

**ADDENDUM NUMBER TWO  
TO  
BIDDING AND CONTRACT DOCUMENTS  
FOR  
RUNWAY 5R-23L REHABILITATION PROJECT - CONSTRUCTION PHASE 1  
PIEDMONT TRIAD INTERNATIONAL AIRPORT  
GREENSBORO, NORTH CAROLINA**

**TO: All Prospective Bidders**

**Date: Wednesday, November 29, 2017**

---

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents as noted below. Acknowledge receipt of this addendum in the space provided on the Bid Form (B-4) AND by acknowledging receipt of this Addendum by returning the attached Acknowledgement Form (Attachment A) via fax, email or mail. FAILURE TO DO SO MAY SUBJECT A BIDDER TO DISQUALIFICATION.

**SPECIFICATIONS AND CONTRACT DOCUMENTS**

- **BID FORMS**
  - Delete Pages B-3a thru B-3c of the BID SCHEDULE, and replace with the attached Pages B-3a thru B-3c.
  
- **TECHNICAL SPECIFICATIONS**
  - Delete Item D-705 and replace with the attached Item D-705.
  - Add the following pay item to Item L-110: Item L-110-5.2-8 Concrete Encased Electrical Ductbank, 1-Way, 2" PVC Conduit, Schedule 40 – per linear foot
  
- **DRAWINGS**
  - Delete Sheet G-002 and replace with the attached sheet G-002.
  - Delete sheets C-401 through C-403 and C-421 and replace with the attached sheets C-401 through C-403 and C-421.
  - Drawing Sheet N-101 - Delete reference to Note 8 within the Legend.
  - All "E" series Drawings: Contractor shall include a 2" conduit connection from light base hub to the underdrain for drainage of the light fixture base can. Conduit connection to underdrain shall be every fifth light base for new runway centerline light and touchdown zone light fixtures.

## **PLANHOLDER QUESTIONS**

1. L-125 Reinstall Existing L-850A Runway Centerline Lights and isolation. The bid schedules have a total of (95) L-850A's being reinstalled. On drawing sheet E-205 you are missing fixture 5RC1-100 on drawing sheet E-234. Please confirm total quantity should be (96) and will you be sending an updated bid schedule?
  - ***5RC1-100 is the first item on the left table on E-234. Confirmed total quantity is 95 fixtures.***
2. On sheet E-231 The Existing Sign Legend for Signs 2002, 2079, 2085A, and 2089 is the same, are we to provide all new panels as show for Side 1 and Side 2?
  - ***Sign panels are not being replaced. Signs are to be relocated per the denoted action codes.***
3. For the relocate existing Airfield Guidance Sign on New Base, Action note 2 on Sheet E-231 are we to provide new sign couplings, floor flanges, cable clamps and extension cords per Detail A and Detail B on Drawing E-255?
  - ***Yes, provide new sign couplings, floor flanges, cable clamps, and extension cords for the bid item.***
4. I have another question regarding the light base details on sheets E-251, E-252 and E-253. The details show a total of five (5) Flex Grommet openings, (2) openings Stacked at Zero Degrees, (2) openings Stacked at 180 Degrees and (1) opening at 90 Degrees. Spec Section 125-2.3 Light Bases states four 2" Threaded Hubs around the perimeter of the base 90 degrees apart for conduit stub outs.

Do we quote hub or flex grommet openings?

Do we quote the bases openings per the details or per the spec?

- ***Reference drawing details for proper references. Quote flex grommet openings and base openings per the details within the contract drawings.***
5. Base Bid Item No. 59, New L-868B Light Base in Pavement. I don't see a symbol on the Airfield Legend and Abbreviations Sheet E-002. Please confirm what drawing detail is required for installation for the (10) L868B Bases located on sheet E-205?
    - ***Refer to Drawing E-264 for the installation detail.***
  6. Base Bid Item No. 62 RWY 23L ALSF-2 Threshold Bar: Sheet N-153 and N-155 show New Heavy Base Plate Type A, Jaquith P/n Vega 2020 mounting on an L-867B Base. The Type A Base Plate has a 14.25 Bolt Circle and will not work with

the L-867B Base 10.25 Bolt Circle. Drawing AP20202 Type A Base Plate attached. Typically, the Type A Base Plate mounts on an LB-3 Base 20" Deep (see attachment). The LB-3 has the same OD 17.375" and Bolt Circle 14.25 as the Type A Base Plate. Please review and confirm quote all L-867B material or Type A with an LB-3 Base for the threshold lights? Attached AC61X drawing for LB-3 Base Can

Station 1 on Sheet N-156 also needs reviewed on using L-867B or supply LB-3 & LB-1. Attached AC6120X drawing for LB-1.

- ***Provide LB-3 with heavy cover plate. Delete reference to L-867B light base.***
7. You can mount the AP2020 on an L-867D. However, why do you want a flange ring with pavement dam as shown on sheet N-153? Keep in mind an L-867B or L-867D Base can is not load bearing.
- ***Refer to the response to questions #6 above.***
8. Boxes D10 & D11 what are the depths of these structures?
- ***D10 is approximately 9.8 feet from the top of grate to the bottom of the structure.***
  - ***D11 is approximately 10.6 feet from the top of grate to the bottom of the structure.***
9. What is the min width of the asphalt patching? Does the re compaction of the stone base need to meet P-209 (question was asked in Add 2 of the last bid)
- ***The minimum width shall be determined by the Contractor with the Engineer. It is dependent upon the extent of the distress to be patched as well as the construction method. Recompaction of the stone base shall be to non-movement.***
10. P-401 – Will the contractor have to profile each lot within 24 hours of placement or can an entire pass be done before opening the section (this was a question in Addendum 5 of the last bid about the profilegraph testing not being required testing for smoothness between lots)
- ***Profilegraph testing per Item P-401 will not be required for testing of smoothness between lots. Profilegraph testing will only be required for the final runway surface following completion of all paving. However, the bidders may want to consider some interval of intermediate testing to ensure that machines and methods are in fact producing the required result so that if there are significant areas that will require corrective actions the machines and/or methods can be***

***adjusted accordingly. Accordingly, Paragraph 401-8.1d will not apply. The final pavement shall meet the profilograph requirements.***

11. Please see attached from Penhall on where they left the slurry from the grooving on airport property on previous projects. Lastly when we grooved the runway the new runway in 2009. We dumped the slurry in the silt basin (that we built) in the waste site beside our asphalt plant with permission from PTIA. Question can this be done again?

- ***The slurry waste from the grooving operations shall be disposed of off airport property as stated in the P-621 specification.***
- ***As stated in paragraph 621-2.6 the grooving machine is required to have a “self-contained and integrated continuous slurry vacuum system as the primary method for removing waste slurry.”***

12. For the underdrain that is to be installed in the existing shoulder 18” in width. Is all the backfill (the P-209 and P-401 asphalt) above the fabric and 57 in the underdrain included in the LF price.

- ***Yes. See above changes to D-705 to clarify. The P-401 up to the milled surface is included in the LF price of the underdrain. The additional asphalt included in the overlay of the entire shoulder is included in the P-401 pay item.***

13. For the underdrain, the plans call for the backfill above the 57 stone and fabric to be P-209 and P-401 in an 18” trench. There is no way to get this compacted per the specifications in a trench this small. Can an alternate material be used such as Concrete?

- ***Pneumatic tampers do exist that would allow for compaction in trenches 18 inches wide.***

14. The details and notes on plan page E-254 appear to have some inconsistencies with the light base installation methods. Will the contractor be permitted to submit an alternate installation method for approval?

- ***An alternate installation detail method may be submitted to the Engineer for review and approval.***

15. Spec section L-125 prohibits the use of grommet cans. Plan detail pages E-251 to E -254 call for grommet cans. Will grommet cans be suitable for any applications on this project?

- ***Grommet cans will be suitable for any applications for this project.***

16. Spec section L108 has no remedy for failed EGR testing. Spec section L111 3.2 requires the contractor to augment ground rods until the required EGR is met. How

will the contractor be paid for additional ground rods required to meet EGR based on site conditions?

- ***Contractor shall drive up to one (1) additional ground rod to remedy failed EGR test values.***

17. We understand that the contractor must provide support personnel for the testing of the adjusted PAPI's; however, please clarify if the contractor responsible for paying for any flight check related to the PAPI adjustment.

- ***The flight check will be paid for under a reimbursable agreement between the FAA and the Owner. The contractor is not responsible for paying for any flight check related to the PAPI adjustment.***

18. We understand that the contractor must provide support personnel for the testing of the adjusted ALSF; however, please clarify if the contractor responsible for paying for any flight check related to the ALSF adjustment.

- ***The flight check will be paid for under a reimbursable agreement between the FAA and the Owner. The contractor is not responsible for paying for any flight check related to the ALSF adjustment.***

19. We understand that the contractor must provide support for any ALCMS modifications that are done as part of this project; however, please clarify if the contractor is responsible for paying for any of the ALCMS modifications.

