ADDENDUM NO. 1

DATE: March 28, 2023

TO: ALL PROSPECTIVE BIDDERS

SUBJECT: Solicitation No. X009A

TITLE: Miami-Opa Locka Executive Airport (OPF) Runway 09L-27R Rehabilitation

This Addendum becomes a part of the subject solicitation.

A. The Solicitation End Date is April 7, 2023, 2:00 PM Local Time.

B. **REVISIONS:**

1. **Volume 1: "Advertisement of Bids", "Schedule of Prices", pages A-22 thru A-28 are hereby revised per Attachment 1 of Addendum No. 1. Please note the PDF is now fillable.**

2. **Volume 1: "Advertisement of Bids", Attachment 2: "General Terms and Conditions", Article 12: "Miscellaneous Provisions", Subsection J: "Insurance" is hereby revised to include the additional requirement:**

   D. Pollution Liability Coverage in an amount not less than $2,000,000 combined single limit per occurrence for Bodily Injury and Property Damage. Miami-Dade County must be shown as an additional insured with respect to this coverage.

3. **Volume II, Division I, Section 011000, Part 1 – General, 1.17.A, Miscellaneous provision, is hereby revised to include the following BURROWING OWL REQUIREMENTS:**

   The Contractor is responsible for an on-site investigation of the areas that will be impacted by; 1) the installation of haul routes to and from the project site, 2) the infield improvements between the services road and Runway 09L-27R, 3) the construction of the PAPI foundations and 4) any other construction of trenches, conduit bank or manholes in the infield areas between Runway 09L-27R and Taxiway N. The contractor shall provide experienced biologists who will assess the areas for the presence of burrowing owls, a state-listed Species of Special Concern. A survey and mapping (schematic) of the areas will be required as part of the investigation.

   The purpose of the on-site investigation is to identify the location of any burrowing owl burrows to avoid impacts to this species, thereby eliminating listed species permitting issues.

   Prior to any construction activity at the site, the contractor shall establish a 50-foot radius buffer around each burrow. These buffers should remain in place until the completion of the project.

   It is important to note that due to the dynamic nature of animals, surveys conducted for burrowing owls are only considered valid for a limited amount of time. It is recommended that this field

investigation be conducted close to the start of construction to ensure that no new burrows have been excavated within the footprint of the proposed project areas.

4. **Volume III: "TECHNICAL SPECIFICATIONS", ITEM L-100, LIGHTING AND ELECTRICAL WORK – METHODS OF MEASUREMENT, PARAGRAPH 100-4.1 is hereby revised the following:**

DELETE ORIGINAL Paragraph 100-4.1

~~The pay item for Electrical Demolition shall be per linear foot the electrical Demolition, Circuit tracing, existing condition verification, miscellaneous electrical prep, disconnections and all incidentals as required to provide complete demolition of identified services. No direct measurement or payment shall be made for cutting conduits and temporary caps (to avoid dirt intrusion) during construction. Conduit cutting and temporary caps shall be incidental to demolition.~~

INSERT REVISED Paragraph 100-4.1

The pay item for Electrical Demolition shall be per linear foot of the continued system removed from start to end. The electrical Demolition, Circuit tracing, existing condition verification, miscellaneous electrical prep, disconnections, and all incidentals as required to provide complete demolition of identified services. No direct measurement or payment shall be made for cutting conduits and temporary caps (to avoid dirt intrusion) during construction. Conduit cutting and temporary caps shall be incidental to this demolition item. No separate measure and payment will be made for removing all other electrical elements located within the linear foot of removal measured, including, but not limited to, base cans, conduits, wire, associated ground rods, etc., necessary to provide a complete and operational electrical infrastructure. These are all incidental to pay item L-100-5.1 below.

Refer to Attachment 7 of Addendum No. 1 – Technical Specifications

C. **QUESTIONS & ANSWERS**

Question No. 1 — Is there a cost estimate or budget associated with the Miami-Opa Locka Executive Airport (OPF) Runway 09L-27R Rehabilitation Project

Answer No. 1: — Currently, the estimate cost for this project is $27,300,000 (excluding all allowances)

Question No. 2 — We hereby request pushing out the bid date a couple of weeks. For a project of this size, contractors, suppliers, and subcontractors require additional time to review the documents and prepare competitive pricing. Pushing it out will allow for additional pricing sources to participate in the bid. In addition, the FDOT bid letting is also the last week of this month.

Answer No. 2: — Refer to Section A of this Addendum.

Question No.3 — Regarding the project of the reference we kindly ask you if you can provide the Engineer's estimate of construction cost.

Answer No. 3 — Refer to Answer No. 1.

Question No. 4 — We hereby request a copy of the Prebid Sign-In Sheet, Agenda, Minutes (if any), and PowerPoint presentation.

Answer No. 4	Refer to Attachment 2 of Addendum No. 1: Pre-bid Sign In Sheet and Attachment 3 of Addendum No. 1: Power Point Presentation.
Question No. 5	Can I get a copy of the prebid meeting sign in sheet for the project listed above?
Answer No. 5	Refer to Answer No. 4.
Question No. 6	I was reaching out to you today to see if I could obtain a copy of the sign-in sheet for the pre-bid meeting for the project at Miami Opa Locka that is bidding that the end of this month?
Answer No. 6	Refer to Answer No. 4.
Question No. 7	We would like to order a copy of the official plans and specs and bid documents for Miami Opa-Locka Executive Airport Runway 9L-27R Rehabilitation. We downloaded the documents last week from Construction Journal but need an official copy.
Answer No. 7	The online documents are the official copy. They are available for accessing and downloading at no cost. Use the following to access the documents: Advertisements - Miami International Airport (miami-airport.com)
Question No. 8	Please confirm that the Contractor can work 24 hours a day, 7 days a week during Phase I.
Answer No. 8	Refer to Volume II, Division I, Section 01100, Summary of Work, 1.16 Work Restrictions.
Question No. 9	Plan page G002 – Waste Materials Notes: Millings/Reclaimed asphalt shall be disposed at a licensed facility. Manifests documenting disposal shall be provided to DERM-RER following disposal. General Asphalt must know exactly what this means since this project will generate approximately 30,000 tons of reclaimed asphalt/ millings.
Answer No. 9	The milling by-product (millings) shall become the property of the Contractor to haul off and legally dispose or to use for recycling. Asphalt pavement and concrete pavement contaminated with asphalt to be demolished shall be removed and disposed on a facility properly designated for the disposal of contaminates & foreign substances (CLASS I LANDFILL). Refer to Attachment 4 of Addendum No. 1, "Construction Plans & Drawings REVISION (Sheet G002 and Attachment 7 of Addendum No. 1 – Technical Specification P-101)".
Question No. 10	Would General Asphalt be considered a "licensed facility" since we store, process, treat, and produce this product.
Answer No. 10	Refer to Answer No. 9.

Question No. 11	As per Volume III Technical Specifications – 101-3.5 Cold Milling "All millings shall be removed and disposed on a facility properly designated for the disposal of contaminates & foreign substances (CLASS I LANDFILL). General Asphalt must know exactly the intent of the above language and the quantity of millings to be hauled to a Class I Landfill to accurately charge the Owner 100% of this cost.
Answer No. 11	Refer to Answer No. 9.
Question No. 12	Please advise on the anticipated Construction Start Date.
Answer No. 12	Anticipated start date is first quarter of 2024.
Question No. 13	Please advise on Construction Budget.
Answer No. 13	Refer to Answer No. 1.
Question No. 14	Please provide Engineers Breakdown of Budget.
Answer No. 14	Refer to Attachment 6 of Addendum No. 1.
Question No. 15	Please provide the Governing Wage Rates for the Project.
Answer No. 15	Refer to Volume 1, Advertisement for Bids, page A-47.
Question No. 16	Please advise if the prevailing Governing Wage Rates at the time of bid will be used throughout the life of the Project.
Answer No. 16	Yes, the applicable Davis Bacon Wage Rates applies throughout the life of the project.
Question No. 17	Please advise if there are any special conditions for active construction employees to drive within the airport limits specifically the proposed construction site plan footprint.
Answer No. 17	The contractor will be able to travel within the construction area unescorted.
Question No. 18	Please advise if there are any special conditions for delivery drivers (i.e. Dump Trucks Hauling Aggregates) to drive within the airport limits specifically the proposed construction site plan footprint.
Answer No. 18	Deliveries will have to be escorted by the Contractor from the site entrance to the staging area or construction site and back out to the site exit.
Question No. 19	Please advise if vehicle escorting will be required.
Answer No. 19	Refer to Answer No. 17 and 18.
Question No. 20	Please advise of ANY and ALL construction activity moratoriums.
Answer No. 20	There are no construction moratoriums that we are aware of at this time.
Question No. 21	Please advise if there are any known areas of contamination within the limits of construction.

Answer No. 21	No know contamination within the limits of construction.
Question No. 22	Please advise if the limits of construction are within the radius of influence of any contamination areas.
Answer No. 22	Refer to Answer No. 21.
Question No. 23	Please provide asbuilts of all known underground utilities.
Answer No. 23	Refer to existing condition plan sheets G201-G209.
Question No. 24	Please advise if existing concrete pavement to be removed & disposed is contaminated.
Answer No. 24	No know contamination of the concrete pavement.
Question No. 25	Please provide tolerance of bituminous asphalt pavement to remain on sleeper concrete pavement which will require disposal at a Class I Landfill.
Answer No. 25	Any concrete pavement contaminated with asphalt must be disposed of at a Class I Landfill.
Question No. 26	Please advise if disposal at a Class I Landfill for the demolished concrete pavement is anticipated.
Answer No. 26	Refer to Answer No. 25.
Question No. 27	Please advise there are any objections to crushing existing concrete pavement and implement beneficial re-use on the Project.
Answer No. 27	Crushing on site is not allowed. Re-Use of material is not allowed. Demolished concrete pavement shall be legally disposed of by the contractor.
Question No. 28	With the exception of “wire mesh”, please advise if existing concrete pavement contains reinforcement.
Answer No. 28	Refer to Attachment. 4 of Addendum No. 1: “1953 Record Dwg OPF Original RW9L-27R”.
Question No. 29	Typically, airport concrete pavement contains dowels, please advise if there are dowels present in concrete pavement to be removed.
Answer No. 29	Refer to Answer No. 28.
Question No. 30	Please confirm Existing Subsoil is to remain per Plan Sheet C110, Demo Section 04.
Answer No. 30	Must comply with detail 4 on sheet C110.
Question No. 31	Please confirm no Proof Rolling on soils to remain will be required.
Answer No. 31	Refer to Section P-152, Excavation and Embankment, Construction Methods, 152-2.11 Proof Rolling and Item P-152S, Excavation, Subgrade, and Embankment, Supplement, Method of Measurement, 152-3.3.

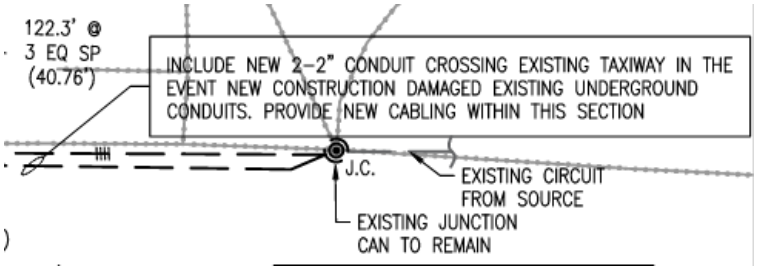
Question No. 32	Please advise if there is any known buried man-made debris within the limits of construction.
Answer No. 32	No known buried debris.
Question No. 33	Please confirm NO geogrid or soil stabilizing fabrics/plastics will be required at locations where subsoils is not excavated.
Answer No. 33	Refer to the rehabilitation sections and details on sheets C301-C305.
Question No. 34	Please advise of any objections to the re-use of excavated existing lime rock base for proposed base material if it meets the requirements of P-211.
Answer No. 34	The lime rock for the base course shall be newly mined. Re-Use of material is not allowed.
Question No. 35	Please confirm a site visit is not available to bidding contractors as stated in Pre-Bid Conference.
Answer No. 35	Confirmed, there is no site visit.
Question No. 36	Please provide a list of Contractors which have downloaded or requested plans for this RFP.
Answer No. 36	There is no list with downloads or requesters. All information is online to the general public.
Question No. 37	Please confirm nighttime work is permitted.
Answer No. 37	Refer to Answer No. 8.
Question No. 38	Please provide work hour/day restrictions.
Answer No. 38	Refer to Answer No. 8.
Question No. 39	Please advise of lighting restrictions for night work.
Answer No. 39	All nighttime lighting must be coordinated with the ATCT and MDAD Operations. All lighting should be pointing toward the activity and away from active runway and taxiways, and away from the ATCT.
Question No. 40	Please advise if there are any known endangered/threatened animal species within the limits of construction.
Answer No. 40	Refer to Section B.3 of this Addendum and Attachment 4 of Addendum No. 1, Construction Plans & Drawings REVISION drawing G002, General Environmental Note No. 2
Question No. 41	Due to the complexity of this project, please clarify if MDAD would consider a time extension to the bid date.
Answer No. 41	Refer to Answer No. 2.

Question No. 42	DWG N101 – Given that taxiway N1 will be completely rehabilitated, please clarify if a duct bank across taxiway N1 is required for future connection of the threshold bar to the FAA/MDAD electrical services.
Answer No. 42	Additional Future Duct bank is not required.
Question No. 43	DWG N102 – Please clarify if the existing RW 09L VASI foundations are abandoned in place or removed. If removed, please provide details showing its size (LxWxD).
Answer No. 43	VASI foundations of Runway 9L and 27R are to be removed by the contractor. The foundation size installation is unknown. Refer to Attachment 4 of Addendum No. 1 – Construction Plans & Drawings REVISED, Sheets C102, C107, N102, & N107.
Question No. 44	DWG N107 – Bid Alternate Windcone Positioning – Please clarify: a. Under which bid item this work is going to be paid. b. Is a new windcone required? If yes, please provide specifications.
Answer No. 44	a. To be paid under Bid item No. 66, L-127-5.8 MALS 27R Rebuild Recommissioning – Wind cone. b. The existing wind cone to be relocated by the contractor. Refer to Attachment 4 of Addendum No. 1:" Construction Plans & Drawings REVISION (Sheet N107)".
Question No. 45	DWG N107 – Please clarify if the existing RW 27R VASI foundations are abandoned in place or removed. If removed, please provide details showing its size (LxWxD).
Answer No. 45	Refer to Answer No. 43.
Question No. 46	DWG N108 – Please clarify what this note means: "NO SURVEY OF EXISTING AND ALL SYSTEMS SHALL BE REPLACED IN KIND".
Answer No. 46	No verified survey of existing services is available. Contractor must investigate as needed. Refer to Attachment 4 of Addendum No. 1 – Construction Plans & Drawings REVISED, Sheets N108 & N109.
Question No. 47	DWG N109 – Please clarify what this note means: "NO SURVEY OF EXISTING AND ALL SYSTEMS SHALL BE REPLACED IN KIND".
Answer No. 47	Refer to Answer No. 46.
Question No. 48	DWG N401 – Please clarify if GRS conduit coated with bitumastic paint is acceptable in lieu of PVC coated GRS conduit.
Answer No. 48	Follow current design for bid. Refer to Attachment 7 of Addendum No. 1 – Technical Specification L-126.

Question No. 49 Specification L-127, DWG N501 and DWG N503 – Specification L-127-3.4 calls for underground cable to be XHHW-2 insulation. However, details on drawings N501 and N503 calls for USE-2 insulation. Please clarify if XHHW-2 insulation is acceptable in lieu of USE-2 insulation.

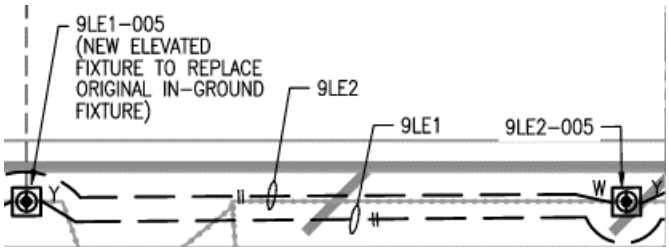
Answer No. 49 XHHW-2 insulated cables are an allowed alternate to USE-2 in this case. Refer to drawing N501. Refer to Attachment 4 of Addendum No. 1 – Construction Plans & Drawings REVISED, Sheets N501 & N503.

Question No. 50 DWG E401 – Please confirm that 3 – 2" PVC conduits will be added to the existing junction can shown on E401.



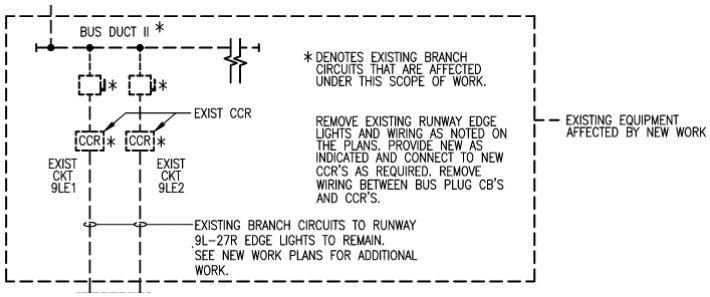
Answer No. 50 New 2-2" conduit crossing existing taxiway to replace existing underground conduit. Provide new cable within this section. These new conduits are to be tied to the junction boxes as shown on plans. Refer to Attachment 4 of Addendum No. 1 – Construction Plans & Drawings REVISED, Sheet E401.

Question No. 51 DWG E401-E408 – Please confirm that 2-#8-5kv cables will be pulled for circuits 9LE1 and 9LE2 along the runway edges.



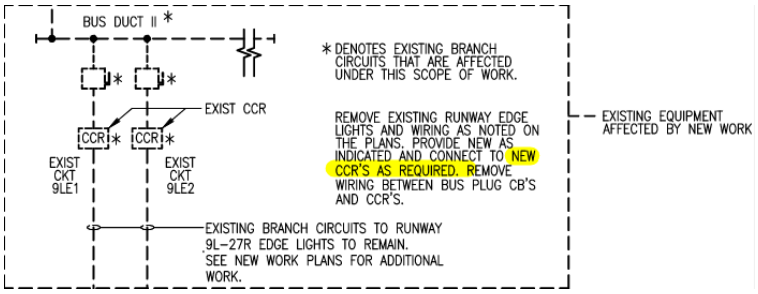
Answer No. 51 Pull conductor per advertised solicitation documents (pull two conductors for each circuit).

Question No. 52 DWG E501 – Please clarify under which bid item the work at the vault will be paid.



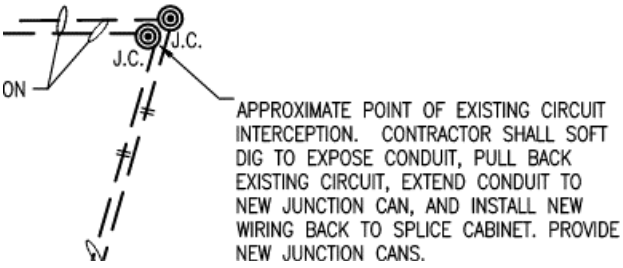
Answer No. 52 Refer to Attachment 4, of Addendum No. 1, Construction Plans & Drawings – Revised, Sheet E501… All reference to new Constant Current Regulator (CCR) and vault work from the scope of this project have been removed.

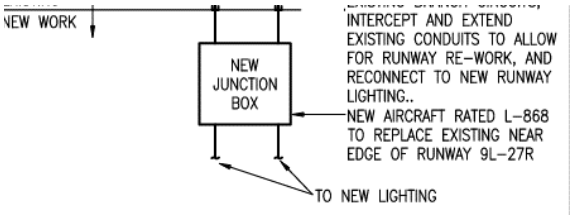
Question No. 53 DWG E501 – Please clarify if new constant current regulators (CCR) are required and under which bid item will be paid.



Answer No. 53 Refer to Answer No. 52.

Question No. 54 DWG E406 & DWG E501 – Please clarify if these base cans are L-867D or L-868 type.





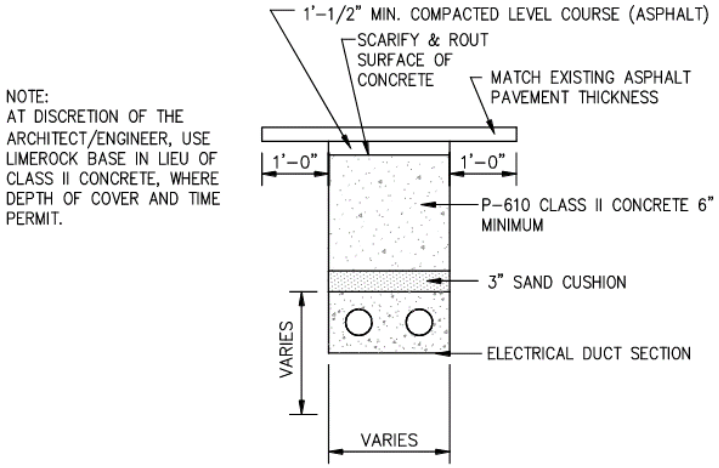
Answer No. 54 Install per advertised solicitation documents, L-868 base cans will only be required on areas within full strength pavement or near the edge of the runway. On non-load bearing applications, such as shoulder and grass areas, use an L-867 base can.

Question No. 55 DWG E601, detail E and DWG E602, detail A – Please confirm that a one piece 12" diameter x 24" deep base can is required for the edge lighting in new and existing pavement.

Answer No. 55 New base cans for elevated edge lights are required in accordance with sheets E401-E408, and per Detail E, Sheet E601 (existing pavement) and Detail A, sheet E602 (new pavement).

Question No. 56 DWG E601 detail C – Please clarify:

a. Is the electrical duct under runway and taxiway asphalt shoulder required to be backfilled with concrete (Detail C Electrical duct under taxiway and runway)?
b. Is the 3" sand cushion required when backfilling with concrete (Detail C Electrical duct under taxiway and runway)?



ELECTRICAL DUCT UNDER TAXIWAY AND RUNWAY (OR CRITICAL MAIN ROADWAYS)

Answer No. 56 Install per advertised solicitation documents, in particular, Detail C, Sheet E602 (Electrical Ducts under Taxiway and Runway).

Question No. 57 DWG E603 – The sign base detail calls for an L-867B base can. However, the bid item 52, calls for an L-868D base can. Please clarify

Answer No. 57 Refer to Attachment 4 of Addendum No. 1, Construction Plans & Drawings – Revised, Sheet E603. Replace the L-867B 24" Deep Base Can with L-868D 24" Deep Base Can.

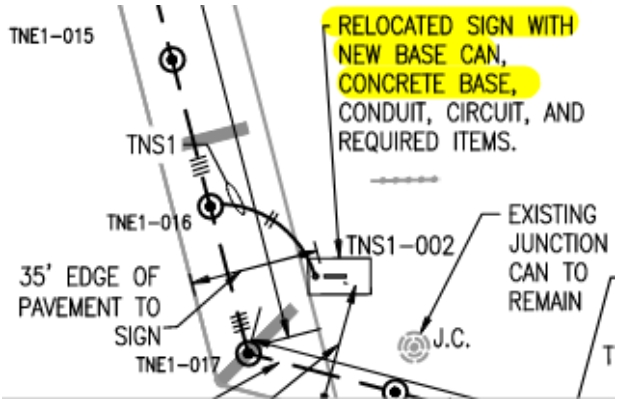
Question No. 58 DWG E301 through E308 – Please clarify what type of material will be used to fill the void of the conduits and base cans that are being removed/demolished under existing paved shoulders.

Answer No. 58 When not filled by the P-610 concrete for ductbanks and base cans, contractor may use P-153 Controlled Low-Strength Material (CLSM), to restore trenches and voids left by the removal of the existing conduits, base cans and all other removed structures under runway, taxiways, and shoulders. Restoration is required up to the bottom of the new pavement section. This work is incidental under pay item L-100-5.1. Refer to Attachment 4 of Addendum No. 1 – Construction Plans & Drawings REVISED, Sheet E602.

Question No. 59

DWG E401 – Please clarify the following regarding this airfield sign:

a. Who is the manufacturer?
b. How many modules?
c. Existing sign dimensions.

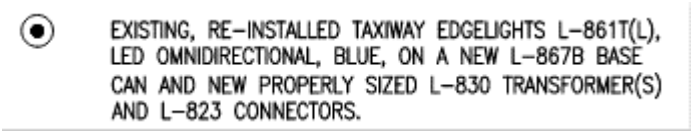


Answer No. 59

Refer to Attachment 5 of Addendum No. 1: "OPF Sign Data Sheet".

Question No. 60

DWG E101 – Electrical Legend – Bid item 48 calls for the installation of new L-861(L)T taxiway edge light complete. Given that the legend does not differentiate between new fixtures and existing fixtures, please clarify where these new taxiway edge lights will be installed.

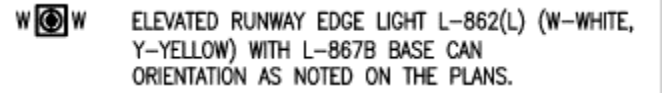


Answer No. 60

Comply with advertised solicitation documents. Refer to the electrical legend in sheet E101, and sheets E301 through E408 for existing and new locations. Refer to Technical Specification Item L-125S INSTALLATION OF AIRPORT LIGHTING SYSTEMS SUPPLEMENT (Sections METHOD OF MEASUREMENT and BASIS OF PAYMENT).

Question No. 61

DWG E101 – Electrical Legend – Bid item 47 calls for the installation of new L-862(L) runway edge light complete. Given that the legend does not differentiate between new fixtures and existing fixtures, please clarify where these new runway edge lights will be installed.



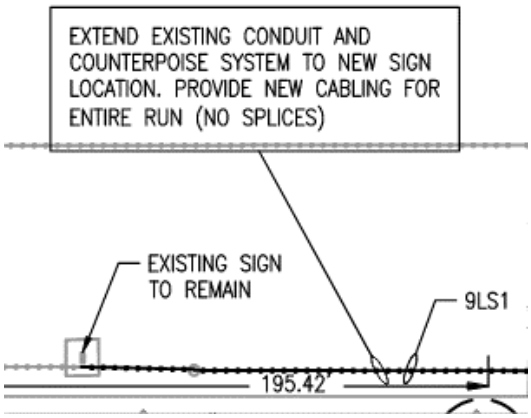
Answer No. 61

Refer to Answer No. 60.

Question No. 62 DWG E603 – The sign base detail on drawing E603 does not show any dimensions. Please specify dimensions (LxWxD) for the proposed signs bases.

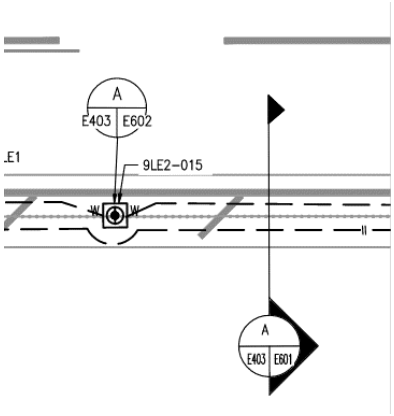
Answer No. 62 The approved sign manufacturer equipment sets sign base dimensions. Use a sign base length of 8 ft plus the length of the sign frame with a 10 ft width and 8-inch-thick reinforced concrete slab shown in Detail B, E603.

Question No. 63 DWG E401 – Please clarify how many cables will be pulled to feed the existing signs to remain.



Answer No. 63 Comply with advertised solicitation documents. The numbers of conductors for the RDR sign are to be replaced in-kind (2 conductors).

Question No. 64 DWG E403 – Please confirm that the base can installation for elevated runway edge lights shown on drawing E403 (detail A on DWG E602) is typical throughout the project: shoulder reconstruction section, runway shoulder asphalt overlay section, runway shoulder asphalt on existing limerock base section and taxiway asphalt shoulder on existing limerock base section.

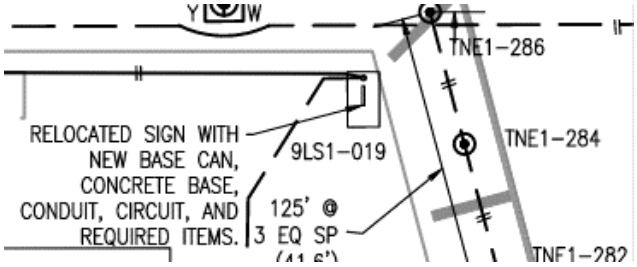


Answer No. 64 Follow advertised solicitation documents.

Question No. 65

DWG E408 – Please clarify the following regarding this airfield sign:

a. Who is the manufacturer?
b. How many modules?
c. Existing sign dimensions.



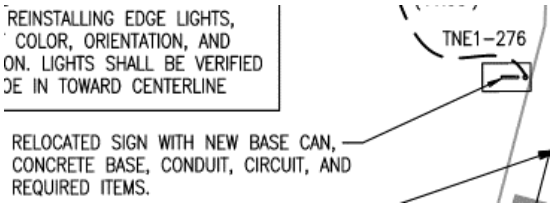
Answer No. 65

Refer to Answer No. 59.

Question No. 66

DWG E408 – Please clarify the following regarding this airfield sign:

a. Who is the manufacturer?
b. How many modules?
c. Existing sign dimensions.

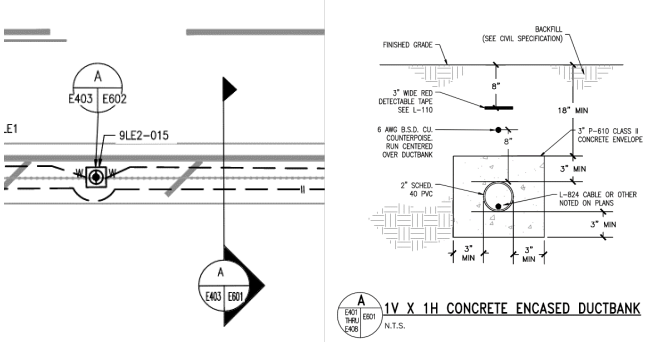


Answer No. 66

Refer to Answer No. 59.

Question No. 67

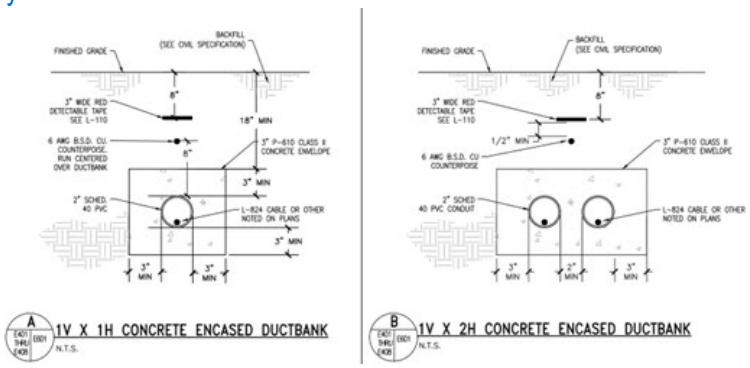
Please confirm that there will be two trenches along each side of runway 09L-27R as per cross section A on drawing E601.



Answer No. 67

Detail A and Detail B in Sheet E601 apply in the construction of the runway lighting ductbank. For the most part, 2-way 2" duct bank segments, Detail B, are required, with shorter pieces of 1-way 2" duct bank following Detail A. The 1-way 2" duct bank allows

alternately connecting the taxiway lights with the respective circuit noted on plans. The 2-way 2" duct bank splits before the light for one conduit to connect to the light and the second conduit to bypass the light as they alternate per plan along the runway lighting system.



Question No. 68 Is there a plan holders list for this project that you can email to me please.

Answer No. 68 Please refer to Answer No. 36.

Question No. 69 Will Temporary Painted Markings be required for ALL identified Pavement Markings shown on drawings (except Black)? Please clarify.

Answer No. 69 The project does not anticipate Temporary Markings; the advertised solicitation documents do not include a quantity and a pay item. However, Per Paragraph 620-3.10, Temporary pavement markings are needed when airport operations require runway and taxiways to open before completing the 30 calendar-day asphalt curing period per Specification P-620S, paragraph 620-3.5 - Application.

Question No. 70 In locations where Temporary Paint will be installed, if required per Question #1, confirm how payment would be issued for this initial application -- if incidental to Final Pay Items.

Answer No. 70 Refer to Answer No. 69. Moreover, should Temporary Markings be required, MDAD will pay from Contingency Allowance.

Question No. 71 Clarify conflicting Rate of Application / Bead Type - for Temporary Markings:

3. a) P-620S Table 1. indicates Temporary Marking Waterborne Paint to be applied at 230 SF/gal with Type III Beads @ 3#/gal (Type III beads will not adhere to 50% application rate).

3. B) Same Technical Spec, Section 620-3.10. "620-3.10 Temporary Markings. All temporary markings shall be of the same width, color, and applied at the locations shown in the plans or as directed by the engineer.

"The paint for temporary markings shall be applied at 50% of the application rate as shown in table 1. Type I, Gradation A Glass beads shall also be applied at the application rate per Table 1.

"Markings may be required before paving operations are complete. Operation may need to temporary markings to allow for opening the runway and taxiways between phases. The Contractor must apply the glass beads with care and at slower pace because they will not adhere well at the low application rates for temporary markings." (Any 'slower' rate, as specifically referenced, changes the paint application rate, which should remain as low as possible for initial application onto new asphalt.)

Typically, Type 1 Beads are applied for initial paint application, if reflectivity is desired prior to final marking installation.

Table 1. Marking Materials

Paint[1]				Glass Beads[2]	
Type	Color	Fed Std. 595 Number	Application Rate Maximum	Type	Application Rate Minimum
Waterborne Type II	White	37925	115 ft2/gal	Type III	10 lb/gal
Waterborne Type II	Yellow	33538 or 33655	115 ft2/gal	Type III	10 lb/gal
Waterborne Type II	Red	31136	115 ft2/gal	Type I	7 lb/gal
Waterborne Type II	Black	37038	115 ft2/gal		
Waterborne Type II	Pink	1 part 31136 to 2 parts 37925	115 ft2/gal	Type I	7 lb/gal
Temporary Marking Waterborne Type I or II			230 ft2/gal	Type III	3 lb/gal

620-3.10 Temporary Markings. All temporary markings shall be of the same width, color, and applied at the locations shown in the plans or as directed by the engineer.

The paint for temporary markings shall be applied at 50% of the application rate as shown in table 1. Type I, Gradation A Glass beads shall also be applied at the application rate per Table 1.

Markings may be required before paving operations are complete. Operation may need to temporary markings to allow for opening the runway and taxiways between phases. The Contractor must apply the glass beads with care and at slower pace because they will not adhere well at the low application rates for temporary markings.

Answer No. 71

a. Refer to Specification P-620S, paragraph 620-3.10 - Temporary Marking, stating: "The Contractor must apply the glass beads with care and at slower pace because they will not adhere well at the low application rates for temporary markings."

b. If Temporary markings are requested during construction, a Control Strip similar to paragraph 620-3.7 will determine if Type III per Table 1 Marking Material or Type I Glass Beads are acceptable to ensure that the Airport complies with Part 139 requirements, avoiding non-standard markings.

Question No. 72

DWG E401-E408 – The scope of the project requires the removal, storage and re-installation of the existing runway and taxiway edge lights. However, bid items 47 and 48 call for furnishing and installing new elevated runway and taxiway edge lights complete. Please clarify the following:

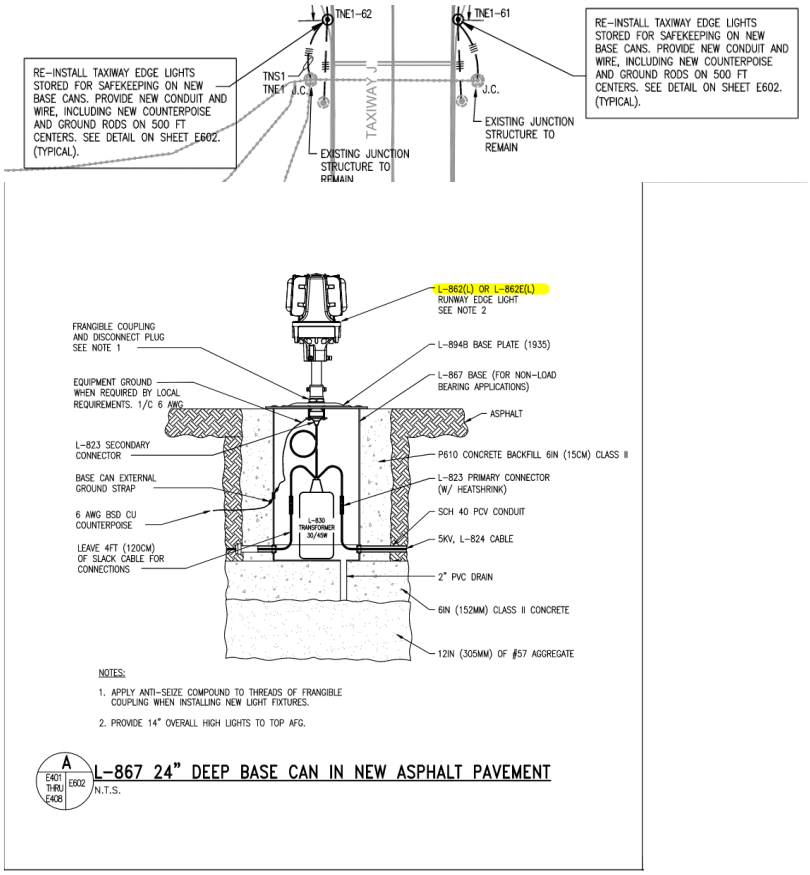
a. Who is the manufacturer of the existing elevated edge lights to be re-installed?
b. Will MDAD allow the installation of other manufacturer's elevated edge light than the ones to be re-installed?

Answer No. 72

a. The existing runway and taxiway edge light are considered ADB SAFEGATE; however, the Contractor will need to verify the equipment removed in the field.
b. The Contractor is required to comply with Technical Specification L-125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS and all other advertised solicitation documents. A specific manufacturer is not specified.

Question No. 73

DWG E-401-E408 – Notes throughout the drawings call for the installation of taxiway edge lights per details on drawing E602. Please confirm that detail A on E602 will be used for the installation of taxiway edge lights (New complete and Remove and re-install).



Answer No. 73

Detail A, E602 applies to all runway and taxiway elevated lights as called out in the plans. The reference "IN NEW PAVEMENT" applies to full-depth and mill-overlay asphalt

pavement. Project scope considers that only the light fixtures are being reused. Use Detail E, E601 were applicable.

Question No. 74 — Bid Items 44 & 58, DWG E401-E408 – After carefully reviewing the drawings, we could not find a detail for the installation of junction cans. Please provide a detail for the 12" junction can installation in earth/new shoulder pavement (bid item 44) and the L-867D Pull Can with concrete encasement (bid item 58).

Answer No. 74 — Installation of junction cans/pull cans is similar to Detail E, E602 in earth/pavement but with a flat flush cover.

Question No. 75 — Bid Item 66 and DWG N-107 – Please provide a detail and scope of work for the wind cone relocation.

Answer No. 75 — Bid Item Note on Sheet N107 details the reuse of existing wind cone at new location and scope of work. Refer to Attachment 4 of Addendum No. 1, Construction Plans & Drawings – Revised, Sheet ED-10

Question No. 76 — Will addendums be uploaded to the Miami Airport business advertisements website with the plans and specs, or are they sent out directly?

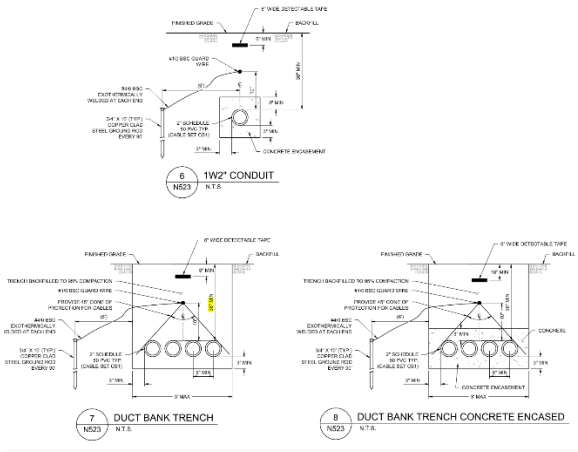
Answer No. 76 — Yes, Addendum No. 1 will be posted on the MIA Business Advertisements Website. Advertisements - Miami International Airport (miami-airport.com)

Question No. 77 — Wondering if a sign sheet for the pre bid for this project is available.

Answer No. 77 — Refer to Answer No. 4.

Question No. 78 — DWGS N101 – N109 – Duct bank details 6, 7 and 8 on drawing N523 show the installation of conduit for the MALS, PAPI and FAA facilities. Given that there are both direct buried and concrete encased details, please confirm that:

a. MALS duct banks will be direct buried.
b. PAPI duct banks will be direct buried.
c. FAA duct banks will be direct buried.



Answer No. 78 The MALS, PAPI, and FAA facilities' conduit shall be concrete encased per Detail 6 and Detail 8, on Sheet N523. Detail 6 on Sheet N523 shall be used the installation of 1W2" and 1W3" concrete encased conduit. Detail 7 on Sheet N523 will not be used for this project.

Refer to Technical Specification ITEM L-126 ELECTRICAL LINE DISTRIBUTION SYSTEMS (FAA OWNED) paragraph 126-4.2 under METHOD OF MEASUREMENT for additional information on conduit installation with concrete encasement. In addition, refer to ITEM L-127 APPROACH LIGHTING SYSTEM – MALS MODIFICATION (FAA OWNED), paragraph 127-4.4 for additional information on conduit installation and concrete encasement shall be included in the METHOD OF MEASUREMENT for the conduit installation. Associated pay Items 55 (Item L-126-5.2 1W2" Ductway (FAA Standards w/ Guard Wire) and 62 (Item L-127-5.4 MALS 27R Rebuild Raceway Installation).

Refer to Attachment 7 of Addendum No. 1 – Technical Specification L-127.

For the 1W2" Directional Drill shown on Sheet N102, refer to Technical Specification ITEM L-129 DIRECTIONAL DRILL, pay item 69 (Item L-129-5.1 Directional Drill Conduit, 1 Way, 2-Inch HDPE).

All other information remains the same.

Miami-Dade County,

Claudia Portocarrero
Senior Procurement Contracting Officer

c: Clerk of the Board

ADDENDUM No. 1

ATTACHMENT 1

Volume 1: Advertised of Bids

Schedule of Prices – REVISED

REVISED

SCHEDULE OF PRICES BID
[All Prices shall be in U.S. Dollars]

PROJECT: OPF RUNWAY 9-27 REHABILITATION

BID NO.: X009A

Miami-Dade County will calculate the amount (sum of Items 1 through 69)
Unit Prices shall include fully burdened equipment, labor, material, tools, supplies, supervision, incidentals, engineering, mobilization, profit, design, manufacture, delivery, construction administration, project management, installation, testing, and any other item necessary which is clearly necessary for the completion of the work shall be considered a part of such work although not directly specified or called for. See specifications for Divisions and Schedule of Payment.

1. The total bid amount shall include all items needed to complete the work specified in the Divisions including without limitation all equipment, labor, material, tools, supplies, supervision, incidentals, engineering design manufacture, delivery, construction administration, project management, installation, testing startup, commissioning, permitting, and any other item necessary to fully complete the work pursuant to this solicitation.

2. Any work omitted from this solicitation which are clearly necessary for the completion of this work and is appurtenances shall be considered part of such work although not directly specified or called for in this solicitation.

3. The Manufacturer/Installer shall be responsible for verifying installation locations, methods, and notify MDAD Representative of any conflict or Code violations prior to manufacturing of equipment. Modifications will be coordinated and approved by MDAD. Modifications shall be made at no additional cost or fees.

4. The Manufacturer/Installer's total bid amount shall include all employees out of pocket expenses, including travel, per diem, and miscellaneous costs and fees.

