ADDENDUM NO. 1
TO
PROPOSAL AND CONTRACT DOCUMENTS

RUSSELL REGIONAL AIRPORT
ROME, GEORGIA

RUNWAY 1/19 OVERLAY
FLOYD COUNTY BID NO. 18-0605

TO: **ALL PROSPECTIVE BIDDERS**

DATE: **MAY 25, 2018**

This Addendum forms a part of the Proposal and Contract Documents and modifies the original documents as noted below. Acknowledge receipt of this Addendum in the space provided in the Bid Form (page B-7). Failure to do so may subject a bidder to disqualification.

This Addendum consists of eighty-two (82) pages, which includes the Pre-Bid Conference Minutes, Specification Revisions / Clarifications, and Responses to Questions Submitted to the Engineer (8 pages). Also incorporated into this Addendum as Attachments are: a copy of the Pre-Bid Conference Sign-In Sheet (1 pages); revised Bid Schedule Pages (4 pages); an exhibit clarifying project access (1 pages), an exhibit clarifying locations where millings can be disposed of (1 pages); and a Project Geotechnical Report (67 pages);

PRE-BID CONFERENCE MINUTES

PROJECT: **RUSSELL REGIONAL AIRPORT**
RUNWAY 1/19 OVERLAY
FLOYD COUNTY BID NO. 18-0605

DATE: **Thursday, May 17, 2018 @ 10:00 AM**

1. GREETING:

A Sign-in sheet was distributed for those present to sign.

2. BID TIME AND PLACE:

Tuesday, June 5, 2018 @ 2:00 PM EST
Floyd County Purchasing Office

12 East Fourth Avenue, Suite 106
Rome, Georgia 30162

3. PROJECT SCOPE:

a. All plans and specifications upon which the bid for this project is based must be dated **April, 2018. No other bidding documents, except for any addenda, issued prior to bid date are valid for this project.**

b. The work called for in the construction documents generally consists of:

Runway 1/19 Overlay:

This project consists of performing rehabilitation measures on the Airport's Primary Runway. The existing asphalt wearing surface is cracked, aged, and is creating FOD issues. General work items include sealing existing cracks, application of a single surface treatment, bituminous pavement milling, an asphalt overlay, pavement marking, and pavement grooving.

c. The Bidder's envelope shall contain the signed original of the bidding documents, **as well as two (2) additional copies of the signed original.**

Each Bidder shall present his proposal in a sealed opaque envelope, marked at the lower left hand corner with: **Runway 1/19 Overlay; Bid 18-0605.**

FUNDING:

This project will be funded under provisions of the Airport and Airway Safety and Capacity Act of 1987. Certain mandatory federal requirements apply to this solicitation and will be made a part of any contract awarded.

a. President's Executive Order No. 11246 as amended by 29 CFR Part 30 and 41 CFR Part 60. (Prohibits discrimination in employment regarding race, creed, color, sex, or national origin).

b. Davis-Bacon and Related Acts, 29 CFR Parts 1, 3, and 5 (Wages).

c. Copeland Act, 29 CFR Part 3. (Payroll deductions permitted by Secretary of Labor).

d. Contract Work Hours and Safety Standards Act.

e. Title VI of Civil Rights Act of 1964. (Ensures that in any contract entered into pursuant to this advertisement for bids, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on grounds of race, color, national origin or sex in consideration for an award).

f. Disadvantaged Business Enterprises Participation 49 CFR Part 26. **The DBE participation goal is <u>12.9%</u> for this project.**

g. Government wide Debarment and Suspension and Government wide Requirements for Drug-free Workplace (DOT Regulation 49 CFR Part 29)

h. Buy American Preferences (Title 49 United States Code, Chapter 501)

i. Foreign Trade Restriction: Denial of Public Works Contracts to Suppliers for Goods and Services of Countries that Deny Contracts to Suppliers of Goods and Services of Countries that Deny Procurement Market Access to U.S. Contractors (DOT Regulation 49 CFR Part 30)

j. Goals for Minority and Female Participation (41 CFR Part 60-4.2)

k. Certification of Nonsegregated Facilities (41 CFR Part 60-1.8)

l. Debarment, Suspension, Ineligibility and Voluntary Exclusion (49 CFR Part 29)

m. Bid guarantee of 5% (49 CFR Part 18.36(h)(1))

n. Performance Bond of 100% (49 CFR Part 18.36(h)(2))

o. Payment Bond of 100% (49 CFR Part 18.36(h)(3))

5. The following items are extremely important and must be addressed and understood.

a. Instructions to Bidders;

b. No Bid for the work may be withdrawn after closing time for the receipt of proposals for a period of One Hundred Twenty (120) days.

c. Include Equal Opportunity Report in all subcontracts (GP-130).

d. Make sure good faith effort is made to attain DBE goal. Attempt to subcontract at least **<u>12.9%</u>** of the awarded project elements to DBE qualified businesses. Be prepared to provide evidence of good faith effort if DBE goal cannot be attained.

e. Liquidated damages in the amount of $1,000.00 per day will be deducted from money due or to become due the Contractor or his Surety for failure to complete Work within stipulated Contract Time.

f. Insurance requirements (00800).

g. Submit weekly payroll and statement of compliance (GP-130).

h. Monthly employment utilization report and annual EEO-1 report (GP-130).

i. Certification of Non-segregated Facilities.

6. PAYMENT:

The successful contractor will submit to the Engineer once each month an Application and Certification for Payment for the previous month's work. The Engineer will review the application for payment and if he certifies that it is in order, he will forward it to the Owner for approval within seven (7) days.

7. CONTRACT TIME:

The Contract Time for completion of the **Base Bid is Thirty-Five (35) consecutive calendar days** from the date of the Notice to Proceed.

8. ADDENDUMS:

a. Addendums will be sent to all Contractors on record receiving a plan set.

9. DISCUSSION OF TECHNICAL ITEMS AND QUESTIONS:

Notice to Bidders

Page A-1; It was noted that all bids will be received **no later than 2:00 pm (local time) on Tuesday, June 5, 2018** at the **Floyd County Purchasing Office; Suite 106, #12 East Fourth Ave. Rome, GA 30162**. It was noted that bids received after the stated time will not be accepted.

Page A-1; The locations that the Bidding documents can be viewed and purchased was noted.

Page A-2; It was noted that Bid security in the form of a Bid Bond or Certified check, made payable to the Floyd County Board of Commissioners equal to 5% of the total bid is required; and that the Contract Security in the form of 100% Performance and Payment Bonds will be required.

Instructions to Bidders

Page IB-3; Bidders were reminded that the deadline for submission of questions is **Thursday, May 24, 2018 at 12:00 PM local time.**

Page IB-8; It was noted that no bids may be withdrawn after submission of the Bid **for a period of one hundred twenty (120) days** after the date of the opening.

Page IB-12; Bidders were reminded that the DBE Participation Goal for the project is 12.9%.

Bid Forms

Page B-1; It was noted that Bidders were provided with a separate, non-spiral bound, single sided duplicate (printed on blue paper) version of the "Proposal Submittal Package" which is to be used for submitting a Bid. Bidders were reminded that they should not submit the version that is bound into the project manual.

Page B-3; It was noted that the time allowed for Substantial Completion on the Base Bid is **Thirty-Five (35) consecutive calendar days** from the date of Notice-to-Proceed.

Page B-4.1; Bidders were reminded to complete this summary page with their totals for the Base Bid, and also enter a Grand Total.

Bid Schedule Pages; Bidders were reminded to enter their unit price for each pay item in words on the lines provided below each pay item description, as well as enter the corresponding numerical value on the line to the right of each pay item description, and carry forward the total to the Amount column.

Page B-5; It was noted that bidders are required to complete the preliminary project schedules and include them with the Bid, that these schedules will be used as an anticipatory pre-construction schedule and estimating tool, and that failure to provide the completed preliminary schedule could be grounds for rendering a bid non-responsive

Pages B-7; It was noted that Bidders are to acknowledge Addendum issued for the Project in the space provided on this page.

Pages B-8 and B-9; It was noted that the Bid Bond form is contained on these pages. *It was noted that the Surety's form of Bid Bond would be acceptable.*

Pages B-15; It was noted that these pages of the Bid Submittal Package should include a listing of both DBE and non-DBE subcontractors.

Pages B-31; It was noted that these pages of the Bid Submittal Package should include a listing of only DBE subcontractors. *It is clarified that faxed versions of the Sub-contractor Affidavits and Letter of Intents (DBE Form 2 and DBE Form 3) will be acceptable for bid submission. The apparent low Bidder shall provide these forms (originals) to the Owner within seventy-two hours of the bid opening.*

Federal Contract Provisions

Bidders were reminded to pay special attention to the requirements of these sections.

General Provisions

Bidders were reminded to pay special attention to the requirements of these sections.

Section GP-100; It was noted that the Contractor shall be required to submit a Quality Control Plan for the work, and that Bidders should familiarize themselves with the requirements of this section.

Supplementary Conditions

Bidders were encouraged to familiarize themselves with the requirements of this section.

Pages 00800-10 to 00800-14; It was noted that the insurance requirements for the project are noted on these pages.

Pages 00800-22 to 27; It was noted that the current prevailing wage rates for this project are presented on these pages.

Division 1 - General Requirements

Bidders were reminded to pay special attention to the requirements of this section.

Division II – FAA Technical Specifications

It was noted that the FAA Standard Technical Specifications for the project are contained within this section and that bidders should familiarize themselves with their requirements.

Item P-401: It was noted that the Asphalt Specification for the project is contained within this section and that bidders should familiarize themselves with its requirements.

Appendices

It was noted that Appendix A and B contain FAA Advisory Circular guidelines that are relevant to this Project.

Other Items

The project schedule and start date was discussed. It was noted that the project is planned to start in the Spring of 2019.

The scope of work was discussed. It was noted that the Runway shall be grooved upon completion of the work. A known grooving company is Cardinal International Grooving & Grinding, LLC out of Conshohocken, Pennsylvania.

It was noted that the Airport does not possess "Lighted X" Units. The Contractor shall be responsible for furnishing "Lighted X" Units per Specification 01530.

The asphalt specification was discussed. A concern was raised regarding the requirement in the specification that the aggregate be free of ferrous sulfides, and the impact this would have on availability of aggregate. The Engineer indicated that this concern would be passed along to the Department of Transportation for review and advice. *As of the date of this Addendum, no further information has been provided by the DOT. Bidders are instructed to adhere to the requirements of this Specification.*

Access to the Project Site was discussed. Bidders are referred to the exhibit (Exhibit 1) included as an attachment to this Addendum which clarifies access to Runway 1/19 north of Runway 7/25. The Contractor may access to work area (north of Runway 7/25) from the location shown on this exhibit, and will be responsible for installing a construction exit at this location.

It was noted that the asphalt millings can be disposed of on airport property. Should the Contractor elect to dispose of the millings on airport property, they will be disposed in the locations shown on the exhibit (Exhibit 2) included as an attachment to this Addendum. The locations shown on this exhibit are numbered – which indicates the Airport's priority for disposal of the millings. Millings disposed at these locations will be uniformly placed at a width of ten feet and a depth of approximately three inches.

END OF MINUTES

SPECIFICATION REVISIONS / CLARIFICATIONS

1) Bid Schedules; Bidders are instructed to remove Bid Schedule Pages B-4.1 through B-4.4 and replace them with Bid Schedule Pages B-4.1 (Addendum 1) through B-4.4 (Addendum 1). The new bid schedule is provided to include a pay item for shoulder grading.

2) Section 01510, Temporary Facilities, 3.04D Airfield Communications. It is clarified that the Contractor shall provide one (1) airport radio for use by the Engineer, and at least two (2) additional airport radios on-site for use by his project superintendent and others. When working near or within active runway and taxiway safety areas, the project superintendent shall continuously monitor the UNICOM frequency. These three radios, including the specified accessories, shall be turned over to the Airport at the conclusion of the project in good working order. Radios not in good working order shall be replaced prior to turning them over to the Airport.

3) Section 01510, Temporary Facilities. Bidders are advised that an Engineer's Field Office will not be required for the project. All other requirements of this specification are valid and shall be considered incidental to Mobilization.

4) Appendix C, Geotechnical Report. Bidders are instructed to remove the Geotechnical Report included in the Project Manual and replace it with the Geotechnical Report include as an attachment to this Addendum.

RESPONSES TO QUESTIONS SUBMITTED TO THE ENGINEER

Question: Is the Pre-Bid Meeting for Floyd Co Runway 1/19 Overlay (Bid 18-0605) on May 17 a requirement? This happens to be the day before the GDOT May Letting so attendance for us may be very problematic.

Response: The Pre-Bid Meeting for the Runway 1/19 Overlay Project is not mandatory.

THIS CONCLUDES ADDENDUM NO. 1 IN ITS ENTIRETY.

This Addendum is being transmitted via Federal Express to all plan holders. If you have any questions, please direct them to; Michael Baker International at (770) 263-9118.

SIGN-IN SHEET

Pre-Bid Conference (Bid 18-0605)
Thursday, May 17, 2018, 10:00 A.M.

Russell Regional Airport; Rome, Georgia
Runway 1/19 Overlay

Name: JAMES MIORIN	**Company:** MICHAEL BAKER INTL.	
Email: JJMIORIN@MBAKERINTL.COM		
Office Ph: 770-263-9118	**Cell Ph:**	**Fax:** 770-263-9145
Name: Austin Blackwell	**Company:** Remac, Inc.	
Email: ablackwell@remacvs.com		
Office Ph: 434-634-2111	**Cell Ph:** 434-594-6089	**Fax:** 434-634-0024
Name: MIKE KLEUCKLING	**Company:** C. W. MATTHEWS	
Email: MIKEK@CWMATTHEWS.COM		
Office Ph: 770-422-7520	**Cell Ph:** 404-277 3637	**Fax:** 770-422-9361
Name: MIKE MATHEWS	**Company:** RUSSELL REGIONAL AIRPORT	
Email: MATHEWSM@ floydcounty ga.org		
Office Ph: 706-295-7835	**Cell Ph:** 706-252-4326	**Fax:** 706-234-8076
Name: Bryan Roberts	**Company:** Northwest Ga Paving	
Email: broberts@NWGPINC.com		
Office Ph: 706-629-8255	**Cell Ph:** 770-547-4028	**Fax:** 770-773-9692
Name:	**Company:**	
Email:		
Office Ph:	**Cell Ph:**	**Fax:**
Name:	**Company:**	
Email:		
Office Ph:	**Cell Ph:**	**Fax:**
Name:	**Company:**	
Email:		
Office Ph:	**Cell Ph:**	**Fax:**

BID SCHEDULE

RUSSELL REGIONAL AIRPORT
RUNWAY 1/19 OVERLAY

APXXX-XXXX-XX(115) FLOYD
FLOYD COUNTY BID NO. 18-0605

Item No.	Spec. No.	Item Description / (Write Unit Price in Words)	Estimated Quantity	Unit	Unit Price	Amount

BID SCHEDULE SUMMARY

TOTAL - BASE BID = $ _____

TOTAL - = $ _____

GRAND TOTAL = $ _____

BID SCHEDULE

RUSSELL REGIONAL AIRPORT
RUNWAY 1/19 OVERLAY

APXXX-XXXX-XX(115) FLOYD
FLOYD COUNTY BID NO. 18-0605

Item No.	Spec. No.	Item Description / (Write Unit Price in Words)	Estimated Quantity	Unit	Unit Price	Amount
BASE BID						
1	105	MOBILIZATION	1	L. SUM	$	$
		Dollars				
		Cents				
2	P-101A	SEAL SMALL CRACKS IN BITUMINOUS PAVEMENT	37,500	LIN. FT.	$	$
		Dollars				
		Cents				
3	P-101B	SEAL MEDIUM CRACKS IN BITUMINOUS PAVEMENT	37,500	LIN. FT.	$	$
		Dollars				
		Cents				
4	P-101C	SEAL LARGE CRACKS IN BITUMINOUS PAVEMENT	19,000	LIN. FT.	$	$
		Dollars				
		Cents				
5	P-101D	MILL ASPHALTIC CONCRETE PAVEMENT, (0"-4" DEPTH)	110,710	SQ. YD.	$	$
		Dollars				
		Cents				
6	P-401	BITUMINOUS SURFACE COURSE	13,050	TON	$	$
		Dollars				
		Cents				