- ***As stated in Notes 1 and 2 under "ALCMS WORK" on Sheet E-001, the Contractor is responsible for providing personnel support for the ALCMS modifications. The Contractor is not responsible for paying for any of the ALCMS modifications.***

20. Given the timing of the project and longer lead times related to some airfield lighting material, will the electrical contractor be able to purchase material after the "Administrative Notice to Proceed" is issued in the winter of 2018? If not, consideration will need to be given to the "Construction Notice to Proceed" in the spring of 2018 based on electrical material lead times at that time.

- ***Yes, the administrative notice to proceed is time for the contractor to get submittals approved and items ordered. Ensure materials are approved prior to purchasing.***

21. Please explain the reasoning for breaking out the electrical work into Phase 1C and Phase 2B. Given the timeframe of the overall project the electrical contractor will need to work in all available days of each overall phase. Will the electrical contractor be limited to completing the electrical work in those specific phases only or can the work be done in the overall Phase 1 & Phase 2 as the work becomes available?

- ***The electrical work is broken out between Phases I and II because of the runway closure. During Phase I, the runway is open and the contractor only has access to the last 2,000 feet of the runway. During Phase II, the entire runway will be closed and the contractor will have access to all work areas. The electrical contractor is free to work in Phase I at any time during the first 145 days of the project (assuming he is coordinating with the other construction activities) but can only work in Phase II when the runway is closed.***

22. The existing conduit configurations on the E1XX series (demolition) plan pages and the new conduit configuration on the E2XX series (installation) plan pages are different. Will the contractor be required to remove all existing conduit as shown under the existing configuration and back fill, or remove only the conduit encountered to reinstall the centerline, TDZ and Edge lights?

- ***Bid conduit removal based on the information shown on the contract drawings.***

23. Is the existing conduit shown to be removed on the E1XX series of the demolition plan pages PVC or GRSC for the Centerline, TDZ and Edge Lights?

- ***Both conduit types may be encountered within the project area. Assume worst case for bidding purposes.***

**END OF ADDENDUM NUMBER TWO**

**ATTACHMENT A  
ACKNOWLEDGEMENT FORM**

Contract Supervisor,

I, (we) am/are returning this acknowledgement to your office as a receipt to the following Addendum:

**PIEDMONT TRIAD INTERNATIONAL AIRPORT**

RUNWAY 5R-23L REHABILITATION PROJECT, CONSTRUCTION PHASE 1

---

ADDENDUM NO. 2

---

**Company Name**

BY: \_\_\_\_\_  
Recipient's Signature

Date: \_\_\_\_\_

This acknowledgement must be returned to:

**Heather Leopardi**  
Michael Baker Engineering, Inc.  
200 Centreport Drive, Suite 350  
Greensboro, NC 27409  
Phone: (412) 269-6407  
Fax: (412) 375-3990  
[hleopardi@mbakerintl.com](mailto:hleopardi@mbakerintl.com)

**PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 RUNWAY 5R-23L REHABILITATION PROJECT, CONSTRUCTION PHASE 1  
 BID SCHEDULE - BASE BID - ADDENDUM 2**

ITEM NO.	SPEC NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED TOTAL
1	01000	MOBILIZATION	1	LS	\$	\$
2	P-101	COLD MILLING	95,600	SY	\$	\$
3	P-101	ISOLATED FULL DEPTH PATCHING	1,000	SY	\$	\$
4	P-101	ASPHALTIC CONCRETE CRACK SEALING	25,000	LF	\$	\$
5	P-101	ASPHALTIC CONCRETE CRACK FILLING WITH SAND MIXTURE	5,000	LF	\$	\$
6	P-152	UNCLASSIFIED EXCAVATION	3,900	CY	\$	\$
7	P-156	CONSTRUCTION ENTRANCE	1	EA	\$	\$
8	P-156	SOD INLET PROTECTION	13	EA	\$	\$
9	P-156	BLOCK AND GRAVEL INLET PROTECTION	10	EA	\$	\$
10	P-156	PIPE INLET PROTECTION	2	EA	\$	\$
11	P-156	INSTALLATION AND REMOVAL OF SILT FENCE	2,250	LF	\$	\$
12	P-401	BITUMINOUS SURFACE COURSE	24,000	TONS	\$	\$
13	P-401	BITUMINOUS LEVELING COARSE	9,000	TONS	\$	\$
14	P-603	BITUMINOUS TACK COAT	19,200	GAL	\$	\$
15	P-620	WATERBORNE, TYPE III MARKING, WHITE	145,000	SF	\$	\$
16	P-620	WATERBORNE, TYPE III MARKING, YELLOW	40,000	SF	\$	\$
17	P-620	WATERBORNE, TYPE III MARKING, BLACK	55,000	SF	\$	\$
18	P-620	WATERBORNE, TYPE II MARKING, TEMPORARY	80,000	SF	\$	\$
19	P-620	REFLECTIVE MEDIA, TYPE III	22,000	LB	\$	\$
20	P-620	MARKING REMOVAL	5,000	SF	\$	\$
21	P-620	EXISTING MARKING CORRECTION	1	LS	\$	\$
22	P-621	GROOVING	59,300	SY	\$	\$
23	D-705	UNDERDRAIN PIPE, PERFORATED, 6-INCH DIAMETER INSTALLED IN TURF	400	LF	\$	\$
24	D-705	UNDERDRAIN PIPE, PERFORATED, 6-INCH DIAMETER INSTALLED IN PAVEMENT	6,700	LF	\$	\$
25	D-705	UNDERDRAIN OUTLET PIPE, NON-PERFORATED, 6-INCH DIAMETER	2,200	LF	\$	\$
26	D-705	STORM PIPE REMOVAL	180	LF	\$	\$
27	D-751	NEW AIRCRAFT RATED DRAINAGE STRUCTURE	4	EA	\$	\$
28	D-751	MODIFY EXISTING STRUCTURE WITH COVER SLAB	2	EA	\$	\$
29	D-751	UNDERDRAIN CLEANOUT	34	EA	\$	\$



**PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 RUNWAY 5R-23L REHABILITATION PROJECT, CONSTRUCTION PHASE 1  
 BID SCHEDULE - BASE BID - ADDENDUM 2**

ITEM NO.	SPEC NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED TOTAL
30	D-751	CONCRETE ENDWALL FOR UNDERDRAIN	1	EA	\$	\$
31	D-751	REMOVE EXISTING DRAINAGE STRUCTURE	4	EA	\$	\$
32	T-901	PERMANENT SEEDING	6	ACRE	\$	\$
33	T-905	TOPSOILING	2,400	CY	\$	\$
34	T-908	MULCHING	6	ACRE	\$	\$
35	L-104	TEMPORARY AIRFIELD LIGHTING JUMPERS AS INDICATED ON THE DRAWINGS, COMPLETE	1	LS	\$	\$
36	L-105	REMOVE EXISTING ELEVATED LIGHT FIXTURE AND BASE (DELIVER FIXTURE TO AIRPORT)	48	EA	\$	\$
37	L-105	REMOVE EXISTING ELEVATED LIGHT FIXTURE AND BASE (FIXTURE FOR REINSTALLTION)	10	EA	\$	\$
38	L-105	REMOVE EXISTING SEMIFLUSH RUNWAY EDGE LIGHT FIXTURE AND BASE (DELIVER FIXTURE TO AIRPORT)	2	EA	\$	\$
39	L-105	REMOVE EXISTING IN-PAVEMENT LIGHT FIXTURE AND BASE (FIXTURE FOR REINSTALLATION)	83	EA	\$	\$
40	L-105	REMOVE EXISTING IN-PAVEMENT LIGHT FIXTURE AND BASE	180	EA	\$	\$
41	L-105	REMOVE EXISTING JUNCTION BOX	70	EA	\$	\$
42	L-105	REMOVE EXISTING 1-WAY, 2-INCH DUCT, DIRECT BURIED, COMPLETE	7,600	LF	\$	\$
43	L-105	REMOVE EXISTING AIRFIELD LIGHTING CABLE IN CONDUIT OR DUCT	50,000	LF	\$	\$
44	L-108	1/C NO. 8 AWG, L-824, TYPE C, 5kV CABLE, INSTALLED IN DUCT BANK OR CONDUIT	150,000	LF	\$	\$
45	L-108	1/C NO. 6 AWG, 600V, BARE COUNTERPOISE WIRE INSTALLED IN TRENCH	28,000	LF	\$	\$
46	L-110	CONTROLLED LOW STRENGTH MATERIAL ENCASED ELECTRICAL DUCTBANK, 2-WAY, 2" PVC CONDUIT, SCHEDULE 40	6,550	LF	\$	\$
47	L-110	CONCRETE ENCASED ELECTRICAL DUCTBANK, 2-WAY, 2" PVC CONDUIT, SCHEDULE 40	13,000	LF	\$	\$
48	L-110	CONTROLLED LOW STRENGTH MATERIAL ENCASED ELECTRICAL DUCTBANK, 1-WAY, 2" PVC CONDUIT, SCHEDULE 40	460	LF	\$	\$
49	L-110	1-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	1,000	LF	\$	\$
50	L-110	2-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	1,900	LF	\$	\$
51	L-110	4-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	180	LF	\$	\$
52	L-110	5-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	210	LF	\$	\$
53	L-110	6-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	430	LF	\$	\$
54	L-110	CONCRETE ENCASED ELECTRICAL DUCTBANK, 1-WAY, 2" PVC CONDUIT, SCHEDULE 40	2,700	LF	\$	\$
55	L-115	CONCRETE ENCASED L-867B JUNCTION BOX WITH 3/4" THICK BLANK COVER	1	EA	\$	\$
56	L-115	4' x 4' x 4' AIRCRAFT RATED ELECTRICAL HANDHOLE	6	EA	\$	\$

**PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 RUNWAY 5R-23L REHABILITATION PROJECT, CONSTRUCTION PHASE 1  
 BID SCHEDULE - BASE BID - ADDENDUM 2**

ITEM NO.	SPEC NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED TOTAL
57	L-123	REMOVE, RELOCATE, AND REINSTALL GUIDANCE SIGN ON NEW BASE - 3 MODULE	4	EA	\$	\$
58	L-125	NEW L-850C RUNWAY SEMIFLUSH EDGE LIGHT ON NEW BASE	4	EA	\$	\$
59	L-125	NEW L-862/L-862E RUNWAY ELEVATED EDGE/END LIGHT ON NEW BASE	46	EA	\$	\$
60	L-125	NEW L-850B(L) INPAVEMENT RUNWAY TOUCHDOWN ZONE LIGHT ON NEW BASE	180	EA	\$	\$
61	L-125	NEW L-868B LIGHT BASE IN PAVEMENT	10	EA	\$	\$
62	L-125	REINSTALL EXISTING L-850A RUNWAY CENTERLINE LIGHT AND ISOLATION	83	EA	\$	\$
63	L-125	REINSTALL EXISTING TAXIWAY EDGE LIGHT AND ISOLATION TRANSFORMER ON NEW BASE	10	EA	\$	\$
64	L-125	RUNWAY 23L ALSF-2 THRESHOLD BAR	1	LS	\$	\$
65	L-125	RUNWAY 23L ALSF-2 STATION 1 - REMOVE AND REINSTALL LIGHTS	1	EA	\$	\$
66	L-125	RUNWAY 23L ALSF-2 STATION 5 - REMOVE AND REINSTALL LIGHTS	1	EA	\$	\$
67	L-125	RUNWAY 23L ALSF-2 STATIONS 2, 3 and 4 - REMOVE, ADJUST AND REINSTALL LIGHTS	1	LS	\$	\$
68	L-125	ADJUSTMENT OF EXISTING L-880 PAPI UNITS ON EXISTING FOUNDATIONS (RUNWAY 23L)	1	EA	\$	\$
69	MC-001	CONCRETE MONUMENT	1	EA	\$	\$
70	MC-002	LIGHTING AND MARKING OF TEMPORARY RUNWAY 23L THRESHOLD	1	LS	\$	\$

**Total Bid Schedule Base Bid \$ \_\_\_\_\_**

**ITEM D-705****PIPE UNDERDRAINS FOR AIRPORTS****DESCRIPTION**

**705-1.1** This item shall consist of the construction of pipe drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

**MATERIALS**

**705-2.1 General.** Materials shall meet the requirements shown on the plans and specified below.

**705-2.2 Pipe.** The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements.

AASHTO M252            Standard Specification for Corrugated Polyethylene Drainage Pipe, Type S or SP with Class 2 perforations as indicated on the plans.

**705-2.3 Joint mortar.** Pipe joint mortar shall consist of one part by volume of Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

**705-2.4 Elastomeric seals.** Elastomeric seals shall conform to the requirements of ASTM F477.

**705-2.5 Porous backfill.** Porous backfill shall be free of clay, humus, or other objectionable matter, and shall conform to the gradation in Table 1 when tested in accordance with ASTM C136.

**Table 1. Gradation of Porous Backfill**

<b>Sieve Designation (square openings)</b>	<b>Percentage by Weight Passing Sieves</b>
1-1/2 inch	100
1 inch	90 - 100
3/8 inch	25 - 60
No. 4	5-40
No. 8	0-20

**705-2.6. Granular material.** Granular material used for backfilling shall conform to the requirements of ASTM D2321 for Class IA, IB, or II materials, or shall meet the requirements of AASHTO Standard Specification for Highway Bridges Section 30.

**705-2.7. Filter fabric.** The filter fabric shall conform to the requirements of AASHTO M288 Class 2.

**Table 2**

Fabric Property	Test Method	Test Requirement
Grab Tensile Strength, lbs	ASTM D4632	125 min
Grab Tensile Elongation %	ASTM D4632	50 min
Burst Strength, psi	ASTM D3785	125 min
Trapezoid Tear Strength, lbs	ASTM D4533	55 min
Puncture Strength, lbs	ASTM D4833	40 min
Abrasion, lbs	ASTM D4886	15 max loss
Equivalent Opening Size	ASTM D4751	70-100
Permittivity $\text{sec}^{-1}$	ASTM D4491	0.80
Accelerated Weathering (UV Stability) (Strength Retained - %)	ASTM D4355 *(500 hrs exposure)	70

**705-2.8. Controlled low-strength material (CLSM).** CLSM is not allowed.

**705-2.9 Aggregate Subbase.** Aggregate subbase for underdrain in pavement shall be in accordance with Item P-209.

**705-2.10 Asphalt.** Asphalt for underdrain in pavement shall be in accordance with Item P-401.

## CONSTRUCTION METHODS

**705-3.1 Equipment.** All equipment required for the construction of pipe underdrains shall be on the project, in good working condition, and approved by the Engineer before construction is permitted to start.

**705-3.2 Excavation.** The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but shall not be less than the external diameter of the pipe plus 6 inches on each side of the pipe. The trench walls shall be approximately vertical.

Where rock, hardpan, or other unyielding material is encountered, it shall be removed below the foundation grade for a depth of at least 4 inches. The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 6 inches in uncompacted depth to form a uniform but yielding foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full trench width. The Engineer shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

Excavated material not required or acceptable for backfill shall be disposed of by the Contractor as directed by the Engineer. The excavation shall not be carried below the required depth; if this occurs, the trench shall be backfilled at the Contractor's expense with material approved by the Engineer and compacted to the density of the surrounding material.

The pipe bed shall be shaped so at least the lower quarter of the pipe shall be in continuous contact with the bottom of the trench. Spaces for the pipe bell shall be excavated to allow the pipe barrel to support the entire weight of the pipe.

The Contractor shall do trench bracing, sheathing, or shoring necessary to perform and protect the excavation as required for safety and conformance to Federal, state and local laws. Unless otherwise provided, the bracing, sheathing, or shoring shall be removed by the Contractor after the backfill has reached at least 12 inches over the top of the pipe. The sheathing or shoring shall be pulled as the granular backfill is placed and compacted to avoid any unfilled spaces between the trench wall and the backfill material. The cost of bracing, sheathing, or shoring, and the removal of same, shall be included in the unit price bid per foot for the pipe.

### **705-3.3 Laying and installing pipe.**

**a. PVC or polyethylene pipe.** PVC or polyethylene pipe shall be installed in accordance with the requirements of ASTM D2321 or AASHTO Standard Specification for Highway Bridges Section 30. Perforations shall meet the requirements of AASHTO M252 or AASHTO M294 Class 2, unless otherwise indicated on the plans. The pipe shall be laid accurately to line and grade.

**b. All types of pipe.** The upgrade end of pipelines, not terminating in a structure, shall be plugged or capped as approved by the Engineer.

Unless otherwise shown on the plans, a 4 inch bed of granular backfill material shall be spread in the bottom of the trench throughout the entire length under all perforated pipe underdrains.

Pipe outlets for the underdrains shall be constructed when required or shown on the plans. The pipe shall be laid with tight-fitting joints. Porous backfill is not required around or over pipe outlets for underdrains. All connections to other drainage pipes or structures shall be made as required and in a satisfactory manner. If connections are not made to other pipes or structures, the outlets shall be protected and constructed as shown on the plans.

**e. Filter fabric.** The filter fabric shall be installed in accordance with the manufacturer's recommendations, or in accordance with AASHTO M288 Appendix, unless otherwise shown on the plans.

**705-3.4 Mortar.** The mortar shall be of the desired consistency for caulking and filling the joints of the pipe and for making connections to other pipes or to structures. Mortar that is not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted.

**705-3.5 Backfilling.**

**a. Earth.** All trenches and excavations shall be backfilled soon after the pipes are installed, unless additional protection of the pipe is directed. The backfill material shall be select material from excavation or borrow and shall be approved by the Engineer. The select material shall be placed on each side of the pipe out to a distance of the nominal pipe diameter and one foot over the top of the pipe and shall be readily compacted. It shall not contain stones 3 inches or larger in size, frozen lumps, chunks of highly plastic clay, or any other material that is objectionable to the Engineer. The material shall be moistened or dried, as required to aid compaction. Placement of the backfill shall not cause displacement of the pipe. Thorough compaction under the haunches and along the sides to the top of the pipe shall be obtained.

