AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT	1. CONTRACT ID CODE	PAGE OF PAGES
		1 | 3

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE	5. PROJECT NO. (If applicable)
W9127824R0131/W9127826RA026-0003	23 NOV 2026		

6. ISSUED BY CODE	7. ADMINISTERED BY (If other than item 6) CODE
U.S. Army Corps of Engineers - Mobile District 100 Canal Street Mobile, AL 36602	

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP code)	☒	9A. AMENDMENT OF SOLICITATION NO. W9127824R0131 9B. DATED (SEE ITEM 11) 08 MAY 2025
	☐	10A. MODIFICATION OF CONTRACT/ORDER NO. 10B. DATED (SEE ITEM 13)

CODE	FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers ☒ is extended. ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 15, and returning copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. **FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER.** If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(if required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

☐	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A
☐	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO AUTHORITY OF FAR 43.103(b)
☐	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
☐	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible)

The subject solicitation for: **COMPETITIVE SATOC FOR SOUTH ALABAMA SOUTH ALABAMA**

Is modified in the following: **REFER TO THE ENCLOSED REVISED SPECIFICATIONS FOR AMENDMENT NO. 0003**

NOTE: THE RECEIPT OF PROPOSAL DATE IS HEREBY REVISED BY THIS AMENDMENT. REFER TO THE ENCLOSED SF1442, SOLICITATION, OFFER & AWARD FORM.

Except as provided herein, all terms and conditions of the document reference in item 9A or 10A, as Heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICE (Type or print)	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY (Signature of contracting officer)	16C. DATE SIGNED

PART I - REVISIONS MADE BY ADDED AND/OR REPLACEMENT PARAGRAPHS/PAGES/SECTIONS

The items listed below are to be replaced by the corresponding added and/or revised paragraphs/pages or sections. Added and/or revised paragraphs/pages or sections are indicated by a note in bottom right hand corner of each paragraph or page. Added sections are hereby made a part of the contract and are to be inserted in the specification in the proper numerical/alphabetical sequence.

Within the specifications, deletions from the specifications are indicated by strikethrough, e.g.: ~~deletions are marked with strikethrough~~ and additions to the specifications including revisions/substitutions are indicated in bold, italic and underlined, e.g.: ***additions are indicated thus.***

SECTION	Corresponding Added or Revised Paragraph Page, and/or Section
Table of Contents	Revised Page 1 and 2 of the Table of Contents as indicated herein.
Standard Form 1442	Revised Blocks 11, and 13.a as indicated herein.
Bidding Schedule No. 2	Revised Estimated Quantities and Note No. 3 as indicated herein.
00 12 00	Revised Paragraph 3.3 as indicated herein.
01 00 00	Revised Paragraphs 1.1, and 1.2 as indicated herein.
Wage Rates	Added Wage Rates – Building in its entirety.
01 35 26	Revised Paragraphs 1.7.1.2, and 1.17 as indicated herein.
01 45 00	Revised Paragraphs 1.6.2.1, and 1.12.4 as indicated herein.
01 45 00.15 10	Revised Paragraph 1.3 as indicated herein.
01 57 19	Revised Paragraph 3.8.1 as indicated herein.
26 56 20	Revised Paragraph 3.4 as indicated herein.
32 12 15.13	Revised Paragraphs 3.1.2, and 3.6.1 as indicated herein.
32 17 23.19	Revised Paragraph 1.5.2.1 as indicated herein.
Appendix A	Added in its entirety.

PART II - NOTE: Revised, replacement and added drawings are listed below. These revised, replacement and added drawings are to be inserted into the folio in the proper numerical sequence. Drawings that have been revised or replaced by this amendment shall be deleted from the folio. All drawings listed below are revised unless indicated otherwise.

Sheet Reference Number	Title
G-001	AM03 COVER SHEET
G-002	INDEX OF DRAWINGS
C-004	PROJECT NOTES
VF104	BID OPTION 1 EXISTING CONDITIONS AND DEMOLITION PLAN
VF109	BID OPTION 5 EXISTING CONDITIONS AND DEMOLITION PLAN
VF113	BID OPTION 4 AND BID OPTION 5 EXISTING CONDITIONS AND DEMOLITION PLAN
VF114	BASE BID EXISTING CONDITIONS AND DEMOLITION PLAN
CG101	BID OPTION 7 GRADING AND STORM DRAINAGE PLAN
CG102	BID OPTION 1 GRADING AND STORM DRAINAGE PLAN
CG103	BID OPTION 2 GRADING AND STORM DRAINAGE PLAN
CG104	BID OPTION 3 GRADING AND STORM DRAINAGE PLAN
CG105	BASE BID GRADING AND STORM DRAINAGE PLAN
CG106	BASE BID GRADING AND STORM DRAINAGE PLAN
CG107	BID OPTION 4 GRADING AND STORM DRAINAGE PLAN
CG108	BID OPTION 6 GRADING AND STORM DRAINAGE PLAN
CG109	BID OPTION 5 GRADING AND STORM DRAINAGE PLAN
CG111	BID OPTION 4 YANKEE ROW PLAN AND PROFILE
CG201	BID OPTION 1 AND BID OPTION 7 STORM DRAIN PROFILES ALPHA AND CHINOOK HILL
CG202	BID OPTION 3 STORM DRAIN PROFILES BRAVO (REVISED)
CG203	BID OPTION 2 STORM DRAIN PROFILES CHARLIE (REVISED)
CG204	BASE BID STORM DRAIN PROFILES DELTA 1 AND DELTA 2 (REVISED)
CG205	BID OPTION 4 STORM DRAIN PROFILES ECHO (REVISED)
CG206	BID OPTION 5 AND BID OPTION 6 STORM DRAIN PROFILES FOXTROT AND GOLF
ES109	BID OPTION 6 ELECTRICAL SITE PLAN (REVISED)
ES110	BID OPTION 5 AND 6 ELECTRICAL SITE PLAN (REVISED)
ES111	BID OPTION 5 ELECTRICAL SITE PLAN (REVISED)

Encl as stated
Revised and Added pages of the specifications as indicated in Part I.
26 Revised Sheets as indicated in Part II.

TABLE OF CONTENTS – PHASE 2

CHECKLIST FOR PREPARATION OF OFFERS (PHASE TWO)

BIDDING REQUIREMENTS

CONTRACT CLAUSES

	STANDARD FORM 1442 - SOLICITATION, OFFER, AND AWARD
	STANDARD FORM 28 - AFFIDAVIT OF INDIVIDUAL SURETY
	STANDARD FORM LLL - DISCLOSURE OF LOBBYING ACTIVITIES
	BIDDING SCHEDULE
	EXPLANATION OF BID ITEMS
	LIMITATIONS OF SUBCONTRACTING COMPLIANCE FORM
00 11 00	PHASE ONE - PROPOSAL SUBMISSION AND EVALUATION CRITERIA
00 12 00	PHASE TWO - PROPOSAL SUBMISSION REQUIREMENTS, EVALUATION CRITERIA, SELECTION PROCEDURES AND BASIS OF AWARD
00 21 00	INSTRUCTIONS
00 22 00	SUPPLEMENTARY INSTRUCTIONS
00 45 00	REPRESENTATIONS AND CERTIFICATIONS
00 70 00	CONDITIONS OF THE CONTRACT
00 72 00	GENERAL CONDITIONS
01 00 01	GENERAL CONTRACT REQUIREMENTS
	CESAM FORM 1151, PROMPT PAYMENT CERTIFICATION AND SUPPORTING DATA FOR CONTRACTOR PROGRESS PAYMENT INVOICE

SPECIFICATIONS

DIVISION 01 – GENERAL REQUIREMENTS

01 00 00	FT. RUCKER ADDITIONAL SPECIAL CONTRACT REQUIREMENTS
	DD FORM 1354
	DD FORM 1354 CHECKLIST
	EP310-1-6A PROJECT SIGNS
	WAGE RATES – BUILDING
	WAGE RATES – HIGHWAY
01 32 01.00 10	PROJECT SCHEDULE
01 33 00	SUBMITTAL PROCEDURES
	SUBMITTAL REGISTER
	ENG FORM 4025
01 35 26	GOVERNMENTAL SAFETY REQUIREMENTS
01 42 00	SOURCES FOR REFERENCE PUBLICATIONS
01 45 00	QUALITY CONTROL
01 45 00.15 10	RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM)
	CESAM FORM 696
01 57 19	TEMPORARY ENVIRONMENTAL CONTROLS - FORT RUCKER STANDARD
01 74 19	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
01 78 23	OPERATION AND MAINTENANCE DATA

DIVISION 02 - EXISTING CONDITIONS

02 41 00	DEMOLITION

DIVISION 03 - CONCRETE

03 30 00	CAST-IN-PLACE CONCRETE

DIVISION 26 - ELECTRICAL

26 56 20 AIRFIELD AND HELIPORT LIGHTING AND VISUAL NAVIGATION AIDS

DIVISION 31 - EARTHWORK

31 00 00 EARTHWORK
31 11 00 CLEARING AND GRUBBING

DIVISION 32 - EXTERIOR IMPROVEMENTS

32 01 11.51 PAINT REMOVAL FROM AIRFIELD PAVEMENTS
32 01 19.61 SEALING OF JOINTS IN RIGID PAVEMENT
32 11 20 AGGREGATE SEPARATION LAYER
32 11 23 GRADED CRUSHED AGGREGATE BASE COURSE FOR FLEXIBLE PAVING
32 11 23.23 BASE COURSE DRAINAGE LAYERS
32 12 13 BITUMINOUS TACK AND PRIME COATS
32 12 15.13 ASPHALT PAVING FOR AIRFIELDS
32 13 14.14 CONCRETE PAVING FOR SMALL AIRFIELD PROJECTS
32 17 23.19 AIRFIELD PAVEMENT MARKINGS
32 92 19 SEEDING

DIVISION 33 - UTILITIES

33 40 00 STORMWATER UTILITIES
33 46 16 SUBDRAINAGE PIPING
33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION

APPENDICES

APPENDIX A BORING LOCATIONS, BORING LOGS AND LAB TESTING RESULTS

-- End of Project Table of Contents --

SOLICITATION, OFFER AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NUMBER	2. TYPE OF SOLICITATION	3. DATE ISSUED	PAGE OF PAGES
	W9127824R0131 / W9127826RA026	☐ SEALED BID (IFB) INVITATION FOR BID ☒ NEGOTIATED (RFP) REQUEST FOR PROPOSAL	08 MAY 2025	1 2

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NUMBER

7. ISSUED BY CODE CT	8. ADDRESS OFFER TO
U.S. ARMY ENGINEER DISTRICT, MOBILE CONTRACTING DIVISION (CESAM-CT) 100 CANAL STREET MOBILE, AL 36602	SAME AS BLOCK 7

9. FOR INFORMATION CALL:	a. NAME	b. TELEPHONE NO. (*Include area code*) (*NO COLLECT CALLS*)
	MAJ Sosebee /Stephanie Scalise	(251) 441-5456 / (251) 690-2478

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (*Title, identifying no., date*):

COMPETITIVE SATOC FOR SOUTH ALABAMA, SOUTH ALABAMA

* See Section 01 00 00, Paragraph “COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK”.
**Block 13A.: Refer to Section 00 11 00 for the number of copies to submit with the Phase 1 offer. Refer to Section 00 12 00 for the number of copies to submit with the Phase 2 offer.

11. The contractor shall begin performance within ___***10*** ~~8~~ ___ calendar days and complete it within ___*___ calendar days after receiving ☐ award, ☒ notice to proceed. This performance period is ☒ mandatory, ☐ negotiable. (See _Section 01 00 00.)

12a. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? (*If "YES," indicate within how many calendar days after award in Item 12b.)*	12b. CALENDAR DAYS
☒YES ☐ NO	10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

a. Sealed offers in original and ___**___ copies to perform the work required are due at the place specified in Item 8 by _1400_ (***hour***) local time ***11*** ~~02~~ DECEMBER 2026 (date). If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

b. An offer guarantee ☒ is, ☐ is not required. (In Phase 2 Only)

c. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

d. Offers providing less than __120__ calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

REVISED BY AMENDMENT NO. W9127826RA026-0003

OFFER (*Must be fully completed by offeror*)

14. NAME AND ADDRESS OF OFFEROR (*Include ZIP Code*)	15. TELEPHONE NO. (*Include area code*)
	16. REMITTANCE ADDRESS (*Include only if different than Item 14.*)
CODE FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. (*Insert any number equal to or greater than the minimum requirement stated in Item 13d. Failure to insert any number means the offeror accepts the minimum in Item 13d.)*

AMOUNTS ▶

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS
(*The offeror acknowledges receipt of amendments to the solicitation - give number and date of each*)

AMENDMENT NUMBER										
DATE										

20a. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (*Type or print*)	20b. SIGNATURE	20c. OFFER DATE

AWARD (*To be completed by Government*)

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified) ▶	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 3204(a) ( ) ☐ 41 U.S.C. 3304(a) ( )

26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT (*Contractor is required to sign this document and return _____ copies to issuing office.*) Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this contract.	☐ 29. AWARD (*Contractor is not required to sign this document.*) Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30a. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN (*Type or print*)		31a. NAME OF CONTRACTING OFFICER (*Type or print*)	
30b. SIGNATURE	30c. DATE	31b. UNITED STATES OF AMERICA BY	31c. AWARD DATE

STANDARD FORM 1442 (REV12/2022) **BACK**

REVISED BY AMENDMENT NO. W9127826RA026-0003

BIDDER'S NAME:_____

BIDDING SCHEDULE NO. 2

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
	BASE BID: **DELTA 1 & DELTA 2 HELIPADS**				
1	Hot Mix Asphalt (HMA) for Airfields Gradation 2	***384*** ~~XXXX~~	Short TN	_____	_____
2	Site Work	1	JOB	XXX	_____
3	Electrical	1	JOB	XXX	_____
	TOTAL BASE BID:				_____
	BID OPTION NO. 1: **ALPHA HELIPAD**				
4	Hot Mix Asphalt (HMA) for Airfields Gradation 2	***192*** ~~XXXX~~	Short TN	_____	_____
5	Site Work	1	JOB	XXX	_____
6	Electrical	1	JOB	XXX	_____
	BID OPTION NO. 2: **CHARLIE HELIPAD**				
7	Hot Mix Asphalt (HMA) for Airfields Gradation 2	***192*** ~~XXXX~~	Short TN	_____	_____
8	Site Work	1	JOB	XXX	_____
9	Electrical	1	JOB	XXX	_____

BID OPTION NO. 3:
BRAVO HELIPAD

10	Hot Mix Asphalt (HMA) for Airfields Gradation 2	***192*** ~~XXXX~~	Short TN	_____	_____
11	Site Work	1	JOB	XXX	_____
12	Electrical	1	JOB	XXX	_____

BID OPTION NO. 4:
ECHO HELIPAD

13	Hot Mix Asphalt (HMA) for Airfields Gradation 2	***732*** ~~XXXX~~	Short TN	_____	_____
14	Site Work	1	JOB	XXX	_____
15	Electrical	1	JOB	XXX	_____

BID OPTION NO. 5:
GOLF HELIPAD & ACCESS ROAD

16	Hot Mix Asphalt (HMA) for Airfields Gradation 2	***192*** ~~XXXX~~	Short TN	_____	_____
17	Site Work	1	JOB	XXX	_____
18	Electrical	1	JOB	XXX	_____

BID OPTION NO. 6:
FOXTROT HELIPAD

19	Hot Mix Asphalt (HMA) for Airfields Gradation 2	***192*** ~~XXXX~~	Short TN	_____	_____
20	Site Work	1	JOB	XXX	_____
21	Electrical	1	JOB	XXX	_____

BID OPTION NO. 7:
CHINOOK HELIPAD

22	Hot Mix Asphalt (HMA) for Airfields Gradation 2	***241*** ~~XXXX~~	Short TN	_____	_____
23	Site Work	1	JOB	XXX	_____
24	Electrical	1	JOB	XXX	_____

TOTAL BASE BID PLUS ALL BID OPTIONS: _____

NOTES FOR BIDDING SCHEDULE

NOTE NO. 1. To better facilitate the receipt and proposal process, all modifications to proposals are to be submitted on copies of the latest bid schedules as published in the solicitation or the latest amendment thereto. In lieu of indicating additions/deductions to bid items, bidder should state the revised prices for each item. The company name should be indicated on the face of the bidding schedule to preclude being misplaced.

NOTE NO. 2. Bidder must insert a price on all numbered items of the Bidding Schedule. Failure to do so will disqualify the bid.

NOTE NO. 3. CONDITIONS GOVERNING EVALUATION OF BIDS AND AWARD OF CONTRACT.

Only one contract will be awarded on this Bid Schedule in accordance with the FAR Clause 52.217-5 Evaluation of Options . (Deviation 2026-O0038) in Section 00 22 00: SUPPLEMENTARY INSTRUCTIONS. Award will be made according to the "Best Value" approach as defined in Section 00 12 00: EVALUATION CRITERIA AND BASIS OF AWARD.

A firm fixed priced contract award will be made on only one of the bid schedules. Award will be made on the ***Total*** Base Bid ***plus all Bid Options***.

The Government may require the delivery of the numbered line items, identified in the schedule as option items, in the quantity and at the price stated in the schedule. Subject to the availability of funds, the Contracting Officer may exercise the Options 1, 2, 3, 4, 5, 6, & 7 ***sequentially*** by written notice to the Contractor within 180 days of Notice to Proceed.

NOTE NO. 4. VARIATION IN ESTIMATED QUANTITY

If the quantity of a unit-priced item in this contract is an estimated quantity and the actual quantity of the unit-priced item varies more than 15 percent above or below the estimated quantity, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115 percent or below 85 percent of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Contractor may request, in writing, an extension of time, to be received by the Contracting Officer within 10 days from the beginning of the delay, or within such further period as may be granted by the Contracting Officer before the date of final settlement of the contract. Upon the receipt of a written request for an extension, the Contracting Officer shall ascertain the facts and make an adjustment for extending the completion date as, in the judgement of the Contracting Officer, is justified.

NOTE NO. 5. CMMC REQUIREMENTS:

CMMC is not required for the award of this task order.

NOTE NO. 6. ADDITIONAL SUBMISSION REQUIREMENTS:

a. Upon the Government's request, the offeror shall submit a price breakdown of the bid items directly to the Mobile District Office. Details on where and how to send the breakdown will be provided by the requesting official making the request on behalf of the Government. The format of the breakdown

will be left up to the offeror. However, as a minimum, the offeror shall provide pricing for the major categories of work under each bid item. This information will not be needed sooner than three (3) working days after the proposal submission due date.

b. This information may be required for the initial and, if requested, for any revised proposals.

END OF BIDDING SCHEDULE

Section 00 12 00

PHASE TWO - PROPOSAL SUBMISSION REQUIREMENTS, EVALUATION CRITERIA, SELECTION PROCEDURES AND BASIS OF AWARD

1.0 OVERVIEW.

1.1 Those Offerors selected to move forward following Phase One are invited to submit a Phase Two proposal, as indicated below. The Government will evaluate the proposals in accordance with the evaluation criteria and evaluation rating scheme described herein. The basis of award is also described herein. Competing Offerors shall submit proposals that include the information required below to demonstrate understanding of the solicitation criteria and capability to successfully complete the work described in this solicitation. The Phase Two evaluation will be conducted in accordance with RFO Part 15.

1.2 For Phase Two, Offerors must submit non-priced information and will also be required to provide rates for key disciplines, overhead and other unit costs, and pricing for the Seed project. Non-priced Phase Two information will consider a technical approach for the Seed project. The Government reserves the right to reject any and/all offers in Phase Two.

1.3 The scope of the Seed project is as indicated in this solicitation.

2.0 PHASE TWO - PROPOSAL SUBMISSION REQUIREMENTS.

2.1 Only those firms selected during Phase One for participation in Phase Two may submit a proposal.

2.2 Submit the electronic proposal package to the U.S. Army Corps of Engineers via Procurement Integrated Enterprise Environment (PIEE) website (https://piee.eb.mil/xhtml/unauth/home/login.xhtml -OR- https://piee.eb.mil). Emailed submissions of proposals are not permitted and will not be accepted under any circumstances. The Government must receive your proposal no later than the time and date specified in Block 13 of SF 1442. The PIEE system notification must show the proposal submission prior to the specified time. Any and all amendments to the solicitation shall be acknowledged by signing on each amendment (SF30) and by completing Block 19 of the SF 1442. Offerors shall confirm proposal receipt by emailing the Points of Contact listed on the SF1442.

2.3 Submit your proposal as follows:

- Submit one (1) electronic copy of the entire proposal (“Volume III and IV”) in Portable Document File (PDF) format. Label the pdf “26RA026-OfferorName-Vol III-IV”.
- Submit one (1) electronic copy of Volume IV in Portable Document File (PDF) format. Label the pdf “26RA026-OfferorName-Vol IV”.
- Hard copies are not required to be submitted and will not be accepted or evaluated. However, when formatting the PDF files the page size shall be 8-1/2” x 11” for all pages except schedules and organizational charts, as applicable, which shall be 11” x 17” (counts as one sheet toward page limitation).

2.4 To effectively and equitably evaluate proposals, the Source Selection Evaluation Board (SSEB) must receive information, in the order described

below, that clearly describes an Offeror's capabilities to successfully execute design and construction in support of this SATOC. It is therefore an Offeror's responsibility to submit proposal information that is fully responsive to the submission requirements of this section. Offerors are responsible for organizing material sequentially under tabs and numbered pages as set out below to facilitate evaluation. Materials that are not properly organized may easily be overlooked during evaluations, possibly affecting an Offeror's rating. Offers should be concise, addressing only the information outlined in this section.

2.5 Volume III - Administrative Requirements (Including Price). Prior to making an award, the Contracting Officer must determine that any offeror is responsible both financially and technically and has the capability to properly manage the contract during performance and complete the work on time.

2.5.1 The offeror is to submit the following information: (1) Standard Form 1442, and acknowledgement of all amendments, (2) proposal bid schedules, (3) representations and certification, and (4) most recent Financial Statement. In Volume III, offerors shall also submit the required pre-award information, which includes but is not limited to:

a) A list of present commitments, including the dollar value thereof. For a newly formed Joint Venture (JV), each JV partner must submit a list of present commitments.

b) Bid Bonds as required.

c) Representations and Certifications as required.

d) Self-Performance Compliance Form as required.

e) Affidavit of Individual Surety as required (SF 28).

f) Financial Statement. Submit a copy of your most recent financial statement. The statement must include a Balance Sheet and Income Statement. If the financial statement is more than 60 days old, attach a certificate stating that the financial condition is substantially the same, or if not the same, describe the changes that have taken place since the financial statement was prepared. Provide evidence of adequate financing arrangements, such as commitments from lending institutions, etc., to perform this contract. Include the names of banks or other financial institutions with which business is conducted (mailing addresses, points of contact and phone number). Reference letters shall include, but are not limited to, the following information: (1) the date the offeror's account was open with the financial institution, (2) the average balance for the last 12 months on the offeror's account (i.e., balance in the xx digits), (3) if there is a credit line established with the financial institution, what is the credit amount and how much is available at this time? If not, would the financial institution be willing to establish a line of credit for the offeror? And if so, for how much (i.e., low xx figure range), (4) how the financial institution evaluates the offeror as a customer (i.e., poor, fair, very good, excellent, etc.), and (5) the financial institution shall declare whether the offeror's account is in good standings. This information will be treated confidentially but may be checked for verification.

g) All other documentation as identified in the Contract Clauses

specifications sections within this solicitation.

2.5.2 Price Breakdown Requirements. The Government may request price breakdown, even when discussions are not going to be held. The price breakdown information is not required to be submitted with the initial proposal; however, may be requested by the Government after initial proposal submission.

3.0 PHASE TWO – EVALUATION CRITERIA.

3.1 There are two volumes required for this proposal. Volume III will include pricing and certain administrative requirements that are not rated. Volume IV has one (1) rated non-price factor.

3.2 In Phase Two, the factor ratings assigned in Phase One will not roll over to Phase Two. Only the Phase Two evaluation factor listed below will be used to conduct the non-price/price tradeoff analysis and make award.

PHASES TWO - EVALUATION FACTORS AND ORDER OF RELATIVE IMPORTANCE

Volume/Tab	Factor - Description	Relative Importance
Volume III	Administrative Requirements (Including Price)	Not Rated. Price evaluated through Price Analysis.
Volume IV	Factor 4 – Technical Approach for the Seed Project	1st in relative importance

The non-price evaluation factor is significantly more important than price.

Amendment 0003
****

3.3 Volume IV - Factor 4 – Technical Approach for the Seed Project. The offeror must submit a narrative to explain its capabilities to execute the ~~design and~~ construction for the Seed Project. The response to Factor 4 shall be limited to 15 pages. ***Cover pages and tabs do not count against the page limitation for Factor 4***. Address each of the following items, in a narrative format:

a) Seed Project Approach - Provide a narrative of the project requirements and the plan for accomplishing those requirements, to include the methods to be employed and any logistical/site limitations under which work must be performed, coordination with the Government, and permitting, as required. The narrative shall also include identification of the major features of work, and shall include site conditions and constraints, and logistics planning and constraints.

b) Seed Project Preliminary Schedule - Provide a preliminary design and construction schedule ***for the base and bid options*** to demonstrate an understanding of the Seed project. As a minimum, include key tasks with durations for such activities as site investigation(s), permitting, project site phasing, ~~design submittals/ phase(s) including the number of days for government reviews~~, and the construction phase of the project to include closeout and turnover activities. Clearly indicate the major milestones for major work features. Ensure the project duration meets the solicitation requirements in calendar days starting from the Government's notice to proceed (NTP) to Closeout Documents approval. The preliminary project schedule shall state the scheduling software including version to be used that is compatible with the QCS software. This section shall include both a

narrative and a traditional CPM schedule. The preliminary construction schedule does not count against the page limitation for Factor 4.

c) Seed Project Self-Performance - Provide a description of the work to be self-performed by the prime contractor.

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4.0 PHASE TWO – EVALUATION PROCESS.

4.1 A Source Selection Evaluation Board (SSEB) composed of U.S. Army Corps of Engineers personnel, Using Activity representatives, and, as necessary, technical advisors will conduct the evaluation. The number and identities of offerors are not revealed to anyone not involved in the evaluation and award process or to other offerors. The SSEB will evaluate proposals, using the factor and evaluation criteria described in this section.

4.2 The evaluation process for Phase Two consists of four parts: Proposal Compliance Review, Non-Price Factor Evaluation, Price Evaluation, Non-Price/Price Trade-Off Analysis.

4.2.1 Proposal Compliance Review. This is an initial check by Contracting Division to ensure that all required forms are complete, and in compliance with all administrative and submission criteria.

4.2.2 Non-Price Factor Evaluation. In accordance with the solicitation, each member of the SSEB will conduct an independent review of the proposals. The review will be an in-depth, systematic evaluation of the proposal against the submission criteria and the evaluation factor. After these reviews, the SSEB, by consensus, will provide a rating for each evaluation factor supported by a justifying narrative. The Offeror’s ratings are confidential, and will remain in the Contracting Officer’s files. Upon completion of the evaluations, the results will be provided to the Contracting Officer in the form of a SSEB Report.

4.2.3 Price Evaluation. The Government will initially review pricing independently from the factor evaluation. Price is not rated but will be analyzed for fairness and reasonableness through the use of cost and price analysis. The price analysts will also check for appearance of unbalanced pricing. Per RFO 15.404-6, unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly over or understated as indicated by the application of cost or price analysis techniques. The Government may reject an offer as non-responsive if it is materially unbalanced. The price evaluation will document the fairness and reasonableness of the proposed bid. If adequate price competition exists, no additional cost information will be requested. However, if at any time during this competition the Contracting Officer determines that further analysis is needed, detailed cost breakdowns may be requested.

4.2.4 Non-Price/Price Trade-Off Analysis. In determining the awardee for the SATOC, the factor ratings from Phase Two will be used during the non-price/price tradeoff analysis. After price analysis of the Bid Schedules and the factor evaluations are completed, the Government will then consider the prices in connection with the factor ratings, comparing the relative advantages and disadvantages of the proposals and prices. If the Contracting

Officer determines discussions are not required, the Contracting Officer, relying on the Board's report and independent business judgment, will decide which offeror is to be awarded the contract. This decision, reflected in the Source Selection Decision Document (SSDD), will be based on the proposal that offers the best value to the Government in terms of their factor rating and price. This may result in an award being made to higher rated, yet higher price offeror where the decision is consistent with the solicitation's evaluation factor and the Contracting Officer reasonably determines that the superiority of the non-price factor rating of the higher priced offeror justifies the additional costs.

4.2.4.1 If discussions are required, some trade-off analysis will be conducted to determine which offerors are to be included in the competitive range. At the conclusion of discussions, and receipt of Final Proposal Revisions, additional evaluation will be conducted by the SSEB, and the Contracting Officer will conduct a final trade-off analysis to determine the awardee.

4.3 Evaluation of Factor 4 - Technical Approach for the Seed Project. The SSEB will evaluate the narrative to assess the Offeror's overall understanding of the requirements of the project given the narrative for the Seed project approach for its logic and reasonableness. The schedule will be assessed for its logic, reasonableness of scheduled activities/tasks, and task durations necessary to complete construction, within the required performance period. The SSEB will evaluate the description of work to be self-performed by the prime contractor to assess the Offeror's understanding of the requirements of the contract for self-performance measures. More consideration will not be given for schedules that reflect completion ahead of the maximum period of performance stated in the solicitation. The SSEB will determine the strengths, weaknesses and deficiencies, if any, in the approach presented, and then assign an overall combined technical/risk ratings as shown below. The technical rating reflects the degree to which the proposed approach meets or does not meet the minimum technical requirements.

Ratings	Combined Technical/Risk Rating Definitions
OUTSTANDING	Proposal indicates an exceptional approach and understanding of the requirements and contains multiple strengths, and risk of unsuccessful performance is low.
GOOD	Proposal indicates a thorough approach and understanding of the requirements and contains at least one strength, and risk of unsuccessful performance is low to moderate.
ACCEPTABLE	Proposal meets requirements and indicates an adequate approach and understanding of the requirements, and risk of unsuccessful performance is no worse than moderate.
MARGINAL	Proposal has not demonstrated an adequate approach and understanding of the requirements, and/or risk of unsuccessful performance is high.
UNACCEPTABLE	Proposal does not meet requirements of the solicitation, and thus, contains one or more deficiencies, and/or risk of unsuccessful performance is unacceptable. Proposal is unawardable.

The technical risk rating reflects the degree to which the proposed approach meets or does not meet the minimum technical requirements. The technical risk rating definitions in support of the above referenced table are as follows:

a) Low – Low risk means the proposal may contain weakness(es) which have little potential to cause disruption of schedule, increased cost or degradation of performance. Normal contractor effort and normal Government monitoring will likely be able to overcome any difficulties.
b) Moderate – Moderate risk means the proposal contains a significant weakness of combination of weaknesses which may potentially cause disruption of schedule, increased cost or degradation of performance. Special contractor emphasis and close Government monitoring will likely be able to overcome difficulties.
c) High – High risk means the proposal contains a significant weakness or combination of weaknesses which is likely to cause significant disruption of schedule, increased cost or degradation of performance. Is unlikely to overcome any difficulties, even with special contractor emphasis and close Government monitoring.
d) Unacceptable – Unacceptable risk means the proposal contains a material failure or a combination of significant weaknesses that increases the risk of unsuccessful performance to an unacceptable level.

4.4 Additional definitions used in all factors.

4.4.1 Deficiency.

a) A material failure of a proposal to meet a Government requirement or combination of significant weaknesses in a proposal that increases the risk of unsuccessful contract performance to an unacceptable level. (FAR 15.001)

b) The evaluators will identify the RFP requirement, and describe why a deficiency or deficiencies exist in the proposal. All deficiencies discovered will be identified to the Offeror during discussions, if conducted, and in the debriefing. Failure by an Offeror to rectify deficiencies will preclude award action to that Offeror.

c) The Contract requirements take precedence over deficiencies (or deviations) discovered after award.

d) Deviation. Proposal implies or specifically offers something below specified criteria. The Offeror may or may not have called the deviation to the Government's attention. A deviation is a deficiency. The technical reviewers will identify any deviations.

4.4.2 Clarification. Means limited exchanges, between the Government and Offerors that may occur when award without discussions is contemplated. Offeror may be given the opportunity to clarify certain aspects of the proposals or to resolve minor or clerical errors. Clarification does not give the Offeror an opportunity to revise or modify its proposal, except to the extent that corrections of apparent clerical mistakes results in a revision. Clarifications do not require "discussions" or submission of another proposal.

4.4.3 Weakness.

a) Means a flaw in the proposal that increases the risk of unsuccessful contract performance. A “significant weakness” in the proposal is a flaw that appreciably increases the risk of unsuccessful contract

performance.

b) All significant weaknesses discovered will be identified to the Offeror during discussions, if conducted, and in the debriefing. Failure by an Offeror to rectify multiple significant weaknesses deemed essential will preclude award action to that Offeror.

4.4.4 Strength. Any aspect of a proposal that, when judged against a stated evaluation criterion, enhances the merit of the proposal or increase the probability of successful performance of the contract. A "significant strength" appreciably enhances the merit of a proposal or appreciably increases the probability of successful contract performance.

5.0 PHASE TWO - DISCUSSIONS. The Government intends to make award on the basis of initial Phase Two offers without holding discussions. However, the Government reserves the right to conduct discussions, and allow proposal revisions, if the Contracting Officer determines that discussions are in the Government's best interest. These discussions and any proposal revisions, however, will be limited to Phase Two information. Offerors are cautioned that discussions may not be conducted and offerors should not assume that they will have an opportunity to revise their Phase Two proposals after submission, and under no circumstances will the Government discuss or accept revisions of Phase One proposals.

5.1 If discussions for Phase Two are deemed necessary, the Contracting Officer will include only those firms determined to be the most highly rated; those whose proposals are reasonably susceptible to being made acceptable; that are not so deficient as to essentially require major revisions or a total re-write. Additionally, the Government may exclude an offer that is so unreasonably priced, in relation to other competitive offers, that there will be little or no chance of becoming competitive. In certain circumstances, the Government may limit offers in the competitive range to a number that will permit an efficient competition.

If discussions are held, Offerors are required to submit their responses to comments electronically. If discussions are held, detailed instructions on responses will be provided. Electronic submissions shall meet the submission deadline set forth by the Contracting Officer during discussions or indicated in the Amendment requesting the Final Proposal Revisions. The Contracting Officer will notify all Offerors in the competitive range, in writing, how and when interim revisions and final proposals revisions are to be submitted.

5.2 Upon conclusion of discussions, those offerors still within the competitive range will be afforded an opportunity to revise their proposal and to submit their final proposal revisions for evaluation.

6.0 THE SELECTION PROCESS.

6.1 The Source Selection Authority will perform the previously discussed Non-Price/Price Trade-Off Analysis considering the non-price evaluation factor and price. The Contracting Officer, independently exercising prudent business judgement, will make the Source Selection Decision based on the Offeror whose proposal offers the best value to the Government. This may result in an award being made to higher rated, higher price Offeror where the decision is consistent with the solicitation's evaluation factors and the Source Selection Authority reasonably determines that the technical superiority of the higher price Offeror outweighs the price differences. This

may also result in rejection of all offers and re-evaluation and/or cancellation of the solicitation.

7.0 BASIS OF AWARD.

7.1 SATOC Selection. It is the Government's intent to award a SATOC IDIQ to the responsible Offeror whose proposal, conforming to the solicitation, is fair and reasonable, and has been determined to be the most advantageous to the Government, non-price, price, and other factors considered.

7.2 The non-price evaluation factor is significantly more important than price. As differences in factor ratings and relative advantages and disadvantages become less distinct, difference in price may become the discriminating factor in determining the most advantageous proposals. Conversely, as differences in prices become less distinct, differences in ratings and relative advantages and disadvantages between proposals are determinative. A contract will not be awarded to an offeror with a deficiency as defined in FAR 15.001.

7.3 The Government reserves the right to accept other than the lowest priced offer. The Government also reserves the right to reject any and all offers. The basis of award will be conforming offer, the price or cost of which may or may not be the lowest.

7.4 Seed Project Selection. After the SATOC has been established, the Government will consider the award of the Seed Project.

END OF SECTION

SECTION 01 00 00

ADDITIONAL SPECIAL CONTRACT REQUIREMENTS
FT. RUCKER

PART 1 GENERAL

Amendment 0003
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1.1 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

a. The Contractor shall be required to (1) commence work under this contract(s) within ***10*** ~~8~~ calendar days after the date the Contractor receives the notice to proceed, (2) prosecute the work diligently, and (3) complete the entire work ***(base bid and all bid options selected)*** ready for use not later than 540 calendar days after receipt of contract notice to proceed. This time stated for completion shall include final cleanup of the premises.

1.2 WORK SITE AND MULTIPLE CONTRACTORS

The Contractor is hereby made aware that multiple contractors will be working at an adjacent work site to this contract. The Prime Contractor on this contract shall work with the other Contractors in the work site vicinity to avoid conflicting construction zones, and scheduling in the same area. He shall also coordinate the activities for his entire work site with other Contractors in the vicinity. ~~In addition, a separate contract will be awarded for the installation of the Audiovisual Equipment within the Add USCENTCOM HQ. The contractor is expected to work with the audiovisual installers/integrators to the fullest extent possible to ensure a proper and timely integration of the audiovisual equipment.~~ The Prime Contractor is responsible for directing the activities of his employees. Also, the Prime Contractor is responsible for the health and safety of his workers at the work site.

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1.3 LIQUIDATED DAMAGES--CONSTRUCTION

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of **$717.00** for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the

Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Hazard Analysis; G,CD.

Scheduled Outages; G,CD.

Area Use Plan; G,CD.

Disposal Site; G,CD.

Disposal of Waste Materials; G,CD.

Electronic Mail System Plan; G,CD.

SD-07 Certificates

Asbestos and Lead Based Paint Certification Letter; G,CD

1.5 CONTRACT DRAWINGS, MAPS AND SPECIFICATIONS

a) The Contractor will be furnished one CD-ROM containing a reproducible copy of the advertised solicitation, including contract clauses, plans and specifications. The work shall conform to the specifications and the contract drawings listed in the technical provisions.

b) Omissions from the drawings or specifications, the mis-description of details of work which are manifestly necessary to carry out the intent of the drawings and specifications which are customarily performed shall not relieve the Contractor from performing such omitted or mis-described details of the work but they shall be performed as if fully and correctly set forth and described in the drawings and specifications.

c) The Contractor shall check all drawings furnished him immediately upon their receipt and shall promptly notify the Contracting Officer's Representative of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The Contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby.

d)The drawings and maps provided in Appendix A for this solicitation are hereby incorporated by reference into these specifications. Any schedules included in the drawings are for the purpose of defining requirements other than quantities.

NOTE: Refer to the folio of drawings for the index of drawings in this solicitation.

1.6 PHYSICAL DATA

Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the

Contractor.

a. The indications of physical conditions on the drawings and in the specifications are the result of site investigations by surveys.

b. Weather Conditions. The location is subject to atmospheric temperature ranging from plus 8 degrees F., to plus 109 degrees F. as determined from the U.S. Weather Bureau Station at Ozark, Alabama. The mean annual precipitation at Ozark, Alabama, is 53.81 inches and the mean monthly precipitation varies from a low of 2.77 inches in October to a high of 6.14 inches in July.

c. Transportation facilities.

1. Railroads. Fort Rucker is served by a spur line of the CSX Transportation Railway System. The rail system on the Fort Rucker installation is not available for the Contractor's use.

2. Highways. Fort Rucker is located on Alabama State Highways Nos. 85 and 134, which are readily accessible from U. S. Highways Nos. 84 and 231 respectively. The Contractor shall make his own investigation of available roads for transportation, load limits for bridges and roads, and other road conditions affecting the transportation of materials and equipment to the site of the work.

1.7 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

a. This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the contract clause entitled "Default: (Fixed Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

1. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

2. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
5	5	5	4	4	5	7	5	5	3	4	5

c. Upon acknowledgement of the Notice to Proceed (NTP) and continuing

throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally schedule work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day.

d. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph 2, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the Contract Clause entitled "Default (Fixed Price Construction)".

1.8 CONTRACTOR PREPARED AS-BUILT DRAWINGS

a. General: In accordance with SPECIAL CONTRACT REQUIREMENT paragraph: CONTRACT DRAWINGS, MAPS AND SPECIFICATIONS, the Government will furnish the Contractor on CD-ROM one electronic set of solicitation drawing files and any amendments for use in preparation of as-built drawings by the Contractor. Copies of the drawings will be the responsibility of the Contractor. The as-built drawings shall be a record of the construction as installed and completed by the Contractor. They shall include all the information shown on the contract set of drawings and a record of all deviations, modifications, or changes from those drawings, however minor, which were incorporated in the work, all additional work not appearing on the contract drawings, and all changes which are made after final inspection of the contract work. In the event the Contractor accomplishes additional work which changes the as-built conditions of the facility after submission of the as-built drawings, the Contractor shall furnish revised and/or additional drawings as required to depict as-built conditions. The requirements for these additional drawings will be the same as for the as-built drawings included in the original submittal.

b. Red line as-built drawings: The Contractor shall have on his staff, personnel to mark up a set of paper copy construction drawings to show the as-built conditions. These as-built marked copies shall be kept current and available on the jobsite at all times. All changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded, as the events occur, by means of details and notes. The Contractor shall call attention to entries by redlining areas affected. The red line as-built will be jointly inspected for accuracy and completeness by the Contracting Officer's representative and a responsible representative of the Contractor prior to submittal of each request for payment. The Contracting Officer's approval of the current status of the as-built drawings shall be a prerequisite to the Contracting Officer's approval of request for progress payment and request for final payment under the contract. The drawings shall show the following information, but not be limited thereto:

1. The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions to permanent features.

2. The location and dimensions of any changes within the building or structures.

3. Correct grade or alignment of roads, structures or utilities if any changes were made from contract plans.

4. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

5. All changes or modifications which result from the final inspection.

6. Options: Where contract drawings or specifications allow options, only the option selected for construction shall be shown on the as-built drawings.

7. Extensions of Design: Shop Drawings such as structural fabrication and erection drawings, fire alarm systems, and sprinkler systems that will require extensive redrafting effort in order to create a electronic set will not be required to be incorporated into the electronic set. They will be included as an Appendix to the paper copy set. The CD-ROM's submitted in the paragraph below shall include scanned or Adobe Acrobat .pdf file copies of the extension of design drawings.

c. Submittal of as-built drawings for review and approval: The Contractor shall participate in monthly review meetings with the Contracting Officer to show the progress made the preceding month and make all required changes. At time of final construction inspection, the Contractor shall submit one copy of the red lined as-built drawings to the Contracting Officer for his review and approval. The as-built drawings shall be certified as to their correctness by the signature of an authorized representative of the Contractor. Upon Government approval of the Contractor's redlined copy of the as-built drawings, the Contractor shall prepare and provide two electronic sets of as-built drawings by incorporating the red line marked up notations on the construction drawings into the electronic set of solicitation drawings and amendments. In addition to the electronic sets of as-built drawings which shall be submitted on a CD-ROM, the Contractor shall also submit a full size set of as-built paper drawings. Submittals are to be to the Contracting Officer not later than ten (10) calendar days after project completion date.

d. Final Drawing Format.

1. The solicitation drawing files and any amendments thereto will be furnished to the Contractor in electronic format. The solicitation drawing files have been prepared in AutoCAD format. The drawing file indicates the format which the drawing was developed. The Contractor shall utilize AutoCad versions 2002 to revise/redraft each solicitation drawing and/or amendment drawing to reflect all changes made during construction as indicated by the red line marked up notations on the construction drawings. Revisions/ redrafting shall match the font styles, sizes, and formats; line weights/ thicknesses and styles/types; and all other drafting elements used on the solicitation drawing/amendments. All elements must be incorporated into each as-built drawing file; the use of reference files shall not be permitted.

2. All revisions made to the solicitation drawings and/or amendment drawings to reflect changes made during construction shall be flagged and

shall have the revision block completed as follows. The entry in the description column of the revision block shall read AS-BUILT. The date of the revision and one approving initial from a responsible person within the Contractor's Firm shall also be included in the revision block. Above the drawing title block the drawing will be labeled in bold letters AS-BUILT. The flagged changes and revision block format shall be in accordance with the examples shown in the Mobile District Design Manual located on the Internet at http://www.sam.usace.army.mil/sam/en/guides/DesMan/desman.htm. The Contractor shall also furnish a revised index of drawings to match the actual design drawings. The drawing title blocks shall be in a uniform format to match the requirements as specified in the Design Manual.

3. The two electronic sets of as-built drawing files shall be submitted in AutoCad 2002 format.

4. The hard copy reproducible set of as-built drawings shall be submitted unbound on paper. The drawings shall be the full size.

e. Payment: No separate payment will be made for the as-built drawings required under this contract, and all costs in connection there-with will be considered a subsidiary obligation of the Contract.

1.9 ARMY PROJECT SIGN

The Contractor shall furnish and install a project sign and a safety performance sign at the location designated by the Contracting Officer within 30 days after notice to proceed. The signs shall be constructed as indicated on the figures bound herein. Size, lettering, color, and paint shall conform to the details shown in Figure 5B "Construction Sign," Figure 5C "Fabrication and Mounting Guidelines," and Figure 5D "Safety Performance Sign," bound herein. All parts of frames and signs shall be given a primer coat of oil paint and a minimum of two finish coats of white semi-gloss paint. The Contractor shall maintain the signs in a "like new" condition throughout the life of the project, repainting and replacing members as necessary to accomplish this requirement. No direct payment will be made for the signs nor maintenance of the signs.

1.10 BULLETIN BOARD

Refer to section 00800 for the bulletin board.

1.11 HAZARD ANALYSIS

A hazard analysis plan, as described in Section 1, Article 01.A.05 of the Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, latest edition, is required for this contract.

1.12 SCHEDULED OUTAGES

All outages, including but not limited to communication, water, electric, natural gas, sewage and road closures, shall be of as short in duration as possible and shall be scheduled by the Contractor in writing, as far in advance as possible with the Contracting Officer. In no case shall scheduling occur less than ten (10) days prior to the required outage. The Contractor's outage request shall include the following:

1. Type of utility, access or service to be disrupted.

2. Areas and/or facilities affected.

3. Expected duration of outage.

4. Date of proposed outage.

5. Names of authorized personnel.

6. Point of contact and telephone numbers.

The Contractor shall obtain in writing from the Contracting Officer a statement of schedule, giving the permissible times of outages for particular installations or activities and the maximum time allowed for each outage. Any utility outage expected to exceed one (1) hour in duration shall be scheduled for the weekend (Saturday/Sunday) and shall not exceed six (6) hours in duration. Any utility outage scheduled during the week (Monday through Friday) shall not exceed one (1) hour in duration. Scheduled outages during the week may be required to occur before or after normal business hours. No outage shall occur until written approval is received from the Contracting Officer. The Contractor shall strictly observe such schedules and will be held responsible for any violations. The Contractor shall include with each outage request a list or bill of materials and equipment that will be used during said outage. The Contractor will be solely responsible for ensuring that all materials and equipment will be on hand and ready for use during any scheduled outage.

1.13 ROAD CLOSURES

Planned road closures shall be detailed and coordinated by the Contractor. Requests for road closures shall be submitted in writing by the Contractor to the Contracting Officer's Representative at least 10 (ten) working days before the planned closure. When it becomes necessary to close roads for construction, the contractor shall immediately put in place the necessary signs and barricades required. All traffic control devices (signs, barricades, pavement markings, traffic signals, intersection control beacons, delineators, etc.) shall conform to the FHWA Manual on Uniform Traffic Control Devices and the FHWA publication Standard Highway Signs, most current edition. These include but are not limited to begin/end construction signs, standard traffic control signs including clearly marked detours and barricades with yellow flashing caution lights. Hand painted plywood signs (or other materials) are not allowed or acceptable. Upon completion of road work, all signs and barricades shall be immediately removed and all normal traffic control devices and signs returned to their original condition. Signs and barricades shall not be left along sides of roadways.

1.14 CONTRACTOR'S AREA USE PLAN

The Contractor shall submit an Area Use Plan to the Contracting Officer, for approval, within thirty (30) days after receipt of Notice to Proceed. The Area Use Plan shall show the following

a. Location of Contractor, sheds and trailers.

b. Location of all Contractor storage areas.

c. Location of Contractor staging areas.

d. Temporary utility tie-ins.

e. Location of Contractor security fencing.

f. Location of project sign.

g. Required telephone service and locations.

h. Portable toilets.

1.15 DISPOSAL OF WASTE MATERIALS

a. All waste materials generated by the Contractor's activities on the installation, including but not limited to demolition debris and waste, shall be disposed of at a location off of Fort Rucker, including federally owned and leased installations and facilities under the jurisdiction of Fort Rucker. Such disposal shall be in compliance with all local, county, State and Federal laws and regulations which govern or affect the disposal of such materials. All waste material of any nature shall be disposed of in a Subtitle D landfill approved and permitted by the Alabama Department of Environmental Management (ADEM) for disposal of such material.

b. The Contractor shall identify, as a part of his submittals required by this contract, the specific disposal site or sites for any waste materials generated by the contractors operations at Fort Rucker.

c. The Contractor shall provide to the Contracting Officer, or his/her authorized representative, documentation (i.e., weight tickets, etc.) which will verify the amount of the final destination of all waste material generated by the contractor's operations at the installation.

d. If salvaged materials are disposed of by resale or other method, such disposal or resale shall comply with all local, County, State and Federal rules and regulations which control or affect such disposal. This shall include, but not be limited to, informing the receiver of the material or items of the presence of any substance which is regulated, i.e., lead, asbestos, etc. Construction debris which includes material painted with lead-based paint (LBP) or which includes any other substance, the disposal of which is controlled by Federal or State law, regulation, or executive order, shall be disposed of at a facility which has been approved by the Alabama Department of Environmental Management (ADEM) for disposal of such material. Construction debris which does not contain regulated substances will be recycled or disposed of at a site off of Fort Rucker which has been approved by ADEM for the disposal of such material. The Contractor shall certify in writing to the Contracting Officer that such disposal complied with all applicable local, County, State, or Federal laws and regulations.

e. Improper Disposal of Waste Material and/or Construction Debris. If at any time during or after the performance of this contract, it is determined by the Contracting Officer's authorized representative that the Contractor has not complied with the requirements of the contract pertaining to the disposal of salvage, waste material and/or construction

debris, the Contractor shall be required to take any corrective action directed by the Contracting Officer or other competent authority at no additional cost to the government. Any fine, fee, or penalty assessed by the regulating authority as a result of the contractor's failure to comply with this provision shall be paid by the contractor. If any part of the performance of this contract is subcontracted, a provision substantially similar to the above shall be included in all such subcontracts. Such provision does not, however, relieve the prime contractor from ultimate responsibility under the contract.

1.16 COORDINATION CONFERENCES

Routine coordination conference will be scheduled by the Contracting Officer throughout the life of this contract. Coordination conferences will be held to discuss contract administration, Contractor quality control, phasing, scheduling, and other aspects relating to this construction. The Using Agency, Corps of Engineers and the Contractor will be represented at each of these meetings. Similar information concerning replacement personnel shall be forwarded to the Contracting Officer, should any replacement be required at any time during the life of this contract. Coordination conferences will be scheduled to occur on a weekly basis.

1.17 SAFETY MARKINGS ON CRANE BOOMS

All cranes shall have a red strobe light and two flags attached to the end of the boom. The flags shall be 18-inches square and international orange in color. The strobe does not need to be flashing during daylight hours or when the boom is lowered to the ground at night. The strobe shall be flashing when operating during weather in which visibility is reduced or when operating at night. The strobe shall remain flashing if the boom remains elevated at night.

1.18 REGISTRATION OF PRIVATELY OWNED VEHICLES

All vehicles requiring access to the installation are now required to be registered with local authorities as directed by the Authorized Representative of the Contracting Officer. This requirement applies to contractors, subcontractors, suppliers, and any other vehicles requiring access by the Contractor to the Fort Rucker installation. This requirement applies to all vehicles, both company and privately owned or leased. Proof of required insurance and car tag receipts are required to obtain registration. Vehicles to be used by the Contractor during the life of the contract will receive decals to indicate registration. These shall be mounted where directed by the issuing authority. The decal is required to be removed upon expiration. Unexpired decals shall be removed and turned in to the appropriate authorities once access is no longer required, such as upon completion of work on this contract, termination of this contract, or termination of employment with those performing work on this contract. Vehicles requiring one-time or non-routine access to the Ft. Rucker installation will be issued temporary permits which will be displayed as directed by the issuing authority. These temporary permits shall be turned in as directed by the issuing authority.

1.19 ELECTRONIC MAIL SYSTEM

The Contractor shall provide and maintain for the life of this contract an electronic mail system which shall interface, connect to and be compatible with the existing electronic mail system in the Corps of Engineers

Resident Office at Ft. Rucker, AL. The Contractors electronic mail system shall transfer and receive correspondence between the Resident Office without loss or modification of formatting codes or special characters.

The Resident Office is currently utilizing Exchange/MS Outlook for Windows and is Internet accessible. The Corps Internet E-mail gateway accepts binary files in uuencoded format, with a limit of 6Mb per E-mail message. Internet messages may be sent to any Mobile District Corps of Engineers Employee using the form <First Name>.<Middle Initial>.<Last Name>@sam.usace.army.mil without the brackets surrounding the names.

During construction, all Requests For Information (RFIs) including field sketched drawings shall be transmitted to the Corps of Engineers Resident Office at Ft. Rucker, AL. in an electronic format. The RFIs shall be saved into a ".pdf" format using Adobe Acrobat 4.0 software.

The Contractor's electronic mail system shall have the capability of sending and receiving text, graphic, and drawing files developed on the following software:

1) Microsoft Word, Version 2000 or newer
2) WordPerfect, Version 12.0
3) AutoCad, Version 2002
4) Adobe Acrobat, Version 6.0

The Contractor shall bear the responsibility to ensure total hardware and software compatibility with the Government's system when transferring and receiving information.

Within 10 days after receipt of NTP, the Contractor shall submit for approval an electronic mail system plan which details the hardware, software, communication paths, processes and procedures for establishing and maintaining the Contractor's electronic mail system.

1.20 EQUIPMENT LAYOUT DRAWINGS

The Contractor shall submit "layout drawings" in plan and necessary elevation, of all mechanical, electrical, heating, and ventilating equipment space(s) showing the proposed equipment, ductwork, piping, conduits, etc., with clearances, for approval of the Contracting Officer, whether or not such layout drawings are specified under the various technical sections of the specifications. In spaces having more than one type of equipment, the layout drawings shall indicate the composite arrangement of all types of equipment and all associated work with all clearances. The layouts of equipment and associated work shall provide adequate and acceptable clearances for entry, servicing, and maintenance. The submittal and approval of equipment layout drawings shall conform to the requirements as herein before specified for shop drawings. Should the Contractor propose to furnish any equipment or standard products requiring allocations of space, or electrical, mechanical, or piping connections thereto, or supports different from those shown or indicated on the plans or in the specifications, he shall prepare and submit full detail drawings to the Contracting Officer for approval showing all changes. The approved detailed drawings shall become a part of the contract and any changes in the construction resulting from revisions in the details and dimensions on the drawings which are required by the substitution of alternate equipment and/or products shall be made at the expense of the Contractor.

1.21 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in four copies. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.22 EQUIPMENT DATA

(a) Major Equipment. The Contractor shall be required to make a list of all installed equipment furnished under this contract. This list shall include but not be limited to each piece of equipment which has a serial number. This list shall include all information usually listed on manufacturer's name plate, so as to positively identify the piece of property. This list shall also include the cost of each piece of installed property (less installation costs) F.O.B. construction site. The above referenced list shall be furnished as soon as possible after equipment is purchased. The list shall be furnished as one (1) reproducible and three (3) copies and shall be furnished to Contracting Officer not later than thirty calendar days prior to completion of any segment of the contract work which has an incremental completion date. Listing will be on Government furnished MOB Form 897, available from the Contracting Officer.

(b) Other Equipment. The Contractor will be required to furnish a brochure, catalog cut, parts list, manufacturer's data sheet or other publication (including the manufacturer's name and address) which will show detailed parts data on all other equipment, such as hardware, plumbing and lighting fixtures, etc., subject to repair and maintenance procedures. The data shall be furnished in four (4) copies to the Contracting Officer not later than thirty calendar days prior to completion of any segment of the contract work which has an incremental completion date.

(NOTE TO SPECIFICATION ENGINEER: DELETE THIS CLAUSE WHEN USING THE TECHNICAL SPECIFICATION SECTION 01781 OR SECTION 01 78 23 ENTITLED OPERATION & MAINTENANCE DATA)

1.23 EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS

(a) The manuals shall be submitted for approval within ninety (90) days after approval of the submittal for the items proposed for procurement unless stated otherwise in the technical specifications. Each manual shall include the following:

(1) Hard Cover Binders. The manuals shall be bound in a 3-ring binder with a hard cover. The following identification shall be inscribed on the cover: the words "EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR

MANUAL" and the building name and number, location, and indication of utility or system covered. Manuals shall be approximately 8 ½ by 11 inches with large sheets folded in, and capable of being easily pulled out for reference.

(2) Warning Page. A warning page shall be provided to warn of potential dangers (if they exist), such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, or high pressures. The warning page shall be placed inside the front cover, in front of the title page.

(3) Title Page. The title page shall show the name, address and phone number of the Contractor, the contract number and the date of publication.

(4) Table of Contents. Provide in accordance with commercial standard practice.

(b) General: Manuals shall include, in separate sections, the following information for each item of equipment and system:

(1) Performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates. Marked-up catalogs, or catalog pages do not satisfy this requirement. Performance information shall be presented as concisely as possible and contain only data pertaining to equipment actually installed.

(2) Catalog cuts showing application information.

(3) Installation information showing minimum acceptable requirements.

(4) Operation and maintenance requirements. Include adequate illustrative material to identify and locate operating controls, indicating devices and locations of areas or items requiring maintenance.

(a) Describe, in detail, starting and stopping procedures for components, adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions.

(b) Maintenance instructions describing the nature and frequency of routine maintenance and procedures to be followed. Indicate any special tools, materials, and test equipment that may be required.

(5) Repair information including diagrams and schematics, guidance for diagnosing problems, and detailed instructions for making the repairs. Provide troubleshooting information that includes a statement of the indication or symptom of trouble and the sequential instructions necessary. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings.

(6) Parts list and names and addresses of the two closest parts supply agencies.

(7) Names and addresses of the local manufacturers representatives and the parent company.

(c) Separate manuals shall be provided for each system required by this contract. The systems are defined as follows:

(1) Facility Heating Systems. Information shall be provided on the following equipment: boilers, water treatment, chemical feed pumps and tanks, converters, heat exchanger, pumps, unit heaters, fin-tube radiation, air handling units (both heating only and heating and cooling), and valves (associated with heating systems).

(2) Air-Conditioning Systems. Provide information on chillers, packaged air-conditioning equipment, towers, water treatment, pumps and tanks, air-cooled condensers, pumps, compressors, air handling units, and valves (associated with air-conditioning systems).

(3) Temperature Control and HVAC Distribution Systems.

(a) Provide the information described for the following equipment: valves, fans, air handling units, pumps, boilers, converters and heat exchangers, chillers, water cooled condensers, air-cooled condensers, cooling towers, fin-tube radiation, and radiant heating systems.

(b) Provide all information described for the following equipment: control air compressors, control components (sensors, controllers, adapters, and actuators), and the water and air flow measuring equipment.

(4) Central Heating Plants. Provide the information described for the following equipment: boilers, converters, heat exchanger, pumps, fans, steam traps, pollution control equipment, chemical feed equipment, control systems, fuel handling equipment de-aerators, tanks (flash, expansion, return water, etc), water softeners, valves and fuel-oil storage tanks.

(5) District Heating Distribution Systems. Provide the information described for the following equipment: valves, fans, pumps, converters and heat exchanger, steam traps, tanks (expansion, flash, etc), and piping systems.

(6) Exterior Electrical Systems. Information shall be provided on the following equipment: power transformers, relays, closers, breakers, regulators, converters, meters and capacitor bank controls.

(7) Interior Electrical Systems. Information shall be provided on the following equipment: relays, motor control centers, switchgear, solid state circuit breakers, motor controller, regulators, converters, filters, meters and EPS lighting systems.

(a) Wiring diagrams and troubleshooting flow chart on control systems.

(b) Special grounding systems.

(8) Energy Management and Control System. The maintenance manual shall include descriptions of maintenance for all equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

(9) Potable Water Treatment Systems. The identified information shall be provided on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentation, laboratory test equipment, chemical feeders, valves, switching gear, and automatic controls.

(10) Wastewater Treatment Systems. The identified information shall be provided on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentation, laboratory test equipment, chemical feeders, valves, scrapers, skimmers, comminutors, blowers, switching gear, and automatic controls.

(11) Fire Protection Systems. Information shall be provided on the following equipment: alarm valves, manual valves, regulators, storage tanks, piping materials, sprinkler heads, nozzles, pumps, and pump drivers.

(12) Fire Detection Systems. The maintenance manual shall include description of maintenance for all detectors, control panels, batteries, transmitters, audible and visual alarm signaling devices and any other auxiliary detection or alarm equipment associated with fire detection and alarm system. The manual shall include inspection, test, periodic maintenance, fault diagnosis, and repair or replacement of defective components.

(13) Plumbing Systems. Information shall be provided on the following equipment: water heaters, valves, pressure regulators, backflow preventors, piping materials, and plumbing fixtures.

(14) Liquid Fuels Systems. Information shall be provided on the following equipment: tanks, automatic valves, manual valves, filter separators, pumps, mechanical loading arms, nozzles, meters, electronic controls, electrical switch gear, and fluidics controls.

(15) Cathodic Protection Systems. Information shall be provided on the following material and equipment: rectifiers, meters anodes, anode backfill, anode lead wire, insulation material and wire size, automatic controls (if any), rheostats, switches, fuses and circuit breakers, type and size of rectifying elements, type of oil in oil-immersed rectifiers, and rating of shunts.

(16) Generator Installations. Information shall be provided on the following equipment: generator sets, automatic transfer panels, governors, exciters, regulators, starting systems, switchgear, and protective devices.

(17) Miscellaneous systems. Information shall be provided on the following: communication and ADP systems, security and intrusion alarm, elevators, motorized doors, kitchen equipment, material handling, active solar, photovoltaic, and other similar type special systems not otherwise specified.

(d) Payment for the equipment or system will be limited to 80% of the cost of the equipment or system and installation until the operating and maintenance manuals are approved.

1.24 LAYOUT OF WORK

The Contractor shall lay out his work from the Government-established base lines, ranges, and gages indicated on the drawings and shall be responsible for all measurements in connection therewith. The Contractor shall furnish, at his own expense, all stakes, templates, platforms, equipment, range markers and labor as may be required in laying out any part of the work from the ranges and gages established by the Government. The Contractor will be held responsible for the execution of the work to such lines and grades as may be established or indicated by the Contracting Officer. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through his negligence prior to their authorized removal, they may be replaced by the Contracting Officer at his discretion. The expense of replacement will be deducted from any amounts due, or to become due, the Contractor.

1.25 TEMPORARY ELECTRICAL SERVICE

All temporary electrical service on the project, and within all temporary and permanent structures shall be installed and maintained in compliance with the provisions of EM 385-1-1, latest edition, Corps of Engineers Safety and Health Requirements, and APPENDIX T of Mobile District Regulation 385-1-1, Electrical Service Requirements for Construction and Maintenance Operations. Copies of these publications are available for

inspection in the District Office by Prospective bidders, and will be furnished to the successful bidder.

1.26 SCHEDULE OF AVAILABLE UTILITIES

In accordance with Section 00700, paragraph entitled "Availability and Use of Utility Services", the Government will make available at no cost to the Contractor, electricity and water from existing distribution lines, outlets and supplies. It shall be the Contractor's responsibility to install and maintain all necessary temporary connections and distribution lines for his own use. Any other required utilities shall be furnished by the Contractor.