BID SCHEDULE

RUSSELL REGIONAL AIRPORT
RUNWAY 1/19 OVERLAY

APXXX-XXXX-XX(115) FLOYD
FLOYD COUNTY BID NO. 18-0605

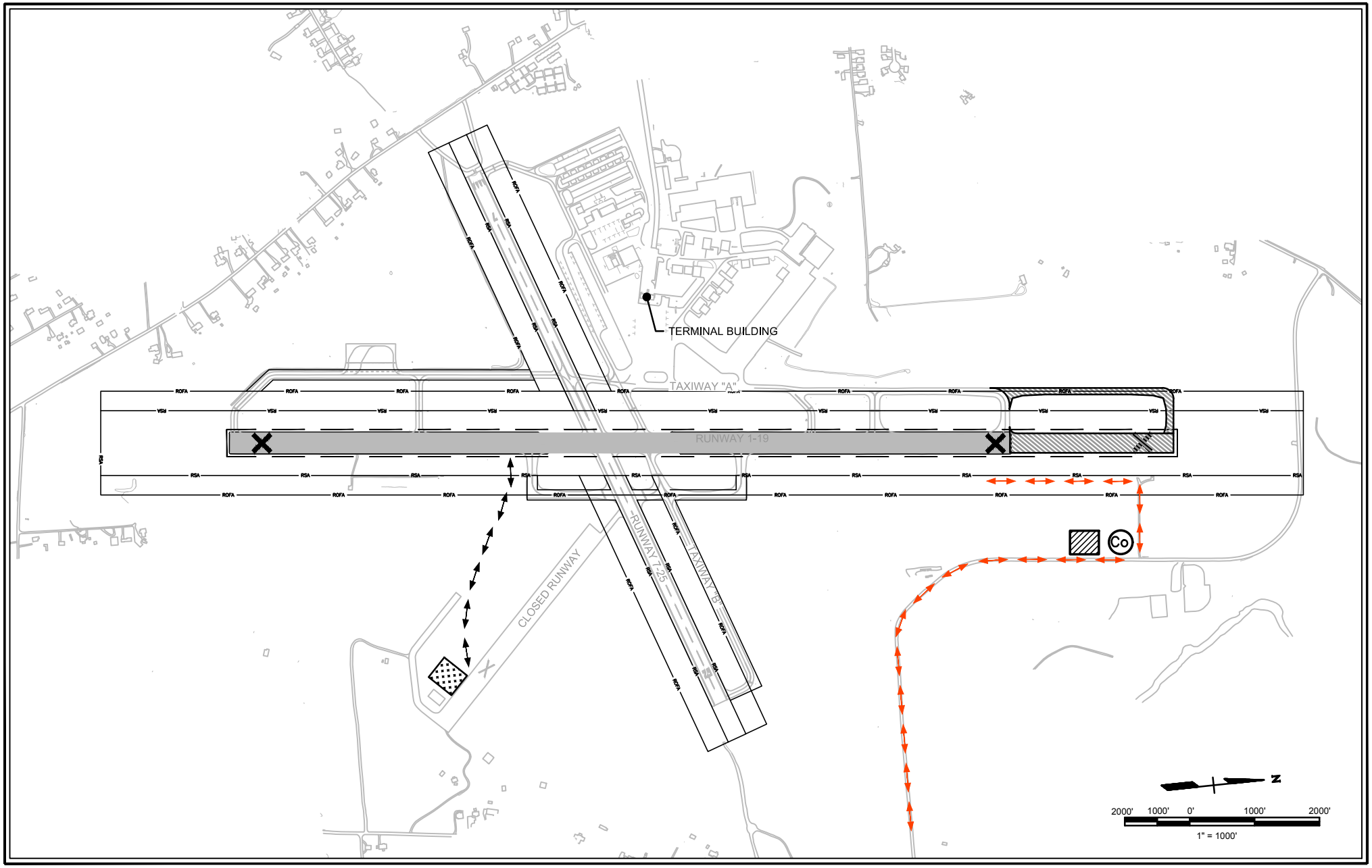
Item No.	Spec. No.	Item Description / (Write Unit Price in Words)	Estimated Quantity	Unit	Unit Price	Amount
BASE BID						
7	P-403	BITUMINOUS LEVELING COURSE	80	TON	$	$
		_____ Dollars _____ Cents				
8	P-603	BITUMINOUS TACK COAT	215	GAL.	$	$
		_____ Dollars _____ Cents				
9	P-609	SINGLE SURFACE TREATMENT	110,110	SQ. YD.	$	$
		_____ Dollars _____ Cents				
10	P-620A	PAVEMENT MARKING, BLACK, NON-REFLECTIVE, FULL RATE	20,420	SQ. FT.	$	$
		_____ Dollars _____ Cents				
11	P-620B	PAVEMENT MARKING, YELLOW, REFLECTIVE, FULL RATE	6,890	SQ. FT.	$	$
		_____ Dollars _____ Cents				
12	P-620C	PAVEMENT MARKING, YELLOW, NON-REFLECTIVE, INITIAL APPLICATION, HALF RATE	6,890	SQ. FT.	$	$
		_____ Dollars _____ Cents				

BID SCHEDULE

RUSSELL REGIONAL AIRPORT
RUNWAY 1/19 OVERLAY

APXXX-XXXX-XX(115) FLOYD
FLOYD COUNTY BID NO. 18-0605

Item No.	Spec. No.	Item Description / (Write Unit Price in Words)	Estimated Quantity	Unit	Unit Price	Amount
BASE BID						
13	P-620D	PAVEMENT MARKING, WHITE, NON-REFLECTIVE, INITIAL APPLICATION, HALF RATE	124,600	SQ. FT.	$	$
		Dollars				
		Cents				
14	P-620E	PAVEMENT MARKING, WHITE, REFLECTIVE, FINAL APPLICATION, FULL RATE	124,600	SQ. FT.	$	$
		Dollars				
		Cents				
15	P-621	BITUMINOUS PAVEMENT GROOVING	104,665	SQ. YD.	$	$
		Dollars				
		Cents				
16	MISC-1	CLEAN FILL MATERIAL FOR SHOULDER GRADING	50	CU. YD.	$	$
		Dollars				
		Cents				
		TOTAL - BASE BID =			$	

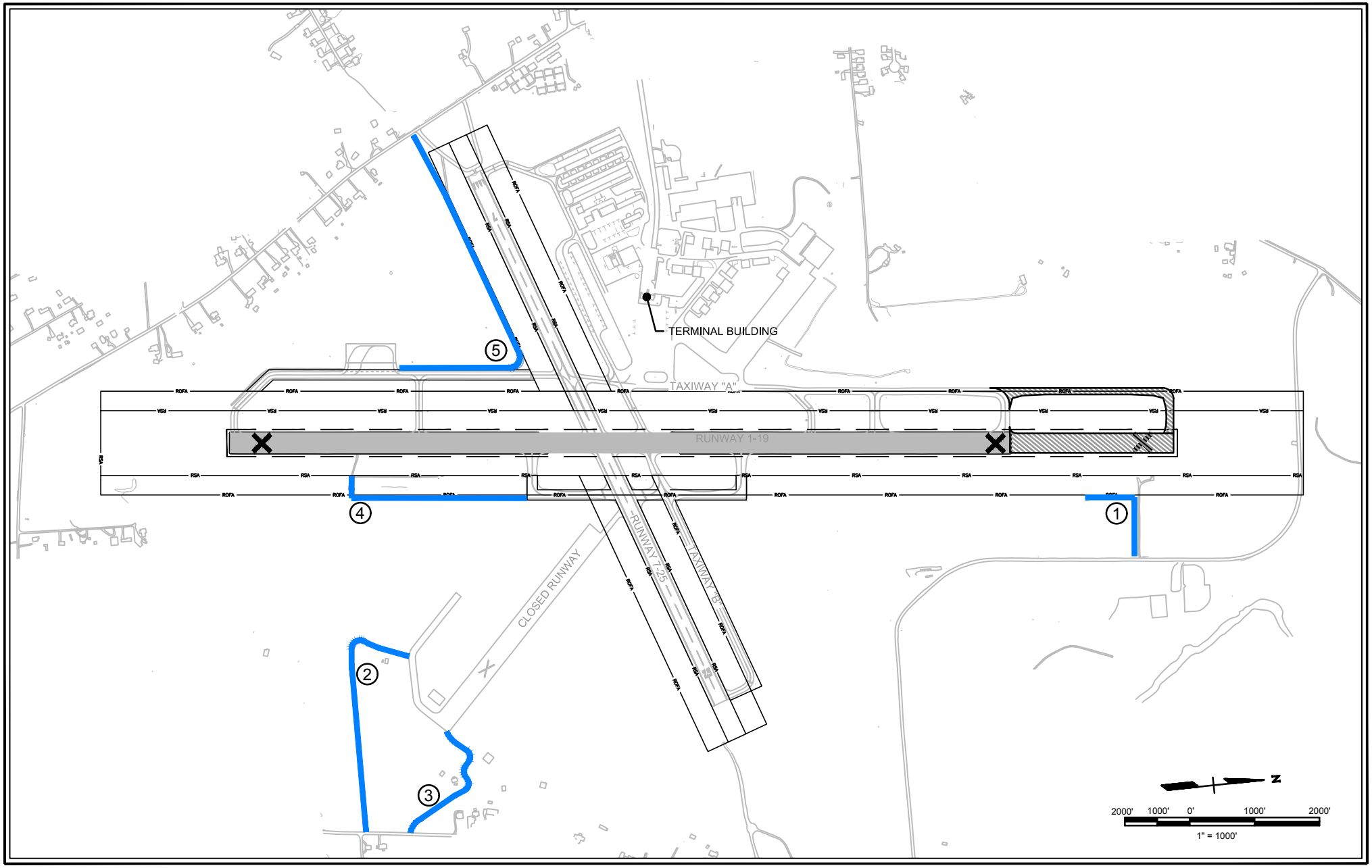


Michael Baker
INTERNATIONAL

RUSSELL REGIONAL AIRPORT
FLOYD COUNTY, GEORGIA

RUNWAY 1/19 OVERLAY

EXHIBIT 1



Michael Baker INTERNATIONAL

RUSSELL REGIONAL AIRPORT
FLOYD COUNTY, GEORGIA

RUNWAY 1/19 OVERLAY

EXHIBIT 2

SUBSURFACE EXPLORATION AND GEOTECHNICAL ENGINEERING EVALUATION REPORT

Runway 1/19 Rehabilitation and Overlay
Richard B. Russell Regional Airport
Rome, Floyd County, Georgia

May 04, 2018

Submitted to:
Michael Baker International
Norcross, Georgia

Submitted by:
Willmer Engineering Inc.
Project No. ATL-71.4275

WILLMER
Engineering

May 04, 2018

VIA EMAIL

Mr. Michael J. Reiter, PE
Michael Baker International
420 Technology Parkway, Suite 150
Norcross, Georgia 30092

SUBJECT: Report of Subsurface Exploration and Geotechnical Engineering Evaluation
Runway 1/19 Rehabilitation and Overlay
Richard B. Russell Regional Airport
Rome, Floyd County, Georgia
Willmer Project No. 71.4275

Dear Mr. Reiter:

Willmer Engineering Inc. (Willmer) is pleased to provide this report summarizing the findings of the pavement coring and subgrade evaluation for Runway 1/19 at Richard B. Russell Regional Airport in Rome, Floyd County, Georgia. This work was performed for Michael Baker International in general accordance with our proposal dated July 05, 2017.

This report presents the objectives and scope of our work, the results of our field and laboratory tests, our conclusions with regard to the existing pavement components and subgrade support characteristics, and our subgrade support recommendations for pavement design.

We greatly appreciate the opportunity to be of service to you on this project and look forward to a continuing relationship. Please contact us if you have any questions concerning this report or require further assistance.

Sincerely,
WILLMER ENGINEERING INC.

Aditya Bhatt
Aditya Bhatt, PhD
Project Engineer

Sujit B Bhowmik
Sujit Bhowmik, PhD, PE
Chief Engineer

James L. Willmer, P.E.
James L. Willmer, PE
Executive Vice President/Principal Consultant

AB/SKB/JLW:
P:\4275 Michael Baker Floyd Co. Runway 1-19 Rehabilitation & Overlay\Reports\Runway1-19 Rehabilitation and Overlay.docx

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Executive Summary

The following summary highlights significant aspects of the project and our conclusions and recommendations. The reader is referred to the report text for detailed descriptions of our geotechnical investigation and recommendations.

- Richard B. Russell Regional Airport is planning an overlay and rehabilitation for the existing Runway 1/19.

- The geotechnical exploration consisted of performing twelve pavement cores. Kessler Dynamic Cone Penetrometer (KDCP) tests and standard Dynamic Cone Penetrometer (DCP) tests were performed in each core hole. The test holes were extended to a depth of about three feet below the bottom of pavement or auger refusal, whichever was encountered first.

- The existing asphalt pavements ranged in total thickness from 6.75 to 14.5 inches, and the underlying aggregate base material ranged from 5 to 10 inches in total thickness.

- The generalized soil stratigraphy under the existing pavement consisted primarily of very loose to medium dense clayey sands or soft to stiff sandy and fat clays extending from the existing subgrade level to the boring termination depth or auger refusal.

- Based on KDCP test results, the field CBR value ranged mostly from 4 to 10, with an average value of 6 and a standard deviation of 1.7.

- From two laboratory CBR tests, the CBR value at a compaction of 95 percent of modified Proctor maximum dry density ranged from 4.4 to 6.9, with an average of 5.6.

- No groundwater was encountered within the boring depths at any of the twelve boring locations.

- Based on the field and laboratory test results, we recommend a CBR value of 4.0 for use in pavement rehabilitation/overlay design.

1.0 Introduction

1.1 Site Location and Project Description

Richard B. Russell Regional Airport is located to the southeast of the intersection of US 27 and GA 140, and along and to the east of Warren Road at its intersection with Russell Field road in Rome, Floyd County, Georgia, as shown in Figure 1. We understand that Russell B. Regional Airport is considering rehabilitation and overlay of the existing Runway 1/19. As part of our exploration, the pavement components along Runway 1/19 and subsurface soils in these areas were investigated to evaluate the soil support parameters and verify the thickness of the existing pavement components. The data will be used for possible overlay design and/or rehabilitation of the Runway 1/19 asphalt pavement in the form of either a direct overlay or a mill and overlay. No other design details were available at the time this report was prepared. Proposed coring locations were provided to us by Michael Baker International (Michael Baker) and are shown in Figure 2.

1.2 Objectives and Scope of Present Work

The primary objectives of this evaluation were to: (i) core the existing pavement to determine the type and thickness of the pavement system components, and (ii) perform field and laboratory tests on subgrade soils to evaluate soil support characteristics for use in pavement overlay design. To achieve these objectives, the following scope of work was performed by Willmer:

- Pavement coring to determine the type and thickness of pavement system layers and provide access to the soil subgrade for subsequent field testing and sampling.

- Perform subsurface exploration consisting of Kessler Dynamic Cone Penetrometer (KDCP) tests in accordance with ASTM D 6951 in the upper 12-inches below the pavement. Upon completion of KDCP test, advance boring with a hand-auger and perform standard Dynamic Cone Penetrometer (DCP) tests up to a depth of 3 feet below the pavement.

- Laboratory classification testing on representative bulk soil samples obtained from the hand-auger borings. These tests included natural moisture content (ASTM D 2216), grain size distribution (ASTM D 422 and D 1140), Atterberg limits (ASTM D4318), modified Proctor compaction (ASTM D 1557), and CBR (ASTM D 1883) tests.

- Preparation of this report documenting the results of the field and laboratory tests and our conclusions and recommendations.

2.0 Field Exploration Program

2.1 Pavement Coring

The subsurface exploration consisted of performing twelve pavement cores, Kessler Dynamic Cone Penetrometer (KDCP) tests, and standard Dynamic Cone Penetrometer (DCP) tests at locations designated C-1 through C-12 as shown in Figure 2. The pavement core locations were selected by Michael Baker and located in the field by our engineer using a handheld GPS device and by referencing from existing site features. Survey of the boring locations and determination of the existing ground surface elevations was beyond the scope of our services. Therefore, the coring locations should be considered approximate. Prior to the subsurface exploration, underground utilities were cleared with the one call service through the Georgia Utility Protection Center and by engaging the services of a private utility locator.

The pavement cores were performed using a 6-inch diamond impregnated core bit. The pavement type and thicknesses and graded aggregate base thickness measured at the twelve core locations are summarized in Table 1. Photographs of the pavement cores are presented in Appendix I.

2.2 Kessler Dynamic Cone Penetrometer Testing

Once the pavement coring was completed, and graded aggregate base material was taken out, Kessler Dynamic Cone Penetrometer (KDCP) tests were performed in the upper 12-inches of soil subgrade at each location in general accordance with ASTM Standard D 6951. The KDCP test is a widely accepted method for in-situ testing of pavement subgrade soils. A hardened point tip attached to the end of a rod is driven into the ground by successive blows of a 10.1-pound hammer freely dropping a distance of 22.6 inches. The angle of the cone is 60 degrees and the diameter of the base of the cone is 0.79 inches. The depth of penetration is recorded for a given number of blows which are typically 1, 2, or 5 blows. These measurements are used to calculate the KDCP Index. The KDCP Index has been empirically correlated with the CBR. CBR results obtained from KDCP correlations for each core location are presented in Table 1. KDCP logs for all the pavement core locations are presented in Appendix III.

2.3 Hand Auger Borings and Dynamic Cone Penetrometer Testing

Upon completion of the KDCP testing, a hand auger boring was performed at each location to evaluate the underlying soil conditions. The borings were extended to depths of up to 3 feet below the existing pavement. Dynamic Cone Penetrometer (DCP) tests were performed at designated intervals in the hand auger borings to provide an index for estimating soil strength and density. The DCP test consists of dropping a 15-pound donut-shaped steel weight a distance of 20 inches to drive a steel rod with a cone point. The angle of the cone is 45 degrees and the diameter of the base of the cone is 1.5 inches. The cone was first seated 2 inches below the subgrade, and then the number of blows required to advance the cone point 1 ¾ inches was recorded. This blow count can be correlated to the N-value obtained from

conventional split spoon sampling with a drill rig (SPT) to provide a measure of the relative consistency or density of the soil. Soil classifications of the auger cuttings were performed in general accordance with the Unified Soil Classification System (USCS) using visual/manual methods. Descriptions of the soils encountered in each boring are presented in Appendix II.

Presence/absence of groundwater was checked immediately upon the completion of each boring, and the borings were then backfilled with sand and auger cuttings and the pavement patched with a quick-set concrete mix.

In addition, three bulk soil samples designated B-1, B-2, and B-3 were obtained for use in laboratory testing. Sample B-1 is a composite bulk sample obtained from borings C-1 and C-2, B-2 is a composite bulk sample obtained from borings C-9 and C-10, and B-3 is a bulk sample obtained from boring C-3.

3.0 Laboratory Testing Program

3.1 General

A laboratory characterization and testing program on the representative bulk soil samples was conducted by Willmer to assess the suitability of the existing subgrade in supporting the future pavement system. These tests included natural moisture content (ASTM D 2216), grain size distribution (ASTM D 422 and D 1140), Atterberg limits (ASTM D4318), modified Proctor compaction (ASTM D 1557), and three-point CBR (ASTM D1883). Results of these tests are summarized in section 4.0. Results of all laboratory tests are presented in Appendix IV, Laboratory Test Results.

3.2 Classification and Index Tests

Classification and index tests were performed to aid in the characterization of soil samples obtained from the boring locations. The tests included visual classification in the laboratory, grain size distribution analyses (ASTM D 422), and percent fines (i.e., percent by dry weight of materials passing the US #200 sieve) determination (ASTM D 1140). Results of these tests are summarized in Table 2, and the individual test results are included in Appendix IV. As shown in Table 2, the tested samples were clayey sands, sandy clays and fat clays with natural moisture contents ranging from 19.7 to 33.2 percent. The percent fines of the samples ranged from approximately 46.7 to 86.3 percent, the liquid limits ranged from 29 to 59 percent, and the plasticity indices ranged from 16 to 42 percent.

3.2 Modified Proctor Compaction Test

Two composite bulk samples, B-1 obtained from C-1 and C-2 and B-2 obtained from C-9 and C10, from the subgrade soil layers, were used for Modified Proctor Compaction tests (ASTM D1557) to determine the compaction characteristics of these soils. Results of these tests are summarized in Table 2, and the individual test results are included in Appendix IV. The Modified Proctor maximum dry densities for B-1 and B-2 were 121.3 and 109.5 lb/ft^3, and the optimum moisture contents ranged from 12.7 and 18.5 percent. The average optimum moisture content was 15.6 percent. The natural moisture content for these samples was 23.8 and 33.2 percent, with an average of 28.5 percent. Thus, based on these tests, the average natural moisture content is about 12.9 percent higher than the average Modified Proctor optimum moisture content.

3.4 California Bearing Ratio Test

CBR tests were performed on the samples selected for compaction testing to determine the subgrade-support characteristics of these soils. The CBR tests were performed on specimens molded to 95 percent of the Modified Proctor maximum dry density at a moisture content approximately equal to the optimum moisture content. The resulting CBR values are summarized in Table 2, and the individual test results are included in Appendix IV. As shown in Table 2, the CBR values for B-1 and B-2 were 6.9 and 4.4, respectively. The average CBR value was 5.6.