The backfill shall be placed in loose layers not exceeding 6 inches in depth under and around the pipe, and not exceeding 8 inches over the pipe. Successive layers shall be added and thoroughly compacted by hand and pneumatic tampers, approved by the Engineer, until the trench is completely filled and brought to the planned elevation. Backfilling shall be done to avoid damaging top or side pressures on the pipe.

In embankments and other unpaved areas, the backfill shall be compacted per Item P-152 to the density required for embankments in unpaved areas. Under paved areas, the subgrade and any backfill shall be compacted per Item P-152 to the density required for embankments for paved areas.

**b. Granular backfill.** When granular backfill is required, placement in the trench and about the pipe shall be as shown on the plans. The granular backfill shall not contain an excessive amount of foreign matter, nor shall soil from the sides of the trench or from the soil excavated from the trench be allowed to filter into the granular backfill. When required by the Engineer, a template shall be used to properly place and separate the two sizes of backfill. The backfill shall be placed in loose layers not exceeding 6 inches in depth. The granular backfill shall be compacted by hand and pneumatic tampers to the requirements as given for embankment. Backfilling shall be done to avoid damaging top or side pressure on the pipe. The granular backfill shall extend to the elevation of the trench or as shown on the plans.

When perforated pipe is specified, granular backfill material shall be placed along the full length of the pipe. The position of the granular material shall be as shown on the plans.

If porous backfill is placed in paved or adjacent to paved areas before grading or subgrade operations is completed, the backfill material shall be placed immediately after laying the pipe. The depth of the granular backfill shall be not less than 12 inches, measured from the top of the underdrain. During subsequent construction operations, a minimum depth of 12 inches of backfill shall be maintained over the underdrains. When the underdrains are to be completed, any unsuitable material shall be removed exposing the porous backfill. Porous backfill containing objectionable material shall be removed and replaced with suitable material. The cost of removing and replacing any unsuitable material shall be at the Contractor's expense.

If a granular subbase blanket course is used which extends several feet beyond the edge of paving to the outside edge of the underdrain trench, the granular backfill material over the underdrains shall be placed in the trench up to an elevation of 2 inches above the bottom surface of the granular subbase blanket course. Immediately prior to the placing of the granular subbase blanket course, the Contractor shall blade this excess trench backfill from the top of the trench onto the adjacent subgrade where it can be incorporated into the granular subbase blanket course. Any unsuitable material that remains over the underdrain trench shall be removed and replaced. The subbase material shall be placed to provide clean contact between the subbase material and the underdrain granular backfill material for the full width of the underdrain trench.

**c. Controlled low-strength material (CLSM).** CLSM is not allowed.

**d. Deflection testing.** The Engineer may at any time, notwithstanding previous material acceptance, reject or require re-installation of pipe that exceeds 5% deflection when measured in accordance with ASTM D2321, including Appendices.

**705-3.6 Connections.** When the plans call for connections to existing or proposed pipe or structures, these connections shall be watertight and made to obtain a smooth uniform flow line throughout the drainage system.

**705-3.7 Cleaning and restoration of site.** After the backfill is completed, the Contractor shall dispose of all surplus material, soil, and rubbish from the site. Surplus soil may be deposited in embankments, shoulders, or as directed by the Engineer. Except for paved areas of the airport, the Contractor shall restore all disturbed areas to their original condition.

**705-3.8 Storm Pipe Removal.** The storm pipe removal shall end at the limits shown on the plans. The Contractor is responsible for maintaining positive drainage following the removal. The resulting void shall be backfilled with suitable material and compacted to the final subgrade in accordance with Item P-152.

All aggregate, pipe, and filter fabric/geotextile removed shall be disposed of off airport property by the Contractor.

#### **METHOD OF MEASUREMENT**

**705-4.1** The length of pipe shall be the number of linear feet of pipe underdrains in place, completed, and approved; measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. The several classes, types, and sizes shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipeline being measured.

**705-4.2** The quantity of Storm Pipe Removal shall be measured on the basis of the number of linear feet removed and disposed of. The number of linear feet shall be measured from the outside face of the structure or termination point on each end of the pipe and along the pipe alignment. There will be no separate measurement made for grouting or otherwise plugging holes in the structures that are to remain in place. There will be no separate measurement made for placing or compacting the backfill material.

#### **BASIS OF PAYMENT**

**705-5.1** Payment will be made at the contract unit price per linear foot for pipe underdrains of the type, class, and size designated. These prices shall be full compensation for furnishing all materials and for all preparation, excavation (including undercuts), backfill (including aggregate subbase and asphalt to the milled surface for underdrain in pavement), geotextile fabric, shoring, restoration and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

**705-5.2** Payment for Storm Pipe Removal shall be made at the contract unit price per linear foot removed, and accepted by the Engineer. Payment for removal shall be made at the contract unit price regardless of the sizes or type of pipes removed. This price shall include removal of all appurtenances associated with removal of each of these items. This price shall include full compensation for furnishing all labor, equipment, tools, excavation, hauling, disposal, backfill, restoration (i.e. topsoil, seed, and mulch) and incidentals necessary to complete this item.



Payment will be made under:

- Item D-705-5.1 Underdrain Pipe, Perforated, 6-inch Diameter, Installed in Turf – per linear foot
- Item D-705-5.2 Underdrain Pipe, Perforated, 6-inch Diameter, Installed in Pavement – per linear foot
- Item D-705-5.3 Underdrain Outlet Pipe, Non-perforated, 6-inch Diameter – per linear foot
- Item D-705-5.4 Storm Pipe Removal – per linear foot

#### **MATERIAL REQUIREMENTS**

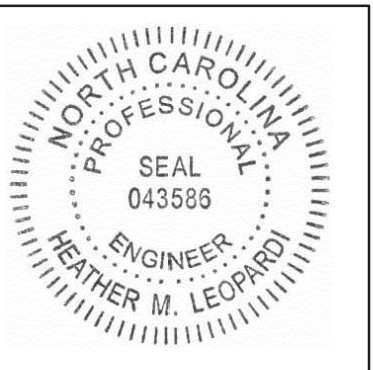
- ASTM C136 Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
- ASTM C144 Standard Specification for Aggregate for Masonry Mortar
- ASTM C150 Standard Specification for Portland Cement
- ASTM D2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- ASTM F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- ASTM F758 Standard Specification for Smooth Wall Poly(Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage
- ASTM F794 Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter
- ASTM F949 Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
- AASHTO M252 Standard Specification for Corrugated Polyethylene Drainage Pipe
- AASHTO M288 Standard Specification for Geotextile Specification for Highway Applications
- AASHTO M304 Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter
- AASHTO Standard Specifications for Highway Bridges

**END OF ITEM D-705**

BASE BID				
ITEM	ITEM DESCRIPTION	QUANTITY	UNIT	AS-BUILT
	MOBILIZATION	1	LS	
P-101-6.1	COLD MILLING	95,600	SY	
P-101-6.2	ISOLATED FULL DEPTH PATCHING	1,000	SY	
P-101-6.3	ASPHALTIC CONCRETE CRACK SEALING	25,000	LF	
P-101-6.4	ASPHALTIC CONCRETE CRACK FILLING WITH SAND MIXTURE	5,000	LF	
P-152-4.1	UNCLASSIFIED EXCAVATION	3,900	CY	
P-156-5.1	CONSTRUCTION ENTRANCE	1	EA	
P-156-5.2	SOD INLET PROTECTION	13	EA	
P-156-5.3	BLOCK AND GRAVEL INLET PROTECTION	10	EA	
P-156-5.4	PIPE INLET PROTECTION	2	EA	
P-156-5.5	INSTALLATION AND REMOVAL OF SILT FENCE	2,250	LF	
P-401-8.1	BITUMINOUS SURFACE COURSE	24,000	TONS	
P-401-8.2	BITUMINOUS LEVELING COARSE	9,000	TONS	
P-603-5.1	BITUMINOUS TACK COAT	19,200	GAL	
P-620-5.1	WATERBORNE, TYPE III MARKING, WHITE	145,000	SF	
P-620-5.2	WATERBORNE, TYPE III MARKING, YELLOW	40,000	SF	
P-620-5.3	WATERBORNE, TYPE III MARKING, BLACK	55,000	SF	
P-620-5.4	WATERBORNE, TYPE II MARKING, TEMPORARY	80,000	SF	
P-620-5.5	REFLECTIVE MEDIA, TYPE III	22,000	LB	
P-620-5.6	MARKING REMOVAL	5,000	SF	
P-620-5.7	EXISTING MARKING CORRECTION	1	LS	
P-621-5.1	GROOVING	59,300	SY	
D-705-5.1	UNDERDRAIN PIPE, PERFORATED, 6-INCH DIAMETER INSTALLED IN TURF	400	LF	
D-705-5.2	UNDERDRAIN PIPE, PERFORATED, 6-INCH DIAMETER INSTALLED IN PAVEMENT	6,700	LF	
D-705-5.3	UNDERDRAIN OUTLET PIPE, NON-PERFORATED, 6-INCH DIAMETER	2,200	LF	
D-705-5.4	STORM PIPE REMOVAL	180	LF	
D-751-5.1	NEW AIRCRAFT RATED DRAINAGE STRUCTURE	4	EA	
	MODIFY EXISTING STRUCTURE WITH COVER SLAB	2	EA	
D-751-5.3	UNDERDRAIN CLEANOUT	34	EA	
D-751-5.4	CONCRETE ENDWALL FOR UNDERDRAIN	1	EA	
D-751-5.5	REMOVE EXISTING DRAINAGE STRUCTURE	4	EA	
T-901-5.1	PERMANENT SEEDING	6	ACRE	
T-905-5.1	TOPSOILING	2,400	CY	
T-908-5.1	MULCHING	6	ACRE	
L-104-6.1	TEMPORARY AIRFIELD LIGHTING JUMPERS AS INDICATED ON THE DRAWINGS, COMPLETE	1	LS	
L-105-7.1	REMOVE EXISTING ELEVATED LIGHT FIXTURE AND BASE (DELIVER FIXTURE TO AIRPORT)	48	EA	
L-105-7.2	REMOVE EXISTING ELEVATED LIGHT FIXTURE AND BASE (FIXTURE FOR REINSTALLTION)	10	EA	
L-105-7.3	REMOVE EXISTING SEMIFLUSH RUNWAY EDGE LIGHT FIXTURE AND BASE (DELIVER FIXTURE TO AIRPORT)	2	EA	