1.27 ASBESTOS MATERIALS AND LEAD BASED PAINTS

The Contractor shall not use materials containing Asbestos or Lead Based Paints in the construction of this facility.

Upon completion of the construction, the Contractor shall submit two copies of an Asbestos and Lead Based Paint Certification Letter to the Contracting Officer's Representative (COR) stating that no lead based paints or materials containing asbestos were used in the construction of the new facilities. One copy of the letter will be filed with project documents in the Resident Engineer's Office. The COR will deliver the remaining copy to the Base Environmental Office.

(USE FOLLOWING PARAGRAPH IN PROJECTS WITH ASBESTOS ABATEMENT)

1.28 ASBESTOS - OCCUPATIONAL HEALTH AND ENVIRONMENT

THE CONTRACTOR IS WARNED THAT EXPOSURE TO AIRBORNE ASBESTOS HAS BEEN ASSOCIATED WITH FOUR DISEASES: LUNG CANCER, CERTAIN GASTROINTESTINAL CANCERS, PLEURAL OR PERITONEAL MESOTHELIOMA AND ASBESTOSIS.

a) Studies indicate there are significantly increased health dangers to persons exposed to asbestos who smoke, and further, to family members and other persons who become indirectly exposed as a result of the worker bringing asbestos contaminated work clothing home to be laundered or handled. The Contractor is advised that friable and/or nonfriable asbestos containing material has been identified in area(s) where contract work is to be performed and exists on or within materials and equipment to be removed during this project. Friable asbestos containing materials means any material that contains more than 1 percent asbestos by weight and possesses the quality that it may be crumbled, pulverized or be reduced to powder by hand pressure. Nonfriable asbestos containing materials are materials in which asbestos materials are bound by a matrix material, saturant, impregnant or coating. Nonfriable asbestos containing materials do not release airborne asbestos fibers during routine handling and end use. However, excessive fiber concentrations may be produced during uncontrolled abrading, sanding, drilling, cutting, machining, removal, demolition or other similar activities of nonfriable asbestos containing materials.

b) Care shall be taken to avoid releasing or causing to be released asbestos fibers into the atmosphere where they may be inhaled or ingested. The occupational Safety and Health Administration (OSHA) has set standards in 29 CFR 1926.58 for occupational exposure to

airborne concentrations of asbestos fibers in the construction industry. These standards define permissible exposure limits, methods of compliance, personal protective equipment including clothing and respiratory protection, hygiene facilities and practices, establishment of regulated removal areas, employee information and training, exposure monitoring of airborne asbestos, signs and labels warning of asbestos hazards, housekeeping methods for fiber control and waste disposal, medical surveillance programs and record keeping of medical and exposure monitoring data. The environmental Protection Agency (EPA) has established standards in 40 CFR 61.140-156 (SUBPART M) for the control of asbestos emissions to the environment and the handling and disposal of asbestos waste. These standards define EPA notification that such removal is to take place. The required work practices and procedures include wetting, containment, container labeling, and disposal of removed materials in an approved sanitary landfill.

c) When contract work activities are carried out in locations where the potential exists for exposure to airborne asbestos fibers as described in 1(b) or where asbestos waste will be generated, the Contractor shall ensure that all measures necessary to provide effective protection to persons from exposure to asbestos fibers and prevention of contamination to property, materials, supplies, equipment and the internal and external environment are effectively instituted. As a minimum the Contractor shall comply with the provisions of OSHA (29 CFR 1926.58), EPA (40 CFR 61.140-156), DOT (49 CFR 172.101; and any state or local regulation applicable to safety and health, emission control and transportation and disposal requirements for asbestos.

d) In addition to complying with the above regulations, the Contractor shall perform all asbestos removal and disposal operations in accordance with the requirements as set forth in SECTION: 13280. If the Contractor or any subcontractor identifies or encounters any suspect asbestos material (asbestos content greater than 1 percent by weight) not otherwise identified by the scope of work in the first clause during pre-construction, construction or post construction work activities in locations where contract work is to be performed, the Contractor shall immediately notify the Contracting Officer or COTR verbally with the follow-up in writing within 24 hours.

1.29 CONTRACTOR BADGES

The Contractor shall be responsible for developing a badging system and issuing identification badges to all workers on this project who require access to the installation. The prime contractor shall issue the badges for both his own employees, and all subcontractor employees working on the project. The badges shall include a recent photo of the individual, and shall include their full name, company they work for, project they are working on, prime contractor company name, and authorized local point of contact and phone number for the prime contractor. Badges shall have an expiration date, and be signed by the prime contractor's designated individual. Badges shall be laminated. A sample badge shall be submitted to the Authorized Representative of the Contracting Officer for approval prior to implementing the badging system. These badges do not take the place of valid photo identification that is required to gain access to Fort Rucker. These badges only supplement other identification showing what project the individual is working on and who the individual works for. These badges must be worn and visible on the individual at all times

while on the installation, and are required to be shown at all access points to the installation.

1.30 DIGGING PERMIT

The following permit is required to be submitted to the contracting Officer's Representative prior to the start of any excavation:

DIGGING PERMIT
FORT RUCKER, ALABAMA
PROJECT NAME _____
CONTRACT NO. _____
PROJECT LOCATION_____
PRIME CONTRACTOR_____

Prior to start of any work requiring excavation, the prime contractor must obtain digging clearance signatures from the following entities:

1. PRIDE INDUSTRIES,
Telephone 334-255-3371 (Allow 10 days for clearance.)
Cleared by_____ Date _____ Marked Yes_____ No _____
Remarks
_____

2. DIRECTORATE OF INFORMATION MANAGEMENT
Telephone 334-255-2020, 2345 (Allow one day from agreed upon date for clearance.)
Cleared by_____ Date _____ Marked Yes_____ No _____
Remarks _____

3. CenturyTel
Telephone 1-800-292-8525 (Alabama One Call) (Allow 2 days for clearance.)
Cleared by _____ Date _____ Marked Yes_____ No _____
Remarks _____

4. SOUTHEAST ALABAMA GAS DISTRICT
Telephone 1-800-292-8525 (Alabama One Call) (Allow 2 days for clearance.)
Cleared by_____ Date _____ Marked Yes_____ No _____
Remarks _____

5. ALABAMA POWER COMPANY
Telephone 1-800-292-8525 (Alabama One Call) (Allow 2 days for clearance.)
Cleared by_____ Date _____ Marked Yes_____ No _____
Remarks _____

6. AMERICAN WATER SERVICES
Telephone 1-800-292-8525 (Alabama One Call) (Allow 2 days for clearance.)
Cleared by_____ Date _____ Marked Yes_____ No _____
Remarks _____

7. NAVIGATIONAL AIDS at FORT RUCKER (Airfields and Stagefields only.)
Telephone 334-255-8536 (Allow 2 days for clearance.)
Cleared by_____ Date _____ Marked Yes_____ No _____
Remarks _____

FAILURE BY THE CONTRACTOR TO OBTAIN PROPER DIGGING CLEARANCE COULD CAUSE DAMAGE TO PRIVATE AND PUBLIC PROPERTIES AND RESULTANT LOSS OF MISSION ESSENTIAL TRAINING HOURS AND PRODUCTIVITY AT FORT RUCKER.

(EFFECTIVE DATE 17 APRIL, 2004 REVISED 13 April, 2004)

1.31 SUBMISSION OF FINAL DD FORM 1354 - TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Using the blank DD Form 1354 provided at the end of this section and the Interim DD Form 1354 obtained from the Contracting Officer's Representative, the Contractor shall submit the Final DD Form 1354 for the project no later than fourteen (14) days prior to the Beneficial Occupancy Date (BOD). Category Code numbers found on the DD Form 1354 Checklist provided at the end of this section shall be used in completing the Final DD Form 1354. Additional Category Codes can be found in the publication entitled "Air Force Real Property Category Code Descriptions" which can be obtained from the Directorate of Technical Support, Air Force Civil Engineer Support Agency, Tyndall AFB, FL 32403-5319.

1.32 RATES OF WAGES

Wage rates follow the end of this section.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section --

"General Decision Number: AL20260075 05/18/2026

State: Alabama

Construction Types: Building

Counties: Alabama Counties of
Dale

Modification Number	Publication Date
0	01/02/2026
1	05/18/2026

BOIL0108-001 01/01/2025

	Rates	Fringes
BOILERMAKER	$ 34.21	23.92

ENGI0653-014 10/01/2023

	Rates	Fringes
POWER EQUIPMENT OPERATOR: FORKLIFT	$ 29.90	14.55
POWER EQUIPMENT OPERATOR: BULLDOZER	$ 29.90	14.55

PLUM0119-001 07/23/2025

	Rates	Fringes
PLUMBER	$ 35.20	13.51

SUAL2015-003 08/02/2017

	Rates	Fringes
TRUCK DRIVER: DUMP TRUCK	$ 14.05	0.00
SHEET METAL WORKER (HVAC DUCT INSTALLATION ONLY)	$ 20.00	10.94
PAINTER (BRUSH AND ROLLER)	$ 15.83	0.00
OPERATOR: BACKHOE/EXCAVATOR/TRACKHOE	$ 20.48	11.78
LABORER: COMMON OR GENERAL	$ 11.34	0.00
ELECTRICIAN	$ 16.18	0.00
CEMENT MASON/CONCRETE FINISHER	$ 16.50	1.12
CARPENTER	$ 15.64	0.00
BRICKLAYER	$ 20.00	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their

own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.65 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract from May 11, 2026, through December 31, 2026. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", "SA", or "SC" denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a

weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ﷿SU﷿ identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

﷿SU﷿ wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ﷿SA﷿ identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ﷿SA﷿ identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

==========

END OF GENERAL DECISION

"

SECTION 01 35 26

GOVERNMENTAL SAFETY REQUIREMENTS
05/24, CHG 1: 05/25

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ANSI/ASSP A10.34	(2021) Protection of the Public on or Adjacent to Construction Sites
ANSI/ASSP A10.44	(2020) Control of Energy Sources (Lockout/Tagout) for Construction and Demolition Operations

ASTM INTERNATIONAL (ASTM)

ASTM F855	(2020) Standard Specifications for Temporary Protective Grounds to Be Used on De-energized Electric Power Lines and Equipment

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 1048	(2016) Guide for Protective Grounding of Power Lines
IEEE C2	(2023) National Electrical Safety Code

INTERNATIONAL SAFETY EQUIPMENT ASSOCIATION (ISEA)

ANSI/ISEA Z89.1	(2014; R 2019) American National Standard for Industrial Head Protection

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 51B	(2024) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2026) National Electrical Code
NFPA 70E	(2024) Standard for Electrical Safety in the Workplace
NFPA 241	(2022; ERTA 22-1) Standard for Safeguarding Construction, Alteration, and Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety -- Safety and Occupational

Health (SOH) Requirements

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

10 CFR 20	Standards for Protection Against Radiation
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1926	Safety and Health Regulations for Construction
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
CPL 2.100	(1995) Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146

1.2 DEFINITIONS

The following definitions are for the convenience of the reader. If there is a referenced document in the text of this specification section, that is the document that should define terms for that paragraph. If further clarification is needed, contact the Contracting Officer.

1.2.1 Site Safety and Health Officer (SSHO)

A Contractor Employee that is responsible for overseeing and ensuring implementation of the prime Contractor's Safety and Occupational Health (SOH) program according to the Contract, EM 385-1-1, applicable federal, state, and local requirements.

1.2.1.1 Level One SSHO

A designated employee with full-time SOH responsibility that meets and follows the requirements of EM 385-1-1.

1.2.1.2 Level Two SSHO

A designated employee with Level Two SSHO responsibility that meets and follows the requirements of EM 385-1-1. Level Two SSHOs cannot be assigned to projects that have a residual Risk Assessment Code (RAC) of high or extremely high.

1.2.1.3 Level Three SSHO

A designated Qualified Person or Competent Person with SOH responsibility that meets and follows the requirements of EM 385-1-1. Level 3 SSHOs cannot be assigned to projects that have a residual RAC of high or extremely high.

1.2.1.4 Alternate SSHO

An employee that meets the definition of the contract-required level SSHO, but is not the primary SSHO.

1.2.2 Competent Person (CP)

The CP is a person designated in writing, who, through training, knowledge and experience, is capable of identifying, evaluating, and addressing existing and predictable hazards in the working environment or working conditions that are unsanitary, hazardous, or dangerous to personnel, and who has authorization to take prompt corrective measures to eliminate them.

1.2.3 Qualified Person (QP)

The QP is a person designated in writing, who, by possession of a recognized degree, certificate, or professional standing, or extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems related to the subject matter, the work, or the project.

1.3 SUBMITTALS

Government Acceptance or Approval does not remove responsibility from the Contractors for their actions or liability.

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G

Dive Operations Plan; G

SD-06 Test Reports

Accident Reports; G

LHE Inspection Reports

Monthly Exposure Reports; G

SD-07 Certificates

Activity Hazard Analysis (AHA); G

Certificate of Compliance

Hot Work Permit

License Certificates

Portable Gauge Operations Planning Worksheet; G

Radiography Operation Planning Work Sheet; G

Standard Lift Plan; G

Critical Lift Plan; G

1.4 PUBLIC HEALTH EMERGENCIES

In the event of a declared public health emergency, follow safety precautions as required by the Occupational Safety and Health Administration (OSHA) www.osha.gov, the Centers for Disease Control and Prevention (CDC) www.cdc.gov, and as required by federal, state and local requirements.

1.5 MONTHLY EXPOSURE REPORTS

Provide a Monthly Exposure Report by the fifth day of each month for the previous month. This report is a compilation of employee-hours worked each month for all site workers, both Prime and subcontractor. Failure to submit the report may result in retention of up to 10 percent of the progress payment.

1.6 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this Contract, comply with the most recent edition of USACE EM 385-1-1, and the following federal, state, and local laws, ordinances, criteria, rules and regulations at the date of the Solicitation for this Contract. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern.

1.7 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

1.7.1 Site Safety and Health Officer (SSHO)

1.7.1.1 Qualifications of SSHO

All SSHOs will have met the training, experience requirements identified in the EM 385-1-1 and this Contract.

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1.7.1.2 Duties of SSHO

All SSHOs will carry out the roles and responsibilities as identified in this Contract and the EM 385-1-1. All SSHOs will be designated on an ENG Form 6282, provided by the Contracting Officer. Superintendent, QC Manager, and SSHO are subject to dismissal if their required duties are not being effectively carried out. If either the Superintendent, QC Manager, or SSHO are dismissed, project work will be stopped and will not be allowed to resume until a suitable replacement is approved and the above duties are again being effectively carried out. ***The SSHO may also serve as the QC Manager.***

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1.7.1.3 Safety Meetings

Conduct safety meetings to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent Safety and Occupational Health (SOH) training and motivation. Conduct meetings at least once a month for all supervisors at the project location. The SSHO, supervisors, or foremen must conduct meetings at least once a week for the trade workers. Document meeting minutes to include the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Maintain documentation on-site and furnish copies to the Contracting Officer on request. Notify the Contracting Officer of all scheduled meetings 7 calendar days in advance.

1.7.2 Roles and Responsibilities of Prime Contractor and SSHO

The Prime Contractor and SSHO must ensure that the requirements of all applicable OSHA and EM 385-1-1 are met for the project. The Prime Contractor must ensure an SSHO or an equally qualified Alternate SSHO(s) is at the worksite at all times to implement and administer the Contractor's safety program and Government accepted Accident Prevention Plan. If the required SSHO has to temporarily (that is, up to 24 hours / 1 day) leave the site of work due to unforeseen or emergency situations, a Level One, Two, or Three SSHO may be used in the interim and must be on the site of work at all times when work is being performed.

If the SSHO must be off-site for a period longer than 24 hours / 1 day, a qualified alternate that meets the contract requirements must be onsite.

a. Prime contractor must ensure all SSHOs will:

(1) Are designated on an ENG Form 6282.

(2) Meet minimum training and experience requirements identified in EM 385-1-1.

(3) Execute roles and responsibilities identified in EM 385-1-1.

1.7.3 Contract Site Safety And Health Officer(s)(SSHOs) Minimum Requirements

Provide a minimum of one Level One SSHO that meets the requirements of EM 385-1-1 for this project.

1.7.4 Competent Person for Confined Space Entry

Provide a CP for Confined Space Entry who meets the requirements of EM 385-1-1 and herein. The CP for Confined Space Entry must supervise the entry into each confined space in accordance with EM 385-1-1.

1.7.5 Preconstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project must attend the preconstruction conference. This includes the project superintendent, Site Safety and Occupational Health Officer, quality control manager, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the Contract. This list of proposed AHAs will be reviewed and an agreement will be reached between the Contractor and the Contracting Officer as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, and Government review of AHAs to preclude project delays. The creation of the APP and Schedule will be created after being given Notice to Proceed.

c. Deficiencies in the submitted APP, identified during the Contracting Officer's review, must be corrected, and the APP re-submitted for review prior to the start of construction. Work is not permitted to begin until an APP is established that is acceptable to the Contracting Officer.

1.8 ACCIDENT PREVENTION PLAN (APP)

1.8.1 Accident Prevention Plan (APP)

Submit the Accident Prevention Plan (APP) for review and acceptance by the Government at least 15 calendar days prior to the start, after being given Notice to Proceed. A competent person must prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of EM 385-1-1, ENG Form 6293, and herein. The APP must be job-specific and address any unusual or unique aspects of the project or activity for which it is written. The APP must interface with the Contractor's overall safety and occupational health program referenced in the APP in the applicable APP element, and made site-specific. Describe the methods to evaluate past safety performance of potential subcontractors in the selection process. Also, describe innovative methods used to ensure and monitor safe work practices of subcontractors. The Government considers the Prime Contractor to be the "controlling employer" for all worksite safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the Contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP must be signed in accordance with the APP and ENG Form 6293 Accident Prevention Plan Worksheet. The SSHO must provide and maintain the APP and a log of signatures by each subcontractor foreman, attesting that they have read and understand the APP, and make the APP and log available on-site to the Contracting Officer. If English is not the foreman's primary language, the Prime Contractor must provide an interpreter.

Submit the APP to the Contracting Officer 15calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP. Once reviewed and accepted by the Contracting Officer, the APP and attachments will be enforced as part of the Contract. Disregarding the provisions of this Contract or the accepted APP is cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. Continuously review and amend the APP, as necessary, throughout the life of the Contract. Changes to the accepted APP must be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and Quality Control Manager. Incorporate unusual or high-hazard activities

not identified in the original APP as they are discovered. Should any severe hazard exposure (i.e., imminent danger) become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate and remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ANSI/ASSP A10.34), and the environment.

1.8.2 Names and Qualifications

Provide plans in accordance with the requirements outlined in EM 385-1-1, including the following:

a. Names and qualifications (resumes including education, training, experience and certifications) of site safety and health personnel designated to perform work on this project to include the designated Site Safety and Health Officer and other competent and qualified personnel to be used. Specify the duties of each position.

b. As a minimum, designate and submit qualifications of Competent Persons (CP) for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; and personal protective equipment and clothing to include selection, use and maintenance. Designate and submit qualifications for additional CPs as applicable to the work performed under this Contract.

1.8.3 Plans

Provide plans in the APP in accordance with the requirements outlined in EM 385-1-1, including the following:

1.8.3.1 Site Demolition Plan

Identify the safety and health aspects, and prepare in accordance with Section 02 41 00 DEMOLITION and referenced sources.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

Before beginning each activity, task or Definable Feature of Work (DFOW) involving a type of work presenting hazards not experienced in previous project operations, or where a new work crew or subcontractor is to perform the work, the Contractor(s) performing that work activity must prepare an AHA. AHAs must be developed by the Prime Contractor, subcontractor, or supplier performing the work, and provided for Prime Contractor review and approval before submitting to the Contracting Officer. AHAs must be signed by the SSHO, Superintendent, QC Manager and the subcontractor Foreman performing the work. Format the AHA in accordance with EM 385-1-1 or as directed by the Contracting Officer. Submit the AHA for review at least 15 working days prior to the start of each activity task, or DFOW. The Government reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences, specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.

AHAs must identify competent persons required for phases involving high

risk activities, including confined entry, crane and rigging, excavations, trenching, electrical work, fall protection, and scaffolding.

1.9.1 AHA Management

Review the AHA list periodically (at least monthly) at the Contractor supervisory safety meeting, and update as necessary when procedures, scheduling, or hazards change. Use the AHA during daily inspections by the SSHO to ensure the implementation and effectiveness of the required safety and health controls for that work activity.

1.9.2 AHA Signature Log

Each employee performing work as part of an activity, task or DFOW must review the AHA for that work and sign a signature log specifically maintained for that AHA prior to starting work on that activity. The SSHO must maintain a signature log on site for every AHA. Provide employees whose primary language is other than English, with an interpreter to ensure a clear understanding of the AHA and its contents.

1.10 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in paragraph REFERENCES. Maintain applicable equipment manufacturer's manuals.

1.11 EMERGENCY MEDICAL TREATMENT

Contractors must arrange for their own emergency medical treatment in accordance with EM 385-1-1. The Government has no responsibility to provide emergency medical treatment.

1.12 NOTIFICATIONS AND REPORTS

1.12.1 Accident Notification

Notify the Contracting Officer in accordance with the EM 385-1-1 Accident Reporting Timeline.

Table
Accident Reporting Required Timeline

Accident Type	Notify KO or COR	Complete Final Accident Report on ENG 3394 and provide to KO or COR
Fatality, in-patient hospitalization, amputation, eye loss, or property damage over $600,000.	Immediately, no later than (NLT) 8 Hours	Within 7 Days
All other accidents and near misses	Immediately, no later than (NLT) 24 Hours	Within 7 Days

Within notification include Contractor name; Contract title; type of Contract; name of activity, installation or location where accident

occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (for example, type of construction equipment used and PPE used). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Assist and cooperate fully with the Government's investigation(s) of any accident or near miss.

1.12.2 Accident Reports

a. Conduct an accident investigation for recordable injuries and illnesses, property damage, and near misses as defined in EM 385-1-1, to establish the root cause(s) of the accident. All accidents are reportable, regardless of whether or not it is recordable. Complete the applicable USACE Accident Report, ENG Form 3394, and provide the report to the Contracting Officer within 7 calendar days of the accident. The Contracting Officer will provide copies of any required or special forms. All accidents are reportable, regardless of whether or not it is recordable.

b. Near Misses: For Army projects, report all "Near Misses" to the Contracting Officer, using local accident reporting procedures, within 24 hours. The Contracting Officer will provide the Contractor the required forms. Near miss reports are considered positive and proactive Contractor safety management actions.

1.12.3 LHE Inspection Reports

Submit LHE inspection reports required in accordance with EM 385-1-1 and as specified herein with Daily Reports of Inspections.

1.12.4 Certificate of Compliance and Pre-lift Plan/Checklist for LHE and Rigging

1.12.4.1 Certificate of Compliance

Provide a Certificate of Compliance for LHE utilized to perform work under this Contract in accordance with Section 16-7 of the EM 385-1-1. Post completed certificate on the crane.

1.12.4.2 Pre-Lift Plans

Develop either a Standard Lift Plan (SLP) or Critical Lift Plan (CLP) as required in accordance with EM 385-1-1. Utilize the Standard Lift Plan ENG Form 6203 for routine crane lifts and use the Critical Lift Plan ENR Form 6213 for non-routine crane lifts requiring more detailed planning and additional safety precautions, as defined by Section 16-2j of the EM 385-1-1. Submit lift plans to the Contracting Officer for approval within 15 calendar days in advance of planned lift.

1.13 HOT WORK PERMIT

1.13.1 Permit and Personnel Requirements

Submit and obtain a written permit prior to performing "Hot Work" (i.e., welding or cutting) or operating other flame-producing/spark producing devices, from the Fire Marshall. A permit is required from the Explosives Safety Office for work in and around where explosives are processed, stored, or handled. Contractors are required to meet all criteria before

a permit is issued. Provide at least two 20 pound 4A:20 BC rated extinguishers for normal "Hot Work". The extinguishers must be current inspection tagged, and contain an approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch must be trained in accordance with NFPA 51B and remain on-site for a minimum of 1 hour after completion of the task or as specified on the hot work permit.

When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Marshall phone number. Report any fire, no matter how small, to the responsible Fire Marshall immediately.

1.13.2 Work Around Flammable Materials

Obtain permit approval from a NFPA Certified Marine Chemist, or Certified Industrial Hygienist for "Hot Work" within or around flammable materials (such as fuel systems or welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, or vaults) that have the potential for flammable or explosive atmospheres.

Whenever these materials, except beryllium and chromium (VI), are encountered in indoor operations, local mechanical exhaust ventilation systems that are sufficient to reduce and maintain personal exposures to within acceptable limits must be used and maintained in accordance with manufacturer's instruction and supplemented by exceptions noted in EM 385-1-1.

1.14 RADIATION SAFETY REQUIREMENTS

Submit License Certificates, employee training records, and Leak Test Reports for radiation materials and equipment to the Contracting Officer and Radiation Safety Office (RSO) for all specialized and licensed material and equipment proposed for use on the construction project (excludes portable machine sources of ionizing radiation including moisture density and X-Ray Fluorescence (XRF)). Maintain on-site records whenever licensed radiological materials or ionizing equipment are on Government property.

Protect workers from radiation exposure in accordance with 10 CFR 20, ensuring any personnel exposures are maintained As Low As Reasonably Achievable.

1.14.1 Radiography Operation Planning Work Sheet

Submit a Gamma and X-Ray Radiography Operation Planning Work Sheet to Contracting Officer 14 days prior to commencement of operations involving radioactive materials or radiation generating devices. For portable machine sources of ionizing radiation, including moisture density and XRF, use and submit the Portable Gauge Operations Planning Worksheet instead. The Contracting Officer will review the submitted worksheet and provide questions and comments.

Contractors must use primary dosimeters process by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.

1.14.2 Site Access and Security

Coordinate site access and security requirements with the Contracting

Officer for all radiological materials and equipment containing ionizing radiation that are proposed for use on a government facility. For gamma radiography materials and equipment, a Government escort is required for any travels on the Installation. The Government authorized representative will meet the Contractor at a designated location outside the Installation, ensure safety of the materials being transported, and will escort the Contractor for gamma sources onto the Installation, to the job site, and off the Installation. For portable machine sources of ionizing radiation, including moisture density and XRF, the Government authorized representative will meet the Contractor at the job site.

Provide a copy of all calibration records, and utilization records for radiological operations performed on the site.

1.14.3 Loss or Release and Unplanned Personnel Exposure

Loss or release of radioactive materials, and unplanned personnel exposures must be reported immediately to the Contracting Officer, RSO, and Base Security Department Emergency Number.

1.14.4 Site Demarcation and Barricade

Properly demark and barricade an area surrounding radiological operations to preclude personnel entrance, in accordance with EM 385-1-1, Nuclear Regulatory Commission, and Applicable State regulations and license requirements, and in accordance with requirements established in the accepted Radiography Operation Planning Work Sheet.

Do not close or obstruct streets, walks, and other facilities occupied and used by the Government without written permission from the Contracting Officer.

1.14.5 Security of Material and Equipment

Properly secure the radiological material and ionizing radiation equipment at all times, including keeping the devices in a properly marked and locked container, and secondarily locking the container to a secure point in the Contractor's vehicle or other approved storage location during transportation and while not in use. While in use, maintain a continuous visual observation on the radiological material and ionizing radiation equipment. In instances where radiography is scheduled near or adjacent to buildings or areas having limited access or one-way doors, make no assumptions as to building occupancy. Where necessary, the Contracting Officer will direct the Contractor to conduct an actual building entry, search, and alert. Where removal of personnel from such a building cannot be accomplished and it is otherwise safe to proceed with the radiography, position a fully instructed employee inside the building or area to prevent exiting while external radiographic operations are in process.

1.14.6 Transportation of Material

Comply with 49 CFR 173 for Transportation of Regulated Amounts of Radioactive Material. Notify Local Fire authorities and the site Radiation Safety Officer (RSO) of any Radioactive Material use.

1.14.7 Schedule for Exposure or Unshielding

Actual exposure of the radiographic film or unshielding the source must not be initiated until after 5 p.m. on weekdays.

1.14.8 Transmitter Requirements

Adhere to the base policy concerning the use of transmitters, such as radios and cell phones. Obey Emissions control (EMCON) restrictions.

1.15 CONFINED SPACE ENTRY REQUIREMENTS

Confined space entry must comply with EM 385-1-1, 29 CFR 1926, 29 CFR 1910, and Directive CPL 2.100. Any potential for a hazard in the confined space requires a permit system to be used.

1.15.1 Rescue Procedures and Coordination with Local Emergency Responders

Develop and implement an on-site rescue and recovery plan and procedures. The rescue plan must not rely on local emergency responders for rescue from a confined space.

1.16 DIVE SAFETY REQUIREMENTS

Develop a Dive Operations Plan, AHA, emergency management plan, and personnel list that includes qualifications, for each separate diving operation. Submit these documents to the District Dive Coordinator (DDC) via the Contracting Officer, for review and approval at least 15 working days prior to commencement of diving operations. These documents must be at the diving location at all times. Provide each of these documents as a part of the project file.

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1.17 SEVERE STORM PLAN

~~Provide severe storm plan, to include a plan for tropical weather events that corresponds with Eglin AFB's HURCON system. Current HURCON checklists can be obtained from the Resident Office.~~

In the event of a severe storm warning, the Contractor must comply with the applicable Storm Plan and:

a. Secure outside equipment and materials and place materials that could be damaged in protected areas.

b. Check surrounding area, including roof, for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.

c. Ensure that temporary erosion controls are adequate.

d. The airfield has a Weather Alert Mass notification system on the airfield. EM-385-1 dictates the distance lightning is observed and stop work is required.

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PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 CONSTRUCTION AND OTHER WORK

Comply with EM 385-1-1, NFPA 70, NFPA 70E, NFPA 241, the APP, the AHA, Federal and State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard prevails.

PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes:

a. Head Protection that meets ANSI/ISEA Z89.1

b. Long Pants

c. Appropriate Safety Footwear

d. Appropriate Class Reflective Vests

3.1.1 Worksite Communication

Employees working alone in a remote location or away from other workers must be provided an effective means of emergency communications (i.e., cellular phone, two-way radios, land-line telephones or other acceptable means). The selected communication must be readily available (easily within the immediate reach) of the employee and must be tested prior to the start of work to verify that it effectively operates in the area/environment. Develop an employee check-in/check-out communication procedure to ensure employee safety.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this Contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint, and hexavalent chromium, are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further Contracting Officer approval. Notify the Radiation Safety Officer (RSO) prior to excepted items of radioactive material and devices being brought on base.

3.1.3 Unforeseen Hazardous Material

Contract documents identify materials such as PCB, lead paint, and friable and non-friable asbestos and other OSHA regulated chemicals (i.e., 29 CFR

Part 1910.1000). If material(s) that can be hazardous to human health upon disturbance are encountered during demolition, repair, renovation, or construction operations, stop portions of work that would disturb the material and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification.

3.2 UTILITY OUTAGE REQUIREMENTS

Apply for utility outages at least 15 days in advance. At a minimum, the written request must include the location of the outage, utilities being affected, duration of outage, any necessary sketches, and a description of the means to fulfill energy isolation requirements in accordance with EM 385-1-1. In accordance with EM 385-1-1, where outages involve Government or Utility personnel, coordinate with the Government on all activities involving the control of hazardous energy.

These activities include, but are not limited to, a review of Hazardous Energy Control Program (HECP) and HEC procedures, as well as applicable Activity Hazard Analyses (AHAs). In accordance with EM 385-1-1 and NFPA 70E, work on energized electrical circuits must not be performed without prior Government authorization. Government permission is considered through the permit process and submission of a detailed AHA. Energized work permits are considered only when de-energizing introduces additional or increased hazard or when de-energizing is infeasible.

3.3 OUTAGE COORDINATION MEETING

After the utility outage request is approved and prior to beginning work on the utility system requiring shut-down, conduct a pre-outage coordination meeting in accordance with EM 385-1-1. This meeting must include the Prime Contractor, the Prime and subcontractors performing the work, the Contracting Officer, and the Installation representative and Public Utilities representative. All parties must fully coordinate HEC activities with one another. During the coordination meeting, all parties must discuss and coordinate on the scope of work, HEC procedures (specifically, the lock-out/tag-out procedures for worker and utility protection), the AHA, assurance of trade personnel qualifications, identification of competent persons, and compliance with HECP training in accordance with EM 385-1-1. Clarify when personal protective equipment is required during switching operations, inspection, and verification.

3.4 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

Provide and operate a Hazardous Energy Control Program (HECP) in accordance with EM 385-1-1, 29 CFR 1910, 29 CFR 1915, ANSI/ASSP A10.44, NFPA 70E.

3.4.1 Safety Preparatory Inspection Coordination Meeting with the Government or Utility

For electrical distribution equipment that is to be operated by Government or Utility personnel, the Prime Contractor and the subcontractor performing the work must attend the safety preparatory inspection coordination meeting, which will also be attended by the Contracting Officer's Representative, and required by EM 385-1-1. The meeting will

occur immediately preceding the start of work and following the completion of the outage coordination meeting. Both the safety preparatory inspection coordination meeting and the outage coordination meeting must occur prior to conducting the outage and commencing with lockout/tagout procedures.

3.4.2 Lockout/Tagout Isolation

Where the Government or Utility performs equipment isolation and lockout/tagout, the Contractor must place their own locks and tags on each energy-isolating device and proceed in accordance with the HECP. Before any work begins, both the Contractor and the Government or Utility must perform energy isolation verification testing while wearing required PPE detailed in the Contractor's AHA and required by EM 385-1-1. Install personal protective grounds, with tags, to eliminate the potential for induced voltage in accordance with EM 385-1-1.

3.4.3 Lockout/Tagout Removal

Upon completion of work, conduct lockout/tagout removal procedure in accordance with the HECP. In accordance with EM 385-1-1, each lock and tag must be removed from each energy isolating device by the authorized individual or systems operator who applied the device. Provide formal notification to the Government (by completing the Government form if provided by Contracting Officer's Representative), confirming that steps of de-energization and lockout/tagout removal procedure have been conducted and certified through inspection and verification. Government or Utility locks and tags used to support the Contractor's work will not be removed until the authorized Government employee receives the formal notification.

3.5 FALL PROTECTION PROGRAM

Establish a fall protection program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures in accordance with EM 385-1-1.

3.5.1 Fall Protection Equipment and Systems

Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the Site Specific Fall Protection and Prevention Plan and AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in EM 385-1-1.

Provide personal fall protection equipment, systems, subsystems, and components that comply with EM 385-1-1 and 29 CFR 1926.

3.5.1.1 Additional Personal Fall Protection Measures

In addition to the required fall protection systems, other protective measures such as safety skiffs, personal floatation devices, and life rings, are required when working above or next to water in accordance with EM 385-1-1. Personal fall protection systems and equipment are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall protection systems are

required when operating other equipment such as scissor lifts. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, travel, or while performing work.

3.5.1.2 Personal Fall Protection Equipment

Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. The use of body belts is not acceptable. Harnesses must have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Snap hooks and carabineers must be self-closing and self-locking, capable of being opened only by at least two consecutive deliberate actions and have a minimum gate strength of 3,600 lbs in all directions. Use webbing, straps, and ropes made of synthetic fiber. The maximum free fall distance when using fall arrest equipment must not exceed 6 feet, unless the proper energy absorbing lanyard is used. Always take into consideration the total fall distance and any swinging of the worker (pendulum-like motion), that can occur during a fall, when attaching a person to a fall arrest system. Equip all full body harnesses with Suspension Trauma Preventers such as stirrups, relief steps, or similar in order to provide short-term relief from the effects of orthostatic intolerance in accordance with EM 385-1-1.

3.6 USE OF EXPLOSIVES

Explosives must not be used or brought to the project site without prior written approval from the Contracting Officer. Such approval does not relieve the Contractor of responsibility for injury to persons or for damage to property due to blasting operations.

Storage of explosives, when permitted on Government property, must be only where directed and in approved storage facilities. These facilities must be kept locked at all times except for inspection, delivery, and withdrawal of explosives.

3.7 ELECTRICAL

Perform electrical work in accordance with EM 385-1-1.

3.7.1 Electrical Work

As described in EM 385-1-1, electrical work is to be conducted in a de-energized state unless there is no alternative method for accomplishing the work. In those cases obtain an energized work permit from the Contracting Officer. The energized work permit application must be accompanied by the AHA and a summary of why the equipment/circuit needs to be worked energized. Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Attach temporary grounds in accordance with ASTM F855 and IEEE 1048. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator is allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method.

When working in energized substations, only qualified electrical workers are permitted to enter. When work requires work near energized circuits as defined by NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety footwear, insulating gloves and electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA. Ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.

3.7.2 Qualifications

Electrical work must be performed by QP with verifiable credentials who are familiar with applicable code requirements. Verifiable credentials consist of State, National and Local Certifications or Licenses that a Master or Journeyman Electrician may hold, depending on work being performed, and must be identified in the appropriate AHA. Journeyman/Apprentice ratio must be in accordance with State, Local requirements applicable to where work is being performed.

3.7.3 Arc Flash

Conduct a hazard analysis/arc flash hazard analysis whenever work on or near energized parts greater than 50 volts is necessary, in accordance with NFPA 70E.

All personnel entering the identified arc flash protection boundary must be QPs and properly trained in NFPA 70E requirements and procedures. Unless permitted by NFPA 70E, no Unqualified Person is permitted to approach nearer than the Limited Approach Boundary of energized conductors and circuit parts. Training must be administered by an electrically qualified source and documented.

3.7.4 Grounding

Ground electrical circuits, equipment and enclosures in accordance with NFPA 70 and IEEE C2 to provide a permanent, continuous and effective path to ground unless otherwise noted by EM 385-1-1.

3.7.5 Testing

Temporary electrical distribution systems and devices must be inspected, tested and found acceptable for Ground-Fault Circuit Interrupter (GFCI) protection, polarity, ground continuity, and ground resistance before initial use, before use after modification and at least monthly. Monthly inspections and tests must be maintained for each temporary electrical distribution system, and signed by the electrical CP or QP.

-- End of Section --

SECTION 01 45 00

QUALITY CONTROL
08/23, CHG 3: 08/25

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D3740	(2019) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E329	(2023) Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety -- Safety and Occupational Health (SOH) Requirements

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program. Include all associated costs in the applicable Bid Schedule item.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Contractor Quality Control (CQC) Plan; G,

SD-06 Test Reports

Verification Statement

1.4 GENERAL REQUIREMENTS

Establish and maintain an effective quality control (QC) system that complies with FAR 52.246-12 Inspection of Construction. QC is comprised of plans, procedures, and organization necessary to produce an end product that complies with the Contract requirements. The QC system covers all

construction operations, both onsite and offsite, and must be keyed to the proposed construction sequence. The Quality Control Manager, Superintendent, Site Safety and Health Officer (SSHO), and all on-site supervisors are responsible for the quality of work and are subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the Contract. The Quality Control Manager must maintain a physical presence at the work site at all times and is the primary individual responsible for all quality control.

1.5 QUALITY CONTROL (QC) PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. The QC program consists of a QC Organization, QC Plan, QC Plan Meeting(s), a Coordination and Mutual Understanding Meeting, QC meetings, three phases of control, submittal review and approval, testing, completion inspections, QC certifications, and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations that comply with the requirements of this Contract. The QC program must cover on-site and off-site work and be keyed to the work sequence. No construction work or testing may be performed unless the QC Manager is on the work site. The QC Manager must report to an officer of the firm and not be subordinate to the Project Superintendent or the Project Manager. The QC Manager, Project Superintendent and Project Manager must work together effectively. Although the QC Manager is the primary individual responsible for quality control, all individuals will be held responsible for the quality of work on the job.

1.5.1 Meetings

1.5.1.1 Quality Control Plan Meeting

Prior to submission of the QC Plan, the Contractor may request a meeting with the Contracting Officer to discuss the QC Plan requirements of this Contract.

The purpose of this meeting is to develop a mutual understanding of the QC Plan requirements prior to plan development and submission and to agree on the Contractor's list of Definable Feature of Work (DFOW).

1.5.1.2 Coordination and Mutual Understanding Meeting

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, meet with the Contracting Officer and discuss the Contractor's quality control system. During the meeting, a mutual understanding of the system details must be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor and the Government. Provide a copy of the signed minutes to all attendees and incorporate into the relevant QC Plan. At a minimum the Coordination and Mutual Understanding Meeting must be repeated when a new QC Manager is appointed. There can be other occasions when subsequent conferences will be called by either party to reconfirm mutual understandings or address deficiencies in the CQC system or procedures which can require corrective action by the Contractor.

1.5.1.2.1 Purpose

The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, design intent, environmental requirements and procedures, coordination of activities to be performed, and the coordination of the Contractor's management, production, and QC personnel. At the meeting, the Contractor must explain in detail how three phases of control will be implemented for each DFOW, as well as how each DFOW will be affected by each management plan or requirement as listed below:

a. Waste Management Plan.

b. Procedures for noise and acoustics management.

c. Environmental Protection Plan.

d. Environmental regulatory requirements.

1.5.1.2.2 Coordination of Activities

Coordinate activities included in various sections to assure efficient and orderly installation of each component. Coordinate operations included under different sections that are dependent on each other for proper installation and operation.

1.5.1.2.3 Attendees

As a minimum, the Contractor's personnel required to attend include an officer of the firm, the Project Manager, Project Superintendent, QC Manager, Alternate QC Manager, Assistant QC Manager, QC Specialists, Environmental Manager, and subcontractor representatives. Each subcontractor who will be assigned QC responsibilities must have a principal of the firm at the meeting.

1.5.1.3 Quality Control (QC) Meetings

After the start of construction, conduct weekly QC meetings led by the QC Manager at the work site with the Project Superintendent, the QC Specialists, and the other personnel as necessary. The QC Manager is to prepare the minutes of the meeting and provide a copy to the Contracting Officer within 2 working days after the meeting. The Contracting Officer may attend these meetings. As a minimum, accomplish the following at each meeting:

a. Review the minutes of the previous meeting.

b. Review the schedule and the status of work and deficiencies/rework. Review the most current approved schedule (in accordance with schedule specification) and the status of work and deficiencies/rework.

c. Review the status of submittals and Request For Information (RFIs).

d. Review the work to be accomplished in the next 3 weeks as defined by the schedule section paragraph WEEKLY PROGRESS MEETINGS in Section 01 32 01.00 10 PROJECT SCHEDULE and all quality control documentation required for that work.

e. Review Testing Plan and Log including status of tests performed since

last QC Meeting.

f. Resolve QC and production problems. Discuss status of pending change orders.

g. Address items that may require revising the QC Plan.

h. Review Accident Prevention Plan (APP) and effectiveness of the safety program.

i. Review environmental requirements and procedures.

j. Review Environmental Management Plan.

k. Review Waste Management Plan.

l. Review the status of training completion.

1.5.2 Contractor Quality Control (CQC) Plan

Submit no later than 15 days after receipt of notice to proceed, the CQC Plan proposed to implement the requirements FAR 52.246-12 Inspection of Construction. The Government will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan and other Contract requirements or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional work.

1.5.2.1 Content of Contractor Quality Control (CQC) Plan

Provide a CQC Plan, prior to start of construction that includes a table of contents, with major sections identified, pages numbered sequentially, and that documents the proposed methods and responsibilities for accomplishing quality control during the construction of the project. The CQC Plan must at a minimum include the following sections:

a. A description of the quality control organization and acknowledgment that the CQC staff will implement the three phase control system for all aspects of the work specified.

b. An organizational chart showing the quality control organization with individual names and job titles and lines of authority up to an executive of the company at the home office.

c. NAMES AND QUALIFICATIONS: Names and qualifications, in resume format, (including position titles and durations for qualifying experiences) for each person in the QC organization. Include the Construction Quality Management (CQM) for Contractors course certifications for the QC personnel as required by the paragraph CONSTRUCTION QUALITY MANAGEMENT TRAINING.

d. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL: Duties, responsibilities, and authorities of each person in the QC organization.

e. OUTSIDE ORGANIZATIONS: A listing of outside organizations, such as architectural and consulting engineering firms, that will be employed

by the Contractor and a description of the services these firms will provide.

f. APPOINTMENT LETTERS: Letters signed by an officer of the firm appointing the QC Manager and Alternate QC Manager, and stating that they are responsible for implementing and managing the QC program as described in this Contract. Include in this letter the responsibility of the QC Manager and Alternate QC Manager to implement and manage the three phases of control, and their authority to stop work that is not in compliance with the Contract. Letters of direction are to be issued by the QC Manager to all other QC Specialists or quality control representatives outlining their duties, authorities, and responsibilities. Include copies of the letters in the QC Plan.

g. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER: Procedures for reviewing, approving, scheduling, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register as specified in Section 01 33 00 SUBMITTAL PROCEDURES.

h. TESTING LABORATORY INFORMATION: Testing laboratory information required by the paragraph ACCREDITATION REQUIREMENTS, as applicable.

i. TESTING PLAN AND LOG: A Testing Plan and Log that includes the tests required, associated feature of work required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.

j. Procedures to complete construction deficiencies from identification through acceptable corrective action. Establish verification procedures that identified deficiencies have been corrected. This phase is performed prior to beginning work on each definable feature of work, after all required plans, documents, materials are approved, and after copies are at the work site.

k. Reporting procedures, including proposed reporting formats.

l. Procedures for submitting and reviewing design changes/variations prior to submission to the Contracting Officer.

m. LIST OF DEFINABLE FEATURES: A Definable Feature of Work (DFOW) is a task that is separate and distinct from other tasks and has control requirements and work crews unique to that task. A DFOW is identified by different trades or disciplines, or it is work by the same trade in a different environment. A DFOW is by definition any item or activity on the construction schedule, and the schedule specification provides direction regarding how the DFOWs are to be structured. Include in the list of DFOWs for all activities on the Construction Schedule. Although each section of the specifications can generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. Identify the specification section number and schedule activity ID for each DFOW listed. The DFOW list will be reviewed in coordination with the construction schedule and agreed upon during the Coordination and Mutual Understanding Meeting.

n. PROCEDURES FOR PERFORMING AND TRACKING THE THREE PHASES OF CONTROL:

Identify procedures used to ensure the three phases of control to manage the quality on this project. For each Definable Feature of Work (DFOW), a Preparatory and Initial phase checklist will be filled out during the Preparatory and Initial phase meetings. Conduct the Preparatory and Initial Phases and meetings with a view towards obtaining quality construction by planning ahead and identifying potential problems for each DFOW.

o. PROCEDURES FOR COMPLETION INSPECTION: Procedures for identifying and documenting the completion inspection process. Include in these procedures the responsible party for punch out inspection, pre-final inspection, and final acceptance inspection.

p. TRAINING PROCEDURES AND TRAINING LOG: Procedures for coordinating and documenting the training of personnel required by the Contract.

q. ORGANIZATION AND PERSONNEL CERTIFICATIONS LOG: Procedures for coordinating, tracking and documenting all certifications required for entities such as subcontractors, testing laboratories, suppliers, and personnel. The QC Manager will ensure that certifications are current, appropriate for the work being performed, and will not lapse during any period of the Contract that the work is being performed.

1.5.3 Acceptance of the Quality Control (QC) Plan

The Contracting Officer's acceptance of the Contractor QC Plan, or interim plan applicable to the particular feature of work to be started, is required prior to the start of construction. Work outside of the accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional work. The Contracting Officer reserves the right to require changes in the QC Plan and operations as necessary, including removal or addition of personnel, to ensure the specified quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time to verify the submitted qualifications. All QC organization personnel are subject to acceptance by the Contracting Officer. The Contracting Officer may require the removal of any individual for non-compliance with quality requirements specified in the Contract.

1.5.4 Notification of Changes

Notify the Contracting Officer, in writing, of any proposed changes in the QC Plan or changes to the QC organization personnel. Proposed changes are subject to acceptance by the Contracting Officer.

1.6 QUALITY CONTROL (QC) ORGANIZATION

1.6.1 Personnel Requirements

The requirements for the CQC organization are a Site Safety and Health Officer (SSHO), QC Manager, and enough qualified personnel to ensure safety and Contract compliance. The SSHO reports directly to a senior project (or corporate) official independent from the QC Manager. The SSHO will also serve as a member of the CQC Staff Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly. The CQC staff always maintains a presence at the site during progress of the work and have complete authority and responsibility to take any action necessary to ensure Contract compliance. The CQC staff will be subject to acceptance by the

Contracting Officer. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly complete and furnish all letters, material submittals, shop drawing submittals, schedules, and all other project documentation to the CQC organization. The CQC organization is responsible for always maintaining these documents and records at the site, except as otherwise acceptable to the Contracting Officer.

1.6.2 Quality Control (QC) Manager

Amendment 0003
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1.6.2.1 Duties

Provide a QC Manager at the work site to implement and manage the QC program. The QC Manager must be employed by the Prime Contractor. The only duties and responsibilities of the QC Manager are to manage and implement the QC program on this Contract. The QC Manager must attend the Coordination and Mutual Understanding Meeting, perform the three phases of control except for those phases of control designated to be performed by QC Specialists, perform submittal review and approval, ensure testing is performed and provide QC certifications and documentation required in this Contract. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by the QC Specialists, testing laboratory personnel and any other inspection and testing personnel required by this Contract. The QC Manager is the manager of all QC activities. ***The QC Manager will be a standalone position but may also fill the role of SSHO. The QC Manager is not allowed to fill the role of the superintendent.***

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Amendment 0003

1.6.2.2 Qualifications

The QC Manager must be an individual with a minimum of 5 years combined experience in the following positions: Project Superintendent, QC Manager, Project Manager, Project Engineer or Construction Manager on similar size and type construction Contracts which included the major trades that are part of this Contract. The individual must have at least 3 years experience as a QC Manager. The individual must be familiar with the requirements of EM 385-1-1 and have experience in the areas of hazard identification, safety compliance, and sustainability.

The QC Manager and all members of the QC organization must be capable of reading, writing, and conversing fluently in the English language.

1.6.2.3 Construction Quality Management Training

In addition to the above experience and education requirements, the QC Manager Alternate QC Manager, Superintendent, QC Specialist, and DQCM must have completed the CQM for Contractors course. If the QC Manager does not have a current certification, obtain the CQM for Contractors course certification within 90 days of award. This course is periodically offered by the Naval Facilities Engineering Systems Command and the Army Corps of Engineers. Contact the Contracting Officer for information on the next scheduled class.

The Construction Quality Management Training certificate expires after 5 years. If the QC Manager's certificate has expired, retake the course to remain current.

1.6.3 Organizational Changes

Maintain the QC staff with personnel as required by the specification section at all times. When it is necessary to make changes to the QC staff, revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

1.6.4 Alternate Quality Control (QC) Manager Duties and Qualifications

Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The qualification requirements for the Alternate QC Manager must be the same as for the QC Manager.

1.6.5 Quality Control (QC) Specialists

Provide a separate QC Specialist at the work site for each of the areas as listed in the Matrix listed below, who must assist and report to the QC Manager and who may perform production related duties but must be allowed sufficient time to perform their assigned quality control duties. These individuals or specialized technical companies are employees of the Prime or subcontractor. A single person can cover more than one area provided that the single person is qualified to perform quality control activities in each designated and that workload allows. QC Specialists must be physically present at the work site with frequency as indicated in the Experience Matrix below, to participate in the QC Meetings, perform the three phases of control, including participation in Preparatory and Initial Phase meetings, and to perform and document Follow-up inspections as an extension of the QC Manager for each definable feature of work in their area of responsibility. QC Specialist must assist and be present for training events, and Critical System Acceptance inspections by the Government. Qualification, experience, Area of Responsibility, and frequency of QC surveillance are provided in Matrix listed herein.

Experience Matrix		
1. Area	**2-1. Qualification** **2-2. Experience**	**3-1. Area of Responsibility** **3-2. Frequency**
Civil	2-1. Graduate Civil Engineer or Construction Manager with 2-2. 2 years experience in the type of work being performed on this project or technician with 5 years related experience	3-1. Area of Responsibility: Earthwork, Concrete and Asphalt 3-2. Frequency of QC surveillance and inspection will be full-time during installation and including final inspection.

Electrical	2-1. Graduate Electrical Engineer with 2-2. 2 years related experience or person 5 years of experience supervising electrical features of work in the field with a construction company	3-1. Area of Responsibility: Electrical, Grounding and Communication 3-2. Frequency of QC surveillance and inspection will be full-time during installation and including final inspection.
Concrete, Pavements and Soils	2-1. Materials Technician 2-2. 2 years experience for the appropriate area	3-1. Area of Responsibility: Earthwork, Concrete and Asphalt 3-2. Frequency of QC surveillance and inspection will be full-time during installation and including final inspection.

1.6.6 Submittal Reviewer Duties and Qualifications

Provide a Submittal Reviewer, other than the QC Manager, qualified in the discipline being reviewed, to review and certify that the submittals meet the requirements of this Contract prior to certification or approval by the QC Manager.

Each submittal must be reviewed by an individual with 10 years of construction experience.

1.7 SUBMITTAL AND DELIVERABLES REVIEW AND APPROVAL

Procedures for submission, review and approval of submittals are described in Section 01 33 00 SUBMITTAL PROCEDURES. Procedures must include field verification of relevant dimensions and component characteristics by the QC organization prior to submittal being sent to the Contracting Officer. The CQC organization is responsible for certifying that all submittals and deliverables are in compliance with the Contract.

1.8 THREE PHASES OF CONTROL

CQC enables the Contractor to ensure that the construction, including that of subcontractors and suppliers, complies with the requirements of the Contract. At least three phases of control must be conducted by the QC Manager to adequately cover both on-site and off-site work for each definable feature of the construction work as follows:

1.8.1 Preparatory Phase

Document the results of the preparatory phase actions by separate minutes prepared by the QC Manager and attach to the daily CQC report. Instruct applicable workers as to the acceptable level of workmanship required to meet Contract specifications.

Notify the Contracting Officer at least 2 business days in advance of each preparatory phase meeting. The meeting will be conducted by the QC Manager and attended by the QC Specialists, the Project Superintendent, and the foreman responsible for the DFOW. When the DFOW will be accomplished by a subcontractor, that subcontractor's foreman must attend the preparatory phase meeting. This phase is performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. Perform the following prior to beginning work on each DFOW:

a. Review each paragraph of the applicable specification sections, reference codes, and standards. Make available during the prepatory inspection a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field. Maintain and make available in the field for use by Government personnel until final acceptance of the work.

b. Review the Contract drawings.

c. Verify that field measurements are as indicated on construction or shop drawings or both before confirming product orders, to minimize waste due to excessive materials.

d. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required.

e. Review the testing plan and ensure that provisions have been made to provide the required QC testing.

f. Examine the work area to ensure that the required preliminary work has been completed and complies with the Contract and ensure any deficiencies/rework items in the preliminary work have been corrected and confirmed by the Contracting Officer.

g. Review coordination of product/material delivery to designated prepared areas to execute the work.

h. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data and are properly stored.

i. Check to assure that all materials and equipment have been tested, submitted, and approved.

j. Discuss specific controls to be used, construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFOW. Ensure any portion of the plan requiring separate Contracting Officer acceptance has been approved.

k. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Safety Data Sheets (SDS) are submitted.

l. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and

workmanship standards for that feature of work.

m. Discuss schedule and execution of the initial control phase and confirmation or construction quality compliance.

1.8.2 Initial Phase

Notify the Contracting Officer at least 2 business days in advance of each initial phase. When construction crews are ready to start work on a DFOW, conduct the initial phase with the QC Specialists, the Project Superintendent, and the foreman responsible for that DFOW. Observe the initial segment of the DFOW to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily CQC Report and in the Initial Phase Checklist. Repeat the initial phase for each new crew to work on-site when acceptable levels of specified quality are not being met. Indicate the exact location of initial phase for definable feature of work for future reference and comparison with follow-up phases. Perform the following for each DFOW:

a. Check work to ensure that it is in full compliance with Contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full Contract compliance. Verify required control inspection and testing comply with the Contract.

c. Establish level of workmanship and verify that it meets the minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve any workmanship issues.

e. Ensure that testing is performed by the approved laboratory.

f. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.

g. Review project specific work plans (i.e., HAZMAT Abatement, Stormwater Management) to ensure all preparatory work items have been completed and documented.

1.8.3 Follow-Up Phase

Perform the following for on-going DFOW daily, or more frequently as necessary, until the completion of each DFOW. The Final Follow-Up for any DFOW will clearly note in the daily report the DFOW is completed, and all deficiencies/rework items have been completed in accordance with the paragraph DEFICIENCY/REWORK ITEMS LIST. Each DFOW that has completed the Initial Phase and has not completed the Final Follow-up must be included on each daily report. If no work was performed on that DFOW for the period of that daily report, it must be so noted. Document all Follow-Up activities for DFOWs in the daily CQC Report:

a. Ensure the work including control testing complies with Contract requirements until completion of that particular work feature. Record checks in the CQC documentation.

b. Maintain the quality of workmanship required.

c. Ensure that testing is performed by the approved laboratory.

d. Ensure that deficiencies/rework items are being corrected. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of work which may be affected by the deficient work.

e. Do not build upon nor conceal non-conforming work.

f. Assure manufacturers' representatives have performed necessary inspections if required and perform safety inspections.

1.8.4 Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same DFOW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFOW has not started within 45 days of the initial preparatory meeting or has resumed after 45 days of inactivity, or if other problems develop.

1.8.5 Notification of Three Phases of Control for Off-Site Work

Notify the Contracting Officer at least 2 weeks prior to the start of the preparatory and initial phases.

1.8.6 Deficiency/Rework Items List

The QC Manager must maintain a list of work that does not comply with the Contract, identifying what items need to be corrected, the activity ID number associated with the item, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected.

The QC Manager reviews the list at each weekly QC Meeting:

a. There is no requirement to report a deficiency/rework item that is corrected the same day it is discovered.

b. No successor task may be advanced beyond the preparatory phase meeting until all deficiencies/rework items have been cleared by the QC Manager and concurred with by the Contracting Officer. This must be confirmed as part of the Preparatory Phase activities.

c. Attach a copy of the "Deficiency/Rework Items List" to the last daily CQC Report of each month.

d. The Contractor is responsible for including those items identified by the Contracting Officer.

e. All deficiencies/rework items must be confirmed as corrected by the QC Manager, and concurred by the Contracting Officer, prior to commencement of any completion inspections per paragraph COMPLETION INSPECTIONS unless specifically exempted by the Contracting Officer.

f. Non-Compliance with these requirements is grounds for removal in accordance with paragraph ACCEPTANCE OF THE QUALITY CONTROL (QC) PLAN.

g. All delays, concurrent or related to failure to manage, monitor,

control, and correct deficiencies/rework items are entirely the responsibility of the Contractor and can not be made the subject, or any component of any request for additional time or compensation.

1.9 TESTING

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to Contract requirements. Upon request, furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and acceptance tests when specified. Procure the services of an U.S. Army Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site or within 50 miles. Perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with Contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all test documentation requirements, have been prepared.

e. Record results of all tests taken, both passing and failing on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer, actual test reports are submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility directly to the Contracting Officer. Failure to submit timely test reports as stated results in nonpayment for related work performed and disapproval of the test facility for this Contract.

1.9.1 Laboratory Accreditation Authorities

All testing laboratories must be validated by the USACE Material Testing Center (MTC) for the tests to be performed. Information on the USACE MTC with web-links to both a list of validated testing laboratories and for the laboratory inspection request for can be found at: https://mtc.erdc.dren.mil

1.9.2 Capability Check

The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract. Laboratories utilized for testing soils, concrete, asphalt, and steel must meet criteria detailed in ASTM D3740 and ASTM E329.

1.9.2.1 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed a charge to be determined by the Contracting Officer's Representative to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory.

Such costs will be deducted from the Contract amount due the Contractor.

1.9.2.2 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

1.9.3 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the Contracting Officer immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results must be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager.

1.10 COMPLETION INSPECTIONS

1.10.1 Punch-Out Inspection

Near the completion of all work or any increment thereof, established by a completion time stated in the Contract Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the QC Manager must conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings, specifications, and Contract. Include in the punch list any remaining items on the "Deficiency/Rework Items List", that were not corrected prior to the Punch-Out Inspection as approved by the Contracting Officer in accordance with the paragraph DEFICIENCY/REWORK ITEMS LIST. Include within the punch list the estimated date by which the deficiencies will be corrected. Provide a copy of the punch list to the Contracting Officer.

The QC Manager, or staff, must make follow-on inspections to ascertain that all deficiencies have been corrected. All punch list items must be confirmed as corrected by the QC Manager and concurred by the Contracting Officer. Once this is accomplished, notify the Government that the facility is ready for the Government "Pre-Final Inspection".

1.10.2 Pre-Final Inspection

The Government and QC Manager will perform this inspection to verify that the facility is complete and ready to be occupied. A Government "Pre-Final Punch List" will be documented by the QC Manager as a result of this inspection. The QC Manager will ensure that all items on this list are corrected and concurred by the Contracting Officer prior to notifying the Government that a "Final" inspection with the Client can be scheduled. All items noted on the "Pre-Final" inspection must be corrected and concurred by the Contracting Officer in a timely manner and be accomplished before the Contract completion date for the work, or any increment thereof, if the project is divided into increments by separate completion dates unless exceptions are directed by the Contracting Officer.

1.10.3 Final Acceptance Inspection

Notify the Contracting Officer at least 14 calendar days prior to the date a final acceptance inspection can be held. State within the notice that all items previously identified on the pre-final punch list will be corrected and acceptable, along with any other unfinished Contract work, by the date of the final acceptance inspection. The Contractor must be represented by the QC Manager, the Project Superintendent, and others deemed necessary. Attendees for the Government will include the Contracting Officer, other Government QA personnel, and personnel representing the Client. Failure of the Contractor to have all Contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the Contract Clause entitled "Inspection of Construction."

1.11 QUALITY CONTROL (QC) CERTIFICATIONS

1.11.1 Contractor Quality Control (CQC) Report Certification

Contain the following statement within the CQC Report: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used, and work performed during this reporting period is in compliance with the Contract drawings and specifications to the best of my knowledge, except as noted in this report."

1.11.2 Completion Certification

Upon completion of work under this Contract, the QC Manager must furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract." Provide a copy of this final QC Certification for completion to the preparer of the Operation & Maintenance (O&M) documentation.

1.12 DOCUMENTATION AND INFORMATION FOR THE CONTRACTING OFFICER

Maintain current and complete records of on-site and off-site QC program operations and activities.

Contact the Contracting Officer for sample forms or print from RMS-QCS as needed. Prior to commencing work on construction, the Contractor must obtain a copy set of the current report forms. The report forms will consist of the Contractor Quality Control (CQC) Report, CQC Report (Continuation Sheet), Contractor Production Report, Contractor Production Report (Continuation Sheet), Preparatory Phase Checklist, Initial Phase Checklist, Testing Plan and Log, and Rework Items List. Unless otherwise provided by the Contracting Officer, Contractor may use the forms provided as related material located at www.wbdg.org/dod/ufgs/ufgs-01-45-00.

1.12.1 Construction Documentation

Prepare a Construction Production Report and a Contractor Quality Control Report for each day that work is performed. Attach the Construction Production Report to the Contractor Quality Control Report prepared for the same day. Maintain current and complete records of on-site and off-site QC program operations and activities.

Account for each calendar day throughout the life of the Contract.

The Project Superintendent and the QC Manager must prepare and sign the

Contractor Production and CQC Reports, respectively. Every space on the forms must be filled in. Use N/A if nothing can be reported in one of the spaces. The reporting of work must be identified by terminology consistent with the construction schedule. In the "Remarks" sections of the reports, enter pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered, a record of visitors to the work site, quality control problem areas, deviations from the QC Plan, construction deficiencies encountered, and meetings held. For each entry in the report(s), identify the Schedule Activity No. that is associated with the entered remark.