4.0 Area Geology and Subsurface Conditions

4.1 Area Geology

The site is located in the Ridge and Valley Physiographic Province. The Ridge and Valley region is bounded on the north by the Cumberland Plateau and Lookout Mountain and on the south and east by the Great Smokey (Cartersville) Fault. The Ridge and Valley Province is comprised of folded and faulted stratified rock ranging in age from Lower Cambrian to Upper Pennsylvanian, or roughly 600 to 280 million years old. The rocks of the area are shale, limestone, dolomite, and sandstone. All of these rocks were originally deposited as sediments carried by running water from the Blue Ridge upland on the southeast side into the Paleozoic Sea and then spread as horizontal sheets covering the sea bottom. These loose sediments were later compressed westward and tilted, creating faults, fractures, and joints. Tilting exposed some of the more erodible rock, enhancing weathering. The compression, tilting, and erosion resulted in a series of northeast to southwest trending ridges and valleys which gave the area its name.

The rocks have weathered in-place to form residual over-burden soils including clays, silts, and sands, some of which contain chert fragments ranging from gravel to boulder sizes. Due to the interbedding, tilting, and weathering, relatively hard, sound rock layers can be underlain by soils or voids, creating complex foundation conditions. The subject site is underlain by undifferentiated Floyd Shale of Mississippian Age.

4.2 Existing Pavement Components and Subsurface Conditions

The existing pavement thicknesses and soil stratigraphy discussed in the following paragraphs and those presented in the boring logs in Appendix II represent pavement component thickness and soil conditions based on interpretation of the coring/boring data using generally accepted geotechnical engineering practice. Although individual test corings/borings are representative of the pavement thickness/subsurface conditions at the precise boring locations on the dates shown, they are not necessarily indicative of the conditions at other locations or at other times.

4.2.1 Existing Pavement Components

The pavement at all locations sampled consisted of asphalt. The thickness of the asphalt pavement as determined by the core measurements ranged between 6.75 and 14.5 inches, with an average thickness of 10.5 inches. A detailed analysis of the pavement conditions was beyond our scope of work. The material directly under the pavement at all core locations consisted of graded aggregate base. This material ranged in thickness from approximately 5 to 10 inches, with an average thickness of 7.6 inches.

4.2.3 Subsurface Conditions

All borings were extended below the existing pavement system to the termination depth of three feet below the existing pavement subgrade or auger refusal, whichever occurred first. Existing fill was encountered beneath the base material at all the locations. All borings generally encountered sandy clays, clayey sands or fat clays extending from the existing subgrade (i.e., bottom of base material) elevation to the boring termination depth or auger refusal.

At each boring location, the average CBR value for the top 12 inches of subgrade was determined from KDCP tests. At locations where distinctly different soil layers were encountered in the top 12 inches, the CBR value for the weaker layer was used. The average of all CBR values was determined to be 6 with a standard deviation of 1.7. CBR values from C-1 and C-2 were considered outliers and were excluded from the calculation. The CBR values obtained from the KDCP tests are presented in Table 1 and individual KDCP logs are presented in Appendix III.

Below a depth of about 12 inches under the pavement (i.e., below the depth of KDCP tests), standard DCP tests were performed up to a depth of 3 feet below the pavement or auger refusal whichever occurred first. DCP blow counts for 1.75 mm of penetration ranged between 1 to over 25 blows. The average DCP blow count for all the borings was 12.8 with a standard deviation of 5.4. Based on correlations between standard penetration tests and dynamic cone penetrometers test obtained from literature, the soils underneath the pavement ranged from very loose to medium dense clayey sands and soft to stiff sandy clays and fat clays.

Hand auger refusal was encountered at boring locations C-3, C-5, C-8, and C-9 at depths of 4.2, 4.1, 3.2 and 3.4 feet below the existing ground surface, respectively. The nature of the obstructions causing auger refusal could not be determined from the borings.

Groundwater was not encountered in any of the borings at the termination of drilling. The groundwater level is generally not stationary, but will fluctuate with seasonal and climatic variations and may be different at other times.

5.0 Conclusions and Recommendations

5.1 General Conclusions and Recommendations

The following conclusions and recommendations are based on the field and laboratory testing data gathered during this exploration, our understanding of the proposed improvements, our experience with the subsurface conditions found from our previous geotechnical studies at this airport and generally accepted principles and practices of geotechnical engineering. This report and the conclusions and recommendations provided herein are intended for the sole use of Michael Baker and their designated subconsultants for use in design of the overlay and pavement rehabilitation for Runway 1/19 at the Richard B. Russell Regional Airport. This report should not be relied upon by other third parties.

We request that we be advised of any significant changes to the proposed development from that described in this report so that we may amend our recommendations accordingly. In addition, we request the opportunity to review the geotechnical related portions of the project documents.

Based on the results of our field and laboratory testing program along Runway 1/19, the existing subgrade soils appear to be suitable to support the current pavement system. We do not anticipate any extensive soil repair or stabilization prior to rehabilitation or overlay construction.

If any portion of the pavement is selected for reconstruction, we recommend that the existing pavement and base material in the area be cut and removed and the subgrade soils evaluated by an experienced geotechnical engineer. We recommend proof rolling of the exposed subgrade soil using repeated passes from a heavily loaded tandem axle dump truck (20 tons minimum), under the observation of the geotechnical engineer. If unstable soils are encountered, subgrade re-compaction, stabilization or shallow undercutting may be necessary.

The soils encountered during this exploration are generally suitable for re-use as structural fill or compaction in place. During any reconstruction, soils that are found to be unstable due to high moisture content can be moisture conditioned and re-compacted or removed and replaced with well-compacted structural fill or compacted stone base material. The upper foot of newly exposed subgrade soils should be re-compacted to a minimum of 95% of the modified Proctor (ASTM D1557) maximum dry density prior to placement of base stone. The compaction moisture content should be maintained at optimum moisture content plus or minus three percent. As indicated earlier, the average natural moisture content of the tested soil samples was about 12.9 percent higher than the average optimum moisture content. Hence, drying of the in-situ soils will be required prior to compaction. Proper drainage of the finished pavements and ground surfaces is important to maintain the integrity of the existing subgrade soils both during construction and after completion of the project. Therefore, we recommend that all median and shoulder areas be graded to provide positive drainage away from the adjacent pavement subgrade areas, and toward suitable drainage areas such as a perimeter ditch or culvert.

As previously mentioned, hand auger refusal was encountered at borings C-3, C-5, C-8, and C-9. The nature of the obstructions causing auger refusal could not be determined. We anticipate that the runway will remain near current grade and no significant cuts are anticipated. Therefore, we do not anticipate that the auger refusal material will be encountered during the rehabilitation. If excavations are anticipated in the vicinity of the Runway additional borings should be performed to further evaluate the character and continuity as well as the horizontal and vertical extent of the refusal material.

5.2 Pavement Design Recommendations

In accordance with the soil classification method (USCS classification) described in the FAA advisory circular 150/5320-6D, *Airport Pavement Design and Evaluation*, the subgrade soils were classified by laboratory test results and were designated as soils in group SC, CL, and CH. The FAA recommends that the design CBR value be conservatively selected based on one standard deviation below the mean. The mean CBR value from two laboratory tests is 5.6. Also, excluding the outlier CBR values (C-1 and C-2) obtained from KDCP tests, mean CBR value for the top 12 inches of the subgrade below the Runway 1/19 was 6 with a standard deviation of 1.7. Therefore, the CBR value corresponding to one standard deviation below the mean is 4.3. Based on these field and laboratory test results, we recommend that a CBR value of 4.0 be used in design of the pavement rehabilitation/overlay.

TABLES

Table 1
Summary of Pavement Cores and KDCP Test Results
Runway 1/19 Rehabilitation and Overlay
Richard B. Russell Regional Airport
Floyd County, Georgia
Willmer Project No. ATL-71.4275

Core No.	Location on Runway 1/19	Asphalt Pavement Thickness (in)	GAB Thickness[1](in)	In-Situ Kessler CBR[2] Value from KDCP Test Results[3]
C-1	Left	14.5	6	18
C-2	Right	11.5	8	35
C-3	Left	11.5	6	6
C-4	Right	9.25	9	7
C-5	Left	10.5	7	5
C-6	Right	10	7	4
C-7	Left	9.5	9	5
C-8	Right	9.25	7	10
C-9	Left	10.25	7	4
C-10	Right	9.75	5	5
C-11	Left	13.75	10	7
C-12	Right	6.75	10	7

1. GAB – Graded aggregate base.

2. The CBR values listed are the average values for the top up to 12-inches of subgrade soil. Where distinctly different layers were encountered in the top 12 inches, the CBR value for the weaker layer was used.

3. KDCP – Kessler Dynamic Cone Penetrometer

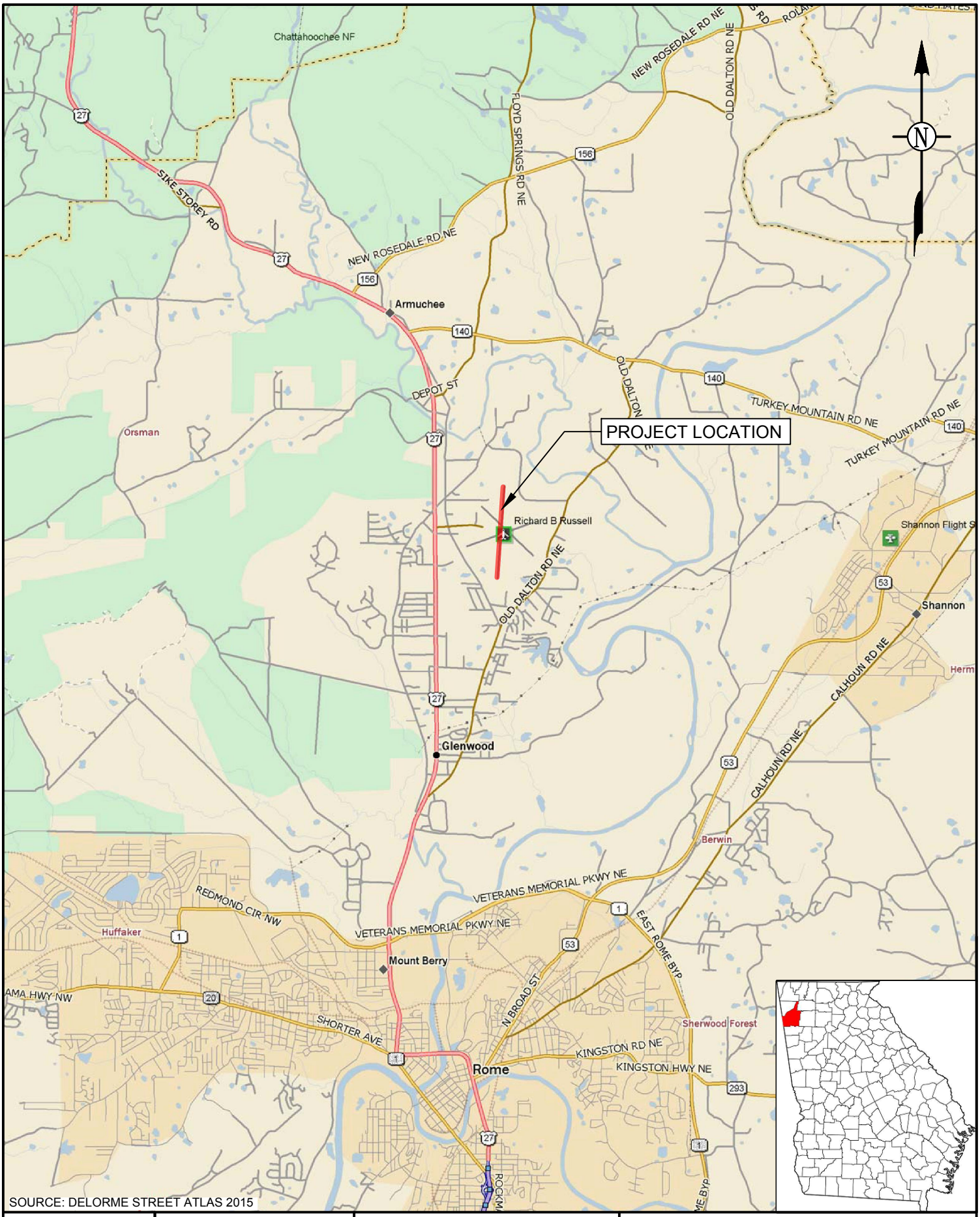
Table 2
Summary of Modified Proctor Compaction and CBR Test Results
Runway 1/19 Rehabilitation and Overlay
Richard B. Russell Regional Airport
Rome, Floyd County, Georgia
Willmer Project No. ATL-71.4275

Sample Number	Boring Number	Sample Depth Below Pavement Surface (ft)	Soil Description	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	Natural Moisture Content (%)	Modified Proctor Compaction Test		CBR Test Results	
								Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Degree of Compaction (%)	CBR Value (%)
B-1	C-1 C-2	2.1-4.6 2.1-4.6	Clayey Sand (SC)	46.7	50	30	23.8	121.3	12.7	95	6.9
B-2	C-9 C-10	2.4-3.4 2.3-4.8	Fat Clay (CH)	86.3	59	42	33.2	109.5	18.5	95	4.4
B-3	C-3	2.5-4.2	Sandy Clay (CL)	78.4	29	16	19.7	--	--	--	--

Abbreviations:

CBR – California Bearing Ratio
pcf – pounds per cubic foot

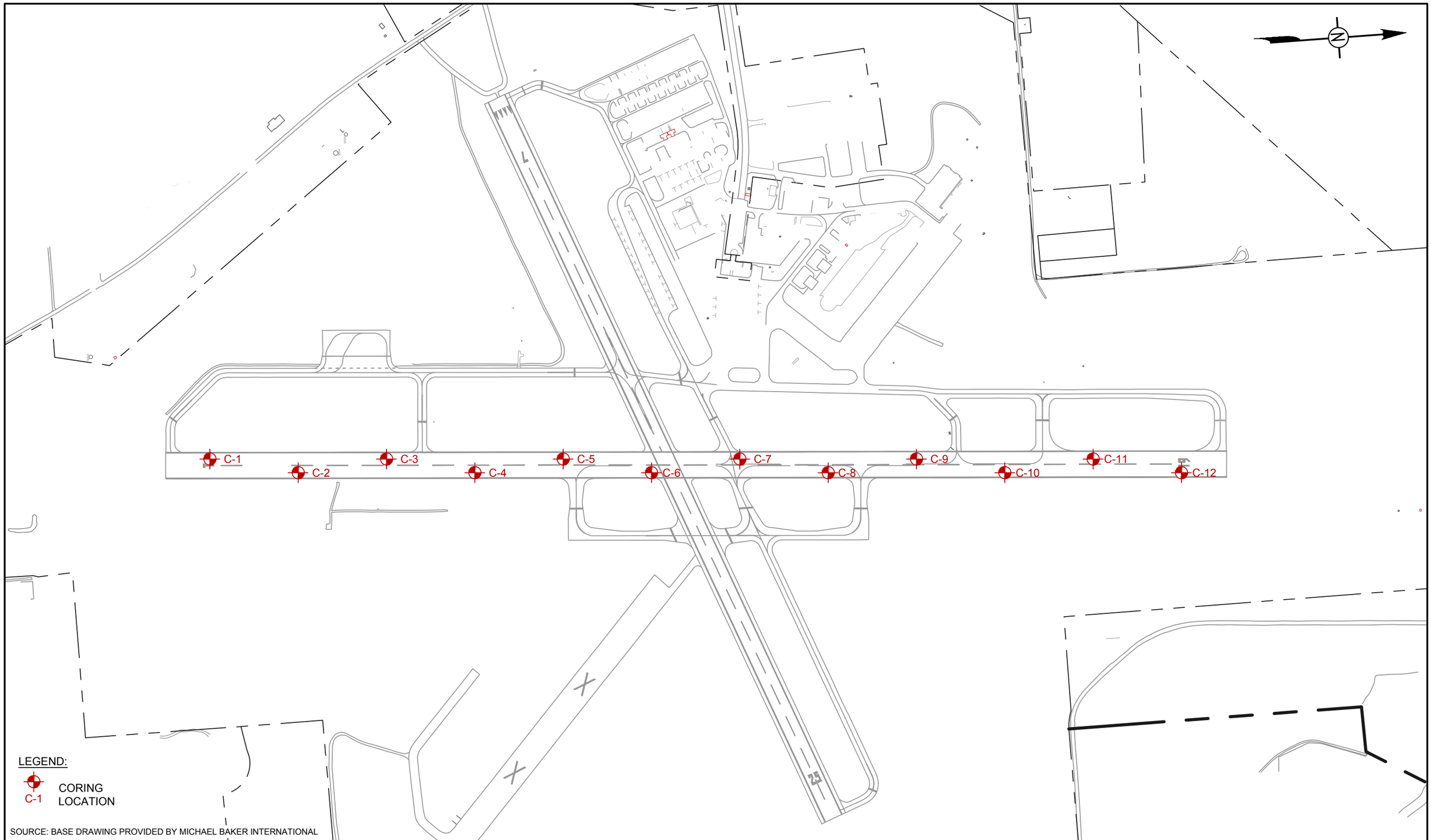
FIGURES



SOURCE: DELORME STREET ATLAS 2015

SCALE: 1" = 1.5 MILES	WILLMER Engineering	GEOTECHNICAL ENGINEERING CONSTRUCTION SERVICES ENVIRONMENTAL SERVICES AND ENGINEERING 3772 PLEASANTDALE ROAD - SUITE 165 ATLANTA, GA 30340-4270	FIGURE 1: PROJECT LOCATION MAP SUBSURFACE EXPLORATION & GEOTECHNICAL ENGINEERING EVALUATION RUNWAY 1/19 REHABILITATION AND OVERLAY RICHARD B. RUSSELL REGIONAL AIRPORT ROME, FLOYD COUNTY, GEORGIA WILLMER PROJECT No. 71.4275
DATE: 3/7/2018			
DRAWN BY: JC			
REVIEWED BY: AB			

P:\4275 Michael Baker Floyd Co. Runway 1-19 Rehabilitation & Overlay\CADD\Fig 1 Project Location.dwg



SOURCE: BASE DRAWING PROVIDED BY MICHAEL BAKER INTERNATIONAL

SCALE: 1" = 500'	
DATE: 3/7/2018	
DRAWN BY: JC	
REVIEWED BY: AB	

WILLMER Engineering

GEOTECHNICAL ENGINEERING ¤ CONSTRUCTION SERVICES
ENVIRONMENTAL SERVICES AND ENGINEERING
3772 PLEASANTDALE ROAD - SUITE 165
ATLANTA, GA 30340-4270