BASE BID				
ITEM	ITEM DESCRIPTION	QUANTITY	UNIT	AS-BUILT
L-105-7.4	REMOVE EXISTING IN-PAVEMENT LIGHT FIXTURE AND BASE (FIXTURE FOR REINSTALLATION)	83	EA	
L-105-7.5	REMOVE EXISTING IN-PAVEMENT LIGHT FIXTURE AND BASE	180	EA	
L-105-7.6	REMOVE EXISTING JUNCTION BOX	70	EA	
L-105-7.7	REMOVE EXISTING 1-WAY, 2-INCH DUCT, DIRECT BURIED, COMPLETE	7,600	LF	
L-105-7.8	REMOVE EXISTING AIRFIELD LIGHTING CABLE IN CONDUIT OR DUCT	50,000	LF	
L-108-5.1	1/C NO. 8 AWG, L-824, TYPE C, 5KV CABLE, INSTALLED IN DUCT BANK OR CONDUIT	150,000	LF	
L-108-5.2	1/C NO. 6 AWG, 600V, BARE COUNTERPOISE WIRE INSTALLED IN TRENCH	28,000	LF	
L-110-5.1	CONTROLLED LOW STRENGTH MATERIAL ENCASED ELECTRICAL DUCTBANK, 2-WAY, 2" PVC CONDUIT, SCHEDULE 40	6,550	LF	
L-110-5.2-1	CONCRETE ENCASED ELECTRICAL DUCTBANK, 2-WAY, 2" PVC CONDUIT, SCHEDULE 40	13,000	LF	
L-110-5.2-2	CONTROLLED LOW STRENGTH MATERIAL ENCASED ELECTRICAL DUCTBANK, 1-WAY, 2" PVC CONDUIT, SCHEDULE 40	460	LF	
L-110-5.2-3	1-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	1,000	LF	
L-110-5.2-4	2-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	1,900	LF	
L-110-5.2-5	4-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	180	LF	
L-110-5.2-6	5-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	210	LF	
L-110-5.2-7	6-WAY, 2" PVC CONDUIT, SCHEDULE 40, DIRECT BURY	430	LF	
L-110-5.2-8	CONCRETE ENCASED ELECTRICAL DUCTBANK, 1-WAY, 2" PVC CONDUIT, SCHEDULE 40	2,700	LF	
L-115-5.1	CONCRETE ENCASED L-867B JUNCTION BOX WITH 3/4" THICK BLANK COVER	1	EA	
L-115-5.2	4' x 4' x 4' AIRCRAFT RATED ELECTRICAL HANDHOLE	6	EA	
L-123-5.1	REMOVE, RELOCATE, AND REINSTALL GUIDANCE SIGN ON NEW BASE - 3 MODULE	4	EA	
L-125-5.1-1	NEW L-850C RUNWAY SEMIFLUSH EDGE LIGHT ON NEW BASE	4	EA	
L-125-5.1-2	NEW L-862/L-862E RUNWAY ELEVATED EDGE/END LIGHT ON NEW BASE	46	EA	
L-125-5.1-3	NEW L-850B(L) INPAVEMENT RUNWAY TOUCHDOWN ZONE LIGHT ON NEW BASE	180	EA	
L-125-5.1-4	NEW L-868B LIGHT BASE IN PAVEMENT	10	EA	
L-125-5.2-1	REINSTALL EXISTING L-850A RUNWAY CENTERLINE LIGHT AND ISOLATION TRANSFORMER ON NEW BASE	83	EA	
L-125-5.2-2	REINSTALL EXISTING TAXIWAY EDGE LIGHT AND ISOLATION TRANSFORMER ON NEW BASE	10	EA	
L-125-5.3-1	RUNWAY 23L ALSF-2 THRESHOLD BAR	1	LS	
L-125-5.3-2	RUNWAY 23L ALSF-2 STATION 1 - REMOVE AND REINSTALL LIGHTS	1	EA	
L-125-5.3-3	RUNWAY 23L ALSF-2 STATION 5 - REMOVE AND REINSTALL LIGHTS	1	EA	
L-125-5.3-4	RUNWAY 23L ALSF-2 STATIONS 2, 3 and 4 - REMOVE, ADJUST AND REINSTALL LIGHTS	1	LS	
L-125-5.4-1	ADJUSTMENT OF EXISTING L-880 PAPI UNITS ON EXISTING FOUNDATIONS (RUNWAY 23L)	1	EA	
MC-001-5.1	CONCRETE MONUMENT	1	EA	
MC-002-5.1	LIGHTING AND MARKING OF TEMPORARY RUNWAY 23L THRESHOLD	1	LS	

Digitally signed by Heather M. Leopardi  
 DN: cn=Heather M. Leopardi, o=Michael Baker International, ou=Aviation, email=hleopardi@mbakerintl.com, c=US  
 Date: 2017.11.29 17:10:59 -05'00'



JMP	JMP
DESIGNED	DRAWN
LJS	HML
CHECKED	APPROVED

**Michael Baker International**  
 www.mbakerial.com  
 MICHAEL BAKER ENGINEERING, INC.  
 200 Centreport Dr.  
 Suite 350  
 Greensboro, NC 27409  
 OFC: (336) 931-1500  
 FAX: (336) 931-1501