1.12.2 Quality Control Activities

CQC and Contractor Production reports will be prepared daily to maintain current records providing factual evidence that required quality control activities and tests have been performed. Include in these records the work of subcontractors and suppliers on an acceptable form that includes, as a minimum, the following information:

a. The name and area of responsibility of the Contractors and any subcontractors.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, description, and by whom. When a Network Analysis Schedule (NAS) is used, identify each item of work performed each day by NAS activity number.

d. Control phase activities performed. Preparatory, and Initial phase Checklists associated with the DFOW referenced to the construction schedule. Follow-up phase activities identified to the DFOW. If testing or specific QC Specialist activities are associated with the Follow-up phase activities for a specific DFOW note this and include those reports.

e. Test and control activities performed with results and references to specifications and drawings requirements. Identify the control phase (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action in accordance with the paragraph DEFICIENCY/REWORK ITEMS LIST.

f. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications and drawings requirements.

g. Submittals and deliverables reviewed, with Contract reference, by whom, and action taken.

h. Offsite surveillance activities, including actions taken.

i. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

j. Instructions given/received and conflicts in plans and specifications.

1.12.3 Verification Statement

Indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. Cover both conforming and deficient features and include a statement that equipment and materials incorporated in the work and workmanship comply with the Contract.

Furnish the original and one copy of these records in report form to the Government by 10:00 AM the next working day after the date covered by the report. As a minimum, prepare and submit one report for every 7 days of no work and on the last day of a no work period. All calendar days need to be accounted for throughout the life of the Contract. The first report following a day of no work will be for that day only. Reports need to be signed and dated by the QC Manager. Include copies of test reports and copies of reports prepared by all subordinate quality control personnel within the QC Manager Report.

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1.12.4 Reports from the Quality Control (QC) Specialist(s)

Document inspection results on a QC specialist report prepared each day work is performed in their area of responsibility. The report must include a description of the visual inspection or observation performed, a written summary of findings, a conclusion on compliance with the Contract documents, and signature of the QC Specialist. In person inspections must be documented with Video/photographs. Video/photographic documentation of deficiencies must include before and after conditions and physical measurements, as necessary. ***Permission must be granted from the airfield tower and is subject to restrictions to video/photographic contents.*** Forward the QC daily report to the QC Manager who must include the report with the submission of their daily QC Report to the Government each day. Every site visit by the QC Specialist must be documented on a QC Specialist daily report.

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Amendment 0003

1.12.5 Quality Control Validation

Establish and maintain the following in an electronic folder. Divide folder into a series of tabbed sections as shown below. Ensure folder is updated at each required progress meeting.

a. CQC Meeting minutes in accordance with paragraph QUALITY CONTROL (QC) MEETINGS.

b. All completed Preparatory and Initial Phase Checklists, arranged by specification section, further sorted by DFOW referenced to the construction schedule. Submit each individual Phase Checklist the day the phase event occurs as part of the CQC daily report.

c. All milestone inspections, arranged by Activity Number referenced to the construction schedule.

d. An up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section referenced to the DFOW

to which individual reports results are associated. Individual field test reports will be submitted within 2 working days after the test is performed in accordance with the paragraph QUALITY CONTROL ACTIVITIES.

e. Copies of all Contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.

f. An up-to-date copy of the paragraph DEFICIENCY/REWORK ITEMS LIST.

g. Upon commencement of Completion Inspections of the entire project or any defined portion, maintain up-to-date copies of all punch lists issued by the QC staff to the Contractor and subcontractors and all punch lists issued by the Government in accordance with the paragraph COMPLETION INSPECTIONS.

1.12.6 Testing Plan and Log

As tests are performed, the QC Manager will record on the "Testing Plan and Log" the date the test was performed and the date the test results were forwarded to the Contracting Officer. Attach a copy of the updated "Testing Plan and Log" to the last daily CQC Report of each month. Provide a copy of the final "Testing Plan and Log" to the preparer of the Operation & Maintenance (O&M) documentation.

1.12.7 As-Built Drawings

The QC Manager must ensure the as-built drawings are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. The as-built drawings document commences with the QC Manager ensuring all amendments, or changes to the Contract prior to Contract award are accurately noted in the initial document set creating the accurate baseline of the Contract prior to any work starting. Ensure each deviation has been identified with the appropriate modifying documentation (e.g., PC No., Modification No., Request for Information No.). The QC Manager or QC Specialist assigned to an area of responsibility must initial each revision. Upon completion of work, the QC Manager will furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.13 NOTIFICATION ON NON-COMPLIANCE

The Contracting Officer will notify the Contractor of any detected non-compliance with the Contract. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, is deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of a claim for extension of time for excess costs or damages by the Contractor.

1.14 DELIVERY, STORAGE, AND HANDLING

Designate receiving/storage areas for incoming material to be delivered according to installation schedule and to be placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. Store and handle materials in a manner as to prevent loss from weather and other damage. Keep materials, products, and accessories covered and off the ground, and store in a dry, secure area. Prevent

contact with material that may cause corrosion, discoloration, or staining. Protect all materials and installations from damage by the activities of other trades.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 45 00.15 10

RESIDENT MANAGEMENT SYSTEM CONTRACTOR MODE (RMS CM)
11/23

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2024) Safety -- Safety and Occupational Health (SOH) Requirements

1.2 MEASUREMENT AND PAYMENT

The work of this section is not measured for payment. The Contractor is responsible for the work of this section, without any direct compensation other than the payment received for contract items.

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1.3 CONTRACT ADMINISTRATION

The Government will use the Resident Management System (RMS) to assist in its monitoring and administration of this contract. The Government accesses the system using the Government Mode of RMS (RMS GM) and the Contractor accesses the system using the Contractor Mode (RMS CM). The term RMS will be used in the remainder of this section for both RMS GM and RMS CM. The joint Government-Contractor use of RMS facilitates electronic exchange of information and overall management of the contract. The Contractor accesses RMS to record, maintain, input, track, and electronically share information with the Government throughout the contract period in the following areas:

Administration
Finances
Quality Control
Submittal Monitoring
Scheduling
Closeout
Import/Export of Data

The Contractor must be prepared to transition from the Resident Management System (RMS) to the new Construction Management Platform (CMP) at any time during the period of performance of this contract, once the USACE enterprise implements this change. The Contractor's obligation to transition from RMS to the CMP system is a requirement of this contract. Therefore, additional time or cost increase to complete this transition will not be considered. In the event of the transition, RMS project information will be migrated to CMP by the government and available in the CMP system. After the transition, the Contractor must utilize the CMP system to perform all contract administration functions previously

required in RMS, including all areas listed above. After the transition, "RMS" and "CMP" will be synonymous for all "Resident Management System" and "RMS" references in this contract's specification. To facilitate the transition from RMS to CMP, online training for the CMP system will be made available to the Contractor with enough time to train staff, prior to the transition occurring. ***The estimated time frame for the transition is 2nd or 3rd quarter, fiscal year 2027.***

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Amendment 0003

1.3.1 Correspondence and Electronic Communications

For ease and speed of communications, exchange correspondence and other documents in electronic format to the maximum extent feasible. Some documents such as correspondence, including pay requests and payrolls, may be required in paper format with original signatures. Paper documents will govern in the event of discrepancy with the electronic version. Contracting Officer will determine which documents require submission of paper copies.

1.3.2 Other Factors

Other portions of this document have a direct relationship to the reporting accomplished through RMS. Particular attention is directed to FAR 52.236-15 Schedules for Construction Contracts; FAR 52.232-27 Prompt Payment for Construction Contracts; FAR 52.232-5 Payments Under Fixed-Priced Construction Contracts; Section 01 32 01.00 10 PROJECT SCHEDULE; Section 01 33 00 SUBMITTAL PROCEDURES; Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS; and Section 01 45 00 QUALITY CONTROL.

1.4 RMS SOFTWARE

RMS is a web based application. Download, install and be able to utilize the latest version of RMS within 7 calendar days of receipt of the Notice to Proceed. RMS software, user manuals, access and installation instructions, program updates and training information are available from the RMS website (https://rms.usace.army.mil). The Government and the Contractor will have different access authorities to the same contract database through RMS. The common database will be updated automatically each time a user finalizes an entry or change.

1.5 CONTRACT DATABASE - GOVERNMENT

The Government will enter the basic contract award data in RMS prior to granting the Contractor access. The Government entries into RMS will generally be related to submittal reviews, correspondence status, and Quality Assurance(QA)comments, as well as other miscellaneous administrative information.

1.6 CONTRACT DATABASE - CONTRACTOR

Contractor entries into RMS establish, maintain, and update data throughout the duration of the contract. Contractor entries generally include prime and subcontractor information, daily reports, submittals, RFI's, schedule updates and payment requests. RMS includes the ability to import attachments and export reports in many of the modules, including submittals. The Contractor responsibilities for entries in RMS typically include the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

Enter all current Contractor administrative data and information into RMS within 7 calendar days of receiving access to the contract in RMS. This includes, but is not limited to, Contractor's name, address, telephone numbers, management staff, and other required items.

1.6.1.2 Subcontractor Information

Enter all missing subcontractor administrative data and information into RMS CM within seven calendar days of receiving access to the Contract in RMS or within seven calendar days of the signing of the subcontractor agreement for agreements signed at a later date. This includes name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor is listed separately for each trade to be performed.

1.6.1.3 Correspondence

Identify all Contractor correspondence to the Government with a serial number. Prefix correspondence initiated by the Contractor's site office with "S". Prefix letters initiated by the Contractor's home (main) office with "H". Letters are numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C" or "RFP".

1.6.1.4 Equipment

Enter and maintain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates in accordance with Section 01 45 00 QUALITY CONTROL.

1.6.1.5 Reports

Track the status of the project using the reports available in RMS. The value of these reports reflects the quality of the data input. These reports include but are not limited to the Progress Payment Request worksheet, Quality Control (QC) comments, Deficiency Tracking Log, Submittal Register Status, and Three-Phase Control worksheets in accordance with Sections 01 32 01.00 10 PROJECT SCHEDULE, 01 33 00 SUBMITTAL PROCEDURES, and 01 45 00 QUALITY CONTROL.

1.6.1.6 Request For Information (RFI)

Create and track all Requests For Information (RFI) in the RMS Administration Module for Government review and response. Provide status at weekly progress meeting in accordance with Section 01 32 01.00 10 PROJECT SCHEDULE.

1.6.2 Finances

1.6.2.1 Pay Activity Data

Develop and enter a list of pay activities in conjunction with the project schedule in accordance with Section 01 32 01.00 10 PROJECT SCHEDULE. The sum of pay activities equals the total Contract amount, including

modifications. Each pay activity must be assigned to a Contract Line Item Number (CLIN). The sum of the activities assigned to a CLIN equals the amount of each CLIN.

1.6.2.2 Payment Requests

Prepare all progress payment requests using RMS. Update the work completed under the Contract at least monthly, measured as percent or as specific quantities. After the update, generate a payment request and prompt payment certification using RMS. Submit the signed prompt payment certification and payment request as well as supporting data, either electronically or by hard copy.

1.6.3 Quality Control (QC)

Enter and track implementation of the 3-phase QC Control System, QC testing, transferred and installed property and warranties in RMS. Link each deficiency and QC test to a pay activity. Prepare daily reports, identify and track deficiencies, document progress of work, and support other Contractor QC requirements in RMS. Maintain all data on a daily basis. Ensure that RMS reflects all quality control methods, tests and actions contained within the Contractor Quality Control (CQC) Plan and Government review comments. Provide within seven calendar days of Government acceptance of the CQC Plan.

1.6.3.1 Quality Control (QC) Reports

The Contractor's Quality Control (QC) Daily Report in RMS is the official report. The Contractor can use other supplemental formats to record QC data, but information from any supplemental formats are to be consolidated and entered into the RMS QC Daily Report. Any supplemental information may be entered into RMS as an attachment to the report. QC Daily Reports must be finalized and signed in RMS within 24 hours after the date covered by the report. Provide the Government a printed signed copy of the QC Daily Report, unless waived by the Contracting Officer.

1.6.3.2 Deficiency Tracking

Use the QC Daily Report Module to enter and track deficiencies. Deficiencies identified and entered into RMS by the Contractor or the Government will be sequentially numbered with a QC or QA prefix for tracking purposes. Enter each deficiency into RMS the same day that the deficiency is identified. Monitor, track and resolve all QC and QA entered deficiencies. A deficiency is not considered to be corrected until the Government indicates concurrence in RMS.

1.6.3.3 Three-Phase Control Meetings

Maintain scheduled and actual dates and times of preparatory and initial control meetings in RMS, and upload meeting minutes of the meetings. Worksheets for the three-phase control meetings are generated within RMS.

1.6.3.4 Labor and Equipment Hours

Enter labor and equipment exposure hours on a daily basis. Roll up the labor and equipment exposure data into a monthly exposure report.

1.6.3.5 Accident/Safety Reporting

Both the Contractor and the Government enter safety related comments in RMS as a deficiency. The Contractor must monitor, track and show resolution for safety issues in the QC Daily Report area of the RMS QC Module. In addition, follow all reporting requirements for accidents and incidents as required in EM 385-1-1, Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS and as required by any other applicable Federal, State or local agencies.

1.6.3.6 Definable Features of Work

Enter each feature of work, as defined in the approved CQC Plan, into the RMS QC Module. A feature of work may be associated with a single or multiple pay activities, however a pay activity is only to be linked to a single feature of work.

1.6.3.7 Activity Hazard Analysis

Import activity hazard analysis electronic document files into the RMS QC Module utilizing the document package manager. Prepare activity hazard analysis in accordance with Section 01 35 26 GOVERNMENT SAFETY REQUIREMENTS.

1.6.4 Submittal Management

Enter all current submittal register data and information into RMS within seven calendar days of receiving access to the Contract in RMS. Contractor is responsible for entering Activity Numbers for each submittal item corresponding to their Schedule. The Contractor will import the information shown in the submittal register following the specification Section 01 33 00 SUBMITTAL PROCEDURES unless otherwise directed by the Contracting Officer. Group electronic submittal documents into transmittal packages to send to the Government, except very large electronic files, samples, spare parts, mock ups, color boards, or where hard copies are specifically required. Track transmittals and update the submittal register in RMS on a daily basis throughout the duration of the Contract. Submit hard copies of all submittals unless waived by the Contracting Officer.

Contractor may request submittals to be added to RMS throughout the lifecycle of the project. Approval/disapproval of Contractor requests is at the discretion of the Contracting Officer. Submittals entry into RMS must be updated daily or as practical for performance of the Contract, as approved by the Contracting Officer.

1.6.5 Schedule

Enter and update the contract project schedule in RMS by either manually entering all schedule data or by importing the Standard Data Exchange Format (SDEF) file, based on the requirements in Section 01 32 01.00 10 PROJECT SCHEDULE.

1.6.6 Closeout

Closeout documents, processes and forms are managed and tracked in RMS by both the Contractor and the Government. Ensure that all closeout documents are entered, completed and documented within RMS.

1.7 IMPLEMENTATION

Use of RMS as described in the preceding paragraphs is mandatory. Ensure that sufficient resources are available to maintain contract data within the RMS system. RMS is an integral part of the Contractor's required management of quality control.

1.8 NOTIFICATION OF NONCOMPLIANCE

Take corrective action within seven calendar days after receipt of notice of RMS non-compliance by the Contracting Officer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

-- End of Section --

SECTION 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS Fort Rucker Standard
08/22, CHG 2: 08/25

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA SW-846	(Third Edition; Update VII) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.1053	Respirable Crystalline Silica
29 CFR 1910.1200	Hazard Communication
29 CFR 1926.1153	Respirable Crystalline Silica
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards
40 CFR 60	Standards of Performance for New Stationary Sources
40 CFR 63	National Emission Standards for Hazardous Air Pollutants for Source Categories
40 CFR 64	Compliance Assurance Monitoring
40 CFR 82	Protection of Stratospheric Ozone
40 CFR 112	Oil Pollution Prevention
40 CFR 122.26	Storm Water Discharges (Applicable to State NPDES Programs, see section 123.25)
40 CFR 152	Pesticide Registration and Classification Procedures
40 CFR 241	Guidelines for Disposal of Solid Waste
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Subtitle D Landfill Requirements
40 CFR 260	Hazardous Waste Management System: General

40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 261.7	Residues of Hazardous Waste in Empty Containers
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 262.11	Hazardous Waste Determination and Recordkeeping
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 273	Standards for Universal Waste Management
40 CFR 273.2	Standards for Universal Waste Management - Batteries
40 CFR 273.3	Standards for Universal Waste Management - Pesticides
40 CFR 273.4	Standards for Universal Waste Management - Mercury Containing Equipment
40 CFR 273.5	Standards for Universal Waste Management - Lamps
40 CFR 273.6	Applicability - Aerosol Cans
40 CFR 279	Standards for the Management of Used Oil
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 300.125	National Oil and Hazardous Substances Pollution Contingency Plan - Notification and Communications
40 CFR 355	Emergency Planning and Notification
40 CFR 372	Toxic Chemical Release Reporting
49 CFR 171	General Information, Regulations, and

	Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 172.101	Hazardous Material Regulation-Purpose and Use of Hazardous Material Table
49 CFR 173	Shippers - General Requirements for Shipments and Packagings
49 CFR 178	Specifications for Packagings

1.2 DEFINITIONS

1.2.1 Class I and II Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act. A list of Class I ODS can be found on the EPA website at the following weblink. https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances.

Class II ODS is defined in Section 602(s) of The Clean Air Act. A list of Class II ODS can be found on the EPA website at the following weblink. https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances.

1.2.2 Contractor Generated Hazardous Waste

Contractor generated hazardous waste is materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e., methyl ethyl ketone, toluene), waste thinners, excess paints, excess solvents, waste solvents, excess pesticides, and contaminated pesticide equipment rinse water.

1.2.3 Electronics Waste

Electronics waste is discarded electronic devices intended for salvage, recycling, or disposal.

1.2.4 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally or historically.

1.2.5 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other

pollutants.

1.2.6 Hazardous Debris

As defined in paragraph SOLID WASTE, debris that contains listed hazardous waste (either on the debris surface, or in its interstices, such as pore structure) in accordance with 40 CFR 261. Hazardous debris also includes debris that exhibits a characteristic of hazardous waste in accordance with 40 CFR 261.

1.2.7 Hazardous Materials

Hazardous material is any material that: Is defined in 49 CFR 171, listed in 49 CFR 172, regulated as a hazardous material in accordance with 49 CFR 173; or requires a Safety Data Sheet (SDS) in accordance with 29 CFR 1910.1200; or during end use, treatment, handling, packaging, storage, transportation, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D. Designation of a material by this definition, when separately regulated or controlled by other sections or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this section for "control" purposes. Such material includes ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs).

1.2.8 Hazardous Waste

Hazardous Waste is any material that meets the definition of a solid waste and exhibits a hazardous characteristic (ignitability, corrosivity, reactivity, or toxicity) as specified in 40 CFR 261, Subpart C, or contains a listed hazardous waste as identified in 40 CFR 261, Subpart D, or meets a state, local, or host nation definition of a hazardous waste.

1.2.9 Installation Pest Management Coordinator

Installation Pest Management Coordinator (IPMC) is the individual officially designated by the Installation Commander to oversee the Installation Pest Management Program and the Installation Pest Management Plan.

1.2.10 Land Application

Land Application means spreading or spraying discharge water at a rate that allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" must occur. Comply with federal, state, and local laws and regulations.

1.2.11 Municipal Separate Storm Sewer System (MS4) Permit

MS4 permits are those held by municipalities or installations to obtain NPDES permit coverage for their stormwater discharges.

1.2.12 National Pollutant Discharge Elimination System (NPDES)

The NPDES permit program controls water pollution by regulating point

sources that discharge pollutants into waters of the United States.

1.2.13 Oily Waste

Oily waste are those materials that are, or were, mixed with Petroleum, Oils, and Lubricants (POLs) and have become separated from that POLs. Oily wastes also means materials, including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents which have come into contact with and have been contaminated by, POLs and may be appropriately tested and discarded in a manner which is in compliance with other state and local requirements.

This definition includes materials such as oily rags, "kitty litter" sorbent clay and organic sorbent material. These materials may be land filled provided that: It is not prohibited in other state regulations or local ordinances; the amount generated is "de minimus" (a small amount); it is the result of minor leaks or spills resulting from normal process operations; and free-flowing oil has been removed to the practicable extent possible. Large quantities of this material, generated as a result of a major spill or in lieu of proper maintenance of the processing equipment, are a solid waste. As a solid waste, perform a hazardous waste determination prior to disposal. As this can be an expensive process, it is recommended that this type of waste be minimized through good housekeeping practices and employee education.

1.2.14 Pesticide

Pesticide is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.15 Pesticide Treatment Plan

A plan for the prevention, monitoring, and control to eliminate pest infestation.

1.2.16 Pests

Pests are arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.17 Project Pesticide Coordinator

The Project Pesticide Coordinator (PPC) is an individual who resides at a Civil Works Project office and who is responsible overseeing of pesticide application on project grounds.

1.2.18 Regulated Waste

Regulated waste are solid wastes that have specific additional federal, state, or local controls for handling, storage, or disposal.

1.2.19 Sediment

Sediment is soil and other debris that have eroded and have been

transported by runoff water or wind.

1.2.20 Solid Waste

Solid waste is a solid, liquid, semi-solid or contained gaseous waste. A solid waste can be a hazardous waste, non-hazardous waste, or non-Resource Conservation and Recovery Act (RCRA) regulated waste. Types of solid waste typically generated at construction sites may include:

1.2.20.1 Debris

Debris is non-hazardous solid material generated during the construction, demolition, or renovation of a structure that exceeds 2.5-inch particle size that is: a manufactured object; plant or animal matter; or natural geologic material (for example, cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be reinforced with or contain ferrous wire, rods, accessories and weldments. A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.

1.2.20.2 Green Waste

Green waste is the vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.

1.2.20.3 Material Not Regulated As Solid Waste

Material not regulated as solid waste is nuclear source or byproduct materials regulated under the Federal Atomic Energy Act of 1954 as amended; suspended or dissolved materials in domestic sewage effluent or irrigation return flows, or other regulated point source discharges; regulated air emissions; and fluids or wastes associated with natural gas or crude oil exploration or production.

1.2.20.4 Non-Hazardous Waste

Non-hazardous waste is waste that is excluded from, or does not meet, hazardous waste criteria in accordance with 40 CFR 261.

1.2.20.5 Recyclables

Recyclables are materials, equipment and assemblies such as doors, windows, door and window frames, plumbing fixtures, glazing and mirrors that are recovered and sold as recyclable, wiring, insulated/non-insulated copper wire cable, wire rope, and structural components. It also includes commercial-grade refrigeration equipment with Freon removed, household appliances where the basic material content is metal, clean polyethylene terephthalate bottles, cooking oil, used fuel oil, textiles, high-grade paper products and corrugated cardboard, stackable pallets in good condition, clean crating material, and clean rubber/vehicle tires. Metal meeting the definition of "lead contaminated" or "lead based paint contaminated" may be included as recyclable only if the metal is handled and transported in accordance with regulations, and the facility receiving the material is permitted and authorized to accept and process lead

contaminated materials. Paint cans that meet the definition of empty containers in accordance with 40 CFR 261.7 may be included as recyclable if sold to a scrap metal company.

1.2.20.6 Surplus Soil

Surplus soil is existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars, and paving. Contaminated soil meeting the definition of hazardous material or hazardous waste is not included and must be managed in accordance with paragraph HAZARDOUS MATERIAL MANAGEMENT.

1.2.20.7 Scrap Metal

This includes scrap and excess ferrous and non-ferrous metals such as reinforcing steel, structural shapes, pipe, and wire that are recovered or collected and disposed of as scrap. Scrap metal meeting the definition of hazardous material or hazardous waste is not included.

1.2.20.8 Wood

Wood is dimension and non-dimension lumber, plywood, chipboard, hardboard. Treated or painted wood that meets the definition of lead contaminated or lead based contaminated paint is not included. Treated wood includes, but is not limited to, lumber, utility poles, crossties, and other wood products with chemical treatment.

1.2.21 Surface Discharge

Surface discharge means discharge of water into drainage ditches, storm sewers, or creeks meeting the definition of "waters of the United States". Surface discharges from construction sites are discrete, identifiable sources and require a permit from the governing agency. Comply with federal, state, and local laws and regulations.

1.2.22 Wastewater

Wastewater is the aqueous liquid waste generated by a project, to include both domestic wastewater (sewage) and industrial wastewater.

1.2.22.1 Stormwater

Stormwater is any precipitation in an urban or suburban area that does not evaporate or soak into the ground, but instead collects and flows into storm drains, rivers, and streams.

1.2.23 Waters of the United States

Waters of the United States means Federally jurisdictional waters, including wetlands, that are subject to regulation under Section 404 of the Clean Water Act or navigable waters, as defined under the Rivers and Harbors Act.

1.2.24 Wetlands

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

1.2.25 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (for example, thermostats), and lamps (for example, fluorescent bulbs). The rule is designed to reduce hazardous waste in the municipal solid waste (MSW) stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal. These regulations can be found at 40 CFR 273.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G,

Stormwater Pollution Prevention Plan (SWPPP); G,

Stormwater Notice of Intent (for NPDES coverage under the general permit for construction activities); G,

Spill Prevention Control And Countermeasure (SPCC) Plan; G,

SD-03 Product Data

Hazardous Material Management Plan; G

SD-06 Test Reports

Monthly Solid Waste Disposal Report; G,

SD-11 Closeout Submittals

Regulatory Notifications; G,

Solid Waste Management Permit; G,

Stormwater Pollution Prevention Plan Compliance Notebook; G,

Stormwater Notice of Termination (for NPDES coverage under the general permit for construction activities); G,

Waste Determination Documentation; G,

Project Solid Waste Disposal Documentation Report; G,

Sales Documentation; G,

Hazardous Waste/Debris Management; G,

Disposal Documentation for Hazardous and Regulated Waste; G,

1.4 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The Contractor's work under this contract shall conform with all operational controls identified in the Fort Rucker Environmental Management System and provide monitoring and measurement information necessary for the Government to address environmental performance relative to the goals of the Environmental Management System. The Contractor will be provided project applicable forms and work instructions to be utilized in order to conform with the Fort Rucker Environmental Management System.

Fort Rucker has implemented an Environmental Management System (EMS) as the primary management approach for addressing environmental impacts of its processes, activities, and services. Fort Rucker uses the ISO 14001:2004 as the standard for its EMS. All personnel performing work for or on behalf of Fort Rucker must be aware of and understand Fort Rucker's Environmental Policy. Fort Rucker offers EMS General Awareness Training in multiple forms in the EMS section of the Fort Rucker environmental website (https://www.fortrucker-env.com/). All contractors and their employees are required to review EMS General Awareness Training materials. Contractors are also responsible for ensuring all subcontractors hired on their behalf receive EMS General Awareness Training. The Contractor is also responsible to ensure that all goods and services used by the Contractor or any of its subcontractors do not deviate from the installation Environmental Policy.

In the event of non-compliance with Fort Rucker's legal or other requirements or non-conformance with the installation EMS, the Contractor is required to take immediate corrective action, perform a root-cause analysis of the non-compliance/non-conformance and develop preventive action to keep the non-compliance/non-conformance from recurring. In addition, the Contractor shall ensure their employees and subcontract employees are aware of their roles and responsibilities with regard to the EMS and how these requirements affect the work performed under this contract. For more information regarding EMS requirements contact the Fort Rucker Environmental and Natural Resources Division at 334-255-1653.

1.5 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this Contract. Comply with federal, state, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

Tests and procedures assessing whether construction operations comply with Applicable Environmental Laws may be required. Analytical work must be performed by qualified laboratories; and where required by law, the laboratories must be certified.

1.5.1 Conformance with the Environmental Management System

Perform work under this contract consistent with the policy and objectives

identified in the installation's Environmental Management System (EMS). Perform work in a manner that conforms to objectives and targets of the environmental programs and operational controls identified by the EMS. Support Government personnel when environmental compliance and EMS audits are conducted by escorting auditors at the Project site, answering questions, and providing proof of records being maintained. Provide monitoring and measurement information as necessary to address environmental performance relative to environmental, energy, and transportation management goals. In the event an EMS nonconformance or environmental noncompliance associated with the contracted services, tasks, or actions occurs, take corrective and preventative actions. In addition, employees must be aware of their roles and responsibilities under the installation EMS and of how these EMS roles and responsibilities affect work performed under the contract.

Coordinate with the installation's EMS coordinator to identify training needs associated with environmental aspects and the EMS, and arrange training or take other action to meet these needs. Provide training documentation to the Contracting Officer and the Fort Rucker Environmental and Natural Resources Division . The Installation Environmental Office will retain associated environmental compliance records. Make EMS Awareness training completion certificates available to Government auditors during EMS audits and include the certificates in the Employee Training Records. See paragraph EMPLOYEE TRAINING RECORDS.

1.6 QUALITY ASSURANCE

1.6.1 Preconstruction Survey and Protection of Features

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, perform a Preconstruction Survey of the project site with the Contracting Officer, and take photographs showing existing environmental conditions in and adjacent to the site. Submit a report for the record. Include in the report a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. The Contractor and the Contracting Officer will sign this survey report upon mutual agreement regarding its accuracy and completeness. Protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference that their preservation may cause to the work under the Contract. All tree removal must be coordinated prior to the project start through the Fort Rucker Environmental and Natural Resources Division to ensure marketable timber is harvested and sold as required.

1.6.2 Regulatory Notifications

Provide regulatory notification requirements in accordance with federal, state and local regulations. In cases where the Government will also provide public notification (such as stormwater permitting), coordinate with the Contracting Officer and the Fort Rucker Environmental and Natural Resources Division. Submit copies of regulatory notifications to the Contracting Officer and the Fort Rucker Environmental and Natural Resources Divisionat least 30 days prior to commencement of work activities. Typically, regulatory notifications must be provided for the

following (this listing is not all-inclusive): demolition, renovation, NPDES defined site work, construction, removal or use of a permitted air emissions source, and remediation of controlled substances (asbestos, hazardous waste, lead paint).

1.6.3 Environmental Brief

Attend an environmental brief to be included in the preconstruction meeting. Provide the following information: types, quantities, and use of hazardous materials that will be brought onto the installation; and types and quantities of wastes/wastewater that may be generated during the Contract. Discuss the results of the Preconstruction Survey at this time.

Prior to initiating any work on site, meet with the Contracting Officer and the Fort Rucker Environmental and Natural Resources Division to discuss the proposed Environmental Protection Plan (EPP) or equipment local requirement. Develop a mutual understanding relative to the details of environmental protection, including measures for protecting natural and cultural resources, required reports, required permits, permit requirements (such as mitigation measures), and other measures to be taken.

1.6.4 Environmental Manager

Appoint in writing an Environmental Manager for the project site. The Environmental Manager is directly responsible for coordinating contractor compliance with federal, state, local, and installation requirements. The Environmental Manager must ensure compliance with Hazardous Waste Program requirements (including hazardous waste handling, storage, manifesting, and disposal); implement the EPP; ensure environmental permits are obtained, maintained, and closed out; ensure compliance with Stormwater Program requirements; ensure compliance with Hazardous Materials (storage, handling, and reporting) requirements; and coordinate any remediation of regulated substances (lead, asbestos, PCB transformers). This can be a collateral position; however, the person in this position must be trained to adequately accomplish the following duties: ensure waste segregation and storage compatibility requirements are met; inspect and manage Satellite Accumulation areas; ensure only authorized personnel add wastes to containers; ensure Contractor personnel are trained in 40 CFR requirements in accordance with their position requirements; coordinate removal of waste containers; and maintain the Environmental Records binder and required documentation, including environmental permits compliance and close-out. Submit Environmental Manager Qualifications to the Contracting Officer.

1.6.5 Employee Training Records

Prepare and maintain Employee Training Records throughout the term of the contract meeting applicable 40 CFR requirements. Provide Employee Training Records in the Environmental Records Binder. Ensure every employee completes a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures compliance with federal, state and local regulatory requirements for RCRA Large Quantity Generator. Provide a Position Description for each employee, by subcontractor, based on the Davis-Bacon Wage Rate designation or other equivalent method, evaluating the employee's association with hazardous and regulated wastes. This Position Description will include training requirements as defined in 40 CFR 265 for a Large Quantity Generator facility. Submit these Assembled Employee Training Records to the Contracting Officer at the conclusion of the project, unless otherwise

directed.

Train personnel to meet state requirements. Conduct environmental protection/pollution control meetings for personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. Include in the training and meeting agenda: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, waters of the United States, and endangered species and their habitat that are known to be in the area. The Fort Rucker Environmental and Natural Resources Division offers courses on hazardous waste management, spill prevention and other installation specific Environmental Programs. The Contractor may attend these courses for familiarization with Installation policies.

1.6.5.1 Pest Control Training

Trained personnel in pest control. Conduct a pest control meeting for personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. Include in the training and meeting agenda: methods of detecting and pest infestation; familiarization with statutory and contractual pest control standards; installation and care of devices, and instruments, if required, for monitoring purposes to ensure adequate and continuous pest control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of waters of the United States, and endangered species and their habitat that are known to be in the area. Provide a Certificate of Competency for the personnel who will be conducting the pesticide application and management of pest control.

1.6.6 Non-Compliance Notifications

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with federal, state or local environmental laws or regulations, permits, and other elements of the Contractor's EPP. After receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. FAR 52.242-14 Suspension of Work provides that a suspension, delay, or interruption of work due to the fault or negligence of the Contractor allows for no adjustments to the contract for time extensions or equitable adjustments. In addition to a suspension of work, the Contracting Officer may use additional authorities under the contract or law. Payment of fines or penalty charges associated with citations issued by federal, state, or local officials shall be paid by the Contractor when it is determined that the Contractor is at fault for the non-compliance.

1.6.7 Inspection by Regulatory Agencies

The Contractor shall, without delay, notify the Contracting Officer and Fort Rucker Environmental and Natural Resources Division by phone of any inspection visit by an agent or agents of any regulatory agency. The Contractor shall submit a written report, by close of business of the next working day following completion of the inspection/visit, to include the

names, identification numbers, agency of the inspectors, and the reason for the visit. The Contractor shall submit a copy of all reports received. Samples shall be accompanied by a statement signed by the inspector validating their authenticity.

1.7 ENVIRONMENTAL PROTECTION PLAN

The purpose of the EPP is to present an overview of known or potential environmental issues that must be considered and addressed during construction. Incorporate construction related objectives and targets from the installation's EMS into the EPP. Include in the EPP measures for protecting natural and cultural resources, required reports, and other measures to be taken. Meet with the Contracting Officer or Contracting Officer Representative to discuss the EPP and develop a mutual understanding relative to the details for environmental protection including measures for protecting natural resources, required reports, and other measures to be taken. Revise the EPP throughout the project to include any reporting requirements, changes in site conditions, or contract modifications that change the project scope of work in a way that could have an environmental impact. No requirement in this section will relieve the Contractor of any applicable federal, state, and local environmental protection laws and regulations. During Construction, identify, implement, and submit for approval any additional requirements to be included in the EPP. Maintain the current version onsite.

The EPP includes, but is not limited to, the following elements:

1.7.1 General Overview and Purpose

1.7.1.1 Descriptions

A brief description of each specific plan required by environmental permit or elsewhere in this Contract such as stormwater pollution prevention plan, spill control plan, solid waste management plan, wastewater management plan, air pollution control plan, contaminant prevention plan, pesticide treatment plan, a historical, archaeological, cultural resources, biological resources and wetlands plan, traffic control plan Hazardous, Toxic and Radioactive Waste (HTRW) Plan Non-Hazardous Solid Waste Disposal Plan borrowing material plan.

1.7.1.2 Duties

The duties and level of authority assigned to the person(s) on the job site who oversee environmental compliance, such as who is responsible for adherence to the EPP, who is responsible for spill cleanup and training personnel on spill response procedures, who is responsible for manifesting hazardous waste to be removed from the site (if applicable), and who is responsible for training the Contractor's environmental protection personnel.

1.7.1.3 Procedures

A copy of any standard or project-specific operating procedures that will be used to effectively manage and protect the environment on the project site.

1.7.1.4 Communications

Communication and training procedures that will be used to convey

environmental management requirements to Contractor employees and subcontractors.

1.7.1.5 Contact Information

Emergency contact information contact information (office phone number, cell phone number, and e-mail address).

1.7.2 General Site Information

1.7.2.1 Drawings

Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, jurisdictional wetlands, material storage areas, structures, sanitary facilities, storm drains and conveyances, and stockpiles of excess soil.

1.7.2.2 Work Area

Work area plan showing the proposed activity in each portion of the area and identify the areas of limited use or nonuse. Include measures for marking the limits of use areas, including methods for protection of features to be preserved within authorized work areas and methods to control runoff and to contain materials on site, and a traffic control plan.

Show where any fuels, hazardous substances, solvents, or lubricants will be stored. Provide a spill plan to address any releases of those materials.

1.7.2.3 Documentation

A letter signed by an officer of the firm appointing the Environmental Manager and stating that person is responsible for managing and implementing the Environmental Program as described in this contract. Include in this letter the Environmental Manager's authority to direct the removal and replacement of non-conforming work.

1.7.3 Management of Natural Resources

a. Land resources

b. Tree protection

c. Replacement of damaged landscape features

d. Temporary construction

e. Stream crossings

f. Fish and wildlife resources

g. Wetland areas

1.7.4 Protection of Historical and Archaeological Resources

a. Objectives

b. Methods

1.7.5 Stormwater Management and Control

a. Ground cover

b. Erodible soils

c. Temporary measures

(1) Structural Practices

(2) Temporary and permanent stabilization

d. Effective selection, implementation and maintenance of Best Management Practices (BMPs).

e. Stormwater Pollution Prevention Plan (SWPPP).

1.7.6 Protection of the Environment from Waste Derived from Contractor Operations

This item consists of the management procedures for hazardous waste to be generated. The elements of those procedures will coincide with the Installation Hazardous Waste Management Plan when within an installation. The Contracting Officer will provide a copy of the Installation Hazardous Waste Management Plan as applicable.

As a minimum, include the following:

a. List of the types of hazardous wastes expected to be generated

b. Procedures to ensure a written waste determination is made for appropriate wastes that are to be generated

c. Sampling/analysis plan, including laboratory method(s) that will be used for waste determinations and copies of relevant laboratory certifications

d. Methods and proposed locations for hazardous waste accumulation/storage (that is, in tanks or containers)

e. Management procedures for storage, labeling, transportation, and disposal of waste (treatment of waste is not allowed unless specifically noted)

f. Management procedures and regulatory documentation ensuring disposal of hazardous waste complies with Land Disposal Restrictions (40 CFR 268)

g. Management procedures for recyclable hazardous materials such as lead-acid batteries, used oil, and similar

h. Used oil management procedures in accordance with 40 CFR 279; Hazardous waste minimization procedures

i. Plans for the disposal of hazardous waste by permitted facilities; and Procedures to be employed to ensure required employee training records are maintained.

j. A copy of Fort Rucker Work Instruction on Contractor Hazardous Waste Management (EMS-WI-SW010) which outlines manifest authority and installation specific procedures in the event that a hazardous waste is generated from the spill.

1.7.7 Prevention of Releases to the Environment

Procedures to prevent releases to the environment

Notifications in the event of a release to the environment

1.7.8 Regulatory Notification and Permits

List what notifications and permit applications must be made. Some permits require up to 180 days to obtain. Demonstrate that those permits have been obtained or applied for by including copies of applicable environmental permits. The EPP will not be approved until the permits have been obtained.

1.7.9 Clean Air Act Compliance

1.7.9.1 Haul Route

Submit truck and material haul routes along with a Dirt and Dust Control Plan for controlling dirt, debris, and dust on Installation roadways. As a minimum, identify in the plan the subcontractor and equipment for cleaning along the haul route and measures to reduce dirt, dust, and debris from roadways.

1.7.9.2 Pollution Generating Equipment

Identify air pollution generating equipment or processes that may require federal, state, or local permits under the Clean Air Act. Determine requirements based on any current installation permits and the impacts of the project. Provide a list of all fixed or mobile equipment, machinery or operations that could generate air emissions during the project to the Installation Environmental Office (Air Program Manager). Ensure required permits are obtained prior to installing and operating applicable equipment/processes.

1.7.9.3 Stationary Internal Combustion Engines

Identify portable and stationary internal combustion engines that will be supplied, used or serviced. Comply with 40 CFR 60 Subpart IIII, 40 CFR 60 Subpart JJJJ, 40 CFR 63 Subpart ZZZZ, and local regulations as applicable. At minimum, include the make, model, serial number, manufacture date, size (engine brake horsepower), and EPA emission certification status of each engine. Maintain applicable records and log hours of operation and fuel use. Logs must include reasons for operation and delineate between maintenance/testing, emergency, and non-emergency operation.

1.7.9.4 Refrigerants

Identify management practices to ensure that heating, ventilation, and air conditioning (HVAC) work involving refrigerants complies with 40 CFR 82 requirements. Technicians must be certified, maintain copies of certification on site, use certified equipment and log work that requires the addition or removal of refrigerant. Any refrigerant reclaimed is the

property of the Government, coordinate with the Installation Environmental Office to determine the appropriate turn in location.

1.7.9.5 Air Pollution-engineering Processes

Identify planned air pollution-generating processes and management control measures (including, but not limited to, spray painting, abrasive blasting, demolition, material handling, fugitive dust, and fugitive emissions). Log hours of operations and track quantities of materials used.

1.7.9.6 Compliant Materials

Provide the Government a list of SDSs for all hazardous materials proposed for use on site. The Contractor shall submit to the Contracting Officer and Fort Rucker Environmental and Natural Resources Division copies of SDS for all hazardous materials five days prior to bringing materials on post. Materials must be compliant with all Clean Air Act regulations for emissions including solvent and volatile organic compound contents, and applicable National Emission Standards for Hazardous Air Pollutants requirements. The Government may alter or limit use of specific materials as needed to meet installation permit requirements for emissions.

1.8 LICENSES AND PERMITS

Obtain licenses and permits required for the construction of the project and in accordance with FAR 52.236-7 Permits and Responsibilities. Notify the Government of all equipment that may require permits or special approvals that the Contractor plans to use on site. This paragraph supplements the Contractor's responsibility under FAR 52.236-7 Permits and Responsibilities.

1.9 ENVIRONMENTAL RECORDS BINDER

Maintain on-site a separate three-ring Environmental Records Binder and submit at the completion of the project. Make separate parts within the binder that correspond to each submittal listed under paragraph CLOSEOUT SUBMITTALS in this section.

1.10 PESTICIDE DELIVERY, STORAGE, AND HANDLING

1.10.1 Delivery and Storage

Deliver pesticides to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Store pesticides according to manufacturer's instructions and under lock and key when unattended.

1.10.2 Handling Requirements

Formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and use the clothing and personal protective equipment specified on the labeling for use during each phases of the application. Furnish SDSs for pesticide products.

1.11 SOLID WASTE MANAGEMENT PERMIT

Provide the Contracting Officer with written notification of the quantity of anticipated solid waste or debris that is anticipated or estimated to

be generated by construction. Include in the report the locations where various types of waste will be disposed or recycled. Include letters of acceptance from the receiving location or as applicable; submit one copy of the receiving location state and local Solid Waste Management Permit or license showing such agency's approval of the disposal plan before transporting wastes off Government property.

1.11.1 Monthly Solid Waste Disposal Report

Monthly, submit a solid waste disposal report to the Contracting Officer. For each waste, the report will state the classification (using the definitions provided in this section), amount, location, and name of the business receiving the solid waste.

1.12 FACILITY HAZARDOUS WASTE GENERATOR STATUS

Fort Rucker is designated as a Small Quantity Generator. Meet the regulatory requirements of this generator designation for any work conducted within the boundaries of this Installation. Comply with provisions of federal, state, and local regulatory requirements applicable to this generator status regarding training and storage, handling, and disposal of construction derived wastes.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitats. Prior to the commencement of activities, consult with the Installation Environmental Office as applicable, regarding rare species or sensitive habitats that need to be protected. The protection of rare, threatened, and endangered animal and plant species identified, including their habitats, is the Contractor's responsibility. Any removal of trees or land disturbance requires evaluation and possibly a survey for gopher tortoise burrows to be conducted by the Fort Rucker Environmental and Natural Resources Division in accordance with the Gopher Tortoise Candidate Conservation Agreement. If gopher tortoises are found, they will be relocated by the Natural Resources Division prior to the start of construction. Projects with tree removal must also be reviewed for compliance with the Migratory Bird Treaty Act by the DPW-ENRD. Projects requiring work that will affect streams or other waterways on Fort Rucker will also require a review to ensure there are no protected mussels within the waterway. Projects that require clearing of existing forestland must be evaluated for possible impacts on listed bat species.

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work that is consistent with the requirements of the Installation Environmental Office or as otherwise specified. Confine construction activities to within the limits of the work indicated or specified.

3.1.1 Flow Ways

Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as specified and permitted.

3.1.2 Vegetation

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the Contracting Officer. Where such use of attached ropes, cables, or guys is authorized, the Contractor is responsible for any resultant damage.

Protect existing trees and critical root zones (CRZ) that are to remain to ensure they are not injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. Coordinate with the Contracting Officer and Installation Environmental Office to determine appropriate action for trees and other landscape features scarred or damaged by equipment operations.

3.1.3 Streams

Stream crossings must allow movement of materials or equipment without violating water pollution control standards of the federal, state, and local governments. Construction of stream crossing structures must be in compliance with all required permits including, but not limited to, Clean Water Act Section 404, and Section 401 Water Quality. Stream crossings may require a permit issued by ADEM and the Mobile District Corps of Engineers. Permit applications will be coordinated with the Fort Rucker DPW-ENRD prior to submission to the permitting authority.

The Contracting Officer's approval and appropriate permits are required before any equipment will be permitted to ford live streams. In areas where frequent crossings are required, install temporary culverts or bridges. Obtain Contracting Officer's approval prior to installation. Remove temporary culverts or bridges upon completion of work, and repair the area to its original condition unless otherwise required by the Contracting Officer.

3.1.4 Wetlands

Do not enter, disturb, destroy, or allow discharge of contaminants into any wetlands. Work to be conducted within a wetland may require a permit issued by ADEM and the Mobile District Corps of Engineers. Permit applications will be coordinated with the Fort Rucker DPW-ENRD prior to submission to the permitting authority.

3.1.5 Borrow and Spoil Areas

No on-site borrow areas will be created, with the exception of reutilization of excavated material. Fort Rucker maintains an ADEM permitted borrow pit for clay. If the soil meets compaction requirements for the project, the Contractor may utilize this borrow pit free of charge. If the soil does not meet compaction requirements, or the project site is not located near the main cantonment area, the Contractor is authorized to use material from an off post borrow pit if the pit is permitted through ADEM and approved by the Environmental Division.

Spoil areas are typically not located on site. Fort Rucker maintains an unclassified fill and topsoil stockpile area that can be utilized for spoil, or the spoil can be hauled to another permitted facility with the approval of the Fort Rucker Environmental and Natural Resources Division. In special circumstances, on site spoil areas can be developed with prior approval from DPW-ENRD. Spoil material that contains more than 5% rock or debris must be disposed of in an off-site ADEM permitted location that has been approved by DPW-ENRD.

3.1.6 Solid Waste Management Units

Any disturbance of a former Solid Waste Management Unit (SWMU) site will require prior written notification and approval by the Alabama Department of Environmental Management (ADEM). The Environmental and Natural Resources Division will coordinate the notification with ADEM if the project site includes a SWMU site.

3.2 STORMWATER

Do not discharge stormwater from construction sites to the sanitary sewer. If the water is noted or suspected of being contaminated, it may only be released to the storm drain system if the discharge is specifically permitted. Obtain authorization in advance from the Installation Environmental Office for any release of contaminated water.

3.2.1 Construction General Permit

Provide a Construction General Permit as required by 40 CFR 122.26 or the State of Alabama General Permit. Under the terms and conditions of the permit, install, inspect, maintain BMPs, prepare stormwater erosion and sediment control inspection reports, and submit SWPPP inspection reports. Maintain construction operations and management in compliance with the terms and conditions of the general permit for stormwater discharges from construction activities.

3.2.1.1 Stormwater Pollution Prevention Plan

Submit a project-specific Stormwater Pollution Prevention Plan (SWPPP) to the Contracting Officer for approval, within 30 days of Contract Award and prior to the commencement of work. The SWPPP must meet the requirements of 40 CFR 122.26 and the Alabama State General Permit for stormwater discharges from construction sites.

Include the following:

a. Comply with terms of the state general permit for stormwater discharges from construction activities. Prepare SWPPP in accordance with state requirements.

b. Select applicable BMPs from EPA Fact Sheets located at https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater#constr or in accordance with applicable state or local requirements.

c. Include a completed copy of the Notice of Intent, BMP Inspection Report Template, and Stormwater Notice of Termination, except for the effective date.

3.2.1.2 Stormwater Notice of Intent for Construction Activities

Prepare and submit the Notice of Intent for NPDES coverage under the general permit for construction activities to the Contracting Officer for review.

Submit the approved NOI and appropriate permit fees onto the appropriate federal or state agency for approval. No land disturbing activities may commence without permit coverage. Maintain an approved copy of the SWPPP at the onsite construction office, and continually update as regulations require, reflecting current site conditions.

3.2.1.3 Inspection Reports

Submit "Inspection Reports" to the Contracting Officer in accordance with the State of Alabama Construction General Permit.

3.2.1.4 Stormwater Pollution Prevention Plan Compliance Notebook

Create and maintain a three ring binder of documents that demonstrate compliance with the Construction General Permit. Include a copy of the permit Notice of Intent, proof of permit fee payment, SWPPP and SWPPP update amendments, inspection reports and related corrective action records, copies of correspondence with the the Alabama State Permitting Agency, and a copy of the permit Notice of Termination in the binder. At project completion, the notebook becomes property of the Government. Provide the compliance notebook to the Contracting Officer.

3.2.1.5 Stormwater Notice of Termination for Construction Activities

Submit a Notice of Termination to the Contracting Officer for approval once construction is complete and final stabilization has been achieved on all portions of the site for which the permittee is responsible. Once approved, submit the Notice of Termination to the appropriate state or federal agency. Prepare as-built topographic survey information required by the permitting agency for certification of the stormwater management system, and provide to the Contracting Officer.

The Contractor is responsible for submitting the Notice of Termination (NOT) for any Stormwater Permits that were obtained for construction. A copy of the NOT application and a copy of the final NOT issued from the Alabama Department of Environmental Management will be submitted to the Fort Rucker Environmental Division.

3.2.2 Erosion and Sediment Control Measures

Provide erosion and sediment control measures in accordance with state and local laws and regulations. Preserve vegetation to the maximum extent practicable.

Erosion control inspection reports may be compiled as part of a stormwater pollution prevention plan inspection reports.

If the construction area is 1 acre or greater, the Contractor must submit a Draft Notice of Intent (NOI) and Construction Best Management Practice Plan (CBMPP) to DPW-ENRD for approval prior to submitting the NOI to the Alabama Department of Environmental Management for a Construction Storm Water Permit. The Contractor must also comply with all applicable requirements of ADEM Regulation 335-6-6-.23, including the development and

implementation of a Construction Best Management Practices Plan. Per ADEM Regulation 335-6-6-.23, Part II.F.1 of General Permit ALR100000, and internal procedures, Contractors may be allowed to start work before they receive their NPDES NOI Permit Letter from ADEM if the following items are provided to the Fort Rucker Environmental and Natural Resources Division and the site is NOT a priority construction site as defined in Part II.F.3 and Part IV.T.31 of ALR100000:

(1) Copy of their complete NPDES NOI application form submitted to ADEM
(2) Copy of their check submitted to ADEM for the correct fees
(3) Proof that ADEM has received their application package (either a stamped and dated page from ADEM if hand delivered, or a copy of delivery confirmation if done through Certified Mail)
(4) A copy of the US Geological Survey Map showing the site location
(5) A copy of their Construction Best Management Practices Plan (CBMPP) signed by the QCP, prepared in accordance with Part III.D of ALR100000

A copy of the ADEM approved and signed permit must also be submitted to the Fort Rucker Environmental and Natural Resources Division, once received. If the construction area is within the ADEM Priority Watershed there is a 30-day waiting period after the NOI is submitted to ADEM prior to beginning work.
The Contractor is responsible for completing all requirements of the permit, to include required inspections. Inspections must be performed by a State of Alabama Qualified Credentialed Professional or Qualified Credentialed Inspector as outlined in Construction Storm Water General Permit ALR100000.

The Contractor is also responsible for achieving final stabilization as defined in the Construction Stormwater General Permit once the Contractor believes that site stabilization has been reached, they must notify DPW-ENRD.
DPW-ENRD will make a site visit, if DPW-ENRD agrees the site is stabilized, written notification will be provided to the Contractor. Then the Contractor may submit their application for a Notice of Termination (NOT) of permit coverage. A copy of the NOT application must also be submitted to DPW-ENRD when submitted to ADEM. The Contractor is responsible for the site until ADEM grants the NOT and a copy is provided to DPW-ENRD. The Contractor is then responsible for removing any silt fencing or other temporary BMP's from the site.

The Contractor shall install temporary and permanent erosion and sediment control best management practices(BMPs) as specified in the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas. All disturbed areas must meet the definition of final stabilization as outlined in the Construction Stormwater
General Permit ALR100000, Part IV, Section T (17) regardless of project size or requirement to register under a permit. ADEM defines final stabilization as the application and establishment of the permanent ground cover (vegetative, pavements of erosion resistant hard or soft material or impervious structures) planned for the site to permanently eliminate soil erosion to the maximum extent practicable. Established vegetation will be considered final if 100% of the soil surface is uniformly covered in permanent vegetation with a density of 85% or greater. Permanent vegetation shall consist of; planted trees, shrubs, perennial vines; an agricultural or a perennial crop of vegetation appropriate for the region. Final stabilization applies to each phase of construction.

3.2.2.1 Erosion Control

Prevent erosion by mulching, Compost Blankets, Geotextiles, temporary slope drains. Stabilize slopes by chemical stabilization, sodding, seeding, or such combination of these methods necessary for effective erosion control. Use of hay bales is prohibited.

Provide seeding in accordance with Section 32 92 19 SEEDING.

3.2.2.2 Sediment Control Practices

Implement sediment control practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Implement sediment control practices prior to soil disturbance and prior to creating areas with concentrated flow, during the construction process to minimize erosion and sediment laden runoff. Include the following devices: silt fence, temporary diversion dikes, storm drain inlet protection, Location and details of installation and construction are indicated on the drawings.

3.2.3 Work Area Limits

Mark the areas that need not be disturbed under this Contract prior to commencing construction activities. Mark or fence isolated areas within the general work area that are not to be disturbed. Protect monuments and markers before construction operations commence. Where construction operations are to be conducted during darkness, all markers must be visible in the dark. Personnel must be knowledgeable of the purpose for marking and protecting particular objects.

3.2.4 Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Contracting Officer. Move or relocate the Contractor facilities only when approved by the Government. Provide erosion and sediment controls for onsite borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant or work areas to protect adjacent areas.

3.2.5 Municipal Separate Storm Sewer System (MS4) Management

Comply with the Installation's MS4 permit requirements.

3.3 SURFACE AND GROUNDWATER

3.3.1 Cofferdams, Diversions, and Dewatering

Construction operations for dewatering, removal of cofferdams, tailrace excavation, and tunnel closure must be constantly controlled to maintain compliance with existing state water quality standards and designated uses of the surface water body. Comply with the State of Alabama water quality standards and anti-degradation provisions. Do not discharge excavation ground water to the sanitary sewer, storm drains, or to surface waters without prior specific authorization in writing from the Installation Environmental Office or Contracting Officer. Discharge of hazardous substances will not be permitted under any circumstances. Use sediment control BMPs to prevent construction site runoff from directly entering any storm drain or surface waters.

If the construction dewatering is noted or suspected of being contaminated, it may only be released to the storm drain system if the discharge is specifically permitted. Obtain authorization for any contaminated groundwater release in advance from the Installation Environmental Officer and the federal or state authority, as applicable. Discharge of hazardous substances will not be permitted under any circumstances.

3.3.2 Waters of the United States

Do not enter, disturb, destroy, or allow discharge of contaminants into waters of the United States.

3.3.3 Ground Water Monitoring Wells

Ground water monitoring wells within a project footprint will be safeguarded at all times. Any damage caused to these wells will become the responsibility of the Contractor to correct, at no additional cost to the government.

3.4 PROTECTION OF CULTURAL RESOURCES

3.4.1 Archaeological Resources

If, during excavation or other construction activities, any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, activities that may damage or alter such resources will be suspended. Resources covered by this paragraph include, but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, immediately notify the Contracting Officer and the Environmental and Natural Resources Division (POC is Brent Waters at 334-255-2080). In the case human remains are discovered, the Provost Marshall must also be notified. These individuals will makes a determination as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources. The Government retains ownership and control over archaeological resources. Suspected archeological materials must not be removed from the site in accordance with 32 CFR Part 229. The Environmental and Natural Resources Division can provide aerial imagery with known sites depicted.

3.5 AIR RESOURCES

Equipment operation, activities, or processes will be in accordance with 40 CFR 64 and state air emission and performance laws and standards. Any gas fired equipment that will be installed such as boilers or emergency generators, as well as modifications or installation of new surface coating equipment (paint booths) will be coordinated through the Fort Rucker Environmental and Natural Resources Division Air Program Manager. The Environmental Division will work with the Contractor to ensure permitting is accomplished through the Alabama Department of Environmental Management. Any permitting fees required will be paid by the Contractor. Equipment will not be installed nor operated prior to obtaining required

permits and approval from DPW-ENRD.

3.5.1 Preconstruction Air Permits

Notify the Air Program Manager, through the Contracting Officer, at least 6 months prior to bringing equipment, assembled or unassembled, onto the Installation, so that air permits can be secured. Necessary permitting time must be considered in regard to construction activities. Clean Air Act (CAA) permits must be obtained prior to bringing equipment, assembled or unassembled, onto the Installation.

Permits will be provided by the Government. Confirm that these permits have been obtained.

3.5.2 Oil or Dual-fuel Boilers and Furnaces

Provide product data and details for new, replacement, or relocated fuel fired boilers, heaters, or furnaces to the Installation Environmental Office (Air Program Manager) through the Contracting Officer. Data to be reported include: equipment purpose (water heater, building heat, process), manufacturer, model number, serial number, fuel type (oil type, gas type) size (MMBTU heat input). Provide in accordance with paragraph PRECONSTRUCTION AIR PERMITS.

3.5.3 Burning

Burning is prohibited on the Government premises.

3.5.4 Class I and II ODS Prohibition

Class I and II ODS are Government property and must be returned to the Government for appropriate management. Coordinate with the Installation Environmental Office to determine the appropriate location for turn in of all reclaimed refrigerant.

3.5.5 Venting of Refrigerant

Accidental venting of a refrigerant is a release and must be reported immediately to the Contracting Officer. Intentional venting of refrigerants (including most Non-ODS substitute refrigerants) is prohibited per 40 CFR 82.

3.5.6 EPA Certification Requirements

Heating and air conditioning technicians must be certified through an EPA-approved program. Maintain copies of certifications at the employees' places of business; technicians must carry certification wallet cards, as provided by environmental law.

3.5.7 Dust Control

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or

plaster. Since these products contain Crystalline Silica, comply with the applicable OSHA standard, 29 CFR 1910.1053 or 29 CFR 1926.1153 for controlling exposure to Crystalline Silica Dust.

3.5.7.1 Particulates

Dust particles, aerosols and gaseous by-products from construction activities, and processing and preparation of materials (such as from asphaltic batch plants) must be controlled at all times, including weekends, holidays, and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates that would exceed 40 CFR 50, state, and local air pollution standards or that would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators, or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp. Provide sufficient, competent equipment available to accomplish these tasks. Perform particulate control as the work proceeds and whenever a particulate nuisance or hazard occurs. Comply with state and local visibility regulations.

3.5.7.2 Abrasive Blasting

Blasting operations cannot be performed without prior approval of the Installation Air Program Manager. The use of silica sand is prohibited in sandblasting.

Provide tarpaulin drop cloths and windscreens to enclose abrasive blasting operations to confine and collect dust, abrasive agent, paint chips, and other debris. Perform work involving removal of hazardous material in accordance with 29 CFR 1910.

3.5.8 Odors

Control odors from construction activities. The odors must be in compliance with state regulations and local ordinances and may not constitute a health hazard.

3.6 WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of waste. Include procedures for pollution prevention/ hazardous waste minimization in the Hazardous Waste Management Section of the EPP. Obtain a copy of the installation's Pollution Prevention/Hazardous Waste Minimization Plan for reference material when preparing this part of the EPP. If no written plan exists, obtain information by contacting the Contracting Officer. Describe the anticipated types of the hazardous materials to be used in the construction when requesting information.

3.6.1 Salvage, Reuse and Recycle

Identify anticipated materials and waste for salvage, reuse, and recycling. Describe actions to promote material reuse, resale or recycling. To the extent practicable, all scrap metal must be sent for reuse or recycling and will not be disposed of in a landfill.

Include the name, physical address, and telephone number of the hauler, if

transported by a franchised solid waste hauler. Include the destination and, unless exempted, provide a copy of the state or local permit (cover) or license for recycling.

All recyclable materials such as cardboard, paper, metal, unpainted wood, clean (no paint and no rebar) concrete and asphalt must be separated by material type and transported to an ADEM Registered Recycling Facility in accordance with Chapter 335-13-3 of Alabama Administrative Code.

Construction and Demolition Debris to be discarded and not recycled must be disposed of in an ADEM Permitted Construction and Demolition (C&D) Landfill (either Coffee County Landfill or Rose Hill Landfill.

3.6.2 Nonhazardous Solid Waste Diversion Report

Maintain an inventory of nonhazardous solid waste diversion and disposal of construction and demolition debrisutilize USAACE Form 2720 - Debris Recovery Plan and Statement available at https://www.fortrucker-env.com/ under the EMS forms link). Submit a report to Fort Rucker Environmental and Natural Resources Division. The Contractor must prepare a USAACE Form 2720 Pre-Construction/Demo with the proposed recyclers and/or landfills and submit to DPW-ENRD for approval prior to waste leaving the installation through the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that nonhazardous solid waste has been generated.

3.7 WASTE MANAGEMENT AND DISPOSAL

3.7.1 Waste Determination Documentation

The Contractor must prepare a USAACE Form 2720 Pre-Construction/Demo with the proposed recyclers and/or landfills and submit to DPW-ENRD for approval prior to waste leaving the installation. Complete a Waste Determination form (provided at the pre-construction conference) for Contractor-derived wastes to be generated. All potentially hazardous solid waste streams that are not subject to a specific exclusion or exemption from the hazardous waste regulations (e.g., scrap metal, domestic sewage) or subject to special rules, (lead-acid batteries and precious metals) must be characterized in accordance with the requirements of 40 CFR 262.11 or corresponding applicable state or local regulations. Base waste determination on user knowledge of the processes and materials used, and analytical data when necessary. Consult with the Installation environmental staff for guidance on specific requirements. Attach support documentation to the Waste Determination form. As a minimum, provide a Waste Determination form for the following waste (this listing is not exhaustive): oil- and latex -based painting and caulking products, solvents, adhesives, aerosols, petroleum products, and containers of the original materials.

3.7.1.1 Sampling and Analysis of Waste

3.7.1.1.1 Waste Sampling

Sample waste in accordance with EPA SW-846. Clearly mark each sampled drum or container with the Contractor's identification number, and cross reference to the chemical analysis performed.

3.7.1.1.2 Analysis Type

Identify hazardous waste by analyzing for the following characteristics:

ignitability, corrosivity, reactivity, toxicity based on TCLP results.