FIGURE 2: CORING LOCATION PLAN
SUBSURFACE EXPLORATION &
GEOTECHNICAL ENGINEERING EVALUATION
RUNWAY 1/19 REHABILITATION AND OVERLAY
RICHARD B. RUSSELL REGIONAL AIRPORT
ROME, FLOYD COUNTY, GEORGIA
WILLMER PROJECT No. 71.4275

P:\4275 Michael Baker Floyd Co. Runway 1-19 Rehabilitation & Overlay\CADD\FIG 2 CORING LOCATION.dwg

APPENDIX I

Pavement Core Photographs

Core No.	Location	Core Thickness
C-1	Runway 1/19 Left	14.5”

Core No.	Location	Core Thickness
C-2	Runway 1/19 Right	11.5”

Core No.	Location	Core Thickness
C-3	Runway 1/19 Left	11.5”

Core No.	Location	Core Thickness
C-4	Runway 1/19 Right	9.25”

Core No.	Location	Core Thickness
C-5	Runway 1/19 Left	10.5”

Core No.	Location	Core Thickness
C-6	Runway 1/19 Right	10”

Core No.	Location	Core Thickness
C-7	Runway 1/19 Left	9.5”

Core No.	Location	Core Thickness
C-8	Runway 1/19 Right	9.25”

Core No.	Location	Core Thickness
C-9	Runway 1/19 Left	10.25”

Core No.	Location	Core Thickness
C-10	Runway 1/19 Right	9.75”

Core No.	Location	Core Thickness
C-11	Runway 1/19 Left	13.75”

Core No.	Location	Core Thickness
C-12	Runway 1/19 Right	6.75”

APPENDIX II

Boring Record Legend

Unified Soil Classification System Reference Sheet

Boring Logs

BORING RECORD LEGEND

SM, CL, etc: - GROUP SYMBOL based on Unified Soil Classification System.
(Refer to ASTM D-2488 and Table 1 of D-2487)

N-VALUE: BLOWS PER FOOT- Standard Penetration Resistance (SPT) blow count ,
the sum of the second and third 6-inch increments of the SPT test.
(Refer to ASTM D-1586)

CONSISTENCY / RELATIVE DENSITY Correlated with SPT Blow Count, N:

SILTS AND CLAYS

N (blows per foot)	Consistency
0 - 2	Very Soft
3 - 4	Soft
5 - 8	Firm
9 - 15	Stiff
16 - 30	Very Stiff
31 - 50	Hard
> 50	Very Hard

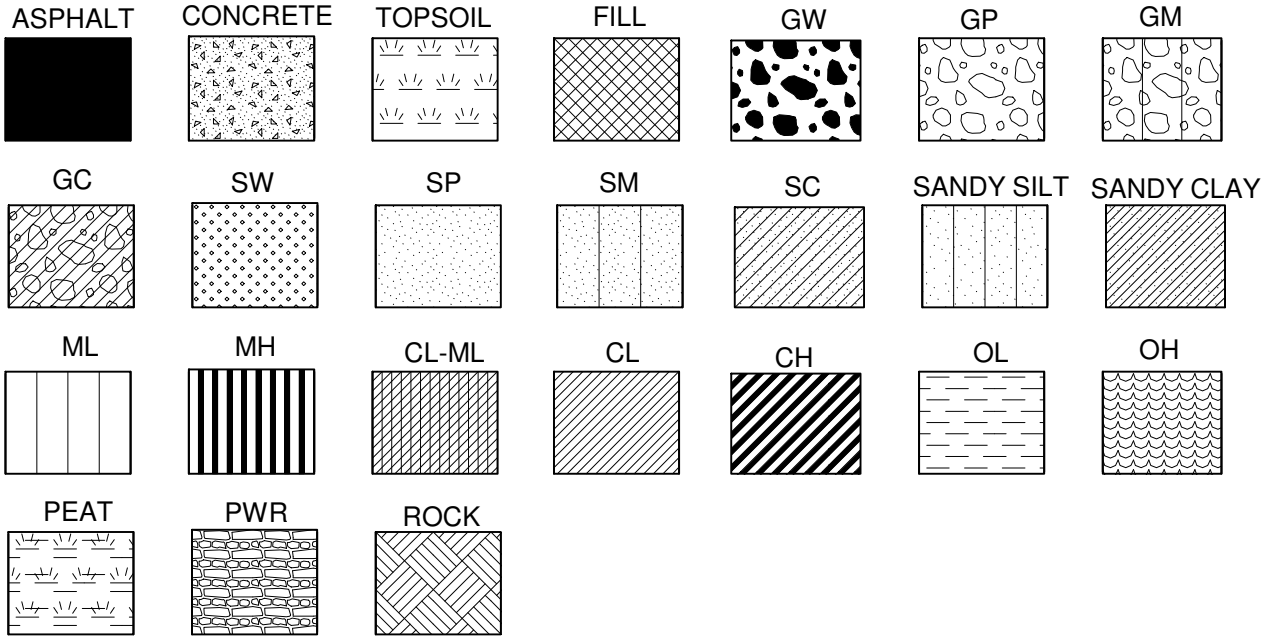
SANDS

N (blows per foot)	Relative Density
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
> 50	Very Dense

NOTES:

Groundwater Measurements:

- Water level at time of backfilling
- Water level at time of boring
- Caved level at 24 hours



Willmer Engineering Inc.
3772 Pleasantdale Road, Suite 165
Atlanta, Georgia 30340

UNIFIED SOIL CLASSIFICATION SYSTEM REFERENCE SHEET

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN #200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED #4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES	**(GW)**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			(GP)	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES	**(GM)**	SILTY GRAVELS and GRAVEL-SAND-SILT MIXTURES
			(GC)	CLAYEY GRAVELS and GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING #4 SIEVE	CLEAN SAND LITTLE OR NO FINES	**(SW)**	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			(SP)	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES	**(SM)**	SILTY SANDS and SAND-SILT MIXTURES
			(SC)	CLAYEY SANDS and SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		**(ML)**	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR VERY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			(CL)	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			(OL)	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		**(MH)**	INORGANIC ELASTIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
			(CH)	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			(OH)	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			**(PT)**	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**
Project Number: **ATL-71.4275**

HOLE No. C-1

Sheet 1 of 1

Location: **See Figure 2**

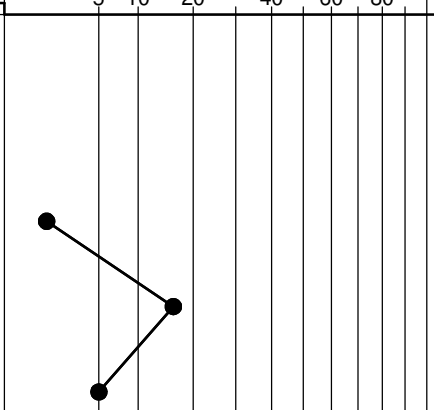
Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **4** Overburden: **4.6** Rock: **N/A** Total Depth (ft): **4.6**

Logged By: **ND** Date Logged: **3/5/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)	BLOWS/1.75 IN.
					ASPHALT = 14.5"	--		
1					GRADED AGGREGATE BASE = 6" **GAB**			
2		DCP			FILL: Dark gray clayey **SAND** **SC**			1
3		BAG DCP						16
4		DCP						5
5					Boring was terminated at 4.6 feet below the existing ground surface.			
6					Groundwater was not encountered at the time of boring completion.			
7								
8								
9								
10								
11								
12								
13								
14								
15								



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-1**

A&PLOG 4275 FLOYD CO. RUNWAY DCP.GPJ 4/29/18

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**	**HOLE No. C-2**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**	Sheet 1 of 1
Project Number: **ATL-71.4275**	Location: **See Figure 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **4** Overburden: **4.6** Rock: **N/A** Total Depth (ft): **4.6**

Logged By: **ND** Date Logged: **3/5/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)	BLOWS/1.75 IN.
					ASPHALT = 11.5"	--		
1					GRADED AGGREGATE BASE = 8" **GAB**			
2		DCP			FILL: Dark gray clayey **SAND** **SC**			25+
3		BAG DCP						25+
4		DCP						25+
5					Boring was terminated at 4.6 feet below the existing ground surface.			
6					Groundwater was not encountered at the time of boring completion.			
7								
8								
9								
10								
11								
12								
13								
14								
15								

DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment): 5 10 20 40 60 80

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-2**

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**
Project Number: **ATL-71.4275**

HOLE No. C-3

Sheet 1 of 1

Location: **See Figure 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

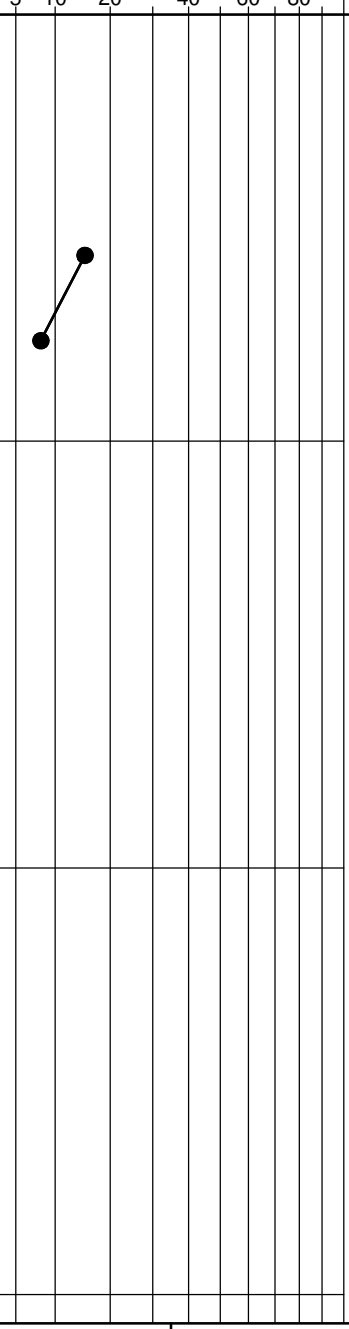
Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **3** Overburden: **4.2** Rock: **N/A** Total Depth (ft): **4.2**

Logged By: **ND** Date Logged: **3/5/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	BLOWS/1.75 IN.
					ASPHALT = 11.5"	--	
1					GRADED AGGREGATE BASE = 6" **GAB**		
2					FILL: Reddish brown sandy **CLAY**		
3		DCP					15
		BAG					
4		DCP					8
5					Hand auger refusal was encountered at 4.2 feet below the existing ground surface.		
6					Groundwater was not encountered at the time of boring completion.		
7							
8							
9							
10							
11							
12							
13							
14							
15							

DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-3**

A&PLOG 4275 FLOYD CO. RUNWAY DCP.GPJ 4/29/18

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**
Project Number: **ATL-71.4275**

HOLE No. C-4

Sheet 1 of 1

Location: **See Figure 2**

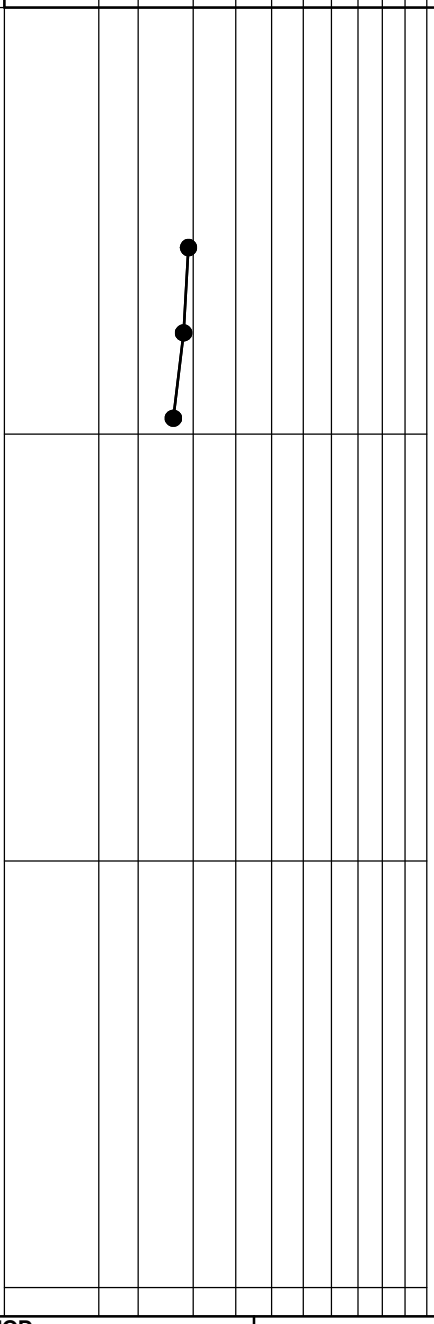
Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **3** Overburden: **5** Rock: **N/A** Total Depth (ft): **5.0**

Logged By: **ND** Date Logged: **3/5/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)	BLOWS/1.75 IN.
					ASPHALT = 9.25"	--		
1					GRADED AGGREGATE BASE = 9" GAB			
2					FILL: Reddish brown sandy **CLAY**			
3		DCP						19
4		DCP						18
5		DCP						16
5					Boring was terminated at 5.0 feet below the existing ground surface.			
6					Groundwater was not encountered at the time of boring completion.			
7								
8								
9								
10								
11								
12								
13								
14								
15								



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-4**

A&PLOG 4275 FLOYD CO. RUNWAY DCP.GPJ 4/29/18

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**
Project Number: **ATL-71.4275**

HOLE No. C-5

Sheet 1 of 1

Location: **See Figure 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **2** Overburden: **4.1** Rock: **N/A** Total Depth (ft): **4.1**

Logged By: **ND** Date Logged: **3/5/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)	BLOWS/1.75 IN.
					ASPHALT = 10.5"	--		
1					GRADED AGGREGATE BASE = 7" **GAB**			
2					FILL: Reddish brown sandy **CLAY**			
3		DCP						12
4		DCP						19
5					Hand auger refusal was encountered at 4.1 feet below the existing ground surface.			
6					Groundwater was not encountered at the time of boring completion.			
7								
8								
9								
10								
11								
12								
13								
14								
15								

DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment): 5 10 20 40 60 80

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-5**

A&PLOG 4275 FLOYD CO. RUNWAY DCP.GPJ 4/29/18

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**	**HOLE No. C-6**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**	Sheet 1 of 1
Project Number: **ATL-71.4275**	Location: **See Figure 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

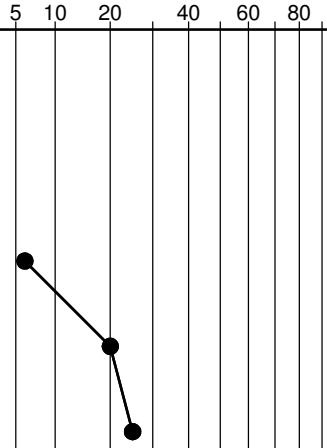
Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **3** Overburden: **4.9** Rock: **N/A** Total Depth (ft): **4.9**

Logged By: **ND** Date Logged: **3/6/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	BLOWS/1.75 IN.
					ASPHALT = 10"	--	
1					GRADED AGGREGATE BASE = 7" **GAB**		
2					FILL: Reddish brown sandy **CLAY**		
3		DCP					6
4		DCP					20+
		DCP					25+
5					Boring was terminated at 4.9 feet below the existing ground surface.		
6					Groundwater was not encountered at the time of boring completion.		
7							
8							
9							
10							
11							
12							
13							
14							
15							

DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-6**

A&PLOG 4275 FLOYD CO. RUNWAY DCP.GPJ 4/29/18

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**
Project Number: **ATL-71.4275**

HOLE No. C-7

Sheet 1 of 1

Location: **See Figure 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

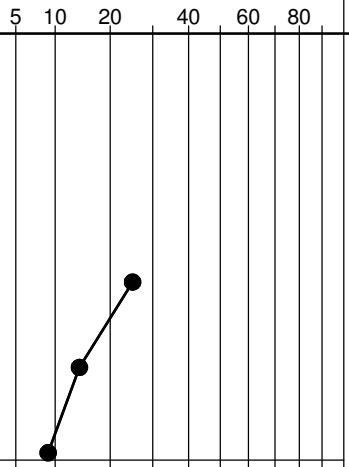
Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **3** Overburden: **5.1** Rock: **N/A** Total Depth (ft): **5.1**

Logged By: **ND** Date Logged: **3/6/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	BLOWS/1.75 IN.
					ASPHALT = 9.5"	--	
1					GRADED AGGREGATE BASE = 9" **GAB**		
2					FILL: Reddish brown sandy **CLAY**		
3		DCP					25+
4		DCP					14
5		DCP					9
6					Boring was terminated at 5.1 feet below the existing ground surface.		
7					Groundwater was not encountered at the time of boring completion.		
8							
9							
10							
11							
12							
13							
14							
15							

DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-7**

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**
Project Number: **ATL-71.4275**

HOLE No. C-8

Sheet 1 of 1

Location: **See Figure 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **1** Overburden: **3.2** Rock: **N/A** Total Depth (ft): **3.2**

Logged By: **ND** Date Logged: **3/6/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment) 5 10 20 40 60 80	BLOWS/1.75 IN.
					ASPHALT = 9.25"	--		
1					GRADED AGGREGATE BASE = 7" **GAB**			
2					FILL: Reddish brown sandy **CLAY**			
		DCP					●	25+
3								
4					Hand auger refusal was encountered at 3.2 feet below the existing ground surface.			
5					Groundwater was not encountered at the time of boring completion.			
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-8**

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**
Project Number: **ATL-71.4275**

HOLE No. C-9

Sheet 1 of 1

Location: **See Figure 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **2** Overburden: **3.4** Rock: **N/A** Total Depth (ft): **3.4**

Logged By: **ND** Date Logged: **3/6/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment) 5 10 20 40 60 80	BLOWS/1.75 IN.
					ASPHALT = 10.25"	--		
1					GRADED AGGREGATE BASE = 7" **GAB**			
2					FILL: Reddish brown fat **CLAY** **CH**			
3		DCP BAG					●	25+
4					Hand auger refusal was encountered at 3.4 feet below the existing ground surface.			
5					Groundwater was not encountered at the time of boring completion.			
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-9**

A&PLOG 4275 FLOYD CO. RUNWAY DCP.GPJ 4/29/18

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**	**HOLE No. C-10**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**	Sheet 1 of 1
Project Number: **ATL-71.4275**	Location: **See Figure 2**

Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

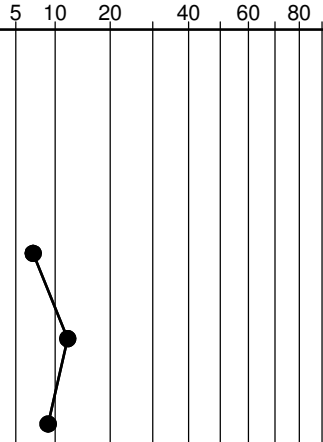
Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **4** Overburden: **4.8** Rock: **N/A** Total Depth (ft): **4.8**