CONTINUES ON NEXT PAGE

REVISED

SCHEDULE OF PRICES BID
[All Prices shall be in U.S. Dollars]

Item #	ADDED Specification Section #	Item Description	Quantity	Unit of Measurement	Unit Price
1	017113-1	MOBILIZATION	1	Lump Sum	$
2	015700-1	MAINTENANCE OF AIRCRAFT OPERATING AREA TRAFFIC	1	Lump Sum	$
3	015713-1	TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL	1	Lump Sum	$
4	P-101-5.1	FULL-DEPTH CONCRETE PAVEMENT REMOVAL	25,300	Square Yard	$
5	P-101-5.2	FULL-DEPTH CONCRETE AND ASPHALT PAVEMENT REMOVAL	20,200	Square Yard	$
6	P-101-5.3	FULL-DEPTH ASPHALT PAVEMENT REMOVAL	47,800	Square Yard	$
7	P-101-5.4	VARIABLE DEPTH ASPHALT MILLING	141,300	Square Yard	$
8	P-101-5.5	SURFACE CRACK PREPARATION AND SEALANT	99,000	Linear Foot	$
9	P-151-4.1	CLEARING AND GRUBBING	11	Acres	$
10	P-152-4.1	EMBANKMENT	2,800	Cubic Yard	$
11	P-154-5.1	12" STABILIZED SUBGRADE	11,800	Square Yard	$
12	P-154-5.2	18" STABILIZED SUBGRADE	38,700	Square Yard	$
13	P-160-1	TEMPORARY STOCKPILING OF SUSPECTED AND ENR (Environmentally Non-Reusable) SOIL WITHOUT BERM / LINING	4,500	Cubic Yard	$
14	P-160-2	TEMPORARY STOCKPILING OF SUSPECTED AND ENR SOIL WITH BERM / LINING	3,500	Cubic Yard	$
15	P-160-3	TRANSPORTATION / DISPOSAL OF NON-HAZARDOUS SOIL	6,450	Ton	$
16	P-160-4	TRANSPORTATION / INCINERATION OF SOIL	4,300	Ton	$
17	P-160-5	TRANSPORTATION / DISPOSAL OF HAZARDOUS SOIL	1,130	Ton	$

REVISED

SCHEDULE OF PRICES BID [All Prices shall be in U.S. Dollars]					
Item #	**ADDED Specification Section #**	**Item Description**	**Quantity**	**Unit of Measurement**	**Unit Price**
18	P-160-6	REMOVAL / DISPOSAL OF FFHP (Free-Floating Hydrocarbon Product)	10,000	Gallon	$
19	P-160-7	SKIMMING / TRANSPORTATION / DISPOSAL OF ABSORBANT PADS / BOOMS	20	Each	$
20	P-211-5.1	8" LIME ROCK BASE COURSE	11,100	Square Yard	$
21	P-211-5.2	15" LIME ROCK BASE COURSE	37,100	Square Yard	$
22	P-211-5.3	REWORK EXISTING LIME ROCK BASE COURSE	45,800	Square Yard	$
23	P-211-5.4	VARIABLE THICKNESS LIME ROCK BASE COURSE	3,650	Cubic Yard	$
24	P-401-8.1	ASPHALT SURFACE COURSE	53,950	Ton	$
25	P-603-5.1	EMULSIFIED ASPHALT TACK COAT	37,500	Gallon	$
26	P-605-5.1	JOINT SEALING FILLER, SELF LEVELING	900	Linear Foot	$
27	P-609-5.1	BITUMINOUS SINGLE SURFACE TREATMENT	32,400	Gallon	$
28	P-609-5.2	AGRREGATE SINGLE SURFACE TREATMENT	700	Ton	$
29	P-620-5.1	MARKING REMOVAL	6,900	Square Foot	$
30	P-620-5.2	PAVEMENT MARKING, REFLECTIVE (WHITE)	128,100	Square Foot	$
31	P-620-5.3	PAVEMENT MARKING, REFLECTIVE (YELLOW)	37,600	Square Foot	$
32	P-620-5.4	PAVEMENT MARKING, NON-REFLECTIVE (BLACK)	67,800	Square Foot	$
33	P-620-5.5	PREFORMED THERMOPLASTIC MARKING	4,500	Square Foot	$
34	P-621-5.1	RUNWAY AND TAXIWAY GROOVING	124,600	Square Yard	$

REVISED

SCHEDULE OF PRICES BID [All Prices shall be in U.S. Dollars]					
Item #	**ADDED Specification Section #**	**Item Description**	**Quantity**	**Unit of Measurement**	**Unit Price**
35	T-904-5.1	SODDING, 4 INCHES OF TOPSOIL, GRADE TO DRAIN	45,000	Square Yard	$
36	L-100-5.1	ELECTRICAL DEMOLITION, CIRCUIT TRACING, EXISTING CONDITION VERIFICATION, MISC ELECTRICAL PREP	43,000	Linear Foot	$
37	L-108-5.1	No. 8 AWG, 5 KV, L-824 TYPE C CABLE, INSTALLED IN DUCT BANK OR CONDUIT	51,350	Linear Foot	$
38	L-108-5.2	No. 6 AWG, BARE SOLID COPPER COUNTERPOISE WIRE, INSTALLED IN TRENCH	26,170	Linear Foot	$
39	L-108-5.3	3/4" X 10' COPPER CLAD STEEL GROUND RODS, INCLUDING GROUND CONNECTORS	78	Each	$
40	L-108-5.4	INTERCEPT EXISTING CIRCUIT CONDUCTORS IN EXISTING BASE CAN/MANHOLE/JUNCTION CAN AND EXTEND CIRCUITS	32	Each	$
41	L-108-5.5	10' ADDITIONAL GROUND ROD SECTIONS	10	Each	$
42	L-110-5.1	1-WAY 2" SCHEDULE 40 PVC (Polyvinyl Chloride), CONCRETE ENCASED W/ ELECTRICAL WARNING TAPE	3,050	Linear Foot	$
43	L-110-5.2	2-WAY 2" SCHEDULE 40 PVC, CONCRETE ENCASED W/ ELECTRICAL WARNING TAPE	23,200	Linear Foot	$
44	L-115-5.1	L-867 12" DIAMETER JUNCTION CAN WITH COVER INSTALLED IN EARTH/NEW SHOULDER PAVEMENT	18	Each	$
45	L-125-5.1	L-862(L) LED RUNWAY OR L-861T(L)TAXIWAY EDGE LIGHT, (DISCONNECT EXISTING FIXTURE, REMOVE AND STORE)	174	Each	$
46	L-125-5.2	L-862(L) LED RUNWAY OR L-861T(L) LED TAXIWAY EDGE LIGHT, (INSTALL PREVIOUSLY STORED FIXTURE ONTO NEW BASE CAN - INCLUDES TRANSFORMER, AND SPLICE KITS. BASE CAN IS UNDER SEPARATE LINE ITEM)	174	Each	$
47	L-125-5.3	L-862(L) LED RUNWAY EDGE LIGHT, NEW COMPLETE FIXTURE WHICH INCLUDES BASE CAN, TRANSFORMER, SPLICE KITS, LIGHT FIXTURE AND INSTALLATION.	10	Each	$

REVISED

SCHEDULE OF PRICES BID [All Prices shall be in U.S. Dollars]					
Item #	**ADDED Specification Section #**	**Item Description**	**Quantity**	**Unit of Measurement**	**Unit Price**
48	L-125-5.4	L-861T(L) LED TAXIWAY EDGE LIGHT, NEW COMPLETE FIXTURE WHICH INCLUDES BASE CAN, TRANSFORMER, SPLICE KITS, LIGHT FIXTURE AND INSTALLATION.	6	Each	$
49	L-125-5.5	L-850D(L) LED INGROUND EDGE/THRESHOLD AIRCRAFT RATED LIGHT NEW FIXTURE WHICH INCLUDES BASE CAN, TRANSFORMER, SPLICE KITS, LIGHT FIXTURE, BASE CAN COVER AND INSTALLATION.	24	Each	$
50	L-125-5.6	L-867 12-INCH DIAMETER BASE CAN FOR EDGE LIGHTS WITH COVER, INSTALLED IN EARTH / SHOULDER	177	Each	$
51	L-125-5.7	L-868B AIRCRAFT RATED 12-INCH DIAMETER BASE CAN WITH COVER, INSTALLED IN EARTH/NEW SHOULDER PAVEMENT	24	Each	$
52	L-125-5.8	L-868D AIRCRAFT RATED 16-INCH DIAMETER BASE CAN WITH COVER AND NEW CONCRETE BASE (FOR RELOCATED SIGNS)	5	Each	$
53	L-125-5.9	EXISTING SIGN REMOVED DURING GRADING, STORED, AND RE-INSTALLED	19	Each	$
54	L-126-5.1	3'x3' AIRCRAFT RATED HANDHOLE (FAA STANDARDS)	14	Each	$
55	L-126-5.2	1W2" DUCTWAY (FAA STANDARDS W/ GUARD WIRE)	300	Linear Foot	$
56	L-126.5.3	RUNWAY 09L EQUIPMENT RACK REPLACEMENT NEAR GLIDE SLOPE BUILDING	1	Lump Sum	$
57	L-126.5.4	RUNWAY 27R EQUIPMENT RACK REPLACEMENT NEAR GLIDE SLOPE BUILDING	1	Lump Sum	$
58	L-126.5.5	L-867D PULL CAN WITH CONCRETE ENCASEMENT	1	Each	$
59	L-127-5.1	MALS (Medium-Intensity Approach Lighting System) 09L THRESHOLD INFRASTRUCTURE	1	Lump Sum	$
60	L-127-5.2	MALS 27R THRESHOLD INFRASTRUCTURE	1	Lump Sum	$

REVISED

SCHEDULE OF PRICES BID [All Prices shall be in U.S. Dollars]					
Item #	**ADDED Specification Section #**	**Item Description**	**Quantity**	**Unit of Measurement**	**Unit Price**
61	L-127-5.3	MALS INSET THRESHOLD LIGHT FIXTURE (FA-23000/5-GREEN)	18	Each	$
62	L-127-5.4	MALS 27R REBUILD RACEWAY INSTALLATION	1	Lump Sum	$
63	L-127-5.5	MALS 27R REBUILD CABLE INSTALLATION	1	Lump Sum	$
64	L-127-5.6	MALS 27R REBUILD RECOMMISSIONING	1	Lump Sum	$
65	L-127-5.7	MALS 27R REBUILD RECOMMISSIONING - RDR (Runway Distance Remaining) SIGN REMOVAL	1	Each	$
66	L-127-5.8	MALS 27R REBUILD RECOMMISSIONING - WIND CONE RELOCATION	1	Each	$
67	L-128.5.1	PAPI (Precision Approach Path Indicator) 09L INFRASTRUCTURE INCLUDING 4-BOX PAPI UNITS (FAA FURNISHED), AND POWER AND CONTROL ASSEMBLY (FAA FURNISHED)	1	Lump Sum	$
68	L-128.5.2	PAPI 27R INFRASTRUCTURE INCLUDING 4-BOX PAPI UNITS (FAA FURNISHED), AND POWER AND CONTROL ASSEMBLY (FAA FURNISHED)	1	Lump Sum	$
69	L-129.5.1	DIRECTIONAL DRILL CONDUIT, 1 WAY, 2-INCH HDPE (High Density Polyethylene)	400	Linear Foot	$

NOTE: ALLOWANCE ACCOUNT(S):

Contingency ALLOWANCE ACCOUNT (Amount in Words)	10% OF TOTAL BID ITEM A (Amount in Figures)
Inspector General (Amount in Words)	0.25% OF TOTAL BID ITEM A (Amount in Figures)

ADDENDUM No. 1

ATTACHMENT 2

Pre-Bid Signing Sheet

X009A

Miami-Opa Locka Executive Airport (OPF) Runway 09L-27R Rehabilitation

Pre-Bid Conference Sign-In Sheet - March 10, 2023
OPTIONAL

Name	Company	Phone	E-mail
ERNESTO BELTRE	MDAD	3052676097	EBELTRE@FLYMIA.COM
MIGUEL J. RIERA	MDAD	305 876-0596	MRIERA@FLYMIA.COM
Edwin Rosario	Hypower	954-978-9200	ERosario@hypowerinc.com
Carlos Arboleda	Atkins	305-514-3232	carlos.arboleda@atkinsglobal.com
Joseph L. Duarte	ATKINS	954 892-1203	joseph.duarte@atkinsglobal.com
Luis Diaz	ATKINS	305-514-3232	luis.diaz@atkinsglobal.com
Andre Ragin	MDAD	305 876 7221	aragin@flymia.com
Leonardo Mane	ISD/SBD	305-375-3167	leonardo.maneleyva@miamidade.gov
Benjamin Dezayas	Gartek	305-266-8997	bdezayas@gartek.cc

X009A

Miami-Opa Locka Executive Airport (OPF) Runway 09L-27R Rehabilitation

Pre-Bid Conference Sign-In Sheet - March 10, 2023
OPTIONAL

Name	Company	Phone	E-mail
Robert Haas	CEI	305 910 9100	RHAAS @ cherokeecorp.com
Daniel Sanchez	General Asphalt	786 594-1639	daniel @ generalasphalt.com
XAVIER SALVAT	HORIZON CONTRACTORS INC	(305)345-7816	XS @ HCIMAIL.NET
Rob Lopez	General Asphalt	305-970-3031	rob@generalasphalt.com
Robert Lopez	" "		robert@generalasphalt.com
Danielle Goveia	CEI	305-984-1400	dgoveia@cherokeecorp.com
Pierre Francoeur	Hypower	9549011849	Pfrancoeur@hypowerinc.com
Mario Avin	Hypower		Mavin@hypowerinc.com
JACK LOVELY	VALTIR	501 927-7129	JACK.LOVELY@VALTIR.COM

X009A

Miami-Opa Locka Executive Airport (OPF) Runway 09L-27R Rehabilitation

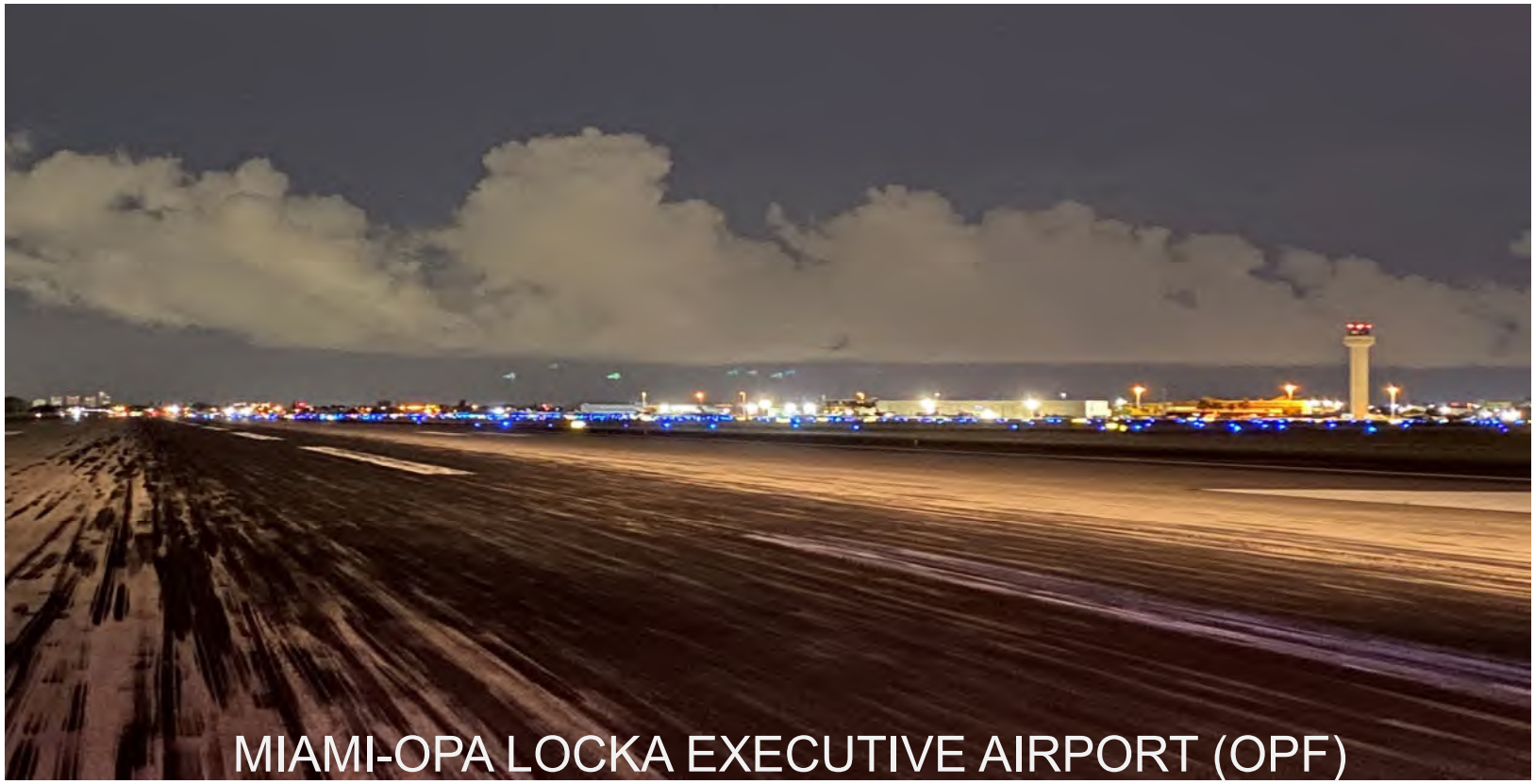
Pre-Bid Conference Sign-In Sheet - March 10, 2023
OPTIONAL

Name	Company	Phone	E-mail
Yassir El-Khamlichi	MCM	786.899-356	Yassir@mcm-us.com

ADDENDUM No. 1

ATTACHMENT 3

Pre-Bid Power Point Presentation



ATKINS
Member of the SNC-Lavalin Group

SNC·LAVALIN

Runway 09L-27R Rehabilitation - Pre-Bid Conference Presentation

MIAMI DADE AVIATION DEPARTMENT (MDAD)

MDAD Project No. X009A • March 10, 2023

MIA MIAMI INTERNATIONAL AIRPORT

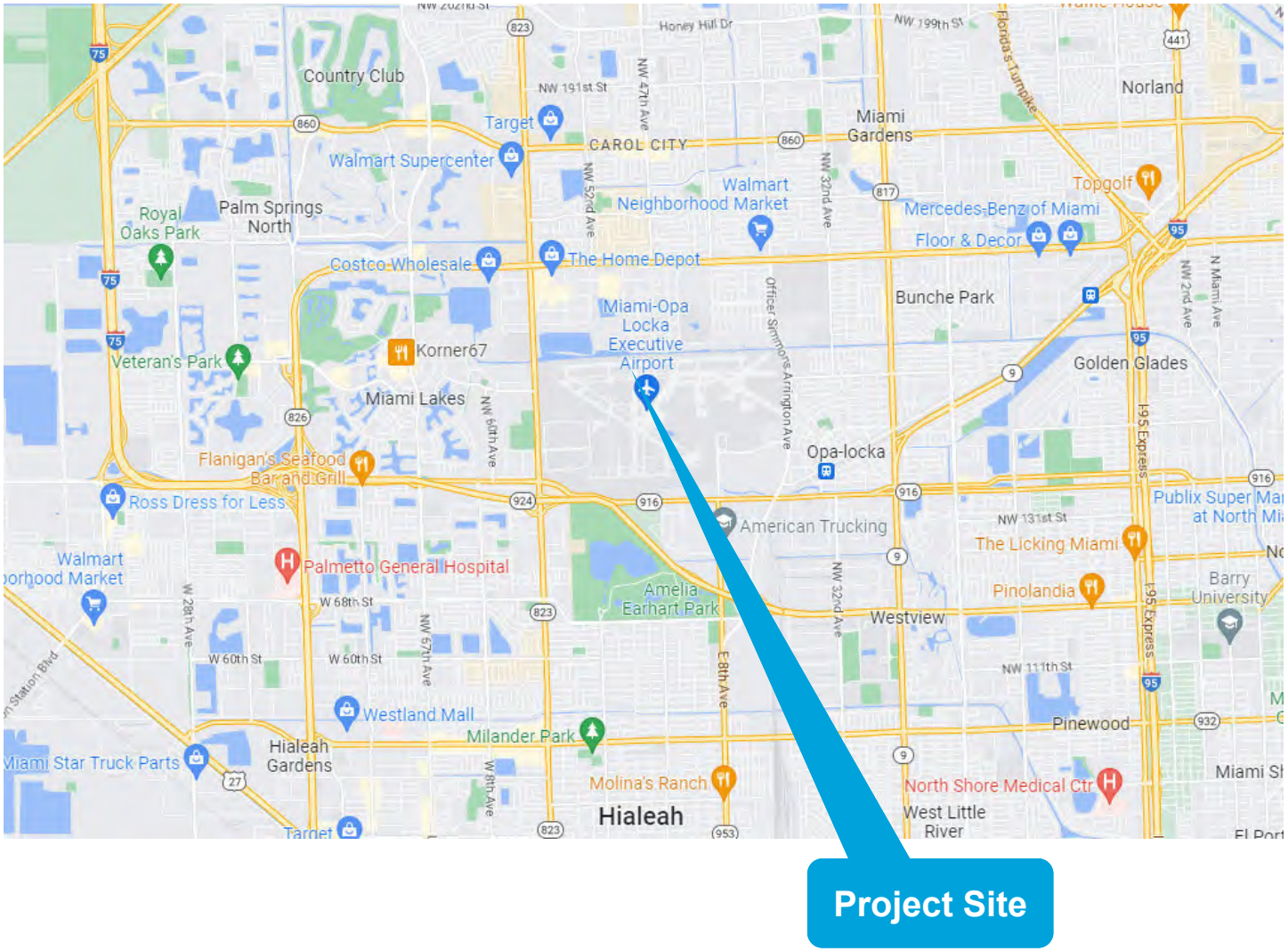
MIAMI-DADE COUNTY

Agenda – Project Description

1. Location and Site Description
2. Phasing and Schedule
3. Scope of Work
4. Site Access - Storage & Staging
5. Construction Safety Phasing Plan (CSPP) & Safety Plan Compliance Document (SPCD)
6. ATKINS Design Team

Item 1:
Location and Site Description

Project Location



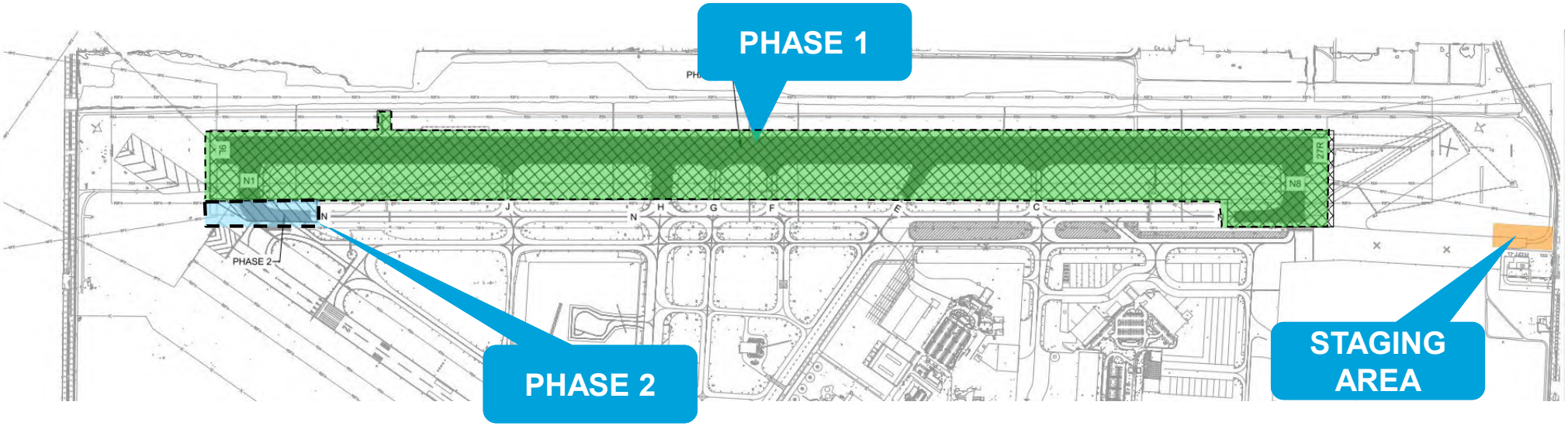
Site Description

- Miami-Opa Locka Executive Airport (OPF)
- 14201 NW 42nd Ave, Opa-locka, FL 33054
- Miami-Dade County, Florida
- Public Airport
- Owned and Operated by Miami-Dade Aviation Department, MDAD.
- Runway 09L-27R Rehabilitation Project


RW 9L-27R
9L
27R
N1
J
H
G
F
E
C
N8
RW 12-30
Scale = 1:400
MIAMI-OPA LOCKA EXECUTIVE AIRPORT - 2021

Item 2:
Phasing and Schedule

Project Phases



Phase 1

- Close RW 9L-27R
- RW 9L & RW 27R reconstruction (500’)
- RW 9L-27R mill and overlay (7,000’)
- TW N1 reconstruction up to RW 9L-27R ROFA
- TW J (+/-120’), TW G (+/-70’), TW F (+/-120’), and TW C (120’) full depth transition
- TW H and TW E full depth up to TW N TOFA
- TW N8 full length reconstruction
- TW N-East (+/- 500’) between TW N8 (Sta 959+00) and Sta 954+00
- RW 9L-27R Commissioning in coordination with the FAA – 30 calendar days before Phase 1 completion date.
- Flight checks by the FAA for the commissioning

Runway 9L-27R closed

Runway 12-30 open

TW T1 and TW T2 open

Phase 2

Reconstruction of TW N1 (north) and TW N-West

Phase 2A

- TW N1 reconstruction between RW 9L-27R ROFA and TW N..
- TW N-West reconstruction between +/- Sta 901+00 and Sta 906+00.

Work performed concurrently with Phase 1
No Work permitted within RW 12-30 RSA and restricted within the ROFA

TW T1 and TW T2 closed
Runway 9L-27R closed
Runway 12-30 opened

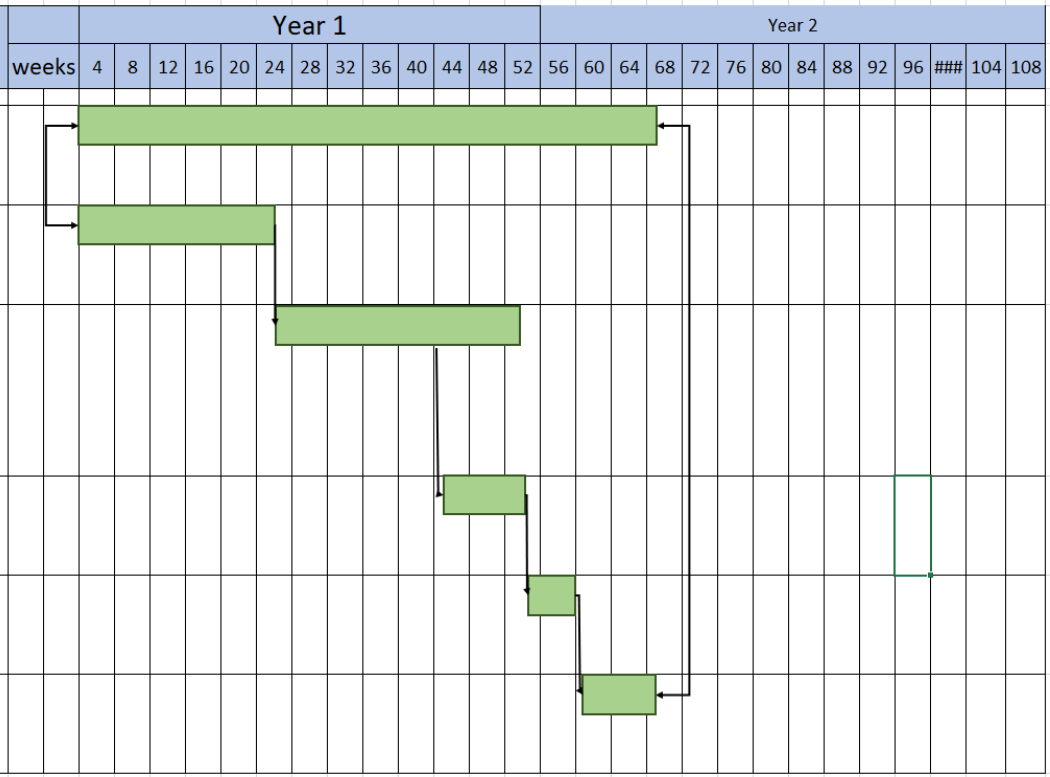
Phase 2B

- **Open Runway 9L-27R**
- **Close Runway 12-30**
- Continue Phase 2A work
- TW N1 & TW N-West – N1 & N Intersection SW corner

  No Work permitted within RW 9L-27R RSA & ROFA

Construction Sequence and Construction Duration by Phase

Construction Sequence	Work Area	Duration C-Days
Project	Total Construction	450
Administrative Period	Mobilization and Submittals	150
Phase 1	RW 9L-27R, TW N1 , TW N8, and TW N East Rehabilitation and TW J. TW H, TW G, TW F, TW E and TW C	200
Phase 2a	TW N-West Rehabilitation Phase 1 & Phase 2 Concurrent Work	60
Phase 2b	TW N-West Rehabilitation Post Phase 1 Work	40
Final	Substantial / Final Completion & Closeout	60



Item 3:
Scope of Work

Scope of Work –Work Elements

- Demolition
- Pavement Rehabilitation
  - Full Depth Pavement Section
  - Mill and Overlay
- Airfield Lighting and Signage
- Pavement Marking
- NAVAIDs

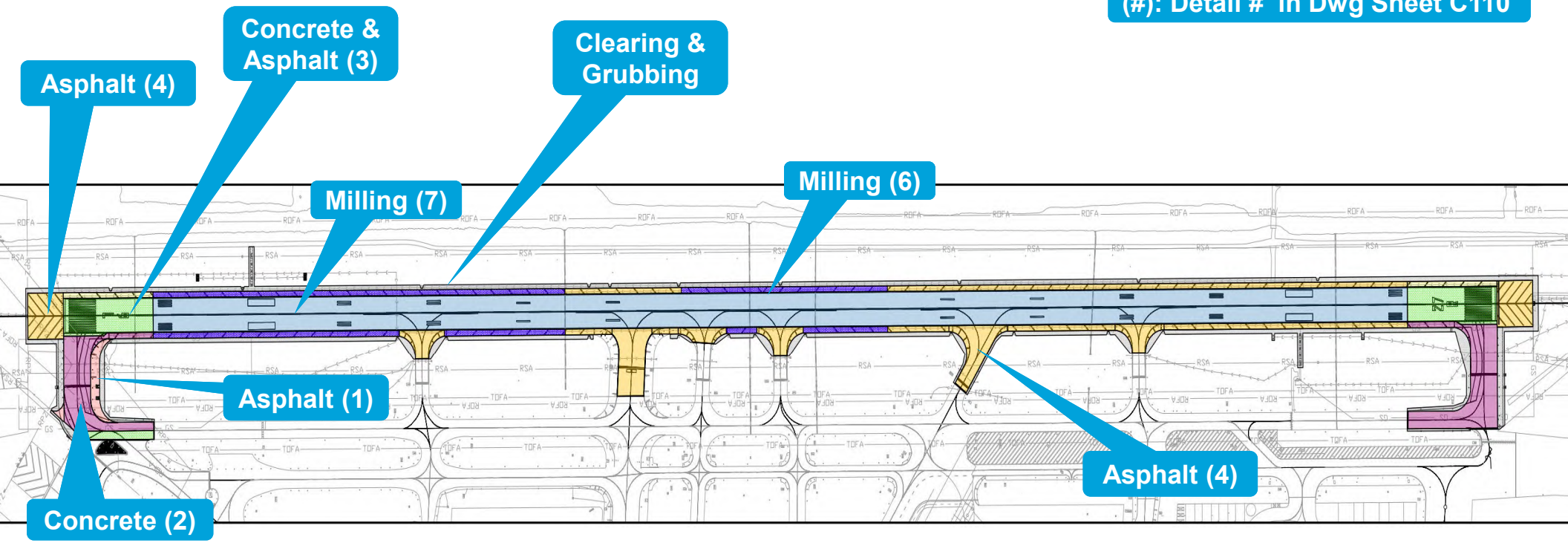
Scope of Work

P-101	Prep./Removal of Existing Pavement
P-151	Clearing, Grubbing and Demolition
P-152	Exc. and Embankment – P-701 / P-610
P- 153	Controlled Low Strength Mat. (CLSM)
P-154	Stabilized Subgrade
P-160	Contaminated Soil / Groundwater
P-211	Lime Rock Base Course
P-401	Asphalt Mix Pavement
P-602	Bituminous Prime Coat
P-603	Bituminous Tack Coat
P-605	Joint Sealants for Pavements
P-609	Bituminous Single Surf. Treatment (SST)
P-610	Structural Portland Cement Concrete
P-620	Pavement Markings

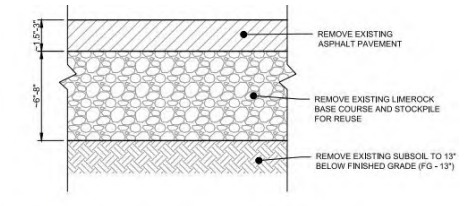
P-621	Saw-Cut Grooves
T-904 /T905	Sodding, Seeding, and Fertilizing / Topsoiling
L-100	Lighting and Electrical Work
L-108	Underground Power Cable for Airports
L-110	Airport Underground Electrical Duct Banks & Conduits
L-115	Electrical Manholes and Junction Structures
L-125	Remove & install New Obstruction Lights
L-126	Electrical Line Distribution Systems (FAA)
L-127	Approach Lighting System – MALSR Modifications (FAA)
L-128	Visual Glides Slope System – PAPI (FAA)
L-129	Directional Drill

Demolition

(#): Detail # in Dwg Sheet C110

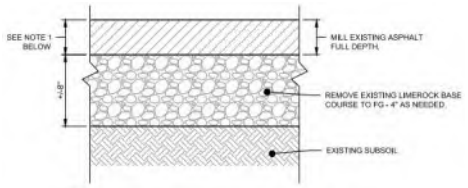


Demolition - Typical Existing Pavement Sections



PAID UNDER ITEM P-101-5.3 FULL-DEPTH ASPHALT PAVEMENT REMOVAL.

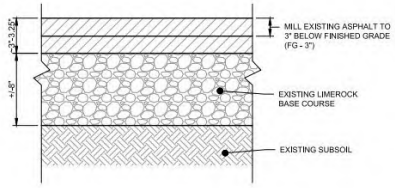
1 C110 FULL DEPTH ASPHALT PAVEMENT REMOVAL - TAXIWAY SHOULDERS
N.T.S.



NOTE 1:
EXISTING ASPHALT ON RUNWAY SHOULDERS IS APPROXIMATELY 3"-3.25". EXISTING ASPHALT ON TAXIWAYS IS APPROXIMATELY 3.25"-6". EXISTING ASPHALT ON BLAST PADS IS APPROXIMATELY 2" +/-.

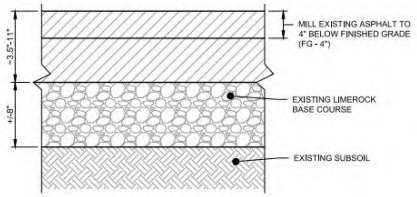
PAID UNDER ITEM P-101-5.3 FULL-DEPTH ASPHALT PAVEMENT REMOVAL.

4 C110 FULL DEPTH ASPHALT PAVEMENT REMOVAL - RUNWAY SHOULDERS, BLAST PAD, AND TAXIWAYS
N.T.S.



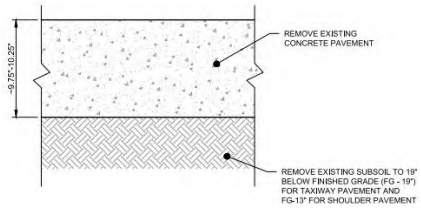
PAID UNDER ITEM P-101-5.4 VARIABLE DEPTH ASPHALT MILLING.

6 C110 ASPHALT PAVEMENT MILLING (FG -3") - RUNWAY SHOULDERS
N.T.S.



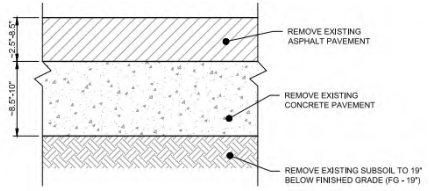
PAID UNDER ITEM P-101-5.4 VARIABLE DEPTH ASPHALT MILLING.

7 C110 ASPHALT PAVEMENT MILLING (FG - 4") - RUNWAY
N.T.S.



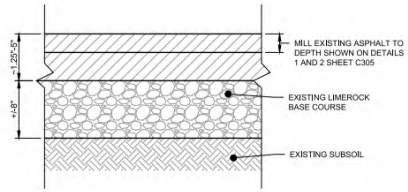
PAID UNDER ITEM P-101-5.1 FULL-DEPTH CONCRETE PAVEMENT REMOVAL.

2 C110 FULL DEPTH CONCRETE PAVEMENT REMOVAL - TAXIWAYS AND SHOULDERS
N.T.S.



PAID UNDER ITEM P-101-5.2 FULL-DEPTH CONCRETE AND ASPHALT PAVEMENT REMOVAL.

3 C110 FULL DEPTH CONCRETE AND ASPHALT PAVEMENT REMOVAL - RUNWAY AND TAXIWAYS
N.T.S.

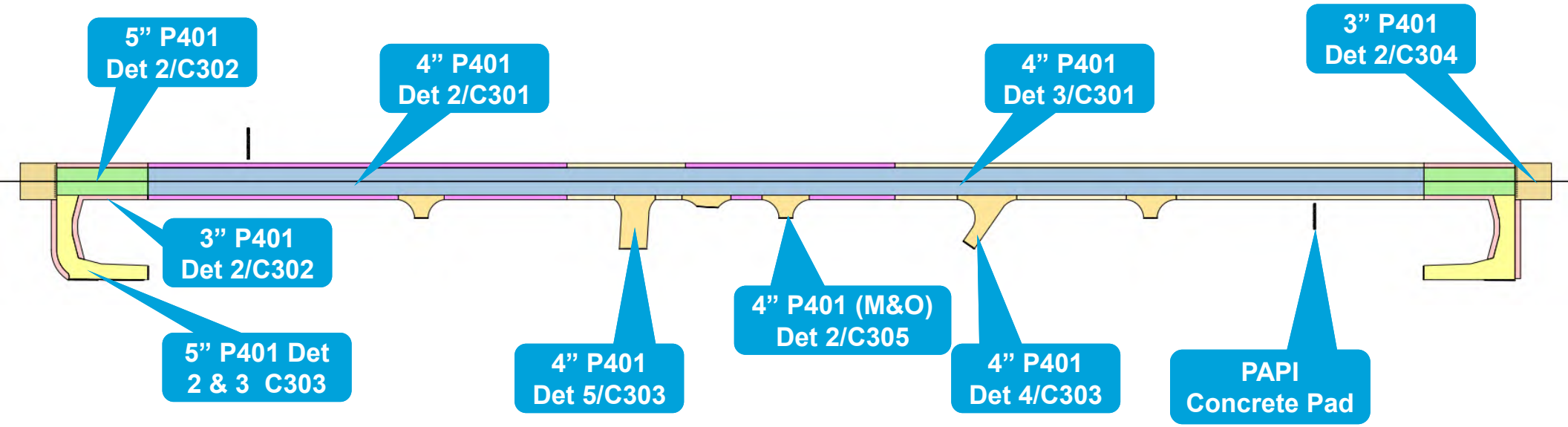


PAID UNDER ITEM P-101-5.4 VARIABLE DEPTH ASPHALT MILLING.

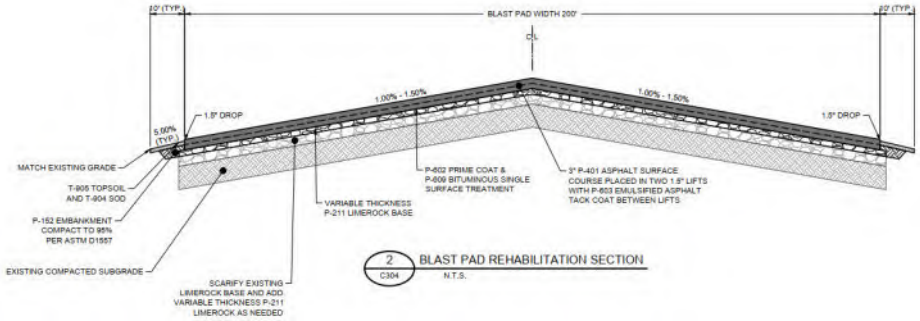
5 C110 ASPHALT PAVEMENT MILLING FOR TRANSITIONS TO EXISTING PAVEMENT (VARIABLE DEPTH)
N.T.S.