3.7.2 Solid Waste Management

3.7.2.1 Project Solid Waste Disposal Documentation Report

Provide copies of the waste handling facilities' weight tickets, receipts, bills of sale, and other sales documentation. In lieu of sales documentation, a statement indicating the disposal location for the solid waste that is signed by an employee authorized to legally obligate or bind the firm may be submitted. The sales documentation Contractor certification must include the receiver's tax identification number and business, EPA or state registration number, along with the receiver's delivery and business addresses and telephone numbers. For each solid waste retained for the Contractor's own use, submit the information previously described in this paragraph on the solid waste disposal report. Prices paid or received do not have to be reported to the Contracting Officer unless required by other provisions or specifications of this Contract or public law.

3.7.2.2 Control and Management of Solid Wastes

Pick up solid wastes, and place in covered containers that are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with non-hazardous solid waste. Transport solid waste off Government property and dispose of it in compliance with 40 CFR 260, state, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill is the minimum acceptable offsite solid waste disposal option. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Solid waste disposal offsite must comply with most stringent local, state, and federal requirements, including 40 CFR 241, 40 CFR 243, and 40 CFR 258.

Manage hazardous material used in construction, including but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags, in accordance with 49 CFR 173.

3.7.3 Control and Management of Hazardous Waste

Do not dispose of hazardous waste on Government property. Do not discharge any waste to a sanitary sewer, storm drain, or to surface waters or conduct waste treatment or disposal on Government property without written approval of the Contracting Officer and Installation Hazardous Waste Manager. The Contractor must follow the instructions as outlined in the Fort Rucker Work Instruction for Contractor Hazardous Waste Management (EMS-WI-SW-010). Disposal and manifesting must be coordinated the Fort Rucker Hazardous Waste Program Manager. Manifest signature authority for all waste generated on Fort Rucker belongs to the Environmental and Natural Resources Division.

3.7.3.1 Hazardous Waste/Debris ManagementHazardous Waste/Debris Management

Identify construction activities that will generate hazardous waste or debris. Provide a documented waste determination for resultant waste streams. Identify, label, handle, store, and dispose of hazardous waste or debris in accordance with federal, state, and local regulations,

including 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, and 40 CFR 268.

Manage hazardous waste in accordance with the approved Hazardous Waste Management Section of the EPP. Store hazardous wastes in approved containers in accordance with 49 CFR 173 and 49 CFR 178. Hazardous waste generated within the confines of Government facilities is identified as being generated by the Government. Prior to removal of any hazardous waste from Government property, hazardous waste manifests must be signed by personnel from the Installation Environmental Office. Do not bring hazardous waste onto Government property. Provide the Contracting Officer with a copy of waste determination documentation for any solid waste streams that have any potential to be hazardous waste or contain any chemical constituents listed in 40 CFR 372-SUBPART D.

3.7.3.2 Hazardous Material Storage

Hazardous materials must be stored in accordance with storage instructions listed on the SDS, and also in a manner that will prevent them from discharging to the ground. This includes keeping materials under cover from precipitation as well as utilizing appropriate secondary containment. At no time will hazardous materials be stored directly on the ground. The cleaning of paint brushes or other equipment MUST NOT be discharged to the ground or in any drains. If any hazardous material gets on the ground, in a drain or in a waterway it must immediately be reported by dialing 911 and notifying Fort Rucker Environmental and Natural Resources Division.

3.7.3.3 Hazardous Waste Disposal

3.7.3.3.1 Responsibilities for Contractor's Disposal

Provide hazardous waste manifest to the Installations Environmental Office for review, approval, and signature prior to shipping waste off Government property.

3.7.3.3.1.1 Services

Provide service necessary for the final treatment or disposal of the hazardous material or waste in accordance with 40 CFR 260 - 40 CFR 279, local, and state, laws and regulations, and the terms and conditions of the Contract within 60 days after the materials have been generated. These services include necessary personnel, labor, transportation, packaging, detailed analysis (if required for disposal or transportation, include manifesting or complete waste profile sheets, equipment, and compile documentation).

3.7.3.3.1.2 Samples

Obtain a representative sample of the material generated for each job done to provide waste stream determination.

3.7.3.3.1.3 Analysis

Analyze each sample taken and provide analytical results to the Contracting Officer. See paragraph WASTE DETERMINATION DOCUMENTATION.

3.7.3.3.1.4 Labeling

During waste accumulation label all containers in accordance with

40 CFR 262. Prior to offering a waste for off-site transport, determine the Department of Transportation's (DOT's) proper shipping names for waste in accordance with 49 CFR 172 (each container requiring disposal) and demonstrate to the Contracting Officer how this determination is developed and supported by the sampling and analysis requirements contained herein. Label all containers of hazardous waste with the words "Hazardous Waste" or other words to describe the contents of the container in accordance with 40 CFR 262 and applicable state or local regulations.

3.7.3.3.2 Contractor Disposal Turn-In Requirements

Hazardous waste generated must be disposed of in accordance with the following conditions to meet installation requirements:

a. Drums must be compatible with waste contents and drums must meet DOT requirements for 49 CFR 173 for transportation of materials.

b. Band drums to wooden pallets.

c. No more than three 55 gallon drums or two 85 gallon over packs are to be banded to a pallet.

d. Band using 1-1/4 inch minimum band on upper third of drum.

e. Provide label in accordance with 49 CFR 172.101.

f. Leave 3 to 5 inches of empty space above volume of material.

3.7.3.4 Universal Waste Management

Manage the following categories of universal waste in accordance with federal, state, and local requirements and installation instructions:

a. Batteries as described in 40 CFR 273.2

b. Lamps as described in 40 CFR 273.5

c. Mercury-containing equipment as described in 40 CFR 273.4

d. Aerosol cans as described in 40 CFR 273.6

e. Pesticides as described in 40 CFR 273.3

Any smoke detectors to be removed must be separated by model and type, containerized, and turned in through DPW-ENRD. DPW-ENRD will arrange either turn in through the radiation safety office for ionizing smoke detectors, or through the electronic waste recycling for photo-electric smoke detectors.

Any air conditioning equipment to be disposed of must have the refrigerant removed prior to disposal. Refrigerant must not be released into the environment and must not be given away or sold. Removal will be done by a certified technician. Certifications will be provided to the Air Program Manager, DPW–ENRD prior to removal of refrigerant. Certain refrigerants must be turned into the Ozone Depleting Substance (ODS) Reserve. In the event that a project results in the removal of one of these refrigerants, turn in procedures will be provided to the Contractor by DPWENRD.

All new HVAC equipment must meet the certification requirements of EPA's Significant New Alternatives Program (SNAP) per Title VI of the Clean Air Act; 40 CFR 82.

Mercury is prohibited in the construction of this facility, unless specified otherwise, and with the exception of mercury vapor lamps and fluorescent lamps. Dumping of mercury-containing materials and devices such as mercury vapor lamps, fluorescent lamps, and mercury switches, in rubbish containers is prohibited. Remove without breaking, pack to prevent breakage, and transport out of the activity in an unbroken condition for disposal as directed.

3.7.3.5 Electronics End-of-Life Management

Recycle or dispose of electronics waste, including, but not limited to, used electronic devices such computers, monitors, hard-copy devices, televisions, mobile devices, in accordance with 40 CFR 260-262, state, and local requirements, and installation instructions.

3.7.3.6 Disposal Documentation for Hazardous and Regulated Waste

Contact the Contracting Officer for the facility RCRA identification number that is to be used on each manifest.

3.7.4 Releases/Spills of Oil and Hazardous Substances

3.7.4.1 Response and Notifications

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated in accordance with 40 CFR 300. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release. In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately (within 15 minutes) notify the Installation Fire Department, Fort Rucker Environmental and Natural Resources Division, the Contracting Officer and the state or local authority.

The Fort Rucker Environmental and Natural Resources Division will coordinate reporting to the appropriate agencies and submit verbal and written notifications as required by the federal (40 CFR 300.125 and 40 CFR 355), state, local regulations and instructions. Provide copies of the written notification and documentation that a verbal notification was made within 20 days. Spill response must be in accordance with 40 CFR 300 and applicable state and local regulations. Contain and clean up these spills without cost to the Government.

3.7.4.2 Clean Up

Clean up hazardous and non-hazardous waste spills. Reimburse the Government for costs incurred including sample analysis materials, clothing, equipment, and labor if the Government will initiate its own spill cleanup procedures, for Contractor- responsible spills, when: Spill cleanup procedures have not begun within one hour of spill discovery/occurrence; or, in the Government's judgment, spill cleanup is inadequate and the spill remains a threat to human health or the

environment.

3.7.5 Mercury Materials

Immediately report to the Environmental Office and the Contracting Officer instances of breakage or mercury spillage. Clean mercury spill area to the satisfaction of the Contracting Officer.

Do not recycle a mercury spill cleanup; manage it as a hazardous waste for disposal.

3.7.6 Wastewater

3.7.6.1 Disposal of Wastewater

The Contractor shall not discharge any wastewater that is in violation of a water quality standard or National Pollutant Discharge Elimination System (NPDES) permits in accordance with 40 CFR 131 to the ground or stormwater collection system. In addition, the Contractor will not discharge any wastewater to the sanitary sewer that will cause upset of the wastewater treatment plants or cause a violation of the treatment plants NPDES permit. Review and coordination for specific wastewater discharges will be done through DPW-ENRD and the DPW Utilities Branch. The Contractor may be required to containerize or filter wastewater prior to discharge based on the specific hazardous constituents that may be present. Disposal of wastewater must be as specified below.

3.7.6.1.1 Treatment

Do not allow wastewater from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, and forms to enter water ways or to be discharged. Dispose of the construction- related waste water by collecting and placing it in a retention pond where suspended material can be settled out or the water can evaporate to separate pollutants from the water. The site for the retention pond must be coordinated and approved with the Contracting Officer. The residue left in the pond prior to completion of the project must be removed, tested, and disposed of off-Government property in accordance with federal, state, and local laws and regulations. Backfill the area to the original grade, top-soiled, and seeded or sodded.

3.7.6.1.2 Surface Discharge

For discharge of ground water, Surface discharge in accordance with federal, state, and local laws and regulations. Surface discharge in accordance with the requirements of the NPDES or state STORMWATER DISCHARGES FROM CONSTRUCTION SITES permit.

3.7.6.1.3 Concrete Washout

Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. will not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. Dispose of the construction related wastewater by collecting and placing it in a lined retention pond where suspended material can be settled out and/or the water can evaporate to separate pollutants from the water. The site for the retention pond must be coordinated and approved

with the Contracting Officer and the Fort Rucker DPW-ENRD. The residue left in the pond prior to completion of the project will be removed, tested, and disposed off-Government property in accordance with Federal, State, and local laws and regulations.

3.7.6.1.4 Flushing and Hydrostatic Testing

Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing will discharged into the sanitary sewer with prior approval and notification to DPW-ENRD, DPW Utilities Branch, the Wastewater Treatment Plant's Operator.

3.7.6.1.5 Detergents, Cleanser, and Solvents

DPW-ENRD must review the SDS and approve all detergents, cleansers, and solvents that may be discharged to the sanitary sewer or storm sewer prior to use. This includes detergents used in interior/exterior pressure washing and solvents used in concrete and masonry cleaning.

3.8 HAZARDOUS MATERIAL MANAGEMENT

Include hazardous material control procedures in the Accident Prevention Plan (APP), in accordance with Section 01 35 26 GOVERNMENTAL SAFETY REQUIREMENTS. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Do not bring hazardous material onto Government property that does not directly relate to requirements for the performance of this contract. Submit an SDS and estimated quantities to be used for each hazardous material to the Contracting Officer prior to bringing the material on the installation. Typical materials requiring SDS and quantity reporting include, but are not limited to, oil and latex based painting and caulking products, solvents, adhesives, aerosol, and petroleum products. Use hazardous materials in a manner that minimizes the amount of hazardous waste generated. Containers of hazardous materials must have National Fire Protection Association labels or their equivalent. Certify that hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste, in accordance with 40 CFR 261 and state and installation requirements.

Amendment 0003
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3.8.1 Hazardous Material Management Plan

The Contractor shall submit ***after award*** ~~with the proposal~~ a hazardous material management plan for handling hazardous material. This plan includes, but is not limited to: identifying how SDS are obtained, filed, maintained and provided for worker Right-to-Know compliance; how hazardous materials will be stored, handled, transported, and disposed of; a listing of equipment that will be used (i.e. brushes, rollers, sprayers, etc.), how cleaning of the equipment will be conducted and procedures to collection and turning in of wastes and what personal protection equipment will be furnished to employees, spill prevention and control measures and the point of contact for safety and compliance with the regulations and laws.

The Contractor shall submit the hazardous material- handling plan for approval by the Contracting Officer within 15 days of contract award. The Government shall have 30 days to review the plan and return it with

comments for the Contractor to incorporate in a revised final plan, which will be due within 15 days after receiving the Government comments.

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Amendment 0003

3.9 PREVIOUSLY USED EQUIPMENT

Clean previously used construction equipment prior to bringing it onto the project site. Equipment must be free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the U.S. Department of Agriculture jurisdictional office for additional cleaning requirements.

3.10 MILITARY MUNITIONS

The project area has not been designated as a MMRP site so Munitions and Explosives of Concern (MEC)/Unexploded Ordnance (UXO) are not suspected to be present on the project site. Directorate of DPW-ENRD included the following statement in the August 19, 2026 RECs: "There is no known military munitions or unexploded ordnance in the foot print of this project."

In the event military munitions, as defined in 40 CFR 260, are discovered or uncovered, immediately stop work in that area and immediately inform the Contracting Officer. The Directorate of Public Safety and Range Control should be notified. Work cannot commence until the suspect material/object is identified and disposed of.

3.11 PETROLEUM, OIL, LUBRICANT (POL) STORAGE AND FUELING

POL products include flammable or combustible liquids, such as gasoline, diesel, lubricating oil, used engine oil, hydraulic oil, mineral oil, and cooking oil. Store POL products and fuel equipment and motor vehicles in a manner that affords the maximum protection against spills into the environment. Manage and store POL products in accordance with EPA 40 CFR 112, and other federal, state, regional, and local laws and regulations. Use secondary containments, dikes, curbs, and other barriers, to prevent POL products from spilling and entering the ground, storm or sewer drains, stormwater ditches or canals, or navigable waters of the United States. Describe in the EPP (see paragraph ENVIRONMENTAL PROTECTION PLAN) how POL tanks and containers must be stored, managed, and inspected and what protections must be provided. Storage of oil, including fuel, on the project site is not allowed. Fuel must be brought to the project site each day that work is performed.

3.11.1 Used Oil Management

Manage used oil generated on site in accordance with 40 CFR 279. Determine if any used oil generated while onsite exhibits a characteristic of hazardous waste. Used oil containing 1,000 parts per million of solvents is considered a hazardous waste and disposed of at the Contractor's expense. Used oil mixed with a hazardous waste is also considered a hazardous waste. Dispose in accordance with paragraph HAZARDOUS WASTE DISPOSAL.

3.11.2 Oil Storage Including Fuel Tanks

Provide secondary containment and overfill protection for oil storage tanks. A berm used to provide secondary containment must be of sufficient size and strength to contain the contents of the tanks plus 5 inches freeboard for precipitation. Construct the berm to be impervious to oil for 72 hours that no discharge will permeate, drain, infiltrate, or otherwise escape before cleanup occurs. Use drip pans during oil transfer operations; adequate absorbent material must be onsite to clean up any spills and prevent releases to the environment. Cover tanks and drip pans during inclement weather. Provide procedures and equipment to prevent overfilling of tanks. If tanks and containers with an aggregate aboveground capacity greater than 1320 gallons will be used onsite (only containers with a capacity of 55 gallons or greater are counted), provide and implement a Spill Prevention Control and Countermeasure (SPCC) plan meeting the requirements of 40 CFR 112. Do not bring underground storage tanks to the installation for Contractor use during a project. Submit the SPCC plan to the Contracting Officer for approval.

Monitor and remove any rainwater that accumulates in open containment dikes or berms. Inspect the accumulated rainwater prior to draining from a containment dike to the environment, to determine there is no oil sheen present.

3.12 INADVERTENT DISCOVERY OF PETROLEUM-CONTAMINATED SOIL OR HAZARDOUS WASTES

If petroleum-contaminated soil, or suspected hazardous waste is found during construction that was not identified in the Contract documents, immediately notify the Contracting Officer. Do not disturb this material until authorized by the Contracting Officer.

3.13 PEST MANAGEMENT

The use of pesticides by the Contractor shall be limited to the application of termiticides as soil treatments to prevent infestation by subterranean
termites in new construction and renovation projects. Termiticides used under this specification shall be registered by the U.S. Environmental Protection Agency for the proposed use, listed on the Fort Rucker Pesticide Use List (PUL) and approved by the COR and Pest Management Coordinator prior to application. All termiticide applications shall be processed, handled, and applied in strict accordance with the manufacturer's label. Personnel selecting, mixing or applying termiticides shall be certified by the State of Alabama in the commercial applicator permit category Wood Destroying Organisms Certified Operator (WDC). The type and amount of pesticide used must be reported to DPW-ENRD using USAACE Form 2740, Pest Management Maintenance Record. Empty pesticide containers and rinsates shall be removed from the installation and disposed of in accordance with applicable State and Federal laws, regulations and policies.

3.13.1 Application

Apply pesticides using a state-certified pesticide applicator in accordance with EPA label restrictions and recommendation. The certified applicator must wear clothing and personal protective equipment as specified on the pesticide label. The Contracting Officer will designate locations for water used in formulating. Do not allow the equipment to

overflow. Inspect equipment for leaks, clogging, wear, or damage and repair prior to application of pesticide.

3.13.2 Pesticide Treatment Plan

Include and update a pesticide treatment plan, as information becomes available. Include in the plan the sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (that is, pounds of active ingredient applied), equipment used for application and calibration of equipment. Comply with 40 CFR 152-189, state, regional, and local pest management record-keeping and reporting requirements as well as any additional Installation Project Office specific requirements in conformance with DA AR 200-1 Chapter 5, Pest Management, Section 5-4 "Program requirements" for data required to be reported to the Installation.

3.14 CHLORDANE

Evaluate excess soils and concrete foundation debris generated during the demolition of housing units or other wooden structures for the presence of chlordane or other pesticides prior to reuse or final disposal.

3.15 SOUND INTRUSION

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives are not permitted without written permission from the Contracting Officer, and then only during the designated times. Confine pile-driving operations to the period between 8 a.m.4 p.m., Monday through Friday, exclusive of holidays, unless otherwise specified.

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the State of Alabama rules.

3.16 POST CONSTRUCTION CLEANUP

Clean up areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing by the Contracting Officer, remove traces of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade parking area and similar temporarily used areas to conform with surrounding contours.

-- End of Section --

SECTION 26 56 20

AIRFIELD AND HELIPORT LIGHTING AND VISUAL NAVIGATION AIDS
02/19

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM A123/A123M	(2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A153/A153M	(2016a) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2	(2017; Errata 1-2 2017; INT 1 2017) National Electrical Safety Code

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA C119.1	(2016) Electric Connectors - Sealed Insulated Underground Connector Systems Rated 600 Volts

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code
NFPA 70B	(2019) Recommended Practice for Electrical Equipment Maintenance

U.S. FEDERAL AVIATION ADMINISTRATION (FAA)

FAA AC 150/5345-7	(2013; Rev F) Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
FAA AC 150/5345-26	(2021; Rev E) FAA Specification for L-823 Plug and Receptacle, Cable Connectors
FAA AC 150/5345-42	(2019; Rev J) Specification for Airport Light Bases, Transformer Housings, Junction Boxes and Accessories
FAA AC 150/5345-46	(2016; Rev E) Specification for Runway and Taxiway Light Fixtures

FAA AC 150/5345-47	(2005; Rev B) Specification for Series to Series Isolation Transformers for Airport Lighting Systems
FAA AC 150/5345-53	(2012; Rev D) Airport Lighting Equipment Certification Program
FAA E-2519	(1972; Rev A) Types I and II
FAA FO 6850.19	(1978) Frangible Coupling

UNDERWRITERS LABORATORIES (UL)

UL 6	(2007; Reprint Sep 2019) UL Standard for Safety Electrical Rigid Metal Conduit-Steel
UL 83	(2017; Reprint Mar 2020) UL Standard for Safety Thermoplastic-Insulated Wires and Cables
UL 486A-486B	(2018; Reprint May 2021) UL Standard for Safety Wire Connectors
UL 797	(2007; Reprint Mar 2021) UL Standard for Safety Electrical Metallic Tubing -- Steel
UL Electrical Construction	(2012) Electrical Construction Equipment Directory

1.2 SYSTEM DESCRIPTION

Provide airfield lighting and visual navigation aids as indicated.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Protection plan; G

Training; G

SD-02 Shop Drawings

Lighting and visual navigation aids; G

Composite drawings showing coordination of work of one trade with that of other trades and with structural and architectural elements of the work. Provide sufficient detail to show overall dimensions of related items, clearances, and relative locations of work in allotted spaces. Indicate where conflicts or clearance problems exist between the various trades.

Posted instructions; G

SD-03 Product Data

When equipment or materials are specified to conform to the standards or publications and requirements of AASHTO, ANSI, ASTM, AEIC, ETL, IEEE, IES, NEMA, NFPA, or UL, or to an FAA, FS, or MS, include proof that the items furnished under this section conform to the specified requirements. The label or listing in UL Electrical Construction or ETL or the manufacturer's certification or published catalog specification data statement that the items comply with applicable specifications, standards, or publications and with the manufacturer's standards will be acceptable evidence of such compliance. Provide manufacturer prepared certificates when the manufacturer's published data or drawings do not indicate conformance with other requirements of these specifications.

Type L-823 Connectors; G

Helipad Perimeter Lights; G

In-Pavement Lights; G

Elevated Hold Lights; G

Light bases, each type; G

List of airfield lighting materials and equipment with the FAA AC 150/5345-53 Appendix C review date.

Isolation transformers; G

Encapsulated isolation transformers; G

Frangible couplings; G

Type P-606 Sealant; G

Materials and equipment; G

SD-06 Test Reports

Visual inspection; G

Progress testing for series lighting circuits; G

Counterpoise system test and inspection; G

Operating test; G

Distribution conductors, 600-volt class; G

Electrical acceptance tests; G

Low-voltage continuity tests; G

High-voltage insulation resistance tests; G

SD-07 Certificates

Qualifications of contractor; G

Certified documentation of qualifications, as specified.

Special tools; G

List of special tools and test equipment required for installation, maintenance and testing of the products supplied by the Contractor. Items to be listed include, but are not limited to, the following:

4-Jack positioning jig, for in-pavement light bases.; G

Elevated light level; G

Crimping tool; G

Cable penciler

List of parts; G

A list of parts and components for the system by manufacturer's name, part number, nomenclature, and stock level required for maintenance and repair necessary to ensure continued operation with minimal delays.

SD-08 Manufacturer's Instructions

Posted instructions; G

Submit proposed disgrams, instructions, and other sheets prior to posting.

SD-10 Operation and Maintenance Data

Maintenance and repair instructions; G

Instructions necessary to check out, troubleshoot, repair, and replace components of the systems, as specified.

Posted operations and maintenance instructions

Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals

As-built drawings

1.4 MAINTENANCE MATERIAL SUBMITTALS

1.4.1 Spare Parts

Provide spare parts as indicated in this specification as part of this contract. The spare parts must be provided at the end of construction. They must be in addition to any items consumed during construction or in testing.

1.5 QUALITY CONTROL

1.5.1 Regulatory Requirements

In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word "must" has been substituted for "shall" or "should" wherever it appears. Interpret references in these standards to "authority having jurisdiction," or words of similar meaning, to mean Contracting Officer.

1.5.1.1 Code Compliance

Comply with the requirements and recommendations of NFPA 70 and IEEE C2 and local codes where required.

1.5.2 Standard Products

a. Use only approved equipment listed in FAA AC 150/5345-53 with addendum for the date of delivery with the exception of Air Force threshold lights and Army heliport fixture colors and intensities. Inspect wire and cable for date of manufacture. Materials must be certified and listed as "Approved Airport Lighting Equipment" downloadable from: http://www.faa.gov/arp/pdf/534553ad.pdf. Do not use wire and cable manufactured more than one year before delivery to job site.

b. Provide materials and equipment listed by FAA, UL, or ETL, when such equipment is listed or approved. Do not use askarel, tetrachlorethylene and insulating liquids containing polychlorinated biphenyls (PCBs) in equipment.

c. Material and equipment must be a standard product of a manufacturer

regularly engaged in the manufacture of the product and essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening.

d. Where two or more items of the same class of equipment are required, provide products of a single manufacturer; however, the component parts of the item need not be products of the same manufacturer unless stated in this section.

1.5.3 Qualifications of Contractor

a. Provide documentation that the aviation lighting equipment contractor and installation electricians are experienced in installing, testing and maintaining aviation lighting systems of a similar complexity. Similar complexity, in increasing complexity, are the following: elevated edge lights and signs, in-pavement lights, and approach light systems. Include a list of government projects and 3 years of experience in constructing similar projects. Include written certification that systems have performed satisfactorily for not less than 18 months. Provide a list of airfield lighting schools or seminars attended in the last 5 years.

b. Submit certification containing the names and the qualifications of persons recommended to perform the splicing and termination of medium-voltage cables approved for installation under this contract. Indicate that any person recommended to perform actual splicing and termination has been adequately trained in the proper techniques and has had at least 3 recent years of experience in splicing and terminating the same or similar types of cables approved for installation. Any person recommended by the Contractor may be required to perform a dummy or practice splice and termination, in the presence of the Contracting Officer, before being approved as a qualified installer of medium-voltage power or series lighting cables. If that additional requirement is imposed, provide short sections of the approved types of cables with the approved type of splice and termination kits, and detailed manufacturer's instruction for the proper splicing and termination of the approved cable types.

1.5.4 Protection Plan

Submit detailed procedures to prevent damage to existing facilities or infrastructures. If damage does occur, the procedures must address repair and replacement of damaged property at the Contractor's expense.

1.5.5 Prevention of Corrosion

1.5.5.1 Metallic Materials

Protect metallic materials against corrosion as specified. Do not use aluminum in contact with earth or concrete. Do not use aluminum conductors.

1.5.5.2 Ferrous Metal Hardware

Ferrous metal hardware must be hot-dip galvanized in accordance with ASTM A123/A123M and ASTM A153/A153M.

1.6 DELIVERY, STORAGE, AND HANDLING

The Contractor must deliver, store and secure all airfield lighting materials an equipment in accordance with the manufacturers' requirements.

1.7 PROJECT/SITE CONDITIONS

Items furnished under this section must be specifically suitable for the following unusual service conditions:

1.7.1 Altitude

Any equipment must be suitable for operation up to an altitude of 10,000 feet.

1.7.2 Other

Material or equipment to be installed underground; in handholes, manholes, or underground vaults; or in light bases, must be suitable for submerged operation.

1.7.3 Existing Airfield Lighting Systems

Existing airfield lighting systems for phases that are not under construction must remain in operating condition utilizing temprorary jumpers.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

Provide airfield lighting and visual navigation aids as indicated on contract drawings.

2.1.1 Design Requirements

2.2 HELIPAD LIGHTING SYSTEMS

2.2.1 Helipad Perimeter Lights

2.2.1.1 In-Pavement Lights

FAA AC 150/5345-46, Type L-852E(L) LED with aviation yellow filters. Mount fixtures on FAA Type L-868 bases.

2.2.2 In-Pavement Hold Lights

FAA AC 150/5345-46, Type L-852A(L) LED, Unidirectional or Bidirectional with aviation yellow, green, or green-yellow globes, as indicated. Frangibly mount lights on FAA AC 150/5345-42, Type L-868 bases.

2.2.3 Elevated Hold Lights

FAA AC 150/5345-46, Type L-861(L) LED with aviation yellow or green globes, as indicated. Frangibly mount lights on FAA AC 150/5345-42, Type L-867 bases.

2.3 LIGHT BASES

FAA AC 150/5345-42 Type L-867 or L-868 . Use steel bases, Class 1, Size as indicated or as required to accommodate the fixture or device installed. Use Size C where more than one distributed control module is installed in the light base. Where used as pull boxes in (single or multiple) can plazas use L-867D bases. Provide base plates, cover plates, and adapter plates to accommodate various sizes of fixtures.

Furnish each base with internal and external one-hole ground lugs for attaching ground or counterpoise cables.

Furnish each base with a 4 foot braided, #6 AWG equivalent ground strap with one-hole lug compression fittings. Utilize straps made for the purpose of grounding the light fixture to the base can interior grounding lug.

2.4 LAMPS AND FILTERS

Provide lamps of the size and type indicated, or as required by fixture manufacturer for each lighting fixture required. Include filters of colors as indicated and conforming to the specification for the light concerned or to the standard referenced.

2.5 ISOLATION TRANSFORMERS

2.5.1 Encapsulated Isolation Transformers

FAA AC 150/5345-47, Type (G) L-830. Provide each transformer with rating as indicated. Insulation Level Primary voltage rating 5000 volts RMS, Secondary 600 V RMS. Operating Temperature range minus 131 degrees F to plus 149 degrees F. Resistant to UV exposure and ozone. Suitable for areas contaminated with oils, aircraft fuels, soil acids, alkalis, and deicing fluids. Compatible with FAA Style 2 and Style 9 connectors.

2.6 MATERIALS AND HARDWARE

2.6.1 Wire and Cable

Use copper conductors installed in conduit. Do not provide or install wire and cable manufactured more than one year before delivery to the job site.

2.6.1.1 Conductor Sizes

Conductor size conforming to American Wire Gage (AWG) or metric trade size. Use stranded conductors for sizes larger #8 AWG. Unless otherwise indicated #8 AWG and smaller may be solid or stranded.

2.6.1.2 Low Voltage Wire and Cable

a. UL 83, Type THWN-2

b. UL 83, Type THWN-2

2.6.1.3 Wire and Cable for Series Lighting Circuits

a. FAA AC 150/5345-7, Type L-824 for crosslinked polyethylene Type C 5000-volt cable. Use unshielded cable for series airfield and

heliport lighting.

2.6.1.4 Safety (Equipment) Grounding System

Safety (Equipment) Grounding System for constant voltage (parallel) circuits: minimum #6 AWG bare stranded copper, annealed or soft drawn.

2.6.1.5 Cable Tags

Install cable tags for each cable or wire at duct entrances entering or leaving manholes, handholes, and at each terminal within the lighting vault, and in all base cans. Use stainless steel, bronze or copper strip cable tags, approximately 1/16 inch thick or hard plastic 1/8 inch thick suitable for immersion in salt water and impervious to petroleum products. Use sufficient material length for imprinting the legend on one line using raised letters. Permanently mark or stamped with letters not less than 1/4 inch in height as indicated. Two-color laminated plastic is acceptable. When providing plastic tags utilize white colored with markings of black color to provide contrast so that identification can be easily read. Use nylon or stainless steel ties must be of a type that will not deteriorate when exposed to water with a high saline content and to petroleum products.

2.6.1.6 Cable Connectors and Splices

FAA AC 150/5345-26, Item Type L-823 for connections and splices appropriate for FAA Type L-824 cable.

2.6.2 Conduit, Conduit Fittings, and Boxes

2.6.2.1 Rigid Metal Conduit (RMC) or Electrical Metallic Tubing (EMT) and Fittings

UL 6 and UL 797.

2.6.2.2 Plastic Duct for Concrete Encasement

Provide as specified in Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION.

2.6.2.3 Plastic Conduit for Direct Burial

Provide as specified in Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION.

2.6.2.4 High Density Polyethylene (HDPE) Electrical Conduit for Directional Bore

Provide as specified in Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION.

2.6.2.5 Frangible Couplings and Adapters

FAA FO 6850.19 and FAA E-2519. Provide upper section of frangible coupling with one of the following:

a. Unthreaded for slip-fitter connections.

b. 2-13/32 inch 16N-1A modified thread for nut and compression ring to

secure 2 inch EMT.

c. 2 inch 11-1/2-N.P.T. (tapered) with 7/32 inch nominal wall thickness to accept rigid conduit coupling.

d. Frangible Couplings for specialized applications as approved.

e. Electrical Metallic Tubing UL 797, where indicated for use with frangible couplings and adapters.

2.6.3 Electrical Tape

Provide as specified in Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION.

2.6.4 Ground Rods

As specified in Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION.

2.6.5 Bolts and Hardware

2.6.5.1 Locking Type Washers

Use locking washers of the two-piece wedge-lock design to prevent damage to the fixture. Do not use split-ring, serrated or star type lock washers.

2.6.5.2 Anti-Seize Compound

Use anti-seize compounds for elevated light fixtures with stainless steel bolts but not for ceramic-metallic/fluorocarbon polymer coated bolts for in-pavement light fixtures. Use as recommended by the fixture manufacturer to provide the required clamping force except as indicated in Part 3 of this specification.

2.6.5.3 Ceramic-Metallic/Fluorocarbon Polymer Coated Bolts

Ceramic-metallic/fluorocarbon polymer coated bolts must be used for in-pavement light fixtures or may be used where recommended by the fixture manufacturer in lieu of using an anti-seize compound.

2.6.5.4 Stainless Steel Bolts for Elevated Fixtures

Use anti-seize lubricating compound.

2.6.6 Manufacturer's Nameplates

Provide on each item of equipment a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

2.6.7 Spare Airfield Lighting Equipment Materials

a. Lamps - Ten percent spare for each type provided on the plans.

b. Isolation Transformers - Ten percent spare for each type provided on the plans.

c. FAA L-823 Connectors - Ten percent spare for each type provided on the plans.

2.7 ACCESSORIES

2.7.1 Special Tools

List of special tools and test equipment required for installation, maintenance of testing of the products supplied by the Contractor. Items to be listed include, but are not limited to, the following:

4-Jack Positioning Jig, used to install the light base to ensure correct orientation and leveling of in-pavement fixtures.

Crimping Tool

Cable Penciler

Elevated Light Level

PART 3 EXECUTION

3.1 LIGHT FIXTURE INSTALLATION REQUIREMENTS

3.1.1 Existing Airfield Lighting Systems

Existing airfield lighting systems for phases that are not under construction must remain in operating condition utilizing temprorary jumpers.

3.1.2 General Installation Requirements

Conform to IEEE C2, NFPA 70, NFPA 70B, and requirements specified herein. Circuits installed underground must conform to the requirements of Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION, except as required herein. Electrical metallic tubing (EMT) must not be installed underground or encased in concrete. Except as covered herein, perform excavation, trenching, and backfilling in accordance with the requirements of Section 31 00 00 EARTHWORK and Section 32 11 23.23 BASE COURSE DRAINAGE LAYERS.

3.1.3 Airfield Light Fixture Installation

Use 2-part locking type washers for the installation of all airfield light fixtures. Tighten bolts to washer manufacturers recommended torque based on bolt type used. Use only adjustable torque limiting tools.

Where stainless steel bolts are used for elevated fixture installation use an anti-seize lubricating compound.

Where ceramic-metallic/fluorocarbon polymer coated bolts are used for in-pavement fixture installation do not use anti-seize lubricating compounds.

3.1.4 Light Base Installation

3.1.4.1 Installation in Cored Pavement

Wipe down the sides and bottom of each light base immediately prior to installation. For bored hole installations cover the inside faces of

bored hole and bottom and sides of light base with a coating of compatible type P-606 sealant that will completely fill the void between concrete and base. Use a jig or holding device when installing each light fixture to ensure positioning to the proper elevation, alignment, level control, and azimuth control. Orient the light fixture with the light beams parallel to the runway or taxiway centerline and facing in the required direction. Outermost edge of fixture must be level with the surrounding pavement. Remove surplus sealant or flexible embedding material. The holding device must remain in place until sealant has reached its initial set. Properly arrange fixture lead wires with respect to their connecting position. Block the wireway entrance into the light recess to retain the sealant material during curing.

3.1.4.2 Installation in Concrete Bed

Where light base can is partially embedded in concrete with jig or holding devices, leave device in place for minimum 24 hours. Let base can set for an additional 48 hours before remaining concrete is placed to the top of the light base.

3.1.5 Frangible Requirements

Install frangible supports, couplings, and adapters as indicated or specified. At the 1000 foot cross bar and beyond, mount approach lights up to 6 feet above concrete foundation on threaded frangible couplings and 2 inch electrical metallic tubing (EMT). For mounting heights greater than 6 feet, mount approach lights on low-impact resistant frangible towers as indicated. The elevation of approach lights must be as indicated on drawings.

3.1.6 Elevated Light Fixtures

Elevated lights must be frangibly mounted, not to exceed 14 inches in height except where higher mounting is permitted in snow accumulation areas. For equipment exceeding 14 inches in height, frangibly mount as indicated. Use a 4-jack positioning jig to install the light base to ensure correct orientation and leveling. The individual setting the jig must fully understand reference marks that are provided by the surveyor. Check azimuth by survey before the concrete anchor is placed and again before paving. Do not place the near light base edge closer than two feet from a planned pavement joint. If conflict occurs, immediately notify the Contracting Officer Representative of the conflict.

3.1.6.1 Elevated Light Level

Level elevated light fixture using manufacturers system required for fixture type.

3.1.7 In-Pavement Airfield and Heliport Lights

Remove water, debris, and other foreign substances prior to installing in-pavement light base and light. Use a 4-jack positioning jig, obtained from the L-868 base manufacturer, to install the light base to ensure correct orientation and leveling. The individual setting the jig must fully understand reference marks that are provided by the surveyor. Check azimuth by survey before the concrete anchor is placed and again before paving. Do not place the near light base edge closer than two feet from a planned pavement joint. If conflict occurs, immediately notify the Contracting Officer Representative of the conflict.

3.1.7.1 In-Pavement Light Installation

For in-pavement installations, pavement around the light base must be level with the surrounding pavement; dished or mounded pavement near the light base is not acceptable.

3.1.8 Light Fixture Installation Tolerances

	IN-PAVEMENT	ELEVATED
ELEVATION (relative to finished pavement surface)	+0 inch, -1/16 inch (fixture edge on low side in snow areas or on high side in non-snow areas)	+1/4 inch, -0 inch
AZMUTH (*) (w/respect to line parallel to RW/TW centerline)	+/- 1/2 degree	+/- 1/2 degree
LEVEL	+/- 1/2 degree	+/- 1/2 degree
STATIONING (in line parallel to RW/TW centerline)	+/- 2 inch	+/- 2 inch
OFFSET (perpendicular to RW/TW centerline)	+/- 1/4 inch	+/- 1/4 inch

(*)For omni-directional fixtures the Azimuth does not apply.

3.1.9 Isolation Transformers

Conform to FAA AC 150/5345-26 for transformer lead connections. Plug transformer secondary connectors directly into a mating connector on the transformer secondary leads. During installation, cover mating surfaces of connectors until connected and clean when plugged together. At joint where connectors come together, install heat shrinkable tubing with waterproof sealant or with two half-lapped layers of tape over the entire joint. Joint must prevent entrapment of air which might subsequently loosen the joint.

3.2 CABLES

3.2.1 Cable Installation

In addition to the requirements of Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION, use kit type connectors to splice 5 kV single-conductor series lighting cables. During installation, keep mating surfaces of connectors covered until connected and clean when plugged together. At joint where connectors come together, install heat shrinkable tubing with waterproof sealant. Joint must prevent entrapment of air which might subsequently loosen the joint.

3.2.2 Low Voltage Cables

For splices in wires #8 AWG single conductor cable, use FAA AC 150/5345-26 Type L-823 connectors Splices below grade or in wet locations must be sealed type conforming to NEMA C119.1 or must be waterproofed by a sealant-filled, thick wall, heat shrinkable, thermosetting tubing or by pouring a thermosetting resin into a mold that surrounds the joined conductors.

Cable must be rated 600 volts, except that secondaries of isolation transformer to in-pavement lights installed in pavement saw kerf and 48 volt DC control cables may be 300 volts. Other parts of cable systems such as splices and terminations must be rated at not less than 600 volts. Splices in wires #10 AWG and smaller must be made with an insulated, solderless, pressure type connector, conforming to the applicable requirements of UL 486A-486B. Splices in wires #8 AWG single conductor cable must be made with FAA AC 150/5345-26 Type L-823 connectors Splices below grade or in wet locations must be sealed type conforming to NEMA C119.1 or must be waterproofed by a sealant-filled, thick wall, heat shrinkable, thermosetting tubing or by pouring a thermosetting resin into a mold that surrounds the joined conductors.

3.2.3 Airfield 5kV Series Lighting Cables

3.2.3.1 Connectors

Use kit type connectors to splice 5 kV single-conductor series lighting cables. During installation and prior to covering with earth, cover mating surfaces of connectors until connected and clean when plugged together. At joint where connectors come together, install heat shrinkable tubing with waterproof sealant with two half-lapped layers of tape over the entire joint. Joint must prevent entrapment of air which might subsequently loosen the joint.

3.2.3.2 Crimping Tool

Use only splice kit manufacturer's crimping tool on splice connectors for all primary and secondary airfield cable splices. Crimping tool must have an embossed die with gauge marks for gauge of cable being used.

3.2.3.3 Cable Penciler

Airfield cable insulation must only be removed using cabling penciler made specifically for airfield cable.

3.2.4 Cable Markers

Provide cable markers or tags for each cable at duct entrances entering or leaving manholes or handholes and at each termination within the lighting vault. Provide not less than two tags per cable in in each manhole or handhole, one near each duct entrance hole. Immediately after cable installation, permanently attached tags to cables and wires so that they cannot be accidentally detached.

3.2.5 Maximum Allowable Non-Armored Cable Pulling Tension, Using Dynamometer

Cable	Tension LB
2 - 1/C #8 solid	275
3 - 1/C #8 solid	367
4 - 1/C #8 solid	550
2 - 1/C #6 stranded	420
3 - 1/C #6 stranded	630
4 - 1/C #6 stranded	840
1 - 2/C #8 stranded	305
1 - 3/C #8 stranded	395
1 - 4/C #8 stranded	585
1 - 2/C #6 stranded	455
1 - 3/C #6 stranded	685
1 - 4/C #6 stranded	880
1 - 6/C #12 stranded	315
1 - 12/C #12 stranded	630
1 - 12 pair #19 solid	230
1 - 25 pair #19 solid	541
1 - 50 pair #19 solid	1061
1 - 100 pair #19 solid	2000 909

3.3 COUNTERPOISE

Install counterpoise above multiple conduits/duct banks for airfield lighting cables, with the intent being to provide a complete cone of protection over the airfield lighting cables. When multiple conduits and/or duct banks for airfield cable are installed in the same trench, the number and location of counterpoise conductors above the conduits must be adequate to provide a cone of protection measured 22 1/2 degrees each side of vertical. Install one continuous length of conductor, except where distance exceeds the length usually supplied. Install the counterpoise approximately 6 inches above single duct lines that are not adjacent to pavement. Where trenches or duct lines intersect, electrically interconnect the counterpoise wires. Connect the counterpoise conductor to a ground rod at every 2,000feet of cable run, at lighting vault(s) (but not to vault equipment), and at feeder connection to light circuit(s). Install the counterpoise conductor in a separate duct under roads, railroads and paved areas, above the highest duct containing electrical or communications circuits.

For in-pavement light fixtures, connect the counterpoise to the exterior one-hole ground lug on fixture bases installed in pavement subject to routine aircraft traffic (runway touchdown zone lights, runway centerline lights, runway guard lights and taxiway centerline lights). Where fixture bases are installed in pavement not subject to routine aircraft traffic (runway and taxiway edge lights) do not connect the counterpoise to fixture bases. In such cases, install the counterpoise at a location half way between the fixture line and the defined runway or taxiway edge. Use

exothermic welding for all counterpoise connections. Provide counterpoise ground rods at maximum 2,000 foot spacing.

Amendment 0003
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3.4 SAFETY (EQUIPMENT) GROUNDING SYSTEM

The purpose of the safety ground is to protect personnel from possible contact with an energized light base that may result from a shorted power cable or isolation transformer. Install and connect a #6 AWG conductor by one of the following methods from base to a ground rod

a. Connect each fixture base to a dedicated ground rod located outside the base on the side opposite the counterpoise.

b. Bond a group of adjacent fixture bases to a common safety ground conductor ***connected to a ground rod. Use this method only where the bases in the group are spaced 5 feet or less apart. Fixture bases spaced more than 5 feet from the nearest adjacent base are considered isolated. Provide each isolated base with a dedicated ground rod in accordance with method a.***.

Connect the safety ground conductor to ground rods by exothermic welding and bolted connections. A safety ground is not required for in-pavement fixture bases where a counterpoise is connected to the exterior ground lug. In all cases connect the light fixture, whether in-pavement or elevated, to the base interior ground lug by means of a braided ground strap specified in paragraph "Light Bases".

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Amendment 0003

3.5 DUCT LINES

Duct lines as required in Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION and as indicated. Ducts must be installed in trench for 24 hours before trench is backfilled to allow ducts to reach final ground temperature.

3.6 APPLICATION

3.6.1 Exothermic Welding

Utilize only personnel who are experienced in and regularly engaged in this type of work to make these connections. Prior to any installations in the field, provide documentation that the welding kits, materials and procedures to be used for welded connections are satisfactory. Comply with the manufacturer's recommendations and the following:

a. Remove all slag from welds.

b. The light fixture base cans should be provided with internal and external one-hole ground lugs that are coated with hot dipped galvanizing, the same as the rest of the base cans. The external ground lug should be bolted to a separate ground lug that is exothermically welded to a #6 AWG solid bare copper grounding cable. That is connected to a ground rod for Air Force or Army projects or

the counterpoise for Navy projects.

c. All direct buried welds must be thoroughly coated 6 mil of 3M "Scotchkote", or approved equivalent, or coated with coal tar bitumastic material to prevent surface exposure to corrosive soil or moisture.

3.6.2 Field Fabricated Nameplate Mounting

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

3.6.3 Equipment for Silicone Sealant

Equipment for silicone sealant must be air-powered pump, components, and hoses as recommended by the sealant manufacturer. Hoses and seals must be lined to prevent moisture penetration and withstand pumping pressures. Equipment must be free of contamination from previously used other type sealant.

3.6.4 Concrete

Concrete used in underground structures, such as manholes, handholes, pull boxes and foundations must have minimum 28-day strength of 4000 psi. Similar structures in areas where freeze/thaw conditions are common, must have minimum 28-day strength of 4500 psi. Concrete used for non-structural items, such as equipment pads, must have minimum 28-day strength of 2000 psi.

3.6.5 Grounding

Ground non-current carrying metallic parts associated with electrical equipment as specified in Section 33 71 02 UNDERGROUND ELECTRICAL DISTRIBUTION.

3.7 FIELD QUALITY CONTROL

Notify the Contracting Officer five working days prior to each test. Correct all deficiencies and repeat tests. Field test reports must be written, signed and provided as each circuit or installation item is completed. Include resistance-to-ground and resistance between conductors field tests, and continuity measurements for each circuit. For each series circuit measure the input voltage and output current of the constant current regulator at each intensity. For multiple circuits measure the input and output voltage of the transformer for each intensity setting. Provide report documenting the visual inspection of the installed fixtures or units.

3.7.1 Visual Inspection

Inspection reports must be prepared and provided as each stage of installation is completed. Identify the activity by contract number, location, quantity of material placed, and compliance with requirements.

3.7.2 Operating Test

Upon completion of tests, show by demonstration in service that circuits, control equipment, and lights covered by the contract are in good

operating condition. Operate each switch in the control tower lighting panels so that each switch position is engaged at least twice. During this process, observe lights and associated equipment to determine that each switch controls properly corresponding circuit. Provide telephone or radio communication between the operator and the observers. Repeat tests from the alternate control station, from the remote control points, and again from the local control switches on the regulators. Test each lighting circuit by operating the lamps at maximum brightness for not less than 30 minutes. Visually examine at the beginning and at the end of this test to ensure that the correct number of lights are burning at full brightness. Conduct one day and one night operating test for the Contracting Officer.

Provide performance test reports, upon completion and testing of the installed system, in booklet form showing all field tests performed to adjust each component and all field tests performed to provide compliance with the specified performance criteria. For each test, indicate the final position of controls.

3.7.3 Distribution Conductors, 600-Volt Class

Using an instrument which applies a voltage of approximately 500 volts providing a direct reading in resistance, performing testing to verify that no short circuits or accidental grounds exist.

3.7.4 Counterpoise System Test and Inspection

At accessible locations, visually inspect counterpoise system to ensure continuity of counterpoise system. Test continuity of counterpoise system to the vault grounding system in manhole closest to the vault.

3.7.5 Progress Testing for Series Lighting Circuits

Conduct a megger test on each section of circuit or progressive combinations of sections as they are installed. Test each section or progressive combination of sections with a megohmmeter providing a voltage of approximately 1000 volts, a direct reading in resistance. Document all results. Eliminate faults found by these tests, and re-test before proceeding with the circuit installation.

3.7.6 Electrical Acceptance Tests

Perform acceptance tests for series and multiple airfield and heliport lighting circuits only on complete lighting circuits. Each series and multiple lighting circuit must receive a high voltage insulation test. Check that cable insulation resistance to ground is not less than 50 megohms per FAA-C-1391, Installation and Splicing of Underground Cable.

3.7.7 Low-Voltage Continuity Tests

Test each series circuit for electrical continuity. Eliminate faults indicated by this test and perform retest before proceeding with the high-voltage insulation resistance test.

3.7.8 High-Voltage Insulation Resistance Tests

Subject each series lighting circuit to a high-voltage insulation resistance test by measurement of the insulation leakage current with a suitable high-voltage test instrument which has a steady, filtered direct

current output voltage and limited current. High-voltage tester must include an accurate voltmeter and microammeter for reading voltage applied to the circuit and resultant insulation leakage current. Do not exceed voltage test values specified below.

a. Test Procedure: Disconnect both leads from regulator output terminals and support so that air gaps of at least 3 inches or as defined by FAA AC 150/5345-7 Table 1 exists between bare conductors and ground. Clean and dry cable sheaths for a distance of 1 feet from ends of cables and exposed insulation at ends of cables. Connect ends of both conductors of the circuit together and to high-voltage terminals of test equipment, and test voltage applied as specified in the following tabulation between conductors and ground for a period of 5 minutes.

Test Voltage, DC		
	First Test on New Circuits	Test on Existing Circuits
High Intensity Series Lighting Circuits (5,000 volt leads, 500 and 200 watt transformers)	9000	5000
Medium Intensity Series Lighting Circuits (5,000 volt leads, 30/45 watt transformers)	6000	3000
600-Volt Circuits	900	600

When additions are made to existing circuits, test only new sections in accordance with "First Test on New Circuits" in table above. To ensure reliable operation, test complete circuit at reduced voltages indicated above.

b. Leakage Current: Measure and record insulation leakage current for each circuit after a 1 minute application of the test voltage. If leakage current exceeds values specified below, sectionalize the circuit and retest, and repair or replace defective parts. Leakage current limits include allowances for the normal number of connectors and splices for each circuit as follows:

1. Three microamperes for each 1000 feet of cable.

2. Two microamperes for each isolation transformer.

3. If measured value of insulation leakage current exceeds calculated value, sectionalize the circuit and test as specified for each section. Repair or replace defective components until repeated tests indicate an acceptable value of leakage current for the entire circuit.

c. Resistance Values versus Cable Length

An alternate test procedure for circuit validation is to use a

megohmeter. Use 5000V test for new circuits and 3000V test for existing circuits. If the minimum resistance values are not achieved then use the leakage current test indicated above.

Circuit Length in Feet Meters	Minimum Resistance to Ground (Megohms)
10,000	50
10,000-20,000	40
>20,000	30

3.8 CLOSEOUT ACTIVITIES

3.8.1 Demonstration

After completion of installations and the above tests, circuits, control equipment, and lights covered by the contract must be demonstrated to be in acceptable operating condition. Each switch in the control tower lighting panels must be operated so that each switch position is engaged at least twice. During this process, lights and associated equipment must be observed to determine that each switch properly controls the corresponding circuit. Telephone or radio communication must be provided between the operator and the observer. Tests must be repeated from the alternate control station, from the remote control points, and again from the local control switches on the regulators. Each lighting circuit must be tested by operating the lamps at maximum brightness for not less than 30 minutes. At the beginning and at the end of this test the correct number of lights must be observed to be burning at full brightness. One day and one night operating test must be conducted for the Contracting Officer.

3.8.2 Training

Submit requirements of training four weeks before training is scheduled to begin. Submit information describing training to be provided, training aids to be used, samples of training materials, and schedules; instructions necessary to checkout, troubleshoot, repair, and replace components of the systems, including integrated electrical and mechanical schematics and diagrams and diagnostic techniques necessary to enable operation and troubleshooting after acceptance of the system.

a. Provide training on the proper operation and maintenance procedures for the system. Submit a list of special tools and test equipment required for maintenance and testing of the products supplied by the Contractor.

b. Submit one copy of operation for the equipment furnished. One complete set must be furnished prior to performance testing and the remainder must be furnished upon acceptance. Operating manuals must detail the step-by-step procedures required for system startup, operation, and shutdown. Operating manuals must include the manufacturer's name, model number, parts list, and brief description of all equipment and their basic operating features.

c. Submit one copy of maintenance manuals listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guides. Maintenance manuals must include conduit and equipment layout and simplified wiring and control diagrams of the system as installed.

3.8.3 As-Built Drawings

Submit as-built drawings that provide current factual information including deviations from, and amendments to the drawings and changes in the work, concealed and visible, as instructed. The as-built drawings must show installations with respect to fixed installations not associated with the systems specified herein. Cable and wire must be accurately identified as to direct-burial or in conduit and must locate the connection and routing to and away from bases, housings, and boxes.

3.8.4 Posted Instructions

Submit a typed copy of the proposed posted instructions showing wiring, control diagrams, complete layout and operating instructions explaining preventive maintenance procedures, methods of checking the system for normal safe operation, and procedures for safely starting and stopping the system.

3.9 MAINTENANCE

3.9.1 List of Parts

A list of parts and components for the system by manufacturer's name, part number, nomenclature, and stock level required for maintenance and repair necessary to ensure continued operation with minimal delays.

3.9.2 Maintenance and Repair Instructions

Instructions necessary to check out, troubleshoot, repair, and replace components of the systems, as specified.

3.9.3 Posted Operations and Maintenance Instructions

Submit proposed diagrams, instructions, and other sheets prior to posting.

3.10 SCHEDULES

Refer to Section 01 35 13 SPECIAL PROJECT PROCEDURES for construction outage plan requirements.

-- End of Section --

SECTION 32 12 15.13

ASPHALT PAVING FOR AIRFIELDS
11/20, CHG 1: 05/22

PART 1 GENERAL

1.1 PERCENT PAYMENT

When a pavement lot of material fails to meet the specification requirements for 100 percent pay as outlined in the following paragraphs, remove and replace the lot, or accept at a reduced price which will be computed by multiplying the unit price per ton by the lot's pay factor. The lot pay factor is determined by taking the lowest computed pay factor based on either laboratory air voids, in-place density, grade or smoothness (each discussed below). At the end of the project, an average of all lot pay factors will be calculated. If this average lot pay factor exceeds 95.0 percent and no individual lot has a pay factor less than 75.0 percent, then the percent payment for the entire project will be 100 percent of the unit bid price. If the average lot pay factor is less than 95.0 percent, then each lot will be paid for at the unit price multiplied by the lot's pay factor. For any lots which are less than 2000 tons, a weighted lot pay factor will be used to calculate the average lot pay factor. When work on a lot is required to be terminated before all sublots are completed, the results from the completed sublots will be analyzed to determine the percent payment for the lot following the same procedures and requirements for full lots but with fewer test results.

1.1.1 Mat and Joint Densities

The average in-place mat and joint densities are expressed as a percentage of the average theoretical maximum density (TMD) for the lot. The average TMD for each lot will be determined as the average TMD of the four random samples per lot. The average in-place mat density and joint density for a lot are determined and compared with Table 1 to calculate a single pay factor per lot based on in-place density, as described below. All density results for a lot will be completed and reported within 24 hours after the construction of that lot. Use the following process to determine the single pay factor for in-place density:

a. Step 1: Determine the pay factors for mat density and joint density using Table 1.

b. Step 2: Determine ratio of joint area to mat area. The area associated with the joint is considered to be 10 feet wide times the length of completed longitudinal construction joint in the lot. This joint area will not exceed the total lot size. The length of joint to be considered will be that length where a new lane has been placed against an adjacent lane of asphalt pavement, either any cold joint against another lot or any other existing asphalt paved previously. The area associated with the joint is expressed as a percentage of the total lot.

c. Step 3: Compute the weighted pay factor for the joint using the formula in the example shown in paragraph PAY FACTOR BASED ON IN-PLACE DENSITY.

d. Step 4: Where freshly placed asphalt pavement abuts old (not in

contract) asphalt pavement, determine density at the tie-in longitudinal joint by taking one core per sublot at a random location for each lot of material placed adjacent to the joint. If Step 4 is not applicable, move to Step 5. The size of joint area is 10 feet wide by the length of the joint being paved. Locate the center of each of the four cores 6 inches from the edge of the existing pavement. Take each core at a random location along the length of the joint. The requirements for joint density for this lot, adjacent to the existing asphalt joint, are the same as that for the mat density specified in Table 1. For the interface of new asphalt pavement abutting existing asphalt (not in contract) joints at taxiways abutting runways, aprons, or other taxiways, take two additional randomly located cores along each taxiway intersection.

e. Step 5: Compare weighted pay factor for joint density to pay factor for mat density and select the lowest. This selected pay factor is the pay factor based on density for the lot. When the TMD on both sides of a longitudinal joint is different, the average of these two TMD values will be used as the TMD needed to calculate the percent joint density.

When 0 percent payment is determined for mat density, remove and replace the rejected lot at least 4 inches into the cold lane adjacent to the longitudinal joint. Evaluate this as a new lot per paragraph MAT AND JOINT DENSITIES.

When 0 percent payment is determined for joint density, remove and replace the rejected longitudinal joint with a 10 feet wide paving lane that is centered over the joint. This 10 feet wide placement will be evaluated as a new lot. When removing and replacing a joint that fails to meet the project requirements, the result will be two additional longitudinal joints. Determine a pay factor for these longitudinal joints by randomly selecting two cores per lot centered on the joint each side of the lot. This will result in four total cores for joint density evaluation. Take the average of the joint density of the four cores to develop a pay factor for joint density determination. Average the new lot TMD values with the adjacent lot TMD values to determine a final average for joint density evaluation. In this case do not use a weighted pay factor. Evaluate the mat density for this lot per paragraph MAT AND JOINT DENSITIES.

Table 1

Pay Factor Based on In-place Density

Average Mat Density (4 cores) (Percent of TMD)	Pay Factor, percent	Average Joint Density (4 cores)(Percent of TMD)
94.0 - 96.0	100.0	Above 92.5
93.9	100.0	92.4
93.8 or 96.1	99.9	92.3
93.7	99.8	92.2
93.6 or 96.2	99.6	92.1
93.5	99.4	92.0
93.4 or 96.3	99.1	91.9
93.3	98.7	91.8

Table 1		
Pay Factor Based on In-place Density		
Average Mat Density (4 cores) (Percent of TMD)	Pay Factor, percent	Average Joint Density (4 cores)(Percent of TMD)
93.2 or 96.4	98.3	91.7
93.1	97.8	91.6
93.0 or 96.5	97.3	91.5
92.9	96.3	91.4
92.8 or 96.6	94.1	91.3
92.7	92.2	91.2
92.6 or 96.7	90.3	91.1
92.5	87.9	91.0
92.4 or 96.8	85.7	90.9
92.3	83.3	90.8
92.2 or 96.9	80.6	90.7
92.1	78.0	90.6
92.0 or 97.0	75.0	90.5
below 92.0, above 97.0	0.0 (reject)	below 90.5

1.1.2 Pay Factor Based on In-place Density

An example of the computation of a pay factor (in I-P units only) based on in-place density, is as follows: Assume the following test results for field density made on the lot: (1) Average mat density = 93.2 percent (of lab TMD). (2) Average joint density = 91.5 percent (of lab TMD). (3) Total area of lot = 30,000 square feet. (4) Length of completed longitudinal construction joint = 2,000 feet.

a. Step 1: Determine pay factor based on mat density and on joint density, using Table 1:

(1) Mat density of 93.2 percent = 98.3 pay factor.

(2) Joint density of 91.5 percent = 97.3 pay factor.

b. Step 2: Determine ratio of joint area (length of longitudinal joint x 10 feet) to mat area (total paved area in the lot): Multiply the length of completed longitudinal construction joint by the specified 10 feet width and divide by the mat area (total paved area in the lot).

(1) ,000 feet x 10 feet)/30000 square feet = 0.6667 ratio of joint area to mat area (ratio).

c. Step 3: Weighted pay factor (wpf) for joint is determined as indicated below:

(1) wpf = joint pay factor + (100 - joint pay factor) (1 - ratio) wpf = 97.3 + (100-97.3) (1-0.6667) = 98.2 percent

d. Step 4: Compare weighted pay factor for joint density to pay factor for mat density and select the smaller:

(1) Pay factor for mat density: 98.3 percent. Weighted pay factor for joint density: 98.2 percent

(2) Select the smaller of the two values as pay factor based on density: 98.2 percent

1.1.3 Payment Adjustment for Smoothness (Final Wearing Surface Only)

1.1.3.1 Longitudinal Smoothness

Evaluate smoothness per paragraph PROFILOGRAPH TESTING. Determine the pay factor for longitudinal smoothness by entering Table 2.

Table 2

Pay Factor for Smoothness

Profile Index of a 0.1 mile segment of a lot exceeds the tolerance specified in paragraph SURFACE SMOOTHNESS by:	Pay Factor, Percent
0.0 inch per mile	100.0
greater than 0.0 inch per mile but less than 1.0 inches per mile	95.0
1.0 inches per mile but less than	90.0
2.0 inches per mile but less than 3.0 inches per mile	75.0
3.0 inches per mile or greater	Remove and Replace

1.1.4 Laboratory Air Voids and Theoretical Maximum Density

Laboratory air voids will be calculated in accordance with ASTM D3203/D3203M by determining the density of each lab compacted specimen using the laboratory-prepared, thoroughly dry method in ASTM D2726/D2726M and determining the theoretical maximum density (TMD) of four of the sublots using ASTM D2041/D2041M. Laboratory air void calculations for each lot will use the average TMD values obtained for the lot. The mean absolute deviation of the four laboratory air void contents (one from each sublot) from the JMF air void content will be evaluated and a pay factor determined from Table 3. All laboratory air void tests will be completed and reported within 24 hours after completion of construction of each lot. The TMD is also used for computation of in-place density, as required in paragraph MAT AND JOINT DENSITIES above.

1.1.4.1 Mean Absolute Deviation

An example of the computation of mean absolute deviation for laboratory air voids is as follows: Assume that the laboratory air voids are determined from 4 random samples of a lot (where 3 specimens were compacted from each sample). The average laboratory air voids for each sublot sample are determined to be 3.5, 3.0, 4.0, and 3.7. Assume that the target air voids from the JMF is 4.0. The mean absolute deviation is then:

Mean Absolute Deviation = (|3.5 - 4.0| + |3.0 - 4.0| + |4.0 - 4.0| + |3.7 - 4.0|)/4

= (0.5 + 1.0 + 0.0 + 0.3)/4 = (1.8)/4 = 0.45

The mean absolute deviation for laboratory air voids is determined to be 0.45. It can be seen from Table 3 that the lot's pay factor based on laboratory air voids, is 100 percent.

Table 3

Pay Factor Based on Laboratory Air Voids

Mean Absolute Deviation of Lab Air Voids from JMF	Pay Factor, Percent
O.60 or less	100
0.61 - 0.80	98
0.81 - 1.00	95
1.01 - 1.20	90
Above 1.20	reject (0)

1.1.5 Pay Factor Based on Plan Grade

Evaluate plan grade per paragraph PLAN GRADE. Use Table 4 for determining Pay Factor for Plan Grade. Evaluate plan grade on a lot basis.