Logged By: **ND** Date Logged: **3/6/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	BLOWS/1.75 IN.
					ASPHALT = 9.75"	--	
1					GRADED AGGREGATE BASE = 5" **GAB**		
					FILL: Reddish brown fat **CLAY** **CH**		
2							
		DCP					7
3		BAG					
		DCP					12
4							
		DCP					9
5					Boring was terminated at 4.8 feet below the existing ground surface.		
6					Groundwater was not encountered at the time of boring completion.		
7							
8							
9							
10							
11							
12							
13							
14							
15							

DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-10**

A&PLOG 4275 FLOYD CO. RUNWAY DCP.GPJ 4/29/18

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**	**HOLE No. C-11**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**	Sheet 1 of 1
Project Number: **ATL-71.4275**	Location: **See Figure 2**

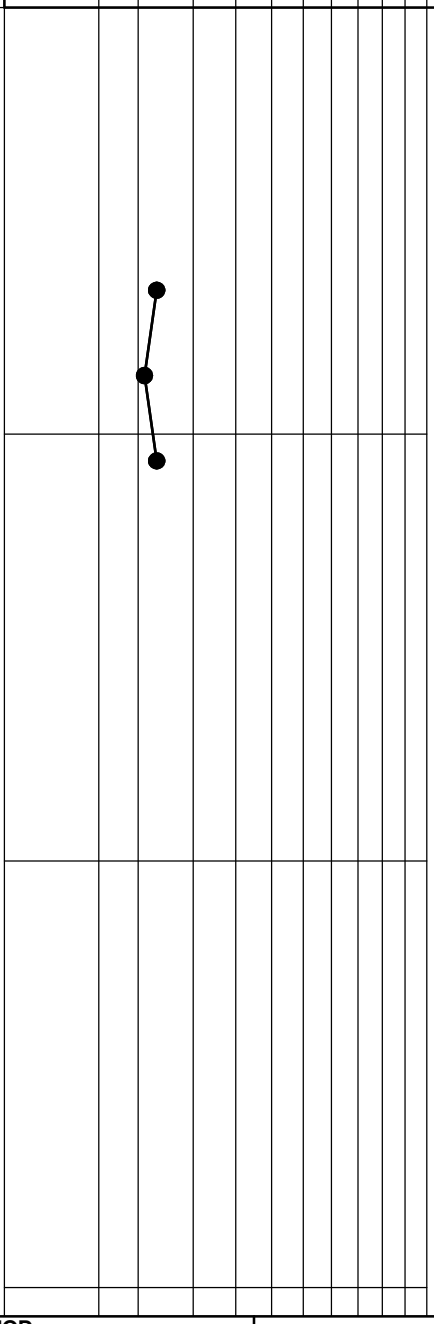
Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **3** Overburden: **5.5** Rock: **N/A** Total Depth (ft): **5.5**

Logged By: **ND** Date Logged: **3/6/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)	BLOWS/1.75 IN.
					ASPHALT = 13.75"	--		
1								
					GRADED AGGREGATE BASE = 10" **GAB**			
2					FILL: Reddish brown fat **CLAY** **CH**			
3		DCP						13
4		DCP						11
5		DCP						13
6					Boring was terminated at 5.5 feet below the existing ground surface.			
7					Groundwater was not encountered at the time of boring completion.			
8								
9								
10								
11								
12								
13								
14								
15								



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-11**

A&PLOG 4275 FLOYD CO. RUNWAY DCP.GPJ 4/29/18

WILLMER Engineering

Project: **Runway 1/19 Rehabilitation and Overlay**
Location: **Richard B. Russell Regional Airport, Floyd County, Georgia**
Project Number: **ATL-71.4275**

HOLE No. C-12

Sheet 1 of 1

Location: **See Figure 2**

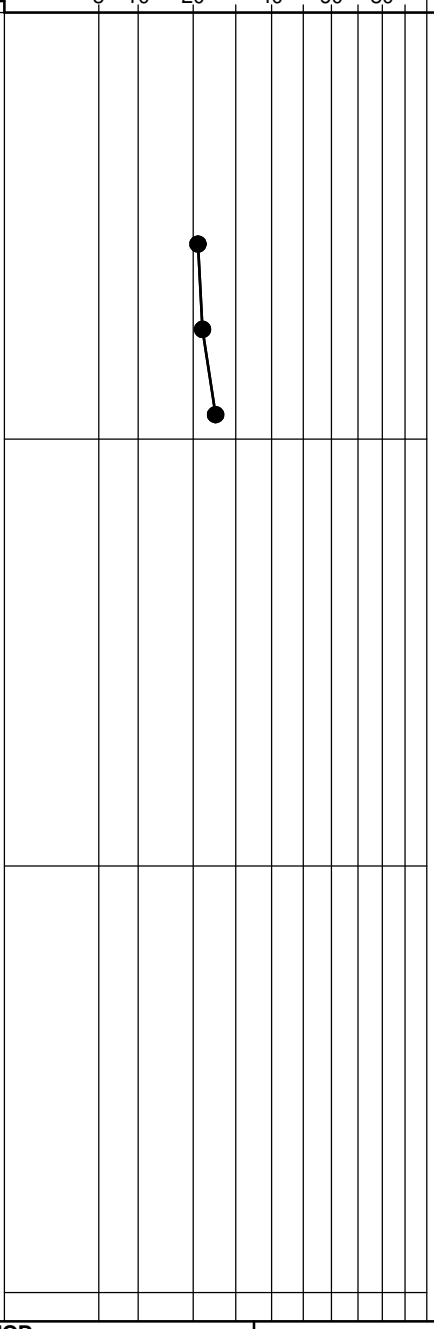
Azimuth: **--** Angle from Horizontal: **90** Surface Elevation (ft): **--** Station: **N/A**

Drilling Equipment: **Hand Auger** Drilling Method: **Dynamic Cone Penetrometer**

Core Boxes: **N/A** Samples: **3** Overburden: **4.9** Rock: **N/A** Total Depth (ft): **4.9**

Logged By: **ND** Date Logged: **3/6/18**

VERTICAL DEPTH	GRAPHIC LOG	SAMPLE TYPE	RCD%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	DYNAMIC CONE PENETRATION TEST DATA (blows/1.75 inch increment)	BLOWS/1.75 IN.
					ASPHALT = 6.75"	--		
1					GRADED AGGREGATE BASE = 10" **GAB**			
2					FILL: Reddish brown fat **CLAY** **CH**			
3		DCP						21
4		DCP						22
		DCP						25+
5					Boring was terminated at 4.9 feet below the existing ground surface.			
6					Groundwater was not encountered at the time of boring completion.			
7								
8								
9								
10								
11								
12								
13								
14								
15								



SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **C-12**

APPENDIX III

Kessler Dynamic Cone Penetrometer Logs

DCP TEST DATA

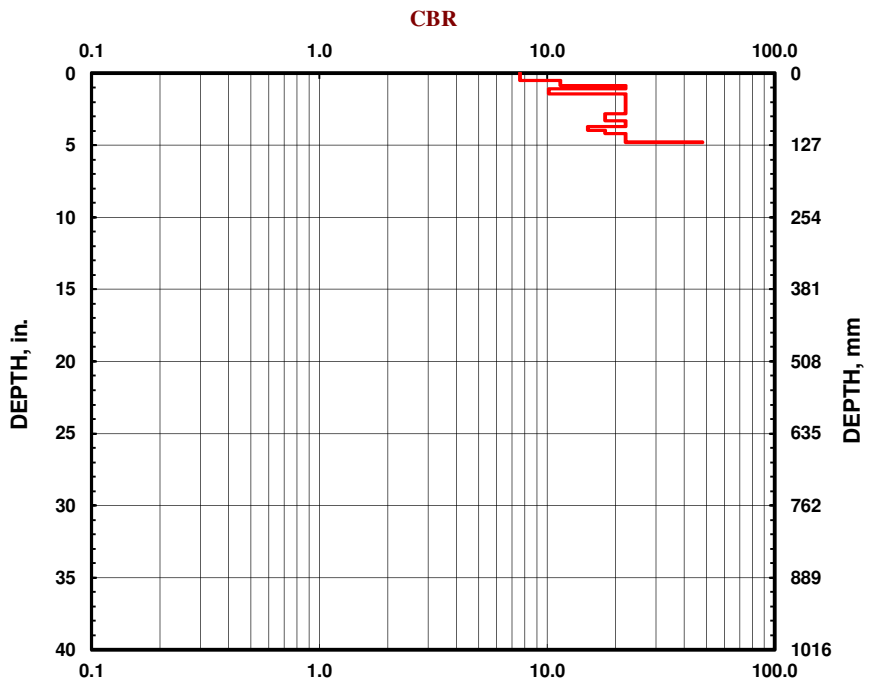
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 5-Mar-18

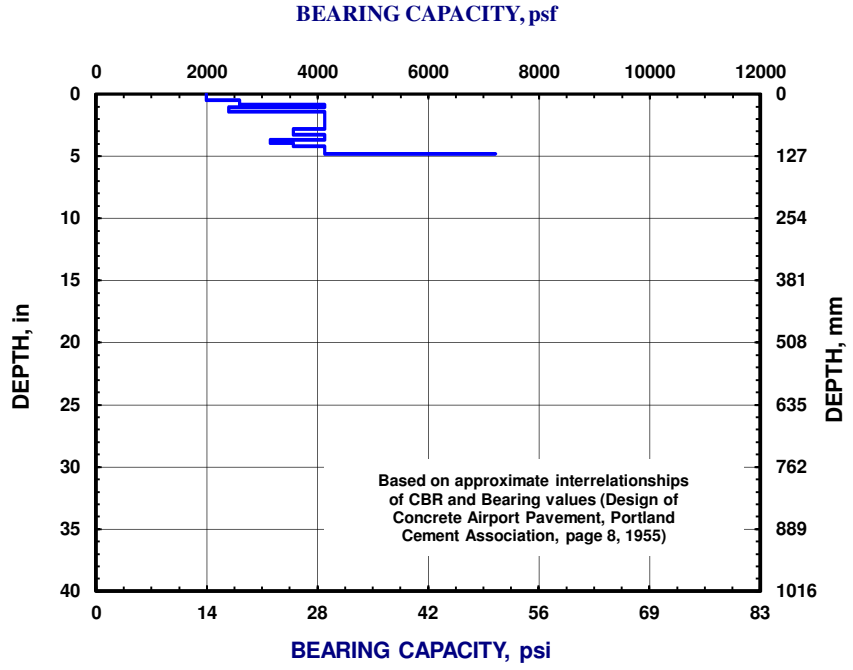
Location: C-1 **Soil Type(s):** Sandy Clay

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	13	2
1	22	2
1	27	2
1	37	2
1	42	2
1	47	2
1	52	2
1	57	2
1	62	2
1	67	2
1	72	2
1	78	2
1	84	2
1	89	2
1	94	2
1	101	2
1	107	2
1	112	2
1	117	2
1	122	2





DCP TEST DATA

Project: Runway 1/19 Rehabilitation & Overlay **Date:** 5-Mar-18

Location: C-2 **Soil Type(s):** Sandy Clay

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	2	2
1	41	2
1	49	2
1	58	2
1	68	2
1	72	2
1	77	2
1	78	2
1	85	2
1	89	2
1	91	2
1	93	2
1	98	2
1	101	2
1	103	2
1	104	2
1	108	2
1	111	2
1	114	2
1	118	2
1	123	2
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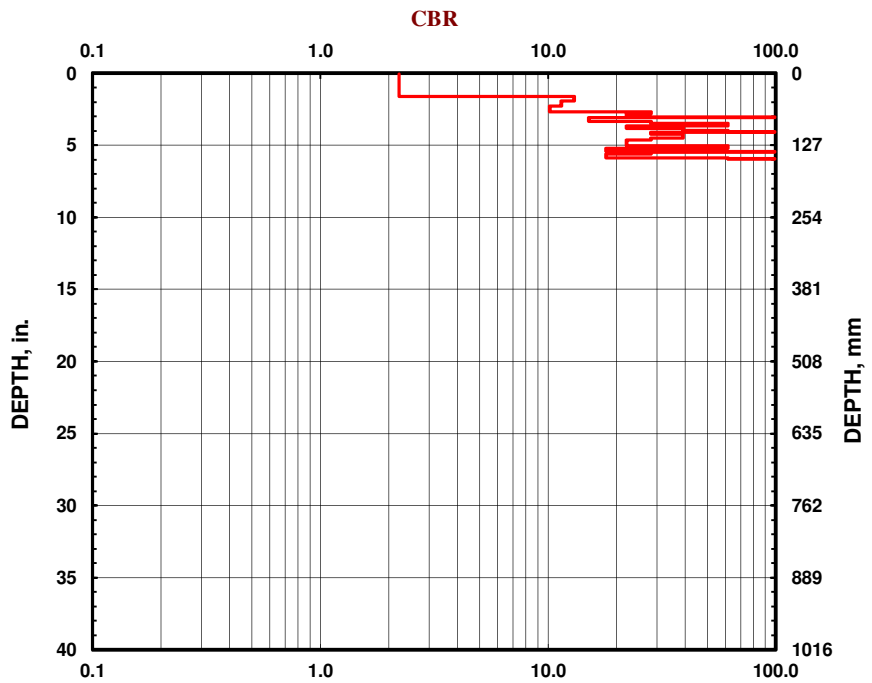
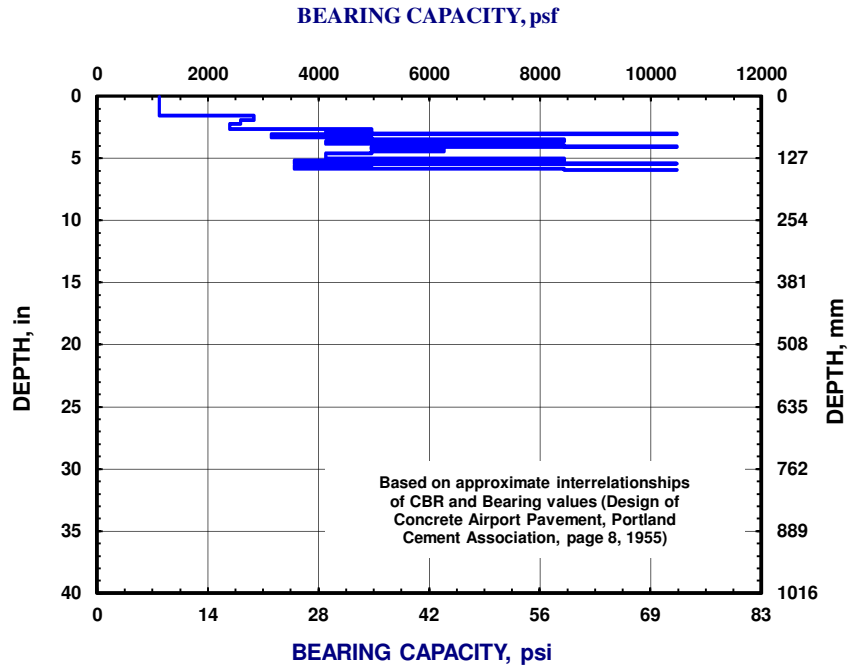
1	143	2
1	149	2
1	151	2





DCP TEST DATA

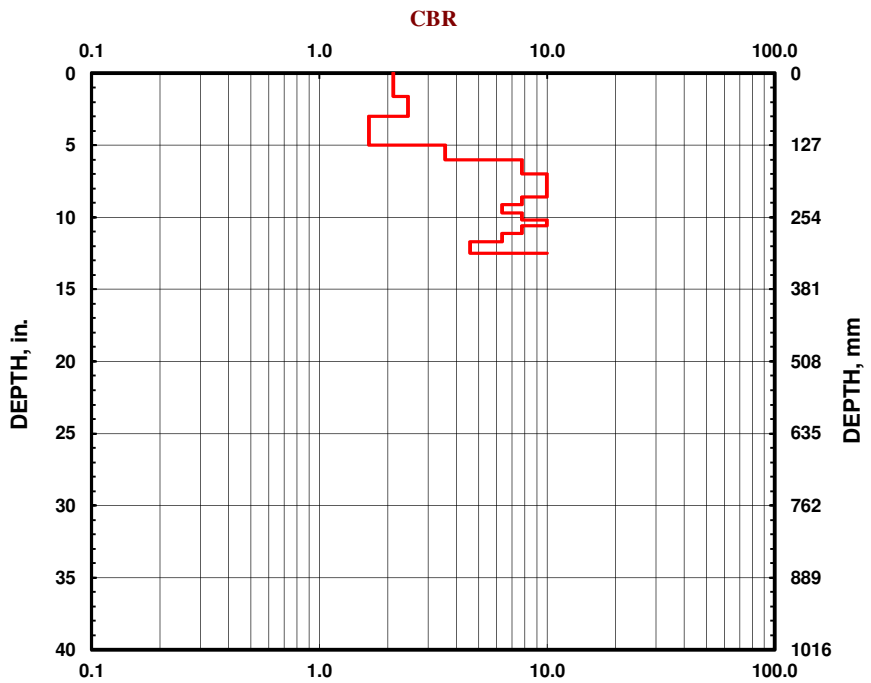
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 5-Mar-18

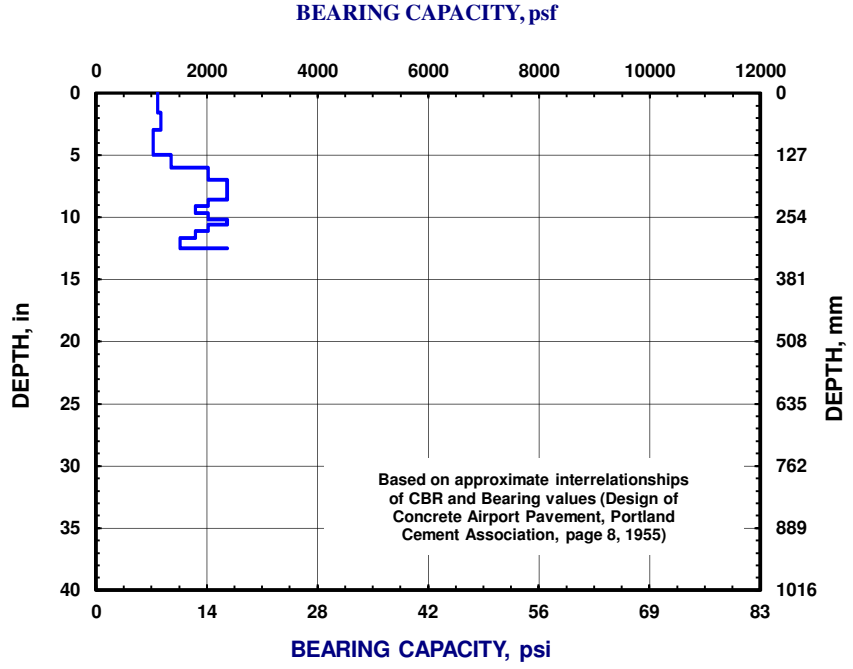
Location: C-3 **Soil Type(s):** Clayey Sand