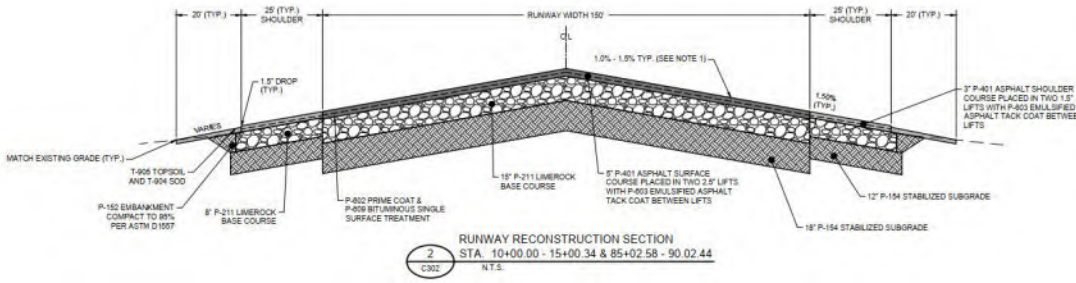
Pavement Rehabilitation

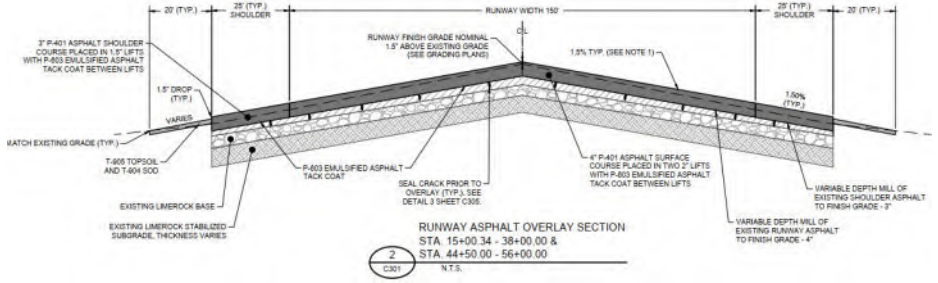
(M&O): Mill & Overlay



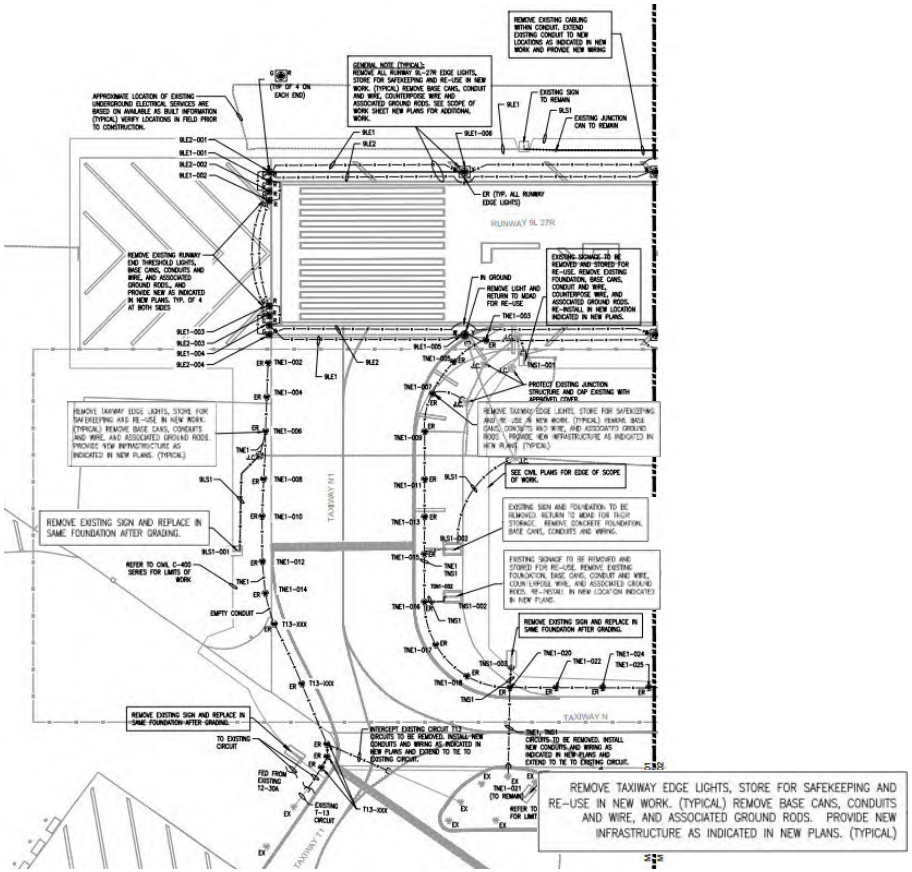
Pavement - Proposed Typical Sections



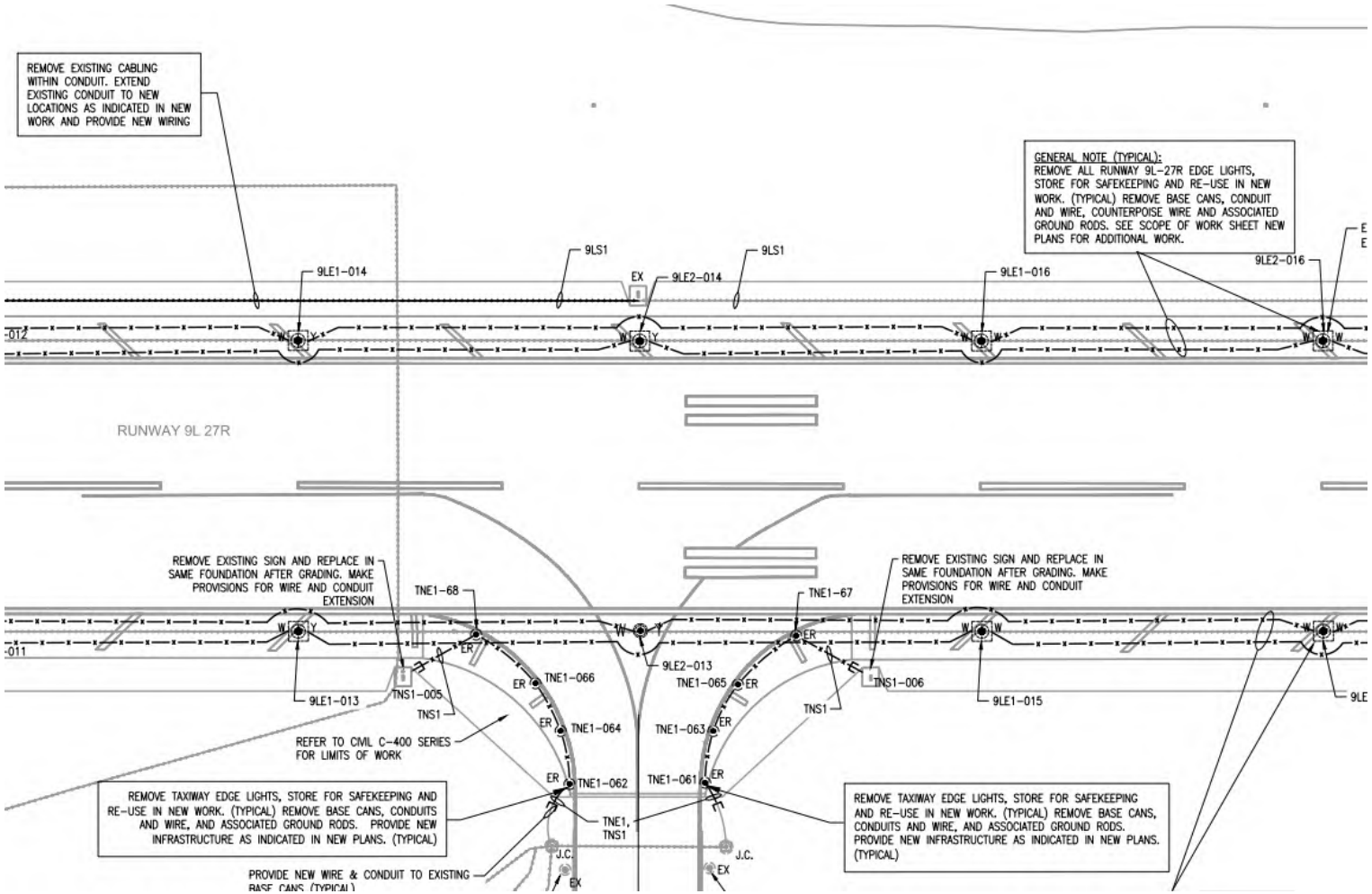




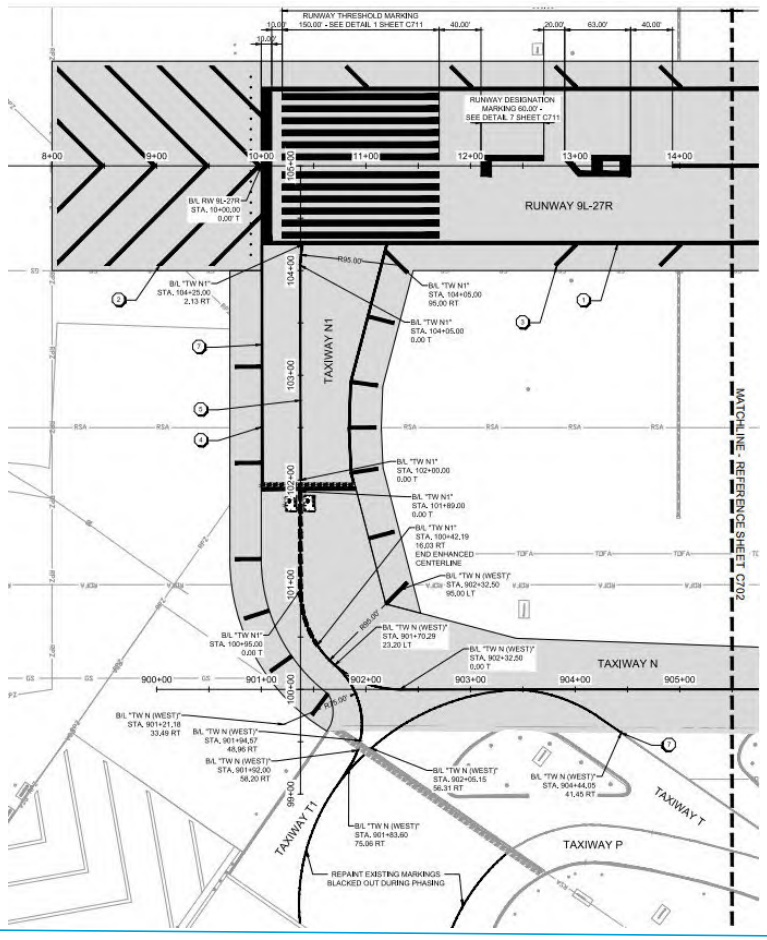
Typical Airfield Lighting Demolition

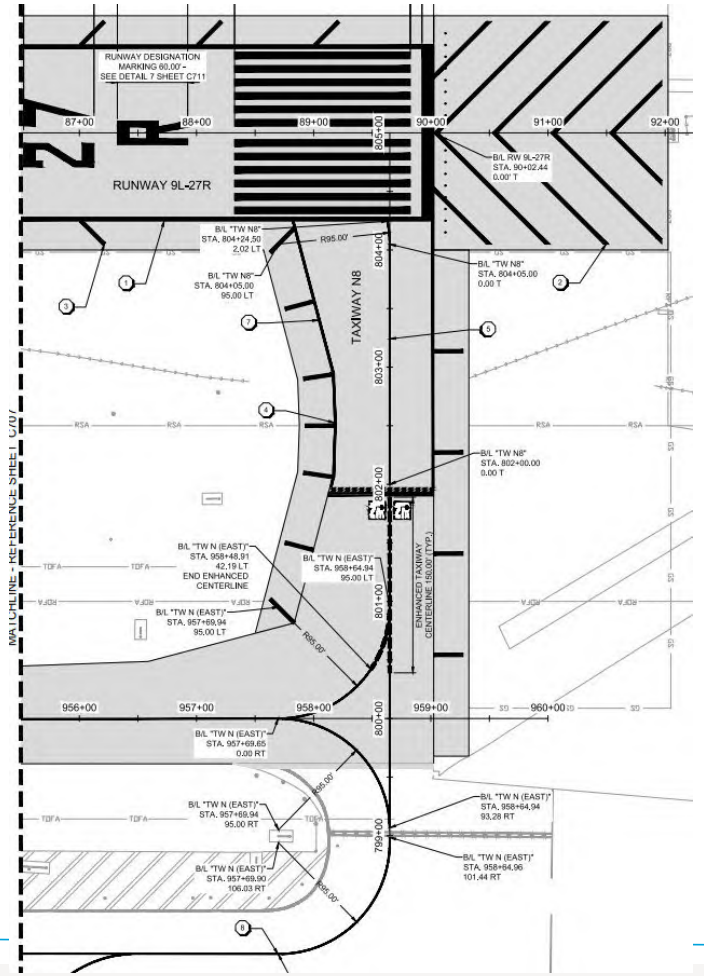


Typical Airfield Lighting Demolition

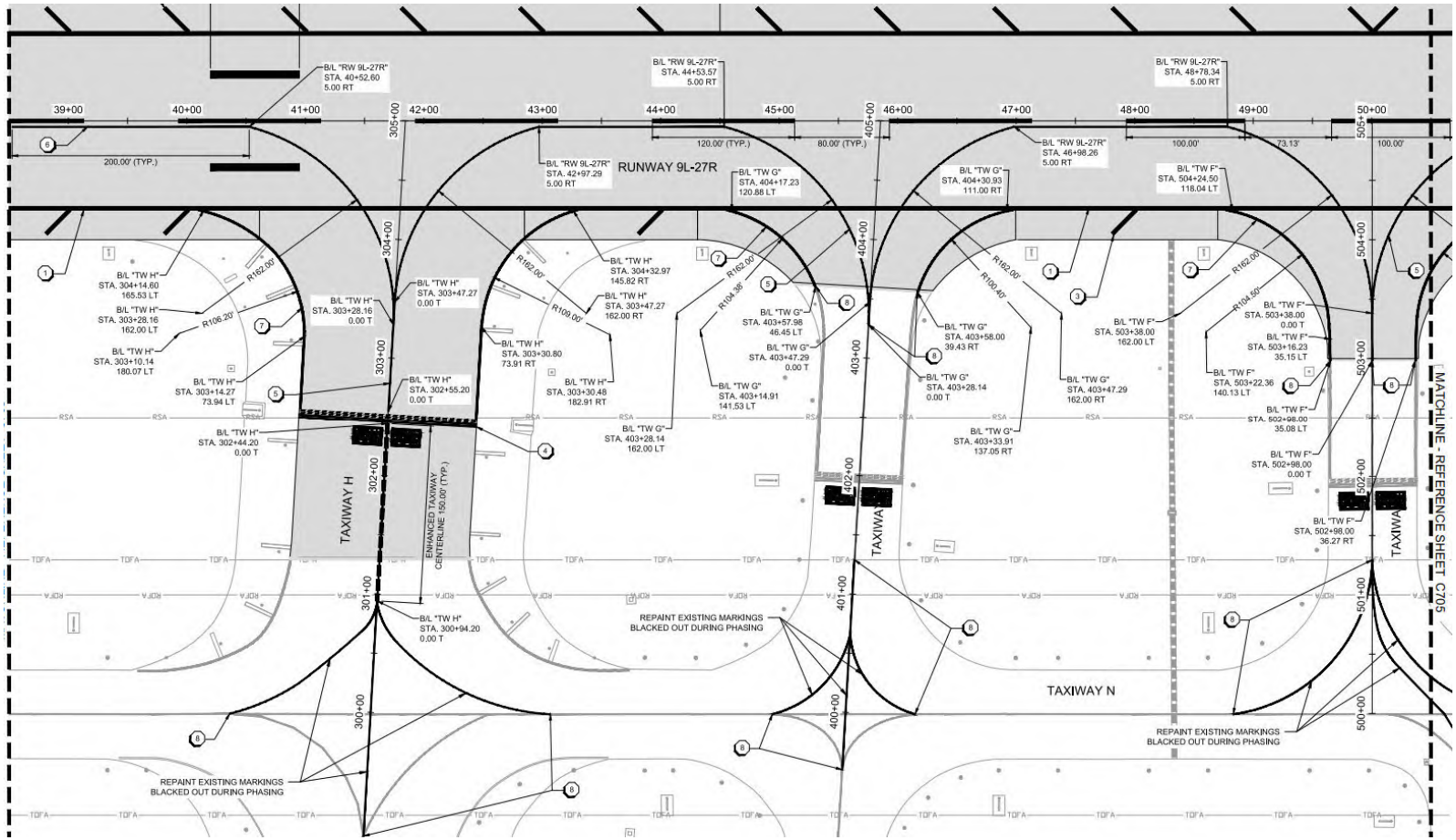


Pavement Markings RW 9L, RW 27R



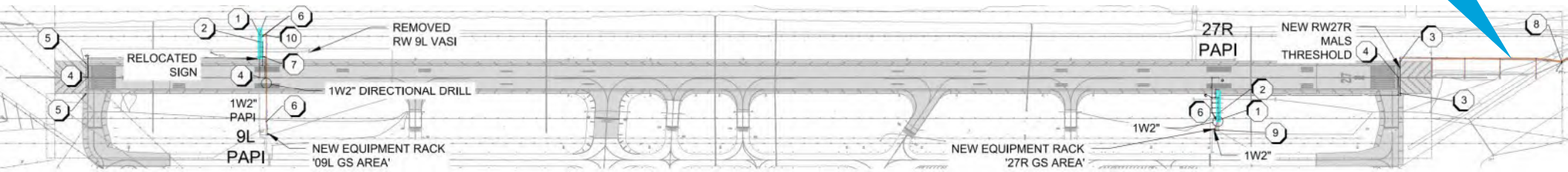


Pavement Markings H, G, & F



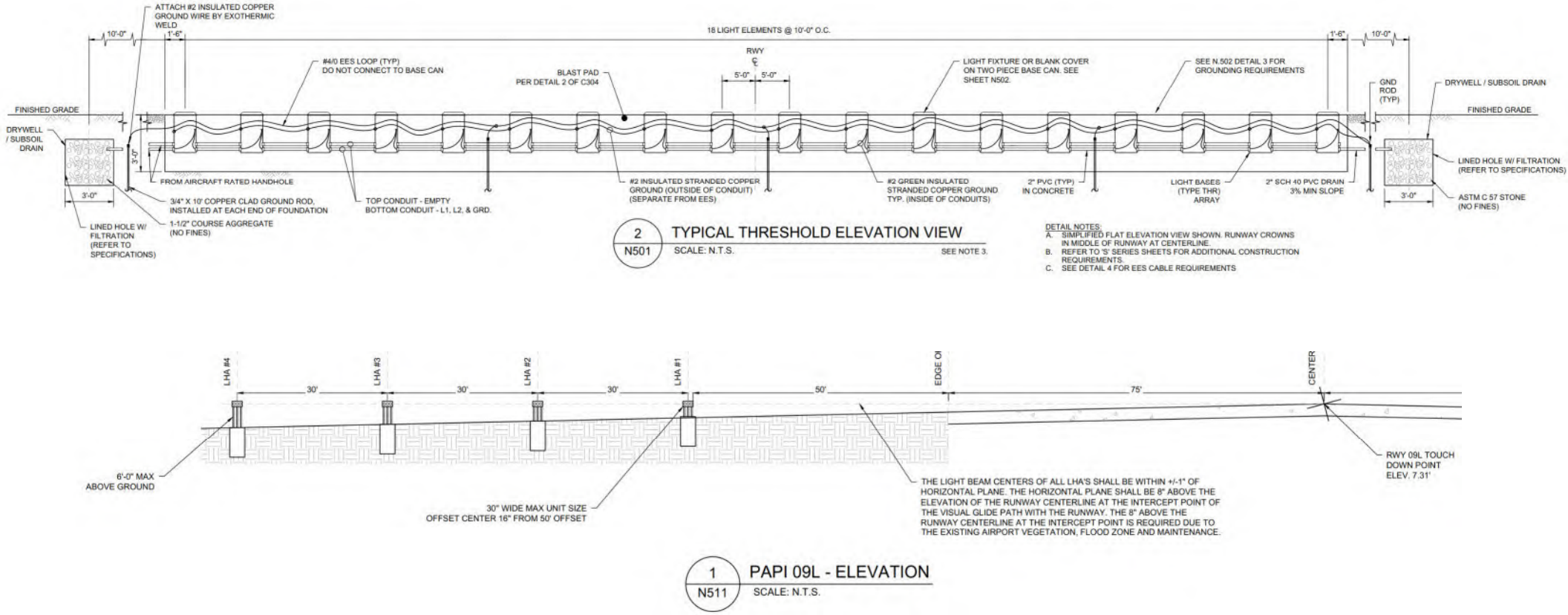
NAVAIDs

RW 27R MALS Stations/ Threshold Bar Feeder Improvements N108 & N109



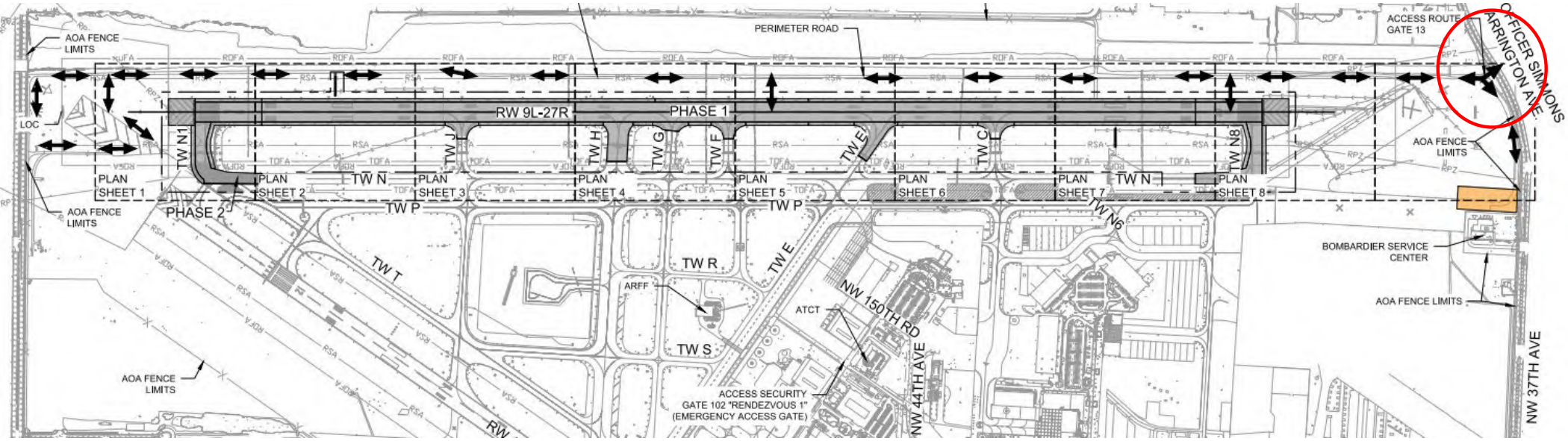
1	PAPI Power Distribution and Control Rack.
2	PAPI Lamp Housing Assembly (LHA). (4 Per RW).
3	27R MALS Threshold Array. (18 Type L-868b)
4	Survey Points (As-Built Required)
5	09L MALS Threshold Array. (18 Type L-868b)
6	Aircraft Rated Handhole.
7	LED PAPI Units - 30" Wide Max Size – 30’ O/C - 50’ +16" offset from RW Edge
8	MALS Power Rack - Replace Existing Enclosure and Back Plate (3R).
9	27R Glide Slope Shelter Feed. 2" RGS & Raceways to Existing Panelboard.
10	L-867D Pull Can and Cover Plate.

NAVAIDs


ATTACH #2 INSULATED COPPER GROUND WIRE BY EXOTHERMIC WELD
10'-0"
1'-6"
18 LIGHT ELEMENTS @ 10'-0" O.C.
1'-6"
10'-0"
RWY
#4/0 EES LOOP (TYP) DO NOT CONNECT TO BASE CAN
BLAST PAD PER DETAIL 2 OF C304
5'-0"
5'-0"
LIGHT FIXTURE OR BLANK COVER ON TWO PIECE BASE CAN. SEE SHEET N502.
SEE N.502 DETAIL 3 FOR GROUNDING REQUIREMENTS
GND ROD (TYP)
DRYWELL / SUBSOIL DRAIN
FINISHED GRADE
FINISHED GRADE
DRYWELL / SUBSOIL DRAIN
3'-0"
FROM AIRCRAFT RATED HANDHOLE
LINED HOLE W/ FILTRATION (REFER TO SPECIFICATIONS)
3'-0"
3/4" X 10' COPPER CLAD GROUND ROD. INSTALLED AT EACH END OF FOUNDATION
1-1/2" COURSE AGGREGATE (NO FINES)
TOP CONDUIT - EMPTY BOTTOM CONDUIT - L1, L2, & GRD.
#2 INSULATED STRANDED COPPER GROUND (OUTSIDE OF CONDUIT) (SEPARATE FROM EES)
#2 GREEN INSULATED STRANDED COPPER GROUND TYP. (INSIDE OF CONDUITS)
2" PVC (TYP) IN CONCRETE
LIGHT BASES (TYPE THR) ARRAY
2" SCH 40 PVC DRAIN 3% MIN SLOPE
LINED HOLE W/ FILTRATION (REFER TO SPECIFICATIONS)
3'-0"
ASTM C 57 STONE (NO FINES)
2
N501
TYPICAL THRESHOLD ELEVATION VIEW
SCALE: N.T.S.
SEE NOTE 3.
DETAIL NOTES:
A. SIMPLIFIED FLAT ELEVATION VIEW SHOWN. RUNWAY CROWNS IN MIDDLE OF RUNWAY AT CENTERLINE.
B. REFER TO 'S' SERIES SHEETS FOR ADDITIONAL CONSTRUCTION REQUIREMENTS.
C. SEE DETAIL 4 FOR EES CABLE REQUIREMENTS
LHA #4
LHA #3
LHA #2
LHA #1
EDGE OF
CENTER
30'
30'
30'
50'
75'
6'-0" MAX ABOVE GROUND
30" WIDE MAX UNIT SIZE OFFSET CENTER 16" FROM 50' OFFSET
THE LIGHT BEAM CENTERS OF ALL LHA'S SHALL BE WITHIN +/-1° OF HORIZONTAL PLANE. THE HORIZONTAL PLANE SHALL BE 8" ABOVE THE ELEVATION OF THE RUNWAY CENTERLINE AT THE INTERCEPT POINT OF THE VISUAL GLIDE PATH WITH THE RUNWAY. THE 8" ABOVE THE RUNWAY CENTERLINE AT THE INTERCEPT POINT IS REQUIRED DUE TO THE EXISTING AIRPORT VEGETATION, FLOOD ZONE AND MAINTENANCE.
RWY 09L TOUCH DOWN POINT ELEV. 7.31'
1
N511
PAPI 09L - ELEVATION
SCALE: N.T.S.

Item 4:
Site Access – Storage & Staging

Site Access Storage & Staging



- HAUL/ACCESS ROAD: EX. SERVICE ROAD & NEW ACCESS TO CONSTRUCTION AREA AS NEEDED.
- THE ROAD MUST BE RESTORED TO ORIGINAL CONDITION FOR SUBSTANTIAL COMPLETION

Item 5:
Construction Safety Phasing Plan (CSPP) & Safety Plan Compliance Document (SPCD)

Construction Safety
Advisory Circular 150/5370-2G

› Operational Safety on Airports During Construction

› Requirements found in the Project Manual

PRIMARY TOOLS:

› Construction Safety and Phasing Plan (CSPP): Developed by the Airport to help the airport operators ensure safety compliance during construction

› Safety Plan Compliance Document (SPCD): Developed by the Contractor to demonstrate that he has read and will abide by the CSPP, as well as all supplemental information that could not be included in the CSPP.

Construction Safety and Phasing

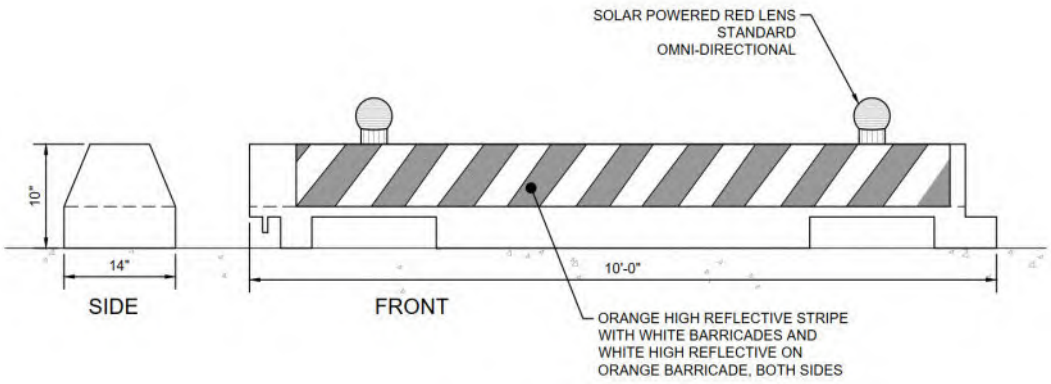
The Contractor is responsible to have An Approved (signed) MOT for each phase before initiating any work.

The Contractor is responsible for controlling its operations and the operations of subcontractors and suppliers as they comply with the requirements of the CSPP/SPCD.

Safety objectives include:

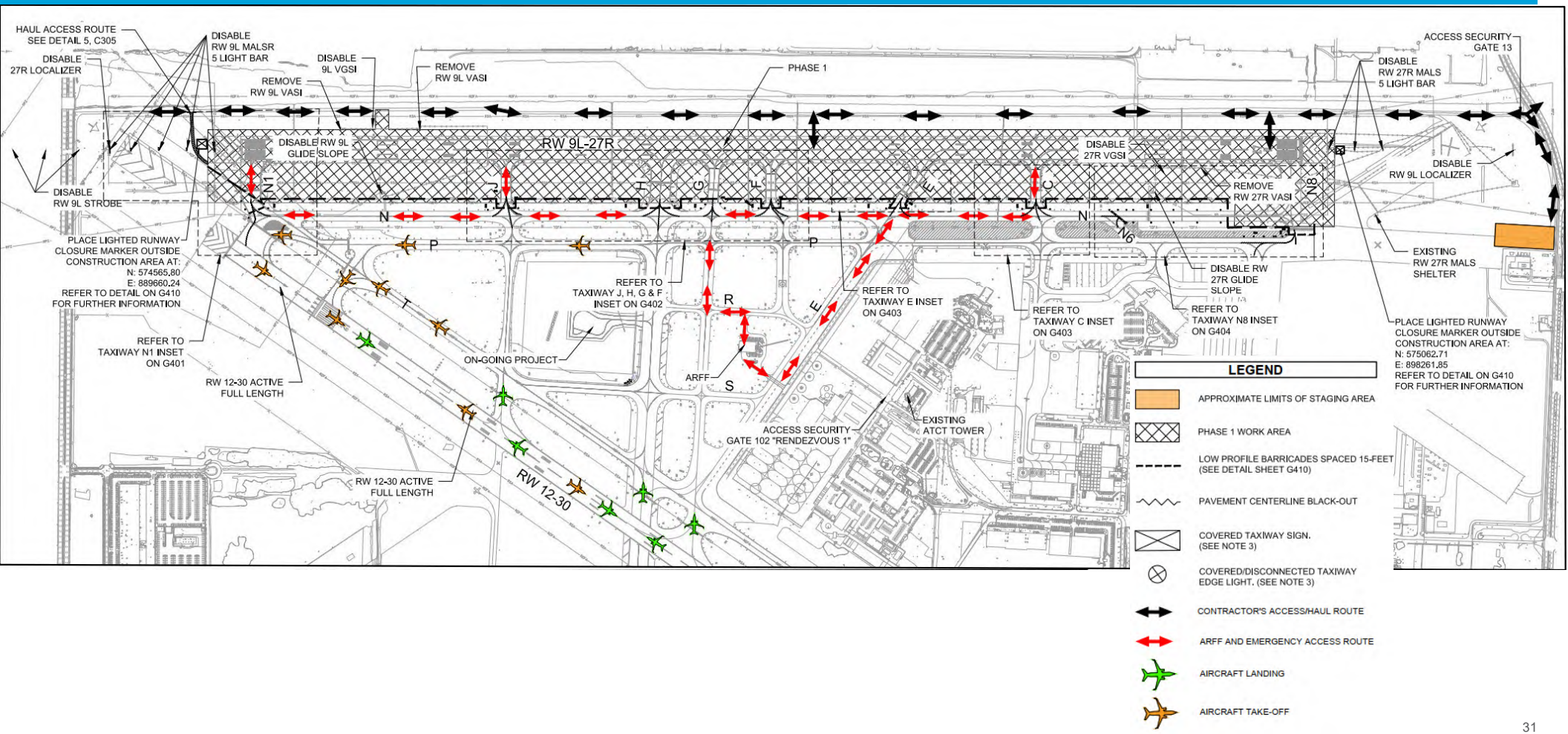
- Maximize the safety of aircraft operations
- Keep the airport operational for all users
- Provide for aircraft operational safety
- Maintain airfield operations within agreed parameters
- Minimize delays to aircraft operations
- Minimize delays to construction operations
- Minimize airport operation and construction activity conflict

LIGHTED RUNWAY CLOSURE MARKER
(PROVIDED BY CONTRACTOR)

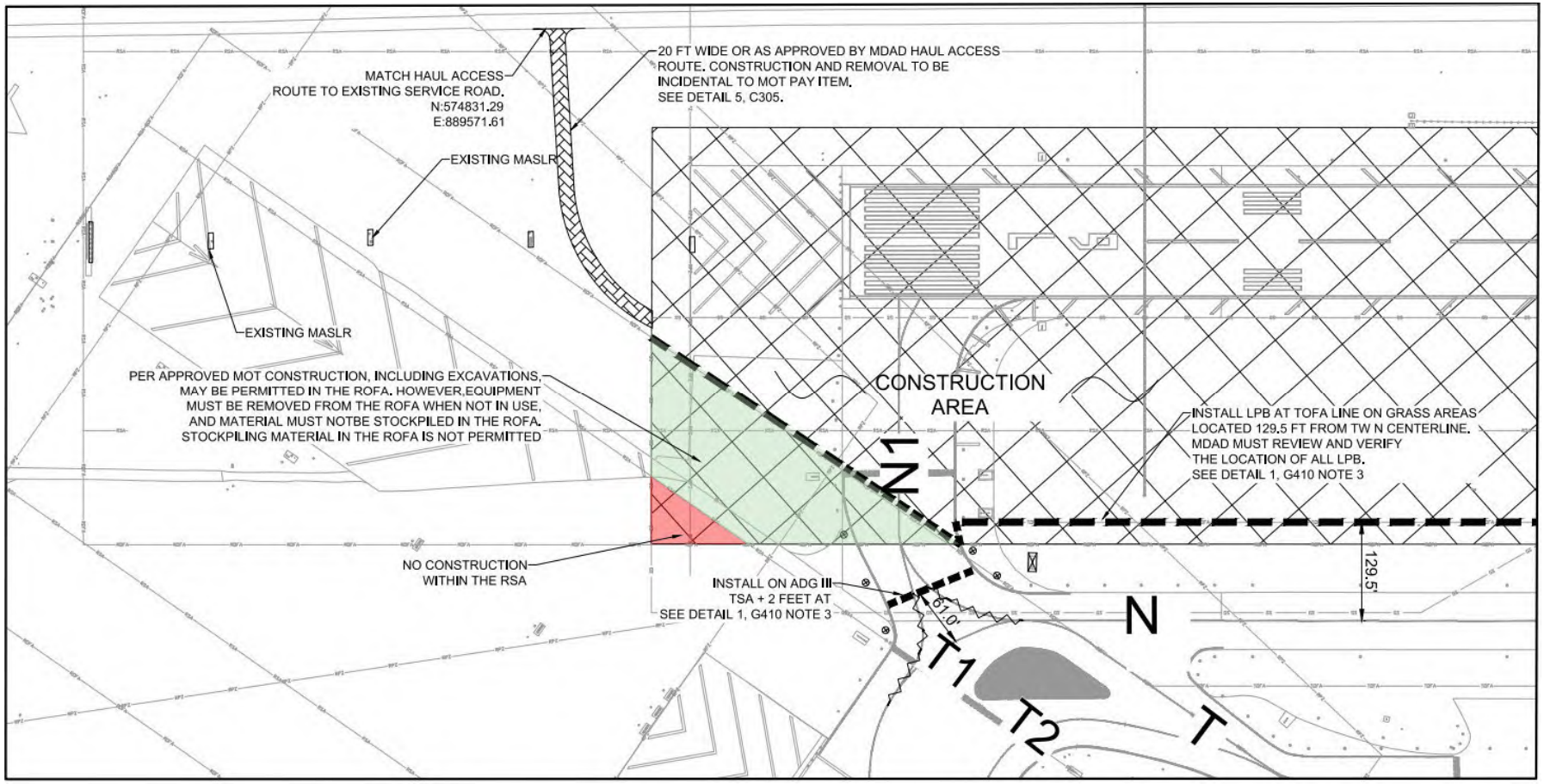


LOW-PROFILE BARRICADE DETAIL

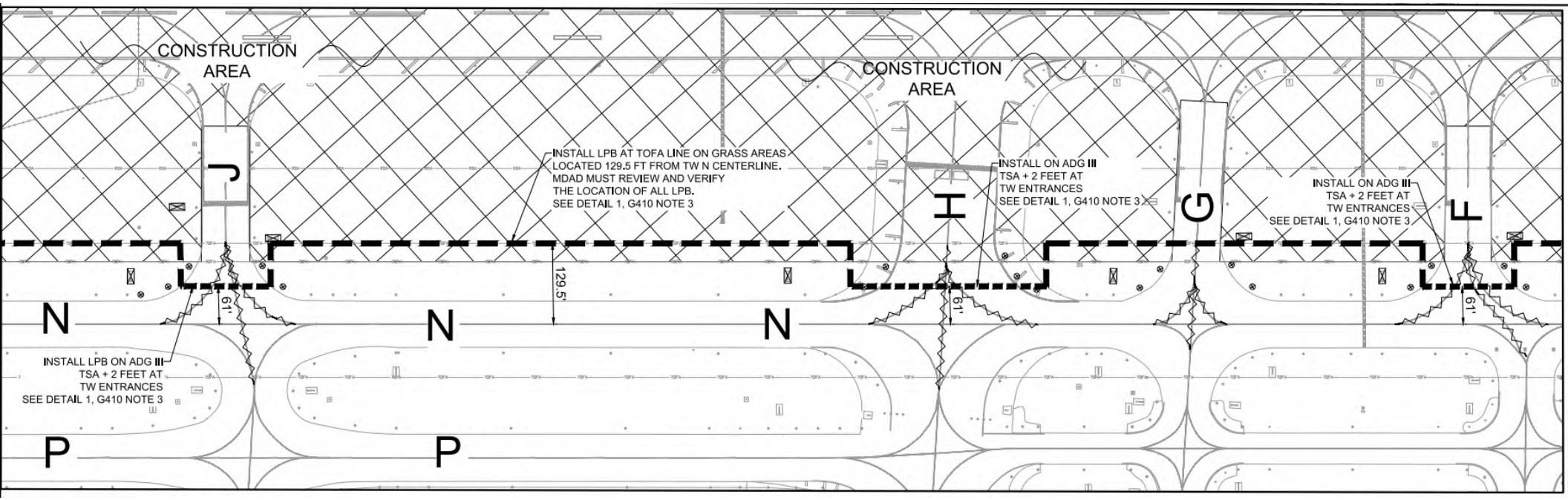
Phase 1 - Overall



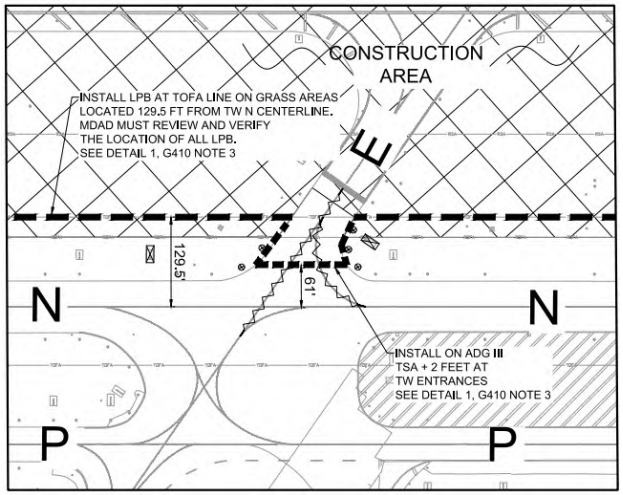
Phase 1 – Detail N-West & N1

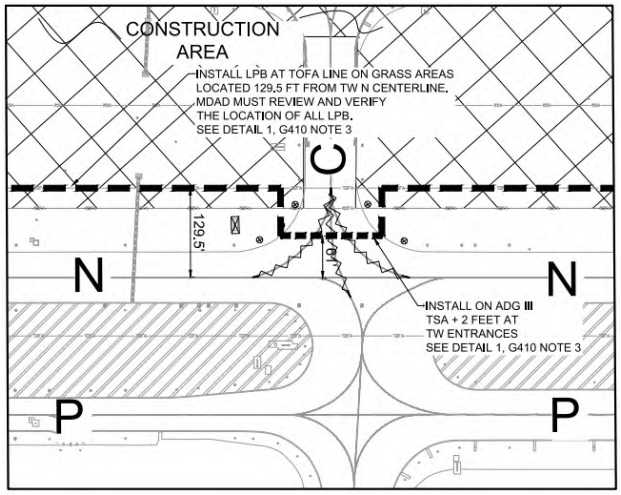


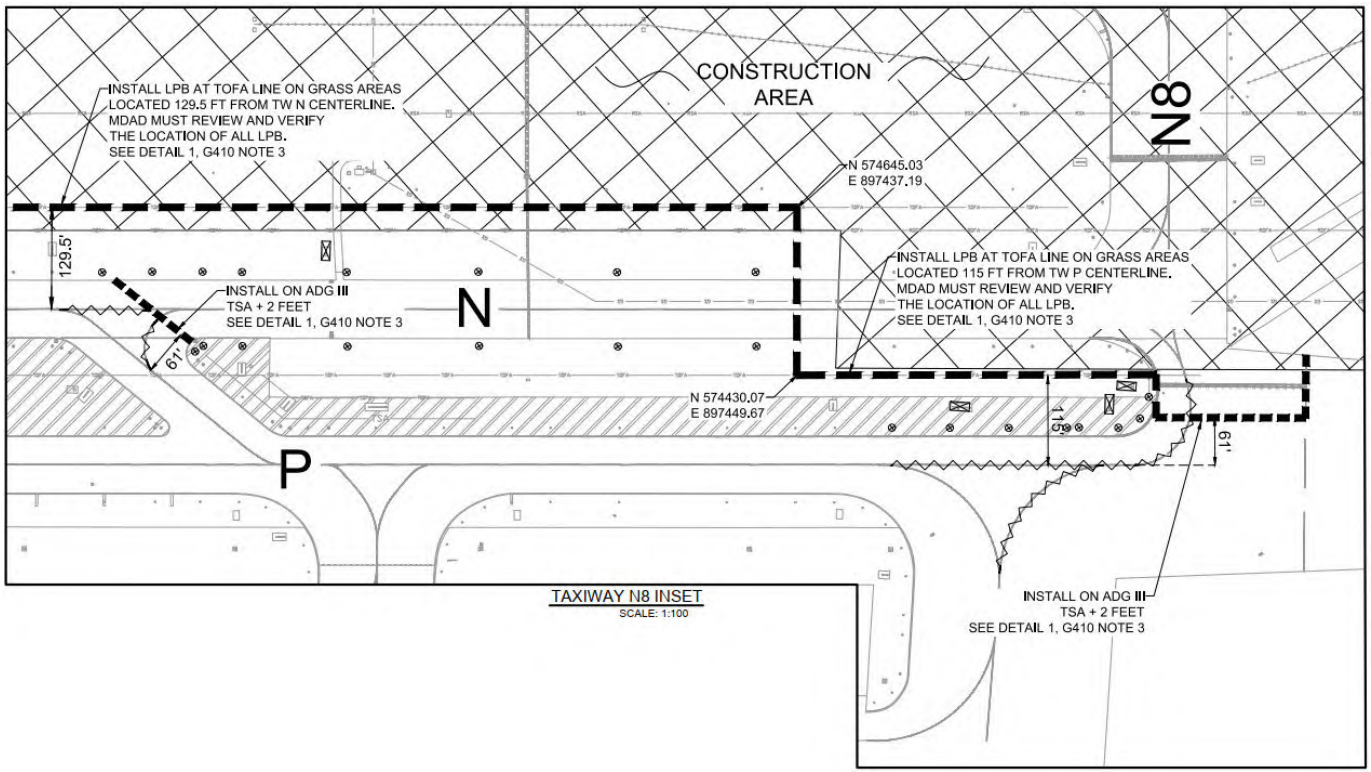
Phase 1 – Detail J, H, G, & F



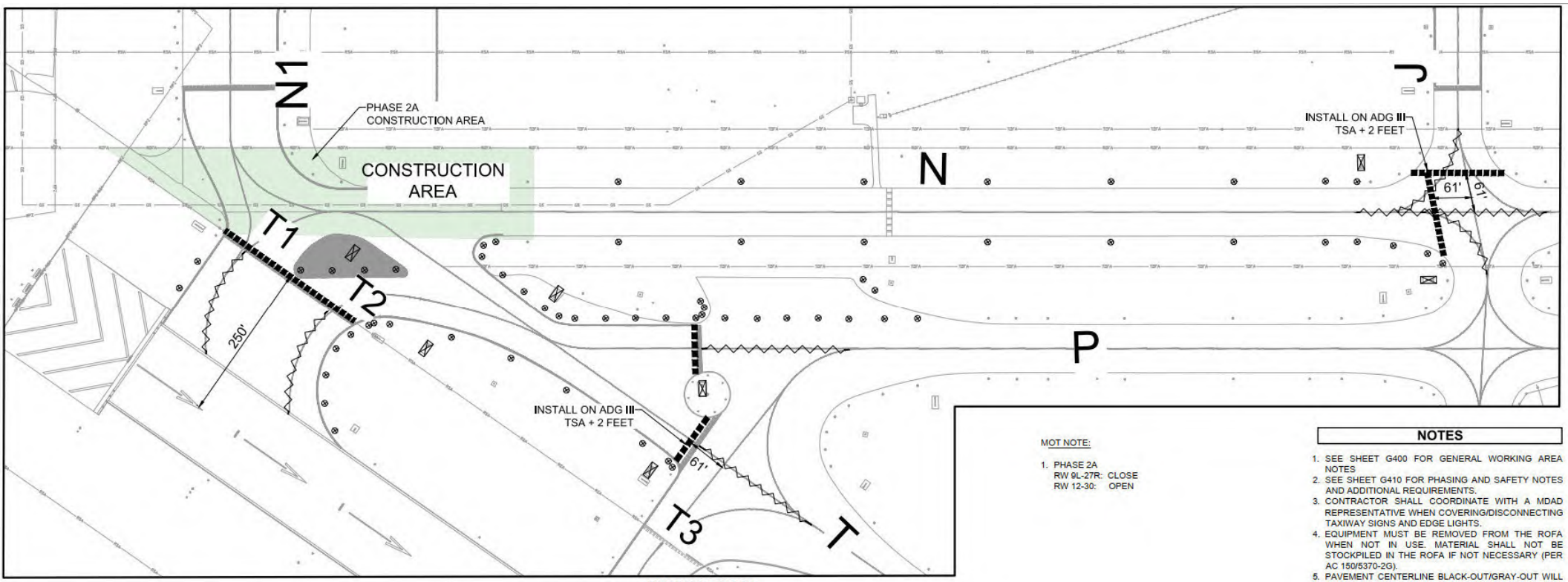
Phase 1 – Detail E, C, N-East, & N8







Phase 2A – Detail T1 & T2 Closure (RW 12-30 Open)



PHASE 2A INSET
SCALE: 1:100

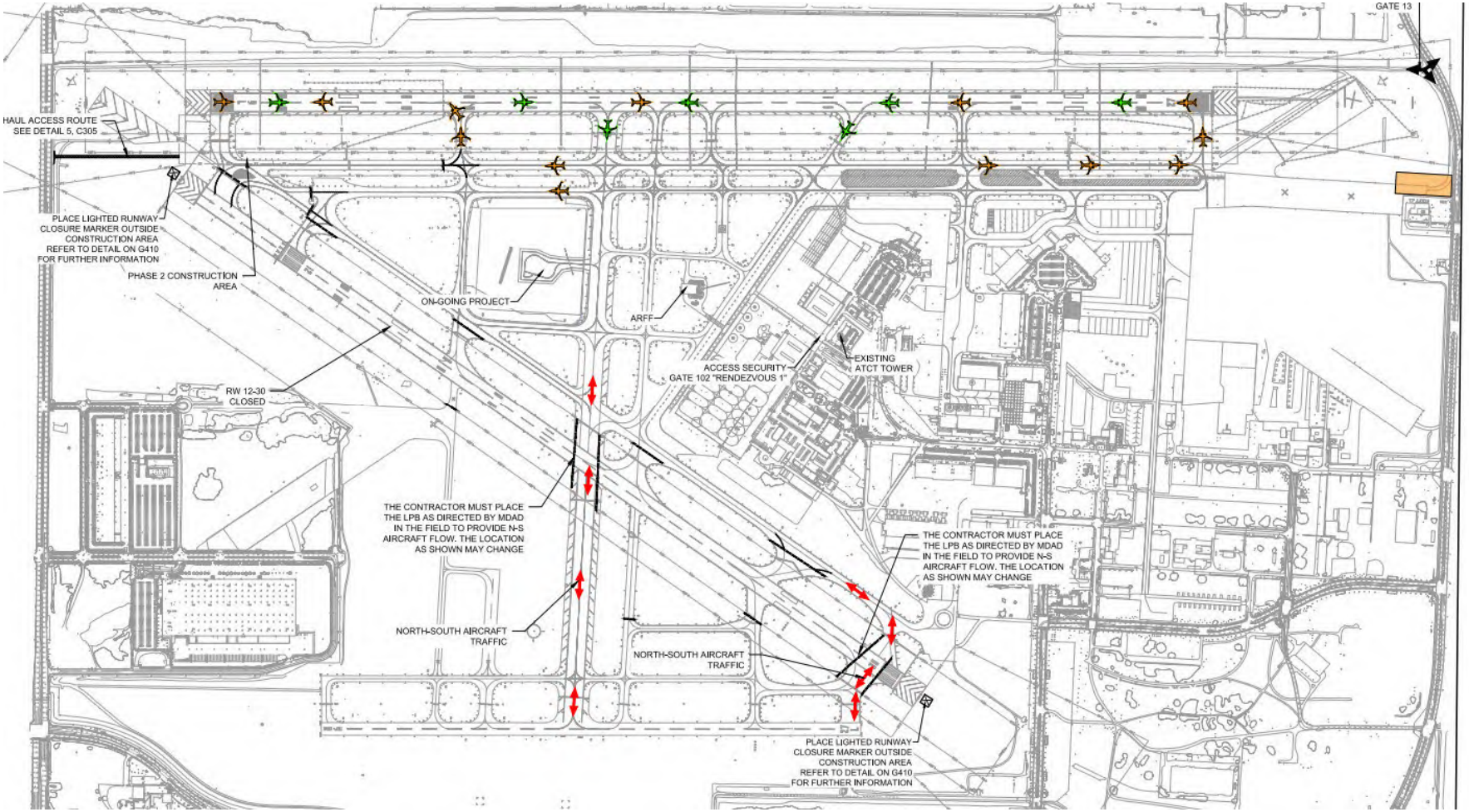
MOT NOTE:

1. PHASE 2A
   RW 9L-27R: CLOSE
   RW 12-30: OPEN

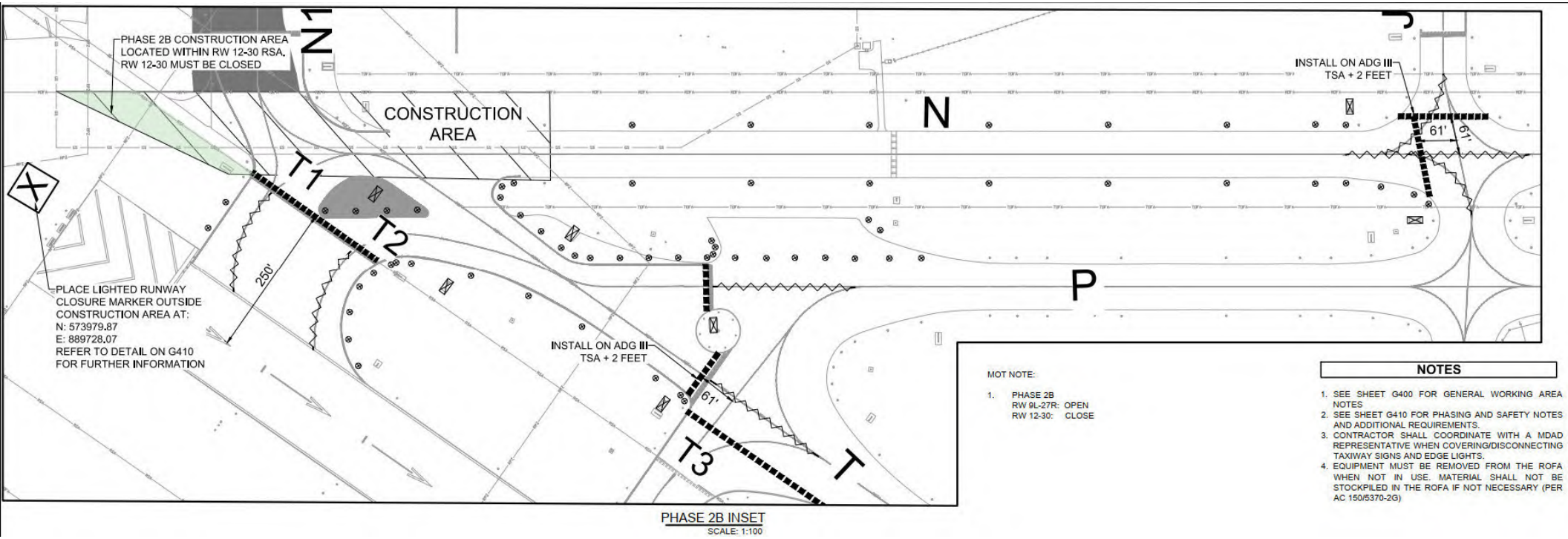
NOTES

1. SEE SHEET G400 FOR GENERAL WORKING AREA NOTES
2. SEE SHEET G410 FOR PHASING AND SAFETY NOTES AND ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL COORDINATE WITH A MDAD REPRESENTATIVE WHEN COVERING/DISCONNECTING TAXIWAY SIGNS AND EDGE LIGHTS.
4. EQUIPMENT MUST BE REMOVED FROM THE ROFA WHEN NOT IN USE. MATERIAL SHALL NOT BE STOCKPILED IN THE ROFA IF NOT NECESSARY (PER AC 150/5370-2G).
5. PAVEMENT CENTERLINE BLACK-OUT/GRAY-OUT WILL BE PAID UNDER ITEM P-620-5.1 (MARKING REMOVALS)

Phase 2B – RW 9L-27R Open & RW 12-30 Close



Phase 2B – Detail



PHASE 2B INSET
SCALE: 1:100

Areas and Operations Affected by the Construction Activity

- Restricted work areas
- Part 77 – Sheet G003 & G004
- Protected Surface – Sheets G005, G006, G007, G008, & G009
- CSPP Section:
- 4.1. Protected Surfaces
- 4.1.1. Approach and Departure Surfaces
- 4.1.2. Runway Safety Area (RSA)
- 4.1.3. Obstacle Free Zone (OFZ)
- 4.1.4. Runway Object Free Area (ROFA)
- 4.1.5. Runway Protection Zone (RPZ)

NOTIFICATION TO THE FAA

Contractor must submit a new Form 7460-1 to FAA for airspace review and approval before using any tall cranes, equipment, or other items.