Table 4

Pay Factor for Plan Grade

Percent of All Measurements Outside Tolerance	Pay Factor, percent
Less than 5	100
Greater than or equal to 5 but less than 10	90
Greater than or equal to 10 but less than 15	75
Greater than or equal to 15	Remove and replace the surface lift

1.2 REFERENCES

The publications listed below form a part of this specification to the

extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 156	(2013; R 2017) Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures
AASHTO T 329	(2015) Standard Test Method for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method

ASPHALT INSTITUTE (AI)

AI MS-2	(2015) Asphalt Mix Design Methods

ASTM INTERNATIONAL (ASTM)

ASTM C29/C29M	(2023) Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C88	(2018) Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	(2023) Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C127	(2024) Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C128	(2022) Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
ASTM C131/C131M	(2020) Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136/C136M	(2019) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C142/C142M	(2017; R 2023) Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C566	(2013) Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM C1252	(2017) Standard Test Methods for Uncompacted Void Content of Fine Aggregate

	(as Influenced by Particle Shape, Surface Texture, and Grading)
ASTM D75/D75M	(2019) Standard Practice for Sampling Aggregates
ASTM D140/D140M	(2016) Standard Practice for Sampling Asphalt Materials
ASTM D242/D242M	(2009; R 2014) Mineral Filler for Bituminous Paving Mixtures
ASTM D979/D979M	(2015) Sampling Bituminous Paving Mixtures
ASTM D2041/D2041M	(2011) Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D2172/D2172M	(2017; E 2018) Standard Test Methods for Quantitative Extraction of Asphalt Binder from Asphalt Mixtures
ASTM D2419	(2014) Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2489/D2489M	(2016) Standard Test Method for Estimating Degree of Particle Coating of Asphalt Mixtures
ASTM D2726/D2726M	(2019) Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
ASTM D3203/D3203M	(2017) Standard Test Method for Percent Air Voids in Compacted Asphalt Mixtures
ASTM D3665	(2012; R 2017) Standard Practice for Random Sampling of Construction Materials
ASTM D3666	(2016) Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
ASTM D4125/D4125M	(2010) Asphalt Content of Bituminous Mixtures by the Nuclear Method
ASTM D4791	(2019) Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D4867/D4867M	(2009; R 2014) Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D5361/D5361M	(2016) Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing
ASTM D5444	(2015) Mechanical Size Analysis of

	Extracted Aggregate
ASTM D5821	(2013; R 2017) Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6307	(2019) Standard Test Method for Asphalt Content of Asphalt Mixture by Ignition Method
ASTM D6373	(2023) Standard Specification for Performance Graded Asphalt Binder
ASTM D6925	(2014) Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Equipment; G, RO

SD-02 Shop Drawings

Placement Plan; G, RO

SD-03 Product Data

Diamond Grinding Plan; G, RO

Mix Design; G, RO

Contractor Quality Control; G, RO

SD-04 Samples

Aggregates

Asphalt Binder

SD-06 Test Reports

Aggregates; G, RO

QC Monitoring

Pavement Lots; G, RO

SD-07 Certificates

Asphalt Binder; G, RO

Testing Laboratory

Airfield Asphalt Pavement QC Manager

Airfield Asphalt Pavement Inspector

Airfield Asphalt Pavement Laboratory Technician

1.4 CONTRACTOR QUALITY CONTROL STAFF

Reference Section 01 45 00QUALITY CONTROL for Contractor personnel qualification requirements along with the information included below. Submit certifications for Contractor Quality Control Staff in the following areas:

a. Airfield Asphalt Pavement QC Manager(1): The QC manager will oversee all QC testing and inspection, review asphalt pavement transmittals prior to submission to the Government, be responsible for making mix design adjustments, and in charge of all other activities related to performance. The QC manager will also ensure that daily reports and necessary transmittals arrive for Government review as specified.

b. Airfield Asphalt Pavement Inspector(1): The Inspector will be available on the project during all paving operations. The Inspector is responsible for identifying observed paving issues and ensuring these issues are addressed by the Contractor Quality Control staff.

c. Airfield Asphalt Pavement Laboratory Technician(1): The Technician will be responsible for conducting laboratory tests. The Airfield Asphalt Pavement Technician will be present in the laboratory anytime laboratory testing is underway.

(1): Registration for the Airfield Asphalt Pavement Certification Program can be found at www.airfieldasphaltcert.com.

1.5 ACCEPTANCE

1.5.1 Acceptability of Work

Acquire the services of an independent commercial laboratory to perform acceptance testing. Acceptance of the plant produced mix and in-place requirements will be on a lot to lot basis. The materials and the pavement itself will be accepted on the basis of production testing. The Government may make check tests from split samples to validate the results of the production testing. Testing performed by the Government does not reduce the required testing of the independent commercial laboratory. Split samples will be taken for Government testing to reduce the variability between the independent commercial laboratory and the Government's test results. When the difference between the independent commercial laboratory and the Government's test results for split samples exceed the acceptable range of two results for multi-laboratory precision for the appropriate test method (i.e. ASTM) then at least one of the laboratories is determined to be in error. An evaluation of procedures and equipment in both laboratories will be made to determine the cause(s) for the differences. Develop steps to correct procedures and equipment to bring multi-laboratory precision to within acceptable limits.

1.5.2 Acceptance Requirements

Provide all sampling and testing required for acceptance and payment adjustment. Where appropriate, adjustments in payment for individual lots of asphalt pavement will be made based on laboratory air voids, in-place density, smoothness, and grade in accordance with the following paragraphs. Surface smoothness and grade determinations will be made on the lot as a whole. Exceptions or adjustments to this will be made in situations where the mix within one lot is placed as part of both the intermediate and surface courses, thus smoothness and grade measurements for the entire lot cannot be made.

1.5.3 Pavement Lots

A standard lot for all requirements is equal to one day's production or 2,000 tons, whichever is smaller. Divide each lot into four equal sublots in order to evaluate laboratory air voids and in-place density. When operational conditions cause a lot to be terminated before the specified four sublots have been completed, use the following procedure to adjust the lot size and number of tests for the lot. Where three sublots have been completed, they constitute a lot. Where one or two sublots have been completed, incorporate them into the next lot and the total number of sublots (i.e. 5 or 6 sublots) is used for acceptance criteria. Maintain 4 sublots when possible. Include partial lots at the end of asphalt production into the previous lot. When more than one plant is simultaneously producing asphalt for the project, apply the lot size separately for each plant. Complete and report all asphalt testing including but not limited to aggregate gradation, asphalt content, theoretical maximum density, laboratory air voids, and in-place density testing within 24 hours, unless otherwise stated, after construction of each lot.

1.5.4 Sublot Sampling

Obtain one random mixture sample from each sublot in accordance with ASTM D979/D979M from a loaded truck or another approved location for determining laboratory air voids, theoretical maximum density, Contractor Quality Control, and for any additional testing as directed the Government. Representative samples will be selected from random trucks, using commonly recognized methods of assuring randomness conforming to ASTM D3665 and employing tables of random numbers or computer programs. Laboratory air voids will be determined from three laboratory compacted specimens of each sublot sample in accordance with ASTM D3203/D3203M. The specimens will be compacted within 2 hours of the time the mixture was loaded into trucks at the asphalt plant. Samples will not be reheated prior to compaction and insulated containers will be used as necessary to maintain the temperature.

1.5.5 Additional Sampling and Testing

The Government reserves the right to direct additional samples and tests for any area which appears to deviate from the specification requirements. The cost of any additional testing will be paid for by the Contractor. Testing in these areas will be treated as a separate lot. Payment will be made for the quantity of asphalt pavement represented by these tests in accordance with the provisions of this section.

1.5.6 Theoretical Maximum Density (TMD)

Measure theoretical maximum density one time for each sublot in accordance with ASTM D2041/D2041M for purposes of calculating laboratory air voids and determining in-place density. The average TMD for each lot will be determined as the average TMD of the random sublot samples. When the TMD on both sides of a longitudinal joint is different, the average of these two TMD values will be used as the TMD needed to calculate the percent joint density.

1.5.7 Laboratory Air Voids

Prepare one set of laboratory compacted specimens for each sublot in accordance with ASTM D6925 using the Superpave gyratory compactor. Provide three test specimens prepared from the same sample for each set of laboratory compacted specimens. Compact the specimens within 2 hours of the time the mixture was loaded into trucks at the asphalt plant. Do not reheat samples prior to compaction. Provide insulated containers as necessary to maintain the sample temperature. Measure the bulk density of laboratory compacted specimens in accordance with ASTM D2726/D2726M. Determine laboratory air voids from one set (three laboratory compacted specimens) for each sublot sample in accordance with ASTM D3203/D3203M.

1.5.8 In-place Density

Obtain one random 6 inch diameter core from the mat and joint of each sublot in accordance with ASTM D5361/D5361M for determining in-place density. Where different job mix formulas are required as part of the same project, and are adjacent to one another, follow the same joint density sampling and joint density testing instructions of this specification. Cut samples neatly with a diamond core drill bit. Obtain random cores that are the full thickness of the layer being placed. Select core locations randomly using the procedures contained in ASTM D3665. Locate cores for mat density no closer than 12 inches from a transverse or longitudinal joint. Center all cores for joint density on the joint. Discard samples that are clearly defective as a result of sampling and take an additional random core. When the random core is less than 1 inch thick, it will not be included in the analysis. In this case, obtain another random core sample. Clean and tack coat dry core holes before filling with asphalt mixture. Fill all core holes with asphalt mixture and compact using a manual (hand-held) Marshall hammer to the density specified. Provide all tools, labor, and materials for cutting samples, cleaning, and filling the cored pavement. Measure in-place density in accordance with ASTM D2726/D2726M using each core obtained from the mat and joint.

1.5.9 Surface Smoothness

After the final rolling, but not later than 24 hours after placement, test the surface of the pavement in each entire lot by use of a straightedge and/or profilograph to reveal surface irregularities exceeding the tolerances specified. Straightedge is used for all lifts. Use the profilograph method for testing longitudinal smoothness on surface lifts only, except for paving lanes less than 0.10 miles, and at the ends of the paving limits for the project. Use straightedge method for all other measurements. If any pavement areas are diamond ground, retest these areas immediately after diamond grinding and submit results to the Government for evaluation. At a minimum, provide enough information to determine exact location of grinding (station and offset from centerline), smoothness results, and the associated lot(s) pay factor for smoothness.

Follow requirements of paragraph DIAMOND GRINDING if diamond grinding is required to correct smoothness. Where drawings show required deviations from a plane surface (for instance crowns, drainage inlets), finish the surface to meet the approval of the Government.

1.5.9.1 Straightedge Testing

Provide finished surfaces of the pavements within the tolerances specified in Table 5 when checked with an approved 12 foot straightedge. Start longitudinal and transverse straightedge testing with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurements. Perform continuous tests across all joints. Determine the amount of surface irregularity by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between these two high points. Use the straightedge to also measure abrupt changes in surface smoothness. Abrupt changes in the surface can be visually observed where the surface exhibits irregularities or discontinuities. Surface areas with obvious smoothness defects will be tested with the straightedge to determine the limits of the surface not meeting the tolerance requirements in Table 5. Do not perform straightedge measurements across grade changes or cross slope transitions.

Perform transverse measurements perpendicular to centerline every 25 feet or more often as determined by the Government. After two full lots have been placed with an average of less than five percent of measurements out, a request can be made to reduce the testing frequency at a rate approved by the Government. Report all individual straightedge measurements coinciding with project stationing in each paving lot report.

Table 5

Straightedge Surface Smoothness

Pavement Category	Direction of Testing	Tolerance, inch
Runways, taxiways, and landing zones	Longitudinal	1/8
	Transverse	1/4
Shoulders (outside edge stripe)	Longitudinal	1/4
	Transverse	1/4
Calibration hardstands and compass swinging bases	Longitudinal	1/8
	Transverse	1/8
All other airfield pavements (including overruns) and helicopter paved areas	Longitudinal	1/4
	Transverse	1/4

1.5.10 Plan Grade

Within 5 working days after completion of a particular lot incorporating the final wearing course, test the lot for conformance with specified plan grade requirements. Provide a final wearing surface of pavement conforming to the elevations and cross sections and not vary more than 0.03 foot for runways and landing zones or 0.05 foot for taxiways, aprons and shoulders. Deviation from the plan elevations will not be permitted in areas of pavements where closer conformance with planned elevation is required for the proper functioning of drainage and other appurtenant structures involved. The grade will be determined by running lines of levels at intervals of 50 feet, or less, longitudinally that coincides with the project spot elevations and lateral spacing to match the paving lane width (after cut back). In areas where the grade exceeds the tolerance by more than 50 percent, remove the surface lift full depth and replace the lift with asphalt pavement to meet specification requirements, at no additional cost to the Government. Match finished surfaces at juncture with other pavements with finished surfaces of abutting pavements except for where paragraph ASPHALT PAVEMENT-PORTLAND CEMENT CONCRETE JOINTS apply. Diamond grinding can be used to remove high spots to meet grade requirements. Skin patching for correcting low areas or planing or milling for correcting high areas is not permitted. Provide finished surface grades in record drawing format showing design and constructed elevations which are stamped and signed by a licensed surveyor. Provide a comparison of the as-built grades to the design grades and determine a percentage of individual measurements exceeding the tolerances specified and determine pay factor per paragraph PAY FACTOR BASED ON PLAN GRADE. Submit the survey CAD files to the Government for record purposes. Submit all files including the calculation for percent measurements in each paving lot report.

1.6 Laboratory Accreditation and Validation

Provide laboratories used to develop the Job Mix Formula (JMF), perform acceptance testing, and Contractor Quality Control testing that meet the requirements of ASTM D3666. Perform all required test methods by an accredited and validated laboratory including field standards. Schedule and provide payment for laboratory inspections. Additional payment or a time extension due to failure to acquire the required laboratory accreditation is not allowed. The Government will inspect the laboratory equipment and test procedures prior to the start of asphalt pavement operations for conformance with ASTM D3666. In addition, all testing laboratories performing JMF, acceptance testing and Contractor Quality Control requires USACE validation by the Material Testing Center (MTC) for both parent laboratory and plant testing laboratory. Validation on all laboratories is required to remain current throughout the duration of the paving project. Contact the MTC manager listed at https://mtc.erdc.dren.mil/ for costs and scheduling. Submit a certificate of compliance signed by the manager of the laboratory stating that it meets these requirements to the Government prior to the start of construction. At a minimum, include the following certifications:

a. Qualification(s) and certification(s) of personnel; laboratory manager, supervising technician, and testing technicians.

b. A listing of equipment, with calibration dates, to be used in developing the job mix.

c. A copy of the laboratory's quality control system.

1.7 ENVIRONMENTAL REQUIREMENTS

Do not place asphalt pavement upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 6. The temperature requirements may be waived by the Government, if requested; provided all other requirements, including in-place density, are met.

Table 6

Surface Temperature Limitations of Underlying Course

Mat Thickness, inches	Degrees F
3 or greater	40
Less than 3	45

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

This section is intended to stand alone for construction of asphalt pavement. However, where the construction covered herein interfaces with other sections, construct each interface to conform to the requirements of both this section and the other section, including tolerance for both.

Perform the work consisting of pavement courses composed of mineral aggregate and asphalt material heated and mixed in a central mixing plant and placed on a prepared course. Provide hot-mix asphalt (HMA) pavement designed and constructed in accordance with this section conforming to the lines, grades, thicknesses, and typical cross sections shown on the drawings. Construct each course to the depth, section, or elevation required by the drawings and rolled, finished, and approved before the placement of the next course (adjacent to or above). Submit proposed Placement Plan, indicating lane widths, longitudinal joints, and transverse joints for each course or lift.

2.2 Equipment

Provide product data for all components below.

2.2.1 Asphalt Mixing Plant

Provide plants used for the preparation of asphalt mixture conforming to the requirements of AASHTO M 156, including calibration data.

2.2.1.1 Truck Scales

Weigh the asphalt mixture on approved scales, or on certified public scales at no additional expense to the Government. Inspect and seal scales at least annually by an approved calibration laboratory.

2.2.1.2 Inspection of Plant

Provide access to the Government at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant; verifying weights, proportions, and material properties; checking the

temperatures maintained in the preparation of the mixtures and for taking samples. Provide assistance as requested, for the Government to procure any desired samples.

2.2.1.3 Storage Silos

The asphalt mixture may be stored in non-insulated storage silos for a period of time not exceeding 3 hours. The asphalt mixture may be stored in insulated storage silos for a period of time not exceeding 8 hours. No differences in the mix removed from silos and the mix loaded into trucks are allowed.

2.2.2 Hauling Equipment

Provide trucks used for hauling asphalt mixture that have tight, clean, and smooth metal beds. To prevent the mixture from adhering to them, lightly coat the truck beds with a minimum amount of paraffin oil, lime solution, or other approved material. Do not use petroleum based products as a release agent. Cover the bed of each truck with a tarp or other suitable cover at all times during transport. When necessary to ensure that the mixture is delivered to the site at the specified temperature, provide insulated or heated truck beds with covers (tarps) that are securely fastened.

2.2.3 Material Transfer Vehicle (MTV)

Provide a self-propelled MTV with a swing conveyor that delivers material to the paver from outside the paving lane and without making contact with the paver. Provide MTV capable to move back and forth between the hauling equipment and the paver providing material transfer to the paver, while allowing the paver to operate at a constant speed. Provide Material Transfer Vehicle with remixing and a minimum onboard storage capability of 13 tons.

2.2.4 Asphalt Pavers

Provide mechanical spreading and finishing equipment consisting of a self-powered paver, capable of spreading and finishing the mixture to the specified line, grade, and cross section. Provide paver with a vibrating screed capable of placing a uniform mixture to meet the specified thickness, smoothness, and grade without physical or temperature segregation, the full width of the material being placed. Provide a screed that effectively produces a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Provide information on the tractor(s) and screed(s) proposed for use.

2.2.4.1 Receiving Hopper

Provide paver with a receiving hopper of sufficient capacity to permit a uniform spreading operation and a distribution system to place the mixture uniformly in front of the screed without segregation.

2.2.4.2 Automatic Grade Controls

If an automatic grade control device is used, provide a paver equipped with a control system capable of automatically maintaining the specified screed elevation that is automatically actuated from either a reference line or through a system of mechanical sensors or sensor-directed mechanisms or devices which maintain the paver screed at a predetermined

transverse slope and at the proper elevation to obtain the required surface. Provide transverse slope controller capable of maintaining the screed at the desired slope within plus or minus 0.1 percent. Do not use the transverse slope controller to control grade. Provide controls capable of working in conjunction with any of the following attachments:

a. Ski-type device of not less than 30 feet in length.

b. Taut stringline set to grade.

c. Short ski or shoe for joint matching.

d. Laser control.

e. GPS control.

2.2.5 Rollers

Provide rollers in good condition and operated at slow speeds to avoid displacement of the asphalt mixture. Provide sufficient number, type, and weight of rollers to compact the mixture to the required density while it is still in a workable condition. Do not use equipment which causes excessive crushing of the aggregate.

2.2.6 Diamond Grinding

Those performing diamond grinding are required to have a minimum of three years experience in diamond grinding of airfield pavements. In areas not meeting the specified limits for surface smoothness and plan grade, reduce high areas to attain the required smoothness and grade, except as depth is limited below. Reduce high areas by diamond grinding the asphalt pavement with approved equipment after the asphalt pavement is at a minimum age of 14 days. Perform diamond grinding by sawing with saw blades impregnated with an industrial diamond abrasive. Assemble the saw blades in a cutting head mounted on a machine designed specifically for diamond grinding that produces the required texture and smoothness level without damage to the asphalt pavement. Provide diamond grinding equipment with saw blades that are 1/8-inch wide, a minimum of 60 blades per 12 inches of cutting head width, and capable of cutting a path a minimum of 3 feet wide. Diamond grinding equipment that causes raveling, fracturing of aggregate , or disturbance to the underlying material will not be allowed. The maximum area corrected by diamond grinding the surface of the asphalt pavement is 10 percent of the total area of any sublot. The maximum depth of diamond grinding is 1/2 inch. Provide diamond grinding machine equipped to flush and vacuum the pavement surface. Dispose of all debris from diamond grinding operations off Government property. Prior to diamond grinding, submit a Diamond Grinding Plan for review and approval. At a minimum, include the daily reports for the deficient areas, the location and extent of deficiencies, corrective actions, and equipment. Remove and replace all pavement areas requiring plan grade or surface smoothness corrections in excess of the limits specified.

Prior to production diamond grinding operations, perform a test section at the approved location, consisting of a minimum of two adjacent passes with a minimum length of 40 feet to allow evaluation of the finish and transition between adjacent passes. Production diamond grinding operations cannot be performed prior to approval.

2.3 AGGREGATES

Sample aggregates in the presence of a Government Representative. Obtain samples in accordance with ASTM D75/D75M and be representative of the materials to be used for the project. Provide aggregates consisting of crushed stone, crushed gravel, crushed slag, screenings, natural sand and mineral filler, as required. The portion of material retained on the No. 4 sieve is coarse aggregate. The portion of material passing the No. 4 sieve and retained on the No. 200 sieve is fine aggregate. The portion passing the No. 200 sieve is defined as mineral filler. Submit sufficient materials to produce 400 pounds of blended mixture for mix design verification. Submit all aggregate test results and samples to the Government at least 14 days prior to start of construction. Aggregate tests can be no older than 6 months prior to contract award.

2.3.1 Coarse Aggregate

Provide coarse aggregate consisting of sound, tough, durable particles, free from films of material that would prevent thorough coating and bonding with the asphalt material and free from organic matter and other deleterious substances. Provide coarse aggregate particles meeting the following requirements:

a. The percentage of loss not greater than 40 percent after 500 revolutions when tested in accordance with ASTM C131/C131M.

b. The sodium sulfate soundness loss not exceeding 12 percent, or the magnesium sulfate soundness loss not exceeding 18 percent after five cycles when tested in accordance with ASTM C88.

c. At least 75 percent by weight of coarse aggregate contain at least two or more fractured faces when tested in accordance with ASTM D5821 with fractured faces produced by crushing.

d. The particle shape essentially cubical and the aggregate containing not more than 5 percent, by weight, of flat particles, elongated particles, or flat and elongated particles (5:1 ratio of maximum to minimum) when tested in accordance with ASTM D4791 Method A.

e. Slag consisting of air-cooled, blast furnace slag, with a compacted weight of not less than 75 pounds per cubic foot when tested in accordance with ASTM C29/C29M.

f. Clay lumps and friable particles not exceeding 0.3 percent, by weight, when tested in accordance with ASTM C142/C142M.

2.3.2 Fine Aggregate

Provide fine aggregate consisting of clean, sound, tough, durable particles. Provide aggregate particles that are free from coatings of clay, silt, or any objectionable material, contain no clay balls, and meet the following requirements:

a. Quantity of natural sand (noncrushed material) added to the aggregate blend not exceeding 15 percent by weight of total aggregate.

b. Individual fine aggregate sources with a sand equivalent value greater than 45 when tested in accordance with ASTM D2419.

c. Fine aggregate portion of the blended aggregate with an uncompacted void content greater than 45.0 percent when tested in accordance with ASTM C1252 Method A.

d. Clay lumps and friable particles not exceeding 0.3 percent, by weight, when tested in accordance with ASTM C142/C142M.

2.3.3 Mineral Filler

Provide mineral filler consisting of a nonplastic material meeting the requirements of ASTM D242/D242M.

2.3.4 Aggregate Gradation

Provide a combined aggregate gradation that conforms to gradations specified in Table 7, when tested in accordance with ASTM C136/C136M and ASTM C117, and does not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice versa, but grades uniformly from coarse to fine. Provide a JMF within the specification limits; however, the gradation can exceed the limits when the allowable deviation from the JMF shown in Tables 10 and 11 are applied.

Table 7

Aggregate Gradations

	Gradation 2
Sieve Size, inch	Percent Passing by Mass
1	---
3/4	100
1/2	90-100
3/8	69-89
No. 4	53-73
No. 8	38-60
No. 16	26-48
No. 30	18-38
No. 50	11-27
No. 100	6-18
No. 200	3-6

2.4 ASPHALT BINDER

Provide asphalt binder that conforms to ASTM D6373 for Performance Grade (PG) 67-22. Provide test data indicating grade certification by the supplier at the time of delivery of each load to the mix plant. Submit

copies of these certifications to the Government. The supplier is defined as the last source of any modification to the binder. The Government may sample and test the binder at the mix plant at any time before or during mix production. Obtain samples for this verification testing in accordance with ASTM D140/D140M and in the presence of the Government. Provide these samples to the Government for the verification testing, which will be performed at the Governments expense. Submit 5 gallon sample of the asphalt binder specified for mix design verification and approval not less than 14 days before start of the test section.

2.5 MIX DESIGN

Develop the mix design and provide results of the Job Mix formula (JMF) and aggregates testing performed no earlier than 6 months prior to contract award. Provide asphalt mixture composed of well-graded aggregate, mineral filler if required, and asphalt material. Provide aggregate fractions sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of Table 7. Do not produce asphalt pavement for payment until a JMF has been approved. Prepare samples at various asphalt contents and compacted in accordance with ASTM D6925. Use laboratory compaction temperatures for Polymer Modified Asphalts as recommended by the asphalt binder supplier. For tensile strength ratio (TSR) testing, adjust the compactive effort, as required, to provide specimens with an air void content of 7 plus or minus 1 percent. If the Tensile Strength Ratio (TSR) of the composite mixture, as determined by ASTM D4867/D4867M is less than 75, reject the aggregates or treat the asphalt mixture with an anti-stripping agent. Add a sufficient amount of anti-stripping agent to produce a TSR of not less than 75. If an antistrip agent is required, provide it at no additional cost to the Government. Provide sufficient materials to produce 400 pounds of blended mixture to the Government for verification of mix design at least 14 days prior to construction of test section.

2.5.1 JMF Requirements

Submit the proposed JMF in writing, for approval, at least 14 days prior to the start of the test section, including as a minimum:

a. Percent passing each sieve size.

b. Optimum asphalt content.

c. Percent of each aggregate and mineral filler to be used.

d. Asphalt viscosity grade, penetration grade, or performance grade and additional test requirements as specified in paragraph ASPHALT BINDER.

e. Number of Superpave gyratory compactor gyrations.

f. Laboratory mixing and compaction temperatures.

g. Supplier-recommended field mixing and compaction temperatures.

h. Percentage and properties (asphalt content aggregate gradation, and aggregate properties) of RAP in accordance with paragraph RECYCLED ASPHALT PAVEMENT, if RAP is used.

i. Temperature-viscosity relationship of the asphalt binder.

j. Plot of the combined gradation on the 0.45 power gradation chart, stating the nominal maximum size.

k. Graphical plots and summary tabulation of air voids, voids in the mineral aggregate, and unit weight versus asphalt content as shown in AI MS-2. Include summary tabulation that includes individual specimen data for each specimen tested.

l. Specific gravity and absorption of each aggregate.

m. Percent natural sand.

n. Percent particles with two or more fractured faces (in coarse aggregate).

o. Fine aggregate angularity.

p. Percent flat or elongated particles (in coarse aggregate).

q. Tensile Strength Ratio and wet/dry specimen test results.

r. Type and amount of antistrip agent (if required).

s. List of all modifiers.

t. Percentage and properties (asphalt content aggregate gradation, and aggregate properties) of RAP in accordance with paragraph RECLAIMED ASPHALT PAVEMENT, if RAP is used.

u. Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season may not be accepted.

Table 8

Superpave Gyratory Compaction Criteria

Test Property	75 Blow Mix
Air voids, percent	4
Percent Voids in mineral aggregate (minimum)	See Table 9
Dust Proportion(2)	0.8-1.2
TSR, minimum percent	75
TSR Conditioned Strength (minimum psi)	60

(1) Select the JMF asphalt content corresponding to an air void content of 4 percent. Verify the other properties of Table 8 meet the specification requirements at this asphalt content.

(2) Dust Proportion is calculated as the aggregate content, expressed as a percent of mass, passing the No. 200 sieve, divided by the effective asphalt content, in percent of total mass of the mixture.

Table 9	
Minimum Percent Voids in Mineral Aggregate (VMA)(1)	
Aggregate (See Table 7)	Minimum VMA, percent
Gradation 2	14.0
Gradation 3	15.0
(1) Calculate VMA in accordance with AI MS-2, based on ASTM C127 and ASTM C128 bulk specific gravity for the aggregate.	

2.5.2 Adjustments to JMF

The JMF for each mixture is in effect until a new formula is approved in writing by the Government. Should a change in sources of any materials be made, perform a new mix design and a new JMF approved before the new material is used. Make minor adjustments within the specification limits to the JMF to optimize mix volumetric properties. Adjustments to the original JMF are limited to plus or minus 4 percent on the No. 4 and coarser sieves; plus or minus 3 percent on the No. 8 to No. 50 sieves; and plus or minus 1 percent on the No. 100 sieve. Adjustments to the JMF are limited to plus or minus 1.0 percent on the No. 200 sieve. Asphalt content adjustments are limited to plus or minus 0.40 from the original JMF. If adjustments are needed that exceed these limits, develop a new mix design.

2.6 RECYCLED ASPHALT SHINGLES

Recycled asphalt shingles (RAS) is not allowed for the project.

PART 3 EXECUTION

3.1 CONTRACTOR QUALITY CONTROL

3.1.1 General Quality Control Requirements

Submit the Pavement Quality Control Plan. The Quality Control Plan is specific to this specification and supplements the overall Quality Control Plan required by Section 01 45 00. Do not produce hot-mix asphalt pavement for payment until the quality control plan has been approved. In the quality control plan, address all elements which affect the quality of the pavement including, but not limited to:

a. Mix Design and unique JMF identification code

b. Aggregate Grading

c. Quality of Materials

d. Stockpile Management and procedures to prevent contamination

e. Proportioning

f. Mixing and Transportation

g. Mixture Volumetrics

h. Moisture Content of Mixtures

i. Placing and Finishing

j. Joints

k. Compaction, including Asphalt Pavement-Portland Cement Concrete joints

l. Surface Smoothness

m. Truck bed release agent

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3.1.2 Testing Laboratory

Provide a fully equipped asphalt laboratory located at the plant or job site that is equipped with heating and air conditioning units to maintain a temperature of 75 plus or minus 5 degrees F. Provide laboratory facilities that are kept clean and all equipment maintained in proper working condition. Provide the Government with unrestricted access to inspect the laboratory facility, to witness quality control activities, and to perform any check testing desired. The Government will advise in writing of any noted deficiencies concerning the laboratory facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to adversely affect test results, immediately suspend the incorporation of the materials into the work. Incorporation of the materials into the work will not be permitted to resume until the deficiencies are corrected. ***The contractor may also substitute, for approval by the Government, an independent laboratory to satisfy the asphalt testing requirements.***

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3.1.3 Quality Control Testing

Perform all quality control tests applicable to these specifications and as set forth in the Quality Control Program. The quality control (QC) testing is separate and distinct from the acceptance testing in paragraph ACCEPTANCE. Use in-house capabilities or the independent commercial laboratory for quality control testing. Required elements of the testing program include, but are not limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, moisture in the asphalt mixture, laboratory air voids, in-place density, grade and smoothness. Develop a Quality Control Testing Plan as part of the Quality Control Program.

3.1.3.1 Asphalt Content

Determine asphalt content a minimum of twice per lot (a lot is defined in paragraph PAVEMENT LOTS) by one of the following methods: extraction method in accordance with ASTM D2172/D2172M, Method A or B, the ignition

method in accordance with ASTM D6307, or the nuclear method in accordance with ASTM D4125/D4125M, provided each method is calibrated for the specific mix being used. For the extraction method, determine the weight of ash, as described in ASTM D2172/D2172M, as part of the first extraction test performed at the beginning of plant production; and as part of every tenth extraction test performed thereafter, for the duration of plant production. Use the last weight of ash value in the calculation of the asphalt content for the mixture. The asphalt content for the lot will be determined by averaging the test results.

3.1.3.2 Aggregate Properties

Determine aggregate gradations a minimum of twice per lot (a lot is defined in paragraph PAVEMENT LOTS) from mechanical analysis of recovered aggregate in accordance with ASTM D5444, ASTM C136/C136M, and ASTM C117. Determine the specific gravity of each aggregate size grouping for each 20,000 tons in accordance with ASTM C127 or ASTM C128. Determine fractured faces for gravel sources for each 20,000 tons in accordance with ASTM D5821. Determine the uncompacted void content of fine aggregate (including manufactured sand and blending aggregate) for each 20,000 tons in accordance with ASTM C1252 Method A.

3.1.3.3 Temperatures

Check temperatures at least four times per lot, at necessary locations, to determine the temperature at the dryer, the asphalt binder in the storage tank, the asphalt mixture at the plant, and the asphalt mixture at the job site.

3.1.3.4 Moisture Content of Aggregate

Determine the moisture content of aggregate used for production a minimum of once per lot in accordance with ASTM C566.

3.1.3.5 Moisture Content of Mixture

Determine the moisture content of the mixture at least once per lot in accordance with AASHTO T 329.

3.1.3.6 Laboratory Air Voids, TMD, and VMA

Obtain mixture samples at least four times per lot and compacted into specimens, using 75 gyrations of the Superpave gyratory compactor as described in ASTM D6925. After compaction, measure the bulk density of laboratory compacted specimens in accordance with ASTM D2726/D2726M. Determine the laboratory air voids from the set (three laboratory compacted specimens) for each sample in accordance with ASTM D3203/D3203M. Also calculate the VMA of each specimen in accordance with AI MS-2 based on ASTM C127 and ASTM C128 bulk specific gravity for the aggregate. Provide VMA within the limits of Table 9.

3.1.3.7 In-Place Density

Conduct any necessary testing to ensure the specified density is achieved. A nuclear gauge or other non-destructive testing device may be used to monitor pavement density for Contractor Quality Control purposes only.

3.1.3.8 Grade and Smoothness

Conduct the necessary checks to ensure the grade and smoothness requirements are met in accordance with paragraph ACCEPTANCE.

3.1.3.9 Additional Testing

Perform any additional testing, deemed necessary to control the process.

3.1.3.10 QC Monitoring

Submit all QC test results to the Government on a daily basis as the tests are performed. The Government reserves the right to monitor any of the Contractor's quality control testing and to perform duplicate testing as a check to the Contractor's quality control testing.

3.1.4 Sampling

When directed by the Government, sample and test any material which appears inconsistent with similar material being produced, unless such material is voluntarily removed and replaced or deficiencies corrected. Perform all sampling in accordance with standard procedures specified.

3.1.5 Control Charts

For process control, establish and maintain linear control charts on both individual samples and the running average of last four samples for the parameters listed in Table 10, as a minimum. Post the control charts as directed by the Government and maintain current at all times. Identify the following on the control charts, the project number, the test parameter being plotted, the individual sample numbers, the Action and Suspension Limits listed in Table 10 applicable to the test parameter being plotted, and the test results. Also show target values (JMF) on the control charts as indicators of central tendency for the cumulative percent passing, asphalt content, and laboratory air voids parameters. When the test results exceed either applicable Action Limit, take immediate steps to bring the process back in control. When the test results exceed either applicable Suspension Limit, halt production until the problem is solved. When the Suspension Limit is exceeded for individual values or running average values, the Government has the option to require removal and replacement of the material represented by the samples or to leave in place and base acceptance on mixture volumetric properties and in place density. Use the control charts as part of the process control system for identifying trends so that potential problems can be corrected before they occur. Make decisions concerning mix modifications based on analysis of the results provided in the control charts. In the Quality Control Plan, indicate the appropriate action to be taken to bring the process into control when certain parameters exceed their Action Limits.

Table 10

Action and Suspension Limits for the Parameters to be Plotted on Individual and Running Average Control Charts

	Individual Samples		Running Average of Last Four Samples	
Parameter to be Plotted	Action Limit	Suspension Limit	Action Limit	Suspension Limit
No. 4 sieve, Cumulative Percent Passing, deviation from JMF target; plus or minus values	6	8	4	5
No. 30 sieve, Cumulative Percent Passing, deviation from JMF target; plus or minus values	4	6	3	4
No. 200 sieve, Cumulative Percent Passing, deviation from JMF target; plus or minus values	1.4	2.0	1.1	1.5
Asphalt content, percent deviation from JMF target; plus or minus value	0.4	0.5	0.2	0.3
Laboratory Air Voids, percent deviation from JMF target value	No specific action and suspension limits set since this parameter is used to determine percent payment			
In-place Mat Density, percent of TMD	No specific action and suspension limits set since this parameter is used to determine percent payment			
In-place Joint Density, percent of TMD	No specific action and suspension limits set since this parameter is used to determine percent payment			
VMA, percent deviation from JMF target				
Gradation 1, 2 & 3	-0.5	-1.0	-0.25	-0.5
$P_{0.075}/P_{be}$ Ratio, deviation from 1.0; plus or minus values	0.7	0.8	0.3	0.4

3.2 PREPARATION OF ASPHALT BINDER MATERIAL

Heat the asphalt binder material while avoiding local overheating and providing a continuous supply of the asphalt material to the mixer at a uniform temperature. Maintain the temperature of unmodified asphalts to no more than 325 degrees F when added to the aggregates. The temperature of modified asphalts is not to exceed 350 degrees F.

3.3 PREPARATION OF MINERAL AGGREGATE

Heat and dry the aggregate for the mixture prior to mixing. No damage to the aggregates due to the maximum temperature and rate of heating used is allowed. Maintain the temperature no lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

3.4 PREPARATION OF ASPHALT MIXTURE

Weigh or meter the aggregates and the asphalt binder and introduce into

the mixer in the amount specified by the JMF. Limit the temperature of the asphalt mixture to 350 degrees F when the asphalt binder is added. Mix the combined materials until the aggregate obtains a thorough and uniform coating of asphalt binder (testing in accordance with ASTM D2489/D2489M may be required by the Contracting Officer) and is thoroughly distributed throughout the mixture. The moisture content of all asphalt mixture upon discharge from the plant is not to exceed 0.5 percent by total weight of mixture as measured by AASHTO T 329.

3.5 PREPARATION OF THE UNDERLYING SURFACE

Immediately before placing asphalt pavement, clean the underlying course of dust and debris. Apply a prime coat or tack coat in accordance with Section 32 12 13 BITUMINOUS TACK AND PRIME COATS.

3.6 TEST SECTION

Prior to full production, place a test section for each JMF used. Construct a test section 250 to 500 feet long and two paver passes wide with a longitudinal cold joint. Do not place the second lane of test section until the temperature of pavement edge is less than 175 degrees F. Construct the test section with the same depth as the course which it represents. Ensure the underlying grade or pavement structure upon which the test section is to be constructed is the same or very similar to the underlying layer for the project. Use the same equipment in construction of the test section as on the remainder of the course represented by the test section. Construct the test section as part of the project pavement as approved by the Government.

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3.6.1 Sampling and Testing for Test Section

Obtain one representative sample from random trucks at the plant, compact triplicate specimens, and test for laboratory air voids. Test a portion of the same sample for theoretical maximum density (TMD), aggregate gradation and asphalt content. Test an additional portion of the sample to determine the TSR. Adjust the compactive effort as required to provide TSR specimens with an air void content of 7 plus or minus 1 percent. Obtain ***two*** ~~four~~ randomly selected cores from the finished pavement mat, and ***two*** ~~four~~ from the longitudinal joint, and test for density. Perform random sampling in accordance with procedures contained in ASTM D3665. Construction may continue provided the test results are within the tolerances or exceed the minimum values shown in Table 11. If all test results meet the specified requirements, the test section may remain as part of the project pavement ***and no other test sections are required***. If test results exceed the tolerances shown, remove and replace the test section and construct another test section at no additional cost to the Government.

Table 11	
Test Section Requirements for Material and Mixture Properties	
Property	Specification Limit
Aggregate Gradation-Percent Passing (Individual Test Result)	

Table 11	
Test Section Requirements for Material and Mixture Properties	
Property	Specification Limit
No. 4 and larger	JMF plus or minus 8
No. 8, No. 16, No. 30, and No. 50	JMF plus or minus 6
No. 100 and No. 200	JMF plus or minus 2.0
Asphalt Content, Percent (Individual Test Result)	JMF plus or minus 0.5
Laboratory Air Voids, Percent (Average of 3 specimens)	JMF plus or minus 1.0
VMA, Percent (Average of 3 specimens)	See Table 9
Tensile Strength Ratio (TSR) (At 7 percent plus/minus 1 percent air void content)	75 percent minimum
Conditioned Strength	60 psi minimum
Mat Density, Percent of TMD (Average of 4 Random Cores)	92.0 - 96.0
Joint Density, Percent of TMD (Average of 4 Random Cores)	90.5 minimum

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3.6.2 Additional Test Sections

If the initial test section proves to be unacceptable, make the necessary adjustments to the JMF, plant operation, placing procedures, and rolling procedures before beginning construction of a second test section. Construct and evaluate additional test sections, as required, for conformance to the specifications. Full production paving is not allowed to begin until an acceptable test section has been constructed and accepted.

3.7 TRANSPORTING AND PLACING

3.7.1 Transporting

Transport asphalt mixture from the mixing plant to the site in clean, tight vehicles. Schedule deliveries so that placing and compacting of mixture is uniform with minimum stopping and starting of the paver. Provide adequate artificial lighting for night placements. Hauling over freshly placed material is not permitted until the material has been compacted as specified, and allowed to cool to 140 degrees F.

3.7.2 Placing

Place the mix in lifts of adequate thickness and compacted at a temperature suitable for obtaining density, surface smoothness, and other specified requirements. Place the mixture to the full width by an asphalt paver; strike off in a uniform layer of such depth that, when the work is complete, the required thickness conforms to the grade and contour indicated. Do not broadcast waste mixture onto the mat or recycle it into the paver hopper. Collect waste mixture and dispose off site. Regulate the speed of the paver to eliminate pulling and tearing of the asphalt

mat. Begin placement of the mixture along the centerline of a crowned section or on the high side of areas with a one-way slope. Place the mixture in consecutive adjacent strips having a minimum width of 10 feet. Offset the longitudinal joint in one course from the longitudinal joint in the course immediately below by at least 1 foot; however, locate the joint in the surface course at the centerline of the pavement. Offset transverse joints in one course by at least 10 feet from transverse joints in the previous course. Offset transverse joints in adjacent lanes a minimum of 10 feet. On isolated areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture may be spread and luted by hand tools. Construct the free edge of shoulder pavements following a guide (e.g. plumb-bob, stringline, etc.) to prevent various widths of the asphalt shoulder. Contractor may elect to cut-back the asphalt edge to maintain consistent shoulder dimensions shown on the plans.

3.8 COMPACTION OF MIXTURE

3.8.1 General

a. After placing, thoroughly and uniformly compact the mixture by rolling. Compact the surface as soon as possible without causing displacement, cracking or shoving. Determine the sequence of rolling operations and the type of rollers used, except as specified in paragraph ASPHALT PAVEMENT-PORTLAND CEMENT CONCRETE JOINTS. Maintain the speed of the roller, at all times, sufficiently slow to avoid displacement of the asphalt mixture and be effective in compaction. Correct at once any displacement occurring as a result of reversing the direction of the roller, or from any other cause.

b. Furnish sufficient rollers to handle the output of the plant. Continue rolling until the surface is of uniform texture, true to grade and cross section, and the required field density is obtained. To prevent adhesion of the mixture to the roller, keep the drums properly moistened, but excessive water is not permitted. In areas not accessible to the roller, thoroughly compact the mixture with hand tampers. Remove the full depth of any mixture that becomes loose and broken, mixed with dirt, contains check-cracking, or is in any way defective, replace with fresh asphalt mixture and immediately compact to conform to the surrounding area. Perform this work at no expense to the Government. Skin patching is not allowed.

3.8.2 Segregation

The Government can sample and test any material that looks deficient. When the in-place material appears to be segregated, the Government has the option to sample the material and have it tested and compared to the aggregate gradation, asphalt content, and in-place density requirements in Table 11. If the material fails to meet these specification requirements, remove and replace the extent of the segregated material the full depth of the layer of asphalt mixture at no additional cost to the Government. When segregation occurs in the mat, take appropriate action to correct the process so that additional segregation does not occur.

3.9 JOINTS

Construct joints to ensure a continuous bond between the courses and to obtain the required density. Provide all joints with the same texture as other sections of the course and meet the requirements for smoothness and

grade.

3.9.1 Transverse Joints

Do not pass the roller over the unprotected end of the freshly laid mixture, except when necessary to form a transverse joint. When necessary to form a transverse joint, construct by means of placing a bulkhead or by tapering the course. Utilize a dry saw cut on the transverse joint full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. Neither cutting equipment that uses water as a cooling or cutting agent nor milling equipment is permitted. Remove the cutback material and cutting debris from the project. Provide a tack coat in accordance with Section 32 12 13 BITUMINOUS TACK AND PRIME COATS to all contact surfaces before placing any fresh mixture against the joint.

3.9.2 Longitudinal Joints

Cut back longitudinal joints which are irregular, damaged, uncompacted, cold (less than 175 degrees F at the time of placing the adjacent lane), or otherwise defective, a minimum of 3 inches and a maximum of 6 inches from the top edge of the lift with a cutting wheel to expose a clean, sound, near vertical surface for the full depth of the course. Remove all cutback material from the project. Neither cutting equipment that uses water as a cooling or cutting agent nor milling equipment is permitted. Remove the cutback material and cutting debris from the project. Provide tack coat in accordance with Section 32 12 13 BITUMINOUS TACK AND PRIME COATS to all contact surfaces prior to placing any fresh mixture against the joint.

3.9.3 Echelon Paving

If echelon paving is accomplished to minimize longitudinal cold joints, visually inspect the interface between the two paving lanes to ensure that the interface is not segregated or appears to be visually different from other sections of the course. If visual inspection identifies quality concerns, extract 1 randomly selected cores per sublot centered over the interface between the two paving lanes being placed. The requirements for density at the interface between the two echelon paved lanes are the same as that for the joint density specified in paragraph MAT AND JOINT DENSITIES.

3.9.4 Asphalt Pavement-Portland Cement Concrete Joints

Joints between asphalt pavement and Portland Cement Concrete (PCC) require specific construction procedures for the asphalt pavement. The following criteria are applicable to the first 10 feet or paver width of asphalt pavement adjacent to the PCC.

a. For all lifts, place the asphalt pavement side of the joint in a direction parallel to the joint.

b. For non-surface lifts (e.g. base or intermediate lifts), compact the mixture per paragraph MAT AND JOINT DENSITIES.

c. For the surface lift place the asphalt pavement side sufficiently high so that when fully compacted the asphalt pavement is greater than 1/8 inch but less than 1/4 inch higher than the PCC side of the joint.

d. For the surface lift, compact with steel wheel rollers and at least

one rubber tire roller. Compact with a rubber tire roller that weights at least 20 tons with tires inflated to at least 90 psi. Avoid spalling the PCC during placement and compaction of the asphalt pavement. Operate steel wheel rollers in a way that prevents spalling the PCC. Repair any damage to PCC edges or joints as directed by the Government. If damage to the PCC joint or panel edge exceeds a total of 3 feet, remove and replace the PCC panel at no additional expense to the Government.

e. For the surface lift, after compaction is finished, diamond grind a minimum width of 3 feet of the asphalt pavement so that the asphalt pavement side is less than 1/8 inch higher than the PCC side. Perform diamond grinding in accordance with subparagraph DIAMOND GRINDING above. The asphalt pavement immediately adjacent to the joint is not allowed to be lower than the PCC after the grinding operation. Transition the grinding into the asphalt pavement in a way that ensures good smoothness and provides drainage of water. The joint and adjacent materials when completed is required to meet all of the requirements for grade and smoothness. Measure smoothness across the asphalt pavement-PCC joint using a 12 feet straightedge. The acceptable tolerance is 1/8 inch.

f. For all lifts, consider the asphalt pavement next to the PCC as a separate weighted pay factor associated with the lot being placed for evaluation. Lots are based on individual lifts. Do not commingle cores from different lifts for density evaluation purposes. Take four cores for each lot of material placed adjacent to the asphalt pavement-PCC joint. The size of lot is 10 feet wide by the length of the joint being paved. Perform the same computation as displayed in paragraph PAY FACTOR BASED ON IN-PLACE DENSITY above to determine the weighted pay factor. Select the lowest computed pay factor for the lot. Locate the center of each of the four cores 6 inches from the edge of the concrete. Take each core at a random location along the length of the joint. The requirements for joint density, adjacent to the PCC joint, are the same as that for the mat density specified in Table 1. For asphalt pavement-PCC joints at taxiways abutting runways, aprons, or other taxiways, take two additional randomly located cores along each taxiway intersection.

g. All procedures, including repair of damaged PCC, are required to be in accordance with the approved Quality Control Plan.

-- End of Section --

SECTION 32 17 23.19

AIRFIELD PAVEMENT MARKINGS
11/24

PART 1 GENERAL

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D4414	(1995; R 2020) Standard Practice for Measurement of Wet Film Thickness by Notch Gages
ASTM E1710	(2011) Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)

SAE AMS-STD-595A	(2017) Colors used in Government Procurement

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 300	(1990) Specifications for Membrane-Forming Compounds for Curing Concrete

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS TT-B-1325	(Rev D; Notice 1; Notice 2 2017) Beads (Glass Spheres) Retro-Reflective (Metric)
FS TT-P-1952	(2015; Rev F; Notice 1) Paint, Traffic and Airfield Markings, Waterborne

1.2 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Quality Control Plan; G, RO

Qualifications; G, RO

Safety Data Sheets For Each Paint Type; G, RP

Safety Data Sheets For Chemicals Used In Surface Preparation; G, RO

Data Sheets For Surface Preparation Equipment; G, RO

Marking Applications Equipment List; G, RO

SD-03 Product Data

Manufacturer Data Sheets for all Marking Materials; G, RO

Manufacturer Data Sheets for all Reflective Materials; G, RO

SD-04 Samples

Samples Of Marking Materials; G, RO

Samples Of Each Reflective Media; G, RO

SD-06 Test Reports

Marking Application Wet Film Thickness; G, RO

Reflective Media Reflectivity Test; G, RO

SD-07 Certificates

Manufacturer Certificate of Compliance for Marking Materials; G, RO

Manufacturer Certificate of Compliance for Reflective Materials; G, RO

Manufacturer Certificate Of Conformance For Volatile Organic Compliance; G, RO

SD-08 Manufacturer's Instructions

Marking Materials Storage and Application; G, RO

Reflective Media Storage and Application; G, RO

Chemicals Used in Surface Preparation; G, RO

1.3 QUALITY CONTROL

1.3.1 Quality Control Plan

Within 10 calendar days of project award, submit a quality control plan. The plan must state the means, methods, equipment and materials to be employed for performance of the marking layout, surface preparation, and application of reflective and non-reflective markings. At a minimum, provide descriptive criteria for each of the following activities for review and approval by the Contracting Officer:

a. Describe the means and methods used to layout marking geometry and the location of marking elements.

b. Describe the protocol for determination of the operating pressure and speed of the equipment for surface preparation.

c. Describe the protocol for surface preparation when not using water.

d. Define the protocol for the performance of test sections for each line width, color, and paint type.

e. Provide equipment details to include speed, pressures and application rate for the minimum wet film thickness and the application rate of reflective media to provide the specified glass bead anchoring and reflectivity. The information will be presented in a table format for each type of marking, width and color.

f. Provide and discuss safety directives for vehicle operations on the airfield.

g. Define communications procedures when operating on the airfield.

1.3.2 Personnel Qualifications for Airfield Pavement Marking

Submit documentation, within 10 calendar days of project award, that describes the training and experience of each person performing work on the project.

1.3.2.1 Qualifications of Airfield Marking Personnel

Submit documentation of qualifications for personnel performing work on the airfield and operating mobile self-powered or drawn marking equipment, hand-operated equipment, hand application equipment and surface preparation equipment. The minimum experience is operating similar equipment in a similar environment, size and scope of work as the project. Four years of experience are required for operators of equipment used for centerline or edge markings with a demonstrated proficiency in meeting dimensional tolerance of markings. The Contracting Officer reserves the right to require additional proof of competency or to reject proposed personnel.

1.4 DELIVERY, STORAGE AND HANDLING

A conditioned storage space on the installation will be provided for all materials intended to be used on the project. Ensure all materials delivered to the storage location are in the original container and clearly marked with the product name, compliance information, batch number, color, manufactured date, instructions for storage, instructions for application, and the name of the manufacturer. All materials are to be stored in conformance with the manufacturer instructions. Provide manufacturer instructions for; marking materials storage and application, reflective media storage and application, and the chemicals used in surface preparation.

1.5 PROJECT SPECIAL CONDITIONS

1.5.1 Environmental Requirements

1.5.1.1 Weather Limitations for Markings Application

Apply pavement markings to clean, dry surfaces only when the ambient temperature is at least 5 degrees F above the dew point and the pavement surface temperatures are within limits recommended by the manufacturer unless otherwise noted. Allow the pavement surfaces to dry after the water has been used for surface preparation or after a precipitation event.

Do not perform marking applications when the wind carries overspray onto locations adjacent to the marking. Provide wind screens to shroud application equipment.

1.5.1.2 Testing Dry Surfaces

Do not commence marking until the pavement surface is dry. Use the plastic wrap method in accordance with paragraph PRE-APPLICATION TESTING to test the pavement surface for moisture. Do not proceed with marking until the Contracting Officer has observed the moisture test and has accepted the area prepared for marking.

1.5.1.3 Volatile Organic Compounds Compliance

Submit a manufacturer certificate stating that the proposed pavement marking paint meets the Volatile Organic Compound (VOC) regulations of the local Air Pollution Control District having jurisdiction over the geographical area in which the project is located. Submit manufacturer certificate of conformance for volatile organic compliance.

1.5.2 Traffic Control for Airfields

Coordinate performance of all work in the controlled zones of the airfield with the Contracting Officer and with the Airfield Manager. Neither equipment nor personnel can use any portion of the airfield without permission of the Airfield Manager unless the feature is closed.

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1.5.2.1 Radio Communications

No entry of equipment or personnel is allowed into controlled zones of the airfield until radio contact is established with the Air Traffic Control Tower and the Air Traffic Control Tower has granted permission. When the Air Traffic Control Tower is closed, radio communication can be established with the Airfield Manager. Radio contact with the Air Traffic Control Tower is to be maintained whenever the Contractor is on the active airfield. Notify the Air Traffic Control Tower when work is completed and all equipment, materials, and personnel are clear of the aircraft operating surface(s).

If required, the contractor shall pProvide a minimum of three radios; one for the Air Traffic Control Tower, one for the Airfield Manager, and one for the Contractor. The radio frequency used is to be approved by the Airfield Manager~~Installation Communications Officer~~. ***As an alternative, cell phones may be used instead of radios if approved by the Airfield Manager.***

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1.5.2.2 Emergency Operations on the Airfield

Aircraft emergencies take precedence over all operations. Upon notification from the Air Traffic Control Tower of an emergency, stop all operations immediately and evacuate all personnel and equipment to an area not utilized for aircraft traffic. The evacuation point must be at least 250 feet measured perpendicular to the near edge of any runway or taxiway

or as directed by the Air Traffic Control Tower. All personnel and equipment must be clear of the work area and at a designated evacuation location within 15 minutes.

1.5.2.3 Night Operations

Provide all lighting and equipment necessary to light the work area during night operations effectively. Direct or shade lighting to prevent interference with aircraft, the Air Traffic Control Tower, and other base operations. Provide lighting and related equipment capable of being removed from the runway within 15 minutes of an emergency notification. Coordinate night work with the Flight Operations Manager or Airfield Manager. The Government reserves the right to accept or reject material applications during night work on the day following night activities.

1.6 APPLICATION EQUIPMENT CALIBRATION

Before performing any marking application, calibrate the paint and glass bead application equipment at the necessary speed to execute the application. Calibration and application will be performed using paint that is not diluted or thinned. Paint will be used as formulated by the manufacturer. Calibrate paint and bead guns for each line width and color intended to be applied. Use a wet film gauge in accordance with ASTM D4414 to determine if the wet film thickness is the same at each edge and at the center of the marking. Adjust each paint gun to provide a uniform wet film thickness for the width of the marking.

Collect a sample of glass beads directly from the glass bead dispenser along a measured distance. Weigh the glass beads captured and determine the coverage by dividing the weight by the area of the line placed during the calibration. Adjust the glass bead dispenser to provide an application rate necessary to meet or exceed the reflectivity specified. After determining the application rate, apply a reflective marking using the wet film thickness to be used for the color and marking element. Using a magnifying glass, examine the distribution and embedment of the glass beads. Beads are to be distributed uniformly for the width of the marking. Adjust the wet film thickness if the beads are submerged or predominantly on the surface of the marking.

PART 2 PRODUCTS

2.1 EQUIPMENT

2.1.1 Surface Preparation for Airfields

Submit data sheets for surface preparation equipment the Contractor intends to use to prepare the pavement surface for marking. In the submittal, include descriptive information on the means for adjusting coverage per each pass, water pressure adjustment range, and tank and flow capacities. The equipment must have a range of adjustments that, when used, result in an existing surface that is clean and free of dirt, dust, oil, grease, algae, mildew, mold, and loose paint. The equipment is not intended to be used to remove stable existing markings intentionally. Submit safety data sheets for chemicals used in surface preparation.

2.1.1.1 Water Blasting Equipment

Use mobile water blasting equipment capable of producing a pressurized stream of water that effectively cleans existing markings and pavement

surfaces without damage to stable markings, pavement, or joint seals. Provide equipment, tools, and machinery which are safe and in good working order.

2.1.2 Markings Application Equipment

Submit a marking applications equipment list appropriate for the material(s) to be used. Include manufacturer's descriptive data and certification for the planned use that indicates the area of coverage per pass, pressure adjustment range, tank and flow capacities, and all safety precautions required for operating and maintaining the equipment. Provide and maintain machines, tools, and equipment used in the performance of the work in satisfactory operating condition, or remove equipment that is not providing satisfactory performance from the work site. Provide mobile and maneuverable application equipment to the extent that straight lines can be followed and normal curves can be made in a true arc.

2.1.2.1 Airless or Atomizing Equipment

Provide mobile airless or pneumatic air-atomized application equipment that is maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. Mount equipment on trucks, skids or tractors. Use equipment suitable for application of the marking material specified. Airless systems are used to only apply waterborne coatings. Pneumatic systems are used to apply waterborne coatings and durable materials. Provide equipment capable of applying a marking from 4 inches to 36 inches wide in a single pass and applying two single solid or intermittent lines using a minimum of two colors.

Provide equipment with tanks or reservoirs equipped with mechanical agitators, pressure regulators, and gages in full view of the equipment operator. Use paint strainers suitable to screen paint flowing in all supply lines.

2.1.2.2 Hand-Operated Machines

Provide a hand-operated push-type applicator machine for applying water-based paint, or preformed tape, to pavement surfaces for small marking projects such as surface painted signs. Provide an applicator machine with the necessary tanks and spraying nozzles to apply paint uniformly at the specified wet film thickness. Provide spray guns for hand application of paint in areas where push-type machines cannot be used.

2.1.2.3 Reflective Media Dispenser

Mount glass bead dispensers that are automatically triggered when paint guns are activated. The dispensers may be pressurized or gravity-drop systems. Pressurized systems require moisture control.

2.2 AIRFIELD MATERIALS

Submit safety data sheets for each paint type as well as manufacturer data sheets for all marking materials and manufacturer data sheets for all reflective materials; include with the submittal a manufacturer certificate of compliance for marking materials and a manufacturer certificate of compliance for reflective materials.

2.2.1 Airfield Marking Colors

Provide markings for airfield pavements that conform to SAE AMS-STD-595A color numbers as listed in Table II.

Table II - SAE AMS-STD-595A Color Numbers

Paint Color	SAE AMS-STD-595A Color Number
White	37925
Yellow	33538
Black	37038
Green	34108
Red	33411

2.2.2 Waterborne Paint

Use FS TT-P-1952, Type I, II, or III. paint.

2.2.3 Reflective Media for Airfields

Provide FS TT-B-1325 Type I, Gradation A glass beads. Paint and glass bead types used with markings are designated on the drawings. Provide glass beads with those coatings that promote adhesion, limit flotation, and absorb moisture to preclude bundling and dual coatings for waterborne materials.

PART 3 EXECUTION

3.1 TEST SECTIONS

Before the performance of any marking application, demonstrate to the Government, using the equipment, materials, and personnel identified in the approved quality control plan, that the requirements for acceptance of the final product(s) are attainable. The minimum length of the test section is 50 feet of marking for each line width, color, and wet film thickness. Perform demonstrations in a location designated by the Contracting Officer within the project scope of work. Do not perform the test section(s) until the Contracting Officer is present to observe the test. Table III identifies minimum and maximum wet film thickness based on glass bead type. Each test section’s result is the standard of performance for the color, width, wet film thickness, and glass bead application rate for each marking element. Submit the width, color, wet film thickness, and measured reflectivity.

3.1.1 Surface Preparation Test Section

Perform a demonstration removal of pavement markings in an area designated by the Contracting Officer.Prepare an area large enough to determine cleanliness,adhesion of remaining markings, and cleaning rate. Use the means, methods, and equipment identified in the approved quality control plan. Adjust the means, methods, equipment, or equipment settings until the prepared surface is free of dirt, debris, oils and greases, algae,

mold, mildew, and loose or flaking paint without damage to the pavement. Remove any equipment that fails to provide an acceptable product during the demonstration and provide new equipment that will produce an acceptable product. Approved demonstration area establishes the standard for the work.

3.1.2 Wet Film Thickness Test Section

Adjust the marking application rate for equipment speed, operating pressure, and line width, to provide a minimum wet film thickness, full coverage, and reflective media anchoring. Minimum and maximum wet film thickness is identified in Table III. Measure the wet film thickness using a wet film gauge at three points along the test section. Wet film thickness is determined using ASTM D4414 as the performance standard. When the average of the three readings is less than the minimum specified in Table III, repeat the test section. Submit the results of the marking application wet film thickness test to the Contracting Officer before proceeding with work on the project.

3.1.3 Reflective Value Test Section

Measure the reflectivity at three points, along the length of the marking placed for wet film thickness. After the application is cured, measure the retro-reflective value using a Retro-Reflectometer with a direct readout in millicandelas per square meter per lux (mcd/m2/lx) using ASTM E1710. Take three readings on each test section. When the average of the three readings is less than the minimum specified in Table V, repeat the test section. Document the application rate of the reflective media required to meet the specified minimum reflectivity. Submit the results of the reflective media reflectivity test to the Contracting Officer before proceeding with work on the project.

3.2 SURFACE PREPARATION

Clean surfaces before the application of marking materials. Remove all dirt, dust, oil, grease, algae, mildew, mold, loose paint and mineral deposits such as iron stains by use of water blasting or chemical removal. Follow the cleaning with sweeping, blowing or using water rinse. Do not begin painting in any location prepared for marking until surfaces are dry and clean.

Scrub areas with oil or grease present with applications of trisodium phosphate solution or other approved detergent or degreaser. Rinse thoroughly after each application to prevent staining of the new marking. After cleaning oil-soaked areas, seal with shellac or primer as the manufacturer recommends to prevent bleeding through the new paint.

3.3 PRE-APPLICATION TESTING

Test the pavement surface for moisture before beginning pavement marking after each period of rainfall, fog, high humidity, or cleaning or when the ambient temperature has fallen below the dew point. Do not commence marking until the pavement is sufficiently dry and the Contracting Officer has approved the pavement condition.

Employ the plastic wrap method, described as follows, to test the pavement for moisture:

a. Cover the pavement with a 12 inch by 12 inchsection of clear plastic

wrap and seal the edges with tape.

b. After 15 minutes, examine the plastic wrap for any visible moisture accumulation. Do not begin marking operations until the test can be performed with no visible moisture accumulation inside the plastic wrap.

c. Re-test surfaces when work has been stopped due to a precipitation event.

3.4 TEMPORARY MARKINGS

The dilution or thinning of paint prior to application is not allowed.

Use FS TT-P-1952 Type II paint to apply temporary pavement markings. Apply paint at one-half the wet film thickness used for permanent markings. Reflective media is not used with temporary markings. Apply a coat of wax-based curing compound conforming to COE CRD-C 300 prior to paint application.