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	40.64	2
1	76.2	2
1	127	2
1	152.4	2
1	165.1	2
1	177.8	2
1	187.96	2
1	198.12	2
1	208.28	2
1	218.44	2
1	231.14	2
1	246.38	2
1	259.08	2
1	269.24	2
1	281.94	2
1	297.18	2
1	317.5	2





DCP TEST DATA

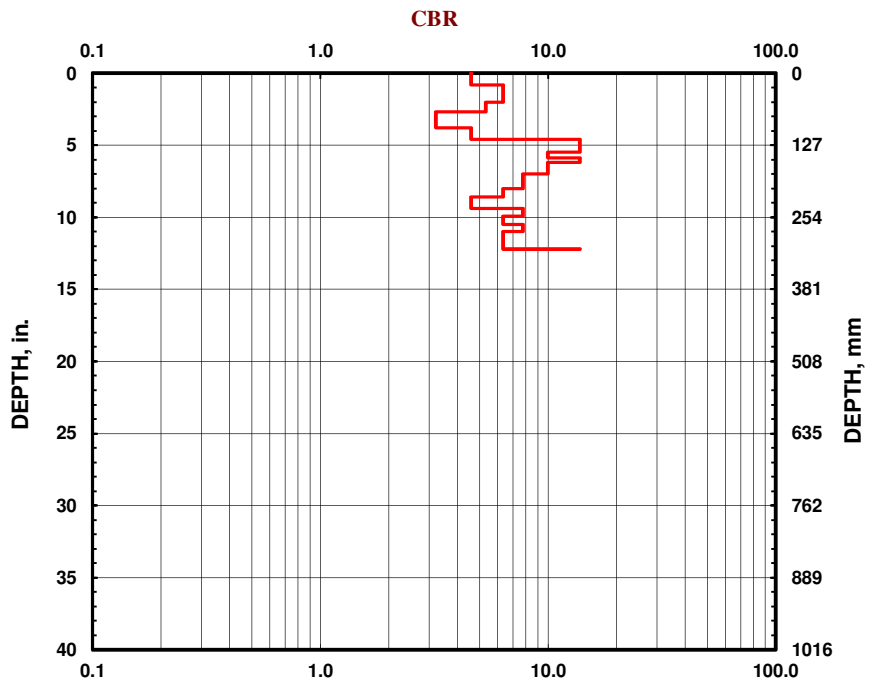
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 5-Mar-18

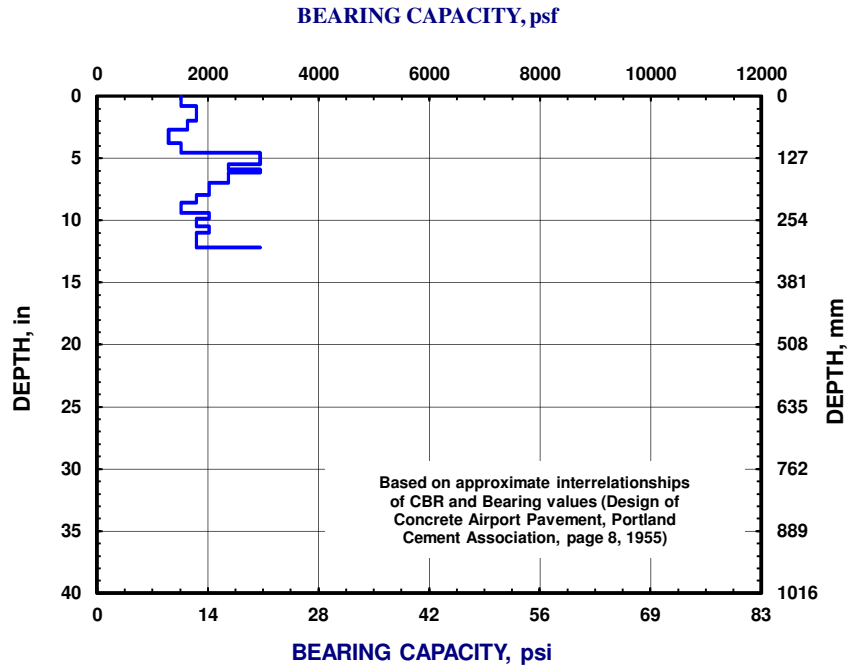
Location: C-4 **Soil Type(s):** Clayey Sand

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	20.32	2
1	35.56	2
1	50.8	2
1	68.58	2
1	96.52	2
1	116.84	2
1	124.46	2
1	132.08	2
1	139.7	2
1	149.86	2
1	157.48	2
1	167.64	2
1	177.8	2
1	190.5	2
1	203.2	2
1	218.44	2
1	238.76	2
1	251.46	2
1	266.7	2
1	279.4	2
1	294.64	2
1	309.88	2





DCP TEST DATA

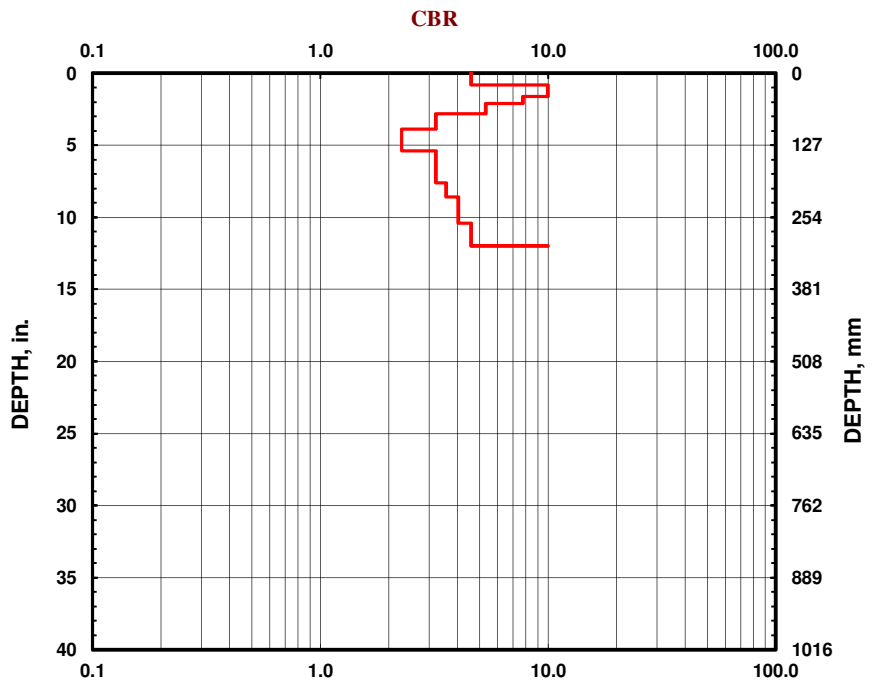
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 5-Mar-18

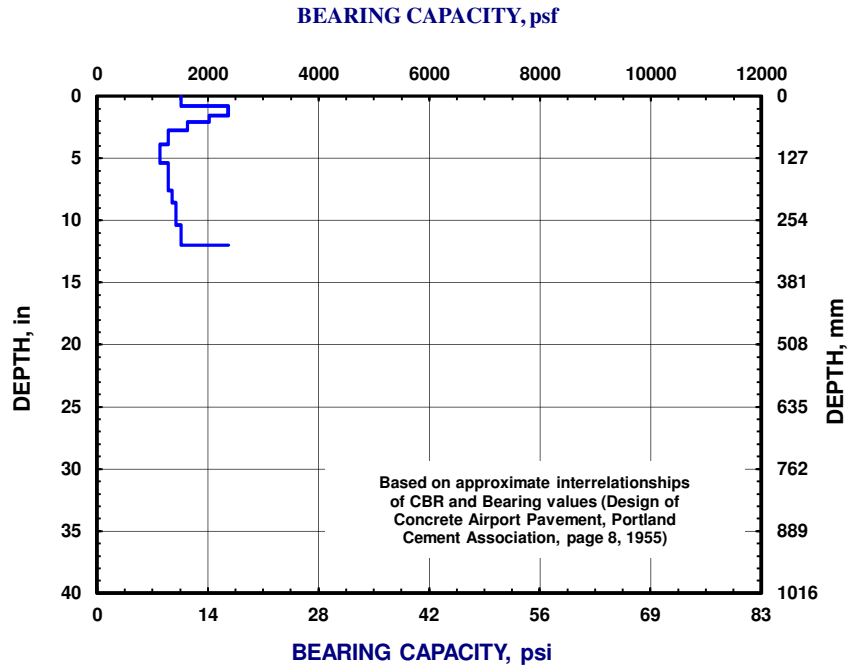
Location: C-5 **Soil Type(s):** Clayey Sand

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	20.32	2
1	30.48	2
1	40.64	2
1	53.34	2
1	71.12	2
1	99.06	2
1	137.16	2
1	165.1	2
1	193.04	2
1	218.44	2
1	241.3	2
1	264.16	2
1	284.48	2
1	304.8	2





DCP TEST DATA

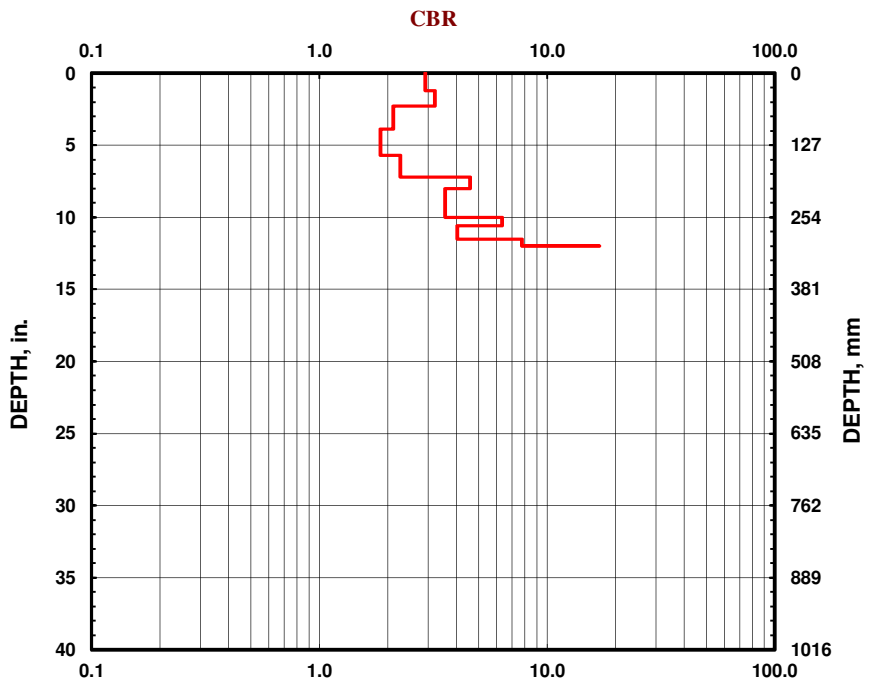
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 6-Mar-18

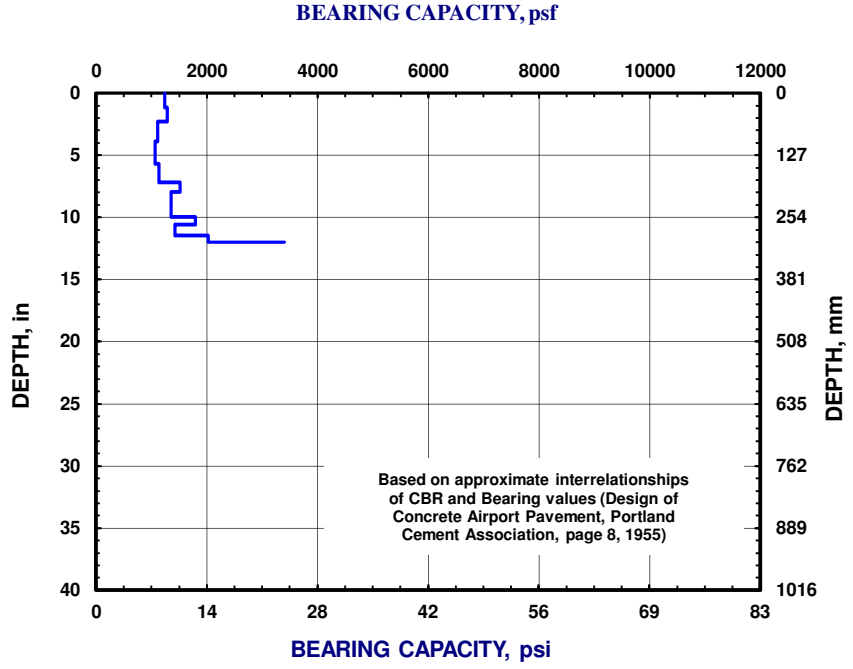
Location: C-6 **Soil Type(s):** Clayey Sand

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	30.48	2
1	58.42	2
1	99.06	2
1	144.78	2
1	182.88	2
1	203.2	2
1	228.6	2
1	254	2
1	269.24	2
1	292.1	2
1	304.8	2





DCP TEST DATA

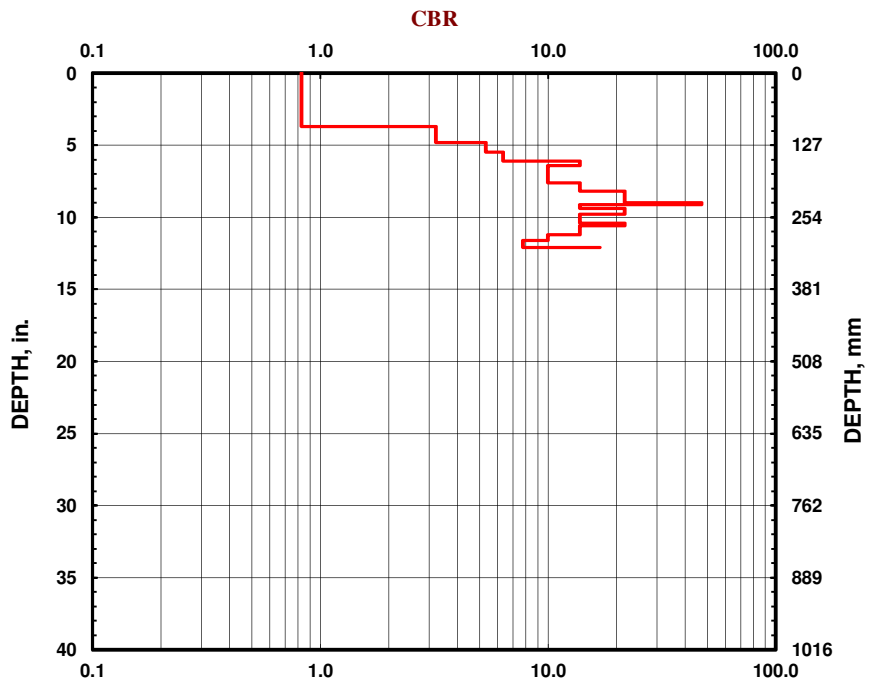
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 6-Mar-18

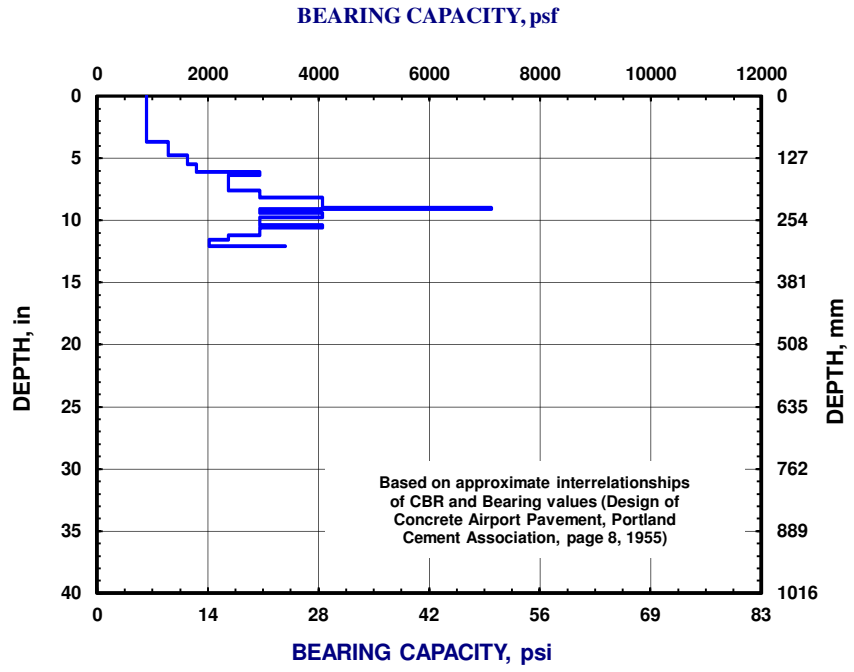
Location: C-7 **Soil Type(s):** Clayey Sand

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	93.98	2
1	121.92	2
1	139.7	2
1	154.94	2
1	162.56	2
1	172.72	2
1	182.88	2
1	193.04	2
1	200.66	2
1	208.28	2
1	213.36	2
1	218.44	2
1	223.52	2
1	228.6	2
1	231.14	2
1	238.76	2
1	243.84	2
1	248.92	2
1	256.54	2
1	264.16	2
1	269.24	2
1	276.86	2
1	284.48	2
1	294.64	2
1	307.34	2