FAA review process can take up to 90 calendar days so the Contractor shall plan accordingly

Airport Security

- The MIA OPF maintains an active security program
- Airport security is of primary importance.
- The Contractor's personnel/employees working on the project are required to obtain from MDAD the General Aviation Identification badges specifically for Opa-Locka Airport
- The project work areas are within the Air Operations Area (AOA)

Item 6:
ATKINS Design Team

Project Team

Gartek

Airfield Electrical

ATKINS

Member of the SNC-Lavalin Group

Prime / Civil Design, NAVAIDS and Surveying

ARA

Pavement Inspection

Terracon

Geotechnical

MSA

Milian, Swain & Associates, Inc.

Environmental

BOTAS Engineering, Inc.

STRUCTURAL ENGINEERS

Structural Design

Thank you

ADDENDUM No. 1

ATTACHMENT 4

Construction Plans & Drawings – REVISED

ABBREVIATIONS

A/E	ARCHITECT/ENGINEER
AOA	AIRSIDE OPERATIONS AREA
AR	APRON RUNOFF
ARFF	AIRCRAFT RESCUE AND FIRE FIGHTING
B/L	BASELINE
CI	CAST IRON
CO	CLEANOUT
DERM	DIVISION OF ENVIRONMENTAL RESOURCES MANAGEMENT
DIP	DUCTILE IRON PIPE
DP	DIGITAL PRINT
EED	ENVIRONMENTAL ENGINEERING DIVISION
EOW	EDGE OF WATER
FAA	FEDERAL AVIATION ADMINISTRATION
FPL	FLORIDA POWER □ LIGHT COMPANY
FOD	FOREIGN OBJECT DEBRIS
GS	GLIDE SLOPE CRITICAL AREA
LDA	LANDING DISTANCE AVAILABLE
LHA	LAMP HOUSING ASSEMBLY
MALS	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM
MDAD	MIAMI-DADE COUNTY AVIATION DEPARTMENT
MH	MANHOLE
MOT	MAINTENANCE OF TRAFFIC
NFAC	NO FURTHER ACTION WITH CONDITIONS
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
A.A.A.	OWNERS AUTHORI□ED REPRESENTATIVE (SYNONMYOUS WITH RPR)
PC	POLLUTION CONTROL
RCP	REINFORCED CONCRETE PIPE
RER/DERM	REGULATION AND ECONOMIC RESOURCES, DIVISION OF ENVIRONMENTAL RESOURCES MANAGEMENT
RGS	RIGID GALVANI□ED STEEL
RPR	RESIDENT PROJECT REPRESENTATIVE
ROFA	RUNWAY OBJECT FREE AREA
RSA	RUNWAY SAFETY AREA
TOFA	TAXIWAY OBJECT FREE AREA
TORA	TAKE-OFF RUN AVAILABLE
TSA	TAXIWAY SAFETY AREA
SD	STORM DRAIN
SFWMD	SOUTH FLORIDA WATER MANAGEMENT DISTRICT
W/	WITH
W/O	WITHOUT
WM	WATER MAIN

GENERAL NOTES

1. CONSTRUCTION LIMITS - ALL CONTRACTOR VEHICLES AND TRAFFIC SHALL REMAIN WITHIN THE LIMITS OF CONSTRUCTION AREAS, STAGING AREAS AND HAUL ROUTES AS SHOWN ON THE PLANS OR AS AUTHORI□ED BY MDAD.
2. THE LOCATION AND SI□E OF ALL EXISTING UTILITIES AND TOPOGRAPHY HAVE BEEN PREPARED FROM THE MOST RELIABLE INFORMATION AVAILABLE TO THE ENGINEER. THIS INFORMATION IS NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE THE EXACT HORI□ONTAL AND VERTICAL LOCATION OF ANY EXISTING UTILITIES IN COORDINATION WITH MDAD AND ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DRAINAGE CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY MDAD IMMEDIATELY IF ANY DISCREPANCIES ARE FOUND WITH THE INFORMATION SHOWN IN THE PLANS.
3. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE PROTECTION OF ALL DRAINAGE STRUCTURES DURING CONSTRUCTION.
4. ARFF ACCESS SHALL BE MAINTAINED AT ALL TIMES IN ACCORDANCE WITH NFPA 101.
5. THE LIMITS OF CONSTRUCTION, MATERIAL STORAGE AREAS, EQUIPMENT STORAGE AREAS, PARKING AREAS AND OTHER AREAS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION SHALL BE MARKED BY THE CONTRACTOR AND APPROVED BY MDAD. THE CONTRACTOR SHALL ERECT AND MAINTAIN SIGNAGE AND WARNING DEVICES, VISIBLE FOR BOTH DAY/NIGHT USE, TO DELINEATE THE PERIMETER OF ALL SUCH AREAS.
6. HURRICANES AND OTHER DISASTERS - THE CONTRACTOR SHALL BE FAMILIAR WITH AND ABIDE BY MDAD'S HURRICANE PROCEDURES MANUAL AVAILABLE FROM MDAD.
7. CONTRACTOR WILL BE RESPONSIBLE TO COORDINATE WITH OPF AIRSIDE OPERATIONS FOR TRAINING ON HOW TO COMMUNICATE WITH OPF TOWER WHEN ACCESSING THE AOA AREAS. ALL CONTRACTOR VEHICLES SHALL BE EQUIPPED WITH YELLOW FLASHING BEACON, CHECKERED FLAGS, COMPANY DECALS ON DOORS AND VHF RADIOS. CONTRACTOR SHALL DESIGNATE A PERSON AND TWO BACKUP PEOPLE WHO CAN BE CONTACTED 24 HOURS A DAY IN THE EVENT OF AN EMERGENCY. THESE PEOPLE SHALL BE AUTHORI□ED TO MAKE FIELD DECISIONS ON THE COMPANY'S BEHALF.

GENERAL UTILITIES AND DRAINAGE NOTES

1. PRIOR TO PERFORMING ANY EXCAVATION THE CONTRACTOR SHALL FOLLOW THE INSTRUCTIONS CONTAINED IN DIVISION 1 SECTION 01100 “EXISTING UTILITIES” AND COMPLETE MDAD UNDERGROUND UTILITIES CLEARANCE FORM THAT REQUIRES NOTIFICATION AND SIGN OFF FROM THE FOLLOWING COMPANIES:

MDAD UTILITIES COORD. (GRISEL AGHA-LONG)	305-869-3874
MDAD UTILITIES (FRED HERBERT)	305-876-7542
FAA (ANDRES ORRETT)	305-869-5349
SUNSHINE STATE ONE CALL CENTER OF FLORIDA	800-432-4770
BLACK BOX COMMUNICATIONS	305-876-8416
FPL (BOB GARDNER)	305-345-3229
FPL (ROBERT SULLIVAN)	305-345-2154
MDAD IRRIGATION (FRANK CONTRERAS)	O:305-869-4760 M:305-796-7746
FLORIDA CITY GAS	305-835-3650

2. THE CONTRACTOR SHALL REPAIR ANY UNDERGROUND UTILITY DAMAGED, CAUSED BY HIS ACTIONS, WITH NO ADDITIONAL COMPENSATION.
3. UTILITY CLEARANCE ACTIVITIES PERFORMED BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT WITH NO ADDITIONAL COMPENSATION.
4. THE TEMPORARY DRAINAGE PLAN SHALL INCLUDE A CONTINGENCY PLAN THAT INDICATES HOW THE CONTRACTOR WILL ALLOW FOR THE INCREASED FLOW RATES DURING A STORM EVENT.
5. STANDING WATER AREAS ARE NOT PERMITTED.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING AIRFIELD LIGHTNING AND UTILITY SYSTEMS PRIOR TO CONSTRUCTION AND NOTIFY MDAD IMMEDIATELY IF ANY DISCREPANCIES ARE FOUND WITH THE INFORMATION SHOWN IN THE PLANS.
7. THE TEMPORARY CONSTRUCTION AIRFIELD LIGHTNING AND UTILITY PLAN SHALL INCLUDE ALL NECESSARY MEASURES TO MAINTAIN THE AIRFIELD LIGHTNING AND UTILITIES IN SERVICES AT ALL TIME
8. THROUGHOUT THE COURSE OF THE CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS AND UNINTERRUPTED ELECTRICAL SERVICE INCLUDING NECESSARY TEMPORARY PROVISIONS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING POSITIVE STORMWATER DRAINAGE FLOW DURING AND AFTER THE CONSTRUCTION ACTIVITIES START AND END. WHILE THE CONSTRUCTION IS ONGOING THE CONTRACTOR SHALL CLEAN ALL DEBRIS FROM EXISTING DRAINAGE INLETS AND MANHOLES WHICH ARE LOCATED WITHIN THE PROJECT LIMITS AND WILL REMAIN OPERATIONAL.

WASTE MATERIALS NOTES

1. ALL HA□ARDOUS AND NON-HA□ARDOUS WASTE LIKE PAINTS, CONSTRUCTION MATERIALS, ETC. MUST BE REMOVED ON A DAILY BASIS FROM THE SITE AND DISPOSED OF PROPERLY UPON THE COMPLETION OF THE PROJECT.
2. ASPHALT MILLINGS, REMOVAL, AND DEMOLITION PRODUCTS SHALL NOT BE STORED ON OPEN GROUND AND SHALL BE IMMEDIATELY PROPERLY DISPOSED OF IN A LEGAL MANNER.

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SAFETY AND SECURITY NOTES

1. THE CONTRACTOR SHALL FOLLOW ALL THE SAFETY AND SECURITY REQUIREMENTS OF THE CONTRACT.
2. STOCKPILE, EROSION AND DUST CONTROL - STOCKPILED MATERIAL AND DUST CONTROL SHALL BE TREATED IN SUCH A MANNER AS TO PREVENT MOVEMENT RESULTING FROM AIRCRAFT BLAST OR WIND CONDITIONS IN EXCESS OF 10 KNOTS AND SHALL ONLY BE PLACED IN APPROVED AREAS. DEBRIS, WASTE AND LOOSE MATERIAL SHALL NOT BE ALLOWED.
3. MAINTENANCE OF TRAFFIC DEVICES - ALL BARRICADE LIGHTING, TEMPORARY SIGNAGE AND SIGNAGE LIGHTING COVERS SHALL BE VERIFIED BY THE CONTRACTOR FOR PROPER OPERATION EACH DAY. IN ADDITION, THE CONTRACTOR SHALL IMMEDIATELY REPLACE ANY BARRICADES, LIGHTS OR FLAGS WHICH IN THE OPINION OF MDAD IS NOT ADEQUATE.
4. ACCESS ROUTES - THE CONTRACTOR SHALL RESTORE ACCESS ROUTE PAVEMENTS BOTH ON AND OFF AIRPORT PROPERTY, AIRSIDE ACCESS GATE PAVEMENTS AND EQUIPMENT, TO THEIR ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COMPENSATION AT THE CONCLUSION OF PAVING AND HAULING OPERATIONS.
5. ACCESS TO THE SITE - CONTRACTOR'S ACCESS TO THE SITE SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE MDAD REPRESENTATIVE. THE CONTRACTOR IS RESPONSIBLE FOR THE IMMEDIATE CLEANUP OF ANY DEBRIS DEPOSITED ALONG ANY ACCESS ROAD AS A RESULT OF THE CONSTRUCTION TRAFFIC. DIRECTIONAL SIGNAGE AT THE ACCESS GATE AND ALONG THE DELIVERY ROUTE TO THE STORAGE AREA OR WORK SITE SHALL NOT BE PERMITTED. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE OFF-SITE HAUL ROUTES (STATE HIGHWAYS, COUNTY ROADS, OR CITY STREETS) WITH THE APPROPRIATE OWNER HAVING JURISDICTION OVER THE AFFECTED ROUTE.
6. CONTRACTOR SHALL HAVE A BROOM TRUCK TO CLEAN ANY AIRCRAFT PAVEMENT PRIOR TO REOPENING TO MDAD OPERATIONS' SATISFACTION AND REQUIREMENTS.
7. CONSTRUCTION AREA LIMITS - THE CONTRACTOR'S STAGING, PARKING AREA AND OTHER AREAS REQUIRED FOR THE CONTRACTOR'S EXCLUSIVE USE DURING CONSTRUCTION SHALL BE MARKED BY THE CONTRACTOR AND APPROVED BY MDAD. THE CONTRACTOR SHALL ERECT AND MAINTAIN SUITABLE FENCING, SIGNAGE AND WARNING DEVICES VISIBLE FOR BOTH DAY/NIGHT USE TO DELINEATE THE PERIMETER OF ALL STAGING AND PARKING AREAS. HOWEVER, THE CONTRACTOR IS RESPONSIBLE FOR SECURING ALL EQUIPMENT AND MATERIALS. MDAD IS NOT RESPONSIBLE FOR EQUIPMENT OR MATERIALS DAMAGED AND/OR STOLEN FROM THE CONTRACTOR'S STAGING AREA.
8. ACCESS ROUTE - THE CONTRACTOR SHALL RESTORE ACCESS ROUTE PAVEMENT BOTH ON AND OFF AIRPORT PROPERTY, AIRSIDE ACCESS GATE PAVEMENTS AND EQUIPMENT, TO ITS ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COMPENSATION AT THE CONCLUSION OF PAVING AND HAULING OPERATIONS.

GENERAL ENVIRONMENTAL NOTES

1. ALL HA□ARDOUS AND NON-HA□ARDOUS WASTE, IF ENCOUNTERED, MUST BE REMOVED FROM THE SITE OF THE PROJECT AND DISPOSED OF PROPERLY UPON THE COMPLETION OF THE PROJECT. COORDINATION WITH RER/DERM REGARDING TESTING, ABATEMENT AND DISPOSAL PROCEDURES MUST BE COMPLETED THROUGH MDAD.
2. BURROWING OWL NESTS - ANY ACTIVE NESTS ENCOUNTERED WITHIN THE CONSTRUCTION SITE DURING BREEDING SEASON (FEBRUARY - JULY) CANNOT BE DISTURBED. SEE SPECIAL PROVISIONS OF THE CONTRACT.
3. IF CONTAMINATED SOIL (ODORS, STAINING, ETC.) OR GROUNDWATER (ODORS, SHEEN, GLOBULES OR FREE-FLOATING PRODUCTS) ARE DISCOVERED DURING EXCAVATION OR/AND DEWATERING, DERM (AIRPORTS AND CONTRACTS SECTION 305-372-6885) AND MDAD MUST BE NOTIFIED IMMEDIATELY. AT THAT TIME, CONTAMINATED SOIL AND GROUNDWATER SHOULD BE HANDLED AS PER MDAD SPECIFICATION P-160. FURTHERMORE, FREE FLOATING PRODUCTS AND SOIL SATURATED WITH PRODUCT SHOULD BE REMOVED, PROPERLY DISPOSED (CLASS 1 LINED LANDFILL OR THERMAL TREATMENT FACILITY) AND DOCUMENTED. SOIL SHOULD BE STOCKPILED ON AN IMPERVIOUS SURFACE, COVERED WITH VISQUEEN, BERMED, SAMPLED AND DISPOSED. MANIFEST SHOULD BE PROVIDED FOR THE FREE PRODUCT AND SOIL DISPOSAL.
4. SOIL REUSE/TRANSPORTATION OFF-SITE OPF OR WITHIN OPF AT ANOTHER LOCATION IS SUBJECT TO DERM APPROVAL. SOIL-TAKEN OFF-SITE (OPF) MUST BE PROVEN TO MEET DERM'S CLEAN SOIL CRITERIA REVISED MAY 12th, 2003 AS PER THE SOIL REUSE GUIDELINES DATED MAY 12th, 2003. IF APPLICABLE, PLEASE SUBMIT A REQUEST IN WRITTEN TO RELOCATE AND REUSE THESE SOILS DIRECTLY TO BECKY VARLEY (BECKY.VARLEY□ MIAMIDADE.GOV) WITH THE SAMPLE DATA AND PROPOSED LOCATION OF REUSE.
5. COORDINATE WITH RER/DERM REGARDING SITE CONTAMINATION AND RELATED TESTING/ABATEMENT PROCEDURES.

DEWATERING NOTES

1. ALL DEWATERING ACTIVITIES SHALL ADHERE TO GUIDELINES AND CONDITIONS ESTABLISHED IN DIVISION 1 SPECIFICATION SECTION 01561 DEWATERING PERMITS.
2. THE CONTRACTOR SHALL PROVIDE A SITE SPECIFIC DEWATERING PLAN THAT INCORPORATES THE LATEST GUIDELINES FOR DEWATERING OPERATIONS AS ESTABLISHED BY THE EED AND THE APPLICABLE REGULATORY AGENCIES.
3. IF DEWATERING IS WARRANTED, A CLASS V DEWATERING PERMIT SHALL BE OBTAINED FROM THE RER/DERM. THE CONTRACTOR SHALL SUBMIT MONTHLY PUMPAGE REPORTS AND A COPY OF THE PERMIT TO THE ENVIRONMENTAL ENGINEERING SECTION. MONTHLY REPORTS MUST CONTINUE FOR THE DURATION OF THE PERMIT (EVEN IF PUMPAGE IS 0 GPM) OR FOR THE LENGTH OF THE DEWATERING ACTIVITIES. COMPLETION OF DEWATERING ACTIVITIES SHALL BE DOCUMENTED.
4. THE APPROVED DEWATERING PLAN IS TO BE SUBMITTED BY THE CONTRACTOR TO SFWMD AS APPLICABLE FOR APPROVAL PRIOR TO THE COMMENCEMENT OF ANY DEWATERING OPERATIONS AT LEAST ONE WEEK IN ADVANCE.
5. THE CONTRACTOR IS REQUIRED TO COORDINATE ALL DEWATERING OPERATIONS WITH MDAD, EED, AND RER/DERM. NO DEWATERING OPERATIONS SHALL BEGIN UNTIL ALL THE NECESSARY PERMITS HAVE BEEN APPROVED.
6. ANY DEWATERING PROCEDURES MANDATED BY RER-DERM SHALL BE INCLUDED IN THE CONTRACT BID ITEMS PRICE. NO ADDITIONAL PAYMENTS SHALL BE MADE FOR DEWATERING OPERATIONS OR SITE SPECIFIC DEWATERING PLAN.
7. THE SITE SPECIFIC DEWATERING PLAN SHALL BE PREPARED BY AN ENVIRONMENTAL CONSULTING FIRM APPROVED BY MDAD.
8. IF DEWATERING IS PERFORMED AND ANY FUEL IS ENCOUNTERED DURING CONSTRUCTION, FUEL MUST BE RETURNED TO MDAD FOR DISPOSAL.

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OPF - RW 9L-27R REHAB

MIAMI-DADE COUNTY AVIATION DEPARTMENT-MDAD

MIAMI-DADE COUNTY

MDAD PROJECT MANAGER
MIGUEL J. RIERA, (305) 876-0596

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△	REVISIONS	DATE
1	ADDENDUM No.1	03/21/23

RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

SEAL

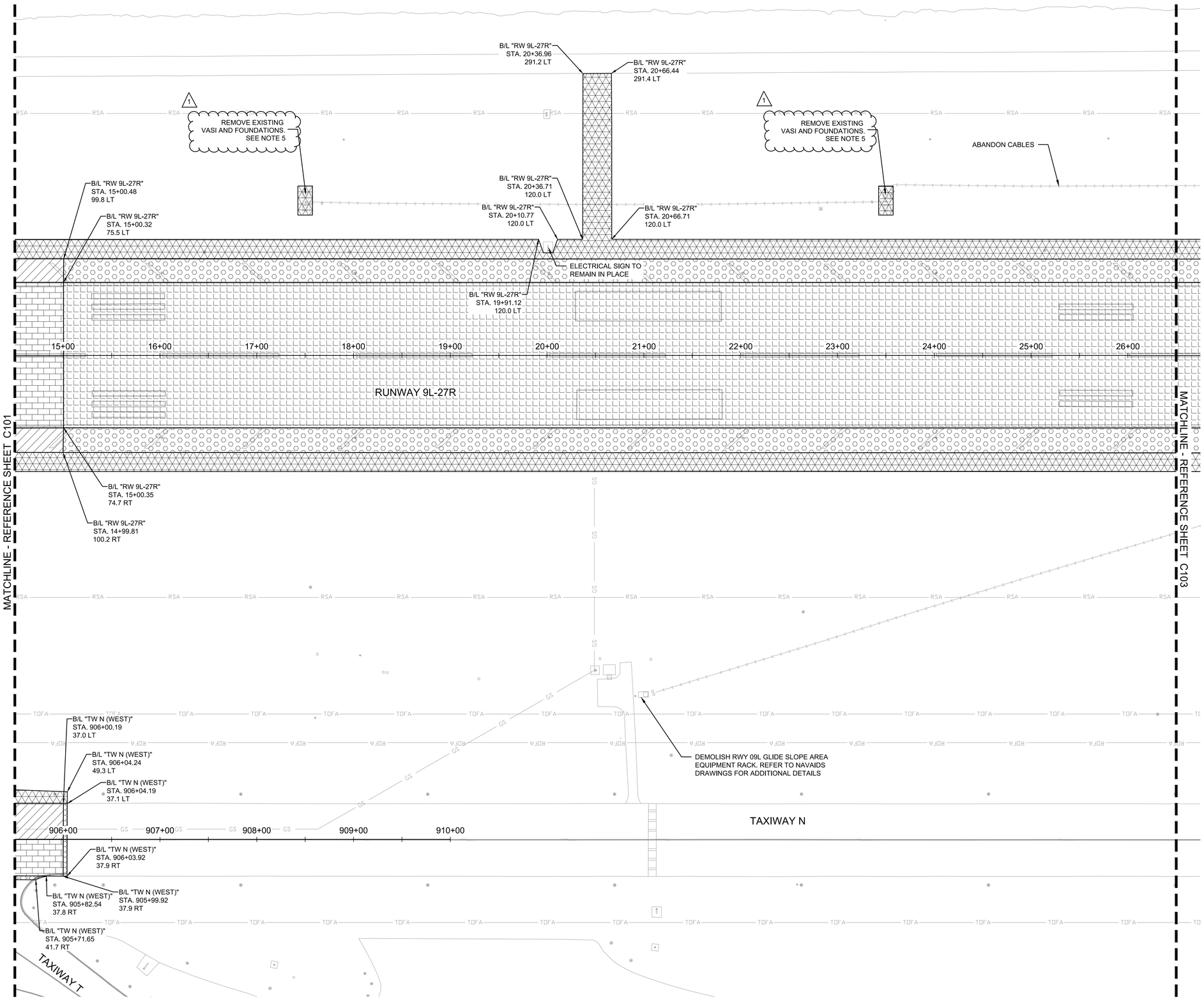
LATOSHA L. SIGLER
REG No.: P.E. 78738
CIVIL ENGINEER

DRAWING TITLE

GENERAL NOTES, LEGENDS AND ABBREVIATIONS

DATE	02/2023
JOB	100075217
DRAWN	DMA
DESIGN	JSP
CHECK	CAO
DC NO.	
SHEET	G002

ISSUED FOR BID - NOT FOR CONSTRUCTION



LEGEND

- FULL DEPTH ASPHALT PAVEMENT REMOVAL TAXIWAY SHOULDERS (SEE DETAIL 1 SHEET C110)
- FULL DEPTH CONCRETE PAVEMENT REMOVAL TAXIWAYS AND SHOULDERS (SEE DETAIL 2 SHEET C110)
- FULL DEPTH CONCRETE AND ASPHALT PAVEMENT REMOVAL - RUNWAY AND TAXIWAYS (SEE DETAIL 3 SHEET C110)
- FULL DEPTH ASPHALT PAVEMENT REMOVAL RUNWAY SHOULDERS, BLAST PAD, AND TAXIWAYS (SEE DETAIL 4 SHEET C110)
- ASPHALT PAVEMENT MILLING FOR TRANSITIONS TO EXISTING PAVEMENT (VARIABLE DEPTH) (SEE DETAIL 5 SHEET C110)
- ASPHALT PAVEMENT MILLING (FG - 4") RUNWAY SHOULDERS (SEE DETAIL 6 SHEET C110)
- ASPHALT PAVEMENT MILLING (FG - 4") RUNWAY (SEE DETAIL 7 SHEET C110)
- CONCRETE PAVEMENT REMOVAL BLAST PAD THRESHOLD LIGHTS (SEE NOTE 6 THIS SHEET)
- CLEARING AND GRUBBING
- MARKING REMOVAL

NOTES

1. INFORMATION IS BASED ON A SURVEY COMPLETED BY ATKINS ON JULY 27, 2021 AND RECORD DOCUMENTATION OBTAINED FROM MDAD. CONDITIONS SHOWN ON THIS PLAN MAY BE DIFFERENT THAN ACTUAL CONDITIONS AT START OF CONSTRUCTION. PRIOR TO SUBMITTING A BID, PROSPECTIVE BIDDERS SHALL VISIT THE SITE TO BECOME FAMILIAR WITH SITE CONDITIONS. SHOULD PROSPECTIVE BIDDERS OBSERVE CONDITIONS WHICH ARE MATERIALLY DIFFERENT FROM WHAT IS SHOWN ON THE DRAWINGS, PROSPECTIVE BIDDERS SHALL NOTIFY MDAD IN WRITING PRIOR TO SUBMISSION OF BID, IN ACCORDANCE WITH THE BIDDING REQUIREMENTS.
2. FULL DEPTH REMOVAL SHALL INCLUDE THE REMOVAL OF BASE AND/OR SUBSOIL TO THE DEPTH REQUIRED TO CONSTRUCT THE PROPOSED PAVEMENT. SEE ITEM P-101 FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL IDENTIFY ALL UTILITIES WITHIN THE PROJECT LIMITS AND SUBMIT UTILITY PROTECTION PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER AND MDAD. CONTRACTOR SHALL ENSURE THAT ALL ACTIVE EXISTING UTILITIES REMAIN IN SERVICE. THE CONTRACTOR SHALL MAKE ALL NECESSARY INVESTIGATIONS TO SATISFY HIMSELF AS TO THE HORIZONTAL LOCATION AND DEPTH OF THE EXISTING UTILITIES. ANY CHANGES/DEVIATIONS FROM THIS ASSUMPTION AND NECESSARY WORK TO REPAIR A DAMAGED UTILITY IS CONSIDERED INCIDENTAL TO THE CONTACT PRICE AND NO ADDITIONAL COMPENSATION IS ALLOWED.
4. SEE PAVEMENT DEMOLITION SECTION DETAILS IN SHEET C110.
5. REMOVE VASI DEVICES AND CIVIL INFRASTRUCTURE IN THEIR ENTIRETY INCLUDING FOUNDATIONS AND RETURN TO MDAD FOR DISPOSAL. REMOVE CABLE AND ABANDON CONDUITS.
6. CONCRETE PAVEMENT AROUND BLAST PAD THRESHOLD LIGHTS WILL BE INCIDENTAL TO ELECTRICAL DEMOLITION PAY ITEMS. SEE ELECTRICAL DEMOLITION PLANS FOR MORE INFORMATION.
7. MILLING DEPTHS SHOWN ARE NOT UNIFORM DEPTH. VARIABLE DEPTH MILLING SHALL BE ACCOMPLISHED TO THE GRADES INDICATED. GRADES ARE RELATIVE TO FINISH GRADE (FG).
8. WIRE MESH MAY BE FOUND WITHIN THE EXISTING CONCRETE PAVEMENT SECTIONS. THESE WILL ALSO BE REMOVED ALONG WITH THE REST OF THE EXISTING CONCRETE PAVEMENT AT NO ADDITIONAL COST.
9. FOR ADDITIONAL EXISTING MARKING REMOVALS SEE PHASING PLANS G400 - G405.

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SCALE: 1" = 50'

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OPF - RW 9L-27R REHAB

MIAMI-DADE COUNTY AVIATION DEPARTMENT-MDAD

MIAMI-DADE COUNTY

MDAD PROJECT MANAGER
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Δ	REVISIONS	DATE
1	ADDENDUM No. 1	03/21/2023

RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

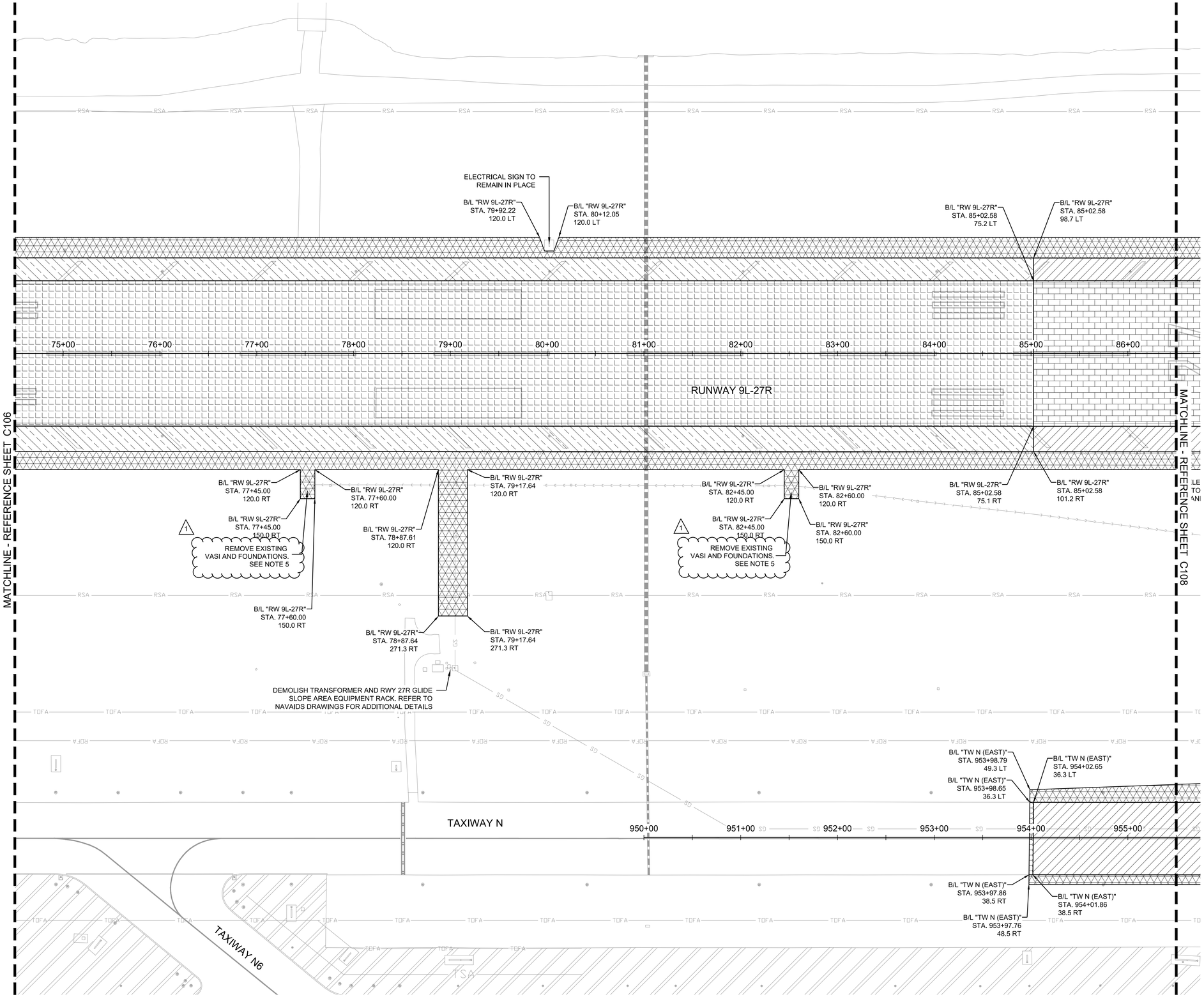
SEAL

LATOSHA L. SIGLER
REG No.: P.E. 78738
CIVIL ENGINEER

DRAWING TITLE
CIVIL DEMOLITION PLAN

DATE	02/2023
JOB	100075217
DRAWN	DMA
DESIGN	JSP
CHECK	CAO
DC NO.	
SHEET	C102

ISSUED FOR BID - NOT FOR CONSTRUCTION



LEGEND

- FULL DEPTH ASPHALT PAVEMENT REMOVAL TAXIWAY SHOULDERS (SEE DETAIL 1 SHEET C110)
- FULL DEPTH CONCRETE PAVEMENT REMOVAL TAXIWAYS AND SHOULDERS (SEE DETAIL 2 SHEET C110)
- FULL DEPTH CONCRETE AND ASPHALT PAVEMENT REMOVAL - RUNWAY AND TAXIWAYS (SEE DETAIL 3 SHEET C110)
- FULL DEPTH ASPHALT PAVEMENT REMOVAL RUNWAY SHOULDERS, BLAST PAD, AND TAXIWAYS (SEE DETAIL 4 SHEET C110)
- ASPHALT PAVEMENT MILLING FOR TRANSITIONS TO EXISTING PAVEMENT (VARIABLE DEPTH) (SEE DETAIL 5 SHEET C110)
- ASPHALT PAVEMENT MILLING (FG - 4") RUNWAY SHOULDERS (SEE DETAIL 6 SHEET C110)
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- CONCRETE PAVEMENT REMOVAL BLAST PAD THRESHOLD LIGHTS (SEE NOTE 6 THIS SHEET)
- CLEARING AND GRUBBING
- MARKING REMOVAL

NOTES

1. INFORMATION IS BASED ON A SURVEY COMPLETED BY ATKINS ON JULY 27, 2021 AND RECORD DOCUMENTATION OBTAINED FROM MDAD. CONDITIONS SHOWN ON THIS PLAN MAY BE DIFFERENT THAN ACTUAL CONDITIONS AT START OF CONSTRUCTION. PRIOR TO SUBMITTING A BID, PROSPECTIVE BIDDERS SHALL VISIT THE SITE TO BECOME FAMILIAR WITH SITE CONDITIONS. SHOULD PROSPECTIVE BIDDERS OBSERVE CONDITIONS WHICH ARE MATERIALLY DIFFERENT FROM WHAT IS SHOWN ON THE DRAWINGS, PROSPECTIVE BIDDERS SHALL NOTIFY MDAD IN WRITING PRIOR TO SUBMISSION OF BID, IN ACCORDANCE WITH THE BIDDING REQUIREMENTS.
2. FULL DEPTH REMOVAL SHALL INCLUDE THE REMOVAL OF BASE AND/OR SUBSOIL TO THE DEPTH REQUIRED TO CONSTRUCT THE PROPOSED PAVEMENT. SEE ITEM P-101 FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL IDENTIFY ALL UTILITIES WITHIN THE PROJECT LIMITS AND SUBMIT UTILITY PROTECTION PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER AND MDAD. CONTRACTOR SHALL ENSURE THAT ALL ACTIVE EXISTING UTILITIES REMAIN IN SERVICE. THE CONTRACTOR SHALL MAKE ALL NECESSARY INVESTIGATIONS TO SATISFY HIMSELF AS TO THE HORIZONTAL LOCATION AND DEPTH OF THE EXISTING UTILITIES. ANY CHANGES/DEVIATIONS FROM THIS ASSUMPTION AND NECESSARY WORK TO REPAIR A DAMAGED UTILITY IS CONSIDERED INCIDENTAL TO THE CONTACT PRICE AND NO ADDITIONAL COMPENSATION IS ALLOWED.
4. SEE PAVEMENT DEMOLITION SECTION DETAILS IN SHEET C110.
5. REMOVE VASI DEVICES AND CIVIL INFRASTRUCTURE IN THEIR ENTIRETY INCLUDING FOUNDATIONS AND RETURN TO MDAD FOR DISPOSAL. REMOVE CABLE AND ABANDON CONDUITS.
6. CONCRETE PAVEMENT AROUND BLAST PAD THRESHOLD LIGHTS WILL BE INCIDENTAL TO ELECTRICAL DEMOLITION PAY ITEMS. SEE ELECTRICAL DEMOLITION PLANS FOR MORE INFORMATION.
7. MILLING DEPTHS SHOWN ARE NOT UNIFORM DEPTH. VARIABLE DEPTH MILLING SHALL BE ACCOMPLISHED TO THE GRADES INDICATED. GRADES ARE RELATIVE TO FINISH GRADE (FG).
8. WIRE MESH MAY BE FOUND WITHIN THE EXISTING CONCRETE PAVEMENT SECTIONS. THESE WILL ALSO BE REMOVED ALONG WITH THE REST OF THE EXISTING CONCRETE PAVEMENT AT NO ADDITIONAL COST.
9. FOR ADDITIONAL EXISTING MARKING REMOVALS SEE PHASING PLANS G400 - G405.

SCALE: 1" = 50'

OPF - RW 9L-27R REHAB

MIAMI-DADE COUNTY AVIATION DEPARTMENT-MDAD

MIAMI-DADE COUNTY

MDAD PROJECT MANAGER
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Δ	REVISIONS	DATE
1	ADDENDUM No. 1	03/21/2023

RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA EXECUTIVE AIRPORT (OPF)

SEAL

LATOSHA L. SIGLER
REG No.: P.E. 78738
CIVIL ENGINEER

DRAWING TITLE

CIVIL DEMOLITION PLAN

DATE	02/2023
JOB	100075217
DRAWN	DMA
DESIGN	JSP
CHECK	CAO
DC NO.	
SHEET	C107

ISSUED FOR BID - NOT FOR CONSTRUCTION

PLOT DATE: 2/9/2023 6:12 PM
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BID ITEM NOTE*:
THE RDR SIGN MAY NEED TO BE REMOVED AT THE DIRECTION OF THE FAA AT FLIGHT CHECK. IF DIRECTED BY THE FAA, THE CONTRACTOR SHALL REMOVE THE SIGN AND TRANSFORMER, RECONNECT PRIMARY CABLING, AND PROVIDE THE SIGN TO THE AIRPORT FOR STORAGE. FOUNDATION WILL BE ABANDONED IN PLACE AND JUNCTION CAN UTILIZED FOR WIRING.

