REQUEST FOR PROPOSALS
FOR IMPROVEMENTS TO
BECLABITO COMMUNITY HELIPAD
BASIC HELIPAD & ACCESS ROAD
BECLABITO, NEW MEXICO

RFP BID No. 26-10-4328JB

Sealed bids for improvements to the Beclabito Community Helipad will be received by the Navajo Nation at the **Navajo Nation Office of the Controller; Procurement Department; Tribal Hill Dr Admin. Bldg.1, Window Rock, Arizona 86585, until December 9, 2026 at 2:00 p.m. (local time / Window Rock, AZ).**

The work involved includes the following:

SCHEDULE I
Basic Helipad (Day Operations Only)
SCHEDULE II
Access Road (1,650 LF)

A digital download of the Project Documents and other related contract information may be downloaded through https://navajodot.org/rfp%2Frfq.

Each bid must be accompanied by a Bid Bond executed by a Surety Company or a certified check in an amount not less than five (5) percent of the total bid made payable to the Navajo Nation.

The Bidder must supply all the information required by the proposal forms and specifications and must bid on all items of every schedule. The Navajo Nation reserves the right to waive any informality in, or to reject any or all portions of, the various bid items. No proposal may be withdrawn for a period of 120 days from the opening thereof.

A non-mandatory virtual pre-bid meeting for all prospective bidders will be held **via Microsoft Teams on December 09, 2026, at 2:00 p.m. (MST).** Meeting access instructions will be sent to all plan holders or you may request an invitation to the pre-bid meeting by contacting Adam Swenson with Egis at adam.swenson@egis-group.com.

A 6% Navajo Nation Sales Tax and 6.5% New Mexico Gross Receipts Tax (NMGRT) will be required for this project.

The proposed contract is under and subject to comply with Navajo Nation Procurement Law.

The proposed contract is subject to:

- Civil Rights Title VI Assurance (49 U.S.C. § 47123 and FAA Order 1400.11)

Minimum wage rates as established by the Navajo Nation Department of Labor Relations are applicable to all schedules awarded for this project.

Any questions regarding this project are to be directed to Adam Swenson at adam.swenson@egis-group.com or the office of Egis, Grand Junction, Colorado, (970) 341-4720 for interpretation.

BECLABITO COMMUNITY HELIPAD

Beclabito, New Mexico

PROJECT MANUAL

SCHEDULE I
Basic Helipad (Day Operations Only)

SCHEDULE II
Access Road (1,650 LF)

RFP Bid No. 26-10-4328JB

Egis No. 28364

November 2026

BECLABITO COMMUNITY HELIPAD

BECLABITO, NEW MEXICO

Project Manual including
Contract Documents and Specifications

RFP Bid No. 26-10-4328JB
Egis No. 28364

CERTIFICATION

I hereby certify that these plans and specifications for the Beclabito Community Helipad Improvements were prepared under my direct supervision for the Owners thereof.

Designed by:

Engineer — Date: 11/23/2026

Reviewed by and prepared under my direct supervision:

egis

ERIC FRANCISCO RIVERA
NEW MEXICO
24574
PROFESSIONAL ENGINEER

Registered Professional Engineer — Date: 11/23/2026

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Each bid must be accompanied by a Bid Bond executed by a Surety Company or a certified check in an amount not less than five (5) percent of the total bid made payable to the Navajo Nation.

The Bidder must supply all the information required by the proposal forms and specifications and must bid on all items of every schedule. The Navajo Nation reserves the right to waive any informality in, or to reject any or all portions of, the various bid items. No proposal may be withdrawn for a period of 120 days from the opening thereof.

A non-mandatory virtual pre-bid meeting for all prospective bidders will be held **via Microsoft Teams on November 24, 2026, at 10:30 a.m. (MST).** Meeting access instructions will be sent to all plan holders or you may request an invitation to the pre-bid meeting by contacting Adam Swenson with Egis at adam.swenson@egis-group.com.

A 6% Navajo Nation Sales Tax and 6.5% New Mexico Gross Receipts Tax (NMGRT) will be required for this project.

The proposed contract is under and subject to comply with Navajo Nation Procurement Law.

The proposed contract is subject to:

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Minimum wage rates as established by the Navajo Nation Department of Labor Relations are applicable to all schedules awarded for this project.

Any questions regarding this project are to be directed to Adam Swenson at adam.swenson@egis-group.com or the office of Egis, Grand Junction, Colorado, (970) 341-4720 for interpretation.

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

1. Defined Terms

1.1 Terms used in these Instructions to Bidders, which are defined in the General Provisions of the Construction Contract, have the meanings assigned to them in the General Provisions. The term "Successful Bidder" means the lowest, qualified, responsible Bidder to whom the Sponsor (on the basis of Sponsor's evaluation as hereinafter provided) makes an award.