DCP TEST DATA

Project: Runway 1/19 Rehabilitation & Overlay **Date:** 6-Mar-18

Location: C-8 **Soil Type(s):** Clayey Sand

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	12.7	2
1	22.86	2
1	35.56	2
1	43.18	2
1	53.34	2
1	60.96	2
1	71.12	2
1	83.82	2
1	93.98	2
1	101.6	2
1	109.22	2
1	114.3	2
1	119.38	2
1	124.46	2
1	129.54	2
1	137.16	2
1	144.78	2
1	149.86	2
1	157.48	2
1	165.1	2
1	167.64	2
1	175.26	2
1	180.34	2
1	187.96	2
1	193.04	2
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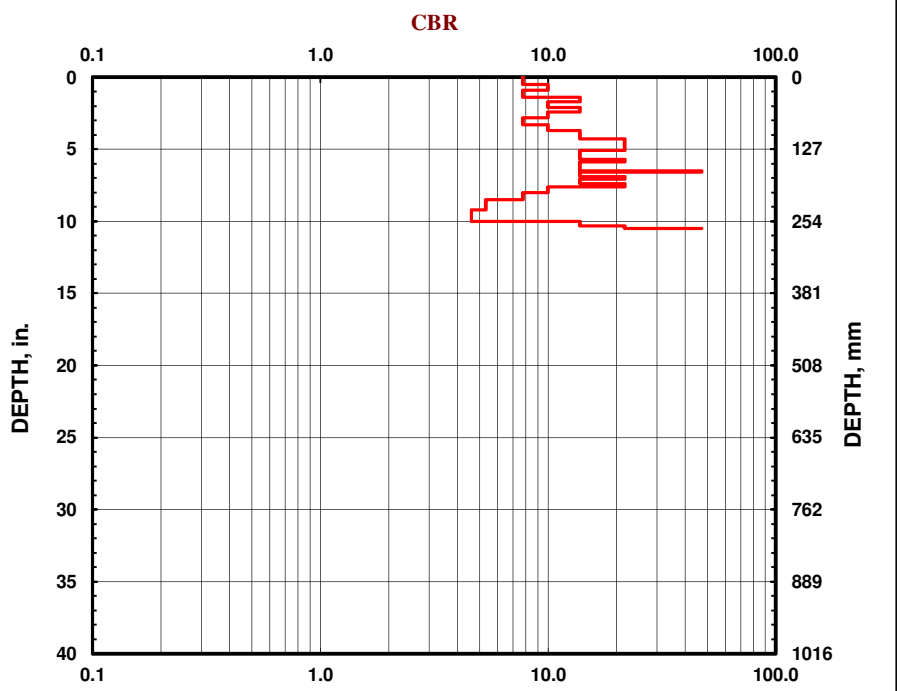
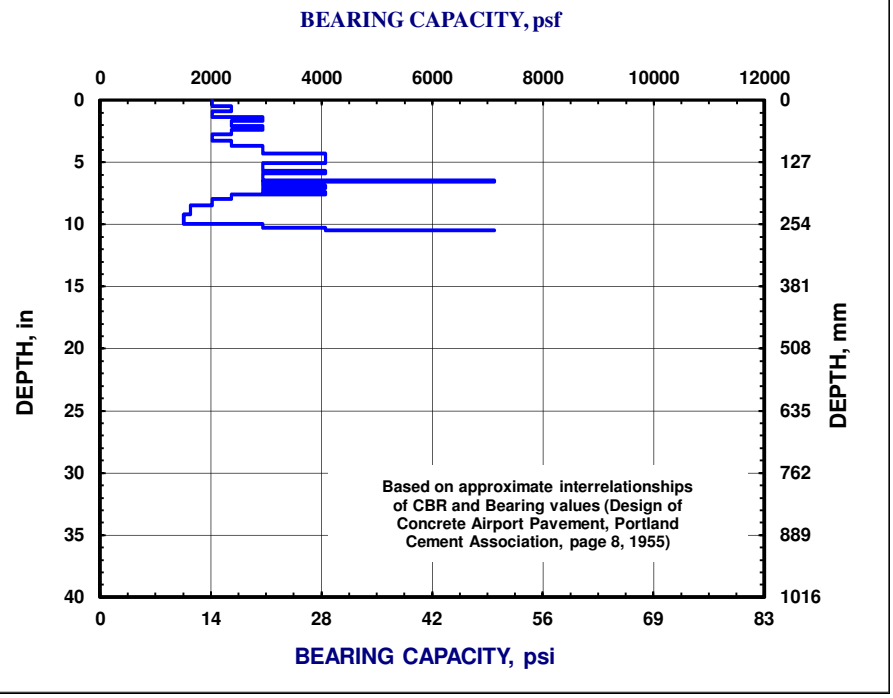
1	254	2
1	261.62	2
1	266.7	2





DCP TEST DATA

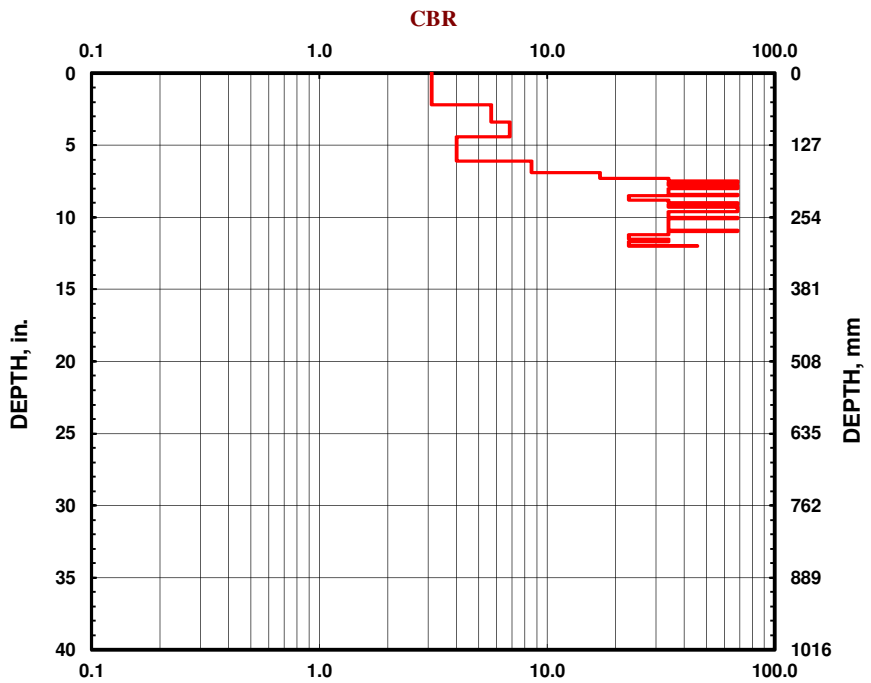
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 6-Mar-18

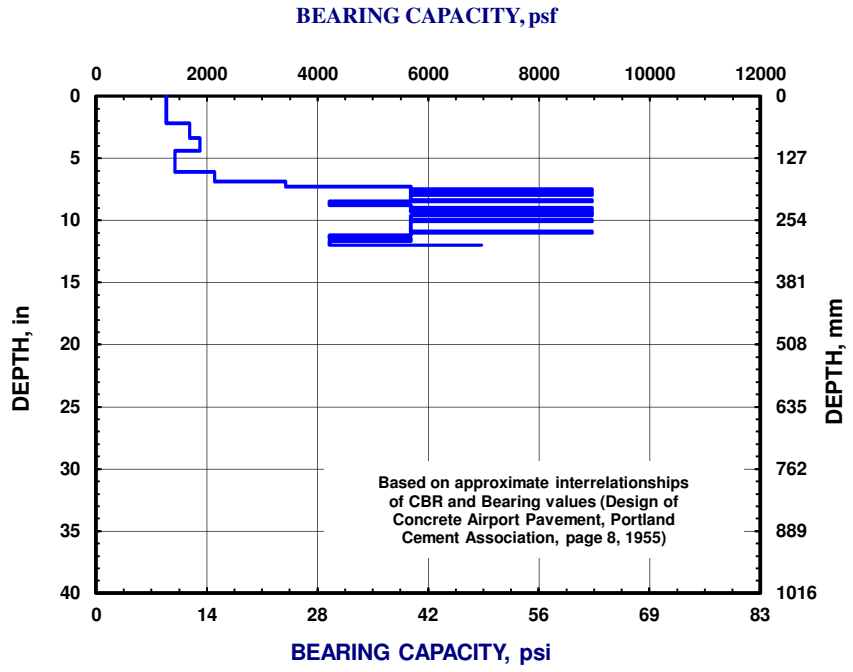
Location: C-9 **Soil Type(s):** Fat Clay

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ● CH
- ○ CL
- ○ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	55.88	2
1	86.36	2
1	111.76	2
1	154.94	2
1	175.26	2
1	185.42	2
1	190.5	2
1	193.04	2
1	198.12	2
1	200.66	2
1	203.2	2
1	208.28	2
1	213.36	2
1	215.9	2
1	223.52	2
1	228.6	2
1	231.14	2
1	236.22	2
1	238.76	2
1	241.3	2
1	243.84	2
1	248.92	2
1	254	2
1	256.54	2
1	261.62	2
1	266.7	2
1	271.78	2
1	276.86	2
1	279.4	2
1	284.48	2
1	292.1	2
1	297.18	2
1	304.8	2





DCP TEST DATA

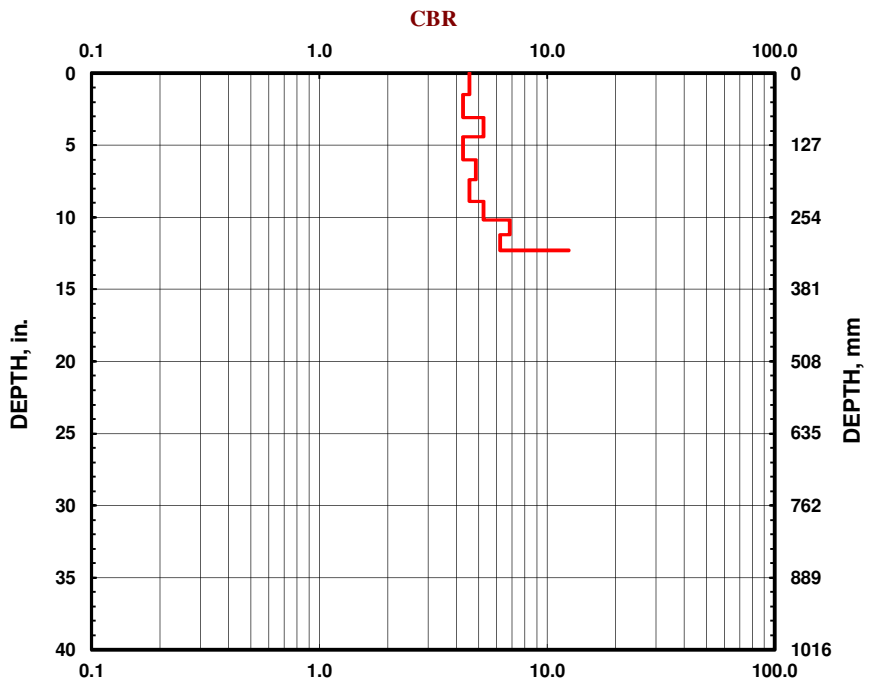
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 6-Mar-18

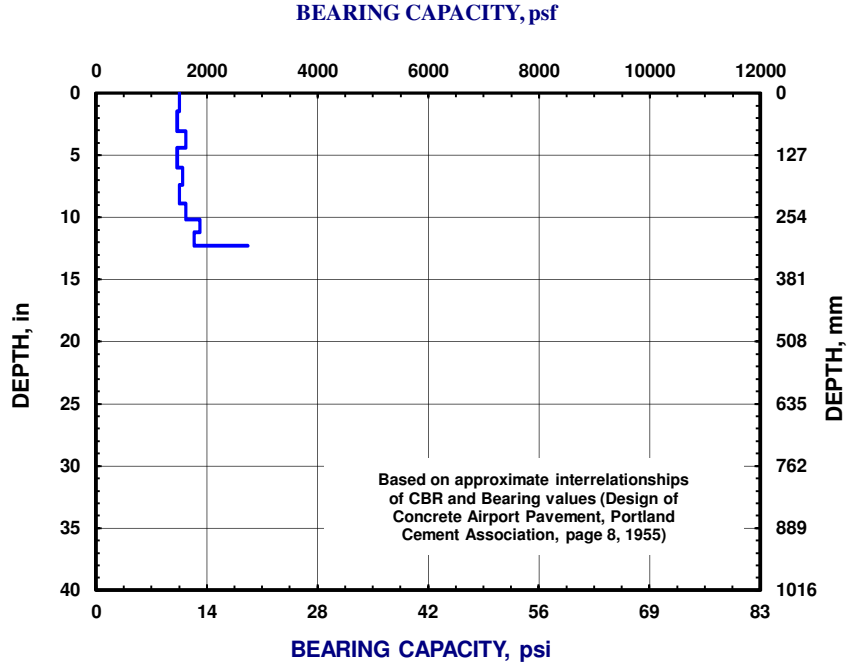
Location: C-10 **Soil Type(s):** Fat Clay

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ● CH
- ○ CL
- ○ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	38.1	2
1	78.74	2
1	111.76	2
1	152.4	2
1	187.96	2
1	226.06	2
1	259.08	2
1	284.48	2
1	312.42	2





DCP TEST DATA

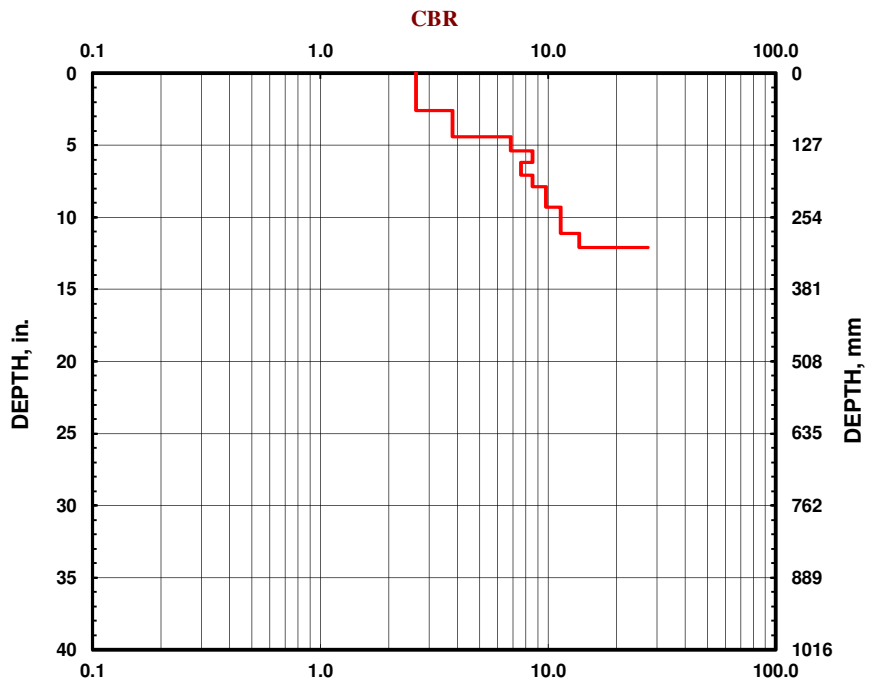
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 6-Mar-18

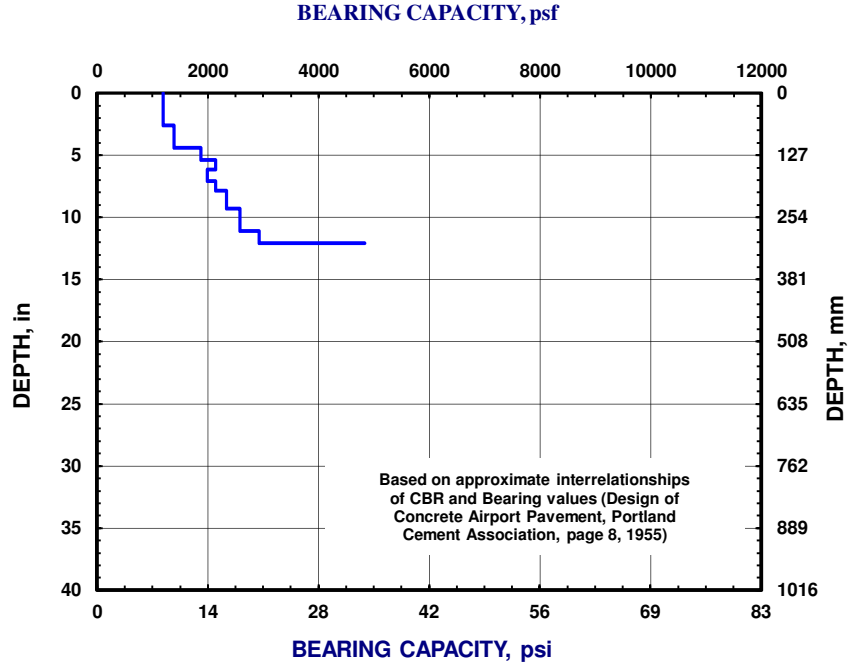
Location: C-11 **Soil Type(s):** Fat Clay

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ● CH
- ○ CL
- ○ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	66.04	2
1	111.76	2
1	137.16	2
1	157.48	2
1	180.34	2
1	200.66	2
1	218.44	2
1	236.22	2
1	251.46	2
1	266.7	2
1	281.94	2
1	294.64	2
1	307.34	2





DCP TEST DATA

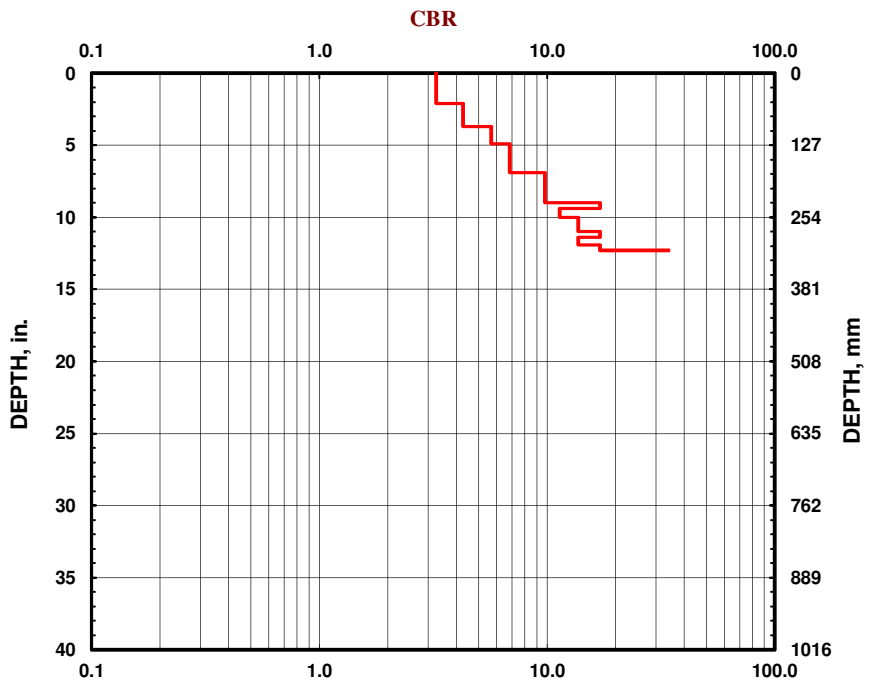
Project: Runway 1/19 Rehabilitation & Overlay **Date:** 6-Mar-18