SERVICE ROAD
NEW ACCESS ROAD
EXISTING WINDCONE
1W2"
SEE DETAIL 1/N511 FOR MORE INFO
LHA#4
LHA#3
LHA#2
LHA#1
9L PAPI
30.00'
30.00'
30.00'
1W2" PAPI
REMOVE RW 9L VASI AND FOUNDATIONS. SEE NOTE 6
ABANDONE VASI POWER CABLE
1048.60'
1W2" DIRECTIONAL DRILL
RELOCATED SIGN, SEE E402 AND BID ITEM NOTE ABOVE
RDR SIGN*
50.00'
125.00'
15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00
B/L "RUNWAY"
STA. 20+48.60
N: 574637.73
E: 891025.49
RW 9L-27R
MATCHLINE - REFERENCE SHEET N101
MATCHLINE - REFERENCE SHEET N103
RW 9L GLIDE SLOPE SURVEY LINE FOR VGSI (PAPI) COINCIDENT INSTALLATION
EXISTING RW 9L GLIDE SLOPE SHELTER
EXISTING RW 9L GLIDE SLOPE TOWER
REUSE EXISTING CONDUIT FOR GLIDE SLOPE SHELTER BUILDING ELECTRICAL FEED
NEW EQUIPMENT RACK '09L GS AREA'
EXISTING EQUIPMENT RACK AND TRANSFORMER
ABANDONED VASI POWER CABLE
FAA ACCESS ROAD
TW N
TW T

NOTES

1. PAPI REFERENCE DISTANCE IS TO THE FRONT FACE OF THE LHA DEVICE.
2. A LICENSED PROFESSIONAL SURVEYOR IN THE STATE OF FLORIDA SHALL ACCOMPLISH SURVEYING AND LAYOUT. USE RUNWAY THRESHOLD AND RUNWAY CENTERLINE AS THE BASELINE AND BENCHMARK FOR PAPI SITTING. VERIFY LAT/LONG COORDINATES AND ELEVATIONS AND REPORT ANY DISCREPANCIES TO THE RPR AND FAA RE BEFORE PROCEEDING.
3. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES AND CABLING USING GROUND PENETRATING RADAR (GPR) IN ACCORDANCE WITH THE SPECIFICATIONS.
4. ADDITIONAL FIELD SURVEY REQUIRED PRIOR TO FINAL AIMING OR ADJUSTMENT. SEE KEYNOTE 4 FOR ADDITIONAL DETAILS.
5. THE FACE OF EACH LAMP HOUSING ASSEMBLY (LHA) SHALLBE LOCATED ON A LINE PERPENDICULAR TO RUNWAY 9L-27R CENTERLINE. THE LIGHT BEAM CENTERS OF ALL LHA'S SHALL BE WITHIN +/-1" OF HORIZONTAL PLANE. THE HORIZONTAL PLANE SHALL BE 8" ABOVE THE ELEVATION OF THE RUNWAY CENTERLINE AT THE INTERCEPT POINT OF THE VISUAL GLIDE PATH WITH THE RUNWAY. THE 8" ABOVE THE RUNWAY CENTERLINE AT THE INTERCEPT POINT IS REQUIRED DUE TO THE EXISTING AIRPORT VEGETATION, FLOOD ZONE AND MAINTENANCE.
6. CONTRACTOR SHALL BACKFILL, COMPACT AND GRADE TO MATCH EXISTING GRADE. THE DISTURBED AREA SHALL BE TOP SOILED AND SODDED IN ACCORDANCE WITH SPECIFICATIONS.
7. REFER TO SHEET N503 FOR MALS 27 CABLE INFORMATION.

KEYNOTE LEGEND

1. PAPI POWER DISTRIBUTION AND CONTROL RACK. LOCATE 10' OFFSET FROM RUNWAY SAFETY AREA.
2. PAPI LAMP HOUSING ASSEMBLY (LHA). TYPICAL OF 4 PER SYSTEM.
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4. SURVEY POINTS FOR THE ELEVATION OF THRESHOLD POINTS AND POINTS-OF-INTERCEPT SHALL BE VERIFIED BY SURVEYOR AFTER PAVEMENT IS PLACED, PRIOR TO THE FINAL AIMING OF THE PAPIS. MINOR ADJUSTMENTS OF THE LEG HEIGHTS MAY BE REQUIRED AND WILL BE DIRECTED AFTER COLLECTION OF SURVEY POINTS BY THE CONTRACTOR.
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10. L-867D PULL CAN AND COVER PLATE WITH 6" CONCRETE ENCASEMENT.

NOMENCLATURE LEGEND

RACEWAY TYPE PLAN CALLOUT EXAMPLE:

1W2"
1 / W / 2"
/ W / SIZE"

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- 'WAY' SEPARATOR
- NUMBER OF CONDUITS

0' 50' 100'
SCALE: 1" = 50'

OPF - RW 9L-27R REHAB

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Δ	REVISIONS	DATE
1	ADDENDUM No. 1	03/21/2023

RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA EXECUTIVE AIRPORT (OPF)

SEAL

WILLIAM J. HOWELL JR.
REG No.: P.E. 81748
ELECTRICAL ENGINEER

DRAWING TITLE
NAVAIDS PLAN

DATE	02/2023
JOB	100075217
DRAWN	PPP
DESIGN	KPK
CHECK	WJH
DC NO.	
SHEET	N102

ISSUED FOR BID - NOT FOR CONSTRUCTION

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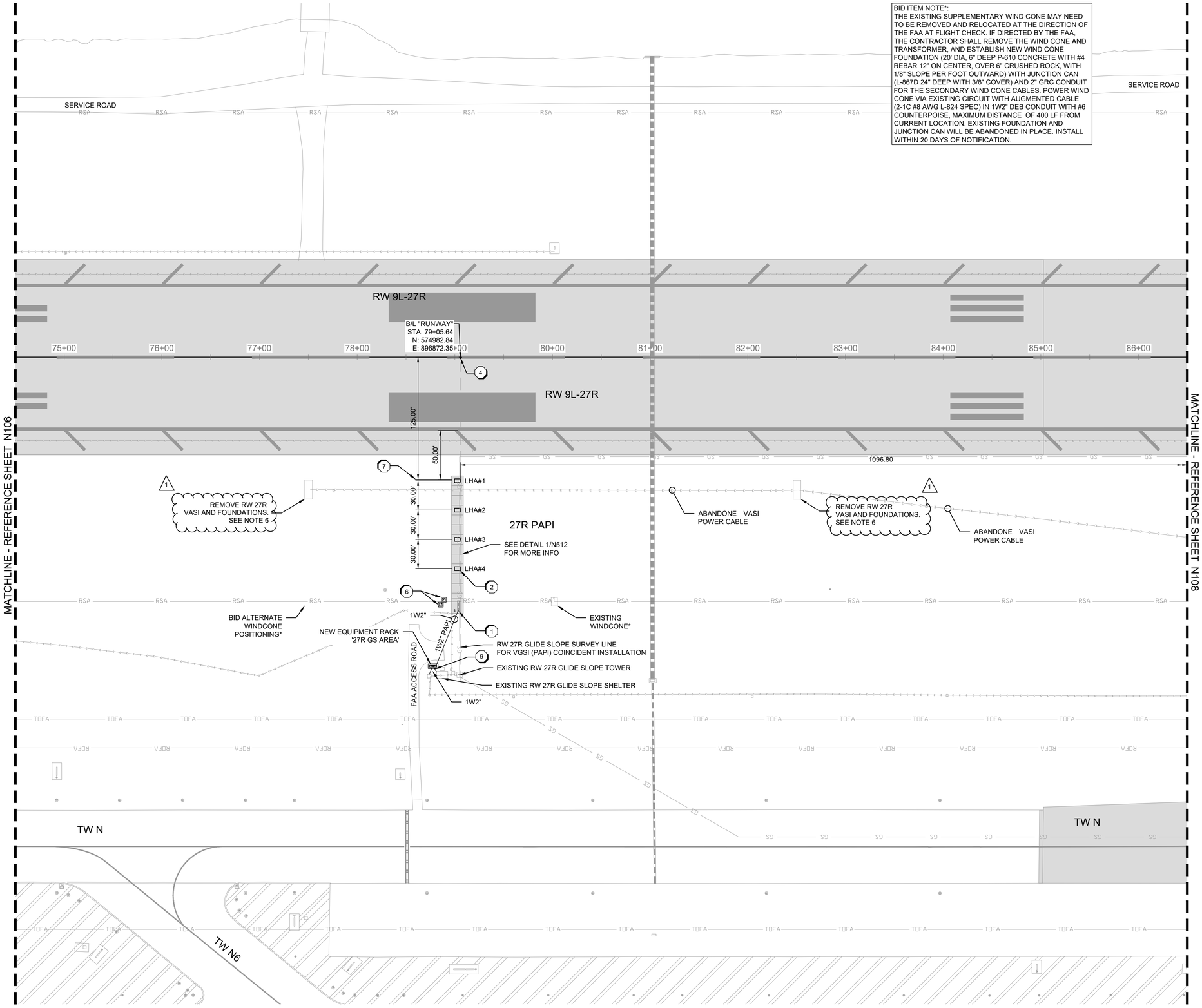

BID ITEM NOTE*:
THE EXISTING SUPPLEMENTARY WIND CONE MAY NEED TO BE REMOVED AND RELOCATED AT THE DIRECTION OF THE FAA AT FLIGHT CHECK. IF DIRECTED BY THE FAA, THE CONTRACTOR SHALL REMOVE THE WIND CONE AND TRANSFORMER, AND ESTABLISH NEW WIND CONE FOUNDATION (20' DIA, 6" DEEP P-610 CONCRETE WITH #4 REBAR 12" ON CENTER, OVER 6" CRUSHED ROCK, WITH 1/8" SLOPE PER FOOT OUTWARD) WITH JUNCTION CAN (L-867D 24" DEEP WITH 3/8" COVER) AND 2" GRC CONDUIT FOR THE SECONDARY WIND CONE CABLES. POWER WIND CONE VIA EXISTING CIRCUIT WITH AUGMENTED CABLE (2-1C #8 AWG L-824 SPEC) IN 1W2" DEB CONDUIT WITH #6 COUNTERPOISE, MAXIMUM DISTANCE OF 400 LF FROM CURRENT LOCATION. EXISTING FOUNDATION AND JUNCTION CAN WILL BE ABANDONED IN PLACE. INSTALL WITHIN 20 DAYS OF NOTIFICATION.

NOTES

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7. REFER TO SHEET N503 FOR MALS 27 CABLE INFORMATION.

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MIAMI - OPA LOCKA EXECUTIVE AIRPORT (OPF)

SEAL

WILLIAM J. HOWELL JR.
REG No.: P.E. 81748
ELECTRICAL ENGINEER

DRAWING TITLE

NAVAIDS PLAN

DATE	02/2023
JOB	100075217
DRAWN	PPP
DESIGN	KPK
CHECK	WJH
DC NO.	
SHEET	N107

ISSUED FOR BID - NOT FOR CONSTRUCTION

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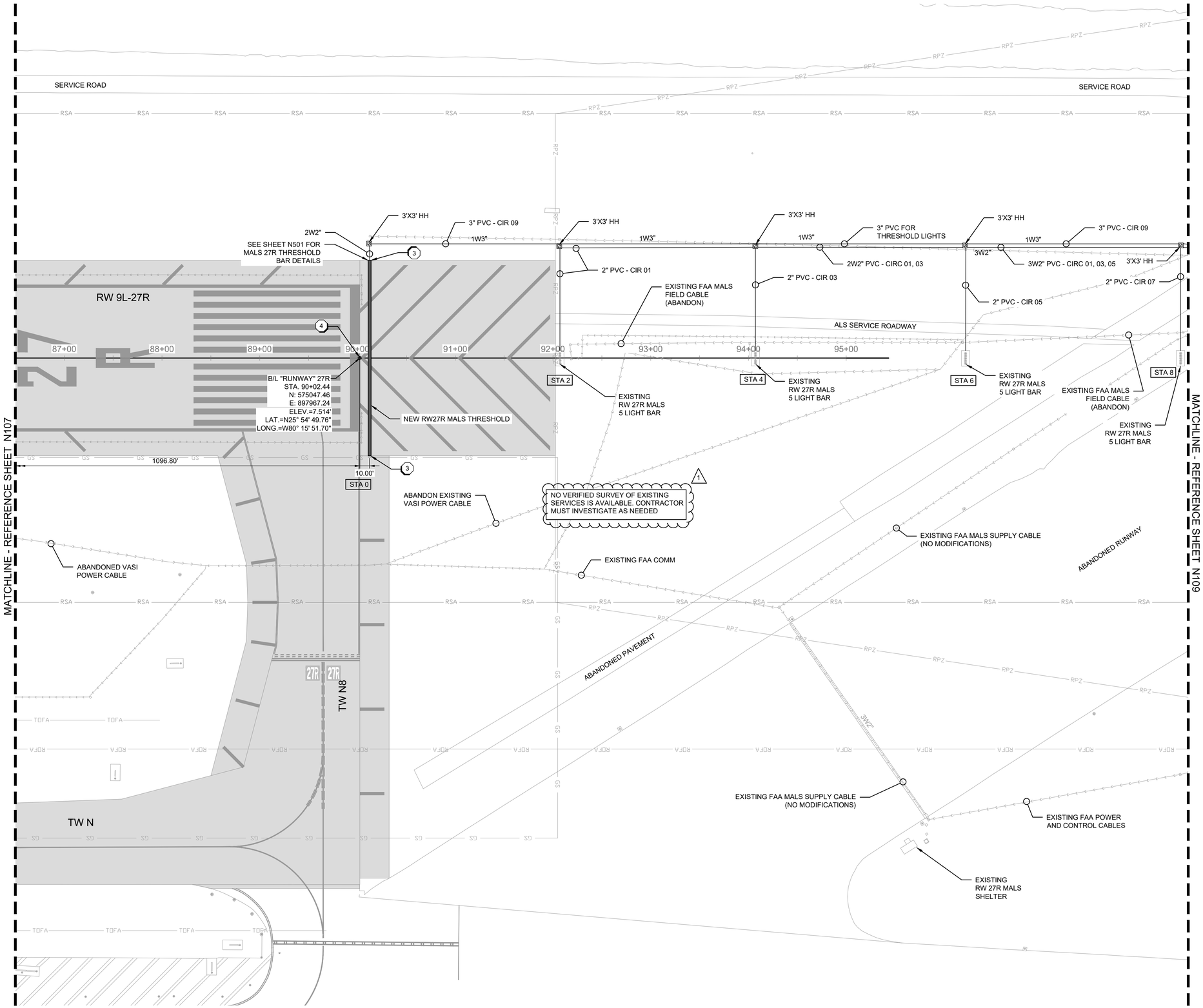

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1	ADDENDUM No. 1	03/21/2023

RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

SEAL

WILLIAM J. HOWELL JR.
REG No.: P.E. 81748
ELECTRICAL ENGINEER

DRAWING TITLE

NAVAIDS PLAN

DATE	02/2023
JOB	100075217
DRAWN	PPP
DESIGN	KPK
CHECK	WJH
DC NO.	
SHEET	N108

ISSUED FOR BID - NOT FOR CONSTRUCTION

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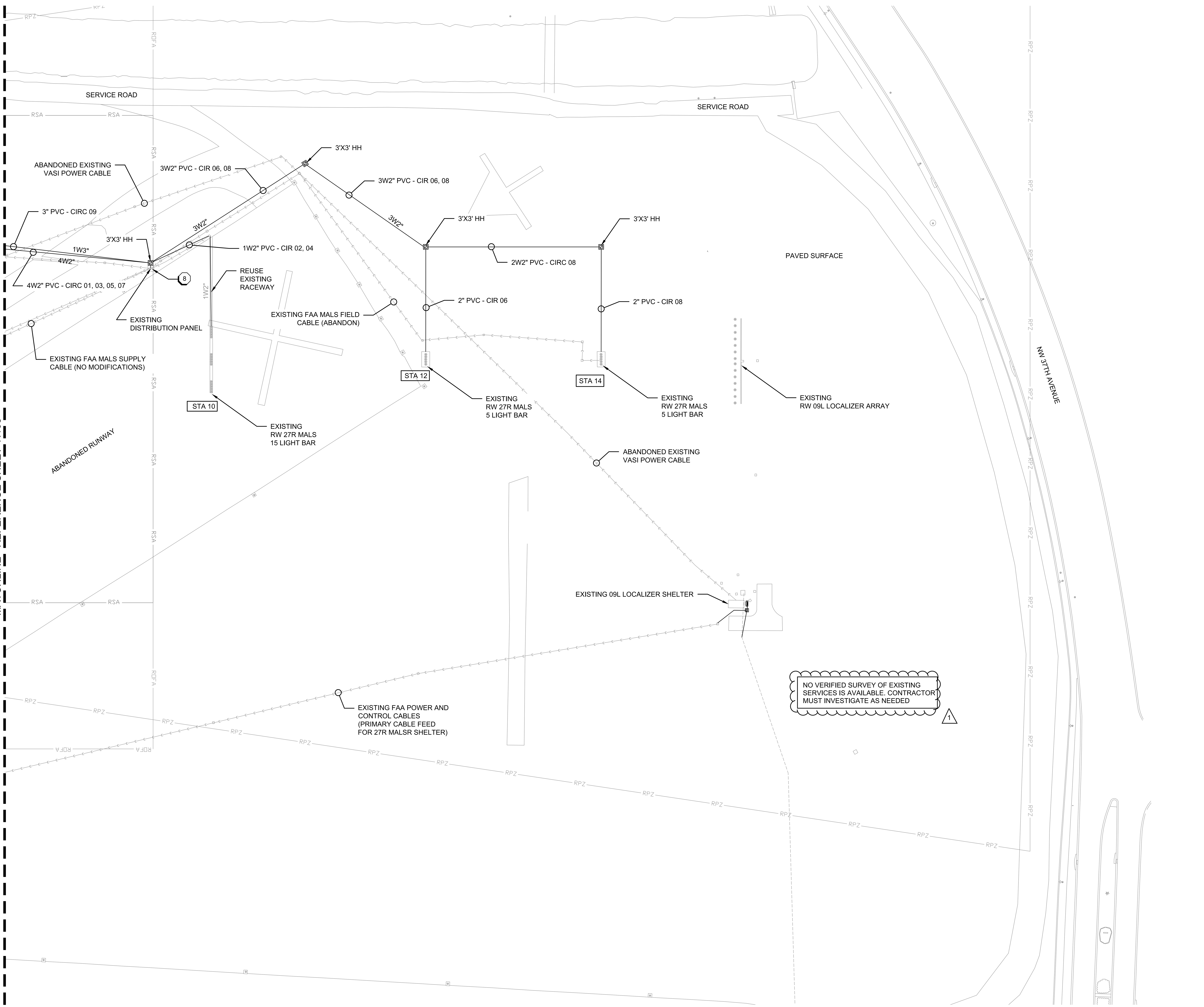

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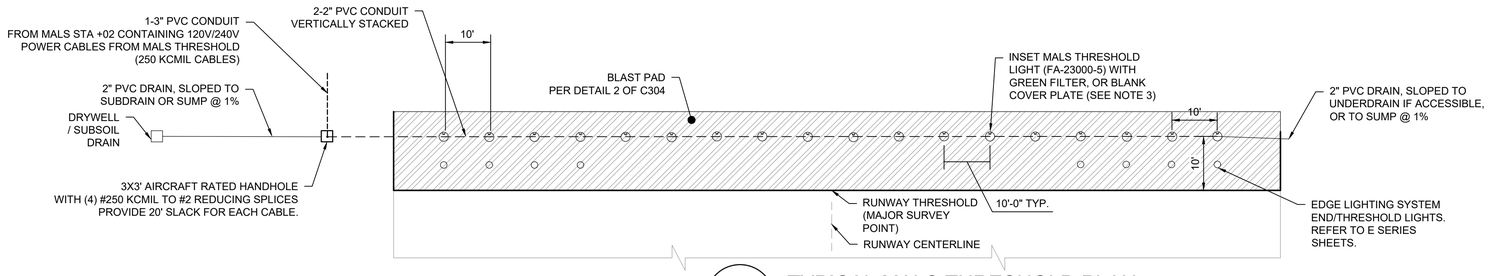
RUNWAY 09L AND 27R - 150' WIDE



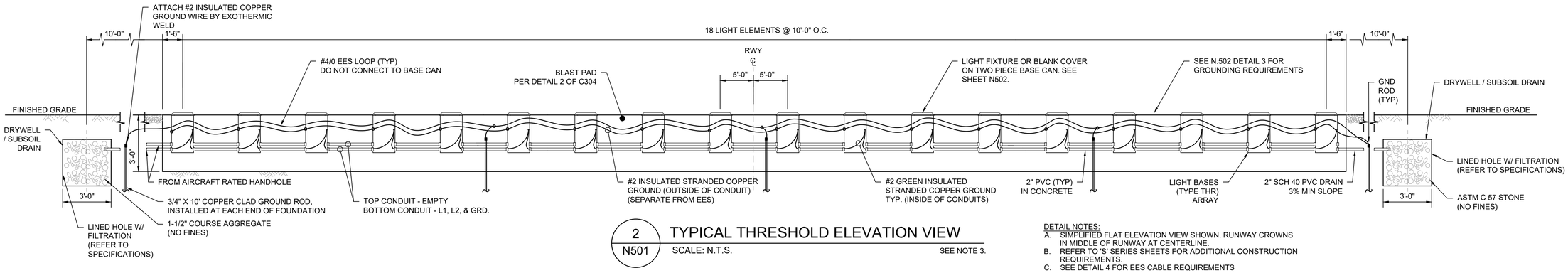
1 / N501 **TYPICAL MALS THRESHOLD PLAN**

SCALE: N.T.S.

DETAIL NOTES:
A. SEE NOTE 3.
B. SEE DETAIL 4 FOR EES CABLE REQUIREMENTS

SHEET NOTES:

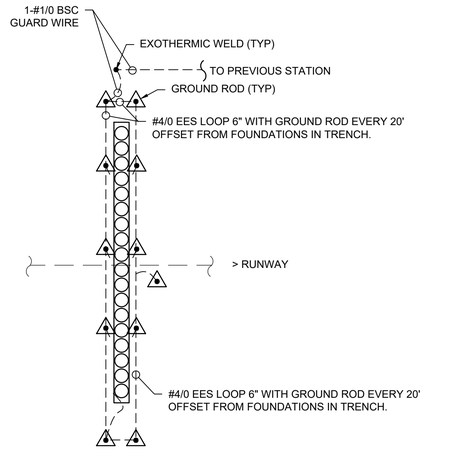
1. LIGHT BASES SHALL CONFORM TO FAA ADVISORY CIRCULAR A/C 150/5345-42B, "SPECIFICATION FOR AIRPORT LIGHT BASES AND TRANSFORMER HOUSINGS".
2. PROVIDE GROUND ROD AT EACH END OF THE THRESHOLD BAR. A 1-C #2 INSULATED COPPER WIRE EXOTHERMICALLY WELDED TO THE GROUND RODS AND CONNECTED TO THE EXTERNAL GROUND LUG IN EACH LIGHT BASE.
3. RUNWAY 27R'S MALS THRESHOLD IS SHOWN DIAGRAMMATICALLY ON THIS SHEET. RUNWAY 09L'S THRESHOLD SHALL BE INSTALLED PER RWY 27R'S TYPICAL DETAILS. BLANK COVERS WILL BE USED WHERE INSET FIXTURES ARE APPLIED (18 PLACES). NO WIRING WILL BE REQUIRED. THE 09L MALS THRESHOLD IS A PROVISION FOR THE FUTURE FAA SYSTEM UPGRADES WHEN THE FAA UPGRADES THE APPROACH LIGHTING SYSTEM.
4. CONTRACTOR SHALL PROVIDE 3 ADDITIONAL SPARE FA-230000/5 INSET GREEN MALS THRESHOLD LIGHTS WITH VOLTAGE TRANSFORMER.
5. REFER TO 'S' SERIES SHEETS FOR ADDITIONAL CONSTRUCTION REQUIREMENTS.
6. XHHW-2 INSULATED CABLES ARE ALLOWED ALTERNATE TO 'USE-2' PER L-127-3.4



2 / N501 **TYPICAL THRESHOLD ELEVATION VIEW**

SCALE: N.T.S. SEE NOTE 3.

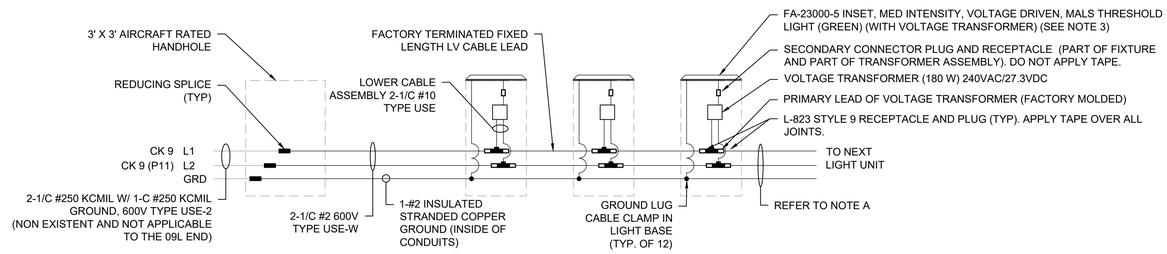
DETAIL NOTES:
A. SIMPLIFIED FLAT ELEVATION VIEW SHOWN. RUNWAY CROWNS IN MIDDLE OF RUNWAY AT CENTERLINE.
B. REFER TO 'S' SERIES SHEETS FOR ADDITIONAL CONSTRUCTION REQUIREMENTS.
C. SEE DETAIL 4 FOR EES CABLE REQUIREMENTS



DETAIL NOTES:
A. APPLIES TO BOTH 09R AND 27L ALS THRESHOLD BARS CONFIGURATIONS. MODIFY AS REQUIRED FOR ROTATION AND SITE SPECIFIC LAYOUTS.

4 / N501 **GROUNDING PLAN (THRESHOLD)**

SCALE: N.T.S.



3 / N501 **THRESHOLD LIGHT WIRING DIAGRAM**

SCALE: N.T.S.

DETAIL NOTES:
A. SEE NOTE 3 ABOVE REGARDING WIRING ON EACH RUNWAY THRESHOLD SYSTEM.

THRESHOLD REDUCING (#250 KCMIL TO #2) SPLICE
- ILSCO SS-350-Z (USPA-350-SS-Z).

TEE STYLE SPLICES
- SOLDERLESS WIRE CONNECTORS AND SEALED WITH SELF SEALING HEAT SHRINKABLE TAP.

PLOT DATE: 2/8/2023 11:22 AM
FILE NAME: c:\pw_workatkins\f001\watkins_krau5284\dms90183\N501 - NAVAIDs Details.dwg

OPF - RW 9L-27R REHAB

MIAMI-DADE COUNTY AVIATION DEPARTMENT-MDAD

MIAMI-DADE COUNTY

MDAD PROJECT MANAGER
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FBPR CA NO. 24

	REVISIONS	DATE
1	ADDENDUM No. 1	03/21/2023

RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

SEAL

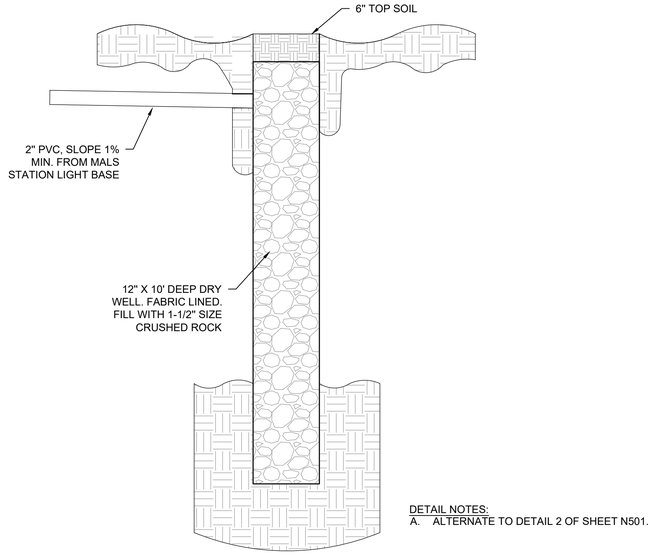
WILLIAM J. HOWELL JR.
REG No.: P.E. 81748
ELECTRICAL ENGINEER

DRAWING TITLE

NAVAIDS DETAILS

DATE	02/2023
JOB	100075217
DRAWN	PPP
DESIGN	KPK
CHECK	WJH
DC NO.	
SHEET	N501

ISSUED FOR BID - NOT FOR CONSTRUCTION



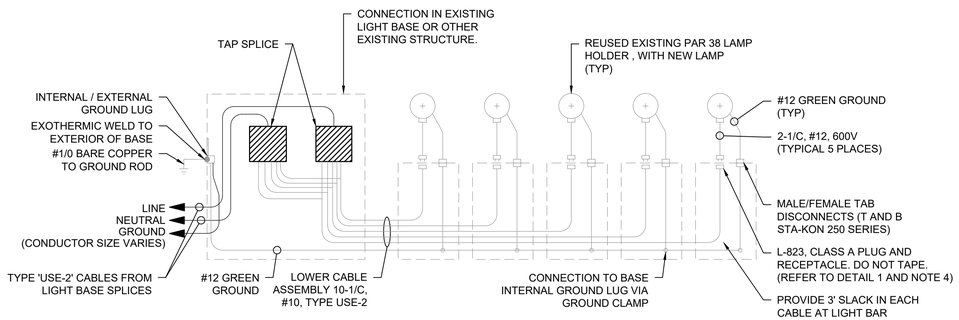
DETAIL NOTES:
A. ALTERNATE TO DETAIL 2 OF SHEET N501.

1 / N503 ALTERNATE DRYWELL

SCALE: N.T.S.

MALS 27R CABLE RUNS

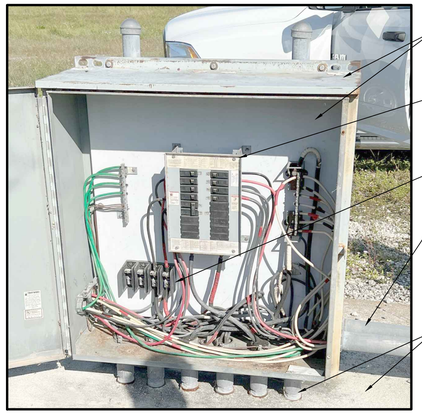
ITEM NO.	DESCRIPTION	NOTES	CABLE	EQUIPMENT GROUND
CKT # 1 & 3	TO STATION 2 AND 4 ORIGINATES AT MALS EQUIPMENT RACK	CKT #1 ENDS AT STATION 02+00 CKT #3 ENDS AT STATION 04+00 (NON-INTERLEAVED AT LIGHT BARS)	2-1/C #2 (L, N) 2-1/C #2 (L, N)	1-1/C #2 (GRD) 1-1/C #2 (GRD)
CKT # 5 & 7	TO STATION 6 AND 8 ORIGINATES AT MALS EQUIPMENT RACK	CKT #5 ENDS AT STATION 06+00 CKT #7 ENDS AT STATION 08+00 (NON-INTERLEAVED AT LIGHT BARS)	2-1/C #4 (L, N) 2-1/C #4 (L, N)	1-1/C #4 (GRD) 1-1/C #4 (GRD)
CKT # 2 & 4	TO STATION 10C, 10L, AND 10R ORIGINATES AT MALS EQUIPMENT RACK	CKT #2 ENDS AT STATION 10+00 (10C MG-20 STATION) (NON-INTERLEAVED AT LIGHT BARS) CKT #4 ENDS AT STATION 10+00 ('Y' TAP TO 10L AND 10R MG-20 STATIONS)	2-1/C #6 (L, N) 2-1/C #6 (L, N)	1-1/C #6 (GRD) 1-1/C #6 (GRD)
CKT # 6 & 8	TO STATION 12 AND 14 ORIGINATES AT MALS EQUIPMENT RACK	CKT #6 ENDS AT STATION 12+00 CKT #8 ENDS AT STATION 14+00 (NON-INTERLEAVED AT LIGHT BARS)	2-1/C #4 (L, N) 2-1/C #4 (L, N)	1-1/C #4 (GRD) 1-1/C #4 (GRD)
CKT # 9 (2P INC. POLE 11)	TO THRESHOLD (STATION 0) ORIGINATES AT MALS EQUIPMENT RACK	CKT #9 (2 POLE) ENDS AT THRESHOLD (NON-INTERLEAVED CIRCUIT (L1 AND L2) SINGLE EQUIPMENT GROUND CABLE	2-1/C #250 (L1, L2) (TRANSITIONS TO #2 AT HANDHOLE NEAR THRESHOLD BAR)	1-1/C #250 (GRD) (TRANSITIONS TO #2 AT HANDHOLE NEAR THRESHOLD BAR)
MALS POWER	(EXISTING)	(EXISTING)	(EXISTING)	(EXISTING)
MALS CONTROL	(EXISTING)	(EXISTING)	(EXISTING)	(EXISTING)
RAIL POWER		NOT APPLICABLE TO MALS SYSTEM		
RAIL CONTROL		NOT APPLICABLE TO MALS SYSTEM		
SHELTER POWER	(EXISTING)	(EXISTING) FROM UTILITY TRANSFORMER FOR SHELTER EQUIPMENT.	(EXISTING)	(EXISTING)



DETAIL NOTES:
A. EVERY OTHER LAMP CONNECTS TO ALTERNATING LEGS OF THE 120/240 VOLT SUPPLY. GROUND LEG IS COMMON TALL ALL LIGHTS.
B. HALFTONE ITEMS ARE EXISTING, FULL TONE ITEMS ARE NEW.
C. XHHW-2 INSULATED CABLES ARE ALLOWED ALTERNATE TO 'USE-2' PER L-127-3.4
TAP SPLICES
- RAYCHEN GTAP-1 SPLICE K.

2 / N503 EMT LIGHT BAR WIRING DIAGRAM

N.T.S.



3 / N503 MALS 27R FIELD DIST. PANEL ENCLOSURE

N.T.S.

DETAIL NOTES:
A. REFER TO SHEET N109 AND FOR LOCATION AND ADDITIONAL NOTES OF THIS WORK.

PLOT DATE: 2/8/2023 11:22 AM
FILE NAME: c:\pw_workatkins\f001\watkins_krau5284\dms90183\N501 - NAVAIDs Details.dwg

OPF - RW 9L-27R REHAB

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RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

SEAL

WILLIAM J. HOWELL JR.
REG No.: P.E. 81748
ELECTRICAL ENGINEER

DRAWING TITLE

NAVAIDS DETAILS

DATE	02/2023
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DRAWN	PPP
DESIGN	KPK
CHECK	WJH
DC NO.	
SHEET	N503

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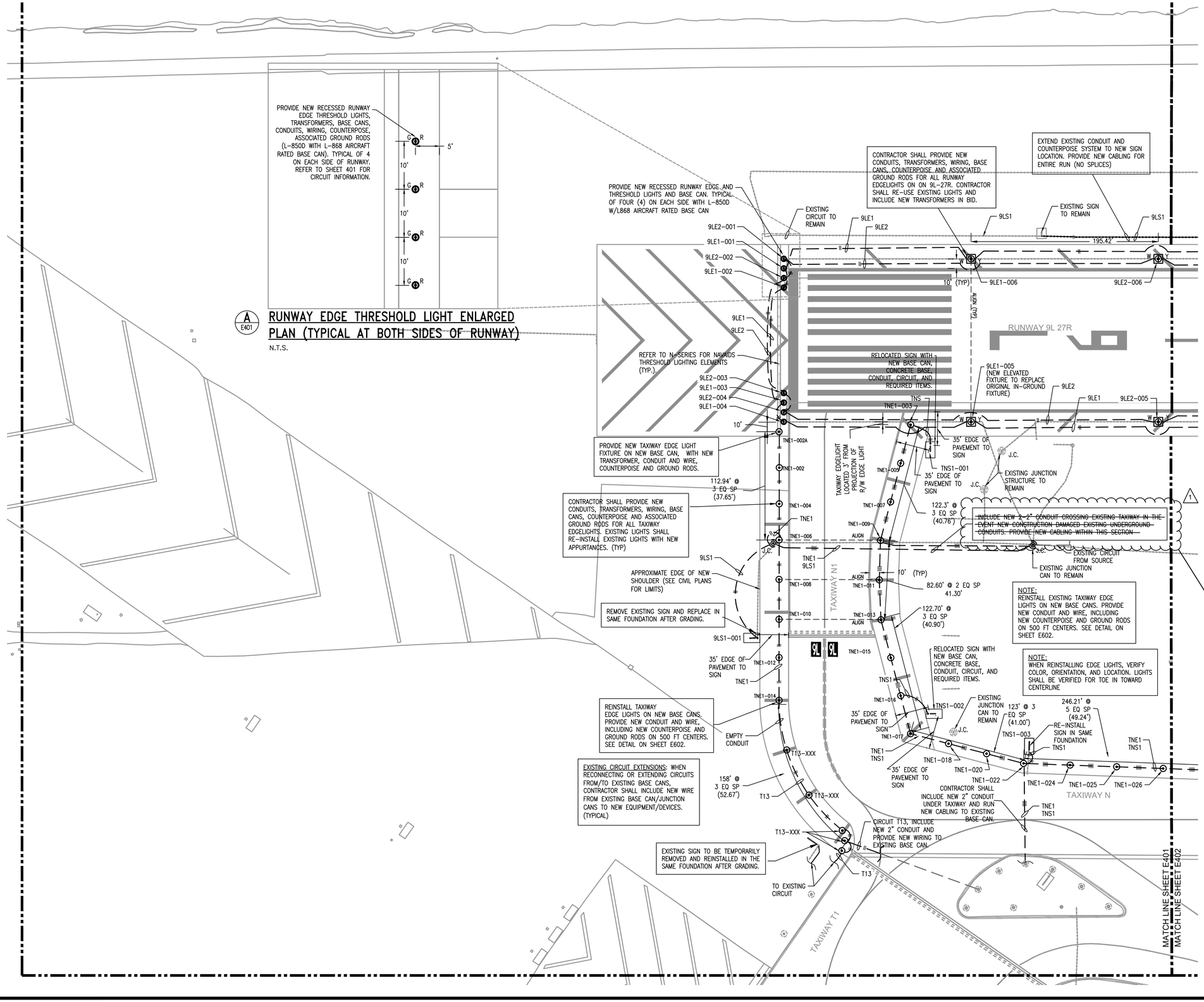

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MIAMI-DADE COUNTY AVIATION DEPARTMENT-MDAD

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RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA EXECUTIVE AIRPORT (OPF)

SEAL

DRAWING TITLE
ELECTRICAL NEW WORK PARTIAL PLAN

DATE	12/2022
JOB	100075217
DRAWN	LR
DESIGN	SD
CHECK	BD
DC NO.	
SHEET	E401

Gartek
Gartek Engineering Corporation
6801 Lake Worth Road, Ste. 117, Greenacres, FL 33467 / (561)249-3431 Fax (561)249-3472
7210 S.W. 39th Terrace, Miami, FL 33155 / (305)266-8997 Fax (305)264-3498
2700 N. 29th Ave., Ste. 303, Hollywood, FL 33020 / (954)404-8100 Fax (954)404-8133
www.gartek-engineering.com Certificate of Authorization #3144
Robert L. Betancourt, P.E. (Mechanical) State of Florida #34788
M. F. Garcia, P.E. (Electrical) State of Florida #24221
Project No. 3371-00

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PLOT DATE: 12/16/2022 4:05 PM
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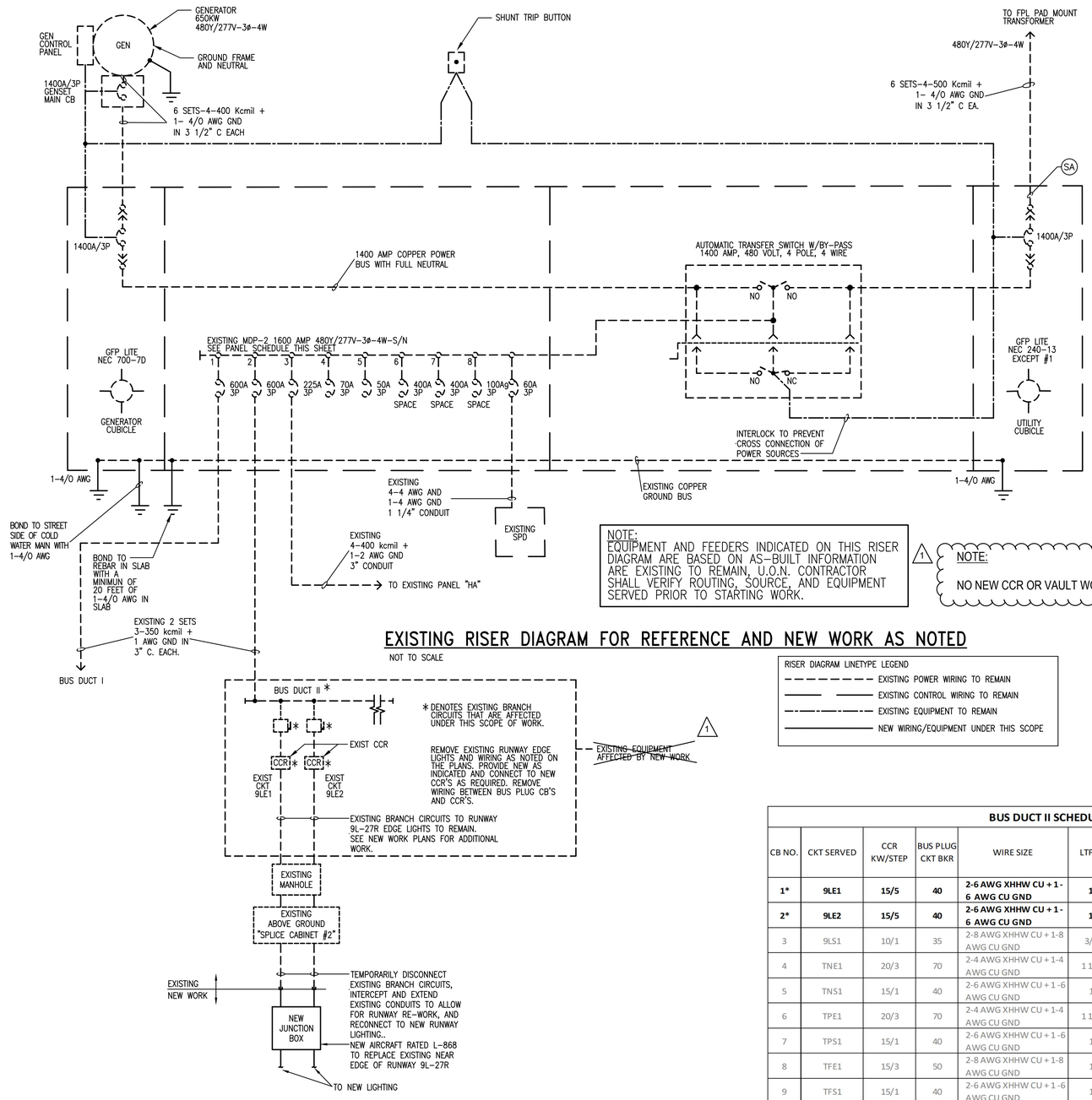

NOTE:
EQUIPMENT AND FEEDERS INDICATED ON THIS RISER DIAGRAM ARE BASED ON AS-BUILT INFORMATION ARE EXISTING TO REMAIN, U.O.N. CONTRACTOR SHALL VERIFY ROUTING, SOURCE, AND EQUIPMENT SERVED PRIOR TO STARTING WORK.

1 NOTE:

NO NEW CCR OR VAULT WORK REQUIRED FOR THIS PROJECT.

EXISTING RISER DIAGRAM FOR REFERENCE AND NEW WORK AS NOTED

NOT TO SCALE

RISER DIAGRAM LINETYPE LEGEND
- EXISTING POWER WIRING TO REMAIN
- EXISTING CONTROL WIRING TO REMAIN
- EXISTING EQUIPMENT TO REMAIN
- NEW WIRING/EQUIPMENT UNDER THIS SCOPE

BUS DUCT II SCHEDULE

CB NO.	CKT SERVED	CCR KW/STEP	BUS PLUG CKT BKR	WIRE SIZE	LTFMC	CONNECTED PHASES A	B	C	KVA	REMARKS
1*	**9LE1**	**15/5**	**40**	**2-6 AWG XHHW CU + 1 - 6 AWG CU GND**	**1"**				**12.7**	**RWY 9L-27R EDGE LIGHTS**
2*	**9LE2**	**15/5**	**40**	**2-6 AWG XHHW CU + 1 - 6 AWG CU GND**	**1"**				**12.7**	**RWY 9L-27R EDGE LIGHTS**
3	9LS1	10/1	35	2-8 AWG XHHW CU + 1-8 AWG CU GND	3/4"				10.3	DEDICATED SIGN CIRCUIT
4	TNE1	20/3	70	2-4 AWG XHHW CU + 1-4 AWG CU GND	1 1/4"				20.9	
5	TNS1	15/1	40	2-6 AWG XHHW CU + 1 -6 AWG CU GND	1"				14.3	DEDICATED SIGN CIRCUIT
6	TPE1	20/3	70	2-4 AWG XHHW CU + 1-4 AWG CU GND	1 1/4"				16.4	
7	TPS1	15/1	40	2-6 AWG XHHW CU + 1 -6 AWG CU GND	1"				13.0	DEDICATED SIGN CIRCUIT
8	TFE1	15/3	50	2-8 AWG XHHW CU + 1-8 AWG CU GND	1"				15.0	
9	TFS1	15/1	40	2-6 AWG XHHW CU + 1 -6 AWG CU GND	1"				12.3	DEDICATED SIGN CIRCUIT
10	1BE1	10/3	35	2-8 AWG XHHW CU + 1-8 AWG CU GND	3/4"				5.0	
11	1BE2	10/3	35	2-8 AWG XHHW CU + 1-8 AWG CU GND	3/4"				5.1	
12	1BS1	15/1	40	2-6 AWG XHHW CU + 1 -6 AWG CU GND	1"				12.5	DEDICATED SIGN CIRCUIT
13	HE1	15/1	40	2-6 AWG XHHW CU + 1 -6 AWG CU GND	1"				13.0	
14	FUTURE									
15	FUTURE									
16	FUTURE									
				EXISTING DEMAND KVA		55.9	58.05	49.3	164*	KVA TOTAL

*** DENOTES CIRCUITS BEING AFFECTED UNDER THIS SCOPE.**
LOAD CALCULATIONS NOTE: LIGHTS UNDER THIS SCOPE ARE BEING RE-USED OR, WHERE DAMAGED, REPLACED WITH SIMILAR PRODUCTS. NO ADDITIONAL LOADS ARE BEING ADDED TO THE CIRCUIT AS A PART OF THIS PROJECT.

