINEER.
- GROUND RODS AND OTHER UNDERGROUND GROUNDING CONNECTIONS SHALL BE EXOTHERMICALLY WELDED. EXOTHERMIC CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. CLEAN ALL METAL SURFACES PRIOR TO MAKING CONNECTIONS. SOLDER, BOLT AND WASHER TYPE CONNECTIONS ARE PROHIBITED.

3 GROUND ROD INSTALLATION
SCALE: NONE

PREPARED FOR:



PREPARED BY:



KEY MAP:

REVISION DESCRIPTION	BY	DATE	NO

RUNWAY 18R PAPI INSTALLATION
FREDRICK W. SMITH INTERNATIONAL AIRPORT
MEMPHIS, TN

TRENCH DETAILS



DESIGNED: COO	DRAWN: COO	CHECKED: VER
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PRINT DATE: 8/17/2026		
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EP210