3.4.1 New Portland Cement Concrete Pavement (PCC)

Regardless of concrete age, permanent markings may be placed when the concrete passes the pre-application test (plastic wrap test), after a 24 hour period. Temporary markings are to be used for concrete pavement that fails the plastic wrap test.

3.4.2 New Hot Mix Asphalt Pavement (HMA)

Temporary markings are to be used on HMA pavement less than 30 days old.

3.5 MARKINGS APPLICATION

3.5.1 Marking Materials for Airfield Pavement

3.5.1.1 Waterborne Paint

Dilution or thinning of paint prior to application is not allowed.

Provide FS TT-P-1952 waterborne paint and FS TT-B-1325 glass beads. Apply reflective and non-reflective markings in accordance with Table III. Use the paint type and bead type as shown on the drawings.

The paint wet film thickness and glass bead application rate is provided in Table III. Perform the marking and bead application test section beginning at the minimum value and adjust the application rate up or down until the requirements of paragraphs WET FILM THICKNESS TEST SECTION and REFLECTIVE VALUE TEST SECTION are satisfied. The values of wet film thickness and bead application rate established by the test section will be the standard of performance for the respective marking type and color.

Table III. Paint Wet Film Thickness and Bead Application Rate

Paint Type	Non-Reflectorized Marking Wet Film Thickness (mil)	Reflectorized Marking					
		Wet Film Thickness (mil) based on Glass Bead Type			Minimum Bead Application Rate		
		Type I Gradation A	Type III	Type IV Gradation B	Type I Gradation A	Type III	Type IV Gradation B
Type I	14-16	14-16	--	--	7 lb/gal	--	--
Type II	14-16	14-16	16-20	--	7 lb/gal	10 lb/gal	--
Type III	16-20	--	16-20	25-30	--	10 lb/gal	8 lb/gal

3.6 FIELD QUALITY CONTROL AND ACCEPTANCE

3.6.1 Material Inspection

The Contractor is responsible to examine all materials accepted for delivery with the certificate of compliance.

3.6.2 Sampling and Testing

As soon as the marking materials are available for sampling, obtain materials by random selection directly from equipment already calibrated. Four quarts of paint are to be collected; two quarts for the Contractor and two quarts for the Government. Samples of marking materials and samples of each reflective media are to be collected by the Contractor in the presence of the Contracting Officer. Identify samples by project name and number, manufacture date, batch number, and the square yards of markings represented by the sample.

The Government will retain samples for the warranty period under storage conditions recommended by the manufacturer. If there is an issue with a material defect during the period of the warranty, the Contractor will incur the cost for an accredited independent laboratory to test the material(s) for conformance with the certifications and the contract specifications. If a sample fails to meet the specification, replace the material in the area represented by the sample and retest the replacement material as specified above. The Government reserves the right to test the samples for verification of materials.

3.6.3 Dimensional Tolerance

The Contractor responsible for layout markings. All layout markings are placed before the marking material application. The edges of markings will not vary from a straight line drawn between the beginning and end of the marking by more than 1/2 inch in 50 feet. Marking dimensions and spacing must be within the tolerances provided in Table IV.

Table IV - Dimensional Tolerance for Marking Elements	
Dimension and Spacing	Tolerance
36 inches or less	+/- 1/2 inch
Greater than 36 inches to 6 feet	+/- 1 inch
Greater than 6 feet to 60 feet	+/- 2 inches
Greater than 60 feet	+/- 3 inches

3.6.4 Coating and Reflective Media Application Reporting

3.6.4.1 Reporting Wet Film Thickness, Glass Bead Distribution, and Reflectivity

Submit documentation on the wet film thickness and reflectivity for each marking element. Provide a reading at the rate of one reading per 1000 linear feet of line marking. For airfield marking elements, such as runway threshold bars or numerals, provide a reading for every 500 square feet of marking area. A reading is the average of 10 measurements at random locations within the marking element area. Submit the results of the Marking Application Wet Film Thickness test and Reflective Media Reflectivity Test to the Contracting Officer.

3.6.4.2 Wet Film Thickness

Conduct a Marking Application Wet Film Thickness test. Provide a wet film thickness gauge to measure the wet film thickness using ASTM D4414 at the edge(s) and one interior location of the marking. When more than 3 in 10 consecutive measurements of wet film thickness are outside of the tolerances in Table III, remove and replace areas not meeting the wet film thickness requirement.

3.6.4.3 Reflectivity

Conduct a Reflective Media Reflectivity Test. Provide documentation that records the readings for white, yellow and red reflective markings. Measure the reflectivity using a Retro-Reflectometer using ASTM E1710. The minimum reading for white, yellow, and red markings is provided in Table V in millicandelas per square meter per lux (mcd/m2/lx) at the time of marking. When more than 3 in 10 consecutive measurements of reflectivity are outside of the minimum in Table V, remove and replace the areas not meeting the minimum reflectivity requirements.

Table V - Minimum Reflectivity (millicandelas per square meter per lux)			
	Minimum Reflectivity at Time of Marking by Paint Color		
Bead Type	White	Yellow	Red
Type I	300	175	35

Table V - Minimum Reflectivity (millicandelas per square meter per lux)			
	Minimum Reflectivity at Time of Marking by Paint Color		
Bead Type	White	Yellow	Red
Type III	600	350	35
Type IV	300	200	35

Preformed Tape pavement markings will yield a minimum of 225 mcd/m2/lux on white markings at installation and a minimum of 100 mcd/m2/lux on yellow markings at installation.

3.7 CLEANUP AND WASTE DISPOSAL

The worksite and the material staging area must be free of debris, dirt, and items that will blow away during periods of elevated wind speeds. Dispose of all materials at a site approved by the Contracting Officer. Dispose of waste from cleaning the marking equipment at a facility that is permitted to accept the material.

3.7.1 Cleanup Requirements

Provide a vacuum sweeper at each work area when markings are cured. Vacuum sweep the entire pavement surface to provide a clean pavement without fugitive glass beads and debris.

-- End of Section --

APPENDIX A

BORING LOCATIONS, BORING LOGS AND LAB TESTING RESULTS

APPENDIX 'A' - LOGS OF BORINGS AND TEST DATA

GENERAL NOTES:

1. GROUNDWATER DEPTHS OR ELEVATIONS SHOWN ON THE BORING LOGS REPRESENT GROUNDWATER ENCOUNTERED ON THE DATES SHOWN. ABSENCE OF GROUNDWATER DATA ON CERTAIN BORINGS IMPLIES THAT NO DATA IS AVAILABLE, BUT DOES NOT NECESSARILY MEAN THAT GROUNDWATER WILL NOT BE ENCOUNTERED AT THE LOCATIONS. GROUNDWATER ELEVATIONS VARY AND SEEPAGE ABOVE THE DEPTHS OR ELEVATIONS SHOWN CAN BE EXPECTED AT ANY TIME.

2. WHILE THE BORINGS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS AND FOR THEIR RESPECTIVE VERTICAL REACHES, LOCAL MINOR VARIATIONS IN CHARACTERISTICS OF THE SUBSURFACE MATERIALS ARE ANTICIPATED AND, IF ENCOUNTERED, SUCH VARIATIONS WILL NOT BE CONSIDERED AS DIFFERING MATERIALLY FROM THE DESCRIPTION SHOWN WITH THE LOGS OR PROFILES.

3. SOILS ARE CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM, ASTM-D-2487, CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES.

4. DRIVING RESISTANCES (BLOW COUNTS OR N VALUES) ARE DETERMINED WITH A STANDARD SPLIT SPOON SAMPLER (1-3/8" I.D.) AND A 140-LB DRIVING HAMMER WITH A 30" DROP UNLESS OTHERWISE NOTED ON THE BORING LOGS. N VALUES SHOWN NUMERICALLY ON THE LOGS ARE THE SUM OF BLOWS FOR THE LOWER TWO OF THREE 0.5-FOOT DRIVES THAT MAKE UP THE 1.5-FOOT STANDARD PENETRATION TEST, EXCEPT WHEN REFUSAL OCCURS. REFUSAL OF THE SPLITSPOON IS DEFINED AS 50 BLOWS IN LESS THAN A 0.5-FOOT DRIVE. REFUSAL IS SHOWN ON THE LOGS AS INDICATED IN THE FOLLOWING EXAMPLES:

50/0.3' - INDICATES 50 BLOWS (REFUSAL) AFTER 0.3' PENETRATION IN THE FIRST DRIVE.

20, 50/0.2' - INDICATES 20 BLOWS IN THE FIRST DRIVE AND REFUSAL AFTER 0.2' PENETRATION IN THE SECOND DRIVE.

20, 85/0.8' - INDICATES 20 BLOWS IN THE FIRST DRIVE, 35 BLOWS IN THE SECOND DRIVE AND REFUSAL (50 BLOWS) AFTER 0.3' PENETRATION IN THE THIRD DRIVE.

5. "MAX SIZE" OF GRAVEL OR ROCK FRAGMENTS SHOWN ON THE BORING LOGS REPRESENTS THE MAXIMUM SIZE OF MATERIAL RECOVERED IN THE DRIVE SAMPLER AND/OR CORE BARREL OR OBSERVED FROM AUGERING UNLESS OTHERWISE NOTED. NOTE THAT THE MAXIMUM LOGGED SIZE OF GRAVEL OR ROCK FRAGMENTS IS LIKELY TO BE SMALLER THAN THE MAXIMUM SIZE OF THE IN-PLACE MATERIAL, ESPECIALLY WHEN THE MAXIMUM LOGGED SIZE IS MORE THAN APPROXIMATELY ONE-HALF THE DIAMETER OF THE DRIVE SAMPLER OR CORE BARREL, OR MORE THAN ONE-THIRD THE DIAMETER OF THE AUGER.

6. CLASSIFICATIONS SHOWN IN COLUMN D OF THE BORING LOG FORM ARE THE DRILLING INSPECTOR'S FIELD VISUAL CLASSIFICATION OF SAMPLES UNLESS OTHERWISE INDICATED ON THE LOG. WHEN AVAILABLE, LABORATORY CLASSIFICATIONS OF SAMPLES ARE SHOWN IN COLUMN G (REMARKS COLUMN) UNLESS OTHERWISE INDICATED.

SOIL CLASSIFICATION LEGEND

COARSE-GRAINED SOILS - MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE

GW		WELL GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GP		POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
SW		WELL GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
SP		POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
SM		SILTY SANDS, SAND-SILT MIXTURES
SM-H		SAME AS ABOVE WITH HIGH LIQUID LIMIT
SC		CLAYEY SANDS, SAND-CLAY MIXTURES
SC-H		SAME AS ABOVE WITH HIGH LIQUID LIMIT

NOTE: DUAL CLASSIFICATIONS, E.G. SP-SM, GP-GM, ML-CL AND SM-SC, ARE SHOWN BY PLACING BOTH SYMBOLS SIDE BY SIDE.

FINE-GRAINED SOILS - MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE

ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SANDY SILTS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTY SOIL, PLASTIC SILTS
OL		ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
PT		PEAT AND OTHER HIGHLY ORGANIC SOILS
		BITUMEN, ASPHALT, OR ASPHALTIC CONCRETE
		CONCRETE

ROCK CLASSIFICATION LEGEND


SANDSTONE


RHYOLITE


SILTSTONE OR CLAYSTONE


BASALT


SHALE


GRANITE


CEMENTED SHALE


GNEISS


LIMESTONE


CONGLOMERATE

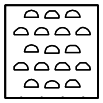

DOLOMITE


CHERT


SCHIST


COAL


PHYLLITE


SHELL, SHELL FRAGMENTS,
OR SHELL-SOIL MIXTURE
CONSISTING MOSTLY OF SHELL


QUARTZITE


WOOD


NOT SAMPLED OR
SAMPLE NOT RECOVERED


VOID (CAVITY,
OPEN JOINT, ETC.)

ABBREVIATIONS

@	AT
ACCUM	ACCUMULATED
ALT	ALTERNATING
ANG	ANGULAR
APPROX.	APPROXIMATE (LY)
ARGIL	ARGILLACEOUS
AUG	AUGER
AVG	AVERAGE
B.A.	BASE OF ALLUVIUM
B.I.	BREAKAGE INTERVAL
B.O.H.	BOTTOM OF HOLE
BBL	BARREL
BDD	BED (ED) (DING)
BDR	BEDROCK
BENT.	BENTONITIC
BGE	BEIGE
BKY	BLOCKY
BL	BLACK (ISH)
BLD	BOULDER
BR	BROWN (ISH)
BREC.	BRECCIATED
BRK	BROKEN. BREAKAGE
C.D.	CORRECTED DEPTH
CAL	CALCITE. CALCAREOUS
CARB	CARBONACEOUS
CAV	CAVITY
CBL	COBBLE
CEM	CEMENT
CHT	CHERT
CIRCLE.	CIRCULATION
CLY	CLAYEY
CMT'D	CEMENTED
CNTR (S)	CONCENTRATION (S)
COMP	COMPACT
CONC	CONCRETE
CONCR	CONCRETIONS
CONGL	CONGLOMERATE
CONT.	CONTINUED
CR'D	CRUSHED
CRM	CRUMBLY
CSE	COARSE
CTD	COATED
D.	DENSE
d.	DEPTH
D.A.	DRILL ACTION
D.T.	DRILL TIME
D.W.L.	DRILL WATER LOSS
D.W.R.	DRILL WATER RETURN
DECOM	DECOMPOSED
DIAG	DIAGONAL
DIS.	DISSEMINATED
DK	DARK
DOL.	DOLOMITE. DOLOMITIC
DRL	DRILLING
DSTG	DISINTEGRATE (D)
EL	ELEVATION
ENC	ENCOUNTERED
EST	ESTIMATE (D)
EXCL	EXCLUDING
EXTR	EXTREMELY
F.	FINE (LY)
F.R.	FLUID RETURN
F/T	FISHTAILED
FE	IRON
FERR	FERRUGINOUS
FIS	FISSILE
FLD	FILLED
FM	FORMATION

ABBREVIATIONS

FOLIA.	FOLIATION
FOS	FOSSIL (IFEROUS)
FRAC	FRACTURE
FRAG	FRAGMENT (S)
G.W.	GROUNDWATER
GEN.	GENERALLY
GLAU	GLAUCONITE (ITIC)
GR	GRAY (ISH)
GRA	GRAIN (ED)
GRAD	GRADATIONAL
GRN	GREEN (ISH)
GRT	GROUT
GVL	GRAVEL (LY)
GYP	GYPSUM
H/A	HIGH ANGLE
H/B	HAMMER BREAK
HD	HARD
HI	HIGH (LY)
HLD	HEALED
HMR	HAMMER
HOR	HORIZONTAL
HYD	HYDRAULIC
INCL	INCLUDING (ED)
INDT	INDURATED
INIT	INITIAL (LY)
INTBDD	INTERBED (DED)
INTLAM	INTERLAMINATED
IRR	IRREGULAR (LY)
JT'S	JOINT'S
JTD	JOINTED
L.C.	LOSE CORE
L.D.W.	LOST DRILL WATER
L/A	LOW ANGLE
LAB.	LABOR
LAM	LAMINATED. LAMINA (NAE)
LAY.	LAYER
LEA	LEACHED
LGE	LARGE
LIG	LIGNITIC
LIT	LITTLE
LL	LIQUID LIMIT
LN. (S)	LENSE (S)
LO	LOOSE
LS	LIMESTONE
LT	LIGHT
MAS	MASSIVE
MAX	MAXIMUM
MECH	MECHANICAL
MED	MEDIUM
MIC	MICACEOUS
MIN	MINIMUM
MINR	MINERALIZED (IZATION)
MIX.	MIXTURE
MOD	MODERATE (D)
MOT	MOTTLED (ING)
MST	MOIST
MTL	MATERIAL
MTX	MATRIX
N/A	NOT APPLICABLE
N/E	NOT ENCOUNTERED
N/R	NO RECOVERY
NOD.	NODULE
NUM	NUMEROUS
OB	OVERBURDEN (UNCLASSIFIED)
OBS	OBSERVED
OCC	OCCASIONAL (LY)
OOL	OOLITE. OOLITIC
OP	OPEN (ED)
OR	ORANGE

ABBREVIATIONS

ORG	ORGANIC
P.S.I.	POUNDS/SQ. IN.
P.T.	PRESSURE TEST
PART.	PARTIALLY
PCS	PIECES
PERTRO	PETROLEUM. PETROLIFEROUS
PHOS	PHOSPHATE (PHOROUS)
PI	PLASTICITY INDEX
PIT	PIT (TED) (TING)
PKT (S)	POCKET (S)
PL	PLASTIC LIMIT
PLA	PLATY
PLAS	PLASTIC
PLN	PLANE
PNK	PINK
PR	POORLY
PRED	PREDOMINATED
PRESS	PRESSURE
PROB	PROBABLE (ABILITY)
PTC	PARTICLES
PTG	PARTING
PUR	PURPLE
QTZ	QUARTZ
QTZE	QUARTZITE
R.Q.D.	ROCK QUALITY DESIGNATION
RBL	RUBBLE
RD	RED (DISH)
REC	RECOVERY
RECEM	RECEMENTED
RND	ROUND (ED)
RTS	ROOTS
S/S	SPLIT
SAP	SAPROLITE
SAT	SATURATED
SCAT.	SCATTEREDLY
SCH (S)	SCHIST (OS)
SD	SAND
SDY	SANDY
SH	SHALE
SI	SILT
SIS	SILTSTONE
SIY	SILTY
SL	SLIGHT (LY)
SLCES	SILICEOUS
SLICK.	SLICKENSIDE
SML	SMALL
SO	SOFT
SOL	SOLUTION (ED) (ING)
SPG	SPECIFIC GRAVITY
SPT	STANDARD PENETRATION TEST
SPT	STANDARD SPLITSPOON
SS	SANDSTONE
ST	STRAIN (ED) (ING)
STF	STIFF
STR	STRUCTURE
STRG	STRINGER
STYL	STYLOLITE (OLITIC)
SUR	SURFACED
T.F.R.	TOP OF FIRM ROCK
T.O.R.	TOP OF ROCK
T.S.R.	TOP OF SOUND ROCK
TEXT.	TEXTURE
THK	THICK
THN	THIN
TI	TIGHT
TN	TAN (NISH)
TR	TRACE
TRP	TRIPOLI

ABBREVIATIONS

UD	UNDISTUBED
UL	UNACCOUNTABLE LOSS
UNACC	UNACCOUNTABLE
UNWEA	UNWEATHERED
V/	VERY
VERT	VERTICAL
VGY	VUGGY
W.C.	WATER CONTENT
W.L.	WATER LEVEL
W/	WITH
W/H	WEIGHT OF HAMMER
W/R	WEIGHT OF ROD
WD	WOOD
WEA	WEATHERED
WG	WEIGH
WHT	WHITE
X-BDD	CROSS-BEDDED
XL	CRYSTAL
XLN	CYRSTALLINE
YEL	YELLOW


Cairns Heliport
Ft Rucker AL
Legend
Boring Location
PVMT-03-24
CHP-11-25
CHP-04-24
PVMT-02-24
PVMT-01-24
CHP-01-24
CHP-05-24
SWP-01-24
CHP-07-24
CHP-12-25
PVMT-04-24
CHP-08-24
CHP-06-24
CHP-14-25
CHP-13-25
CHP-09-24
PVMT-05-24
23 FTS
Cairns AAF Fort Rucker
US Army Air Traffic Services Command
Speicher St
Skyline Dr
Pecan St
Google Earth
3000 ft
N

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.285139° Lon: -85.720607°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-01-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 04 2025	COMPLETED Aug 04 2025
4. NAME OF DRILLER: Rodney Kutei	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 3.25" HSA		
6. DIRECTION OF BORING: Vertical / DEG FROM VERTICAL: 0 / BEARING:	14. ELEVATION SURFACE: 308.0'		
	15. ELEVATION GROUND WATER: - not encountered		
7. THICKNESS OF OVERBURDEN: 15.0'	16. TOTAL NUMBER CORE BOXES		
8. DEPTH DRILLED INTO ROCK	17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer		APPROVED BY: R. Capes
9. TOTAL DEPTH OF BORING: 15.0'			

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
				0.40	Asphalt, 5 in of asplalt, 1.5 ft of cement stabilized base										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
				307.60	POORLY GRADED SAND WITH CLAY (SP-SC) about 10% gravel; about 80%, fine to coarse sand; about 10% non plastic fines; gray, moist, medium dense, FILL										
	12			2.00											
	5	11		306.00	CLAYEY SAND (SC) about 0% gravel; about 80%, fine to medium sand; about 20% non plastic fines; red, moist, medium dense	100	S-1								
	6			2.80											
	5			305.20	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% fines; brown, moist, loose to medium dense										
	5	9				93	S-2								
	4														
5	4														303
	3	7				100	S-3	0	87	13					
	4														
	3														
	3	6				93	S-4								
	3														
	3														
	3	5				93	S-5								
	2														
	4														
	4	8				73	S-6								
10	4														298
				10.50											
	7			297.50	POORLY GRADED SAND WITH SILT (SP-SM) about 0% gravel; about 90%, fine to medium sand; about 10% fines; orangish brown, moist, medium dense										
	9	20				100	S-7								
	11			12.00											
	8			296.00	POORLY GRADED SAND (SP) about 5% fine, rounded gravel; about 90%, fine to coarse sand; about 5% fines; orangish brown, moist, medium dense to dense										
	15	35				93	S-8								
	20														
	22														
	15	23				100	S-9								
	8														
15				15.00											293
				293.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										

Boring Designation **CHP-02-25**

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.285118° Lon: -85.719400°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-02-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING STARTED: Aug 02 2025	COMPLETED: Aug 02 2025
4. NAME OF DRILLER: Rodney Kutei	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 3.25" HSA		
6. DIRECTION OF BORING: Vertical / DEG FROM VERTICAL: 0 / BEARING:	14. ELEVATION SURFACE: 305.0'		
	15. ELEVATION GROUND WATER: - not encountered		
7. THICKNESS OF OVERBURDEN: 15.0'	16. TOTAL NUMBER CORE BOXES		
8. DEPTH DRILLED INTO ROCK	17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer		APPROVED BY: R. Capes
9. TOTAL DEPTH OF BORING: 15.0'			

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	3			0.60	Topsoil										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth. CBR= 7.4% Resistivity = 14800, Chloride < 24, Sulfate < 24, pH = 5.19
	4	11		304.40	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, dry, medium dense	87	S-1								
	7														
	9														
	8	14				100	CBR Sample S-2	0	81	19					
	6														
	3														
	2	4				100	S-3	0	81	19					
	2			4.50											
	4			300.50	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, very loose										
5	6	12		5.50		100	S-4								300
	6			299.50	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine sand; about 5% fines; red and tan, moist, loose to medium dense										
	5														
	5	8				100	S-5								
	3			7.50											
	3			297.50	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine sand; about 5% fines; tan, moist, very loose to loose										
	1	3				100	S-6	0	81	19					
	2														
	1														
	3	8				100	S-7								
10	5			10.00											295
				295.00	POORLY GRADED SAND (SP) about 5% fine to medium, angular gravel; about 90%, medium to coarse sand; about 5% non plastic fines; red, moist, loose										
	6			10.50											
	6			294.50	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine sand; about 5% non plastic fines; moist, medium dense										
	5	11				100	S-8								
	6														
	7														
	7	15				100	S-9								
	8														
	6														
	6	12				100	S-10								
	6			15.00											
15				290.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										290

Boring Designation **CHP-03-25**

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.286166° Lon: -85.717204°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-03-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 05 2025	COMPLETED Aug 05 2025
4. NAME OF DRILLER: Rodney Kutei	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 3.25" HSA		
6. DIRECTION OF BORING: Vertical / DEG FROM VERTICAL: 0 / BEARING:	14. ELEVATION SURFACE: 309.0'		
7. THICKNESS OF OVERBURDEN: 15.0'	15. ELEVATION GROUND WATER: - not encountered		
8. DEPTH DRILLED INTO ROCK	16. TOTAL NUMBER CORE BOXES		
9. TOTAL DEPTH OF BORING: 15.0'	17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer		APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	1			0.30	Concrete										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
	2	4		308.70	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, very loose to loose	67	S-1								
	2														
	3														
	3	7				27	S-2								
	4														
	4														
	4	8				93	S-3								
	4			4.50											
	3			304.50	POORLY GRADED SAND WITH CLAY (SP-SC) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; reddish brown, moist, loose										
5	3	8				100	S-4								304
	5														
	3														
	3	8				80	S-5								
	5			7.50											
	3			301.50	CLAYEY SAND (SC) about 0% gravel; about 80%, fine to medium sand; about 20% non plastic fines; red and brownish gray, wet, loose to medium dense										
	4	8				100	S-6								
	4														
	3														
	5	14				100	S-7								
10	9			10.50											299
	5			298.50	CLAYEY SAND (SC) about 0% gravel; about 80%, fine to medium sand; about 20% non plastic fines; red and brownish gray, moist, medium dense to dense										
	8	21				100	S-8								
	13														
	8														
	15	33				100	S-9								
	18														
	14														
	15	34				87	S-10								
	19			15.00											
15				294.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										294

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.285666° Lon: -85.716067°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-04-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 05 2025	COMPLETED Aug 05 2025
4. NAME OF DRILLER: Rodney Kutei		12. HAMMER TYPE: Automatic	EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46		13. SIZE AND TYPE OF BIT: 3.25" HSA	
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 309.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 15.0'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer
9. TOTAL DEPTH OF BORING: 15.0'			APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	0			0.40	Concrete, 5 in of cement										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
	2	5		308.60	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, loose	93	S-1								
	3			1.50											
	2			307.50	POORLY GRADED SAND WITH SILT (SP-SM) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; brown, moist, very loose to loose										
	2	4				67	S-2								
	2														
	2														
	2	7				87	S-3								
	5			4.00											
	7			305.00	POORLY GRADED SAND WITH SILT (SP-SM) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; red and brown, moist, loose to medium dense										
5	11	25				87	S-4								304
	14														
	11														
	13	29				100	S-5								
	16														
	9														
	14	28				93	S-6								
	14														
	5														
	9	20				87	S-7								
10	11														299
	6														
	10	24				100	S-8								
	14			12.00											
	12			297.00	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to coarse sand; about 5% non plastic fines; red, moist, medium dense										
	11	20				100	S-9								
	9														
	14														
	10	23				100	S-10								
	13			15.00											
15				294.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										294

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.280006° Lon: -85.713642°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-05-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 04 2025	COMPLETED Aug 04 2025
4. NAME OF DRILLER: Rodney Kutei	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 3.25" HSA		
6. DIRECTION OF BORING: Vertical / DEG FROM VERTICAL: 0 / BEARING:	14. ELEVATION SURFACE: 299.0'		
	15. ELEVATION GROUND WATER: - not encountered		
7. THICKNESS OF OVERBURDEN: 15.0'	16. TOTAL NUMBER CORE BOXES		
8. DEPTH DRILLED INTO ROCK	17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer		APPROVED BY: R. Capes
9. TOTAL DEPTH OF BORING: 15.0'			

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	0				Asphalt, 8 in of asplalt										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
				0.65											
	1	8		298.35	POORLY GRADED SAND (SP) about 5% fine, angular gravel; about 90%, fine to coarse sand; about 5% non plastic fines; tan and red, moist, loose	47	S-1								
	7			1.50											
	11			297.50	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, loose to medium dense										
	10	19				100	S-2								
	9														
	3														
	2	6		4.00		93	S-3								
	4			295.00	CLAYEY SAND (SC) about 0% gravel; about 80%, fine to medium sand; about 20% non plastic fines; red, moist, loose to medium dense										
	4														
5	5	11				87	S-4								294
	6														
	4														
	4	10				100	S-5								
	6														
	7														
	8	21				100	S-6								
	13														
	5														
	9	20				93	S-7								
10	11														289
	5			11.00											
	7	17		288.00	CLAYEY SAND (SC) about 0% gravel; about 80%, fine to medium sand; about 20% non plastic fines; tan and red, moist, medium dense	100	S-8								
	10														
	6														
	11	28		13.00		93	S-9								
	17			286.00	POORLY GRADED SAND WITH CLAY (SP-SC) about 0% gravel; about 90%, fine sand; about 10% non plastic fines; orangish red, moist, medium dense										
				13.50											
	14			285.50	CLAYEY SAND (SC) about 0% gravel; about 80%, fine to medium sand; about 20% non plastic fines; tan and red, moist, dense										
	14	38				93	S-10								
	24														
15				15.00											284
				284.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.275107° Lon: -85.713845°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-06-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 04 2025	COMPLETED Aug 04 2025
4. NAME OF DRILLER: Rodney Kutei		12. HAMMER TYPE: Automatic	EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46		13. SIZE AND TYPE OF BIT: 3.25" HSA	
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 299.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 15.0'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer
9. TOTAL DEPTH OF BORING: 15.0'			APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	0				Asphalt, 8.5 in of asphalt										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
	2	7		0.70 / 298.30	POORLY GRADED SAND (SP) about 5% fine, angular gravel; about 90%, fine to coarse sand; about 5% non plastic fines; tan and red, moist, loose to medium dense	47	S-1								
	5														
	6														
	9	20				100	S-2	0	74	26					Resistivity = 32500, Chloride < 28, Sulfate = 47, pH = 8.3
	11			3.00											
	14			296.00	POORLY GRADED SAND (SP) about 5% fine to medium, angular gravel; about 90%, medium to coarse sand; about 5% non plastic fines; red, moist, loose to medium dense										
	14	29				93	S-3								
	15														
	12														
5	11	23				100	S-4								294
	12														
	10														
	11	22				100	S-5								
	11														
	12														
	8	15				100	S-6								
	7														
	7														
	5	10		10.00		93	S-7								
10	5			289.00	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine sand; about 5% non plastic fines; red, moist, loose										289
	5														
	4	8				100	S-8								
	4														
	3														
	4	9		13.00		100	S-9								
	5			286.00	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine sand; about 5% non plastic fines; dark red, moist, loose										
	3														
	3	6				80	S-10								
	3			15.00											
15				284.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										284

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.278084° Lon: -85.706705°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-07-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 02 2025	COMPLETED Aug 02 2025
4. NAME OF DRILLER: Rodney Kutei		12. HAMMER TYPE: Automatic	EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46		13. SIZE AND TYPE OF BIT: 3.25" HSA	
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 288.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 9.0'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer
9. TOTAL DEPTH OF BORING: 9.0'			APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	1			0.60	Topsoil										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
	5	11		287.40	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, very loose to medium dense	100	S-0								
	6														
	4														
	2	4				100	CBR Sample S-2								
	2			3.00											
	2			285.00	POORLY GRADED SAND WITH SILT (SP-SM) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; brown, moist, loose										
	2	6				100	S-3								
	4			4.50											
	13			283.50	POORLY GRADED SAND WITH SILT (SP-SM) about 0% gravel; about 90%, fine to coarse sand; about 10% non plastic fines; brown and red, moist, dense										
5	16	33		5.50		93	S-4								283
	17			282.50	POORLY GRADED SAND (SP) about 5% fine to medium, angular gravel; about 90%, fine to coarse sand; about 5% non plastic fines; brown and red, moist, medium dense to dense										
	17														
	12	23				100	S-5								
	11														
	13														
	10	19				100	S-6								
	9			9.00											
				279.00	Borehole finished at 9.0 ft										
10															278
15															273

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.275531° Lon: -85.707702°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-08-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 01 2025	COMPLETED Aug 01 2025
4. NAME OF DRILLER: Rodney Kutei		12. HAMMER TYPE: Automatic	EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46		13. SIZE AND TYPE OF BIT: 3.25" HSA	
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 293.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 15.0'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer
9. TOTAL DEPTH OF BORING: 15.0'			APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
				0.70	Asphalt, 8.5 in asphalt, 4 in wearing layer, 4.2 in stabled asphalt base, asphalt was to thick to sample 0 to 1.5 ft										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
				292.30	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% fines; brown, moist, medium dense										
	6 5	14		2.50		100	S-1								
	9			290.50	CLAYEY SAND (SC) about 0% gravel; about 85%, fine sand; about 15% non plastic fines; brown and, moist, loose to medium dense										
	3 3 5	8		4.50		100	S-2								
5	4 6	12		288.50 5.20	POORLY GRADED SAND WITH SILT (SP-SM) about 0% gravel; about 90% sand; about 10% non plastic fines; brown and gray, moist, medium dense	100	S-3								288
	6			287.80	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; gray and brown, moist, very loose to medium dense										
	4 4 5	9				100	S-4								
	2 1	2				80	S-5								
	1 3 3	5				80	S-6								
10	2			10.50											283
	4 4 3	7		282.50	POORLY GRADED SAND WITH SILT (SP-SM) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; red and brown, moist, loose to dense	93	S-7								
	4			12.50											
	12 26	38		280.50	POORLY GRADED SAND (SP) about 5% fine to medium, angular gravel; about 90%, medium to coarse sand; about 5% non plastic fines; red, moist, medium dense to dense	100	S-8								
	6 9 9	18				93	S-9								
15				15.00											278
				278.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.269795° Lon: -85.714682°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: CHP-09-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 01 2025	COMPLETED Aug 01 2025
4. NAME OF DRILLER: Rodney Kutei	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 3.25" HSA		
6. DIRECTION OF BORING: Vertical / DEG FROM VERTICAL: 0 / BEARING:	14. ELEVATION SURFACE: 293.0'		
	15. ELEVATION GROUND WATER: - not encountered		
7. THICKNESS OF OVERBURDEN: 15.0'	16. TOTAL NUMBER CORE BOXES		
8. DEPTH DRILLED INTO ROCK	17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer		APPROVED BY: R. Capes
9. TOTAL DEPTH OF BORING: 15.0'			

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	0			0.50	Concrete, 6 in concrete pad										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
	1	2		292.50	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, very loose to medium dense, FILL	47	S-1	0	78	22					
	1														
	4														
	4	9				87	S-2	0	76	24					
	5														
	6														
	6	11				100	S-3								
	5														
	4														
5	3	6				100	S-4	0	88	12					288
	3			6.00											
	3			287.00	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; light brown, moist, loose, FILL										
	3	6				93	S-5	0	91	9					Resistivity = 49500, Chloride < 23, Sulfate < 23, pH = 8.35
	3														
	4														
	4	8				100	S-6								
	4			9.00											
	4			284.00	POORLY GRADED SAND WITH CLAY (SP-SC) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; brown and red, moist, medium dense										
	5	11				100	S-7								
10	6														283
	6														
	12	26				100	S-8								
	14														
	9														
	9	22				100	S-9								
	13			13.00											
	13			280.00	POORLY GRADED SAND WITH CLAY (SP-SC) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; red, moist, medium dense										
	7														
	11	24				93	S-10								
	13			15.00											
15				278.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										278

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Ft. Rucker		Sheet 1 of 1
1. PROJECT: Cairns Helipads, Ft. Rucker	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: N: 285989.84 E: 692525.68		LOCATION METHOD:
2. HOLE NUMBER: CHP-10-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Dec 14 2025	COMPLETED Dec 14 2025
4. NAME OF DRILLER: John Lamar	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 4" Flight Auger		
6. DIRECTION OF BORING: Vertical; DEG FROM VERTICAL: 0; BEARING:	14. ELEVATION SURFACE: 309.0'		
	15. ELEVATION GROUND WATER: - not encountered		
7. THICKNESS OF OVERBURDEN: 15.0'	16. TOTAL NUMBER CORE BOXES		
8. DEPTH DRILLED INTO ROCK	17. SIGNATURE AND TITLE OF INSPECTOR: Laura Roebuck		APPROVED BY:
9. TOTAL DEPTH OF BORING: 15.0'			

DEPTH	BLOWS/0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	1				SILTY SAND (SM) fine to medium sand; brown, moist, very loose, some silt, trace clay, trace roots										0 - 15: 4" Flight Auger Elevations are estimates taken from Google Earth.
	2	4				93	S-1								
	2			1.50											
	2			307.50	POORLY GRADED SAND WITH CLAY (SC) fine sand; yellowish brown and red, moist, very loose to loose, some clay, little silt										
	1	3				80	S-2								
	2														
	2														
	2	5				87	S-3								
	3														
5	3														304
	3	7				93	S-4								
	4			6.00											
	6			303.00	POORLY GRADED SAND WITH CLAY (SC) fine sand; orange and yellow, moist, medium dense, little clay, trace silt										
	6	11				100	S-5								
	5			7.50											
	10			301.50	POORLY GRADED SAND WITH CLAY (SC) fine to medium sand; yellow and orangish red, moist, medium dense, some clay, trace silt										
	13	30				100	S-6								
	17				POORLY GRADED SAND WITH CLAY (SC) fine to medium sand; yellow and orangish red, moist, medium dense, some clay, trace silt										
	21			9.00											
	19	40		300.00	POORLY GRADED SAND WITH CLAY (SC) fine to medium sand; yellow and orangish red, dry, dense, some clay, trace silt	100	S-7								
10	21														299
	19														
	18	37				100	S-8								
	19			12.00											
	10			12.00	POORLY GRADED SAND WITH CLAY (SP-SC) fine to coarse sand; yellow and orangish red, dry, medium dense, little clay, trace fine gravel, trace silt										
	13	26		297.00		100	S-9								
	13			297.00											
	12			13.50											
	9	18		295.50	POORLY GRADED SAND WITH CLAY (SP-SC) fine to coarse sand; red, dry, medium dense, few clay, trace silt	100	S-10								
	9			15.00											
15				294.00	Borehole finished at 15.0 ft										294

Boring Designation **CHP-11-25**

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Ft. Rucker		Sheet 1 of 1
1. PROJECT: Cairns Helipads, Ft. Rucker	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: N: 285791.34 E: 692869.42		LOCATION METHOD:
2. HOLE NUMBER: CHP-11-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Dec 14 2025	COMPLETED Dec 14 2025
4. NAME OF DRILLER: John Lamar	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 4" Flight Auger		
6. DIRECTION OF BORING: Vertical; DEG FROM VERTICAL: 0; BEARING:	14. ELEVATION SURFACE: 310.0'		
	15. ELEVATION GROUND WATER: - not encountered		
7. THICKNESS OF OVERBURDEN: 15.0'	16. TOTAL NUMBER CORE BOXES		
8. DEPTH DRILLED INTO ROCK	17. SIGNATURE AND TITLE OF INSPECTOR: Laura Roebuck		APPROVED BY:
9. TOTAL DEPTH OF BORING: 15.0'			

DEPTH	BLOWS/0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	1				POORLY GRADED SAND WITH SILT (SP-SM) fine sand; yellowish brown, moist, loose, few clay, few silt, trace fine gravel										0 - 15: 4" Flight Auger Elevations are estimates taken from Google Earth.
	3	5				73	S-1								
	2			1.50											
	1			308.50	POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; yellowish brown with red, moist, very loose, little clay, little fine to medium gravel, trace silt										
	1	3				73	S-2								
	2			3.00											
	2			307.00	POORLY GRADED SAND WITH CLAY (SC) fine to medium sand; yellowish brown with red, moist, medium dense, some clay, little fine to coarse gravel, trace silt										
	5	11				87	S-3								
	6			4.50											
	12			305.50	POORLY GRADED SAND WITH CLAY (SC) fine to medium sand; yellow and red, moist, medium dense, some clay, trace silt										
5	12	28				100	S-4								305
	16														
	10														
	12	29				100	S-5								
	17														
	13														
	15	30				100	S-6								
	15														
	15														
	14	28				100	S-7								
10	14			10.50											300
	16			299.50	POORLY GRADED SAND WITH CLAY (SC) fine to medium sand; orangish red and yellow, moist, dense, some clay, trace silt, trace fine gravel										
	15	34				100	S-8								
	19			12.00											
	7			298.00	POORLY GRADED SAND WITH CLAY (SP-SC) fine sand; orange, moist, medium dense, few clay, few silt										
	8	18				100	S-9								
	10														
	7														
	11	22				100	S-10								
	11			15.00											
15				295.00	Borehole finished at 15.0 ft										295

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Ft. Rucker		Sheet 1 of 1
1. PROJECT: Cairns Helipads, Ft. Rucker	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: N: 282871.79 E: 695433.64		LOCATION METHOD:
2. HOLE NUMBER: CHP-12-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Dec 13 2025	COMPLETED Dec 13 2025
4. NAME OF DRILLER: John Lamar	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 4" Flight Auger		
6. DIRECTION OF BORING: Vertical; DEG FROM VERTICAL: 0; BEARING:	14. ELEVATION SURFACE: 294.0'		
	15. ELEVATION GROUND WATER: - not encountered		
7. THICKNESS OF OVERBURDEN: 15.0'	16. TOTAL NUMBER CORE BOXES		
8. DEPTH DRILLED INTO ROCK	17. SIGNATURE AND TITLE OF INSPECTOR: Laura Roebuck		APPROVED BY:
9. TOTAL DEPTH OF BORING: 15.0'			

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
				0.60	Asphalt *0 - 0.6 ft: 7.2" of Asphalt*										0 - 15: 4" Flight Auger Elevations are estimates taken from Google Earth.
	2			293.40	POORLY GRADED SAND WITH CLAY (SP-SC) fine to coarse sand; yellowish orange, moist, very loose, little clay, little fine to coarse gravel	50	S-1								
	3			1.50											
	3			292.50	POORLY GRADED SAND WITH CLAY (SC) fine to coarse sand; orangish red with yellow, moist, medium dense, some clay, few fine to coarse gravel	93	S-2								
	5	12													
	7			3.00											
	5			291.00	POORLY GRADED SAND WITH CLAY (SC) fine to coarse sand; tan, moist, loose, little clay, few fine to coarse gravel	93	S-3								
	2	5													
	3			4.50											
	2			289.50	POORLY GRADED SAND WITH SILT (SP-SM) fine to coarse sand; tan, moist, very loose, few silt, few clay, trace fine gravel	93	S-4								
5	1	2													289
	1			6.00											
	2			288.00	POORLY GRADED SAND WITH CLAY (SP-SC) fine to coarse sand; tan, moist, loose, little clay, few silt, trace fine to medium gravel	87	S-5								
	2	5													
	3			7.50											
	10			286.50	POORLY GRADED SAND WITH CLAY (SP-SC) fine to coarse sand; red, moist, medium dense, some clay, trace fine to coarse gravel	100	S-6								
	13	26													
	13			9.00											
	25			285.00	POORLY GRADED SAND WITH CLAY (SC) fine to coarse sand; orangish red with white, moist, dense, some clay, little fine to coarse gravel	100	S-7								
	24	46													
10	22			10.50											284
	18			283.50	POORLY GRADED SAND WITH GRAVEL (SP-SC) fine to coarse sand; orangish red with white, moist, medium dense, some fine to coarse gravel, little clay	100	S-8								
	18	29													
	11			12.00											
	6			282.00	POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; orangish red with white, moist, loose, little clay, trace fine gravel	100	S-9								
	5	10													
	5														
	4					100	S-10								
	4	10													
	6			15.00											
15				279.00	Borehole finished at 15.0 ft										279

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Ft. Rucker		Sheet 1 of 1
1. PROJECT: Cairns Helipads, Ft. Rucker	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: N: 280244.47 E: 694414.16		LOCATION METHOD:
2. HOLE NUMBER: CHP-13-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING STARTED: Dec 13 2025	COMPLETED: Dec 13 2025
4. NAME OF DRILLER: John Lamar	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 4" Flight Auger		
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 287.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 15.0'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Laura Roebuck
9. TOTAL DEPTH OF BORING: 15.0'			APPROVED BY:

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
				0.50	Concrete										0 - 15: 4" Flight Auger Elevations are estimates taken from Google Earth.
	1			286.50	POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; brown and brownish orange, moist, very loose, little clay, trace silt										
	2	2				33	S-1								
	4														
	4	9				73	S-2								
	5														
	3														
	7	15				100	S-3								
	8														
	5														
5	4	6				100	S-4								282
	2														
	2														
	1	2				100	S-5								
	1			7.50											
	1			279.50	POORLY GRADED SAND WITH CLAY (SC) fine to medium sand; orange, moist, very loose, some clay, trace silt										
	1	3				100	S-6								
	2			9.00											
	2			278.00	POORLY GRADED SAND WITH CLAY (SC) fine to medium sand; orange, moist, very loose to medium dense, some clay										
	1	3				100	S-7								
10	2														277
	4														
	2	6				100	S-8								
	4														
	7														
	7	14				100	S-9								
	7														
	8														
	10	21				100	S-10								
	11			15.00											
15				272.00	Borehole finished at 15.0 ft										272

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Ft. Rucker		Sheet 1 of 1
1. PROJECT: Cairns Helipads, Ft. Rucker	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: N: 280917.72 E: 691895.62		LOCATION METHOD:
2. HOLE NUMBER: CHP-14-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Dec 13 2025	COMPLETED Dec 13 2025
4. NAME OF DRILLER: John Lamar	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 4" Flight Auger		
6. DIRECTION OF BORING: Vertical / DEG FROM VERTICAL: 0 / BEARING:	14. ELEVATION SURFACE: 294.0'		
7. THICKNESS OF OVERBURDEN: 15.0'	15. ELEVATION GROUND WATER: - not encountered		
8. DEPTH DRILLED INTO ROCK	16. TOTAL NUMBER CORE BOXES		
9. TOTAL DEPTH OF BORING: 15.0'	17. SIGNATURE AND TITLE OF INSPECTOR: Laura Roebuck		APPROVED BY:

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	1				POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; orangish brown, moist, loose, few clay, trace silt										0 - 15: 4" Flight Auger Elevations are estimates taken from Google Earth.
	2	5				93	S-1								
	3			1.50											
	3			292.50	POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; brown to orangish brown, moist, loose, little clay, trace silt, trace roots										
	3	5				93	S-2								
	2			3.00											
	2			291.00	POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; orangish brown to brown, moist, very loose, little clay, trace silt, trace fine to medium gravel										
	1	2				100	S-3								
	1														
5	1														289
	1	2				100	S-4								
	1			6.00											
	1			288.00	POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; orangish brown with white, moist, medium dense, few clay, trace fine gravel										
	6	14				100	S-5								
	8			7.50											
	0			286.50	POORLY GRADED SAND WITH SILT (SM) fine to medium sand; orangish brown to light brown, moist, very loose, little silt, trace clay, trace fine gravel										
	1	2				100	S-6								
	1			9.00											
	1			285.00	POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; orangish brown to light brown, moist, very loose, little clay, trace silt										
	1	2				100	S-7								
10	1														284
	1			10.50											
	2			283.50	POORLY GRADED SAND WITH CLAY (SP-SC) fine to medium sand; brown to red, moist, medium dense to dense, little clay, trace silt, trace fine to medium gravel										
	8	22				100	S-8								
	14														
	11														
	15	36				100	S-9								
	21			13.50											
	15			280.50	POORLY GRADED SAND WITH CLAY (SC) fine to coarse sand; red with white, dry, medium dense, little clay, trace silt, trace fine to medium gravel										
	14	29				100	S-10								
	15			15.00											
15				279.00	Borehole finished at 15.0 ft										279

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.285289° Lon: -85.721345°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: PVMT-01-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 04 2025	COMPLETED Aug 04 2025
4. NAME OF DRILLER: Rodney Kutei		12. HAMMER TYPE: Automatic	EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46		13. SIZE AND TYPE OF BIT: 3.25" HSA	
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 307.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 7.5'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer
9. TOTAL DEPTH OF BORING: 7.5'			APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	1			0.60	Topsoil										0 - 9: 3.25" HSA Elevations are estimates taken from Google Earth.
	1	2		306.40	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, very loose to medium dense	93	S-1								
	1														
	1														
	2	5				93	S-2								
	3														
	2														
	2	4				93	S-3								
	2														
	5			5.00											
5	14	30		302.00	POORLY GRADED SAND WITH CLAY (SP-SC) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; orangish brown and tan, moist, medium dense	100	S-4								302
	16														
	15														
	11	22				100	S-5								
	11			7.50											
				299.50	Borehole finished at 7.5 ft										
10															297
15															292

Boring Designation **PVMT-02-25**

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.285672° Lon: -85.720825°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: PVMT-02-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 04 2025	COMPLETED Aug 04 2025
4. NAME OF DRILLER: Rodney Kutei		12. HAMMER TYPE: Automatic	EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46		13. SIZE AND TYPE OF BIT: 3.25" HSA	
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 306.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 9.0'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer
9. TOTAL DEPTH OF BORING: 9.0'			APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	1			0.60	Topsoil										0 - 9: 3.25" HSA Elevations are estimates taken from Google Earth. Resistivity = 14900, Chloride < 24, Sulfate < 24, pH = 6.74
	1	4		305.40	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, very loose	87	S-1								
	3			1.20											
	7			304.80	POORLY GRADED SAND (SP) about 5% rounded gravel; about 90%, fine to medium sand; about 5% non plastic fines; light brown, moist, very loose to medium dense										
	7	14				100	CBR Sample S-2	0	88	12					
	7														
	6														
	5	10				100	S-3								
	5			4.50											
	11			301.50	POORLY GRADED SAND WITH CLAY (SP-SC) about 5% rounded gravel; about 85%, fine to coarse sand; about 10% non plastic fines; tan and red, moist, medium dense										
5	11	24				93	S-4								301
	13														
	11														
	13	26				100	S-5								
	13														
	6														
	8	21				100	S-6								
	13			9.00											
				297.00	Borehole finished at 9.0 ft										
10															296
15															291

Boring Designation **PVMT-03-25**

DRILLING LOG

DIVISION: South Atlantic

INSTALLATION: Mobile District

Sheet 1 of 1

1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL

10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet

VERTICAL: NAVD88

LOCATION COORDINATES: Lat: 31.286045° Lon: -85.716545°

LOCATION METHOD: Handheld GPS

2. HOLE NUMBER: PVMT-03-25

3. DRILLING AGENCY: Corps of Engineers - CESAM

11. DATE BORING: STARTED Aug 05 2025; COMPLETED Aug 05 2025

4. NAME OF DRILLER: Rodney Kutei

12. HAMMER TYPE: Automatic

EFFICIENCY (%)

5. EQUIPMENT: Mobile B-46

13. SIZE AND TYPE OF BIT: 3.25" HSA

6. DIRECTION OF BORING: Vertical; DEG FROM VERTICAL: 0; BEARING:

14. ELEVATION SURFACE: 307.0'

15. ELEVATION GROUND WATER:

7. THICKNESS OF OVERBURDEN: 9.0'

16. TOTAL NUMBER CORE BOXES:

8. DEPTH DRILLED INTO ROCK:

17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer

APPROVED BY: R. Capes

9. TOTAL DEPTH OF BORING: 9.0'

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	0			0.50	Asphalt										0 - 9: 3.25" HSA Elevations are estimates taken from Google Earth. CBR = 19.5%
	2	4		306.50	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% fines; brown, moist, very loose to medium dense	60	S-1								
	2														
	2														
	2	5				93	S-2								
	3														
	4														
	4	7				93	S-3								
	3														
	5			5.00											
5	7	18		302.00	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% fines; tan and orangish brown, moist, medium dense	93	S-4								302
	11			6.00											
	10			301.00	CLAYEY SAND (SC) about 0% gravel; about 80%, fine to medium sand; about 20% non plastic fines; brown and red, moist, medium dense to dense										
	14	41				100	S-5								
	27														
	10														
	10	20				100	S-6								
	10			9.00											
				298.00	Borehole finished at 9.0 ft										
10															297
15															292

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.275819° Lon: -85.707204°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: PVMT-04-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 01 2025	COMPLETED Aug 01 2025
4. NAME OF DRILLER: Rodney Kutei		12. HAMMER TYPE: Automatic	EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46		13. SIZE AND TYPE OF BIT: 3.25" HSA	
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 294.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 9.0'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer
9. TOTAL DEPTH OF BORING: 9.0'			APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	1			0.05	Asphalt										0 - 9: 3.25" HSA
	4	6		293.95	CLAYEY SAND (SC) about 0% gravel; about 85%, fine to medium sand; about 15% non plastic fines; brown and red, moist, loose to medium dense	60	S-1								Elevations are estimates taken from Google Earth.
	2														
	3														
	8	19		2.20		100	S-2								
	11			291.80	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, moist, loose to medium dense										
	6														
	5	9		4.00		100	S-3								
	4			290.00	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; red and brown, moist, loose to medium dense										
	7														
5	8	14				93	S-4								289
	6														
	4														
	4	10				87	S-5								
	6														
	3														
	5	13				67	S-6								
	8			9.00											
				285.00	Borehole finished at 9.0 ft										
10															284
15															279

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.268819° Lon: -85.715272°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: PVMT-05-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING STARTED: Aug 05 2025	COMPLETED: Aug 05 2025
4. NAME OF DRILLER: Rodney Kutei	12. HAMMER TYPE: Automatic		EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46	13. SIZE AND TYPE OF BIT: 3.25" HSA		
6. DIRECTION OF BORING: Vertical / DEG FROM VERTICAL: 0 / BEARING:	14. ELEVATION SURFACE: 289.0'		
7. THICKNESS OF OVERBURDEN: 3.0'	15. ELEVATION GROUND WATER: - not encountered		
8. DEPTH DRILLED INTO ROCK	16. TOTAL NUMBER CORE BOXES		
9. TOTAL DEPTH OF BORING: 3.0'	17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer		APPROVED BY: R. Capes

DEPTH	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
		0.60	Topsoil										Elevations are estimates taken from Google Earth.
		288.40	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% fines; brown, moist										
		2.00			CBR Sample	0	83	17					CBR = 24.3%
		287.00	POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% fines; orangish brown, moist										
		3.00											
		286.00	Borehole finished at 3.0 ft										
5													284
10													279
15													274

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Mobile District		Sheet 1 of 1
1. PROJECT: Cairns Helipads and Lighting, Ft. Rucker, AL	10. COORDINATE SYSTEM: NAD 1983 StatePlane Alabama East FIPS 0101 Feet		VERTICAL: NAVD88
	LOCATION COORDINATES: Lat: 31.278380° Lon: -85.706458°		LOCATION METHOD: Handheld GPS
2. HOLE NUMBER: SWP-01-25	3. DRILLING AGENCY: Corps of Engineers - CESAM	11. DATE BORING: STARTED Aug 02 2025	COMPLETED Aug 02 2025
4. NAME OF DRILLER: Rodney Kutei		12. HAMMER TYPE: Automatic	EFFICIENCY (%)
5. EQUIPMENT: Mobile B-46		13. SIZE AND TYPE OF BIT: 3.25" HSA	
6. DIRECTION OF BORING: Vertical	DEG FROM VERTICAL: 0	BEARING:	14. ELEVATION SURFACE: 292.0'
			15. ELEVATION GROUND WATER: - not encountered
7. THICKNESS OF OVERBURDEN: 15.0'			16. TOTAL NUMBER CORE BOXES
8. DEPTH DRILLED INTO ROCK			17. SIGNATURE AND TITLE OF INSPECTOR: Joseph Long, Geotechnical Engineer
9. TOTAL DEPTH OF BORING: 15.0'			APPROVED BY: R. Capes

DEPTH	BLOWS/ 0.5ft	N	LEGEND	LAYER DEPTH ELEV.	CLASSIFICATION OF MATERIALS (Description)	% REC	SAMP NO.	LABORATORY: Gravel	Sand	Fines	LL	PI	MC	ASTM Class	REMARKS
	3				POORLY GRADED SAND (SP) about 0% gravel; about 95%, fine to medium sand; about 5% non plastic fines; brown, dry, loose										0 - 15: 3.25" HSA Elevations are estimates taken from Google Earth.
	4	8				100	S-1								
	4														
	3						Pond Bucket Sample								
	3	5				80	S-2								
	2			3.00											
	2			289.00	POORLY GRADED SAND WITH SILT (SP-SM) about 0% gravel; about 90%, fine to medium sand; about 10% non plastic fines; brown, dry, very loose										
	1	2				93	S-3								
	1			4.50											
	1			287.50	SILTY SAND (SM) about 0% gravel; about 85%, fine to medium sand; about 15% non plastic fines; brown and red, moist, medium dense										
5	5	12				87	S-4								287
	7														
	8														
	11	23				80	S-5								
	12			7.50											
	19			284.50	POORLY GRADED SAND (SP) about 5% fine to medium, angular gravel; about 90%, fine to coarse sand; about 5% non plastic fines; brown and red, moist, dense										
	22	50				100	S-6								
	28														
	18														
	19	38				87	S-7								
10	19														282
	12														
	8	16				93	S-8								
	8														
	9														
	12	24				100	S-9								
	12														
	12														
	12	22				100	S-10								
	10			15.00											
15				277.00	Borehole finished at 15.0 ft. backfilled with 1 bag of cement										277

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ENGINEERING

September 17, 2025

US Army Corps of Engineers
109 St. Joseph Street
Mobile, AL 36602

Attention: **Chris Long**
Subject: **USACE- Cairns Helipads**
Thompson Project No. 25-1102-0124

Dear Mr. Long:

Thompson Engineering has concluded the laboratory testing services as requested for the Cairns Helipads project. Please find attached, a complete set of test reports as requested. All laboratory testing was performed in accordance with appropriate testing standards.

It has been our pleasure to again provide the US Army Corps of Engineers with our laboratory testing services on this project. If there are any questions or further information is needed, please advise.

Respectfully,

THOMPSON ENGINEERING INC.