OPF - RW 9L-27R
REHAB

MIAMI-DADE
COUNTY AVIATION
DEPARTMENT-MDAD

MIAMI-DADE COUNTY

MDAD PROJECT MANAGER
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www.atkinsglobal.com/northamerica.com
FBPR CA NO. 24

	REVISIONS	DATE
1	ADDENDUM No. 1	03/21/2023

RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA
EXECUTIVE AIRPORT (OPF)

SEAL

DRAWING TITLE
AIRFIELD
ELECTRICAL RISER
& CALCULATIONS

DATE	12/2022
JOB	100075217
DRAWN	LR
DESIGN	SD
CHECK	BD
DC NO.	
SHEET	E501

Gartek
Gartek Engineering Corporation
6801 Lake Worth Road, Ste. 117, Greenacres, FL 33467 / (561)249-3431 Fax (561)249-3472
7210 S.W. 39th Terrace, Miami, FL 33155 / (305)266-8997 Fax (305)264-9496
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Certificate of Authorization #3144
Robert L. Betancourt, P.E. (Mechanical) State of Florida #34788
M. F. Garcia, P.E. (Electrical) State of Florida #24221

Project No. 3371-00

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PLOT DATE: 11/21/2022 2:34 PM
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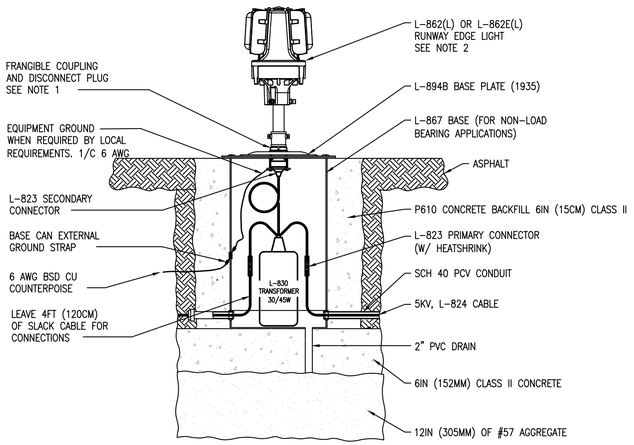


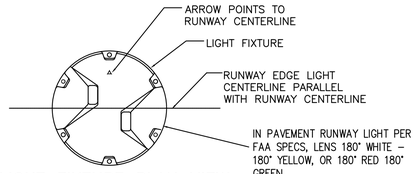
NOTES:

1. APPLY ANTI-SEIZE COMPOUND TO THREADS OF FRANGIBLE COUPLING WHEN INSTALLING NEW LIGHT FIXTURES.
2. PROVIDE 14" OVERALL HIGH LIGHTS TO TOP AFG.

A E401 THRU E408 | E602

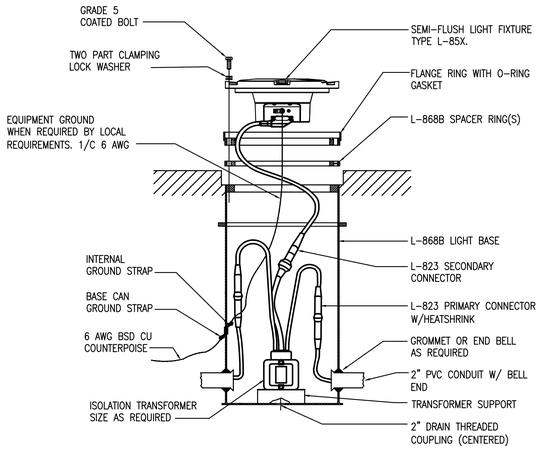
L-867 24" DEEP BASE CAN IN NEW ASPHALT PAVEMENT

N.T.S.



LIGHT FIXTURE PLAN VIEW

N.T.S.

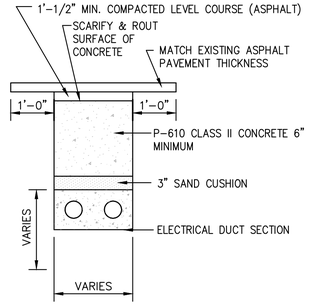


B E403 E602

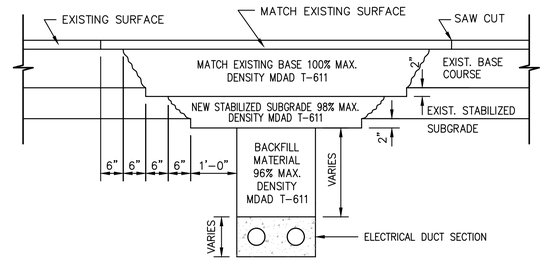
L-868 24" DEEP BASE CAN IN NEW ASPHALT PAVEMENT

N.T.S.

NOTE:
AT DISCRETION OF THE ARCHITECT/ENGINEER, USE LIMEROCK BASE IN LIEU OF CLASS II CONCRETE, WHERE DEPTH OF COVER AND TIME PERMIT.



ELECTRICAL DUCT UNDER TAXIWAY AND RUNWAY (OR CRITICAL MAIN ROADWAYS)



ELECTRICAL DUCT UNDER ROADWAY NON CRITICAL

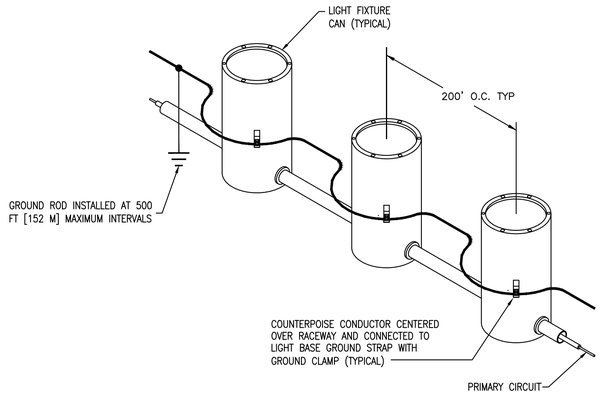
C E403 E602

TRENCH SECTIONS FOR UNDERGROUND

N.T.S.

1 NOTE:

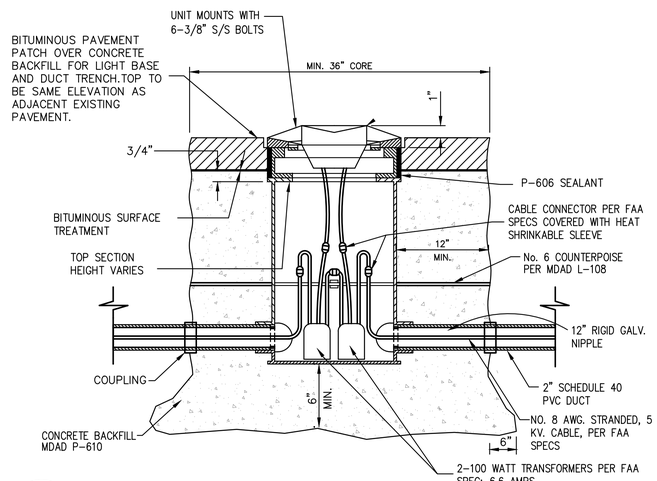
WHEN NOT FILLED BY THE P-610 CONCRETE FOR DUCTBANKS AND BASE CANS, CONTRACTOR MAY USE P-153 CONTROLLED LOW-STRENGTH MATERIAL (CLSM), TO RESTORE TRENCHES AND VOIDS LEFT BY THE REMOVAL OF THE EXISTING CONDUITS, BASE CANS AND ALL OTHER REMOVED STRUCTURES UNDER RUNWAY, TAXIWAYS AND SHOULDERS. RESTORATION IS REQUIRED UP TO THE BOTTOM OF THE NEW PAVEMENT SECTION. THIS WORK IS INCIDENTAL UNDER PAY ITEM L-100-5.1.



D E401 THRU E408 | E602

LIGHT BASE COUNTERPOISE DETAIL

N.T.S.



E E401 THRU E408 | E602

RUNWAY EDGE LIGHT INPAVEMENT STRUCTURAL DETAIL (2L-4)

N.T.S.

OPF - RW 9L-27R REHAB

MIAMI-DADE COUNTY AVIATION DEPARTMENT-MDAD

MIAMI-DADE COUNTY

MDAD PROJECT MANAGER
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RUNWAY 9L-27R REHABILITATION
MIAMI - OPA LOCKA EXECUTIVE AIRPORT (OPF)

SEAL

DRAWING TITLE
ELECTRICAL DETAILS

DATE	12/2022
JOB	100075217
DRAWN	LR
DESIGN	SD
CHECK	BD
DC NO.	
SHEET	E602

Gartek
Project No. 3371-00
Gartek Engineering Corporation
6801 Lake Worth Road, Ste. 117, Greenacres, FL 33467 / (561)249-3431 Fax (561)249-3472
7210 S.W. 39th Terrace, Miami, FL 33155 / (305)266-8997 Fax (305)264-9498
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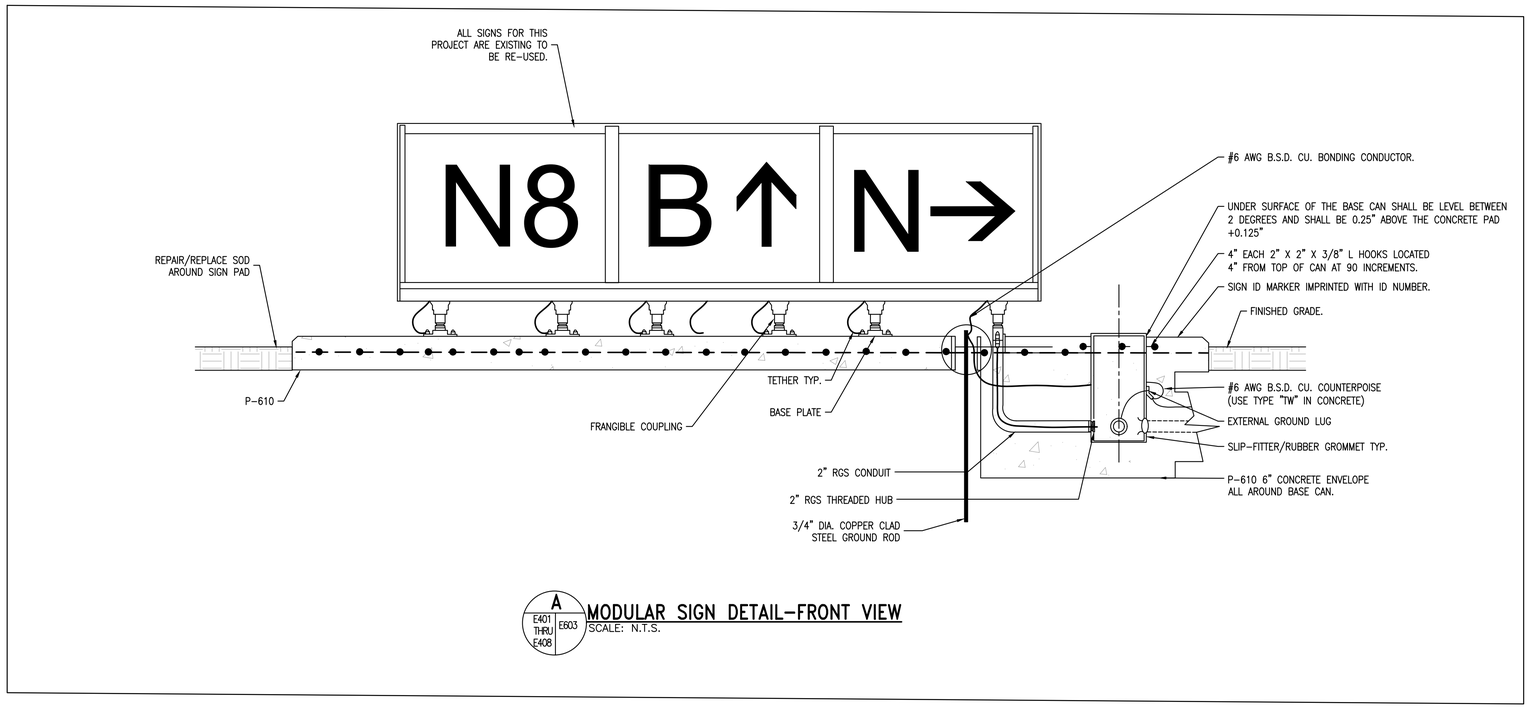
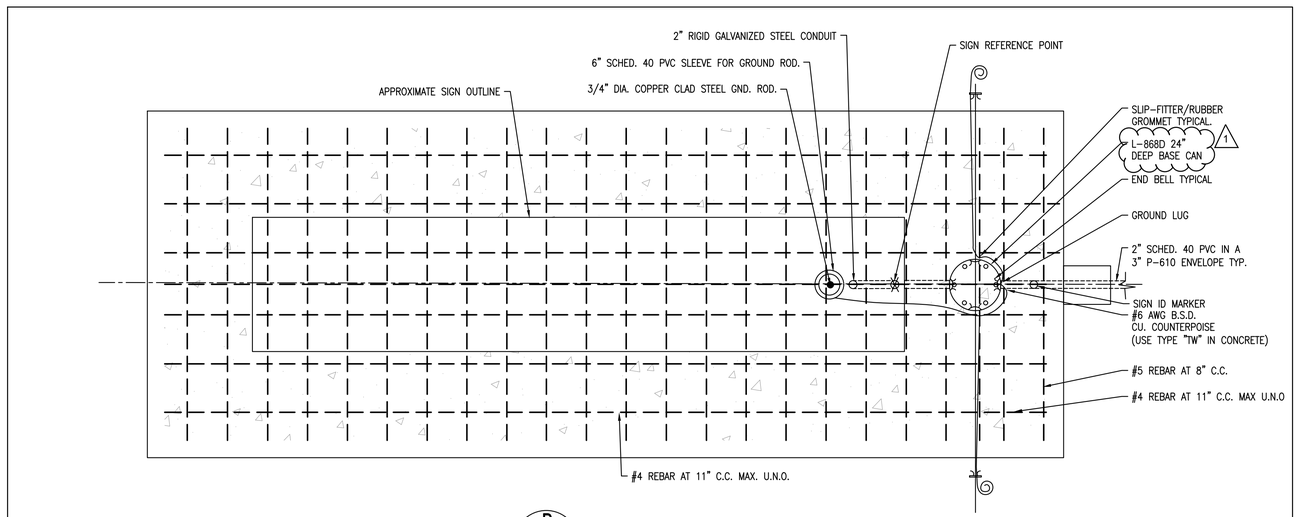


A E401 THRU E408 / E603

MODULAR SIGN DETAIL-FRONT VIEW

SCALE: N.T.S.



B E401 THRU E408 / E603

SIGN BASE DETAIL

SCALE: N.T.S.

PLOT DATE: 11/21/2022 2:34 PM
FILE NAME: H:\ATKINS\3371-00 MDAD Opa Locka RW 9-27\WORK XX\Project Browser\MDAD Opa Locka RW 9-27\Sheets\E603 ELECTRICAL DETAILS.dwg

OPF - RW 9L-27R REHAB

MIAMI-DADE COUNTY AVIATION DEPARTMENT-MDAD

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RUNWAY 9L-27R REHABILITATION
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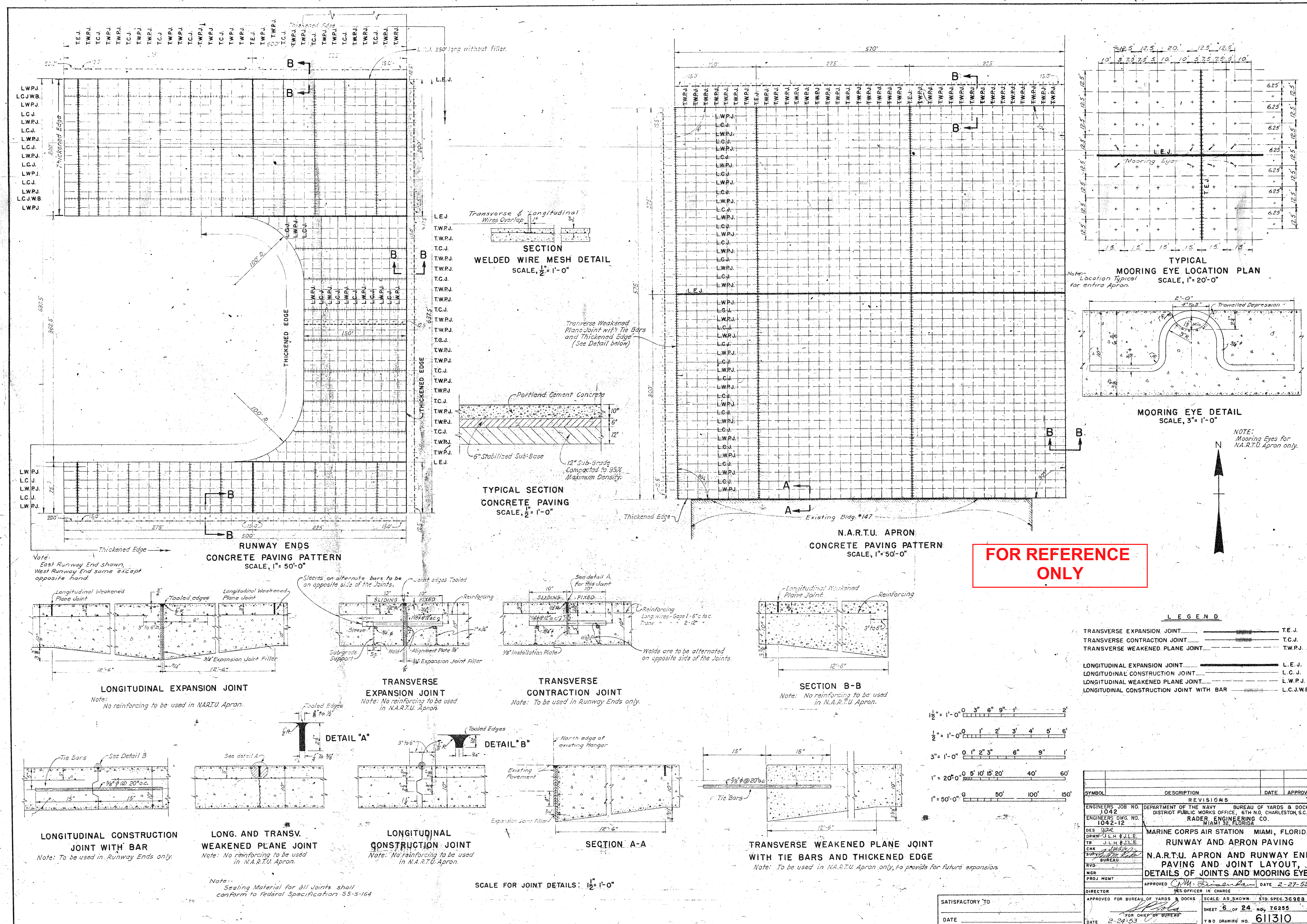
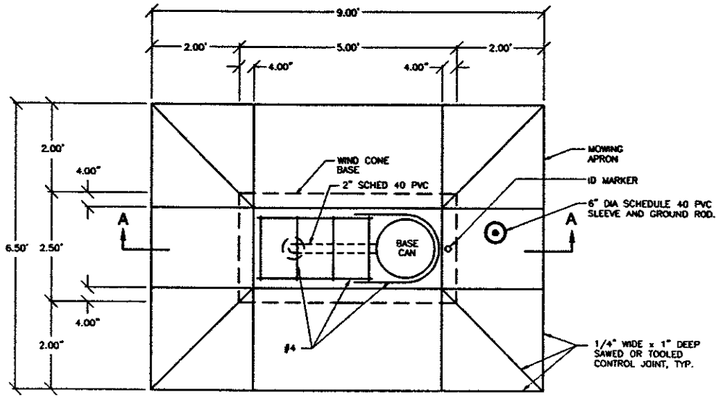
SHEET	E603

Gartek
Gartek Engineering Corporation
6801 Lake Worth Road, Ste. 117, Greenacres, FL 33467 / (561)249-3431 Fax (561)249-3472
7210 S.W. 39th Terrace, Miami, FL 33155 / (305)266-8997 Fax (305)264-9496
2700 N. 29th Ave., Ste. 303, Hollywood, FL 33020 / (954)404-8100 Fax (954)404-8133
www.gartek-engineering.com
Certificate of Authorization #3144
Robert L. Betancourt, P.E. (Mechanical) State of Florida #34788
M. F. Garcia, P.E. (Electrical) State of Florida #24221

Project No. 3371-00

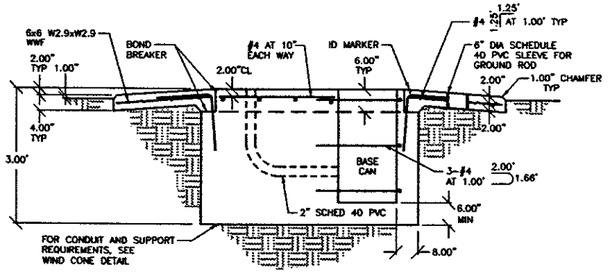
ISSUED FOR BID - NOT FOR CONSTRUCTION


RUNWAY ENDS
CONCRETE PAVING PATTERN
SCALE, 1" = 50'-0"
Note:
East Runway End shown,
West Runway End same except
opposite hand.
Thickened Edge
THICKENED EDGE
100' R.
L.E.J. 250' long without filler.
T.E.J.
T.C.J.
T.W.P.J.
L.W.P.J.
L.C.J.
L.C.J.W.B.
L.E.J.
275'
225'
500'
200'
637.5'
362.5'
150'
75'
15.0'
12.5'
20.0'
SECTION
WELDED WIRE MESH DETAIL
SCALE, 1/2" = 1'-0"
Transverse & Longitudinal
Wires Overlap 1"
3"
TYPICAL SECTION
CONCRETE PAVING
SCALE, 1/2" = 1'-0"
Portland Cement Concrete
6" Stabilized Sub-Base
12" Sub-Grade
Compacted to 95%
Maximum Density.
10"
6"
12"
N.A.R.T.U. APRON
CONCRETE PAVING PATTERN
SCALE, 1" = 50'-0"
570'
575'
275'
300'
Tranverse Weakened
Plane Joint with Tie Bars
and Thickened Edge
(See Detail below)
Thickened Edge
Existing Bldg. #147
TYPICAL
MOORING EYE LOCATION PLAN
SCALE, 1" = 20'-0"
Note:-
Location Typical
for entire Apron.
Mooring Eye
MOORING EYE DETAIL
SCALE, 3" = 1'-0"
2'-0"
4" To 5"
Trowelled Depression
1 1/2" Min.
3"R.
3/4"ϕ
1"R.
NOTE:
Mooring Eyes for
N.A.R.T.U. Apron only.
N
FOR REFERENCE
ONLY
LONGITUDINAL EXPANSION JOINT
Note:
No reinforcing to be used in N.A.R.T.U. Apron.
Longitudinal Weakened
Plane Joint
Tooled edges
3/4" Expansion Joint Filler
12'-6"
TRANSVERSE
EXPANSION JOINT
Note: No reinforcing to be used
in N.A.R.T.U. Apron.
Sleeves on alternate bars to be
on opposite side of the Joints.
Joint edges Tooled
SLIDING
FIXED
Reinforcing
Sleeve
Sub-grade
Support
Weld
Alignment Plate 1/8"
3/4" Expansion Joint Filler
TRANSVERSE
CONTRACTION JOINT
Note: To be used in Runway Ends only.
See detail A
for this Joint
1/8" Installation Plate
Reinforcing
Long. wires - Gage 1 - 6" c. to c.
Tranv. " " " 2 - 12" "
Welds are to be alternated
on opposite side of the Joints.
SECTION B-B
Note: No reinforcing to be used
in N.A.R.T.U. Apron.
DETAIL "A"
Tooled Edges
3/8" to 1/2"
DETAIL "B"
LONGITUDINAL CONSTRUCTION
JOINT WITH BAR
Note: To be used in Runway Ends only.
Tie Bars
See Detail B
5/8" ϕ @ 20" o.c.
LONG. AND TRANSV.
WEAKENED PLANE JOINT
Note: No reinforcing to be used
in N.A.R.T.U. Apron.
See detail A
LONGITUDINAL
CONSTRUCTION JOINT
Note: No reinforcing to be used
in N.A.R.T.U. Apron.
SECTION A-A
North edge of
existing Hangar
Existing
Pavement
Expansion Joint Filler
TRANSVERSE WEAKENED PLANE JOINT
WITH TIE BARS AND THICKENED EDGE
Note: To be used in N.A.R.T.U. Apron only, to provide for future expansion.
Note:-
Sealing Material for all Joints shall
conform to Federal Specification SS-S-164
SCALE FOR JOINT DETAILS: 1 1/2" = 1'-0"
1 1/2" = 1'-0"
1/2" = 1'-0"
3" = 1'-0"
1" = 20'-0"
1" = 50'-0"
LEGEND
TRANSVERSE EXPANSION JOINT — T.E.J.
TRANSVERSE CONTRACTION JOINT — T.C.J.
TRANSVERSE WEAKENED PLANE JOINT — T.W.P.J.
LONGITUDINAL EXPANSION JOINT — L.E.J.
LONGITUDINAL CONSTRUCTION JOINT — L.C.J.
LONGITUDINAL WEAKENED PLANE JOINT — L.W.P.J.
LONGITUDINAL CONSTRUCTION JOINT WITH BAR — L.C.J.W.B.
SYMBOL
DESCRIPTION
DATE
APPROVAL
REVISIONS
ENGINEERS JOB NO. 1042
ENGINEERS DWG. NO. 1042-12
DEPARTMENT OF THE NAVY BUREAU OF YARDS & DOCKS
DISTRICT PUBLIC WORKS OFFICE, 6TH N.D, CHARLESTON, S.C.
RADER ENGINEERING CO.
MIAMI 32, FLORIDA
DES
DRWN J.L.H. & J.L.E.
TR J.L.H. & J.L.E.
CHK
SUPV
BUREAU
RVD
MGR
PROJ MGMT
DIRECTOR
MARINE CORPS AIR STATION MIAMI, FLORIDA
RUNWAY AND APRON PAVING
N.A.R.T.U. APRON AND RUNWAY END
PAVING AND JOINT LAYOUT,
DETAILS OF JOINTS AND MOORING EYES
APPROVED
DATE 2-27-53
RES. OFFICER IN CHARGE
APPROVED FOR BUREAU OF YARDS & DOCKS
FOR CHIEF OF BUREAU
DATE 2-24-53
SCALE AS SHOWN
STD. SPEC. 36988
SHEET 6 OF 24
NO. 76255
Y&D DRAWING NO. 611310
SATISFACTORY TO
DATE
209-19



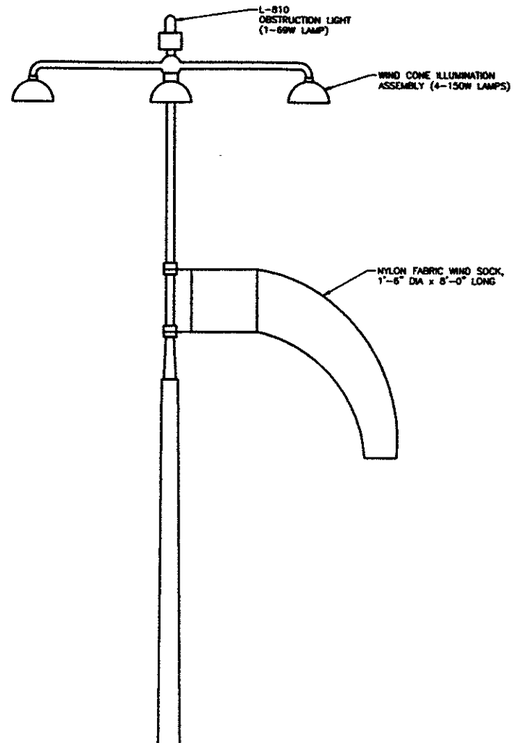
WIND CONE BASE PLAN

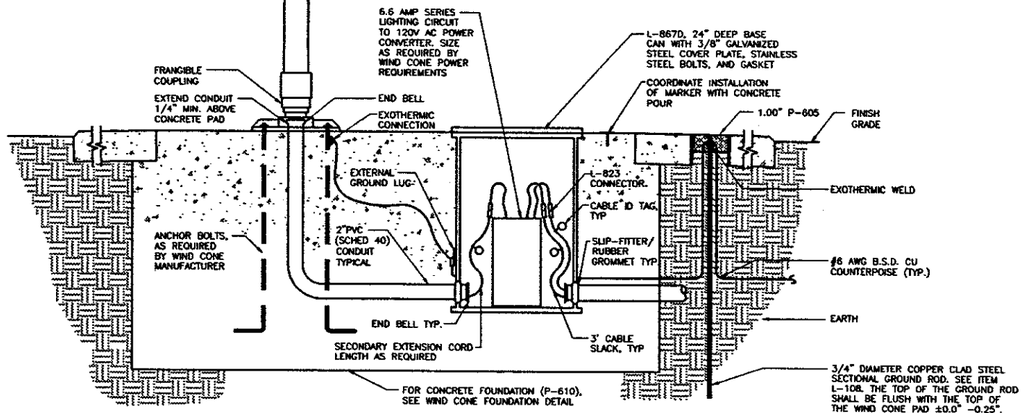
NTS



WIND CONE FOUNDATION DETAIL SECTION A-A

NTS





L-806/7 WIND CONE DETAIL

NTS

NOTES:

1. ALL THREADED CONNECTIONS SHALL BE COATED WITH "IDEAL NOALOX" COMPOUND OR APPROVED EQUAL PRIOR TO ASSEMBLY.
2. COORDINATE WIND CONE INSTALLATION WITH EARTHWORK AND PAVING CONTRACTOR.
3. PROVIDE APPURTENANCES REQUIRED IN FRANGIBLE COUPLINGS OF WIND CONES. TO DISCONNECT WIND CONES FROM POWER SOURCE SHOULD WIND CONE FRANGIBLE COUPLING BE BROKEN.

MIAMI - DADE
AVIATION DEPARTMENT

PHONE: (305)869-4016
MDAD PROJECT MANAGER, RON DOWELL

OPA-LOCKA AIRPORT

MIAMI-DADE AVIATION DEPARTMENT
AIRFIELD LIGHTING
AND SIGNAGE IMPROVEMENTS
P.O. BOX 592075, MIAMI, FL. 33159

Designers & Engineers of Mechanical & Electrical Systems

INDEPENDENT MECHANICAL DESIGNERS & CONSULTANTS INC.
4141 N.E. SECOND AVENUE, SUITE 101, MIAMI, FLORIDA 33137
(305) 573-8255 (407) 645-4049
GARY WEST, P.E. MECHANICAL FLORIDA #22165

ISSUE RECORD

NO.	BY	PURPOSE	DATE	CKD

DATE: JUNE 26, 1998
DRAWN BY: RLR
CHECKED BY: CSRW
FAA AIP NO. 3-12-0047-1498
MDAD PROJECT NO. A050A
VOLUME NO.
SHEET TITLE

WIND CONE DETAILS

SHEET NO. ED-10
CADD FILE NO. 2107C1UNLDWG

ADDENDUM No. 1

ATTACHMENT 5

OPF Rehabilitation – Sign Data Sheet

EXISTING SIGN DATA TABLE

Sheet	Sign No.	TW	Sign Face Front / Back			
E301	**TNS1-002**	N1	← N	↖ T	N	
E401			Y	Y	L	
	No. on sign:		BLANK	BLANK	BLANK	
	110					
	Scope Action:		Relocate			
	Sign (IMG_5672)		Size	2		
	Sign Frame (H'xL'-M#)		2.8	9	3	34 108 Inches
	Sign Pad (L'xW'xD")		17	10	8	
E301	**TNS1-003**	N	↖ T	N	N1 →	
E401			Y	L	Y	
	No. on sign:		BLANK	BLANK	BLANK	
	111					
	Scope Action:		Re-Install			
	Sign (IMG_5667)		Size	2		
	Sign Frame (H'xL'-M#)		2.8	9	3	34 108 Inches
	Sign Base (L'xW'xD")		17	10	8	
E301	**9LS1-001**	N1	N1	9L		
E401			L	R		
	No. on sign:		≡≡≡≡≡	N		
	108		Y	L		
	Scope Action:		Remove & Replace		Ex. Base	
	Sign (IMG_----)		Size	2		
	Sign Frame (H'xL'-M#)		2.8	6	2	34 71 Inches
	Sign Base (L'xW'xD")		17	10	8	
E301	**TNS1-001**		←	N		
E401			Y	Y		
	No. on sign:		BLANK	BLANK		
	xxx					
	Scope Action:		Remove & Reinstall		Ex. Base	
	Sign (IMG_----)		Size	2		
	Sign Frame (H'xL'-M#)		2.8	6	2	34 73 Inches
	Sign Base (L'xW'xD")		11	10	8	

EXISTING SIGN DATA TABLE

Sheet	Sign No.	TW	Sign Face Front / Back					
E301	**1230A-001**	T	← N	T	N →	T →		
E401			Y	L	Y	Y		
	No. on sign:		12	T	BLANK	BLANK		
	xxx		R	L				
	Scope Action:		Remove & Reinstall		Ex. Base			
	Sign (IMG_----)		Size	2				
	Sign Frame (H'xL'-M#)		2.8	12	4	34	143	Inches
	Sign Base (L'xW'xD")		20	10	8			
E301	**9LS1-002**	N1	9L	N1				
E401			R	L				
	No. on sign:		N	≡≡≡≡≡				
	109		L	Y				
	Scope Action:		Remove					
	Sign (IMG_5670)		Size	2				
	Sign Frame (H'xL'-M#)		2.8	6	2	34	71	Inches
	Sign Pad (L'xW'xD")		17	10	8			
E302	9LS1-004	RW	7					
E402			B					
	No. on sign:		1					
	XXX		B					
	Scope Action:		Relocate		New Base			
	Sign (IMG_-----)		Size					
	Sign Frame (H'xL'-M#)		3.3	4	1	40	42	Inches
	Sign Pad (L'xW'xD")		11	10	8			
E303	TNS1-005	RW	J →					
E403			Y					
	No. on sign:		BLANK					
	XXX							
	Scope Action:		Remove & Reinstall		Ex. Base			
	Sign (IMG_-----)		Size					
	Sign Frame (H'xL'-M#)		2.8	3	1	34	37	Inches
	Sign Pad (L'xW'xD")		11	10	8			

EXISTING SIGN DATA TABLE

Sheet	Sign No.	TW	Sign Face Front / Back				
E303	TNS1-006	RW	← J				
E403			Y				
	No. on sign:		BLANK				
	XXX						
	Scope Action:		Remove & Reinstall		Ex. Base		
	Sign (IMG_-----)		Size				
	Sign Frame (H'xL'-M#)		2.8	3	1	34	37 Inches
	Sign Pad (L'xW'xD")		11	10	8		
E304	1851-003	RW	UNKNOWN				
E404							
	9LS1-008	H	9L-27R				
			≡≡≡≡≡				
	9LS1-009	H	9L-27R				
			≡≡≡≡≡				
	1851-004	RW	G →				
			BLANK				
	9LS1-010	G	G	9L-27R			
			≡≡≡≡≡	G			
	TNS1-015	RW	← G				
			BLANK				
	TNS1-017	RW					
	9LS1-012		F	9L-27R			
			≡≡≡≡≡	F			
	9LS1-020		F	← N →			
			BLANK	BLANK			
	NO SIGN SCOPE ACTION						
E305	TNS1-018	RW	← F				
E405			Y				
	No. on sign:		BLANK				
	XXX						
	Scope Action:		Remove & Reinstall		Ex. Base		
	Sign (IMG_-----)		Size				
	Sign Frame (H'xL'-M#)		2.8	3	1	34	37 Inches
	Sign Pad (L'xW'xD")		11	10	8		

EXISTING SIGN DATA TABLE

Sheet	Sign No.	TW	Sign Face Front / Back				
E305 E405	TNS1-024	RW	E → Y BLANK				
	No. on sign: **XXX**						
	Scope Action:		Remove & Reinstall		Ex. Base		
	Sign (IMG_-----)		Size				
	Sign Frame (H'xL'-M#)		2.8	3	1	34	37 Inches
	Sign Pad (L'xW'xD")		11	10	8		
E305 E405	TNS1-014	E	E ═══	9L-27R E			
	No. on sign: **134**						
	Scope Action:		Remain Undisturbed				
	Sign (IMG_-----)		Size				
	Sign Frame (H'xL'-M#)		2.8	12	4	34	144 Inches
	Sign Pad (L'xW'xD")		20	10	8		
E306 E406	TNS1-025	RW	← E Y BLANK				
	No. on sign: **XXX**						
	Scope Action:		Remove & Reinstall		Ex. Base		
	Sign (IMG_-----)		Size				
	Sign Frame (H'xL'-M#)		2.8	3	1	34	37 Inches
	Sign Pad (L'xW'xD")		11	10	8		
E306 E406	TNS1-030	RW	C → Y BLANK				
	No. on sign: **XXX**						
	Scope Action:		Remove & Reinstall		Ex. Base		
	Sign (IMG_-----)		Size				
	Sign Frame (H'xL'-M#)		2.8	3	1	34	37 Inches
	Sign Pad (L'xW'xD")		11	10	8		

EXISTING SIGN DATA TABLE

Sheet	Sign No.	TW	Sign Face Front / Back				
E306 E406	TNS1-031	RW	← C Y				
	No. on sign: **XXX**		BLANK				
	Scope Action:		Remove & Reinstall		Existing Base		
	Sign (IMG_-----)		Size				
	Sign Frame (H'xL'-M#)		2.8	3	1	34	36 Inches
	Sign Pad (L'xW'xD")		11	10	8		
E308 E408	9LS1-019	RW	N8 →				
	No. on sign: **XXX**		27R				
	Scope Action:		Relocate		New Base		
	Sign (IMG_-----)		Size				
	Sign Frame (H'xL'-M#)		2.8	6	2	34	72 Inches
	Sign Pad (L'xW'xD")		14	10	8		
E308 E408	9LS1-020	N8	N8 L ≡≡≡≡≡ Y	27R R N8 L			
	No. on sign: **145**						
	Scope Action:		Relocate		New Base		
	Sign (IMG_5679)		Size				
	Sign Frame (H'xL'-M#)		2.8	9	3	34	108 Inches
	Sign Pad (L'xW'xD")		17	10	8		
E308 E408	9LS1-021	RW	27R R N8 L	N8 L ≡≡≡≡≡ Y			
	No. on sign: **147**						
	Scope Action:		Remove & Turnover to MDAD				
	Sign (IMG_5684)		Size				
	Sign Frame (H'xL'-M#)		2.8	9	3	34	109 Inches
	Sign Pad (L'xW'xD")		17	10	8		

EXISTING SIGN DATA TABLE

Sheet	Sign No.	TW	Sign Face Front / Back			
E308 E408	TNS1-038	RW	← N8	N		
	No. on sign: **146**		BLANK	BLANK		
	Scope Action:		Remove & Reinstall		Ex. Base	
	Sign (IMG_5679)		Size			
	Sign Frame (H'xL'-M#)		2.8	6	3	34 72 Inches
	Sign Pad (L'xW'xD")		17	10	8	
E308 E408	TNS1-039	RW	N8	B ↑	N →	
	No. on sign: **148**		BLANK	BLANK	BLANK	
	Scope Action:		Remove & Reinstall		Ex. Base	
	Sign (IMG_5686)		Size			
	Sign Frame (H'xL'-M#)		2.8	9	3	34 107 Inches
	Sign Pad (L'xW'xD")		17	10	8	

OPF RW 9L-27R RUNWAY AND TAXIWAY SIGN MANUFACTURE:

ADB SAFEGATE is the manufacturer of most of the signs
See photo of a typical sign panel label