DATE: NOVEMBER 1, 2017

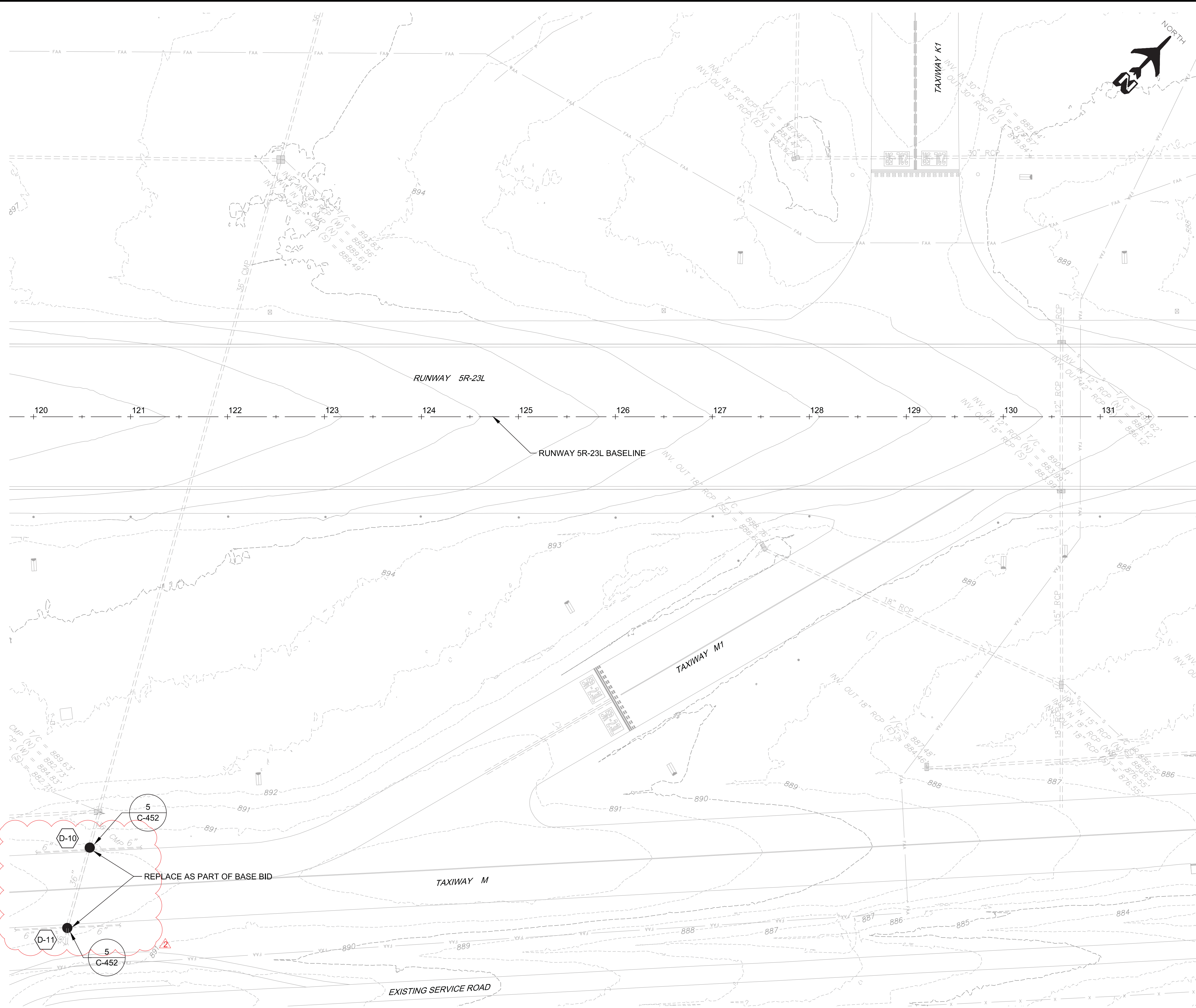
SCALE: NONE

SHEET

**G-002**

REVISIONS				
NO.	DATE	BY	DESCRIPTION	
2	11/29/17	HML	ADDENDUM 2	





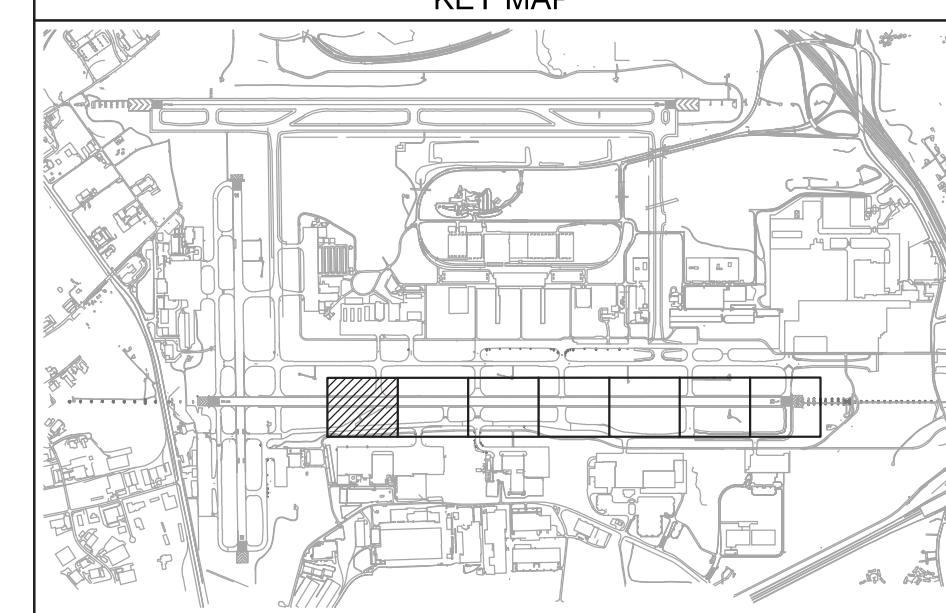
**NOTES:**

1. CONTOURS ARE FOR REFERENCE ONLY. SEE GRADE TABLES.
2. SEE MILLING/PAVING PLANS FOR LIMITS OF PAVING.
3. CONTRACTOR SHALL STRIP ALL TOPSOIL AND STOCKPILE AT THE STAGING AREA. PRIOR TO SEEDING OPERATIONS CONTRACTOR SHALL SPREAD STOCKPILED TOPSOIL OVER DISTURBED AREAS.
4. SEE DRAINAGE TABLES, C-421 FOR INFORMATION

**LEGEND**

- EXISTING CONTOURS
- PROPOSED CONTOURS
- NEW MANHOLE
- PROPOSED CLEANOUT
- PROPOSED UNDERDRAIN PIPE

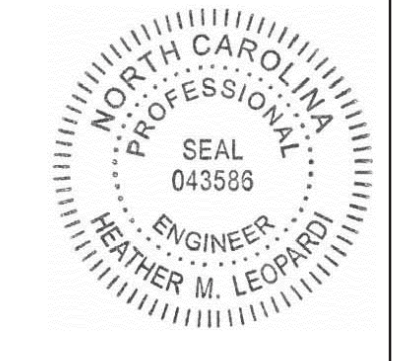
**Heather M. Leopardi**  
 Digitally signed by Heather M. Leopardi  
 DN: cn=Heather M. Leopardi, o=Michael Baker International, ou=Aviation, email=hleopardi@mbakerintl.com, c=US  
 Date: 2017.11.29 17:11:14 -05'00'



NO.		DATE	BY	DESCRIPTION
2		11/29/17	HML	ADDENDUM 2

**PTI**  
 PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 AIRPORT AUTHORITY  
 1000A Ted Johnson Parkway  
 Greensboro, NC 27409  
 OFC: (336) 665-5600  
 FAX: (336) 665-5694  
 www.flyfrompti.com

**PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 RUNWAY 5R - 23L REHABILITATION - CONSTRUCTION PHASE 1  
 GRADING AND DRAINAGE PLAN**



JRG	JRG
DESIGNED	DRAWN
DLF	HML
CHECKED	APPROVED

**Michael Baker INTERNATIONAL**  
 www.mbakerial.com  
 MICHAEL BAKER ENGINEERING, INC.  
 200 Centreport Dr.  
 Suite 350  
 Greensboro, NC 27409  
 OFC: (336) 931-1500  
 FAX: (336) 931-1501

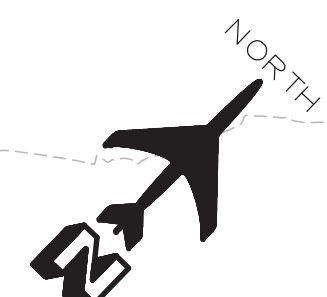
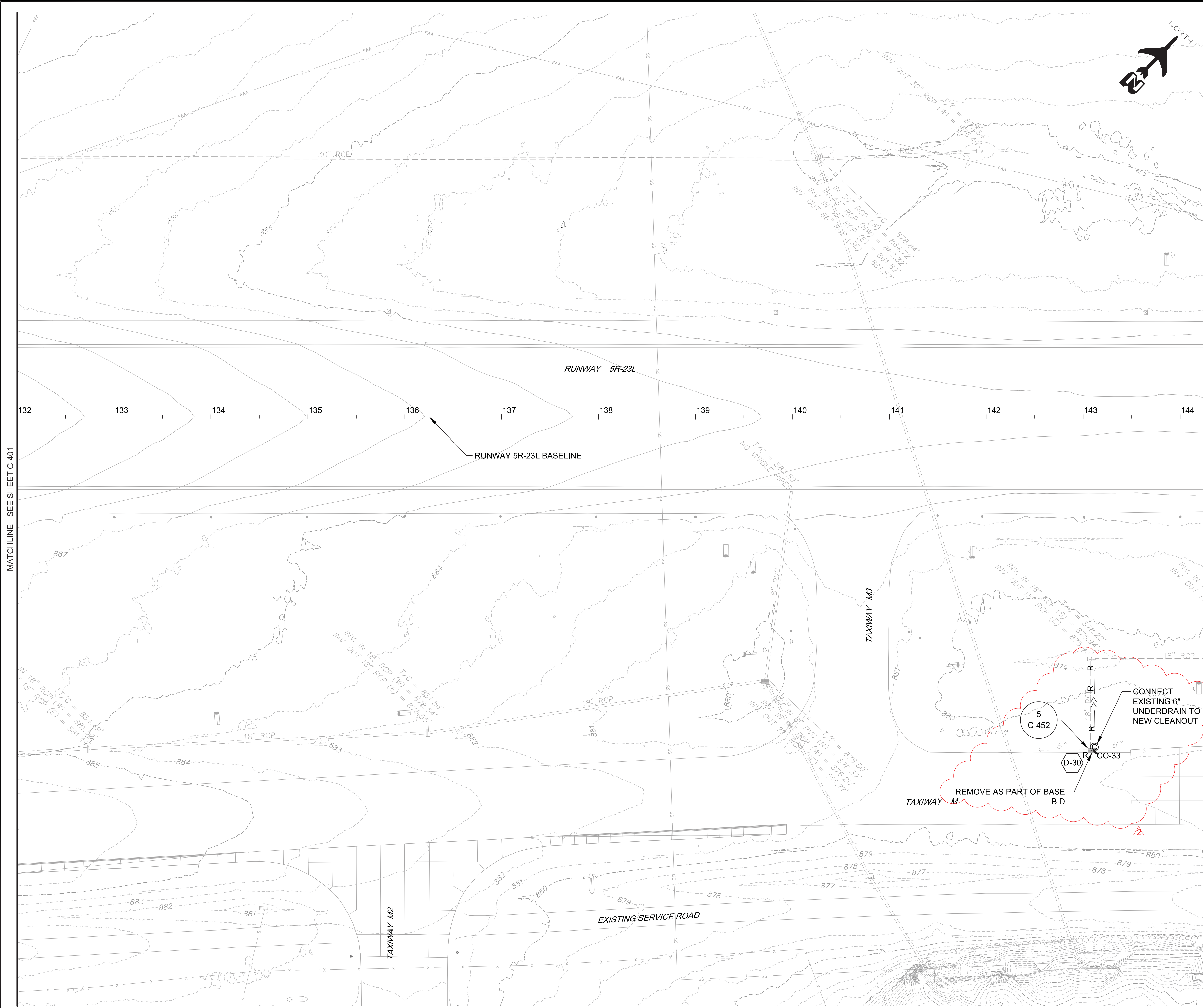
DATE: NOVEMBER 1, 2017