Daniel B. Westbrook
Laboratory Manager

Attachments: Laboratory Test Results

2970 Cottage Hill Road, Ste. 190
Mobile, AL 36606
251.666.2443 ph. / 251.666.6422 fax
www.thompsonengineering.com

A THOMPSON HOLDINGS, INC. COMPANY

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Laboratory Results Summary

PROJECT USACE- Cairns Helipads
CLIENT Archway Solutions LLC
PROJECT NO. 25-1102-0124
LOCATION NA

Boring ID	Sample ID	Depth (ft)	Moisture Content (%)	LL	PL	PI	%Gravel	% Sand	% Fines	% Passing ¾"	% Passing #4	% Passing #10	% Passing #40	% Passing #200
CHP-01-25	S-3	4.5	5.9				0.18	87.33	12.50	100.00	99.82	99.14	65.16	12.50
CHP-02-25	CBR	0	4.7				0.00	81.17	18.83	100.00	100.00	99.95	79.43	18.83
CHP-02-25	S-3	3	7.1				0.00	80.75	19.25	100.00	100.00	99.87	77.67	19.25
CHP-02-25	S-6	7.5	8.6				0.00	80.54	19.46	100.00	100.00	99.74	81.37	19.46
CHP-06-25	S-2	1.5	14.1				0.00	74.47	25.53	100.00	100.00	95.82	55.43	25.53
CHP-09-25	S-1	0	9.3				0.00	77.62	22.38	100.00	100.00	97.60	77.25	22.38
CHP-09-25	S-2	1.5	6.6				0.00	76.43	23.57	100.00	100.00	99.71	76.32	23.57
CHP-09-25	S-4	4.5	5.3				0.00	87.61	12.39	100.00	100.00	99.94	82.81	12.39
CHP-09-25	S-5	6	4.1				0.00	91.04	8.96	100.00	100.00	99.59	80.76	8.96
PVMT-02-25	CBR	0	5.1				0.00	87.64	12.36	100.00	100.00	99.93	79.13	12.36
PVMT-05-25	CBR	0	3.9				0.00	83.35	16.65	100.00	100.00	99.97	79.03	16.65

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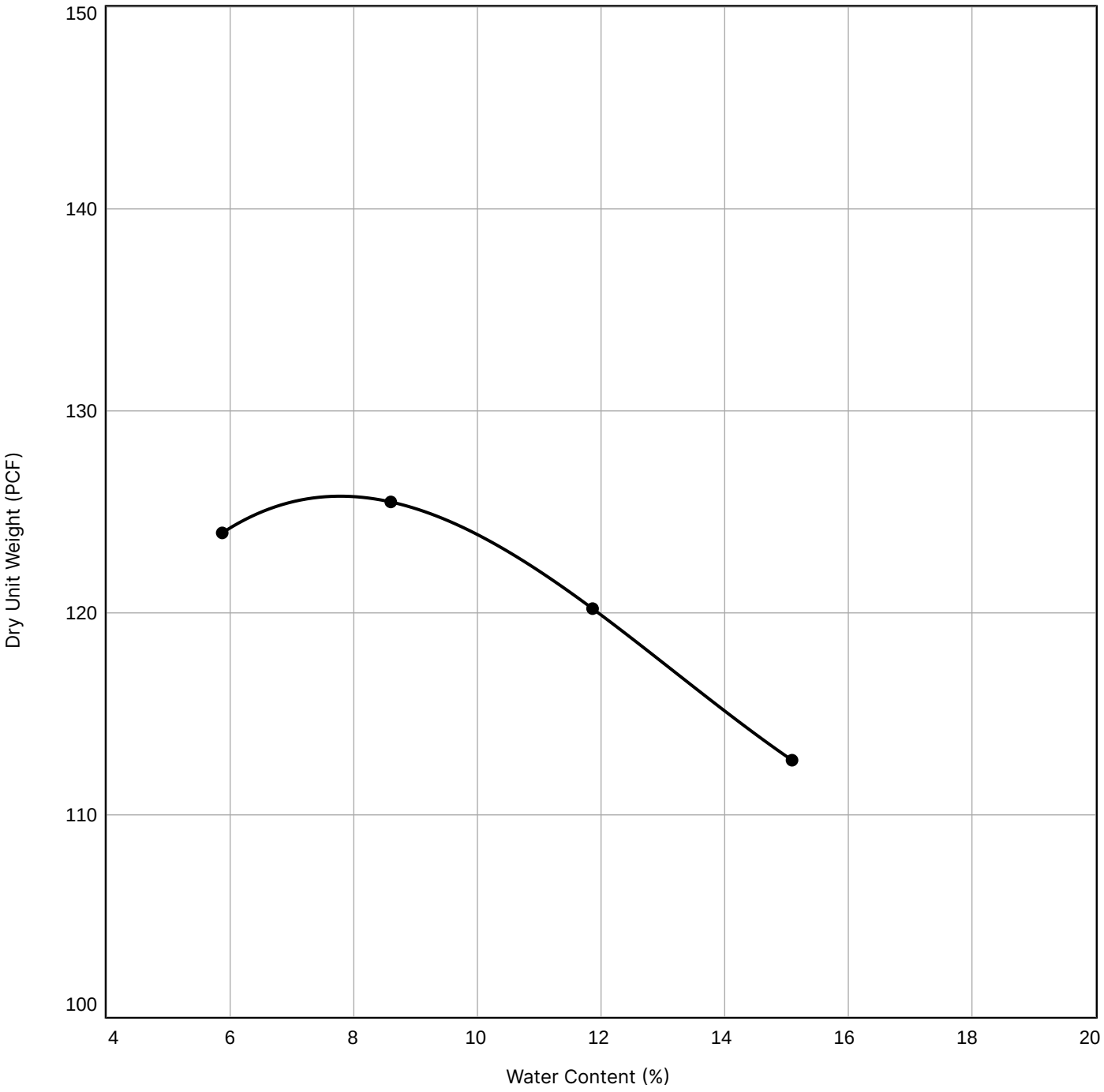
COMPACTION TEST RESULTS

USACE- Cairns Helipads
NA

25-1102-0124

CHP-02-25 CBR

Test Method: ASTM D1557 - 12(2021)
Method: A
Rammer: Manual



SAMPLE INFORMATION	
Sample Identification:	CBR
Date Sample Obtained:	08/21/2025
Sample Depth/Elevation:	0.0'
Sample Description:	

TEST RESULTS	Uncorrected for Oversize Material
Natural Water Content:	10.4 %
Maximum Dry Unit Weight:	125.6 PCF
Optimum Moisture Content:	8.2 %
Remarks:	

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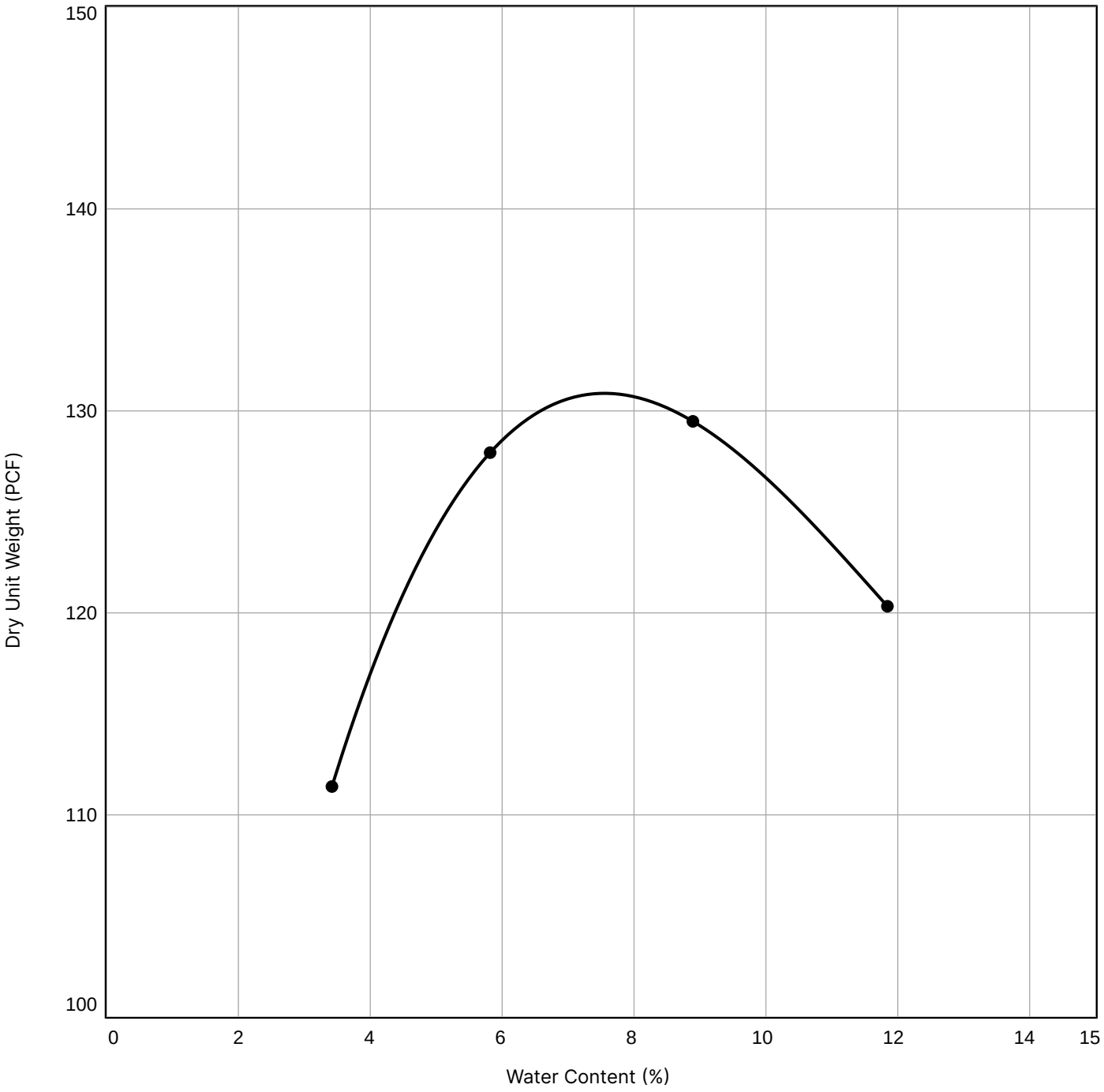
COMPACTION TEST RESULTS

USACE- Cairns Helipads
NA

25-1102-0124

PVMT-02-25 CBR

Test Method: ASTM D1557 - 12(2021)
Method: A
Rammer: Manual



SAMPLE INFORMATION	
Sample Identification:	CBR
Date Sample Obtained:	08/21/2025
Sample Depth/Elevation:	0.0'
Sample Description:	Brown Silty Sand

TEST RESULTS	Uncorrected for Oversize Material
Natural Water Content:	7.5 %
Maximum Dry Unit Weight:	131.2 PCF
Optimum Moisture Content:	7.4 %
Remarks:	

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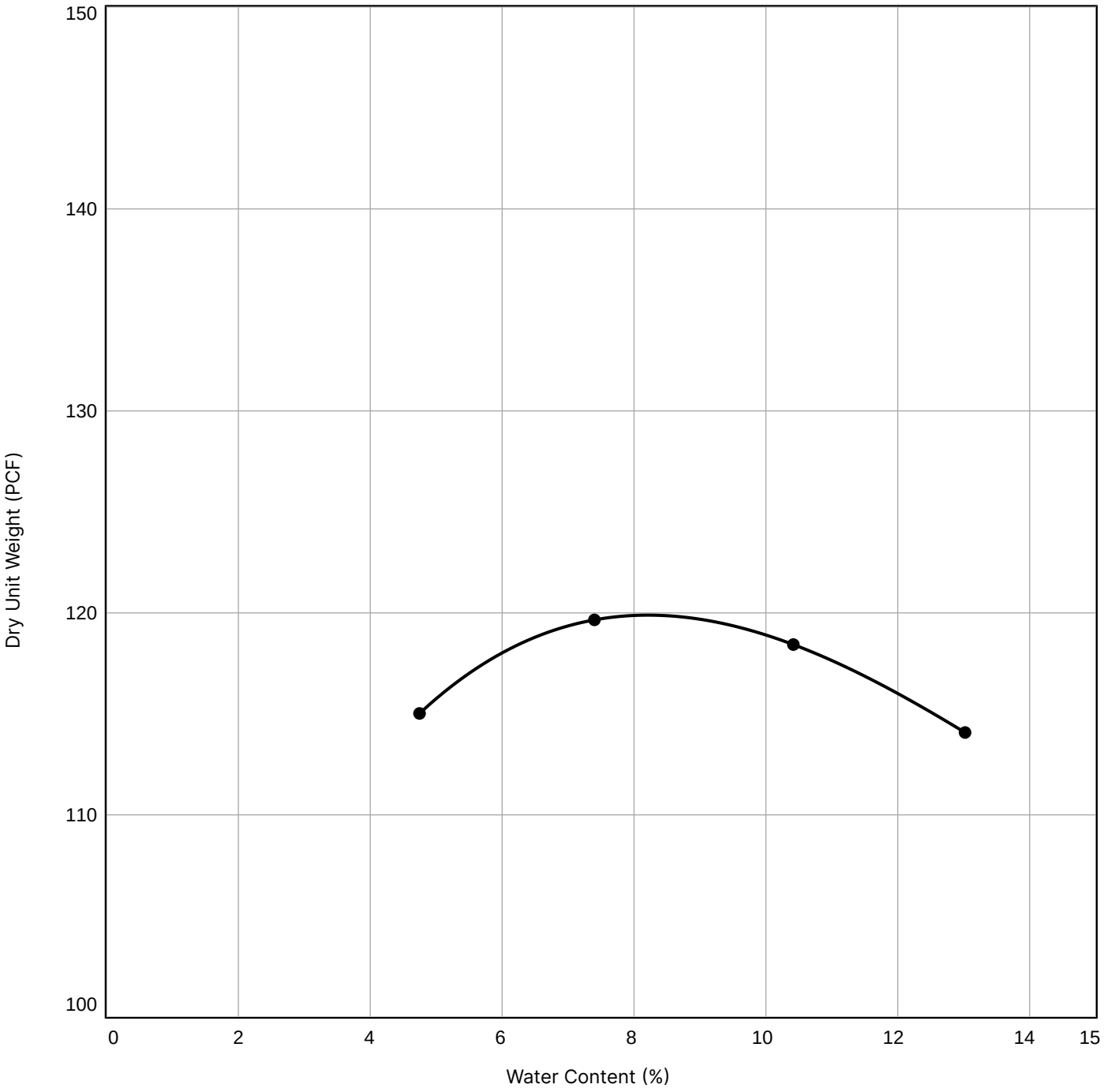
COMPACTION TEST RESULTS

USACE- Cairns Helipads
NA

25-1102-0124

PVMT-05-25 CBR

Test Method: ASTM D1557 - 12(2021)
Method: A
Rammer: Manual



SAMPLE INFORMATION	
Sample Identification:	CBR
Date Sample Obtained:	08/21/2025
Sample Depth/Elevation:	0.0'
Sample Description:	Light Brown Sand

TEST RESULTS	Uncorrected for Oversize Material
Natural Water Content:	8.9 %
Maximum Dry Unit Weight:	120.0 PCF
Optimum Moisture Content:	8.2 %
Remarks:	

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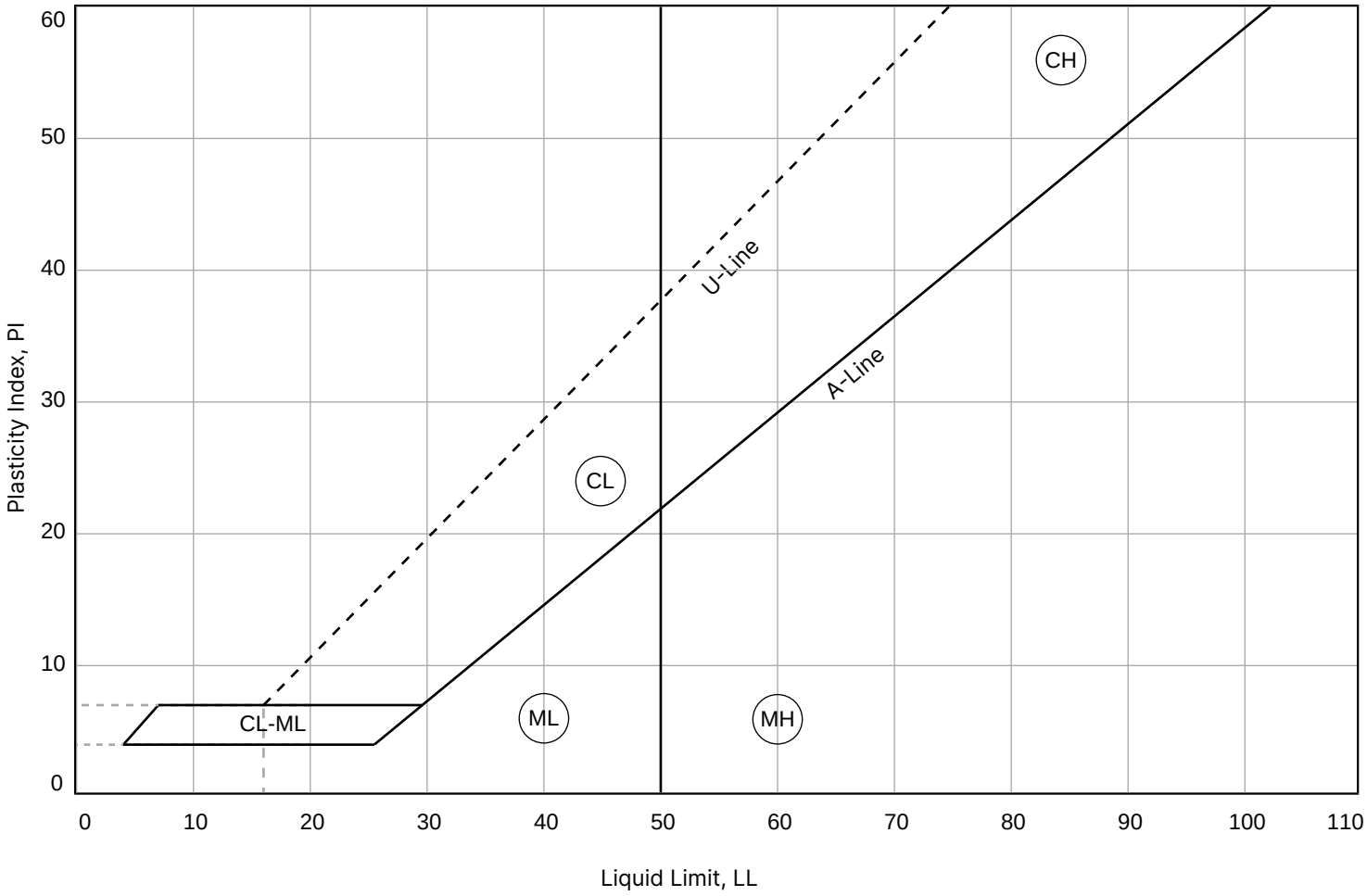
ATTERBERG LIMITS TEST RESULTS

PROJECT USACE- Cairns Helipads
LOCATION NA
PROJECT NO. 25-1102-0124
CLIENT Archway Solutions LLC

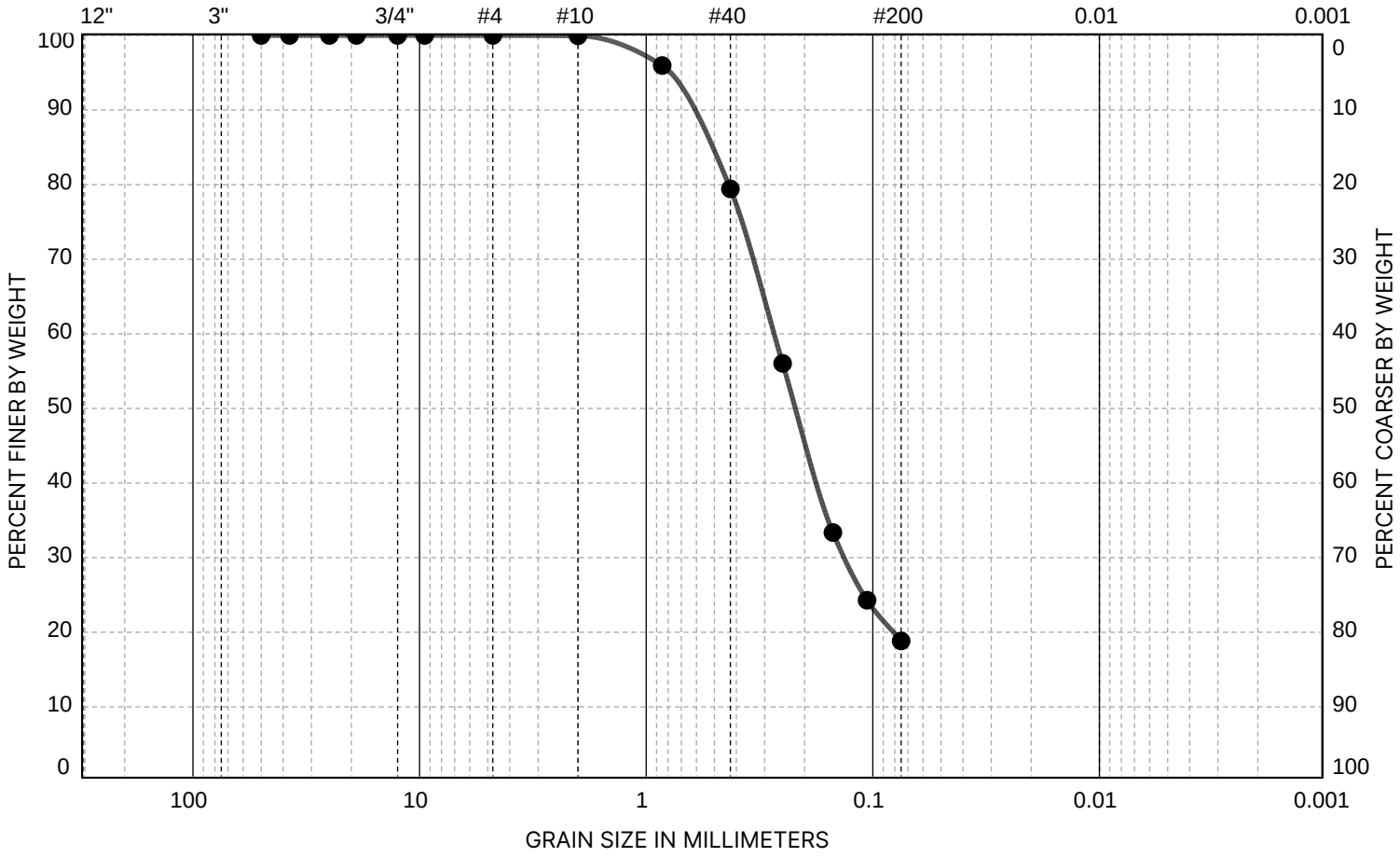


ICON	EXPLORATION NUMBER	SAMPLE NUMBER	DEPTH (Feet)	LL	PL	PI	FINES (%)	NAT MC (%)	TEST STD

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-02-25, CBR, 0'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D30	D50	D60	D75	D85	D90
0.13	0.22	0.27	0.38	0.51	0.61

D100
9.81

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

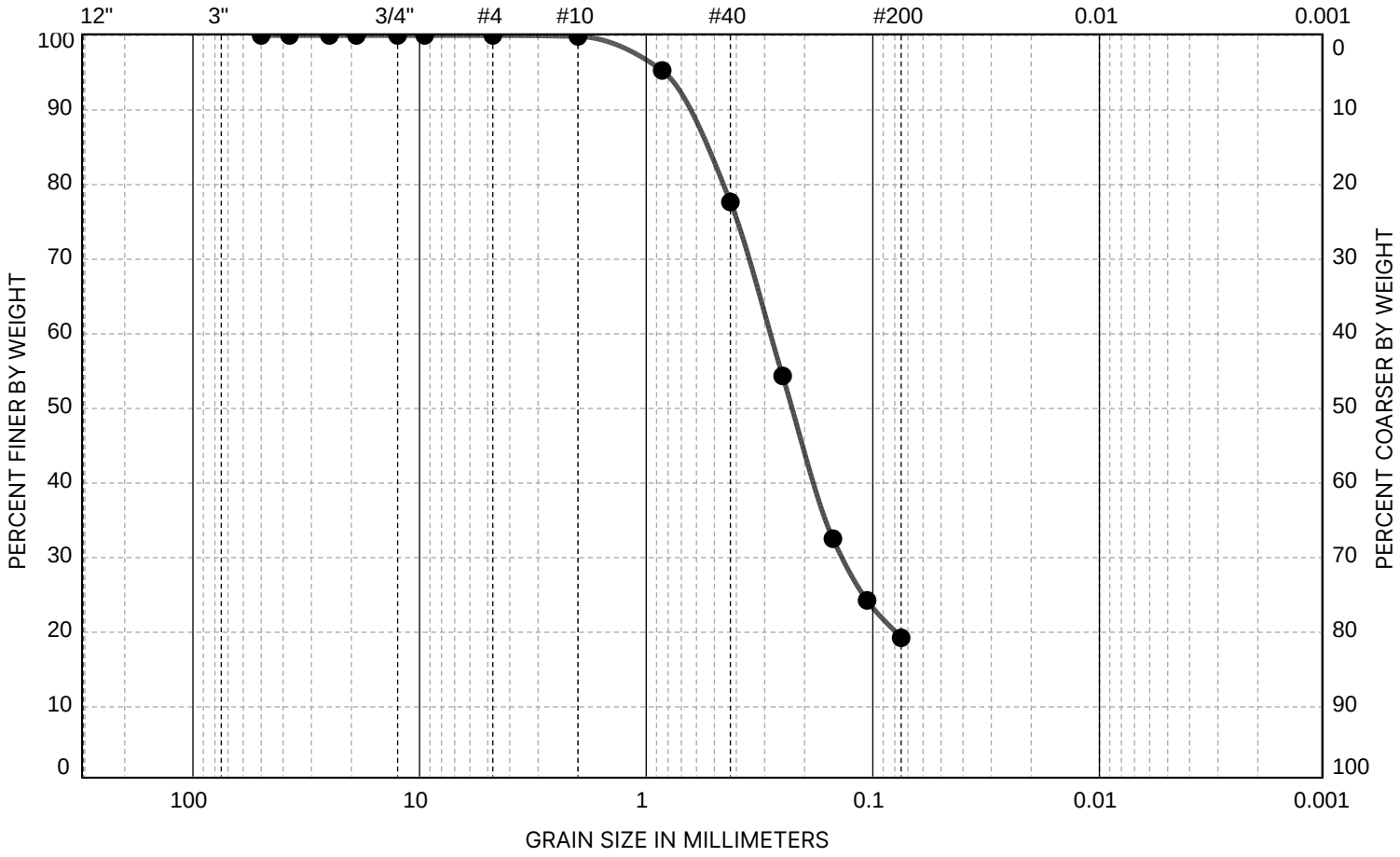
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-02-25, S-3, 3'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D30	D50	D60	D75	D85	D90
0.14	0.23	0.28	0.39	0.53	0.63

D100
9.81

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

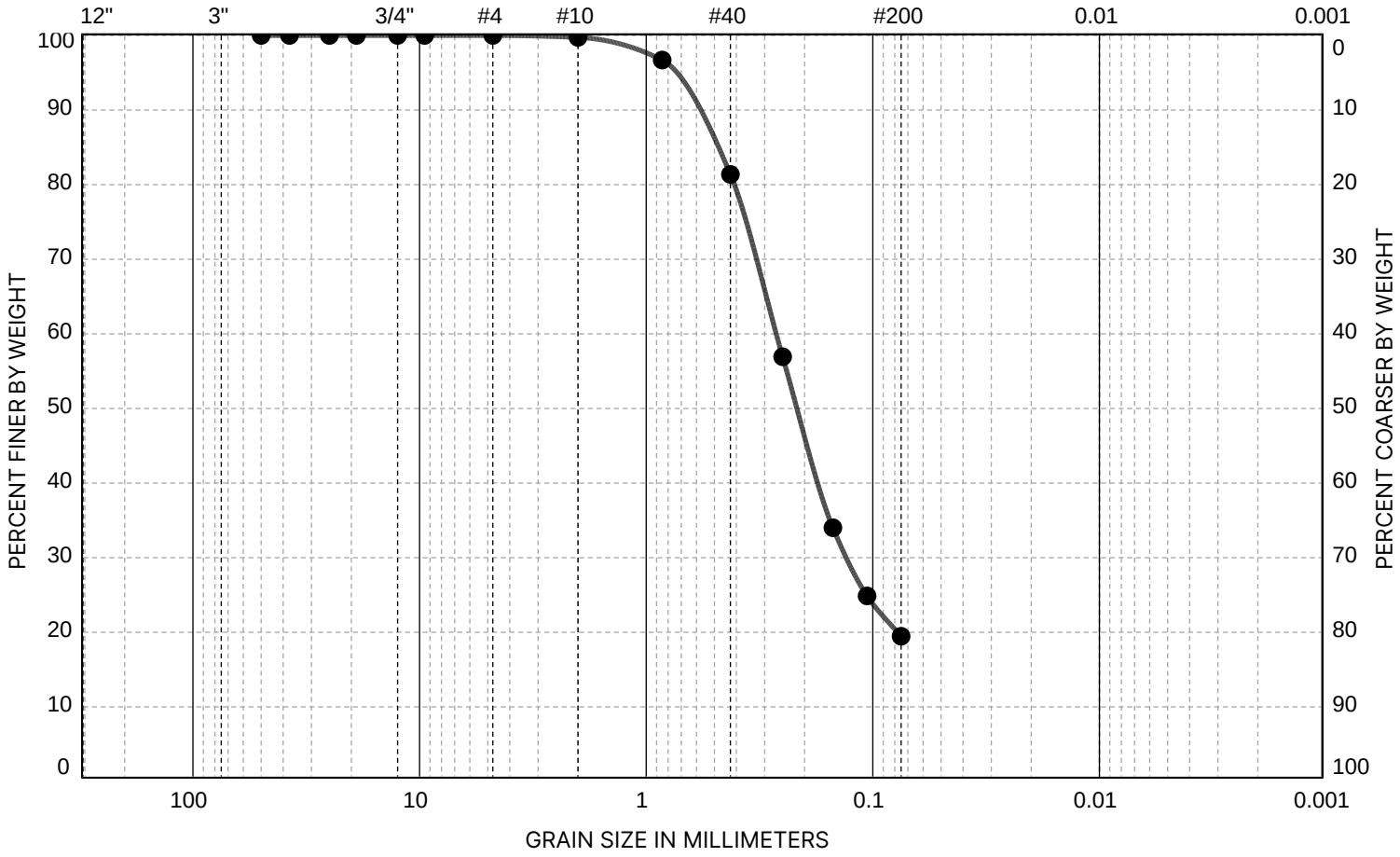
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-02-25, S-6, 7.5'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D30	D50	D60	D75	D85	D90
0.13	0.22	0.27	0.36	0.48	0.57

D100
9.81

thompson ENGINEERING

PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

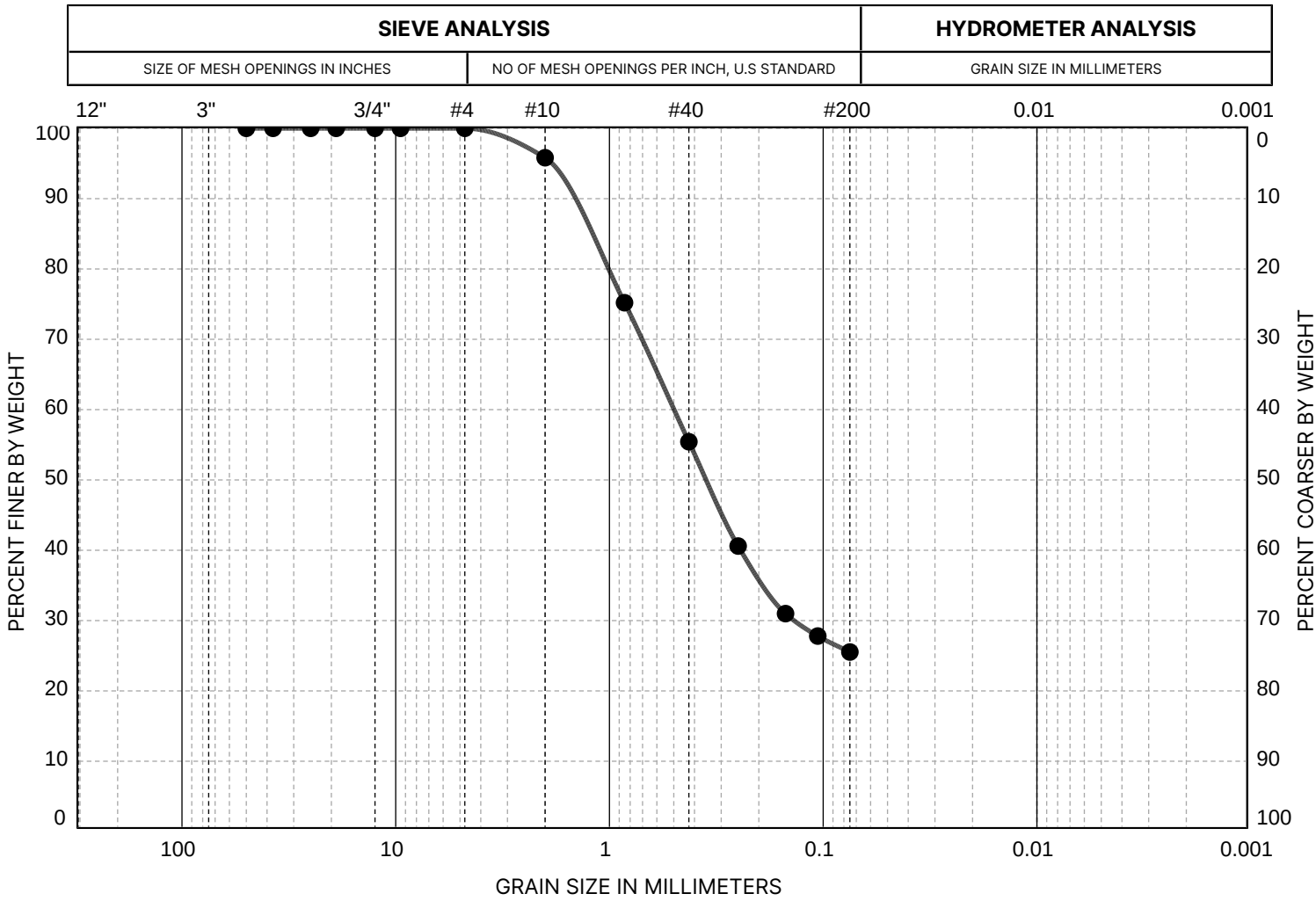
LOCATION NA

PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-06-25, S-2, 1.5'



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D30	D50	D60	D75	D85	D90
0.14	0.35	0.5	0.84	1.2	1.44

D100
9.81

thompson ENGINEERING

PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

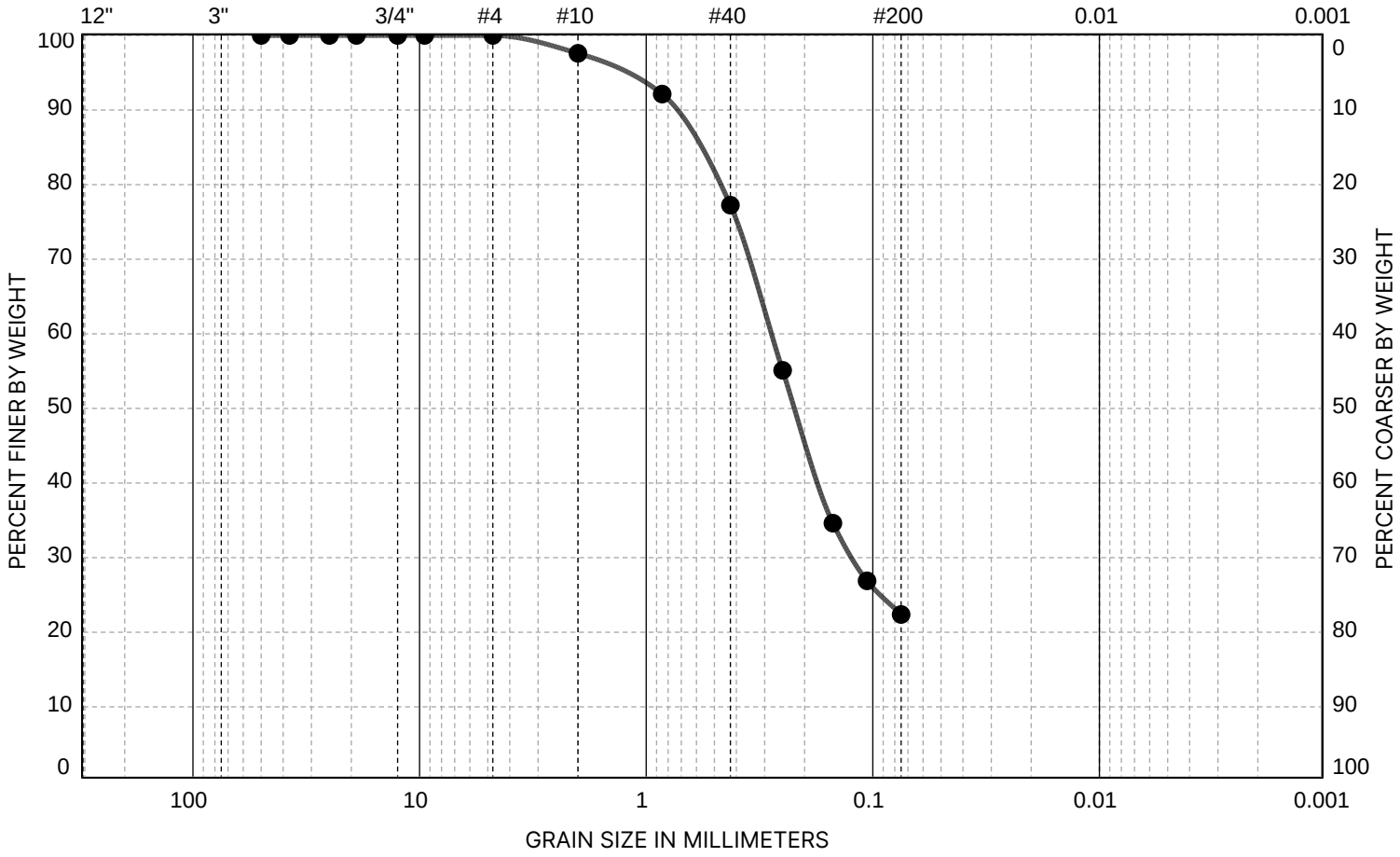
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-09-25, S-1, 0'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D30	D50	D60	D75	D85	D90
0.12	0.22	0.28	0.4	0.57	0.73

D100
9.81

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

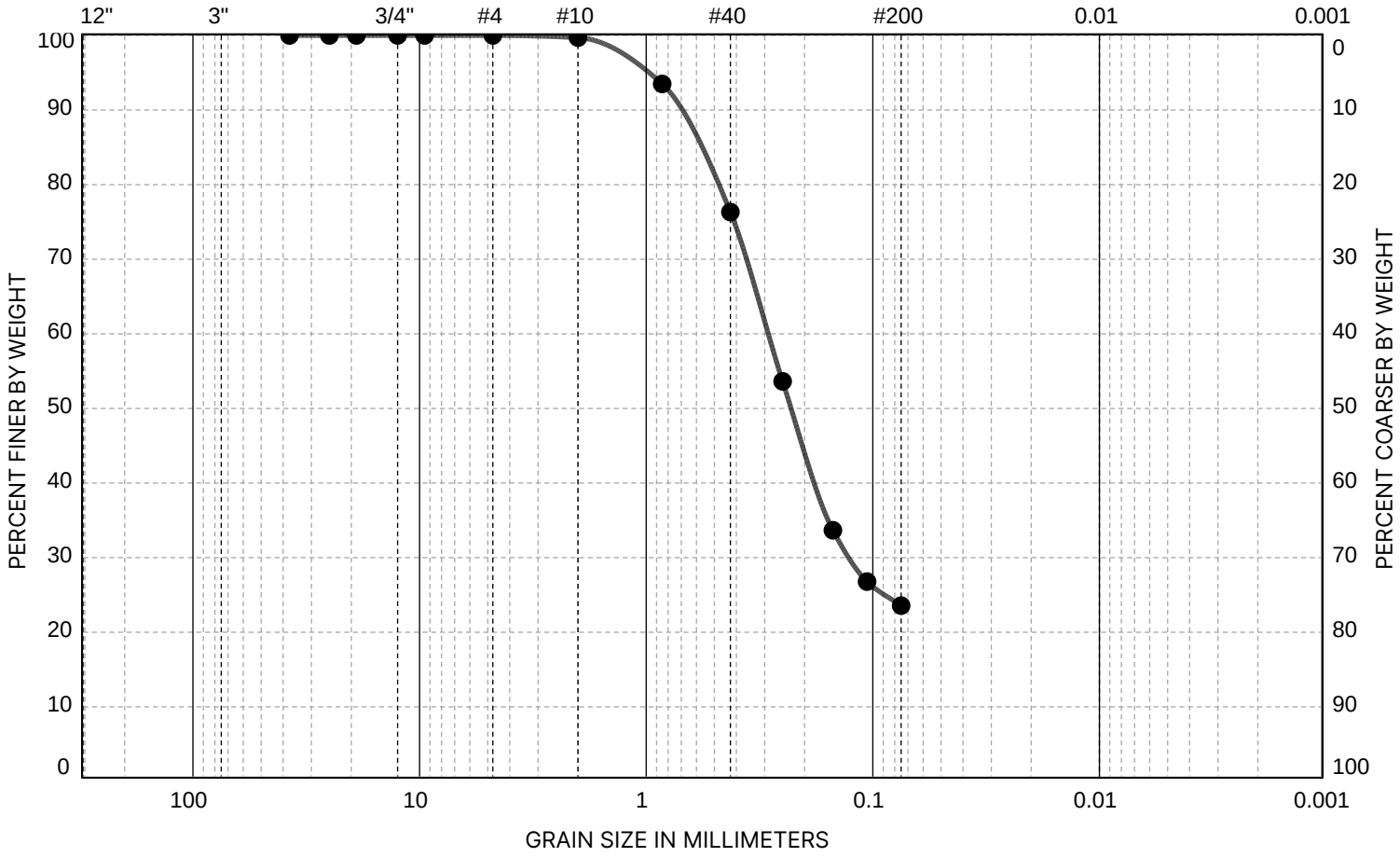
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-09-25, S-2, 1.5'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D30	D50	D60	D75	D85	D90
0.13	0.23	0.29	0.41	0.56	0.69

D100
24.25

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

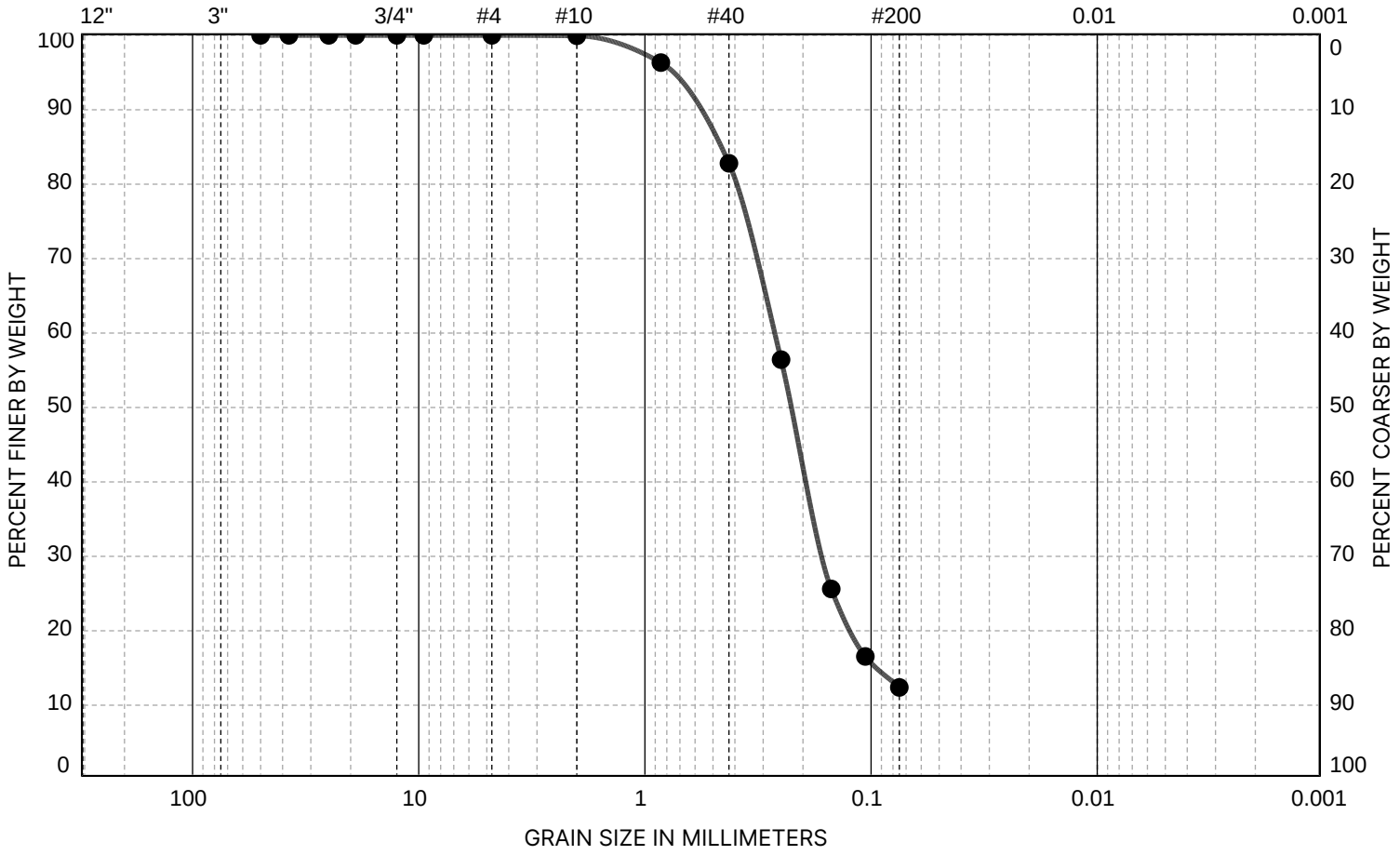
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-09-25, S-4, 4.5'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D15	D30	D50	D60	D75	D85
0.09	0.17	0.23	0.27	0.35	0.46

D90	D100
0.56	9.81

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

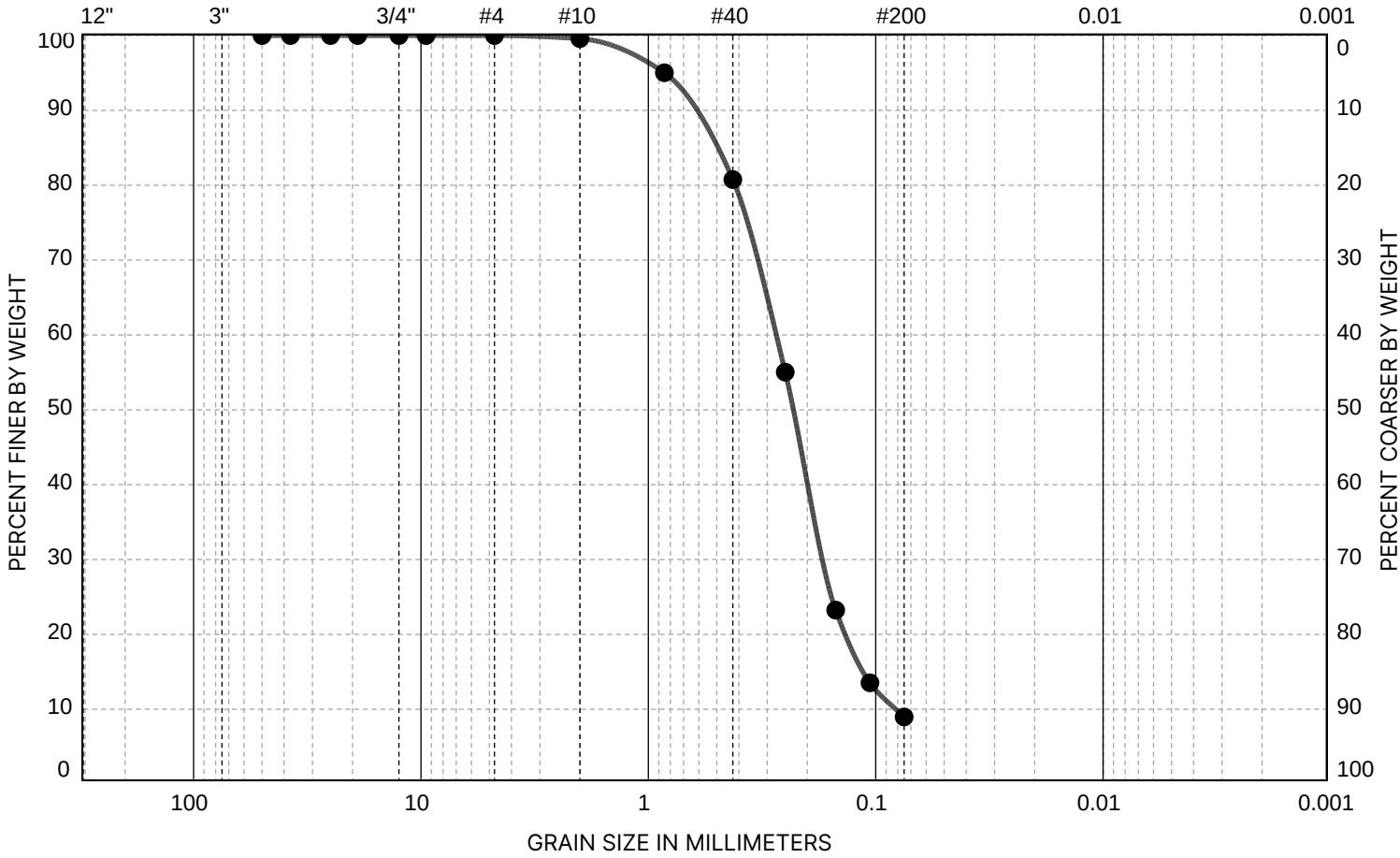
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-09-25, S-5, 6'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D10	D15	D30	D50	D60	D75
0.08	0.11	0.17	0.23	0.27	0.37

D85	D90	D100	C_u	C_c
0.49	0.61	9.81	3.38	1.34

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

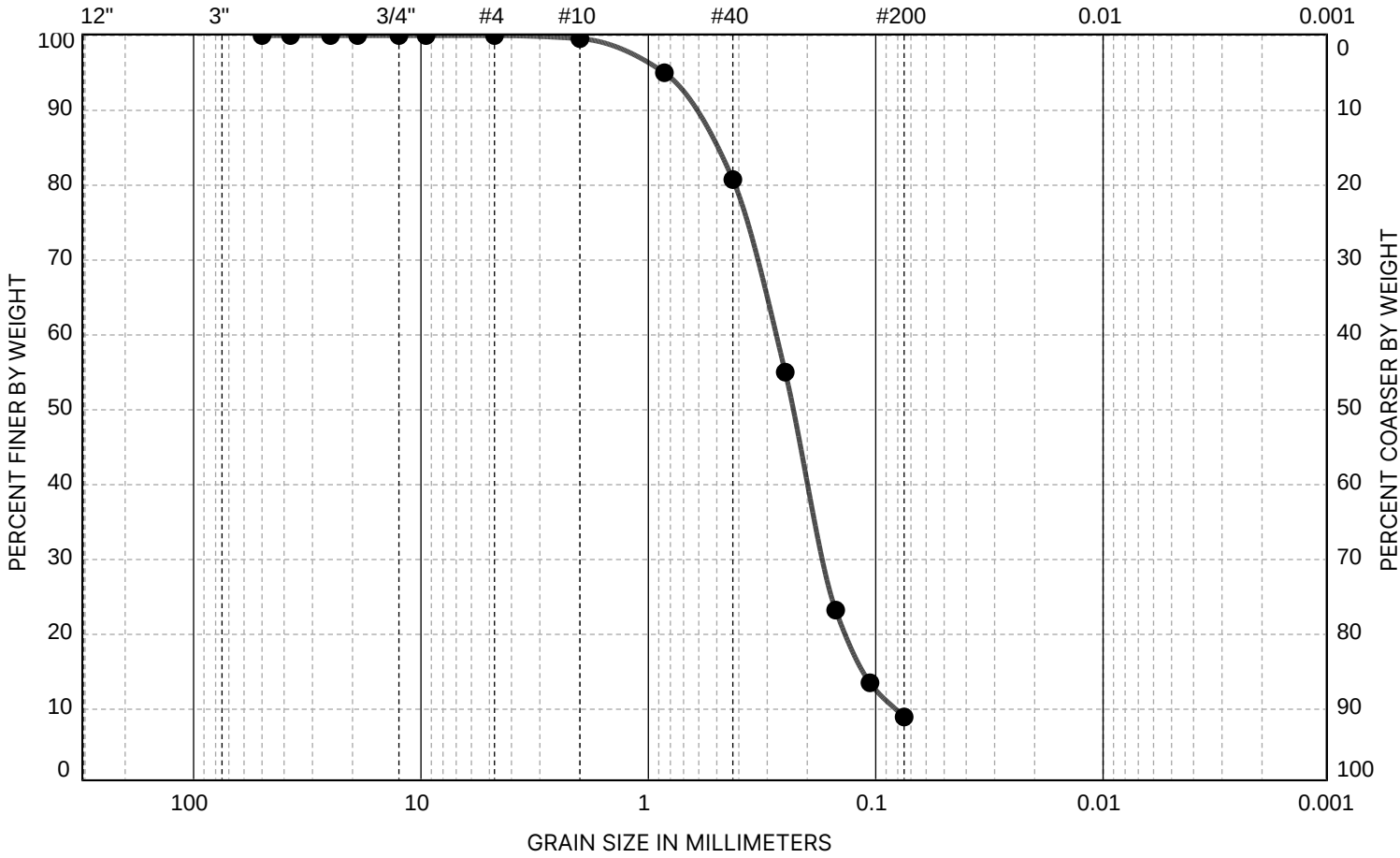
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-09-25, S-5, 6'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D10	D15	D30	D50	D60	D75
0.08	0.11	0.17	0.23	0.27	0.37

D85	D90	D100	C_u	C_c
0.49	0.61	9.81	3.38	1.34

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

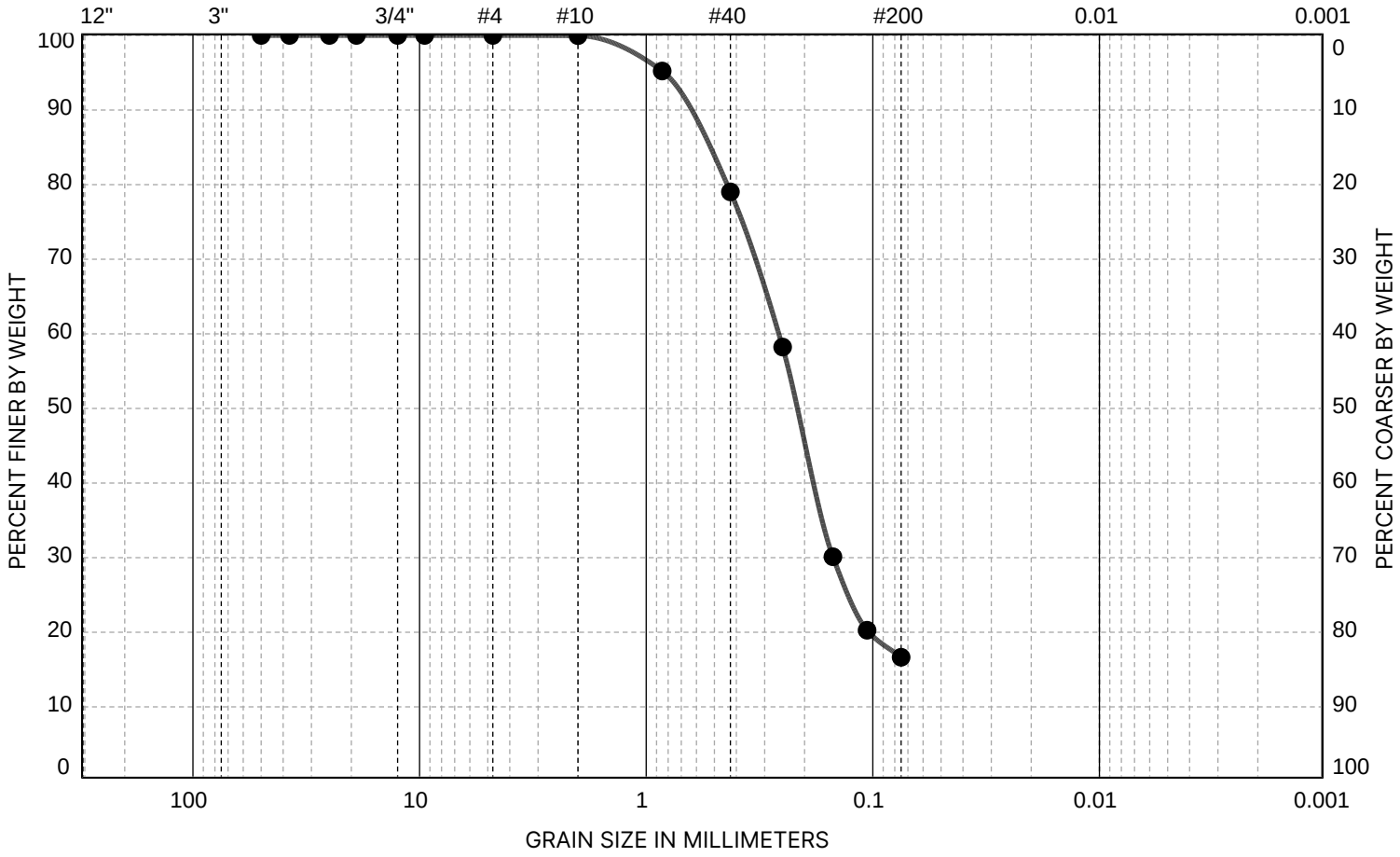
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

PVMT-05-25, CBR, 0'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D30	D50	D60	D75	D85	D90
0.15	0.22	0.26	0.38	0.52	0.63

D100
9.81

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

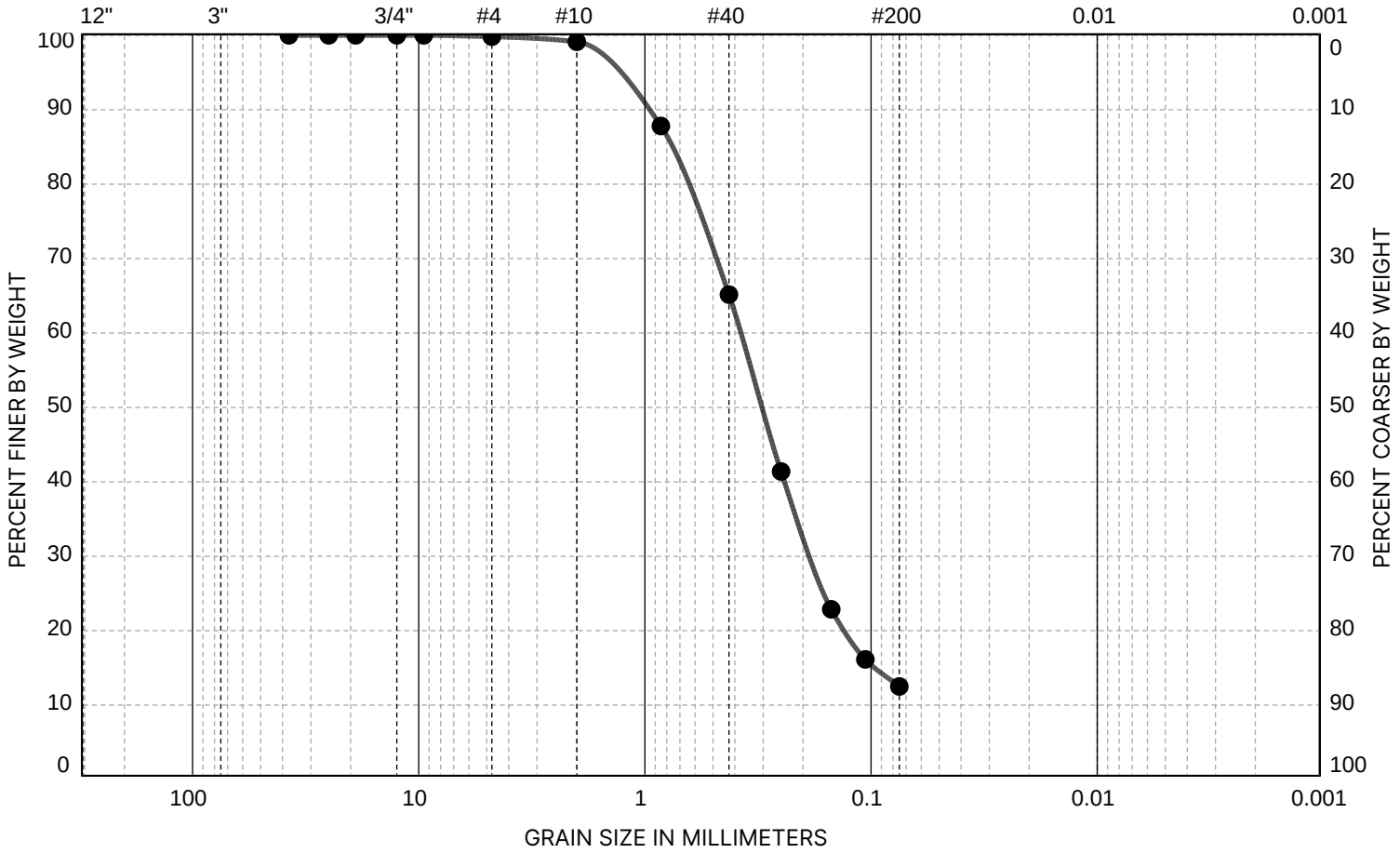
PROJECT NO. 25-1102-0124

FIGURE NO.

GRAIN SIZE DISTRIBUTION TEST RESULTS

CHP-01-25, S-3, 4.5'

SIEVE ANALYSIS		HYDROMETER ANALYSIS
SIZE OF MESH OPENINGS IN INCHES	NO OF MESH OPENINGS PER INCH, U.S STANDARD	GRAIN SIZE IN MILLIMETERS



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

TEST RESULTS

PARTICLE SIZE	% PASSING	SPEC MIN	SPEC MAX
2"	100.00		
1.5"	100.00		
1"	100.00		
3/4"	100.00		
1/2"	100.00		
3/8"	100.00		
#4	100.00		
#10	99.59		
#20	95.03		
#40	80.76		
#60	55.03		
#100	23.24		
#140	13.53		
#200	8.96		

SPECIMEN DESCRIPTION

DESCRIPTION

USCS CLASS.

AASHTO CLASS.

ATTERBERG LIMITS

LL	PL	PI

COEFFICIENTS

D15	D30	D50	D60	D75	D85
0.1	0.19	0.3	0.38	0.55	0.75

D90	D100
0.95	24.25

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PROJECT USACE- Cairns Helipads

CLIENT Archway Solutions LLC

LOCATION NA

PROJECT NO. 25-1102-0124

FIGURE NO.

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LABORATORY REPORT
SPECIFIC GRAVITY OF SOILS
ASTM D-854 - AASHTO T-100

Project No.:	25-1102-0124
Sample No.:	CHP-01-25, S-3 (4.5-6)
Test Completion Date:	9/15/2025
Testing Technician:	ES

Test Data:

Wt. Pan (Gms) =	247.83
Wt. Pan + Dry Soil (Gms) =	329.33
Wt. Dry Soil (Gms) =	81.500
500 ml. Pycnometer No:	13
Pycnometer Temperature (Deg. C) =	22.6
Wt. Pycnometer (Gms) =	166.3
Wt. Pycnometer + Water (Gms @ T) =	664.793
Wt. Pycnometer + Soil + Water (Gms @ T) =	717.54
Specific Gravity @ T =	2.834
Water Relative Density Corr. Factor @ T =	0.99944

Test Result:

Specific Gravity (@ 20 Deg. C) = 2.833

Comments:

Test Result within reasonable range of inorganic soil material

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3707 Cottage Hill Road
Mobile, AL. 36609
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LABORATORY REPORT
SPECIFIC GRAVITY OF SOILS
ASTM D-854 - AASHTO T-100

Project No.:	25-1102-0124
Sample No.:	CHP-09-25 S-5 (6-7.5)
Test Completion Date:	9/15/2025
Testing Technician:	ES

Test Data:

Wt. Pan (Gms) =	103.72
Wt. Pan + Dry Soil (Gms) =	176.17
Wt. Dry Soil (Gms) =	72.450
500 ml. Pycnometer No:	22
Pycnometer Temperature (Deg. C) =	22.6
Wt. Pycnometer (Gms) =	179.21
Wt. Pycnometer + Water (Gms @ T) =	677.271
Wt. Pycnometer + Soil + Water (Gms @ T) =	723.15
Specific Gravity @ T =	2.727
Water Relative Density Corr. Factor @ T =	0.99944

Test Result:

Specific Gravity (@ 20 Deg. C) = 2.725

Comments:

Test Result within reasonable range of inorganic soil material

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LABORATORY REPORT
SPECIFIC GRAVITY OF SOILS
ASTM D-854 - AASHTO T-100

Project No.:	25-1102-0124
Sample No.:	CHP-02-25 CBR 90-3)
Test Completion Date:	9/15/2025
Testing Technician:	ES

Test Data:

Wt. Pan (Gms) =	247.83
Wt. Pan + Dry Soil (Gms) =	327.02
Wt. Dry Soil (Gms) =	79.190
500 ml. Pycnometer No:	21
Pycnometer Temperature (Deg. C) =	22.6
Wt. Pycnometer (Gms) =	178.5
Wt. Pycnometer + Water (Gms @ T) =	676.479
Wt. Pycnometer + Soil + Water (Gms @ T) =	726.74
Specific Gravity @ T =	2.737
Water Relative Density Corr. Factor @ T =	0.99944

Test Result:

Specific Gravity (@ 20 Deg. C) = 2.736

Comments:

Test Result within reasonable range of inorganic soil material

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LABORATORY REPORT
SPECIFIC GRAVITY OF SOILS
ASTM D-854 - AASHTO T-100

Project No.:	25-1102-0124
Sample No.:	PVMT-02-25 CBR (0-3)
Test Completion Date:	9/15/2025
Testing Technician:	ES

Test Data:

Wt. Pan (Gms) =	108.68
Wt. Pan + Dry Soil (Gms) =	190.64
Wt. Dry Soil (Gms) =	81.960
500 ml. Pycnometer No:	27
Pycnometer Temperature (Deg. C) =	22.6
Wt. Pycnometer (Gms) =	176.65
Wt. Pycnometer + Water (Gms @ T) =	675.143
Wt. Pycnometer + Soil + Water (Gms @ T) =	726.75
Specific Gravity @ T =	2.700
Water Relative Density Corr. Factor @ T =	0.99944

Test Result:

Specific Gravity (@ 20 Deg. C) = 2.699

Comments:

Test Result within reasonable range of inorganic soil material

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Ph of Soils Worksheet

Project Name: USACE- Cairns Helipads
Client Name: USACE

Date Tested: Tested By: ES

Boring Number:	CHP-02-25			Boring Number:	PVMT-02-25		
Beaker Number:				Beaker Number:			
Time Start:	15:30:00 PM	Time Stop:	16:00:00 PM	Time Start:	15:30:00 PM	Time Stop:	16:00:00 PM
Time PH Read:	16:00:00 PM			Time PH Read:	16:00:00 PM		
PH Reading:	5.19	Temp:	22	PH Reading:	6.74	Temp:	21
Boring Number:	CHP-06-25			Boring Number:			
Beaker Number:				Beaker Number:			
Time Start:	15:30:00 PM	Time Stop:	16:00:00 PM	Time Start:		Time Stop:	
Time PH Read:	16:00:00 PM			Time PH Read:			
PH Reading:	8.3	Temp:	24	PH Reading:		Temp:	
Boring Number:	CHP-09-25			Boring Number:			
Beaker Number:				Beaker Number:			
Time Start:	15:30:00 PM	Time Stop:	16:00:00 PM	Time Start:		Time Stop:	
Time PH Read:	16:00:00 PM			Time PH Read:			
PH Reading:	8.35	Temp:	25	PH Reading:		Temp:	

Engineering Laboratory Manager

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September 17, 2025

CLIENT: USACE

JOB #: 25-1102-0124

PROJECT: USACE- Cairns Helipads

LAB #: 10561

REPORT OF: Measurement of Soil Resistivity ASTM G57

	DATE	TECHNICIAN
TESTED:		B. Hak

Location	Sample Description	Resisivity (Ohms-cm)
CHP-02-25		14800
CHP-06-25		32500
CHP-09-25		49500
PVMT-02-25		14900

MATERIALS ENGINEERING LABORATORY

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The results identified in this report relate only to the specific items tested or inspected.