END OF EXISTING SIGN DATA TABLE

ADDENDUM No. 1

ATTACHMENT 6

Engineer's Estimate

MIAMI - OPA LOCKA EXECUTIVE AIRPORT (OPF)
RUNWAY 9L-27R REHABILITATION
ENGINEER'S ESTIMATE OF PROBABLE COST - REVISED

ATKINS
Member of the SNC-Lavalin Group

COST ESTIMATE

			SCHEDULE A - AIP ELEGIBLE				SCHEDULE B - AIP NON ELEGIBLE				SCHEDULE A & B			
ITEM	SPEC.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL	UNIT	QUANTITY	UNIT PRICE	TOTAL	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	M-110-1	MOBILIZATION	LS	1	$1,028,000	$1,028,000	LS	1	$194,000	$194,000	LS	1	$1,222,000	$1,222,000
2	M-110-2	SAFETY, SECURITY, AND TRAFFIC CONTROL	DAY	300	$1,000	$300,000	DAY	60	$1,000	$60,000	DAY	360	$1,000	$360,000
3	015713-1	TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION AND	LS	1	$54,000	$54,000	LS	1	$10,000	$10,000	LS	1	$64,000	$64,000
4	P-101-5.1	FULL-DEPTH CONCRETE PAVEMENT REMOVAL	SY	10,900	$25	$272,500	SY	14,400	$25	$360,000	SY	25,300	$25	$632,500
5	P-101-5.2	FULL-DEPTH CONCRETE AND ASPHALT PAVEMENT REMOVAL	SY	18,300	$30	$549,000	SY	1,900	$30	$57,000	SY	20,200	$30	$606,000
6	P-101-5.3	FULL-DEPTH ASPHALT PAVEMENT REMOVAL	SY	43,300	$12	$519,600	SY	4,500	$12	$54,000	SY	47,800	$12	$573,600
7	P-101-5.4	VARIABLE DEPTH ASPHALT MILLING	SY	140,800	$11	$1,548,800	SY	500	$11	$5,500	SY	141,300	$11	$1,554,300
8	P-101-5.5	SURFACE CRACK PREPARATION AND SEALANT	LF	99,000	$4.50	$445,500	LF	0	$4.50	$0	LF	99,000	$4.50	$445,500
9	P-151-4.1	CLEARING AND GRUBBING	AC	9	$18,500	$166,500	AC	2	$18,500	$37,000	AC	11	$18,500	$203,500
10	P-152-4.1	EMBANKMENT	CY	2,100	$22	$46,200	CY	700	$22	$15,400	CY	2,800	$22	$61,600
11	P-154-5.1	12" STABILIZED SUBGRADE	SY	8,100	$20	$162,000	SY	3,700	$20	$74,000	SY	11,800	$20	$236,000
12	P-154-5.2	18" STABILIZED SUBGRADE	SY	22,700	$30	$681,000	SY	16,000	$30	$480,000	SY	38,700	$30	$1,161,000
13	P-211-5.1	8" LIME ROCK BASE COURSE	SY	7,600	$18	$136,800	SY	3,500	$18	$63,000	SY	11,100	$18	$199,800
14	P-211-5.2	15" LIME ROCK BASE COURSE	SY	22,100	$32	$707,200	SY	15,000	$32	$480,000	SY	37,100	$32	$1,187,200
15	P-211-5.3	REWORK EXISTING LIME ROCK BASE COURSE	SY	42,600	$12	$511,200	SY	3,200	$12	$38,400	SY	45,800	$12	$549,600
16	P-211-5.4	VARIABLE THICKNESS LIME ROCK BASE COURSE	CY	3,525	$70	$246,750	CY	125	$70	$8,750	CY	3,650	$70	$255,500
17	P-401-8.1	ASPHALT SURFACE COURSE	TON	39,750	$220	$8,745,000	TON	4,900	$220	$1,078,000	TON	44,650	$220	$9,823,000
18	P-403-8.1	ASPHALT SHOULDER COURSE	TON	9,300	$190	$1,767,000	TON	600	$190	$114,000	TON	9,900	$190	$1,881,000
19	P-603-5.1	EMULSIFIED ASPHALT TACK COAT	GAL	35,300	$8	$282,400	GAL	2,200	$8	$17,600	GAL	37,500	$8	$300,000
20	P-605-5.1	JOINT SEALING FILLER, SELF LEVELING	LF	900	$10	$9,000	LF	0	$10	$0	LF	900	$10	$9,000
21	P-609-5.1	BITUMINOUS SINGLE SURFACE TREATMENT	GAL	25,000	$16	$400,000	GAL	7,400	$16	$118,400	GAL	32,400	$16	$518,400
22	P-609-5.2	AGRREGATE SINGLE SURFACE TREATMENT	TON	500	$200	$100,000	TON	200	$200	$40,000	TON	700	$200	$140,000
23	P-620-5.1	MARKING REMOVAL	SF	100	$5	$500	SF	700	$5	$3,500	SF	800	$5	$4,000
24	P-620-5.2	PAVEMENT MARKING, REFLECTIVE (WHITE)	SF	128,100	$2	$256,200	SF	700	$2	$1,400	SF	128,800	$2	$257,600
25	P-620-5.3	PAVEMENT MARKING, REFLECTIVE (YELLOW)	SF	27,800	$2	$55,600	SF	11,100	$2	$22,200	SF	38,900	$2	$77,800
26	P-620-5.4	PAVEMENT MARKING, REFLECTIVE (RED)	SF	0	$2	$0	SF	2,400	$2	$4,800	SF	2,400	$2	$4,800
27	P-620-5.5	PAVEMENT MARKING, NON-REFLECTIVE (BLACK)	SF	49,000	$1.50	$73,500	SF	17,500	$1.50	$26,250	SF	66,500	$1.50	$99,750
28	P-621-5.1	RUNWAY AND TAXIWAY GROOVING	SY	123,800	$2	$247,600	SY	800	$2	$1,600	SY	124,600	$2	$249,200
29	T-904-5.1	SODDING, 4 INCHES OF TOPSOIL, GRADE TO DRAIN	SY	39,600	$8	$316,800	SY	5,400	$8	$43,200	SY	45,000	$8	$360,000
30	L-100-4.1	ELECTRICAL DEMOLITION	LS	1	$50,000	$50,000	LS	1	$20,000	$20,000	LS	1	$70,000	$70,000
31	L-100-4.2	POTHOLING, TRACING AND EXISTING CONDITION CONFIRMATION	LS	1	$40,600	$40,600	LS	0	$10,000	$0	LS	1	$40,600	$40,600
32	L-100-4.3	MISCELLANEOUS ELECTRICAL PREPARATION AND PHASING	LS	1	$60,000	$60,000	LS	0	$15,000	$0	LS	1	$60,000	$60,000
33	L-100-4.4	1V X 2H, 2" SCHEDULE 40 PVC, CONCRETE ENCASED	LF	23,200	$38	$881,600	LF	2,200	$38	$83,600	LF	25,400	$38	$965,200
34	L-108-5.1	DEMOLITION No. 6 AWG, 5 KV, L-824 TYPE C CABLE, INSTALLED IN DUCT	LF	23,200	$2	$46,400	LF	2,200	$2	$4,400	LF	25,400	$2	$50,800
35	L-108-5.2	DEMOLITION No. 6 AWG, BARE SOLID COPPER COUNTERPOISE WIRE,	LF	21,000	$2	$42,000	LF	2,200	$2	$4,400	LF	23,200	$2	$46,400
36	L-108-5.3	No. 8 AWG, 5 KV, L-824 TYPE C CABLE, INSTALLED IN DUCT BANK OR	LF	46,332	$3	$138,996	LF	0	$3	$0	LF	46,332	$3	$138,996
37	L-108-5.4	No. 6 AWG, BARE SOLID COPPER COUNTERPOISE WIRE, INSTALLED IN	LF	23,166	$4	$92,664	LF	0	$4	$0	LF	23,166	$4	$92,664
38	L-108-5.5	3/4" X 10' COPPER CLAD STEEL GROUND RODS, INCLUDING GROUND	EA	78	$250	$19,500	EA	0	$250	$0	EA	78	$250	$19,500
39	L-108-5.6	INTERCEPT EXISTING CONDUCTORS IN EXISTING BASE	EA	32	$1,000	$32,000	EA	0	$1,000	$0	EA	32	$1,000	$32,000
40	L-108-5.7	10' ADDITIONAL GROUND ROD SECTIONS	EA	10	$250	$2,500	EA	0	$250	$0	EA	10	$250	$2,500
41	L-110-5.1	1V X 2H, 2" SCHEDULE 40 PVC, CONCRETE ENCASED W/ ELECTRICAL	LF	21,500	$40	$860,000	LF	0	$40	$0	LF	21,500	$40	$860,000
42	L-110-5.2	1V X 1H, 2" SCHEDULE 40 PVC, CONCRETE ENCASED W/ ELECTRICAL	LF	3,000	$33	$99,000	LF	0	$33	$0	LF	3,000	$33	$99,000
43	L-115-5.1	L-867 12" DIAMETER JUNCTION CAN WITH COVER INSTALLED IN	EA	78	$3,000	$234,000	EA	0	$3,000	$0	EA	78	$3,000	$234,000
44	L-125-5.1	L-862(L) LED RUNWAY EDGE LIGHT, INSTALLED IN EXISTING PAVEMENT	EA	78	$200	$15,600	EA	0	$200	$0	EA	78	$200	$15,600
45	L-125-5.2	L-861T(L) LED TAXIWAY EDGE LIGHT, INSTALLED IN EXISTING	EA	56	$200	$11,200	EA	44	$200	$8,800	EA	100	$200	$20,000
46	L-125-5.3	L-862(L) LED RUNWAY EDGE LIGHT, (RE-INSTALL EXISTING LIGHT IN	EA	78	$300	$23,400	EA	0	$300	$0	EA	78	$300	$23,400
47	L-125-5.4	L-861T(L) LED TAXIWAY EDGE LIGHT, (RE-INSTALL IN NEW BASE CAN)	EA	56	$300	$16,800	EA	44	$300	$13,200	EA	100	$300	$30,000
48	L-125-5.5	L-862(L) LED RUNWAY EDGE LIGHT, INSTALLED (NEW FIXTURE WITH	EA	10	$3,700	$37,000	EA	0	$3,700	$0	EA	10	$3,700	$37,000
49	L-125-5.6	L-861T(L) LED TAXIWAY EDGE LIGHT, INSTALLED (NEW FIXTURE WITH	EA	6	$3,700	$22,200	EA	0	$3,700	$0	EA	6	$3,700	$22,200
50	L-125-5.7	L-850D(L) LED INGROUND EDGE/THRESHOLD AIRCRAFT RATED LIGHT	EA	22	$4,000	$88,000	EA	0	$4,000	$0	EA	22	$4,000	$88,000
51	L-125-5.8	L-867 12-INCH DIAMETER JUNCTION CAN WITH COVER INSTALLED IN	EA	78	$3,000	$234,000	EA	0	$3,000	$0	EA	78	$3,000	$234,000
52	L-125-5.9	L-868B AIRCRAFT RATED 12-INCH DIAMETER BASE CAN WITH COVER	EA	78	$3,500	$273,000	EA	0	$3,500	$0	EA	78	$3,500	$273,000
53	L-125-5.10	L-868D AIRCRAFT RATED 16-INCH DIAMETER BASE CAN WITH COVER	EA	4	$4,000	$16,000	EA	0	$4,000	$0	EA	4	$4,000	$16,000
54	L-125-5.11	EXISTING SIGN REMOVED DURING GRADING AND RE-INSTALLED	EA	12	$1,500	$18,000	EA	6	$1,500	$9,000	EA	18	$1,500	$27,000
55	L-125-5.12	MISCELLANEOUSS HARDWARE	LS	1	$10,000	$10,000	LS	0	$10,000	$0	LS	1	$10,000	$10,000
56	L-126-5.1	4'x4' STRUCTURAL LOAD RATED HANDHOLE (FAA STANDARDS)	EA	0	$13,000	$0	EA	2	$13,000	$26,000	EA	2	$13,000	$26,000
57	L-126-5.2	1W2" DUCTWAY (FAA STANDARDS W/ GUARD WIRE)	LF	0	$45	$0	LF	300	$45	$13,500	LF	300	$45	$13,500
58	L-127-5.1	MALS 09L THRESHOLD INFRASTRUCTURE	LS	0	$85,000	$0	LS	1	$85,000	$85,000	LS	1	$85,000	$85,000
59	L-127-5.2	MALS 27R THRESHOLD INFRASTRUCTURE	LS	0	$93,000	$0	LS	1	$93,000	$93,000	LS	1	$93,000	$93,000
60	L-127-5.3	MALS INSET THRESHOLD LIGHT FIXTURE (FA-23000/5-GREEN)	EA	0	$1,850	$0	EA	18	$1,850	$33,300	EA	18	$1,850	$33,300
61	L-128.5.1	PAPI 09L INFRASTRUCTURE INCLUDING LOCAL EQUIPMENT RACK	LS	0	$70,000	$0	LS	1	$70,000	$70,000	LS	1	$70,000	$70,000
62	L-128.5.2	PAPI 27R INFRASTRUCTURE INCLUDING LOCAL EQUIPMENT RACK	LS	0	$60,000	$0	LS	1	$60,000	$60,000	LS	1	$60,000	$60,000
63	L-128.5.3	RUNWAY 09L EQUIPMENT RACK REPLACEMENT NEAR GLIDE SLOPE	LS	0	$25,000	$0	LS	1	$25,000	$25,000	LS	1	$25,000	$25,000
64	L-128.5.4	RUNWAY 27R EQUIPMENT RACK REPLACEMENT NEAR GLIDE SLOPE	LS	0	$25,000	$0	LS	1	$25,000	$25,000	LS	1	$25,000	$25,000
65	L-128.5.5	PAPI LAMP HOUSING ASSEMBLY (FA-30200) - LED STYLE	EA	0	$20,000	$0	EA	8	$20,000	$160,000	EA	8	$20,000	$160,000
66	L-128.5.6	PAPI POWER AND CONTROL ASSEMBLY CABINET (FA-30200) - LED	EA	0	$36,000	$0	EA	2	$36,000	$72,000	EA	2	$36,000	$72,000
67	L-128.5.7	PAPI AIMING TOOLS	LS	0	$5,000	$0	LS	1	$5,000	$5,000	LS	1	$5,000	$5,000
68	L-128.5.8	PAPI SITE SPARE PARTS PACKAGE	LS	0	$4,780	$0	LS	2	$4,780	$9,560	LS	2	$4,780	$9,560
69	L-128.5.9	REMOTE RADIO CONTROL SYSTEM TRANSMITTER - TOWER	EA	0	$35,000	$0	EA	1	$35,000	$35,000	EA	1	$35,000	$35,000
70	L-128.5.10	REMOTE RADIO CONTROL SYSTEM RECEIVER (FA-10266) - FOR FIELD	EA	0	$31,000	$0	EA	2	$31,000	$62,000	EA	2	$31,000	$62,000
71	L-129.5.1	DIRECTIONAL DRILL CONDUIT, 1 WAY, 2-INCH HDPE	LF	400	$55	$22,000	LF	400	$55	$22,000	LF	800	$55	$44,000

SCH A Total	$23,015,110	SCH B Total	$4,347,760	Total SCH A & B	$27,362,870

NOTES AND ASSUMPTIONS:

1. Unit costs cover construction labor, materials, and construction equipment.
2. The estimator makes no guarantees regarding actual costs that will be received for bid.
3. Unit prices are based on bid prices received on other similar projects under a public bid.
4. All costs are expressed in 2022 dollars. No escalation factors have been applied.
5. Estimates assume the project will be competitively bid.

DBE GOAL (%) **7%**

ADDENDUM No. 1

ATTACHMENT 7

Technical Specifications – REVISION

Item P-101 Preparation/Removal of Existing Pavements

DESCRIPTION

101-1 This item shall consist of preparation of existing pavement surfaces for overlay, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable plans.

EQUIPMENT AND MATERIALS

101-2 All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

CONSTRUCTION

101-3.1 Removal of existing pavement.

The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

a. Concrete pavement removal. The Contractor shall break the existing concrete in-place for removal or may sawcut and lift the slabs off. The removed concrete shall be disposed off airport property.

b. Asphalt pavement removal. Asphalt pavement to be removed shall be cut to the full depth of the asphalt pavement around the perimeter of the area to be removed. Asphalt pavement and concrete pavement contaminated with asphalt to be demolished shall be removed and disposed on a facility properly designated for the disposal of contaminates and foreign substances (Class I landfill).

c. Repair or removal of Base, Subbase, and/or Subgrade. All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the RPR. Materials and methods of construction shall comply with the applicable sections of these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense.

101-3.2 Preparation of joints and cracks prior to overlay. After milling, the Contractor shall evaluate remaining cracks and/or paving joints with the RPR and Engineer to determine which cracks/joints require sealing. Crack/joint sealing work shall not progress until direction is provided by the RPR and Engineer.

Remove all vegetation and debris from cracks to a minimum depth of 1 inch. If extensive vegetation exists, treat the specific area with a concentrated solution of a water-based herbicide approved by the RPR. Fill all cracks greater than 1/4 inch wide with a crack sealant per ASTM D6690. The manufacturer shall provide certification that the crack sealant, preparation, and application shall be compatible with the surface treatment/overlay to be used. To minimize contamination of the asphalt with the crack sealant, underfill the crack sealant a minimum of 1/8 inch, not to exceed ¼ inch. Any excess joint or crack sealer shall be removed from the pavement surface. The sealant manufacturer's representative shall be on-site for the first day of joint/crack preparation and sealing. The representative shall ensure that the preparation and sealant is in accordance with the manufacturer's installation recommendations.

101-3.3 Removal of Foreign Substances/contaminates prior to overlay. Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the RPR in the field during construction. If chemicals are used, they shall comply with the state's environmental protection regulations. Removal methods used shall not cause major damage to the pavement, or to any

structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch (3 mm) deep. If it is deemed by the RPR that damage to the existing pavement is caused by operational error, such as permitting the application method to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the RPR. Removal of foreign substances shall not proceed until approved by the RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement shoulders. All wastes shall be disposed of in areas indicated in this specification or shown on the plans.

101-3.4 Concrete spall or failed asphaltic concrete pavement repair.

a. Repair of concrete spalls in areas to be overlaid with asphalt. Not used.

b. Asphalt pavement repair. The Contractor shall repair asphalt pavement as directed by the RPR. The failed areas shall be removed as specified in paragraph 101-3.1b. All failed material including surface, base course, subbase course, and subgrade shall be removed. Materials and methods of construction shall comply with the applicable sections of these specifications.

101-3.5 Cold milling. Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface. The milling machine or grinder shall operate without tearing or gouging the underlaying surface. The milling machine or grinder shall be equipped with grade and slope controls, and a positive means of dust control. The milling by-product (millings) shall become the property of the contractor to haul off and legally dispose or to use for recycling. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense. The milled surface shall be dry and clean prior to application of tack coat.

The Contractor shall submit a milling plan to the RPR for review and approval a minimum of 14 days prior to beginning the work. The milling plan shall include the following items:

- Make and model of the milling machine(s) and clean up equipment to be used.
- Method of grade control.
- A tabulation of the pavement elevations after milling corresponding to the grid shown on the pavement elevation plans.
- A milling plan indicating the location, sequence, and width of each milling lane to be used. Provide an estimate of the daily production.

The Contractor shall sequence the milling to protect the existing pavement to remain. Hauling on previously milled surfaces shall be limited to the runway, do not route traffic on the milled shoulders.

a. Patching. The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cut. The RPR shall layout the area to be milled with a straightedge in increments of 1-foot widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall be repaired by the Contractor at the Contractor's Expense.

b. Profiling, grade correction, or surface correction. The milling machine shall have a minimum width of 7 feet and it shall be equipped with electronic grade control devices that will cut the surface to the grade specified. The tolerances shall be maintained within +0 inch and -1/4 inch of the specified grade. Areas that are over-milled over the 1/4 inch tolerance shall be replaced at the Contractor's expense. The machine must cut vertical edges and have a positive method of dust control. The machine must have the ability to remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed and disposed of off the airport.

The Contractor shall survey the milled surface at the grid shown on the pavement elevation plans to verify grades are within tolerance. If scabbing occurs, the Contractor shall inform the RPR and define the limits and depth of scabbing below the specified grade. Scabbing is defined as additional asphalt removed below the depth of milling due to proximity to an existing lift interface.

Scabbing shall be repaired at the RPR's direction and may include additional milling to place a lift of asphalt prior to the 4 inches shown on the Plans or may allow the first lift to be placed variable thickness to fill the scabbed location. Additional milling directed by the RPR shall be at no additional cost. The additional asphalt will be paid in accordance with pay items P-401-8.1 and P-403-8.1. Additional tack coat required to correct scabbing shall be incidental to the work.

c. Clean-up. The Contractor shall sweep the milled surface daily and immediately after the milling until all residual materials are removed from the pavement surface. Prior to paving, the Contractor shall wet down the milled pavement and thoroughly sweep and/or blow the surface to remove loose residual material. Waste materials shall be collected and removed from the pavement surface and adjacent areas by sweeping or vacuuming. Waste materials shall be removed and disposed off Airport property.

101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment. Not used.

101-3.7 Maintenance. The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the RPR. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

101-3.8 Preparation of Joints in Rigid Pavement prior to resealing. Not used.

101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. Immediately before sealing, cracks will be blown out with a hot air lance combined with oil and water-free compressed air. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the cracks and does not damage the pavement.

METHOD OF MEASUREMENT

101-4.1 Full-Depth Concrete Pavement Removal. The unit of measurement for full-depth concrete pavement removal shall be the number of square yards removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal.

101-4.2 Full-Depth Concrete and Asphalt Pavement Removal. The unit of measurement for full-depth concrete and asphalt pavement removal shall be the number of square yards removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal.

101-4.3 Full-Depth Asphalt Pavement Removal. The unit of measurement for full-depth asphalt pavement removal shall be the number of square yards removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal.

101-4.4 Variable Depth Asphalt Milling. The unit of measurement for variable depth asphalt milling shall be the number of square yards milled by the Contractor. Any pavement milled outside the limits of milling because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to milling.

101-4.5 Surface Crack Preparation and Sealant. The unit of measurement for surface crack preparation and sealant shall be the number of linear feet prepared and sealed by the Contractor.

BASIS OF PAYMENT

101-5.1. Full-depth concrete pavement removal payment shall be made at the contract unit price per square yard. This price shall be full compensation for full-depth demolition of the existing concrete and underlying soil to the depth required to install the proposed pavement. This price shall also be inclusive of removal, hauling, and disposal of the demolished materials and for all labor, equipment, tools, and incidentals necessary to complete this item.

101-5.2. Full-depth concrete and asphalt pavement removal payment shall be made at the contract unit price per square yard. This price shall be full compensation for full-depth demolition of the existing asphalt, concrete, and underlying soil to the depth required to install the proposed pavement. This price shall also be inclusive of removal, hauling, and disposal of the demolished materials and for all labor, equipment, tools, and incidentals necessary to complete this item.

101-5.3. Full-depth asphalt pavement removal payment shall be made at the contract unit price per square yard. This price shall be full compensation for full-depth demolition of the existing asphalt and underlying limerock base and soil to the depth required to install the proposed pavement. Temporary stockpiling of the limerock base for reuse is incidental to this item. This price shall also be inclusive of removal, hauling, and disposal of the demolished materials (including excess limerock base, if any) and for all labor, equipment, tools, and incidentals necessary to complete this item.

101-5.4. Variable depth asphalt milling payment shall be made at the contract unit price per square yard. This price shall be full compensation for milling existing asphalt pavement to the depth(s) shown on the plans. Additional removal to correct scabbing, as directed by the RPR, is incidental to this item and will not be measured or paid separately. This price shall also be inclusive of removal, hauling, and disposal of the asphalt millings and for all labor, equipment, tools, and incidentals necessary to complete this item.

101-5.5. Surface crack preparation and sealant payment shall be made at the contract unit price per linear foot. This price shall be full compensation for preparing and sealing existing cracks and joints in the asphalt pavement. This price shall also be inclusive of all labor, equipment, tools, and incidentals necessary to complete this item.

Item P 101-5.1	Full-Depth Concrete Pavement Removal - per square yard
Item P 101-5.2	Full-Depth Concrete and Asphalt Pavement Removal – per square yard
Item P 101-5.3	Full-Depth Asphalt Pavement Removal – per square yard
Item P-101-5.4	Variable Depth Asphalt Milling - per square yard
Item P-101-5.5	Surface Crack Preparation and Sealant - per linear foot

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5380-6	Guidelines and Procedures for Maintenance of Airport Pavements.

ASTM International (ASTM)

ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

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ITEM L-100 LIGHTING AND ELECTRICAL WORK

DESCRIPTION

100-1.1 GENERAL. The airfield electrical work to be done under this contract shall include the furnishing of all supervision, labor, materials, tools, equipment, and incidentals necessary to provide new airfield lighting and signing systems, and other electrical work as shown on the drawings.

Work shall be in accordance with Federal Aviation Administration Advisory Circular No. 150-5370-10G, Standards for Specifying Construction of Airports, as modified herein, other FAA Advisory Circulars and Specifications referred to herein, and other requirements as specified herein. All FAA Advisory Circulars shall be as specified, or the latest adopted edition if revised.

The electrical work shall comply with latest adopted editions, codes and standards applicable to this Contract as follows:

ANSI C2, National Electrical Safety Code
ASTM, American Society of Testing and Materials
FAA, Advisory Circulars
FAA, Orders
NEC, National Electrical Code (NFPA No. 70)
NECA, Standard for Installation
NEMA, Standard for Materials and Products
NFPA No. 101, Life Safety Code
UL, Underwriters Laboratories

All work shall be performed in strict accordance with these contract specifications, drawings, and any instructions that may be furnished by the Engineer during execution of the work to aid in interpretation of said drawings and specifications. Installation details and material and equipment specifications shall be in conformance with all applicable FAA advisory circulars. The contractor shall furnish written proof of FAA approval on all equipment covered by FAA specifications as part of the submittal package. The specifications shall be kept on file at the Contractor's airport construction office.

100-1.2 RELATED DOCUMENTS. The general provisions of the contract apply to the work specified in the items L-100, L-108, L-110, L-115, L-125, and as otherwise noted.

100-1.3 SUMMARY OF WORK. The work to be performed includes furnishing all labor, supplies, materials, equipment, transportation, and services required to augment, move, install, and complete electrical work as specified herein and as shown on the contract drawings.

The work includes, but is not limited to, the following:

(1) Maintain in operation, all existing field electrical facilities and circuits while this improvement work is in progress, including protection of airport personnel, aircraft, and vehicles; furnish and maintain temporary circuits, and place augmented airport lighting into operation. Field lighting shall be operable each night, each day when fog conditions exist, and when the airport calls an emergency.
- Remove and reinstall runway edge lights.
- Provide new runway counterpoise ground.

- Provide new runway edge light base cans.
- Provide new runway end light base cans.

(2) Provide underground cable (L-824) in accordance with specifications, at the locations shown on the plans. Test all circuit loops before and after installation of new cables to verify that no damage was caused by the Contractor.

(3) Remove and reinstall runway and taxiway edge lighting as noted on the Plans.

(4) Demolish existing underground conduits, counterpoise, base cans and additional items as noted on the Plans.

(5) Install new runway and taxiway edge lighting as noted on the Plans.

(6) Remove from the site existing equipment that is to be removed or replaced.

(7) Ground all equipment, enclosures, regulators, and conduits installed under this contract as shown in the plans, or as called for by the authority having jurisdiction.

(8) Other items required to complete foregoing. The omission of expressed reference to any parts necessary for or reasonably incidental to the complete installation shall not be construed as releasing the Contractor from furnishing and installing such parts at no extra cost to the Owner.

All items of general work required, such as excavation, cutting, patching, etc. shall be included in this Contract.

100-1.4 WORK REQUIREMENTS. The general work requirements are as follows:

a. All work shall be scheduled to minimize the impact and duration of shutdowns. The Contractor shall keep the Engineer informed of scheduled work which will affect existing equipment and operations. Minimum three (3) working days advance notice shall be given to the Engineer and approval received for any disconnections or shutdowns. All shutdowns shall then be coordinated with the Engineer.

b. Existing lighting systems shall be operational at the end of each working day at least 30 minutes prior to nightfall except as permitted by the Engineer. Poor weather visibility or an emergency situation may require postponement of a scheduled shutdown or reactivation of the system during an ongoing shutdown on any given day.

c. The plans are diagrammatic. Locations of equipment to be installed are shown in the plans, but the actual installation will depend on field conditions and the nature of the equipment furnished. When conditions which will adversely affect the installation become apparent, the Engineer shall be notified in writing.

d. Locations and quantities of materials shown on the plans and in these specifications are approximate and shall be used for estimating purposes only. Actual locations and quantities of materials shall be reviewed by the contractor through field investigation. No additional payment will be made for discrepancies between estimated quantities and locations of materials as shown in these documents and the actual field conditions.

e. The Contractor shall at all times keep the construction areas free from accumulations of waste material and rubbish, and prior to completion of work shall remove any rubbish from and about the project, as well as all tools, reels, equipment, and materials not a part of the project. Upon completion of the construction, the Contractor shall leave the work and premises in a clean, neat, and safe condition satisfactory to the Engineer. The Contractor shall be responsible for the proper performance in all respects, in whole and in part, of the electrical equipment and for the mechanical installation of electrical equipment until acceptance of the entire work by the Engineer.

100-1.5 SUBMITTALS. In addition to the requirements of Division 2, the Contractor shall include wiring diagrams, cut sheets, brochures, etc. of all equipment used on the job, including, but not limited to the items listed in these specifications and in the format described herein. The submittal package will not be reviewed unless 100% complete.

1.5.1 Submittal Format. The submittal shall consist of manufacturer's brochures and cut sheets describing the equipment and materials the Contractor plans to incorporate in the work. These sheets shall be sequentially ordered by specification number with the reference specification number shown on the bottom right of each sheet. Each cut sheet shall show the complete specification or drawing number which the item must comply with (i.e., L-108.2.3 and/or detail 3 on page E-4). Cut sheets shall be organized by the specification item number (L-100, L-108, etc.) with a tabbed divider sheet separating each item section. The submitted cut sheet shall clearly show the equipment manufacturer's name, catalog number, size, type, and/or rating as required by these specifications or drawings by underlining or circling the information.

The conformance to FAA criteria or other standards where called for shall be clearly indicated for each item. Each sheet shall be dedicated to one piece of equipment, and all sheets shall be sequentially numbered (i.e., 1/50; indicating page 1 of 50 total pages). One manufacturer's cut sheets shall be submitted for each item. All sheets shall be 8-1/2" x 11" or 17" x 11". When these sizes are unpractical, a folded 24" x 36" drawing may be substituted. All drawings shall be to scale. All sheets shall be bound in a 3-ring binder. Each submittal shall show on the cover the complete job name and number, date, contractor's name, and the words: "Electrical Submittal." The checklist shown in this specification shall be included as the first sheet of each submittal and shall show the page number of each item included in the submittal.

Samples of conduit, duct, fittings, cables, tapes, fixtures, etc., may be requested by the Engineer or required in these specifications. After they have been reviewed, samples will be returned in tested condition to the Contractor. In the event any items of material or equipment contained in the list fail to comply with specification requirements, such items will be rejected. All rejected items shall be amended to meet the criteria and then resubmitted for approval by the Engineer.

Substitutions of materials referenced herein is allowed when "or equal" is referenced. Any substitution shall be included in the submittal package.

1.5.2 Submittal Checklist. The contractor shall develop a submittal checklist and submit to the Engineer upon award.

100-1.6 DRAWINGS. The plans, which constitute an integral part of this Contract, shall serve as the working drawings. They indicate the extent and general layout of the lighting and signing system, arrangement of circuits, cables through ducts, connections to existing circuit cables, and other work. Field verification of scale dimensions is required to determine actual locations, distances, and levels. The Contractor shall research in the field the exact routing and identification of all circuits, which extend through, serve, or are affected by the area where work is to commence. No extra compensation will be allowed because of minor differences between work shown on the drawings and field conditions. The

Contractor shall check the plans and specifications and, if any portion of the work is found to be omitted, unclear, or in error, the Contractor shall immediately notify the Engineer. The directions of the Engineer shall be followed and the work completed accordingly.

a. The design drawings may be utilized in the preparation of the shop or working drawings showing the permanent construction, as described in L-100.

b. The plans and specifications are complementary and what is called for in either one shall be as binding as if called for in both.

c. Where a disagreement exists between the plans and specifications, or between plan sheets, the item or arrangements of better quality, greater quantity, or higher cost shall be included in the bid.

d. Any discrepancies between the drawings, Advisory Circulars, and field conditions must be resolved with the Engineer before proceeding. All agreements shall be verified in writing.

e. "Record" drawings covering equipment installed under previous contracts and which relate to this contract will be available for the Contractor. The airport cannot, however, guarantee the accuracy of these drawings. Those conditions that will affect the work under this Contract should be verified prior to any design/fabrication/installation commitment.

f. Detail dimensions shown on the plans are approximate and shall be field verified before construction. All differences shall be submitted to the Engineer in writing before construction begins.

100-1.7 RECORD DRAWINGS. The Contractor shall mark up a set of black line prints to show the as-built conditions which differ from the contract plans. All changes shall be recorded by a skilled draftsman with at least three years of drafting experience. The Engineer will furnish a newly printed set of blueline drawings to be used for this purpose. Record drawings will be checked monthly for accuracy and partial payments will be withheld until the record drawings are completely updated. The mark-up set shall be kept at the Contractor’s site office and not used for construction. Any changes or deviations shall be recorded in red within one week. The Contractor shall furnish the work as-built set and one newly printed record drawing set to the Engineer upon completion. This work shall be completed and accepted by the Engineer before approval of final payment.

100-1.8 MAINTENANCE AND OPERATING INSTRUCTIONS. The Contractor shall provide the Owner with complete instructions in the proper care and operation of the equipment installed under this contract. This is considered as part of the final inspection, and final acceptance will not be given until the Owner's representative is knowledgeable about the system.

The Contractor shall also collect and assemble into each of six (6) 3-ring binders the installation details, instructions, parts list, source of local supply, schematics of actual equipment and operations, and directions supplied by the manufacturer with all equipment. Topics shall be separated with index tabs. Provide with a Table of Contents. If cut sheets are included showing various models and features of the equipment supplied, the specific model and features shall be clearly indicated to show only the options of the equipment that are actually provided and installed. Final acceptance of the work will not be made until such data has been presented complete to the Engineer for transmission to the Owner.

The Contractor shall install all equipment according to the manufacturers' instructions and as shown in the drawings and specifications. The Contractor shall notify the engineer in writing if any discrepancies exist between the aforementioned documents. Work shall be suspended until resolved and approval to proceed

has been granted by the Engineer.

100-1.9 TRAINING. The Contractor shall provide the airport maintenance staff training on the operation and maintenance of the new regulators and signs. Manufacturer's technicians or personnel who are trained and qualified for this purpose shall perform this instruction. Training shall be coordinated through the Engineer with the availability of the Owner's personnel. Two weeks advance notice of training dates shall be given.

The follow up training shall occur 6 months after the initial training or as requested by the Engineer.

100-1.10 SAFETY RULES. The Electrical Safety Rules shall be observed and complied with in every detail, and any violation thereof shall be cause for immediate termination of the Contractor's authority to proceed with the work and recourse to his Surety for completion of the Project. The Electrical Safety Rules are as follows:

a. The Contractor shall be responsible for conforming with the safety requirements of Appendix 1 to AC 150-5370-2G and Owner mandated safety procedures.

b. Electrical circuits, operating over 300 volts, phase-to-ground shall be deenergized before work is accomplished thereon. Work on energized systems shall be accomplished by trained personnel, properly insulated, and done with extreme caution.

c. Electrical circuits shall be considered deenergized only when one of the following conditions exists:

(1) Switches connecting subject circuit to the electrical supply are observed in the OPEN position, with an air break, and safety-tagged (padlocked) in the OPEN position;
(2) Electrically operated switches are visibly OPEN, blocked or racked in the OPEN position, and safety-tagged OPEN;
(3) Whenever the supply circuit break is not visible and clearly identified, the circuit shall be grounded. The ground connection shall be safety-tagged before work thereon, when the ground connection is not within sight of the work area.
(4) Oil switches observed OPEN in a sight window and tagged OPEN; or oil fuse cutouts with fuse carrier removed and tagged OPEN.

d. Use of Red Safety Tags:

(1) Safety tags shall be filled out and connected to any switch or equipment opened for protection of personnel working upon circuits connected thereto.
(2) Safety tags shall be removed only by the employee who placed the tag, or by another employee designated in writing by the employee who placed the tag, to remove the tag. Removal of a safety tag placed by an employee not available at the time of need to remove, may be authorized by the Electrical Superintendent or his designated representative, only after carefully checking that the circuit is ready to be energized.
(3) Equipment with a safety tag attached shall not be operated, and connections with a safety tag attached shall not be changed.
(4) Insulated cables, operated at over 300 volts to ground shall be handled, when energized, only with rubber gloves tested to 15,000 volts.
(5) Insulated cables, which have been in operation, shall be cut only with a grounded cable shears, or shall be grounded by driving a grounded sharp tool through the shielding and the conductors

before cutting.

(6) All personnel working around energized electrical equipment operating at over 600 volts shall wear standard insulated, nonconducting hard hats, and shall wear no garments with metallic zipper fasteners.

(7) Ladders used in any electrical work shall be of wood or fiberglass construction.

(8) The Contractor shall designate a supervisor for all contract personnel and operations, said supervisor shall be on the job wherever contract operations are in progress.

100-1.11 CONTRACTOR QUALIFICATIONS. Work shall be performed by a contractor licensed in the State of Florida, with a minimum of five years of electrical contracting experience in airfield electrical systems.

EQUIPMENT AND MATERIALS

100-2.1 GENERAL.

a. Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified by independent laboratory testing to be in compliance with the specification.

b. Equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the Engineer. Whenever Underwriters Laboratories has a published standard applicable to the equipment furnished for this contract, the furnished equipment shall be listed by UL.

c. Materials and equipment shall be as specified herein. When materials are used that are not specifically designated herein, they shall be in accordance with the best industry standards and practices for equipment of this type. All components and parts shall be suitable for operation under the environmental conditions specified herein. Metal parts shall be either inherently corrosion-resistant or shall be suitably protected to resist corrosion or oxidation during extended service life.

100-2.2 HARDWARE CORROSION PROTECTION. In order to prevent deterioration due to corrosion, all bolts, nuts, studs, washers, pins, terminals, springs, hangers and similar fastenings and fittings shall be of an approved corrosion-resisting material and/or be treated in an approved manner to render it adequately resistant to corrosion. All hardware such as cap screws, set screws, tap bolts, nuts, washers, etc., shall be of stainless-steel type 304, SAE Grade 2, if they are used outdoors unless specified otherwise on the plans. Brass, bronze, or hot-dip galvanized ferrous hardware (per ASTM, Specification A1530) will be considered for indoor use. All bolts, screws, nuts, etc., shall be coated with a layer of "Neverseize" compound or approved equal.

All ferrous metalwork shall be galvanized. If any galvanizing is damaged, the metal work shall be refinished by cleaning, treating with one coat of wash primer conforming to Federal (military) Specification MIL-P-152388, and shall be given one shop coat of zinc-rich base paint (zinc dust paint) conforming to Federal Specification TT-P-641F Type II, immediately when the wash primer is dry.

100-2.3 PARTS RATING. All parts shall be of adequate rating for the application and shall not be operated above the parts manufacturer's recommended ratings.

100-2.4 ENVIRONMENTAL CONDITIONS. The equipment installed outdoors shall be designated for continuous outdoor operation under the following environmental conditions unless specified elsewhere:

a. Temperature: Any ambient temperature from minus 20°F to plus 120°F.

b. Altitude: 100 MSL.

c. Humidity: Up to 100 percent.

d. Sand and Dust: Exposure to windblown sand and dust particles.

e. Wind: Operation at wind velocities up to 120 miles per hour.

f. Water: Components provided for underground installation, direct buried or installed in underground housing, shall be suitable for continuous operation, continuously or intermittently submerged in water.

100-2.5 SALVAGE. Except as otherwise specified or indicated on the drawings, all electrical materials and equipment to be salvaged, removed, or "stored" shall become the property of the Airport, and shall be moved by the Contractor to a site at the airport or within 5 miles of the airport designated by the Engineer. All wastes such as removed asphalt, concrete, excess excavation, conductors, damaged base cans, etc., shall become property of the Contractor and shall be disposed of off site by the Contractor. Provide receipt of proper disposal.

100-2.6 TESTING. All materials and finishes are subject to testing. Material inspection and testing, and strength tests on the concrete will be performed by the Airport at no expense to the Contractor other than material used. The Contractor shall assist the Engineer in obtaining samples during the course of construction work. The testing of electrical equipment shall conform to the description of the individual specification sections.

100-2.7 INSPECTION. Provide for electrical inspections by the authority having jurisdiction. No work shall be concealed or enclosed until after inspections. If work is concealed or enclosed without inspection and approval, the Contractor shall be responsible for all expense and work required to open and restore the concealed area in addition to all required modifications.

Mill inspection will be waived, and the materials accepted upon certified copies of mill reports identifying the material specification requirements. Copies of order bills and test reports shall be furnished as requested.

100-2.8 WARRANTY. The Contractor shall provide a written 1-year warranty guaranteeing all work installed under this contract. It shall cover all parts and labor against defective parts, corrosion or workmanship necessary to repair or bring into proper operation any equipment including, but not limited to, isolation transformers, lamps, edge lights, apron lighting fixtures, poles, transformers circuit breakers, conduit system, and junction boxes. The warranty shall start upon the acceptance of all work as accepted by the Engineer. Final payment will be withheld until receipt of the warranty by the Engineer.

CONSTRUCTION METHODS

100-3.1 GENERAL. Installation shall be performed by experienced and skilled persons to obtain only the best workmanship. All equipment shall be set square and true with construction. The work shall be under constant supervision by the Contractor, or by an authorized and competent foreman with five years experience, until completion.

100-3.2 INSTALLATION METHOD. The methods used for the installation of electrical system and equipment shall conform to the National Electric Contractors Association (NECA) published "Standard of Installation" except where specifically specified or shown otherwise, and to the requirements of the National Electrical Code (NEC) and its revisions as adopted by the local agency having jurisdiction.

All electrical materials, construction methods, and installation shall be in accordance with applicable Federal Aviation Administration's advisory circulars including amendments, the National Electrical Code, and the American National Standards Institute Standard C2.

The workmanship shall be first class and in accordance with the highest standards of the electrical industry and consistent with the best commercial practices. The installations and adjustments shall be by competent electricians.

The responsibility for the correct and satisfactory installation and operation of all materials and equipment required herein shall rest with the Contractor. Before any equipment is ordered, a complete schedule of materials and detailed shop drawings covering all items of equipment and brochures of the materials proposed for installation shall be submitted for approval by the Engineer as described in Item L-100.

100-3.3 SITE CONDITIONS. At least five (5) working days prior to commencing construction operations in an area which may involve underground utility facilities, the Contractor shall notify the Engineer of each underground utility facility shown on the plans. When coordinated with the Engineer, the FAA will assist the Contractor in locating existing FAA cables.

The existence of any known buried wires, conduits, junction boxes, ducts, or other facilities is shown in a general way only. It will be the duty of the Contractor, with the help of airport personnel, to visit the site and make exact determination of the existence and location of any facilities prior to commencing any work. It is understood that the Contractor will be responsible for making the exact determination of the location and condition of such facilities and any costs shall be paid for locating services by the Contractor. The Contractor shall obtain from the Engineer copies of contract drawings from previous construction projects, examine these drawings, and verify at the site the location of all below grade utilities in the vicinity of work performed under this Contract.

All items damaged by the Contractor's workers or equipment shall be replaced immediately at the Contractor's expense.

100-3.4 INTERRUPTIONS. Interruptions of lighting circuits may be necessary during construction. The Contractor shall provide a reliable shunt cable to provide temporary continuity of circuit service to runway and taxiway lights and signs during construction where required. The Contractor shall not interrupt any circuit or perform any work that might endanger any circuit until approval of the Engineer has been received. Temporary cables shall be protected and identified as a hazard.

The Contractor shall be responsible for installing, maintaining, protecting, and removing all required temporary jumper cables used to maintain power to electrical circuits.

For the permanent installation, all temporary connections and rerouting of circuits shall be replaced with new materials installed in accordance with the specifications and as shown on the plans.

The Contractor shall remove all circuit cables from their respective electrical power sources in the vault before working on the cables in the field. All such cables shall be so marked at the point of disconnection to prevent accidental reconnection. This work is incidental to the electrical work and no separate payment

will be made. See item L-100, SAFETY RULES.

100-3.5 CODES. The Contractor shall comply with all ordinances, laws, regulations, and codes applicable to the work involved and as referenced in these specifications. This does not relieve the Contractor from furnishing and installing work shown or specified which may be beyond the requirements of such ordinances, laws, regulations, and codes.

100-3.6 SAFETY AREA. The Contractor shall abide by the requirements of the Contract Specifications when working within the runway or taxiway safety areas or as directed by the Engineer.

METHOD OF MEASUREMENT

100-4.1 The pay item for Electrical Demolition shall be per linear foot of the continued system removed from start to end. The electrical Demolition, Circuit tracing, existing condition verification, miscellaneous electrical prep, disconnections, and all incidentals as required to provide complete demolition of identified services. No direct measurement or payment shall be made for cutting conduits and temporary caps (to avoid dirt intrusion) during construction. Conduit cutting and temporary caps shall be incidental to this demolition item. No separate measure and payment will be made for removing all other electrical elements located within the linear foot of removal measured, including, but not limited to, base cans, conduits, wire, associated ground rods, etc., necessary to provide a complete and operational electrical infrastructure. These are all incidental to pay item L-100-5.1 below.

BASIS OF PAYMENT

100-5.1 Payment will be made at the Contract unit price for the demolition of existing electrical services in preparation for new work. Payment will be full compensation for demolishing all materials and for all labor, supervision, equipment, tools and incidentals necessary to complete this item.

Payment will be made under:

Item L-100-5.1	Electrical demolition, circuit tracing, existing condition verifications, misc electrical prep – per linear foot

MATERIAL REQUIREMENTS

AC 150/5370-2C	Operational Safety on Airports During Construction
AC 150/5370-10	Standards for Specifying Construction of Airports
MIL-P-152388	Wash Primer Specification
TT-P-641F	Type II, Base Paint, Zinc-Rich

END OF ITEM L-100

ITEM L-126 ELECTRICAL LINE DISTRIBUTION SYSTEMS (FAA OWNED)

DESCRIPTION

126-1.1 GENERAL

This section shall consist of work specific to FAA owned approach lighting systems. This section covers Electrical Line Distribution (ELD) systems, and non ELD infrastructure supporting the approach lighting aids. The scope of work is detailed within the N series of the project drawings.

The ELD systems, also known as supporting infrastructure, are unique to the FAA owned approach lighting aids. The ELD systems consist of handholes, conduit, duct markers, surge protection, wiring and counterpoise (guard) wiring. The ELD system installation specific items address surveying, trenching, backfilling, material installation, system identification and testing and reporting. The ELD system is associated with the exterior, power supply of FAA facilities.

Items within this specification shall be installed to FAA specifications. Refer to section 126-6.1 for additional references/criteria the contractor shall comply with. Specifications L-108, L-110 L-115 and L-125 shall not be applied to the approach lighting aids unless otherwise noted.

This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the Engineer. This item shall also include removal and disposal of all equipment and materials as shown on the Plans. Excavation and backfill required for installation of new approach lighting aids handholes and conduit ductbanks is incidental to this work.

Coordinate removal and installation of system components with FAA through the Engineer.

Verification of existing conditions such as locating, potholing, tracing coordination with FAA, local utilities and others deemed necessary shall be incidental to the pay items provided in this specification.

126-1.2 FAA SPECIFICATIONS AND OTHER PROJECT STANDARDS

Unless otherwise indicated, the contractor shall comply with the following FAA specifications and standards:

1. FAA-C-1217 (Latest Edition) Electrical Work, Interior
2. FAA-C-1391 (Latest Edition) Installation and Splicing of Underground Cables
3. FAA-STD-019 (Latest Edition) Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment.
4. NFPA No. 70 National Electrical Code
5. NFPA No. 780 Lightning Protection Code

126-1.3 INTERRUPTION OF POWER / NAS SERVICES

Contractor is advised that the project site is a fully operational NAS facility that supports the airport and/or the NAS. An un-scheduled power interruption to any of the electrical distribution systems or an

interruption of the communication systems is not allowed. Work requiring a temporary or permanent de-energizing of the electrical service shall be scheduled and approved in writing by the Resident Engineer at least 14 calendar days in advance of performance of the work. Work may not commence until written authorization is received from the Resident Engineer.

126-1.4 CONTRACTOR QUALIFICATIONS

Work shall be performed by a contractor licensed in the State of Florida, with a minimum of five years of electrical contracting experience in airfield electrical systems and experience with NAVAIDS / FAA Orders. Refer to Division 1 for required 'Contractor Qualifications Statement' that must be provided at time of bid addressing additional requirements.

EQUIPMENT AND MATERIALS

126-2.1 GENERAL

The Contractor shall furnish all material, equipment and incidentals as required for a complete installation as shown on the plans, unless identified as "FAA Furnished" or "GFE". Unless otherwise shown, material and equipment shall be new and must comply with all contract documents and requirements. All material and equipment furnished by the Contractor shall be the standard products of manufacturers regularly engaged in the production of such material and be of the manufacturer's latest designs.

Wherever Underwriters' Laboratories, Inc. has established standards for a Contractor furnished item, that item shall bear the UL label. For items where UL standards are not established, the Contractor shall obtain listing or labeling from an agency acceptable to the authority having jurisdiction.

Manufacturer's certifications shall not relieve the Contractor of the Contractor's responsibility to provide materials in accordance with these specifications, Appendix 3 to AC 150/5345-53 and as deemed acceptable to the Engineer. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the Engineer and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

The rules, regulations and referenced specifications shall be considered as minimum requirements. These minimum requirements shall not relieve the Contractor from furnishing and installing higher grades of materials and workmanship than specified or when so required by the construction drawings.