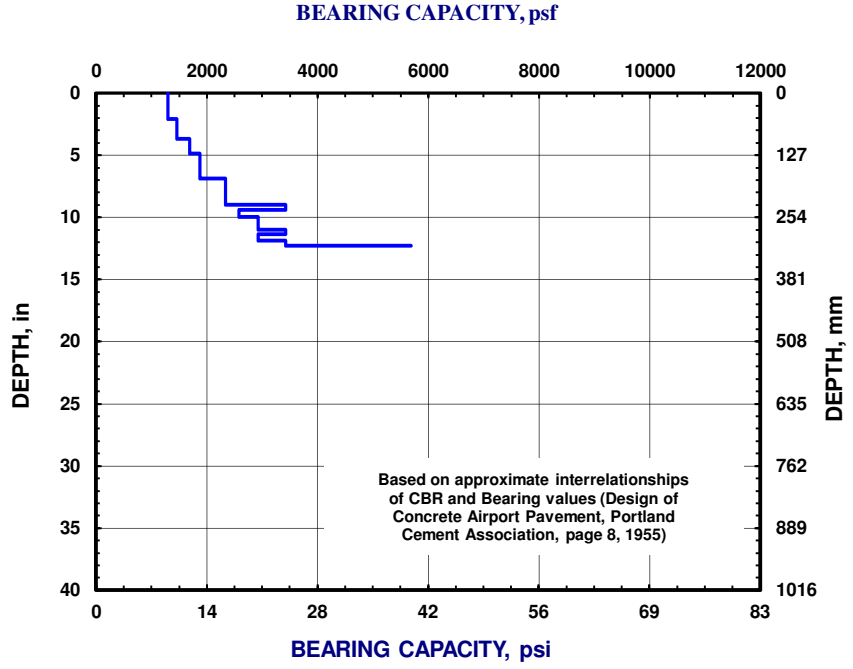
Location: C-12 **Soil Type(s):** Fat Clay

Hammer
- ● 10.1 lbs.
- ○ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ● CH
- ○ CL
- ○ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	53.34	2
1	93.98	2
1	124.46	2
1	149.86	2
1	175.26	2
1	193.04	2
1	210.82	2
1	228.6	2
1	238.76	2
1	254	2
1	266.7	2
1	279.4	2
1	289.56	2
1	302.26	2
1	312.42	2





APPENDIX IV

Laboratory Test Results

Job No. **71.4275** Date **3/8/2018**

Project **Runway 1/19 Rehabilitation and Overlay**

Location **Richard B. Russell Regional Airport**

Proctor No. **B-1**

Source of Material **Borings C-1 and C-2**

Description of Material **Dark Gray Clayey Sand**

Test Method **ASTM D1557 Method A**

TEST RESULTS

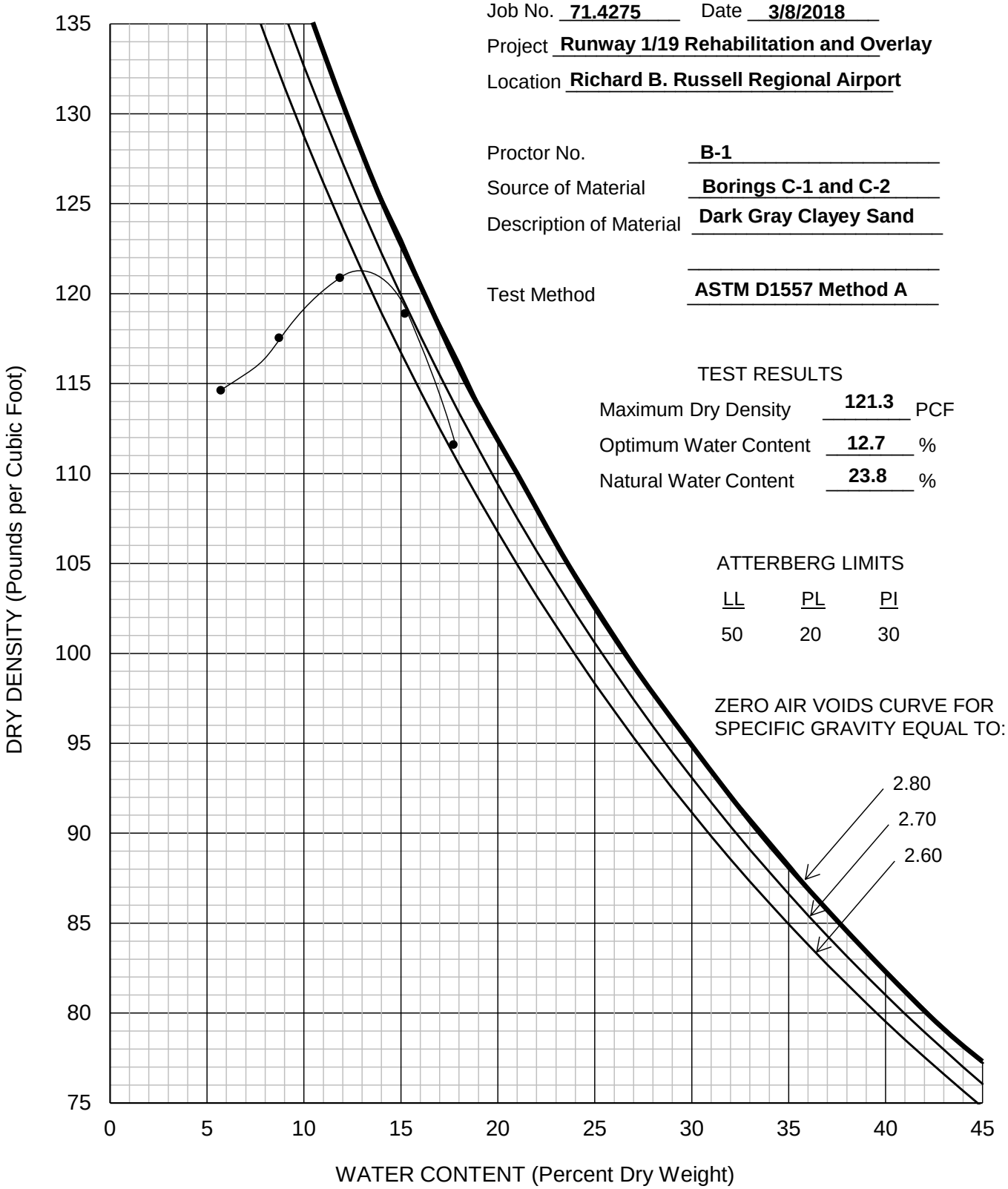
Maximum Dry Density **121.3** PCF

Optimum Water Content **12.7** %

Natural Water Content **23.8** %

ATTERBERG LIMITS

LL	PL	PI
50	20	30



WILLMER Engineering

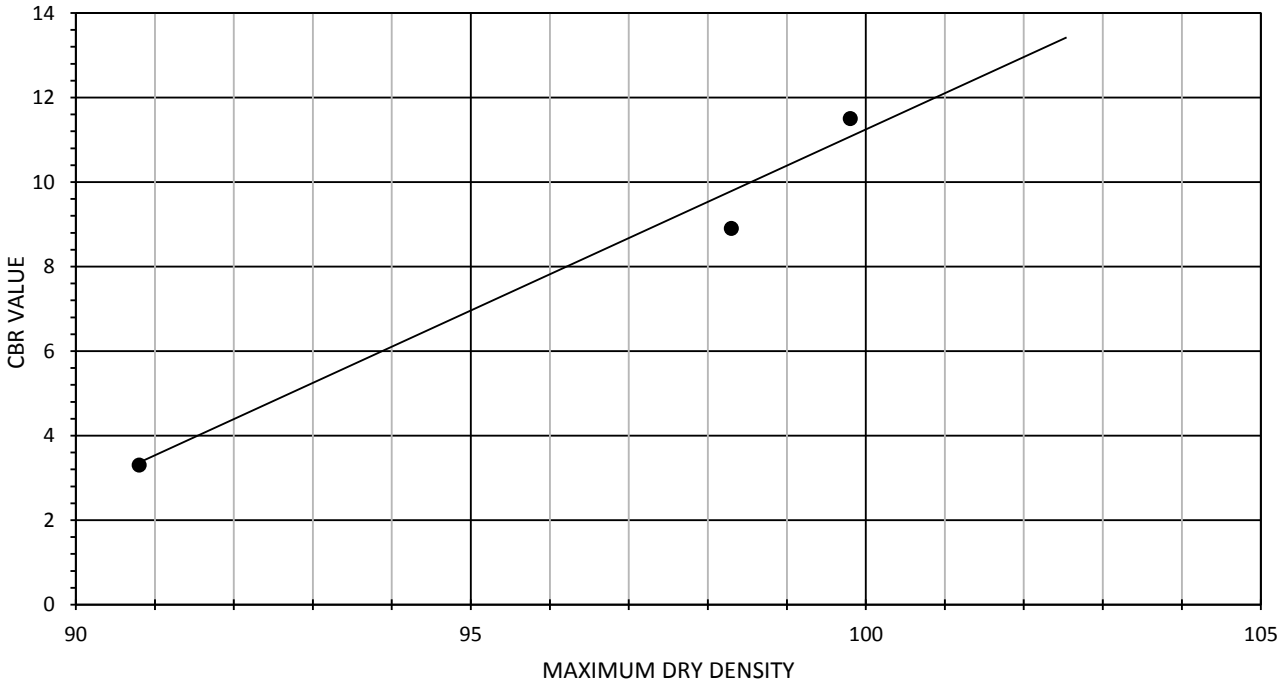
MOISTURE-DENSITY RELATIONSHIP

California Bearing Ratio
Test Report
ASTM D1883-16

Project	Runway 1/19 Rehabilitation and Overlay	**Project Number**		71.4275	**Date**		2/16/2018
Lab Number	8283	**SAMPLE NO.**		B-1	**Depth**		See Table 2
Proctor Procedure	ASTM D1557 (modified)	**Maximum Dry Density (pcf)**		121.3	**Optimum Water Content (%)**		12.7
Soil Description	Clayey SAND		**CBR Point**		**1**	**2**	**3**
			Compacted Dry Density		110.2	119.2	117.4
			Compaction Percentage		91%	98%	100%
			CBR Value		3.3	8.9	11.5
Index Properties	**Percent Fines**	46.7%	**G_S**	--	**Reviewed**		AB
	LL	50	**PI**	30			

CBR Value at 95% Modified Proctor Maximum Dry Density	**6.9**

CBR VALUE VS. PERCENT COMPACTION



Job No. **71.4275** Date **3/8/2018**

Project **Runway 1/19 Rehabilitation and Overlay**

Location **Richard B. Russell Regional Airport**

Proctor No. **B-2**

Source of Material **Borings C-9 and C-10**

Description of Material **Reddish Brown Fat CLAY**

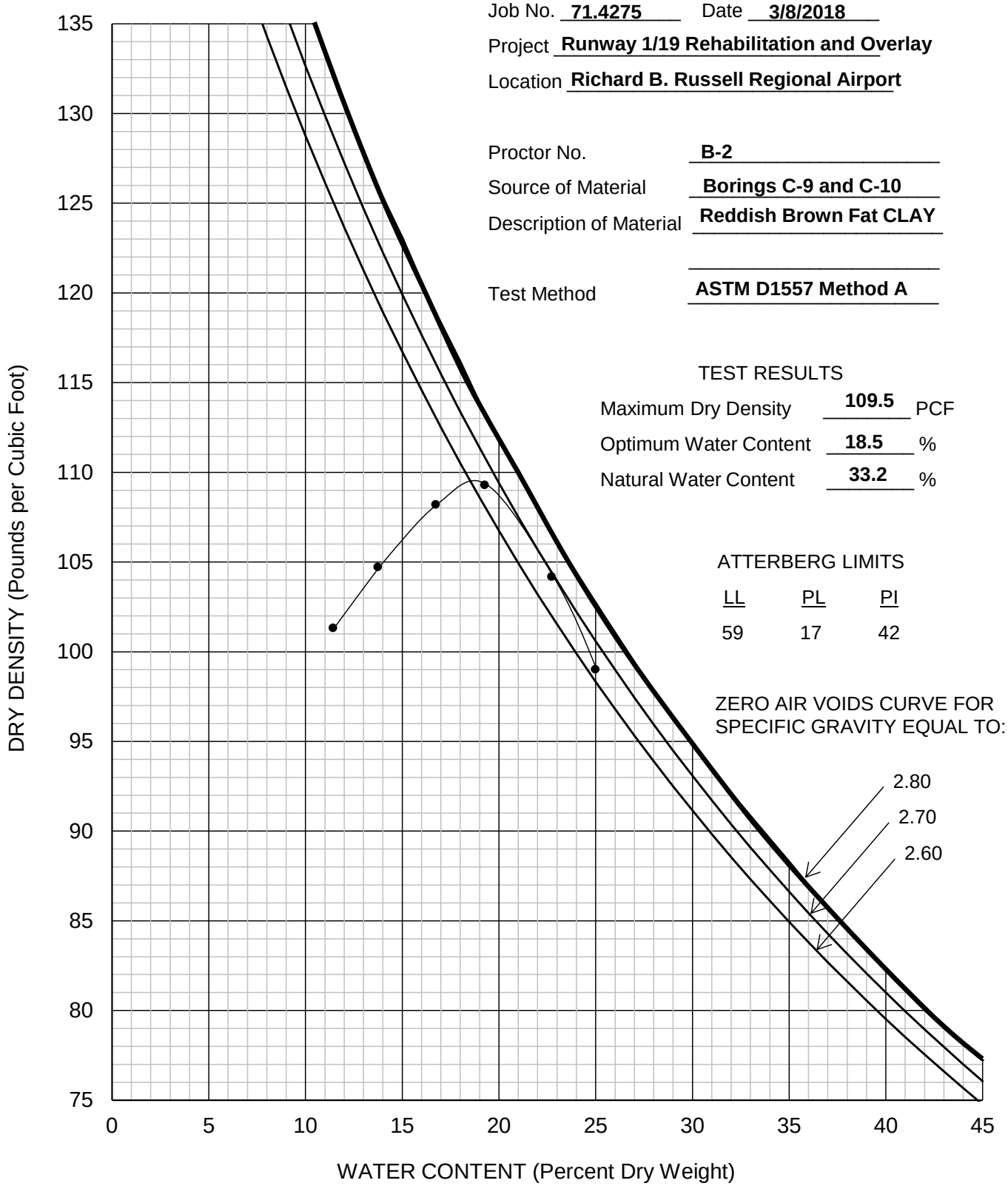
Test Method **ASTM D1557 Method A**

TEST RESULTS

Maximum Dry Density	**109.5**	PCF
Optimum Water Content	**18.5**	%
Natural Water Content	**33.2**	%

ATTERBERG LIMITS

LL	PL	PI
59	17	42



WILLMER Engineering

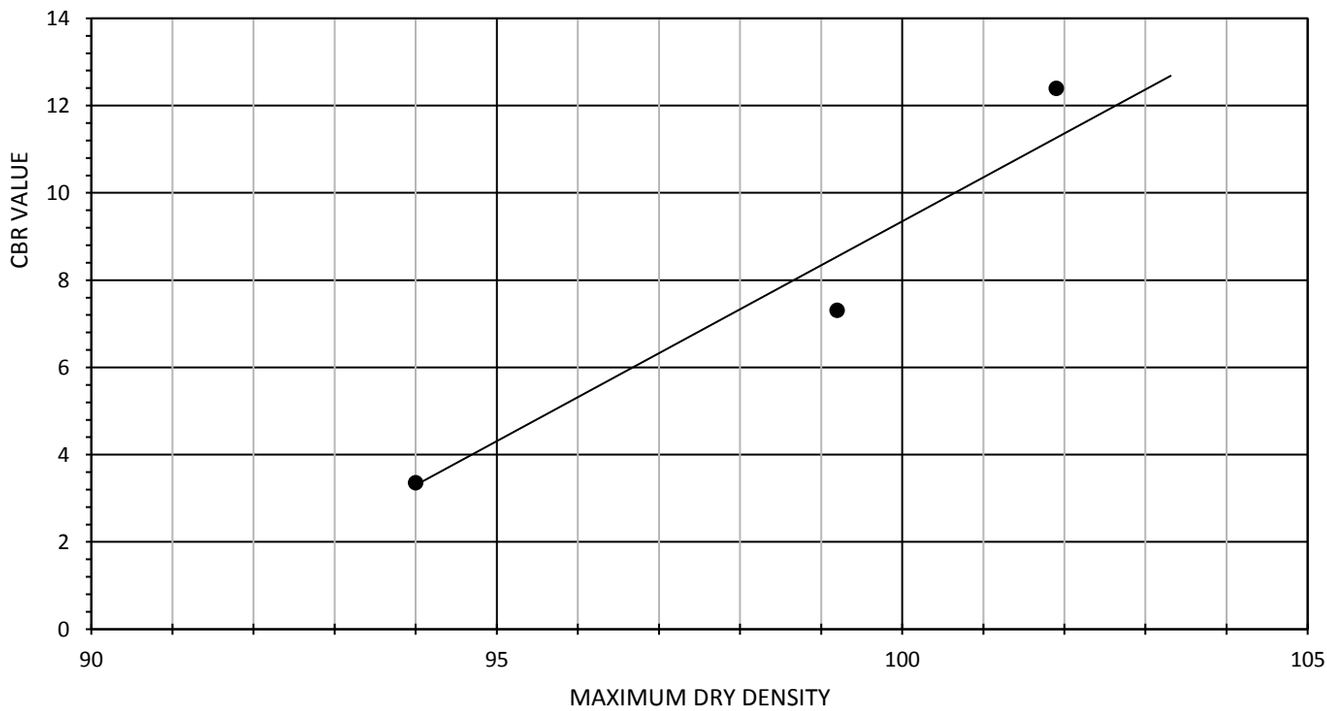
MOISTURE-DENSITY RELATIONSHIP

California Bearing Ratio
Test Report
ASTM D1883-16

Project	Floyd Co. Runway 1-19 Rehabilitation & Overlay	**Project Number**		71.4275	**Date**		3/7/2018
Lab Number	8284	**SAMPLE NO.**		B-2	**Depth**		See Table 2
Proctor Procedure	Modified	**Maximum Dry Density**		109.5	**Optimum Water**		18.5
Soil Description	Fat CLAY		**CBR Point**		**1**	**2**	**3**
			Compacted Dry Density		102.9	108.6	111.6
			Compaction Percentage		94%	99%	102%
			CBR Value		3.3	7.3	12.4
Index Properties	**Percent Fines**	86.3%	**G_S**	--	**Reviewed**		AB
	LL	59	**PI**	42			

CBR Value at 98% Standard Proctor Maximum Dry Density	**4.4**

CBR VALUE VS. PERCENT COMPACTION



APPENDIX V

Important Information about Geotechnical Report

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

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