SCALE: AS SHOWN

SHEET

**C-401**





**NOTES:**

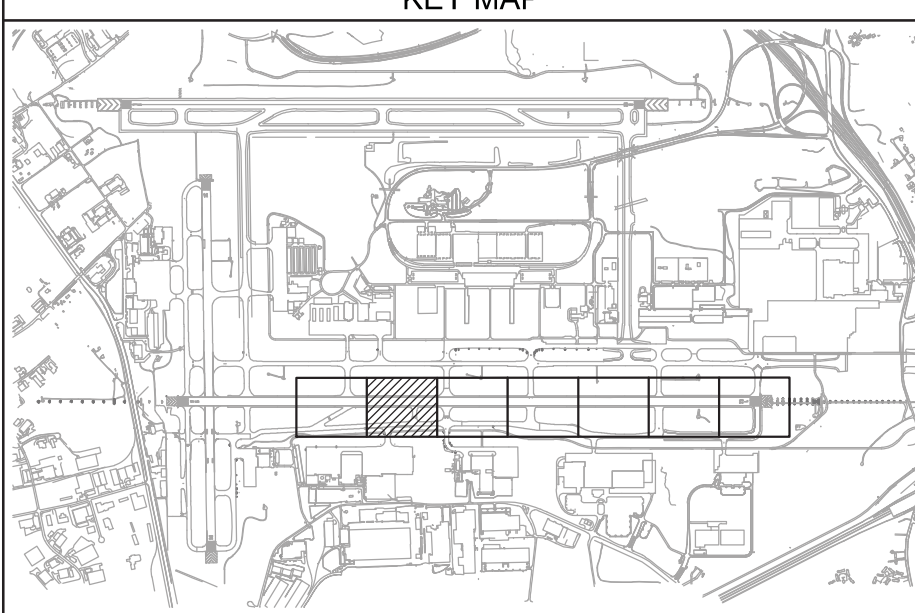
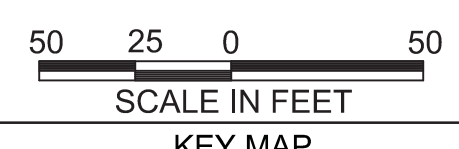
1. CONTOURS ARE FOR REFERENCE ONLY. SEE GRADE TABLES.
2. SEE MILLING/PAVING PLANS FOR LIMITS OF PAVING.
3. CONTRACTOR SHALL STRIP ALL TOPSOIL AND STOCKPILE AT THE STAGING AREA. PRIOR TO SEEDING OPERATIONS CONTRACTOR SHALL SPREAD STOCKPILED TOPSOIL OVER DISTURBED AREAS.
4. SEE DRAINAGE TABLES, C-421 FOR INFORMATION

**LEGEND**

- EXISTING CONTOURS
- PROPOSED CONTOURS
- NEW MANHOLE
- PROPOSED CLEANOUT
- PROPOSED UNDERDRAIN PIPE
- REMOVE EXISTING STRUCTURE
- REMOVE STORM PIPE

**Heather M. Leopardi**

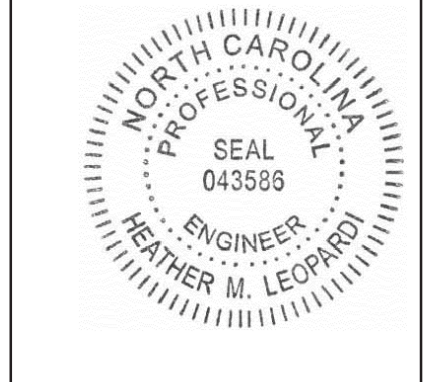
Digitally signed by Heather M. Leopardi  
 DN: cn=Heather M. Leopardi, o=Michael Baker International, ou=Aviation, email=hleopardi@mbakerintl.com, c=US  
 Date: 2017.11.29 17:11:25 -05'00'



REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11/29/17	HML	ADDENDUM 2

PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 AIRPORT AUTHORITY  
 1000A Ted Johnson Parkway  
 Greensboro, NC 27409  
 OFC: (336) 665-5600  
 FAX: (336) 665-5694  
 www.flyfrompti.com

**PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 RUNWAY 5R - 23L REHABILITATION - CONSTRUCTION PHASE 1  
 GRADING AND DRAINAGE PLAN**



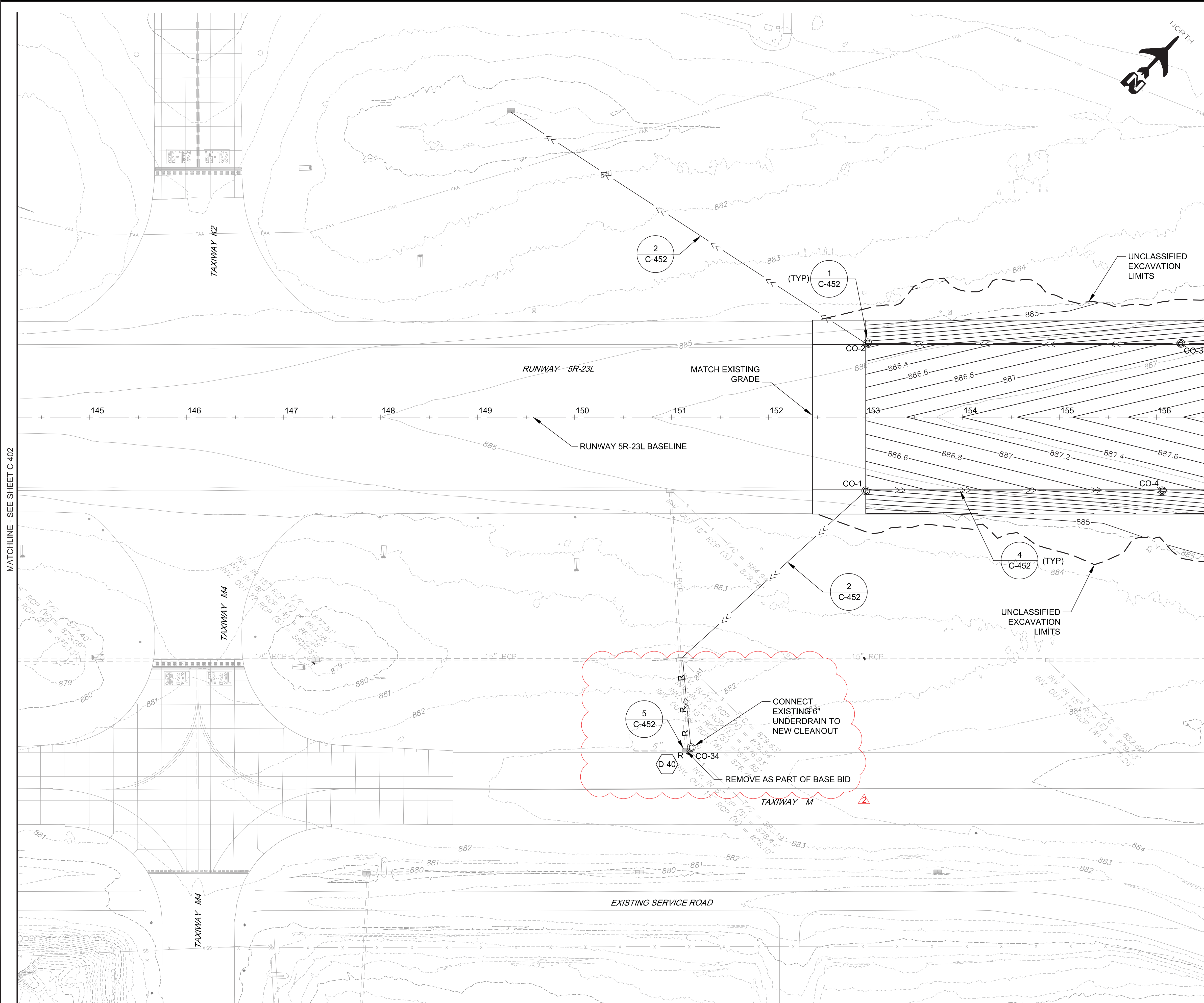
JRG DESIGNED	JRG DRAWN
DLF CHECKED	HML APPROVED

**Michael Baker International**  
 www.mbakintl.com  
 MICHAEL BAKER ENGINEERING, INC.  
 200 Centreport Dr.  
 Suite 350  
 Greensboro, NC 27409  
 OFC: (336) 931-1500  
 FAX: (336) 931-1501