126-2.2 EQUIPMENT SUBMITTALS

All materials and equipment used to construct these items shall be submitted to the Engineer for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise, and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be boldly and clearly made with colored arrows or circles (highlighting is not acceptable). Contractor is solely responsible for delays in project accruing directly or indirectly from late submissions or resubmissions of submittals.

The submitted data shall be sufficient, in the opinion of the Engineer, to determine compliance with the

plans, specifications and relevant FAA Advisory Circulars, and FAA Standards. The Contractor's submittals shall be organized in digital format (PDF). The Engineer reserves the right to reject any and all equipment, materials, or procedures, which, in the Engineer's opinion, does not meet the system design and the standards and codes, specified herein.

126-2.3 WARRANTY

All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

The FAA will take ownership of the approach aids, from the Airport, at conclusion of the project. The warranty shall be transferable to the FAA.

126-2.4 FAA DEFINED ELD SYSTEM / EQUIPMENT

Material Specifications for all ELD system below are detailed within the Reference to this speciation (Item 126-6.1). Abbreviated specification, application on the project and additional requirements beyond the reference is listed below for each ELD item.

1. Ridged Metal Conduit (Galvanized) – used for all above ground conduits at distribution racks. Comply with ANSI C80.3 and UL 797. Use where EMT is not specified.
2. PVC Coated RGS Conduit – used within foundations and within 10' of EES cables. Material: Coating Thickness: 0.040 inch, minimum. Comply with NEMA RN 1,

   At the Contractor's request, the Engineer will consider and present to the FAA the use of bitumastic painted conduits instead of factory epoxy coated materials per Specification 126-2.4 Item 2. FAA's approval is a binding condition for the Contractor to use the bitumastic painted conduits. The Owner and the Engineer are not responsible for any consequence, time, and cost impacts on the Contractor resulting from the non-approval of the material.

3. Direct Buried Ridged non-Metallic Conduit – PVC Schedule 80, used outside of EES loops. Additionally, PVC conduit shall be used for lighting down conductor connections within foundations. Comply with UL 651.
4. Duct Spacers – See Details. 6" min vertical clearance, 3" horizontal clearance.
5. Duct Hold Down Systems – See Details.
6. Pull Wires and Tape (pull strings) – Provided at all spare conduits. ¼" pull tape or nylon jet line having a minimum tensile strength of 210 pounds for non-metallic conduit. Comply with FAA-STD-019 Item 4.17.
7. Underground Duct and Cable Warning Tape - Furnish detectable underground warning tape for underground duct banks. Use aluminum backed, 0.005-inch thick, underground warning tape with a red background color. Lettering shall be black and indicate the type of service buried below: "CAUTION BURIED ELECTRIC LINE BELOW". Use tape width appropriate for the burial depth: A. Three-inch wide tape for up to 18 inches depth. B. Six-inch wide tape for up to 24 inches depth. Comply with FAA-STD-019 Item 4.16.
8. Insulated Bushings - NRTL-listed, malleable iron. Comply with FAA-C-1391 Item 4.10.

9. Grounding Bushings – Comply with FAA-STD-019 Item 4.5.4, FAA-STD-019 Items 4.11 and 5.5.5.3 and FAA-C-1217 Item 5.5.1.1.
10. Ground Rods. Ground rods shall be copper or copper clad steel, a minimum of 10 feet long and 3/4-inch diameter. Rod cladding shall not be less than 1/100 in. thick. Comply with FAA-STD-019 Item 4.4.4.1, FAA-C-1391 Item 4.20 and FAA-C-1217 Item 5.5.1.1.
11. Wire Gutters – 4" min size. Comply with FAA-C1391 Item 4.5.
12. Distribution Rack Foundations: Material: Concrete shall meet or exceed a 28-day compressive strength of 4,000 psi. Construction: chamfered 1", brushed and graded for drainage.
13. Distribution Rack Post Supports– Material: 2" RGS. Construction: Install on frangible couplings on floor flanges, install with anchors,
14. Distribution Rack Channel / Strut– Material: Stainless Steel Type 304. UV Resistant plastic end caps. Install at all ends of strut material.
15. Floor Flanges – Material: Stainless. 6" OD with 2 11-1/2 npsm threaded, four 0.63" dia holes on 4.75" bolt pattern. applying asphaltic sealing compound on bottom of floor flange before placement and securing with anchors.
16. Frangible Couplings - Comply with FAA AC 150/5220-23 and FAA AC 150/5340-26. Frangible point shall be approximately 1" above pavement and not exceed 3" from ground level.
17. Lighting Protection Air Terminals at Distribution Rack - Comply with FAA-STD-019 item 4.3 (specifically 4.3.3 and 4.3.6).
18. Lighting Protection Down Conductor at Distribution Rack – Harger 28R or similar. Construction: end exothermic welds to the EES. Comply with FAA-STD-019 item 4.3 (specifically 4.3.5).
19. Lighting Protection Hardware at Distribution Rack – Comply with FAA-STD-019 item 4.3 (specifically 4.3.7).
20. Aircraft Rated Handhole Structure – Construction: Shall meet A/C 150-5320-6 for 250 psi (tire pressure and 100,000 lbs. (aircraft rated). Refer to plan details for additional specifics of handhole systems.
21. Aircraft Rated Handhole Lids / Covers – Provide Spring Assist Type with Safety Bar. Lids/Covers shall be marked as shown on plan details.
22. Handhole Accessories – Supports, Cable Racking Systems/ Arms /Insulators. Material: Non-conductive type. Refer to plan details.
23. Handhole Accessories - Ground Bus Plate – Refer to plan details.
24. Exterior Equipment Identification Tag / Labels - Materials. Shall be engraved phenolic type with black letters on white background. Use 3/8" letters for identifying individual equipment and loads.
25. Exterior Cable Identification - Refer to plan details.
26. Duct markers – Refer to plan details.
27. Arc Flash Labels – Suitable for exterior locations. Comply with FAA Order 6950.27A Power Systems Analyses Assessment.
28. Surge Protective Devices – Material: Provide stainless steel enclosure. Provide visual indicator of fault conditions on exterior of enclosure. See details for equipment details.

29. Service Disconnecting Means (SDM): Material: Stainless Steel. Type: Heavy Duty. Comply with FAA-C-1391 Item 4.5 & 5.10.

126-2.5 NON-FAA DEFINED ELD SYSTEMS / EQUIPMENT

1. Electrical Metallic Tubing (EMT) – used only at frangible connections per EB 79. Typically used for Legs of Approach Aids within the RSA above frangible points. Comply with ANSI C80.3 and UL 797.
2. Anchor / Wedge Bolts – Material: Stainless Steel. Epoxy methods acceptable alternative to wedge type.
3. Condulet Bodies - Material: Malleable iron body hot dip galvanized, stainless steel cover, neoprene gasket, stainless screws hardware. Type: Threaded. Comply with UL 514B.
4. Break Away Power Connectors – See Details.
5. Break Away Comm Connectors – See Details.
6. Threaded Reducing Bushings – Stainless Steel with RTV applied.
7. Flexible Metallic Liquid Type Conduit – Comply with UL 360.
8. Flexible Metallic Liquid Tight Conduit Connector – See Details.
9. Junction Cans (Light Bases / Transformer Housings) – L-867 / L-868 type, four 2” threaded hubs around the perimeter of the base 90 degrees apart, unless detailed on plans differently. Comply with AC 150/5345-42.
10. Splice Can Covers –L-867 Type 3/8” thick, fully installed above concrete, not imbedded.
11. RTV Silicone – Momentive RTV118 or similar.
12. Anti-Seize Compound – Non-Metal Based. Henkel Loctite® LB 8009 or LB 8023.
13. Rubber Electrical Tape - self-fusing Ethylene Propylene Rubber (EPR) based high-insulating voltage tape such Scotch Electrical Tape Number 23 and 88 as manufactured by 3M Company or an approved equal.
14. Plastic Vinyl Electrical Tape - 8.5 mil heavy duty, premium grade all-weather vinyl electrical insulating tape such as Scotch Premium Vinyl Electrical Tape 88 as manufactured by 3M Company or an approved equal.
15. Cable Ties - UV-rated nylon or stainless steel
17. Reinforcing Steel - All reinforcing steel shall be ASTM A 615, Grade 60.
18. Fillers and Adhesives - Joint sealing filler shall comply with Specification P-605 and Joint Sealing Filler and adhesive compounds shall comply with Specification P-606, Adhesive Compounds, Two-Component, For Sealing Wire and Lights and Pavement.

126-2.6 GROUNDING SYSTEMS CABLES

a. Grounding Cable Criteria:

1. Earth Electrode System (EES) – Provide #4/0 Bare Copper Stranded unless other identified.

2. Duct Bank Guard Wire (GW) – Provide #1/0 AWG Bare Copper Stranded unless otherwise identified
3. Equipment Grounding Conductors – Sized per NEC, provide #2 AWG minimum connection to EES. See N-134 for additional details. Bare ground conductors shall be sized in accordance with NEC and FAA-STD-019F. Minimum allowable size of ground conductors in contact with earth shall be not less than #2 AWG.

126-2.7 CONNECTOR PRODUCTS

Exothermic Welded Connections: Provided in kit form and selected per manufacturer's written instructions for specific types, sizes, and combinations of conductors and connected items. All underground conductor-to-conductor connections and conductor to ground rod connections shall be made by the exothermic weld process, unless otherwise noted. For certain materials and shapes which exothermic welds may not be possible, coordinate connection method with WRPM.

A. Substitutes: Provide exothermic connections equal to Cadweld. To substitute another exothermic weld process, the Subcontractor must submit a chemical analysis by an independent test laboratory certifying:

a. The material used contains no phosphorous, caustic, toxic or explosive substance.

b. Weld material used for ground connections contains copper oxide, aluminum and not less than 3% tin as a wetting agent. Weld metal for cathodic connections shall contain vanadium, but no tin.

c. A minimum of 80 percent of the weld metal shall screen out between 30 and 140 Mesh.

d. Exothermic Weld shall meet the applicable requirements of IEEE-80, Chapter 9, Section of Conductors and Joints.

e. Molds shall be made from graphite or other material withstanding welding temperatures and shall be designed to provide average life of not less than 50 exothermic welds under normal conditions. The molds shall bear permanent marking, indicating the name of the manufacturer, the mold model, the type, and size of the welding mixture compatible with the welding process and the size of the conductor. Instructions detailing general safety information, welding procedures shall be provided with each mold. The installer is prohibited from using a mold from one manufacturer with a different manufacturer’s welding mixture.

B. Application: Exothermic connections to be used outdoors shall be suitable for exposure to the elements and direct burial without degradation over the grounding system.

126-2.8 CIVIL MATERIALS

a. Backfill material. Trenching and backfilling for the PAPI conduits installation shall comply with

CONSTRUCTION METHODS

126-3.1 GENERAL

a) General. Whenever drawing details lack full clarity, the contractor shall still furnish all equipment, material, and labor to complete the installation work and accomplish all the intended functions of the electrical installation. The contractor shall ensure that the approach lighting aids electrical installation is

coordinated and compatible with civil, mechanical, and electrical construction under this contract.

Minor departures from exact dimensions shown in the electrical plans may be permitted when required to avoid conflict or unnecessary difficulty in placement of a dimensioned item, provided all contract requirements are met. The contractor shall promptly obtain approval from the Engineer before undertaking any such departure and shall provide appropriate documentation of the departure.

b) Shipping and Storage. Equipment should be shipped in suitable packing material to prevent damage during shipping. Equipment and materials should be maintained in new condition and stored in areas protected from weather and physical damage.

Any equipment and materials, in the opinion of the Engineer, damaged during construction or storage shall be replaced by the contractor at no additional cost to the owner. Painted or galvanized surfaces that are damaged shall be repaired according to manufacturer's recommendations.

126-3.2 EXCAVATION, TRENCHING & BACKFILLING

a) Verify site conditions. Verify that survey benchmark and intended elevations for the work are as indicated. Coordinate with FAA Sector Personnel and the Project Engineer to locate existing underground utilities. Identify and protect all existing utilities from damage. Protect benchmarks, existing structures, and fences, from excavation equipment and vehicular traffic. Locate the center of all PAPI foundations and stake excavation. Manually excavate and trim the surrounding earth to the required dimensions. Ensure only NFS material is below all foundations. Notify the Project Engineer of unusual subsurface conditions. Remove from the site any excess material not being reused. Protect the bottom of excavations and soil adjacent to and beneath foundation from freezing. Coordinate with the Project Engineer for on-site disposal of any excavated material when necessary. No excavated material may be disposed of on site without approval of the Project Engineer.

b) Protection of Existing Utilities and Cables. The location of existing utility lines and underground cables, as shown on the drawings, are approximate. Where the exact locations of existing ducts, pipes, or cable, etc., are required for construction purposes, the Contractor shall determine those locations in the field. The Contractor shall have a cable detector on site to locate any existing cables that he may encounter during construction operations. The Contractor shall immediately notify the Project Engineer if any proposed construction is located over any existing underground utilities.

The Contractor shall immediately repair, at their time and expense, any damage done by their personnel to utilities and/or cables within the work area. A written report shall be submitted immediately to the Project Engineer describing the type of services interrupted, the length of time that the services were out, and method used for repair.

Use hand excavation only when attempting to locate any existing power or signal cables. Record the As-built locations for all encountered utilities on the plans. Support and protect from damage all uncovered utility lines or features until approval for backfill is obtained from the Project Engineer.

c) Trenching and Backfilling. Trenching and backfilling for the PAPI conduit installation shall comply with specification Item L-110.

126-3.3 CONCRETE

Manually trim sides and bottom of earth forms to neat lines. Remove all loose soil prior to placing concrete. Place reinforcement wire to provide 3" of concrete cover over the reinforcement. Do not interrupt successive placement or permit cold joints to occur. Screed slabs on grade level, maintaining surface flatness of maximum ¼" deviation in 10'. Finish concrete slab surfaces to light broom swept, non-slip finish. Chamfer exposed corners of slabs 1".

a) Curing and Protection. Immediately after placement, protect concrete from premature drying, excessively hot or freezing temperatures and mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete, a minimum of five (5) days.

b) Patching. Notify the Project Engineer to inspect concrete surfaces immediately upon removal of forms. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify the Project Engineer upon discovery of any concrete defects. Concrete that does not conform to the required lines, details, dimensions, tolerances, or specifications shall be repaired or removed and replaced by the Contractor as directed by the Project Engineer. The Project Engineer's decision of whether to repair or replace defective concrete is final. The Contractor shall not patch, fill, touch-up, or repair exposed concrete defects except upon express direction of the Project Engineer.

126-3.4 GROUNDING AND BONDING

a) System Installation. Grounding and bonding shall be as shown on the plans and be accomplished in accordance with the base contract specifications.

The Earth Electrode System (EES) is the network of ground rods, conduit connection, equipment bonds and loop conductors, about equipment or structures. See FAA-STD-019 Item 4.4, FAA-C-1391 Item 5.11.2. All connections shall be made using exothermic connections equal to Cadweld field welds.

Guard Wire System, the network of ground rods, conduit connection, equipment bonds and counterpoise conductors shall. See FAA-STD-019 Item 5.4.3.3.3.2, FAA-C-1391 Item 5.11.2. All connections shall be made using exothermic connections equal to Cadweld field welds.

Grounding Electrode Conductors (GEC) – See FAA-STD-019 4.5.2

Equipment Grounding Conductors (EGG) – Supply an ECG conductor within all raceways for power and communication cables. Where power conductors and the EGC are to be extended to a second building or structure, the neutral to ground bond of the power system shall originate at the first building electrical service entrance point. The grounded conductor shall not be connected to the EGC or EES at the second building or structure. See FAA-STD-019 4.5.3

Earth Electrode System (Counterpoise) - Unless otherwise indicated on Contract Drawings, the grounding electrode system shall consist of a minimum of four (4) ground rods located at each corner of the structure.

A. Ground rods shall be interconnected by a buried, bare, #4/0 AWG, 7 stranded copper cable. The ground cable shall be directly buried at least 2'-6" below grade level. The interconnecting cable shall close on itself, forming a complete loop, with the ends exothermically welded. Provide sufficient mechanical protection during installation so as not to break cable or connections.

B. Connect structural steel of buildings to the earth electrode system with a bare, #4/0 AWG cable.

C. All underground metallic pipes, metallic conduit, tanks, and telephone ground shall be connected to the earth electrode system by a copper cable no smaller than #2 AWG. Exothermic welds shall not be used where hazards exist, i.e., near fuel tanks. In these cases, pressure connectors will be allowed as approved by engineer and FAA onsite representatives.

D. All exposed non-current carrying metallic parts of electrical and mechanical equipment including metallic raceway systems, piping, steel columns and structural members and neutral conductors of the wiring systems shall be grounded as required by the NEC and FAA-STD-019F.

E. Install ground cables in Schedule 80 PVC conduit where routed above grade, unless otherwise indicated on Contract Drawings.

F. Guard Wire: Install guard wire in trench lines where protecting PVC or direct buried cables. Locate guard wire 10 inches (minimum) above the conduit/cable. Connect guard wire to ground rods and the earth electrode system by exothermic means. Space ground rods at approximately 90-foot intervals along the trench line. Locate ground rods 2 feet outside of trench/handhole wall.

G. Ground pad-mounted equipment and non-current-carrying metal items by connecting them to Earth Electrode System by exothermic means.

H. Ground Rods: Install ground rods as follows:

a. Spacing: Ground rods shall be as widely spaced as practical and shall not be spaced less than one rod length apart. Spacing between rods around structures should be between 10 to 30 feet, nominal 20 feet, as shown on Contract Drawings.

b. Depth of rods: Tops of vertically driven ground rods shall be not less than 12 inches below grade level.

c. Location: Ground rods shall be located 2 to 6 feet outside the foundation or exterior footing of the structure.

d. Manholes and Handholes: Install a copper ground bus in each handhole/manhole. Install driven ground rods 2 feet from outside wall of handhole/manhole. Install a 2 AWG bare conductor from ground bus inside the manhole/handhole through a waterproof sleeve in manhole/handhole wall, and exothermically weld to the ground rod.

e. Access Wells: Install where indicated on contract drawings. Set top of well flush with finished grade or floor. Place gravel in well to a level 3 inches below ground rod connections

126-3.5 FIELD QUALITY CONTROL

A. Tests: Perform tests described below. Ensure no connection to utility power is made during testing.

a. Fall of Potential: Subject the completed EES system to an earth resistance test using a ground test null balance megger instrument designed for the purpose, such as a Biddle, utilizing the fall of potential method (3-point). Measure ground resistance not less than 3 full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.

b. Earth Electrode System Resistance: The resistance of the earth electrode system shall not exceed 10 Ohms unless otherwise noted.

c. Bolting Resistance: Spot test to verify that ground cable bolted connections have a DC resistance of one milliohm maximum, when measured with a bridge type milli-ohmeter or similar instrument.

d. Continuity: Test ground conductors, sheet metal, metallic raceways, cellular metal deck, equipment enclosure, metallic enclosures, and lighting fixtures for continuity to ground system with a megger.

e. Bonding Resistance: Unless otherwise specified all bonds shall exhibit a resistance of one milliohm or less when measured between bonded members with a 4 terminal milliohm meter.

f. Witness: Tests shall be witnessed by Resident Engineer and Local FAA.

B. Performance Requirements.

Each EES shall have a resistance to earth no greater than 10 Ohms. Each EES System shall be tested before connection to guard wire of adjacent ductways.

The Guard Wires shall have a resistance to earth no greater than 10 Ohms. Each Guard Wire System shall be tested before connection to EES of adjacent electrical equipment or structures.

All low-voltage (≤ 600 V) cables (power and communication signals) shall measure not less than 50 megohms resistance between conductors and between conductors and ground. (Measured at 500V)

126-3.6 NAMEPLATES AND LABELS

a) General. Conform to requirements of ANSI/NFPA 70. Comply with FAA-C-1217 item 5.11

Degrease and clean surfaces to receive nameplates and labels. Install nameplate and label parallel to equipment lines. Secure nameplate to equipment front using screws or adhesive. Identify underground conduits using underground warning tape. Install one tape per trench at 6” below finished grade.

b) Locations. Nameplates and labels shall be placed on panel boards, switches, and self-enclosed circuit breakers, etc. Nameplates shall describe the functional name of the unit, voltage utilized, number of phases and other pertinent information. Switches for local lighting need not be identified. Each electrical distribution and control equipment enclosure shall be labeled.

c) Arc Flash Labels. The systems in this project are limited to single phase systems and only generic Arc Flash Labels shall be utilized. Contractor shall supply generic labels at equipment. Labels shall be suitable for exterior locations.

126-3.7 FIXTURE DEVICE INSTALLATION

Use an approved anti-seize compound on all installed hardware with external/internal threads, and where EMT conduit is inserted into frangible couplings. Failure to do this will result in the contractor replacing any items damaged due to seized, galled, or stripped threads or connections.

126-3.8 APPROACH AIDS

a) Coordination. Coordinate all shutdowns, equipment removals, startups, and commissioning with the FAA.

b) Aiming. Leveling and Aiming of LHA to the satisfaction of the FAA, per the drawings. Use vendor supplied tools to set final aiming angles.

c) Fight Check Support. Provided Adjustment of LHA during FAA performed Flight Check, in conjunction with and under direction of FAA Staff.

Provided Testing and documentation in conjunction with FAA resident engineer.

126-3.9 FAA DOCUMENTATION (FORMS / CHECKLIST)

FAA Prepared forms for Contractor Reference

1. 3900-16 Project Planning Environmental and Occupational Safety and Health Checklist 2015-04
2. 3900-17 Design Risk Analysis for Environmental and Occupational Safety and Health Checklist 2015-04

Guidelines - OHSA

3. 3900-18 Pre-Construction Environmental and Occupational Safety and Health Checklist 2015-04

This document provides guidelines in the preparation of the Pre-Construction, Installation, and non-routine maintenance reviews for environmental, occupational, safety and health prior to start work that potentially has EOSH impacts on NAS operations and employees.

Contractor shall review and consider any FAA requirements in the preparation of the CSPP.

Guidelines – Arc Flash Evaluation

This Arc Flash user guide shall be review completely for Electrical Safety in the Workplace.

Always wear the appropriate PPE. Also review the flowchart including with this guide. If applied to you, filled out completely and acquire the forms attached to this guide.

Contractor shall provide the required Arc Flash labeling in accordance with FAA requirement for all new equipment installed following final testing, prior to acceptance by FAA. Calculations shall be provided by the contractor for engineer's review, as an initial submittal prior to any equipment submittals.

Procedure Forms

This format specified the procedure for a Lockout/Tagout for the Approach Lighting Aids system and shall be used to ensure that any person surrounding the equipment as well as personnel working on the equipment are protected from hazardous energy source.

This item shall supplement the contractors own Lock-out, Tag-out program as it pertains to FAA specific systems. Contractor shall fill out the sections corresponding to their scope of work.

Technical Reference Data Records

6000-08 Technical Performance (2019-12)

6000-10 Technical Reference Data Record (2008-09)

This Technical Reference Data Record form shall be filled correctly and acquire as possible for the appropriate device, refer to step number 8 of the Data Record sheet "Equipment/System Type". Contractors shall provide required test equipment and personnel to perform all test required to fill out the

system performance data. Test shall be supervised by FAA resident engineer, Owner's representative, and contractor. The data shall be filled out the sections corresponding to the scope of work.

METHOD OF MEASUREMENT

126-4.1 3x3 Aircraft Rated Handhole will be measured per each system installed as a competed unit, ready in place, ready for operation and as accepted by the Engineer. The following items shall be included in the price of each unit: All required excavation and dewatering, sheeting, and bracing; all required backfilling with on-site materials; restoration of all surfaces and finished grading and turfing; all required connections and conduits; hardware and rack materials, temporary cables, and connections; labeling, and ground rod testing. The measurement includes all underground items 10' outside of the structure, or 5' outside of the EES loop where RGS conduit are required.

126-4.2 1W2" ductways of FAA standards will be measured per linear foot for each type and size of conduit completed and accepted, including trench and backfill with the designated material including concrete encasement. This item includes but not limited to trench marking tape, terminations, couplings, end bells, conduit plugs, conduit transitions, conduit connections, mandrelling, pulling lines, plugging of conduits, and duct markers as a completed system per the plans and specifications to the satisfaction of the Resident Engineer. Additionally, this item includes removal and disposal of existing duct banks and conduits as shown on the plans, testing, furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications. Ductways shall include guard wire cabling installed over ducts and associated ground rods. The measurement includes all underground items 10 feet outside of the concrete foundations, or 5 feet outside of the EES loop where RGS conduit are required. Duct bank size variations not listed are to be inclusive in other lump sum items.

126-4.3 Runway Equipment Rack Replacement near Glide Slope (09L) Building will be measured per lump sum. This item includes but not limited to, removal of existing equipment racks and installation of new electrical distribution equipment racks. This item also includes all grounding, conduits, wireways, wiring (starting at the facility transformer), including reconnection of the existing Glide Slope shelters wiring, excluding wiring from PAPI disconnects [on the equipment rack near the Glide Slope shelters] to the PAPI equipment rack (Refer to specification section 128-4.1), racks, concrete foundation, connections, lightning protection, electrical equipment (disconnects, SPDS, etc.), and other incidentals detailed on the drawings for a fully operating system.

126-4.4 Runway Equipment Rack Replacement near Glide Slope (27R) Building will be measured per lump sum. This item includes but not limited to, removal of existing equipment racks and installation of new electrical distribution equipment racks. This item also includes all grounding, conduits, wireways, wiring (starting at the facility transformer), including reconnection of the existing Glide Slope shelters wiring, excluding wiring from PAPI disconnects [on the equipment rack near the Glide Slope shelters] to the PAPI equipment rack (Refer to specification section 128-4.1), racks, concrete foundation, connections, lightning protection, electrical equipment (disconnects, SPDS, etc.), and other incidentals detailed on the drawings for a fully operating system.

126-4.5 Electrical junction cans (L-867D) shall be measured by each unit completed in place and accepted. This item consists of the installation of the type of junction can noted, installed per the requirements of the drawings and specifications, at the indicated locations and conforming to the lines, grades and dimensions shown on the drawings or as required by the RPR. This item includes the installation of each structure with all associated excavation, backfilling, concrete encasement,

appurtenances, all required connections, labels, dewatering, ground rod, ground cable, cadweld, test report and connections, steel cover, gasket, bolting hardware, and ID marker, and restoration of surfaces required, to the satisfaction of the RPR. This item additionally includes restoration of the site including site grading to prohibit ponding.

BASIS OF PAYMENT

126-5.1 Payment will be made at the Contract unit price for the complete installation of each system. Payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials and for all labor, supervision, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item L-126-5.1	3'x3' Aircraft Rated Handhole (FAA Standards)	Per Each
Item L-126-5.2	1W2" Ductway (FAA Standards w/ Guard Wire)	Per Linear Foot
Item L-126-5.3	Runway 09L Equipment Rack Replacement Near Glide Slope Building	Per Lump Sum
Item L-126-5.4	Runway 27R Equipment Rack Replacement Near Glide Slope Building	Per Lump Sum
Item L-126-5.5	L-867D Pull Can with Concrete Encasement	Per Each

REFERENCES

126-6.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

FAA / Department of Transpiration Standards

FAA-STD-019(f)	Lightning and Surge Protection, Grounding, Bonding, And Shielding Requirements for Facilities and Electronic Equipment
FAA-STD-1217(H),	Electrical Work, Premises Wiring
FAA-C-1391(e),	Installation, Termination, Splicing, And Transient/Surge Protection of Underground Electrical Distribution System Power Cables
FAA-G-2100H	Electronic Equipment, General Requirements

END OF ITEM L-126

ITEM L-127 APPROACH LIGHTING SYSTEM – MALS MODIFICATION (FAA OWNED)

DESCRIPTION

127-1.1 GENERAL

This item shall consist of all work required for the modifications of the existing Runway 09L and 27R Medium Intensity Approach Lighting System (MALS) as indicated on the construction drawings.

This item shall also include all wire and cable connections. It shall also include the testing of the installation and all incidentals necessary to place the MALS in operation as completed units to the satisfaction of the FAA, Airport and Engineer.

Equipment shall be manufactured, constructed, and installed in accordance with the manufacturer's standard plans and specifications. Provide equipment that meets all applicable requirements of the Federal Aviation Administration (FAA) and Federal Communication Commission (FCC).

Items within this specification shall be installed in accordance with FAA specifications. Refer to section 127-6.1 for additional references/criteria the contractor shall comply with. Specifications L-108, L-110 and L-125 shall not be applied to the approach lighting aids unless otherwise noted.

This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the FAA., Airport and Engineer. This item shall also include removal and disposal of all equipment and materials as shown on the plans.

Coordinate removal and re-installation of system components with FAA through the Engineer.

Verification of existing conditions such as locating, potholing, tracing coordination with FAA, local utilities and others deemed necessary shall be incidental to the pay items provided in this specification.

127-1.2 EXISTING MALS AND MALSR SYSTEMS

The existing system on runway 09L is a Medium Intensity Approach Lighting System with Runway Alignment Indicator (MALSR) system with RMS (remote monitoring subsystem), Type FA-11500, manufactured by the DME Corporation (Astronics / now Hughey Philips LLC). This unit consists of one (1) power and control assembly in a weatherproof enclosure (FA-11501) together with one (1) remote monitoring subsystem assembly (FA-11509) in a separate weatherproof enclosure. The RMS element is disabled. This system will be augmented with a new threshold bar consisting of empty conduits for future use, and with blank cover plates.

The existing system on runway 27R is MALS system with RMS (remote monitoring subsystem), Type FA-11500, manufactured by the DME Corporation (Astronics / now Hughey Philips LLC). This unit consists of one (1) power and control assembly in a weatherproof enclosure (FA-11501) together with one (1) remote monitoring subsystem assembly (FA-11509) in a separate weatherproof enclosure. The RMS element is disabled. The existing threshold will be replaced with new threshold infrastructure. The existing elevated lights will be removed and provided to the FAA. New inset type lights will be installed.

127-1.3 CONTRACTOR QUALIFICATIONS

Work shall be performed by a contractor licensed in the State of Florida, with a minimum of five years of

electrical contracting experience in airfield electrical systems and experience with NAVAIDS / FAA Orders. Refer to Division 1 for required 'Contractor Qualifications Statement' that must be provided at time of bid addressing additional requirements.

EQUIPMENT AND MATERIALS

127-2.1 GENERAL

The Contractor shall furnish all material, equipment and incidentals as required for a complete installation as shown on the plans, unless identified as "FAA Furnished", "GFE" or "GFM". Unless otherwise shown, material and equipment shall be new and must comply with all contract documents and requirements. All material and equipment furnished by the Contractor shall be the standard products of manufacturers regularly engaged in the production of such material and be of the manufacturer's latest designs.

127-2.2 RWY 27R MALS SYSTEM

The modified MALS system shall conform to the requirements of FAA performance specification FA-1097, "Medium Intensity Approach Lighting System"

The existing MALS remote radio control system shall be reused. No control modification is required.

The existing shelter will remain with no modifications to the building structure.

127-2.3 MALS EQUIPMENT

Install all equipment, wiring and appurtenances to re-establish each existing MALS to an operational condition.

The minimum MALS equipment requirements shall be as follows:

1. Master Control Cabinet with lamps-out monitoring
   a. No expected modifications.
2. 15 kVA Transformer
   a. No expected modifications.
3. PAR 38 Lamp holders with PAR 38 lamps
   a. Select Systems will be deenergized and reused with new wiring.
4. PAR 56 Lamp holders with PAR 56 Lamps
   a. Existing Select Systems will be removed and provided to the FAA.
5. Inset Threshold Lights
   a. For Runway 27R -New Inset FA-23000-5 Green Med Intensity Fixtures with voltage transformers shall be provided. Fixtures shall be 12.5" OD to fit within L-868B light bases with pavement dams. Green filters with 3 x 63W lamps shall be provided.
   b. For Runway 09L – blank cover plates of 3/4" thickness shall be provided. The blank plates shall fit L-868B light bases with 5/8" pavement dams.
   c. Bolts shall be ceramic coated bolts per FAA engineering Brief 83A.
6. EMT and MG-Towers Assemblies
   a. Not impacted by project.
7. Elevated Sequenced Flashing Lights
   a. Not impacted by project.

8. Individual Control Cabinets (ICC)
    a. Not impacted by project.
9. High Voltage Interconnection Wires (Flasher Wiring)
    a. Not impacted by project.
10. Raceways and Junction Boxes and Handholes
    a. Refer to specification L-126
11. Aiming Device
    a. Existing FAA owned asset provided to contractor for installation of fixtures.
12. Spare Parts
    a. N/A to this project.
13. Technical Instruction Manual
    a. Existing Provided by the FAA for installation by the contractor.
14. Field Distribution Panel
    a. Remove existing direct buried wiring and install new wiring (installed in new raceways).
    b. Add new SPD Breaker and SPD device.

Although not a comprehensive list, the equipment above provides the minimum equipment requirements. The contractor will be responsible for coordinating complete MALS system equipment requirements based upon the plans, specifications and the specific MALS manufacturer submitted and approved by the Engineer.

Light bases / Base cans shall be installed with ½" spacer thickness allocation and with ½" thick pavement dam (5/8" dam depth). No more than two spacer rings are allowed to achieve the total thickness.

Refer to specification L-126 for other ELD system material properties.

127-2.4 INTERCONNECTION WIRING / CONDUIT.

Wiring / Conduit including size and type shall be as shown on the plans. Refer to specification L-126 for additional information.

127-2.5 UTILITY SERVICE TO MALS SHELTER

Existing to remain with no expected modifications.

127-2.6 PRODUCT SUPPORT AND WARRANTY

Refer to specification L-126-2.3.

127-2.7 ELECTRICAL STRUCTURES

For handholes and junction cans used in the MALS distribution system, refer to the details and specification L-126-2.3.

127-2.7 SURGE PROTECTIVE DEVICE

Provide 2P 50A breaker and Rayvoss 120-2S-M3-3-06-A in a stainless-steel enclosure. Supplement existing enclosure with strut to support new SPD enclosure.

CONSTRUCTION METHODS

127-3.1 REMOVAL/DEMOLITION

Removal and demolition of existing facilities, equipment, infrastructure that are indicated to be removed, shall be completely removed, and disposed of by the contractor. Work includes the removal of all above ground structures, foundations, pull boxes, and underground conduit and cabling (conduit and cable within 10 ft of the structures) associated with these facilities, equipment, and infrastructure. The sites shall be restored (including re-paving where necessary) to match the surrounding grade, compaction, and condition. All work shall be to the satisfaction of the FAA and the Airport. The contractor shall provide documentation to the FAA Project Engineer certifying that all material has been disposed of properly.

127-3.2 MALS TESTS

The system shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance. The test shall include the functioning of each control (Low, Medium, and High) in both Remote and Local not less than 10 times at the beginning and end of the 24-hour test.

Operational tests are not required for the 09L system, but base can placement and levelness shall be tested to the FAA satisfaction, with corrections provided as required.

127-3.3 MALS INSTALLATION

The equipment and components shall be installed by personnel experienced with the requirements and techniques involved with similar MALS installations. The personnel shall be thoroughly familiar with National Electrical Code and Federal Communications Commission (FCC) requirements. The personnel shall be thoroughly familiar with airport rules and regulations, and applicable safety requirements.

127-3.4 WIRES AND CABLES

Cable splices shall be per FAA-C-1391 Section 4.6.2. Splices shall not be allowed between units except in specified handholes or light bases.

Splices shall be made at outlets, junction boxes, pull boxes, manholes/handholes, or accessible raceways only. Splice 600V conductors in pull boxes only. Splices shall be made in manholes/handholes as indicated on the drawings only. All other splices within manholes/handholes shall require written approval

Splices shall be made with solderless connectors conforming to FS W-S-610, UL-486A, UL-486C, and UL-486E.

Wire nuts may only be used to splice conductors sized 10 AWG and smaller.

Compression connectors shall be used to splice conductors 8 AWG and larger. Use proper tool to provide circumferential pressure connection.

All splices, including those made with insulated wire nuts, shall be insulated with electrical tape or heat-shrink tubing to a level equal to that of the factory insulated conductors.

Splicing of ungrounded conductors in panelboards is not permitted.

Install splices and insulating tapes that possess equivalent or better mechanical strength and insulation ratings than conductors being spliced.

Use splice and tap connectors that are compatible with conductor material.

Splicing methods and material shall be of a type recommended by the manufacturer of the splicing material for the particular type of cable being spliced and shall be approved by the FAA Resident Engineer prior to installation.

Conductors of different color insulation shall never be spliced together.

Keep conductor splices to a minimum.

A splice shall not be pulled into a duct or a raceway under any circumstances.

Install waterproof taps in underground structures.

All above ground cable used in steady burning lights shall be THWN or XHHW-2 stranded confirming to NEMA WC70. Insulation for conductor shall be rated at 75 degrees C.

All cables below ground shall be XHHW-2 stranded confirming to NEMA WC70. Insulation for conductor shall be rated at 75 degrees C. No cable shall be installed via direct burial methods.

All cable and conduit installation shall be in accordance with FAA-C-1391.

127-3.5 ELECTRICAL

a) General. Construction shall conform to the National Electrical Code (NEC) and all Federal, State, and local codes, laws and regulations required by the authority having jurisdiction. Where requirements of the authority having jurisdiction conflict with this specification yet are mandatory, they shall be followed the same as if specifically noted in this specification.

Only skilled workers, regularly engaged in this type of electrical work, shall work on the approach aid systems electrical installation. All work shall be performed under the supervision of licensed journeymen electricians and/or line worker only.

b) Color Coding. All 600 volt and below branch circuit and feeder conductors shall be color-coded as specified herein. The color-coding shall be continuous throughout the facility on each phase conductor to its point of utilization so that the conductor phase connection is readily identifiable in any part of the installation. The equipment-grounding conductor shall be covered with green insulation in sizes 6 AWG and smaller or shall be bare copper when shown or noted on the plans. Neutral conductors shall be covered in continuous white insulation in sizes 6 AWG and smaller. Conductors larger than 6 AWG shall be phase taped as follows:

120/240 volts:

Line 1 – Black

Line 2 – Red

Neutral – White

Ground – Green (unless bare conductor is call out)

Provide new SPDs at Existing panelboards.

127-3.6 ELECTRICAL TESTING

All low-voltage (≤ 600 V) cables (power and communication signals) shall measure not less than 50 megohms resistance between conductors and between conductors and ground. (Measured at 500V) Cables shall tested to FAA-C-1391 Section 3.3.5.5. Test both existing and cables separately, prior to connecting the new cables.

a. General. Furnish all necessary labor, materials, equipment, appliances, and power for conducting and performing operating tests on the completed systems. Testing includes insulation resistance testing and operation of the remote-control and the local control of the systems.

Final testing shall be witnessed by the Engineer and FAA personnel. Final adjustment and aiming will be done by contractor as direct by FAA personnel. Contractor shall repair systems that do not test satisfactorily at no additional cost to the Owner. Restart testing only after corrections are complete.

b. Operating Tests. Perform 30-minute system testing. After 30 minutes of operation, test system input voltages. Test systems using system specific control methodologies. Test photocells by covering the photocell control or as otherwise instructed by the FAA to ensure intensity adjustments. Test tilt switches if applicable. Test remote control function if applicable. Observe SPD visual indicators lamps.

c. Electrical Tests. Perform electrical test per FAA-C-1391 section 3.3.5.5.

d. Contractor shall supply all startup test in the Technical Instruction manual for the MALS FA-10097 system. FAA will provide all testing forms following the technical instruction manual.

127-3.7 CLEANUP

Upon completion of the project, the contractor shall clean around the project site and provided surface treatments per the civil plans for and specifications.

127-3.8 INSPECTION

The equipment shall be ‘ground tested’ prior to the ‘flight inspection’. The Contractor shall conduct tests as necessary to ensure that the system can be commissioned when flight inspected by the FAA. Pre-inspection shall be done 10 days prior to the flight check. All necessary adjustments to the system shall be made prior to flight checks.

Contractor shall arrange for and coordinate an FAA flight check for inspection and be on site and available for adjustments, as needed. The cost of flight checks is excluded from the contractor’s effort. The FAA will provide the flight checks (aircraft, observers, and testing reports). Contractor shall support two unique flight checks. as they may not necessarily be performed at the same time.

127-3.9 SURGE PROTECTIVE DEVICE

Install SPD on existing rack. Update panel schedule with added breaker and circuit identification.

METHOD OF MEASUREMENT

127-4.1 The MALS (09L) Threshold Infrastructure installation will be measured per lump sum. This item shall include but not limited to, conduit, ducts, base cans, blank base can covers, grounding, EES system, excavation, restoration, coordination with FAA, testing and all incidentals necessary to complete, in place. The additional elements supplement L-126 Items for a functional system and associated testing. Electrical items are inclusive of all field cabling identified on the drawings (unless identified as separate pay item), and all other work required to replace the existing system. The MALS system shall be accepted as a functional system, in place, tested and ready for operation to the satisfaction and acceptance by the FAA, Airport and Engineer. Threshold infrastructure pay item is inclusive of stub-out conduits for future provisions.

127-4.2 The MALS (27R) Threshold Infrastructure installation will be measured per lump sum. This item shall include but not limited to, conduit, ducts, base cans, installation of light fixtures, transformer, cabling, connectors, grounding, EES system, excavation, restoration, coordination with FAA, testing and all incidentals necessary to complete, in place. The additional elements supplement L-126 Items for a functional system and associated testing. Electrical items are inclusive of all field cabling identified on the drawings (unless identified as separate pay item), and all other work required to replace the existing system. The MALS system shall be accepted as a functional system, in place, tested and ready for operation to the satisfaction and acceptance by the FAA, Airport and Engineer. Threshold infrastructure pay item is inclusive of stub-out conduits for future provisions.

127-4.3 MALS Inset Light Fixtures will be measured per each. This item shall include all items as described in the contract documents (this specification and all plan sheets). This item includes all spare parts, labor, equipment, materials, tools, site preparation, assembly, and installation of materials.

127-4.4 MALS Rebuild Raceway Installation will be measured per lump sum. This item includes but not limited to, duct bank (type and size as shown on plans – **concrete encased**), counterpoise, grounding, EES system, warning tape, excavation, and backfill, terminations, couplings, end bells, conduit plugs, conduit transitions, conduit connections, mandrelling, pulling lines, plugging of conduits, duct markers, connections to existing structures, and other necessary duct bank / raceway installation effort for acceptance by FAA, Airport and Engineer. Cost excludes structures (Refer to specification L-126).

127-4.5 MALS Rebuild Electrical Cable Installation will be measured per lump sum. This item includes but not limited to, cables (type and size as shown on plans), taps, splices, labels, equipment panel connections, testing, and all other incidentals for a functional system.

127-4.6 MALS Rebuild Recommissioning will be measured per lump sum. This item includes but not limited to, performing and documenting all test per FAA supplied paperwork, supporting flight check, and other startup and commissioning activities. The contractor shall be responsible for costs of re-checking or additional flight checks of unsatisfactory installations.

127-4.7 MALS Rebuild Recommissioning RDR Sign Removal will be measured per each. This item provides for the removal of RDR sign of the type noted and associated equipment and cabling as identified in the drawings and specifications. Work for this item will be at the direction of the FAA in the event of a failed FAA PAPI flight check.

127-4.8 MALS Rebuild Recommissioning Wind Cone Relocation will be measured per each. This item provides for the relocation of the existing wind cone of the type noted and associated equipment and cabling as identified in the drawings and specifications. This item includes installation of the new concrete foundation with L-867D base can with steel cover, hub, gasket, bolting hardware, wind cone ID

tag and marker, ground cable, ground rod with test results, grout, reinforcement bars all incidentals required to provide a complete and operational system. Work for this item will be at the direction of the FAA in the event of a failed FAA PAPI flight check.

BASIS OF PAYMENT

127-5.1 Payment will be made at the Contract unit price for the complete installation of each system. Payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials and for all labor, supervision, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item L-127-5.1	MALS 09L Threshold Infrastructure	Per Lump Sum
Item L-127-5.2	MALS 27R Threshold Infrastructure	Per Lump Sum
Item L-127-5.3	MALS Inset Threshold Light Fixture (FA-23000/5-Green)	Per Each
Item L-127-5.4	MALS 27R Rebuild Raceway Installation	Per Lump Sum
Item L-127-5.5	MALS 27R Rebuild Cable Installation	Per Lump Sum
Item L-127-5.6	MALS 27R Rebuild Recommissioning	Per Lump Sum
Item L-127-5.7	MALS 27R Rebuild Recommissioning – RDR Sign Removal	Per Each
Item L-127-5.8	MALS 27R Rebuild Recommissioning – Wind Cone Relocation	Per Each

REFERENCES

127-6.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

FAA / Department of Transpiration Standards

FAA-STD-019(f)	Lightning and Surge Protection, Grounding, Bonding, And Shielding Requirements for Facilities and Electronic Equipment
FAA-STD-1217(H),	Electrical Work, Premises Wiring
FAA-C-1391(e),	Installation, Termination, Splicing, And Transient/Surge Protection of

Underground Electrical Distribution System Power Cables

FAA-G-2100H Electronic Equipment, General Requirements

END OF ITEM L-127