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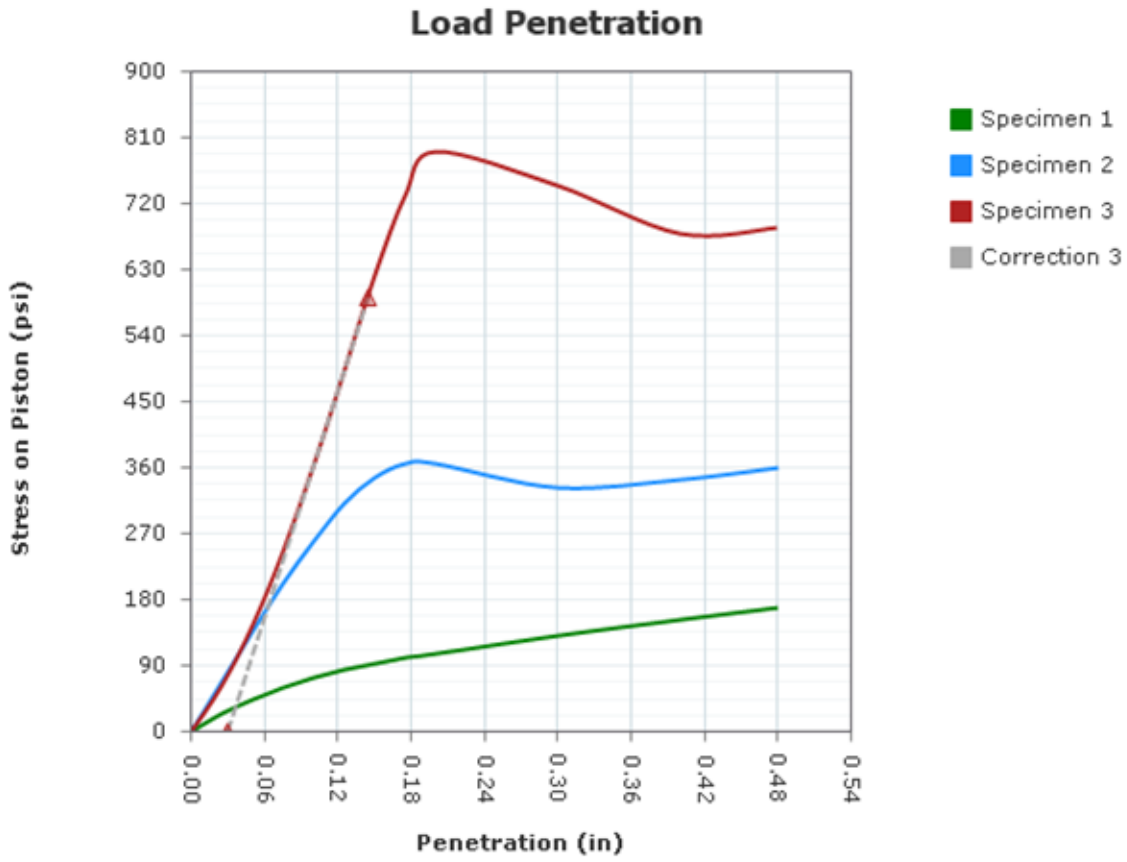
CBR Test Results

ASTM (D1883) / AASHTO (T193)



CBR Results								
Results	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
CBR @ 0.10 (in)	7.4	26.0	51.6					
CBR @ 0.20 (in)	7.1	24.3	51.8					

Project Information	
Project:	Cairns Helipad
Project Number:	25-1102-0124
Sampling Date:	
Sample Number:	CHP-02-25
Sample Depth:	
Location:	
Client Name:	USACE
Remarks:	

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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CBR Test

ASTM (D1883) / AASHTO (T193)

Before Soaking	Specimen Number							
	1	2	3	4	5	6	7	8
Specific Gravity	2.66	2.66	2.66					
Liquid Limit	0	0	0					
Plastic Limit	0	0	0					
Surcharge Weight (lb)	10.02	9.98	9.97					
Number of Blows	10	25	56					
Maximum Dry Density (pcf)	0.0	0.0	0.0					
Optimum Moisture Content (%)	0.0	0.0	0.0					
Mold ID	10	20-A	P-2					
Mold Diameter (in)	6.000	6.000	6.000					
Mold Weight (lb)	16.01	17.55	15.88					
Sample Height (in)	4.650	4.650	4.650					
Mold Volume (in^3)	131.48	131.48	131.48					
Moisture Content (%)	7.8	7.3	7.4					
Weight of Mold + Soil (lb)	25.08	27.08	25.76					
Weight of Soil (g)	4112.5	4319.7	4481.3					
Dry Density (pcf)	110.5	116.6	120.9					
Wet Density (pcf)	119.2	125.2	129.8					
After Soaking	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Soaked Sample Height (in)	4.635	4.628	4.603					
Soaked Time (Day)	4.0	4.0	4.0					
Swell (%)	-0.3	-0.5	-1.0					
Moisture Content (%)	12.7	11.1	9.6					
Weight of Mold + Soil (lb)	25.51	27.38	25.96					
Weight After Soaking (g)	4306.8	4456.6	4572.6					
Dry Density (pcf)	110.7	116.2	120.9					
Wet Density (pcf)	124.8	129.1	132.5					
Piston Area (in^2)	0.000							

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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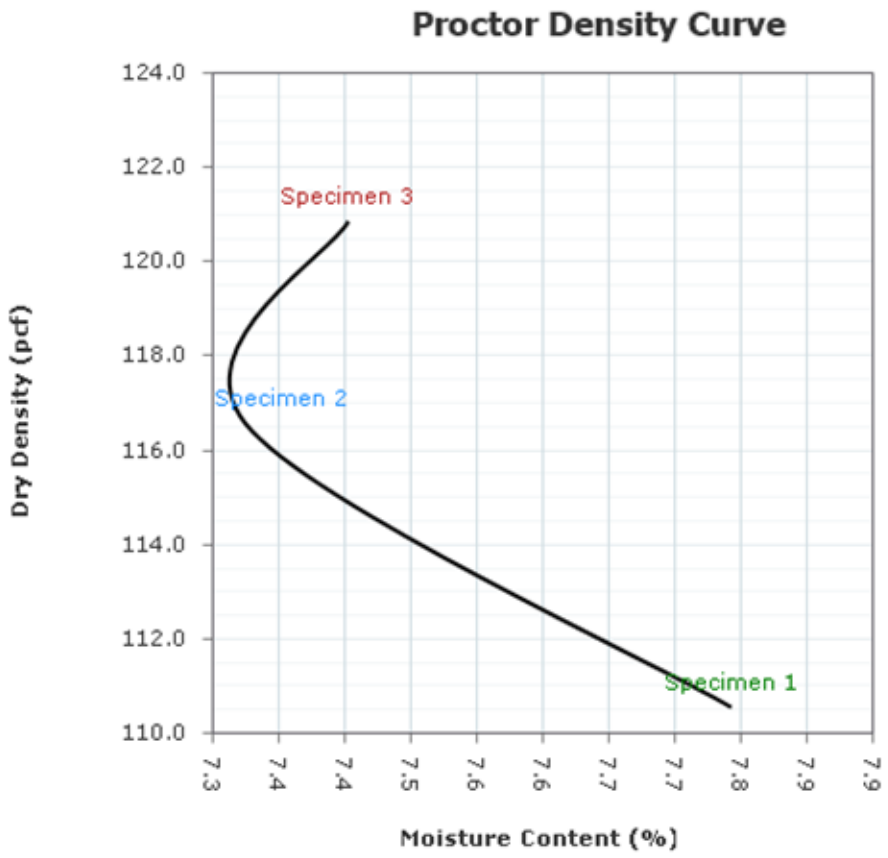
CBR Proctor Density Curve

ASTM (D1883) / AASHTO (T193)



CBR Proctor Density Curve	
Maximum Dry Density (pcf)	120.9
Optimum Moisture Content (%)	7.4

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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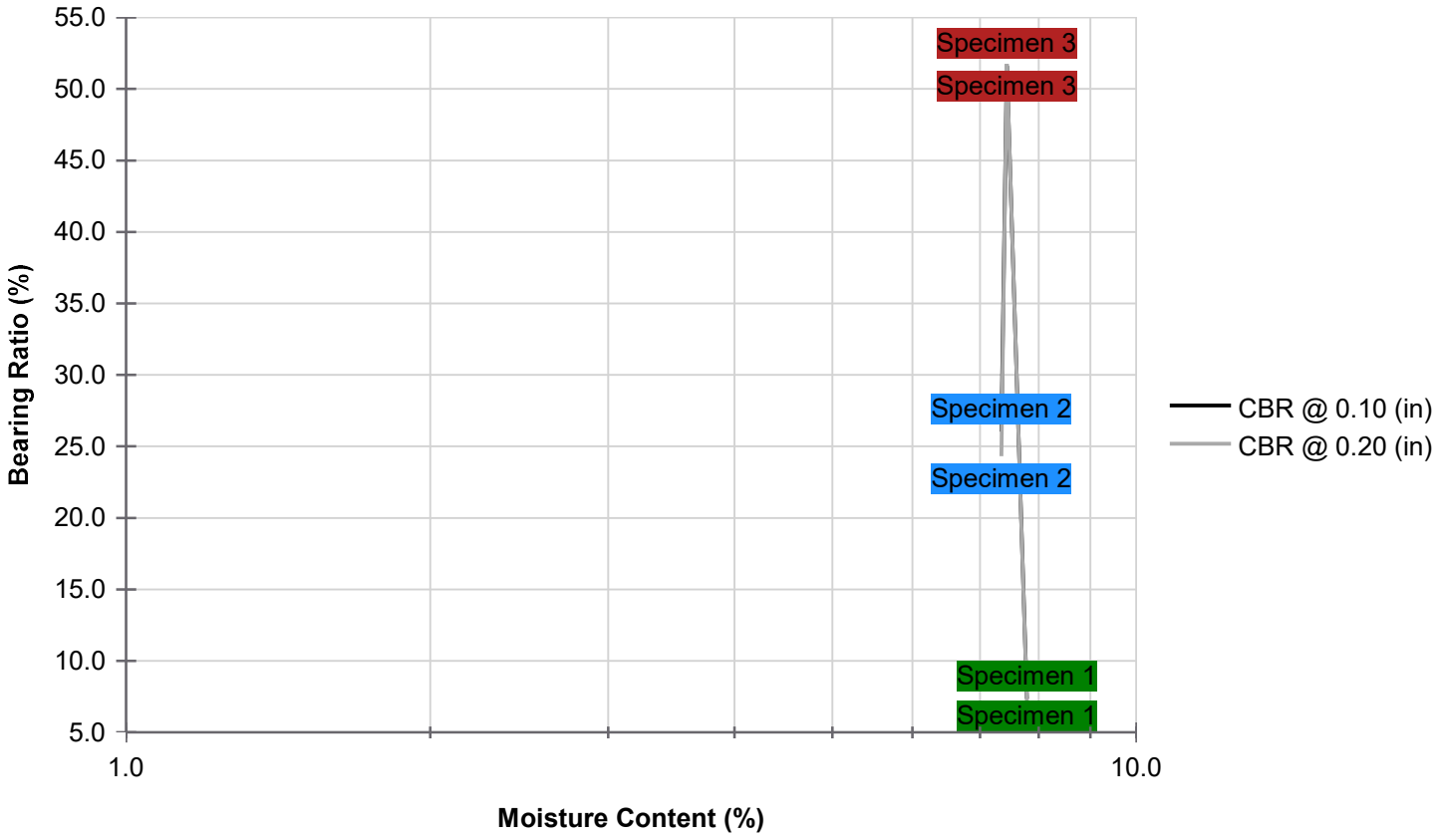
CBR Bearing Ratio

ASTM (D1883) / AASHTO (T193)



CBR Results	
CBR @ 0.10 (in)	51.6
CBR @ 0.20 (in)	51.8
Moisture Content (%)	7.8

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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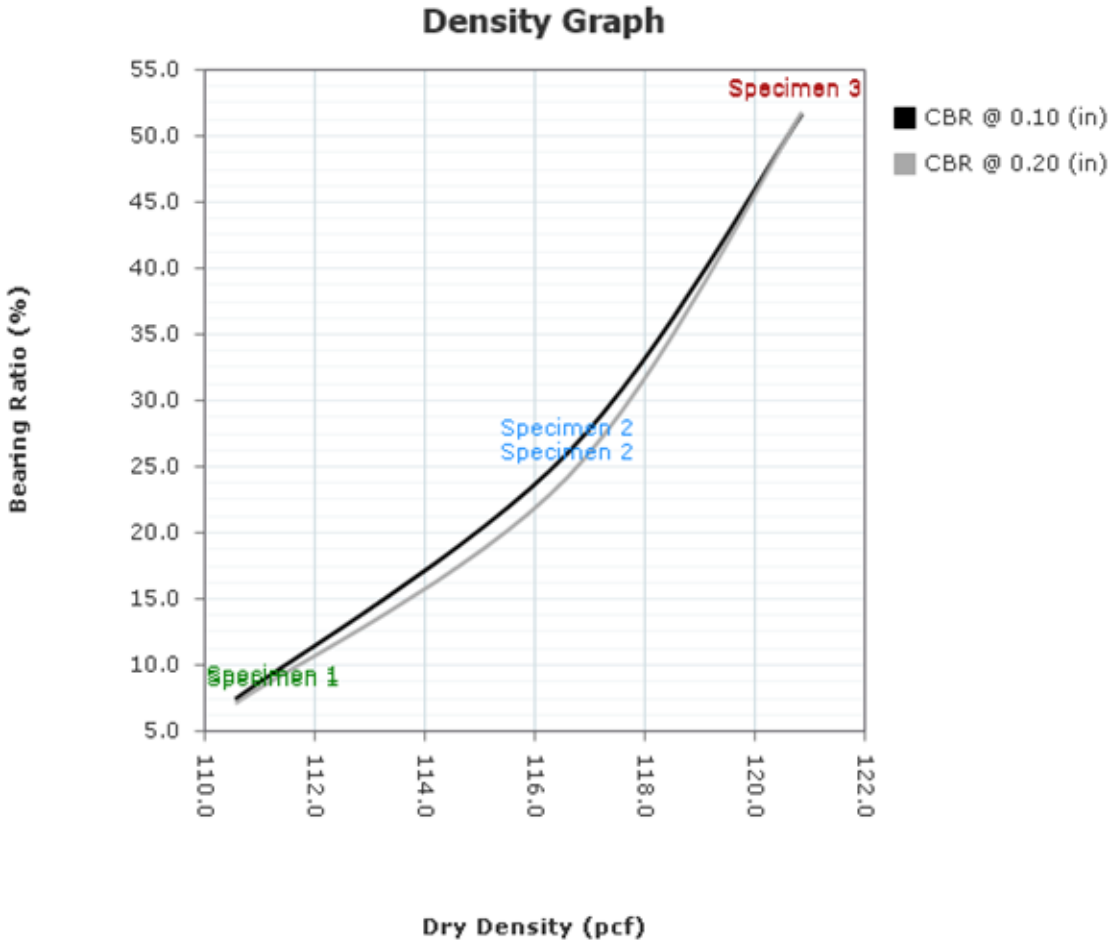
CBR Density Graph

ASTM (D1883) / AASHTO (T193)



CBR Results	
CBR @ 0.10 (in)	51.6
CBR @ 0.20 (in)	51.8
Maximum Dry Density (pcf)	120.9

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

CBR Test - Specimen 1

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	88.0	0.025	0.0	0.00	0	0.0	0.0
1	00:00:30	159.7	0.050	71.7	0.03	24	0.0	0.0
2	00:01:00	218.2	0.075	130.2	0.05	43	0.0	0.0
3	00:01:31	267.2	0.100	179.3	0.08	60	0.0	0.0
4	00:02:01	308.7	0.125	220.8	0.10	74	7.4	7.4
5	00:02:31	341.4	0.150	253.4	0.13	84	0.0	0.0
6	00:03:01	368.7	0.175	280.8	0.15	94	0.0	0.0
7	00:03:30	390.8	0.200	302.9	0.18	101	0.0	0.0
8	00:04:00	409.3	0.225	321.3	0.20	107	7.1	7.1
9	00:06:00	479.9	0.325	392.0	0.30	131	6.9	6.9
10	00:07:58	542.1	0.425	454.2	0.40	151	6.6	6.6
11	00:09:34	596.0	0.504	508.1	0.48	169	6.5	6.5

CBR Test - Specimen 2

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	164.0	0.021	0.0	0.00	0	0.0	0.0
1	00:00:30	368.9	0.046	204.9	0.03	68	0.0	0.0
2	00:01:02	574.1	0.071	410.0	0.05	137	0.0	0.0
3	00:01:33	771.0	0.096	606.9	0.08	202	0.0	0.0
4	00:02:03	945.1	0.121	781.0	0.10	260	26.0	26.0
5	00:02:34	1,095.4	0.146	931.4	0.13	310	0.0	0.0
6	00:03:04	1,204.3	0.171	1,040.3	0.15	347	0.0	0.0
7	00:03:35	1,262.1	0.196	1,098.1	0.18	366	0.0	0.0
8	00:04:06	1,258.2	0.221	1,094.2	0.20	365	24.3	24.3
9	00:06:03	1,163.1	0.321	999.0	0.30	333	17.5	17.5
10	00:08:00	1,192.7	0.421	1,028.7	0.40	343	14.9	14.9
11	00:09:35	1,248.1	0.502	1,084.0	0.48	361	13.9	13.9

CBR Test - Specimen 3

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	108.8	0.023	0.0	0.00	0	0.0	0.0
1	00:00:32	295.9	0.048	187.2	0.03	62	0.0	0.0
2	00:01:03	544.6	0.073	435.9	0.05	145	0.0	0.0
3	00:01:33	848.3	0.098	739.5	0.08	247	0.0	0.0
4	00:02:03	1,196.7	0.123	1,087.9	0.10	363	36.3	51.6
5	00:02:35	1,581.6	0.148	1,472.9	0.13	491	0.0	0.0
6	00:03:06	1,971.1	0.173	1,862.4	0.15	621	0.0	0.0
7	00:03:37	2,301.3	0.198	2,192.5	0.18	731	0.0	0.0
8	00:04:07	2,479.3	0.223	2,370.5	0.20	790	52.7	51.8
9	00:06:06	2,340.4	0.323	2,231.6	0.30	744	39.2	38.1
10	00:08:03	2,146.6	0.423	2,037.8	0.40	679	29.5	29.7
11	00:09:37	2,171.4	0.502	2,062.6	0.48	688	26.4	0.0

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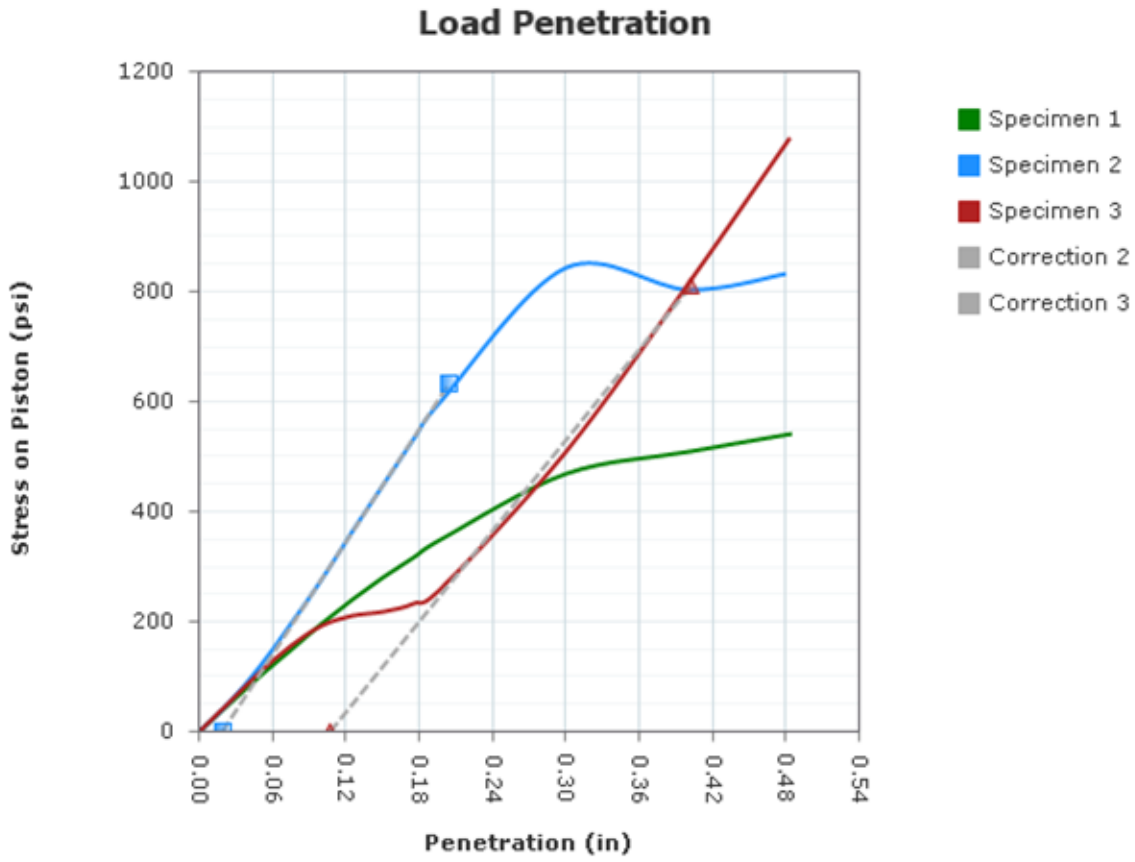
CBR Test Results

ASTM (D1883) / AASHTO (T193)



CBR Results								
Results	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
CBR @ 0.10 (in)	19.5	34.2	28.3					
CBR @ 0.20 (in)	23.5	43.5	35.5					

Project Information	
Project:	Cairns Helipad
Project Number:	25-1102-0124
Sampling Date:	
Sample Number:	PVMT-03-025
Sample Depth:	
Location:	
Client Name:	USACE
Remarks:	

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CBR Test

ASTM (D1883) / AASHTO (T193)

Before Soaking	Specimen Number							
	1	2	3	4	5	6	7	8
Specific Gravity	2.66	2.66	2.66					
Liquid Limit	0	0	0					
Plastic Limit	0	0	0					
Surcharge Weight (lb)	9.95	9.96	10.03					
Number of Blows	10	25	56					
Maximum Dry Density (pcf)	0.0	0.0	0.0					
Optimum Moisture Content (%)	0.0	0.0	0.0					
Mold ID	88	90	77					
Mold Diameter (in)	6.000	6.000	6.000					
Mold Weight (lb)	17.50	17.57	18.19					
Sample Height (in)	4.650	4.650	4.650					
Mold Volume (in^3)	131.48	131.48	131.48					
Moisture Content (%)	7.8	7.7	7.5					
Weight of Mold + Soil (lb)	27.50	27.81	28.50					
Weight of Soil (g)	4535.5	4643.9	4677.9					
Dry Density (pcf)	121.9	124.9	126.1					
Wet Density (pcf)	131.4	134.6	135.5					
After Soaking	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Soaked Sample Height (in)	4.649	4.638	4.649					
Soaked Time (Day)	4.0	4.0	4.0					
Swell (%)	0.0	-0.3	0.0					
Moisture Content (%)	9.9	8.7	8.2					
Weight of Mold + Soil (lb)	27.77	27.99	28.67					
Weight After Soaking (g)	4659.3	4725.1	4756.6					
Dry Density (pcf)	122.9	126.0	127.4					
Wet Density (pcf)	135.0	136.9	137.8					
Piston Area (in^2)	0.000							

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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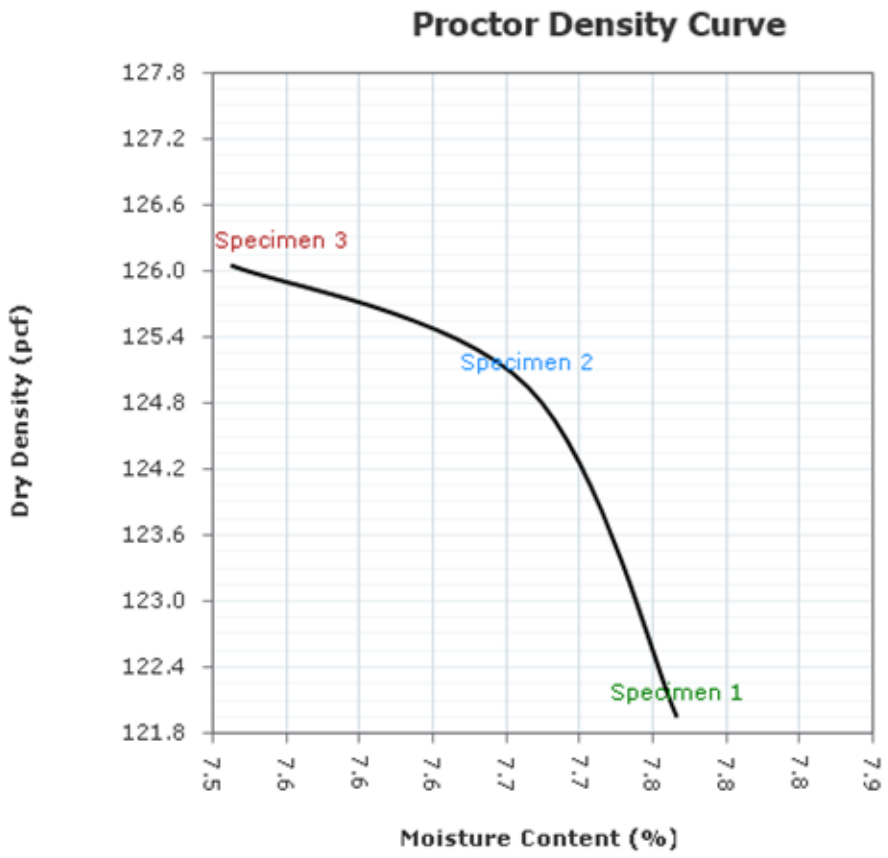
CBR Proctor Density Curve

ASTM (D1883) / AASHTO (T193)



CBR Proctor Density Curve	
Maximum Dry Density (pcf)	126.1
Optimum Moisture Content (%)	7.5

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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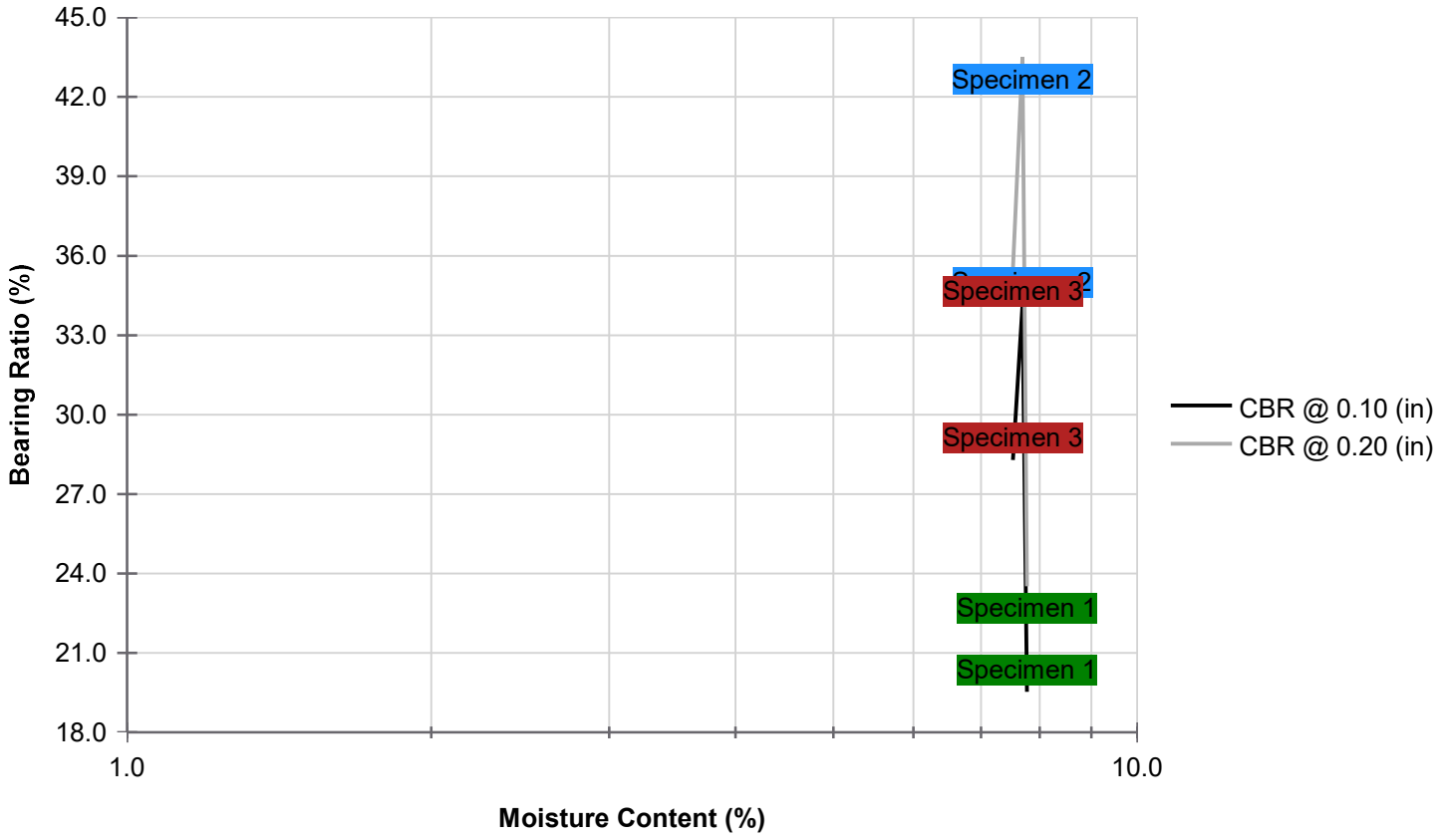
CBR Bearing Ratio

ASTM (D1883) / AASHTO (T193)



CBR Results	
CBR @ 0.10 (in)	34.2
CBR @ 0.20 (in)	43.5
Moisture Content (%)	7.8

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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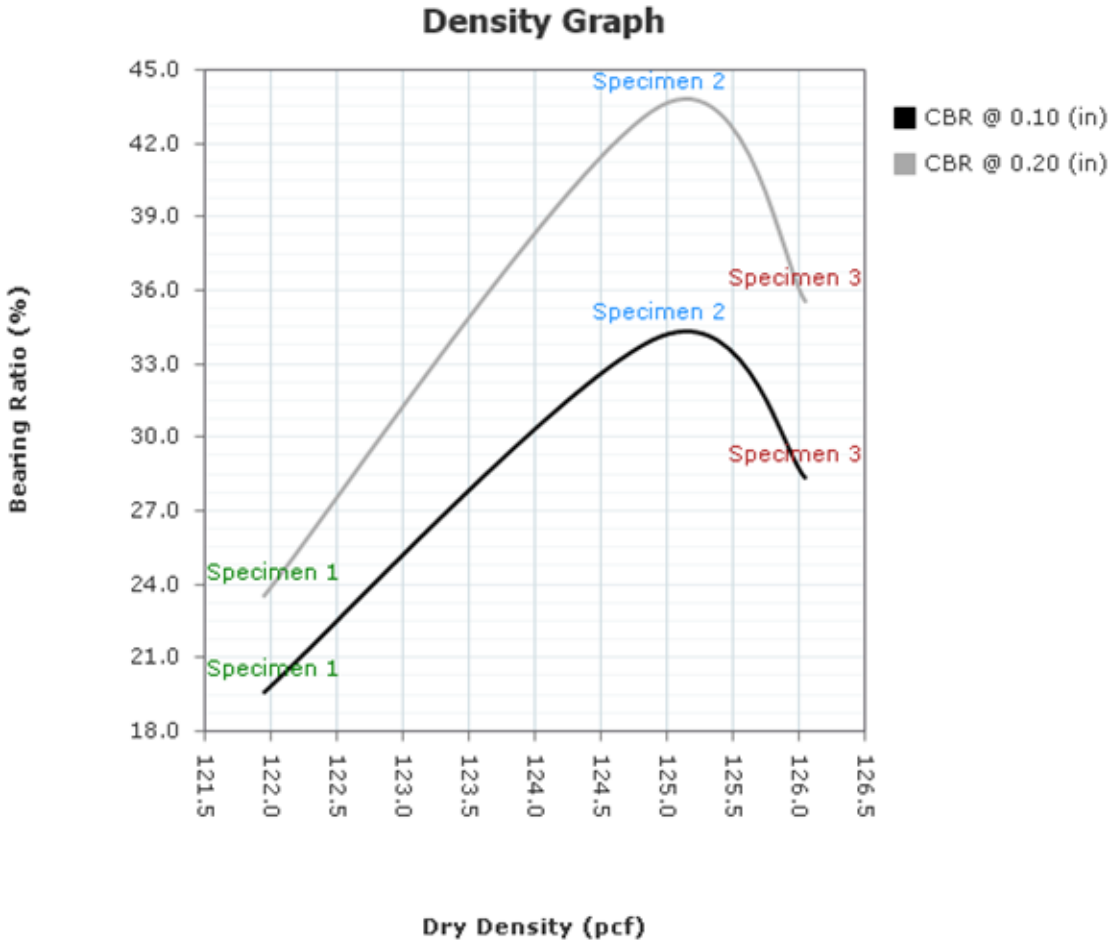
CBR Density Graph

ASTM (D1883) / AASHTO (T193)



CBR Results	
CBR @ 0.10 (in)	34.2
CBR @ 0.20 (in)	43.5
Maximum Dry Density (pcf)	126.1

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

CBR Test - Specimen 1

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	108.9	0.016	0.0	0.00	0	0.0	0.0
1	00:00:35	264.4	0.041	155.5	0.03	52	0.0	0.0
2	00:01:08	416.2	0.066	307.3	0.05	102	0.0	0.0
3	00:01:39	559.5	0.091	450.6	0.08	150	0.0	0.0
4	00:02:10	694.9	0.116	586.0	0.10	195	19.5	19.5
5	00:02:41	823.5	0.141	714.6	0.13	238	0.0	0.0
6	00:03:11	945.7	0.166	836.8	0.15	279	0.0	0.0
7	00:03:42	1,060.6	0.191	951.6	0.18	317	0.0	0.0
8	00:04:13	1,167.0	0.216	1,058.1	0.20	353	23.5	23.5
9	00:06:15	1,521.2	0.316	1,412.2	0.30	471	24.8	24.8
10	00:08:15	1,639.4	0.416	1,530.5	0.40	510	22.2	22.2
11	00:09:57	1,738.9	0.501	1,630.0	0.48	543	20.9	20.9

CBR Test - Specimen 2

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	200.1	0.030	0.0	0.00	0	0.0	0.0
1	00:00:34	366.8	0.055	166.7	0.03	56	0.0	0.0
2	00:01:07	557.4	0.080	357.3	0.05	119	0.0	0.0
3	00:01:39	784.8	0.105	584.7	0.08	195	0.0	0.0
4	00:02:11	1,032.1	0.130	832.0	0.10	277	27.7	34.2
5	00:02:43	1,287.0	0.155	1,086.9	0.13	362	0.0	0.0
6	00:03:14	1,544.0	0.180	1,343.9	0.15	448	0.0	0.0
7	00:03:45	1,788.5	0.205	1,588.5	0.18	529	0.0	0.0
8	00:04:15	2,023.3	0.230	1,823.2	0.20	608	40.5	43.5
9	00:06:19	2,733.1	0.330	2,533.0	0.30	844	44.4	44.0
10	00:08:18	2,611.9	0.430	2,411.9	0.40	804	35.0	35.2
11	00:09:55	2,698.0	0.510	2,497.9	0.48	833	32.0	0.0

CBR Test - Specimen 3

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	112.9	0.018	0.0	0.00	0	0.0	0.0
1	00:00:35	278.1	0.043	165.2	0.03	55	0.0	0.0
2	00:01:08	437.1	0.068	324.2	0.05	108	0.0	0.0
3	00:01:39	584.4	0.093	471.5	0.08	157	0.0	0.0
4	00:02:09	691.2	0.118	578.3	0.10	193	19.3	28.3
5	00:02:38	745.3	0.143	632.4	0.13	211	0.0	0.0
6	00:03:07	771.4	0.168	658.5	0.15	220	0.0	0.0
7	00:03:35	812.8	0.193	699.9	0.18	233	0.0	0.0
8	00:04:04	908.7	0.218	795.8	0.20	265	17.7	35.5
9	00:06:05	1,644.3	0.318	1,531.4	0.30	510	26.9	44.1
10	00:08:12	2,558.1	0.418	2,445.2	0.40	815	35.4	0.0
11	00:09:58	3,358.2	0.502	3,245.3	0.48	1,082	41.6	0.0

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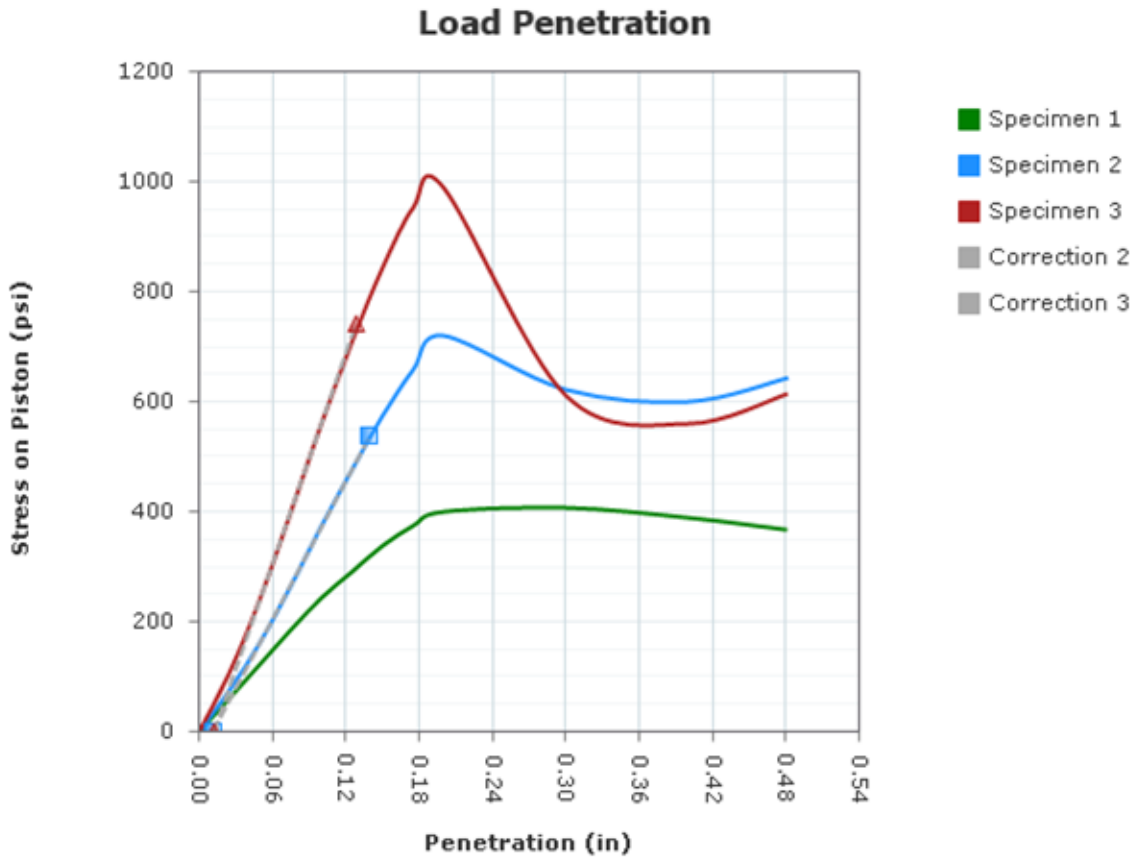
CBR Test Results

ASTM (D1883) / AASHTO (T193)



CBR Results								
Results	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
CBR @ 0.10 (in)	24.3	42.0	63.3					
CBR @ 0.20 (in)	26.7	47.2	62.8					

Project Information	
Project:	Cairns Helipad
Project Number:	25-1102-0124
Sampling Date:	
Sample Number:	PVMT-05-25
Sample Depth:	
Location:	
Client Name:	USACE
Remarks:	

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CBR Test

ASTM (D1883) / AASHTO (T193)

Before Soaking	Specimen Number							
	1	2	3	4	5	6	7	8
Specific Gravity	2.66	2.66	2.66					
Liquid Limit	0	0	0					
Plastic Limit	0	0	0					
Surcharge Weight (lb)	9.99	9.97	10.01					
Number of Blows	10	25	56					
Maximum Dry Density (pcf)	0.0	0.0	0.0					
Optimum Moisture Content (%)	0.0	0.0	0.0					
Mold ID	4-A	P-3	16					
Mold Diameter (in)	6.000	6.000	6.000					
Mold Weight (lb)	15.48	15.81	15.12					
Sample Height (in)	4.650	4.650	4.650					
Mold Volume (in^3)	131.48	131.48	131.48					
Moisture Content (%)	8.3	8.2	8.0					
Weight of Mold + Soil (lb)	24.73	25.34	25.34					
Weight of Soil (g)	4196.6	4323.2	4633.9					
Dry Density (pcf)	112.3	115.8	124.4					
Wet Density (pcf)	121.6	125.3	134.3					
After Soaking	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Soaked Sample Height (in)	4.643	4.643	4.618					
Soaked Time (Day)	4.0	4.0	4.0					
Swell (%)	-0.2	-0.2	-0.7					
Moisture Content (%)	10.7	9.5	8.7					
Weight of Mold + Soil (lb)	25.11	25.62	25.79					
Weight After Soaking (g)	4367.3	4448.4	4836.7					
Dry Density (pcf)	114.3	117.7	128.9					
Wet Density (pcf)	126.5	128.9	140.1					
Piston Area (in^2)	0.000							

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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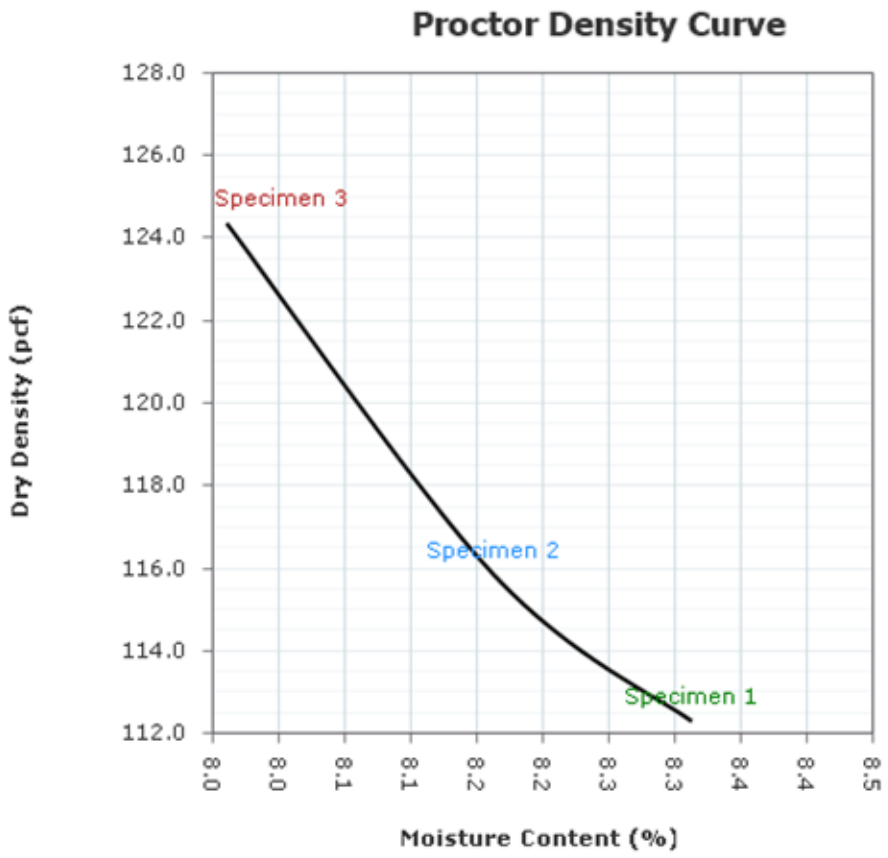
CBR Proctor Density Curve

ASTM (D1883) / AASHTO (T193)



CBR Proctor Density Curve	
Maximum Dry Density (pcf)	124.4
Optimum Moisture Content (%)	8.0

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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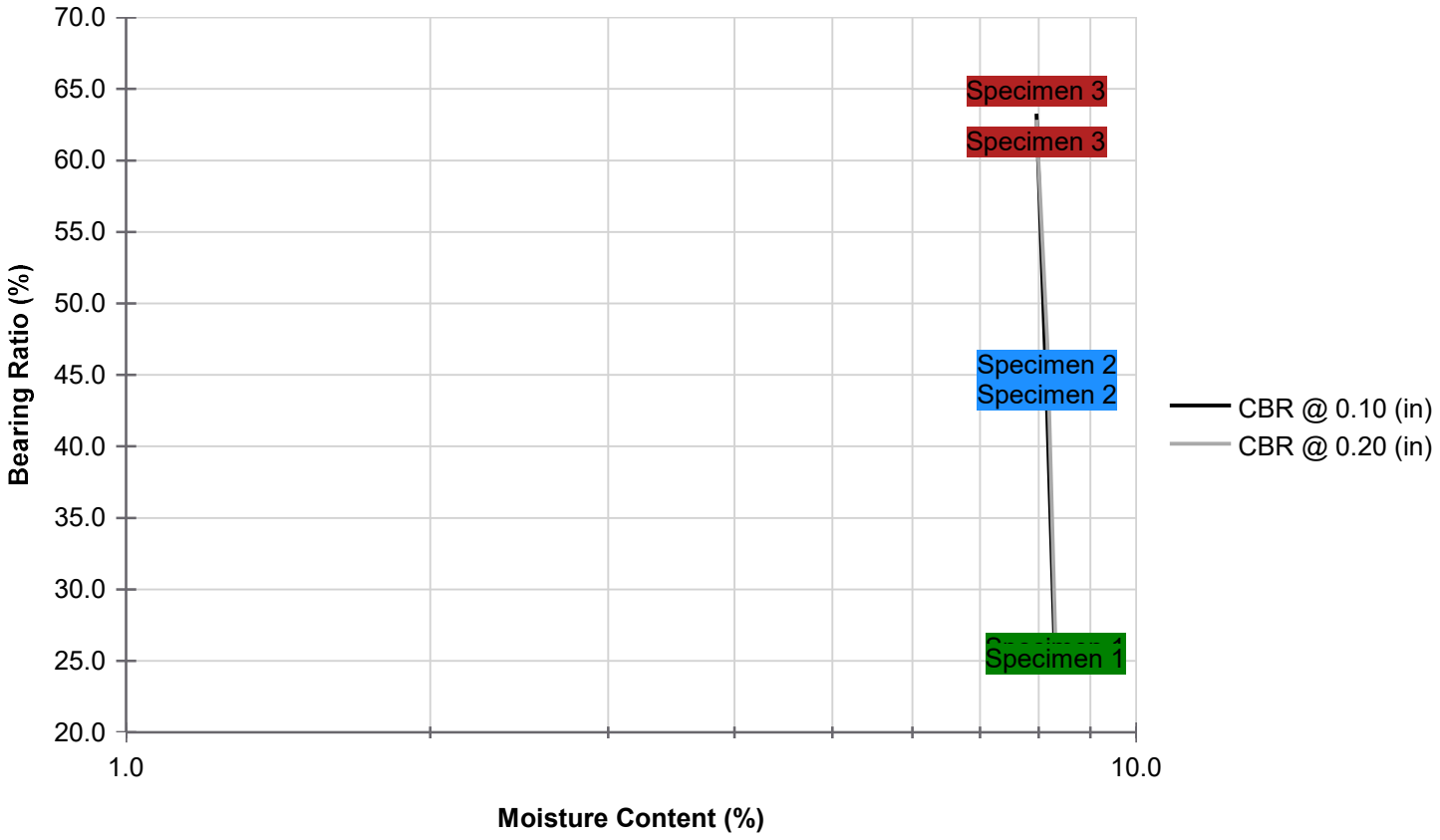
CBR Bearing Ratio

ASTM (D1883) / AASHTO (T193)



CBR Results	
CBR @ 0.10 (in)	63.3
CBR @ 0.20 (in)	62.8
Moisture Content (%)	8.3

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

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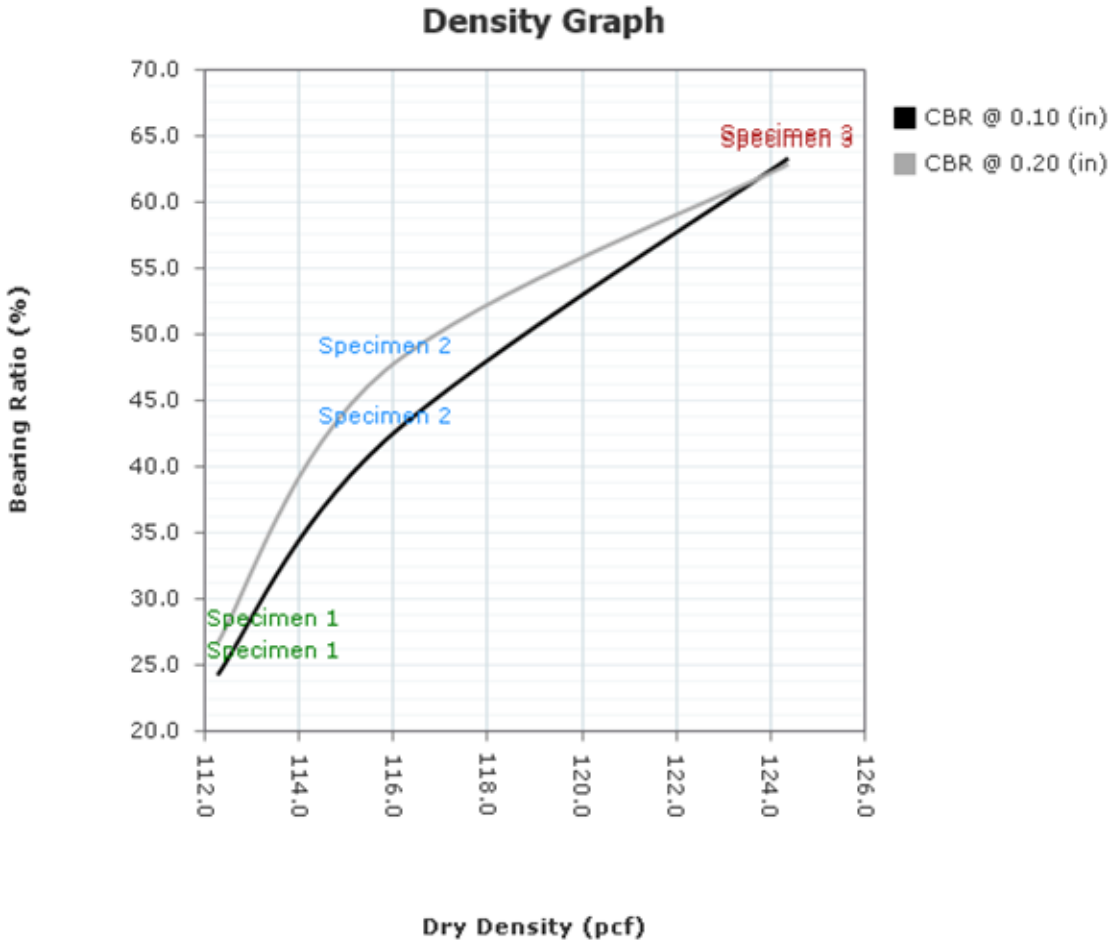
CBR Density Graph

ASTM (D1883) / AASHTO (T193)



CBR Results	
CBR @ 0.10 (in)	63.3
CBR @ 0.20 (in)	62.8
Maximum Dry Density (pcf)	124.4

Project Name: Cairns Helipad Project Number: 25-1102-0124

Tested By: _____ Date: _____ Checked By: _____ Date: _____

CBR Test - Specimen 1

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	132.8	0.020	0.0	0.00	0	0.0	0.0
1	00:00:32	314.0	0.045	181.3	0.03	60	0.0	0.0
2	00:01:03	505.4	0.070	372.6	0.05	124	0.0	0.0
3	00:01:34	690.6	0.095	557.8	0.08	186	0.0	0.0
4	00:02:04	861.9	0.120	729.1	0.10	243	24.3	24.3
5	00:02:34	1,010.1	0.145	877.3	0.13	292	0.0	0.0
6	00:03:04	1,144.1	0.170	1,011.3	0.15	337	0.0	0.0
7	00:03:34	1,254.2	0.195	1,121.5	0.18	374	0.0	0.0
8	00:04:04	1,334.2	0.220	1,201.4	0.20	400	26.7	26.7
9	00:06:06	1,351.1	0.320	1,218.3	0.30	406	21.4	21.4
10	00:08:03	1,299.9	0.420	1,167.2	0.40	389	16.9	16.9
11	00:09:39	1,236.4	0.501	1,103.6	0.48	368	14.1	14.1

CBR Test - Specimen 2

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	138.8	0.020	0.0	0.00	0	0.0	0.0
1	00:00:32	365.1	0.045	226.3	0.03	75	0.0	0.0
2	00:01:04	631.3	0.070	492.5	0.05	164	0.0	0.0
3	00:01:36	936.3	0.095	797.4	0.08	266	0.0	0.0
4	00:02:08	1,260.3	0.120	1,121.4	0.10	374	37.4	42.0
5	00:02:38	1,572.5	0.145	1,433.6	0.13	478	0.0	0.0
6	00:03:08	1,860.9	0.170	1,722.0	0.15	574	0.0	0.0
7	00:03:37	2,108.5	0.195	1,969.6	0.18	657	0.0	0.0
8	00:04:06	2,296.2	0.220	2,157.3	0.20	719	47.9	47.2
9	00:05:59	2,006.7	0.320	1,867.9	0.30	623	32.8	32.6
10	00:07:58	1,942.7	0.420	1,803.9	0.40	601	26.1	26.4
11	00:09:35	2,074.8	0.502	1,936.0	0.48	645	24.8	0.0

CBR Test - Specimen 3

ASTM (D1883) / AASHTO (T193)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Penetration (in)	Stress On Piston (psi)	CBR (%)	Corrected CBR (%)
0	00:00:00	459.1	0.049	0.0	0.00	0	0.0	0.0
1	00:00:32	790.1	0.074	331.0	0.03	110	0.0	0.0
2	00:01:04	1,186.7	0.099	727.6	0.05	243	0.0	0.0
3	00:01:38	1,656.8	0.124	1,197.7	0.08	399	0.0	0.0
4	00:02:12	2,141.7	0.149	1,682.6	0.10	561	56.1	63.3
5	00:02:44	2,589.6	0.174	2,130.5	0.13	710	0.0	0.0
6	00:03:17	2,990.2	0.199	2,531.1	0.15	844	0.0	0.0
7	00:03:49	3,320.3	0.224	2,861.2	0.18	954	0.0	0.0
8	00:04:20	3,424.2	0.249	2,965.1	0.20	988	65.9	62.8
9	00:06:09	2,287.5	0.349	1,828.4	0.30	609	32.1	31.8
10	00:08:06	2,144.3	0.449	1,685.2	0.40	562	24.4	24.8
11	00:09:43	2,307.0	0.530	1,847.9	0.48	616	23.7	0.0

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Michael Davis
Thompson Engineering Inc
2970 Cottage Hill Rd.
Suite 190
Mobile, Alabama 36606

Generated 9/16/2025 4:28:20 PM

JOB DESCRIPTION

Cairns Helipad

JOB NUMBER

400-281997-1

Eurofins Pensacola
3355 McLemore Drive
Pensacola FL 32514

See page two for job notes and contact information.

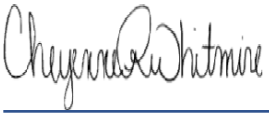
myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southeast, LLC Project Manager.

Authorization



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Authorized for release by
Cheyenne Whitmire, Senior Project Manager
Cheyenne.Whitmire@et.eurofinsus.com
(850)471-6222

Job ID: 400-281997-1 — Eurofins Pensacola

Job Narrative
400-281997-1

Receipt
The samples were received on 9/5/2025 4:00 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.2º C.

Receipt Exceptions
The Chain-of-Custody (COC) was incomplete as received. No date or time on COC or containers.

HPLC/IC
Method 9056A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 400-723183 and analytical batch 400-723199 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET PEN
Moisture	Percent Moisture	EPA	EET PEN
DI Leach	Deionized Water Leaching Procedure	ASTM	EET PEN

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET PEN = Eurofins Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Sample Summary

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
400-281997-1	CHP-02-25 CBR	Solid	09/04/25 00:00	09/05/25 16:00	Alabama
400-281997-2	CHP-06-25 S-2	Solid	09/04/25 00:00	09/05/25 16:00	Alabama
400-281997-3	CHP-09-25 S-5	Solid	09/04/25 00:00	09/05/25 16:00	Alabama
400-281997-4	PVMT-02-25 CBR	Solid	09/04/25 00:00	09/05/25 16:00	Alabama

Client Sample Results

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

Client Sample ID: CHP-02-25 CBR

Lab Sample ID: 400-281997-1
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00
Percent Solids: 82.3

Method: SW846 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<24		24		mg/Kg	☼		09/15/25 18:56	1
Sulfate	<24		24		mg/Kg	☼		09/15/25 18:56	1

Client Sample ID: CHP-06-25 S-2

Lab Sample ID: 400-281997-2
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00
Percent Solids: 71.3

Method: SW846 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<28		28		mg/Kg	☼		09/15/25 19:04	1
Sulfate	**47**		28		mg/Kg	☼		09/15/25 19:04	1

Client Sample ID: CHP-09-25 S-5

Lab Sample ID: 400-281997-3
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00
Percent Solids: 85.2

Method: SW846 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<23		23		mg/Kg	☼		09/15/25 19:13	1
Sulfate	<23		23		mg/Kg	☼		09/15/25 19:13	1

Client Sample ID: PVMT-02-25 CBR

Lab Sample ID: 400-281997-4
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00
Percent Solids: 82.4

Method: SW846 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<24		24		mg/Kg	☼		09/15/25 19:21	1
Sulfate	<24		24		mg/Kg	☼		09/15/25 19:21	1

Definitions/Glossary

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Lab Chronicle

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

Client Sample ID: CHP-02-25 CBR
Lab Sample ID: 400-281997-1
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	722795	TMP	EET PEN	09/11/25 13:26

Client Sample ID: CHP-02-25 CBR
Lab Sample ID: 400-281997-1
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00
Percent Solids: 82.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Soluble	Leach	DI Leach			723183	AR	EET PEN	09/15/25 15:19
Soluble	Analysis	9056A		1	723199	AR	EET PEN	09/15/25 18:56

Client Sample ID: CHP-06-25 S-2
Lab Sample ID: 400-281997-2
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	722795	TMP	EET PEN	09/11/25 13:26

Client Sample ID: CHP-06-25 S-2
Lab Sample ID: 400-281997-2
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00
Percent Solids: 71.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Soluble	Leach	DI Leach			723183	AR	EET PEN	09/15/25 15:19
Soluble	Analysis	9056A		1	723199	AR	EET PEN	09/15/25 19:04

Client Sample ID: CHP-09-25 S-5
Lab Sample ID: 400-281997-3
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	722795	TMP	EET PEN	09/11/25 13:26

Client Sample ID: CHP-09-25 S-5
Lab Sample ID: 400-281997-3
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00
Percent Solids: 85.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Soluble	Leach	DI Leach			723183	AR	EET PEN	09/15/25 15:19
Soluble	Analysis	9056A		1	723199	AR	EET PEN	09/15/25 19:13

Client Sample ID: PVMT-02-25 CBR
Lab Sample ID: 400-281997-4
Date Collected: 09/04/25 00:00
Matrix: Solid
Date Received: 09/05/25 16:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	722795	TMP	EET PEN	09/11/25 13:26

Lab Chronicle

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

Client Sample ID: PVMT-02-25 CBR

Date Collected: 09/04/25 00:00
Date Received: 09/05/25 16:00

Lab Sample ID: 400-281997-4

Matrix: Solid
Percent Solids: 82.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Soluble	Leach	DI Leach			723183	AR	EET PEN	09/15/25 15:19
Soluble	Analysis	9056A		1	723199	AR	EET PEN	09/15/25 19:21

Laboratory References:

EET PEN = Eurofins Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

QC Association Summary

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

HPLC/IC

Leach Batch: 723183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-281997-1	CHP-02-25 CBR	Soluble	Solid	DI Leach	
400-281997-2	CHP-06-25 S-2	Soluble	Solid	DI Leach	
400-281997-3	CHP-09-25 S-5	Soluble	Solid	DI Leach	
400-281997-4	PVMT-02-25 CBR	Soluble	Solid	DI Leach	
MB 400-723183/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 400-723183/2-A	Lab Control Sample	Soluble	Solid	DI Leach	

Analysis Batch: 723199

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-281997-1	CHP-02-25 CBR	Soluble	Solid	9056A	723183
400-281997-2	CHP-06-25 S-2	Soluble	Solid	9056A	723183
400-281997-3	CHP-09-25 S-5	Soluble	Solid	9056A	723183
400-281997-4	PVMT-02-25 CBR	Soluble	Solid	9056A	723183
MB 400-723183/1-A	Method Blank	Soluble	Solid	9056A	723183
LCS 400-723183/2-A	Lab Control Sample	Soluble	Solid	9056A	723183

General Chemistry

Analysis Batch: 722795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-281997-1	CHP-02-25 CBR	Total/NA	Solid	Moisture	
400-281997-2	CHP-06-25 S-2	Total/NA	Solid	Moisture	
400-281997-3	CHP-09-25 S-5	Total/NA	Solid	Moisture	
400-281997-4	PVMT-02-25 CBR	Total/NA	Solid	Moisture	

QC Sample Results

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 400-723183/1-A
Matrix: Solid
Analysis Batch: 723199

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<20		20		mg/Kg			09/15/25 16:56	1
Sulfate	<20		20		mg/Kg			09/15/25 16:56	1

Lab Sample ID: LCS 400-723183/2-A
Matrix: Solid
Analysis Batch: 723199

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	99.4	109		mg/Kg		110	80 - 120
Sulfate	99.4	105		mg/Kg		105	80 - 120

CHAIN-OF-CUSTODY

PAGE ___ OF ___

thompson
ENGINEERING
3707 Cottage Hill Rd.
Mobile, Alabama 36609
(251) 666-2443

JOB NO.: 25-1102-0124

CLIENT: USACE

PROJECT: Cairns Helipad

LAB USE ONLY LAB I.D.	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	TESTS ASSIGNED: Sulfates	TESTS ASSIGNED: Chlorides	REMARKS
				X	CHP-02-25 CBR	1 bag	X	X	
				X	CHP-06-25 S-2	1 bag	X	X	
				X	CHP-09-25 S-5	1 bag	X	X	
				X	PVMT-02-25 CBR	1 bag	X	X	

400-281997 Chain of Custody

SAMPLED BY AND TITLE: (SIGNATURE)	DATE/TIME	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
			09.05 1035	

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY LAB: (SIGNATURE)	DATE/TIME
	9-5-25 1600					09/05/1600

REMARKS

SAMPLE SHIPPED VIA ☐UPS ☐BUS ☐OTHER

AIR/BUS BILL NUMBER

DISTRIBUTION: ORIGINAL - ACCOMPANIES SHIPMENT. COPY 1 - COORDINATOR FIELD FILES. COPY 2 - CLIENT

0.2°C IR

9/16/2025

Login Sample Receipt Checklist

Client: Thompson Engineering Inc

Job Number: 400-281997-1

Login Number: 281997
List Number: 1
Creator: Perez, Trina M

List Source: Eurofins Pensacola

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.2°C IR-11
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No date or time on COC or containers.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Thompson Engineering Inc
Project/Site: Cairns Helipad

Job ID: 400-281997-1

Laboratory: Eurofins Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alabama	State	40150	06-30-26
ANAB	ISO/IEC 17025	L2471	02-22-26
Arkansas DEQ	State	88-00689	08-01-26
Florida	NELAP	E81010	06-30-26
Georgia	State	E81010(FL)	06-30-26
Illinois	NELAP	200041	10-31-26
Kansas	NELAP	E-10253	10-31-25
Kentucky (UST)	State	53	06-30-26
Louisiana (All)	NELAP	30976	06-30-26
Louisiana (DW)	State	LA017	12-31-25
North Carolina (WW/SW)	State	314	12-31-25
Oklahoma	NELAP	9810	12-31-25
Pennsylvania	NELAP	68-00467	01-31-26
South Carolina	State	96026	06-30-26
Tennessee	State	TN02907	06-30-26
Texas	NELAP	T104704286	09-30-25
US Fish & Wildlife	US Federal Programs	A22340	06-30-26
USDA	US Federal Programs	525-23-9-22801	01-09-26
USDA	US Federal Programs	FLGNV23001	01-08-26
Virginia	NELAP	460166	06-14-26
West Virginia DEP	State	136	03-31-26