DATE: NOVEMBER 1, 2017  
 SCALE: AS SHOWN

SHEET  
**C-402**





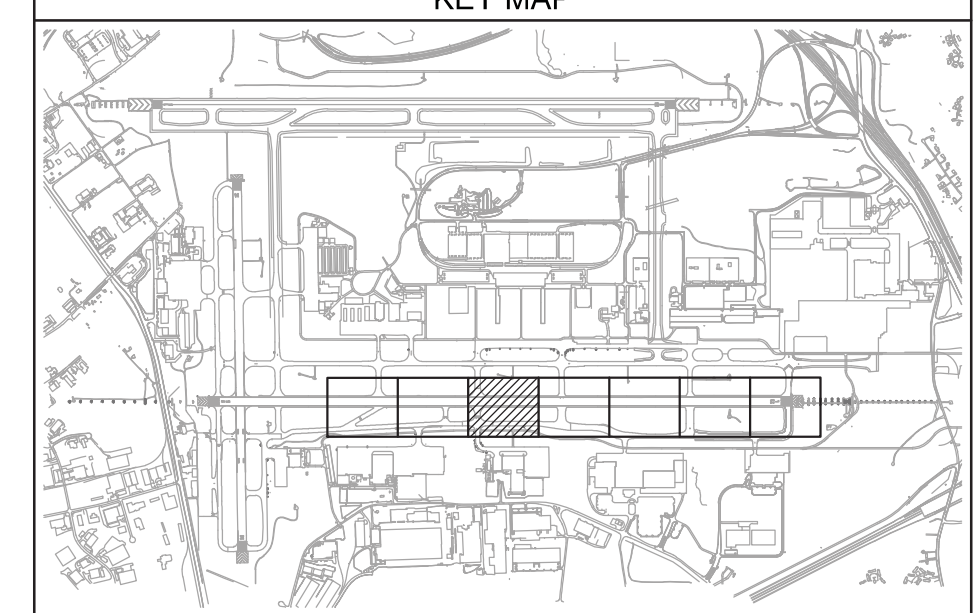
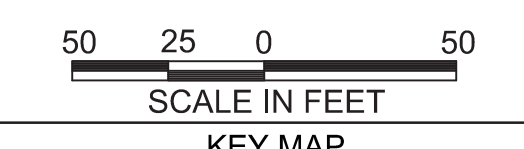
**NOTES:**

1. CONTOURS ARE FOR REFERENCE ONLY. SEE GRADE TABLES.
2. SEE MILLING/PAVING PLANS FOR LIMITS OF PAVING.
3. CONTRACTOR SHALL STRIP ALL TOPSOIL AND STOCKPILE AT THE STAGING AREA. PRIOR TO SEEDING OPERATIONS CONTRACTOR SHALL SPREAD STOCKPILED TOPSOIL OVER DISTURBED AREAS.
4. SEE DRAINAGE TABLES, C-421 FOR INFORMATION

**LEGEND**

- - - - - EXISTING CONTOURS
- PROPOSED CONTOURS
- D-5 ● NEW MANHOLE
- CO-X ○ PROPOSED CLEANOUT
- - - - - PROPOSED UNDERDRAIN PIPE
- R ■ REMOVE EXISTING STRUCTURE
- R - R - REMOVE STORM PIPE

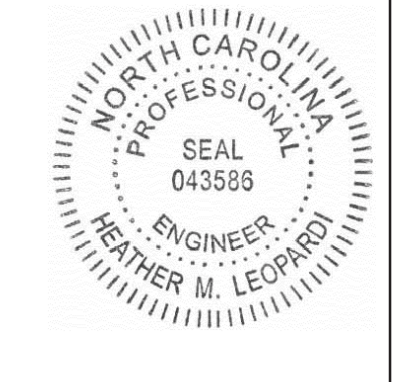
**Heather M. Leopardi**  
 Digitally signed by Heather M. Leopardi  
 DN: cn=Heather M. Leopardi, o=Michael Baker International, ou=Aviation, email=hleopardi@mbakerintl.com, c=US  
 Date: 2017.11.29 17:11:40 -05'00'



REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11/29/17	HML	ADDENDUM 2

**PTI**  
 PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 AIRPORT AUTHORITY  
 1000A Ted Johnson Parkway  
 Greensboro, NC 27409  
 OFC: (336) 665-5600  
 FAX: (336) 665-5694  
 www.flyfrompti.com

**PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 RUNWAY 5R - 23L REHABILITATION - CONSTRUCTION PHASE 1  
 GRADING AND DRAINAGE PLAN**



JRG DESIGNED	JRG DRAWN
DLF CHECKED	HML APPROVED

**Michael Baker International**  
 www.mbakerial.com  
 MICHAEL BAKER ENGINEERING, INC.  
 200 Centreport Dr.  
 Suite 350  
 Greensboro, NC 27409  
 OFC: (336) 931-1500  
 FAX: (336) 931-1501

DATE: NOVEMBER 1, 2017

SCALE: AS SHOWN

SHEET  
**C-403**



CLEANOUT STRUCTURE TABLE		
NUMBER	STATION	OFFSET
CO-1	153+00	76' LT
CO-2	153+00	76' RT
CO-3	156+25	76' LT
CO-4	156+05	76' RT
CO-5	159+12	76' RT
CO-6	159+50	76' LT
CO-7	161+71	76' LT
CO-8	162+07	76' RT
CO-9	164+44	76' LT
CO-10	164+49	76' LT
CO-11	165+20	76' RT
CO-12	165+25	76' RT
CO-13	168+55	76' LT
CO-14	169+26	76' RT
CO-15	173+25	76' RT
CO-16	173+46	76' LT
CO-17	177+24	76' RT
CO-18	178+00	76' LT
CO-19	181+20	76' LT
CO-20	181+21	76' RT
CO-21	184+01	76' RT
CO-22	184+16	76' LT
CO-23	187+83	76' LT
CO-24	187+84	76' RT
CO-25	192+73	76' LT
CO-26	192+75	76' RT
CO-27	197+63	76' LT
CO-28	197+66	76' RT
CO-29	200+15	101' LT
CO-30	200+40	101' RT
CO-31	202+04	101' RT
CO-32	202+02	101' LT
CO-33	143+09	345' RT
CO-34	151+15	344' RT

DRAINAGE STRUCTURE TABLE

I.D.	NORTHING	EASTING	DESCRIPTION (PROPOSED)	TOP EL.	INV. IN	INV. OUT	COMMENTS
D10	854463.49	1722689.49	AIRCRAFT RATED MANHOLE	892.10 ±			REMOVE EXIST. INLET
			EXIST. 36" PIPE		882.80±	882.80±	
			EXIST. 6" PIPES		888.70±	888.70±	
D11	854391.30	1722727.61	AIRCRAFT RATED MANHOLE	892.20 ±			REMOVE EXIST. INLET
			EXIST. 36" PIPE		882.20±	882.20±	
			EXIST. 6" PIPES		887.90±	887.90±	
D30	856088.61	1724254.22		880.60			REMOVE EXIST. STRUCTURE
			EXIST. 18" PIPE			876.18 ±	
			EXIST. 6" PIPES		877.10±		
D40	856643.34	1724839.12		883.19			REMOVE EXIST. STRUCTURE
			EXIST. 6" PIPES		878.44 ±		
			EXIST. 15" PIPE			878.10 ±	
D60	857883.09	1725501.47	MODIFY EXISTING STRUCTURE	888.20			REMOVE EXIST. STRUCTURE TOP
			EXIST. 36" PIPE		870.86 ±		INSTALL 20'X20' TOP SLAB
			EXIST. 36" PIPE			870.43 ±	
D61	857707.34	1725607.10	MODIFY EXISTING STRUCTURE	888.20			REMOVE EXIST. STRUCTURE TOP
			EXIST. 36" PIPE		868.40 ±		
			EXIST. 36" PIPE			868.40 ±	INSTALL 20'X20' TOP SLAB

NOTE:  
CONTRACTOR TO FIELD VERIFY INFORMATION ON ALL STRUCTURES

Digitally signed by Heather M. Leopardi  
DN: cn=Heather M. Leopardi, o=Michael Baker International, ou=Aviation, email=hleopardi@mbakerintl.com, c=US  
Date: 2017.11.29 17:11:59 -05'00'



PIEDMONT TRIAD INTERNATIONAL AIRPORT  
 RUNWAY 5R - 23L REHABILITATION - CONSTRUCTION PHASE 1  
 DRAINAGE TABLES



JMP	JMP
DESIGNED	DRAWN
HML	HML
CHECKED	APPROVED

**Michael Baker International**  
www.mbakerial.com

MICHAEL BAKER ENGINEERING, INC.  
200 Centreport Dr.  
Suite 350  
Greensboro, NC 27409  
OFC: (336) 931-1500  
FAX: (336) 931-1501

DATE: NOVEMBER 1, 2017  
SCALE: AS SHOWN

REVISIONS			
NO.	DATE	BY	DESCRIPTION
2	11/29/17	HML	ADDENDUM 2

SHEET  
**C-421**