2. Sponsor and Sponsor's Representative

2.1 The Sponsor as stated herein refers to the following agency: Navajo Nation.

2.2 The Sponsor's authorized representative as stated herein refers to the Sponsor's Consultant, Egis, herein referred to as Engineer with offices at 751 Horizon Drive, Suite 255, Grand Junction, Colorado 81506, (970) 242-0101. Said Consultant will act as the Sponsor's Representative and shall assume all rights and authority assigned to the Engineer as stated within the Project Documents in connection with the completion of the Project Work.

3. Bid Documents/Project Documents

3.1 The project documents are comprised of the documents listed in Article 9 of the Agreement.

3.2 All documents comprising the Bid Documents are complementary to one another and together establish the complete terms, conditions, and obligations of the successful Bidder. Bid documents are made available for the purpose of obtaining bids on the work and not confer a license or grant for any other use.

3.3 Complete sets of Project Documents shall be used in preparing Bids; neither Sponsor nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3.4 Those individual elements of the Contract Documents that are issued electronically shall also be referred to as the Project Documents. No part of the project documents may be removed or detached.

4. Qualifications of Bidders

4.1 Evidence of appropriate licensing under the New Mexico Construction Industries Division (current edition) for the construction shall be submitted to the Sponsor with each bid for the appropriate classification of work. Evidence of Registration with the Labor Enforcement Fund of the New Mexico Department of Workforce Solutions shall be submitted to the Sponsor with each bid.

5. Examination of Project Documents and Site

5.1 Before submitting a Bid, Bidders must (a) examine the Project Documents thoroughly, (b) visit the site to familiarize themselves with the project site and local conditions, including the requirements of working on an operating airport that may in any manner affect cost, progress or performance of the Work, (c) familiarize themselves with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress, or

performance of the Work; and (d) study and carefully correlate their observations with the Project Documents.

5.2 Project Documents were prepared on the basis of interpretation, judgment and discretion of Engineer. Accuracy of the Project Documents cannot be guaranteed. Questions about perceived inconsistencies, ambiguities or errors should be directed to the Engineer. By submitting its Bid, Bidder waives the right to assert that inconsistencies, ambiguities or errors impacted its Bid. Bidder assumes the risk of attendance to successful performance of the work, waives all claims for additional compensation or time extensions on the grounds that the nature or amount of work to be done was not understood at the time of Bidding and waives all claims of any nature against the Sponsor and the Engineer arising out of or related to submission of its Bid. The submission of a Bid will constitute an incontrovertible representation that they have compiled with every requirement herein and that the Project Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

5.3 The Project Documents may have been obtained through a plan room, either physically or through Internet access. Bidder acknowledges that the Engineer has no control over the operation of the plan room and that it is the Bidder's sole responsibility for obtaining any Bid information or addendums.

5.4 Where any soils investigation or report of subsurface and latent physical conditions at the site or otherwise affecting cost, progress, or performance of the Work which have been relied upon by Engineer in preparing the Project Documents for the convenience of the Bidder, the Engineer will make copies of such reports available to any Bidder requesting them. These reports are not guaranteed as to accuracy or completeness, nor are they part of the Project Documents. Before submitting his Bid, each Bidder will, at his own expense, make such additional investigations and tests as the Bidder may deem necessary to determine his Bid for performance of the Work in accordance with the time, price, and other terms and conditions of the Project Documents.

5.5 On request, Sponsor will provide each Bidder with access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his Bid. The submission of a proposal shall be prima facie evidence that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed Project Documents.

5.6 The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by Contractor in performing the Work are identified in the General Provisions or Construction Drawings.

6. Interpretations

6.1 All questions about Contract Documents including Detailed Specifications and/or Construction Drawings shall be submitted to Engineer in writing. Questions will be accumulated, and a reply will be issued by Addendum. Bidders identified on the plan holders list will be notified by email that an Addendum is available no later than five (5) business days before the scheduled Bid Opening. Questions received less than seven (7) business days prior to the time and date for opening Bids will not be answered. Only questions answered by formal written Addenda will be binding and receipt of all addenda must be properly acknowledged on the appropriate proposal page. Any addenda will be issued to all plan

holders. If acknowledgement for receiving any of the issued addenda is missing, then your bid will not be accepted. Oral and other interpretations or clarifications will be without legal effect.

7. Bid Security

7.1 Bid Security shall be made payable to Sponsor, in an amount of five (5) percent of the Bidder's total Bid price and in the form of a certified or bank check or a Bid Bond issued by a Surety as assurance that the Bidder will, upon acceptance of his Bid, execute such contractual documents as may be required within the time specified. The bid bond shall be from a responsible surety qualified to conduct business within the State of New Mexico. A certified check shall be issued from a responsible and solvent bank or trust company.

7.2 The Bid Security of the successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Contract Security; whereupon it will be returned if the successful Bidder fails to execute and deliver the Agreement and furnish the required Contract Security within 15 days of the Notice of Award, Sponsor may annul the Notice of Award, and the Bid Security of that Bidder will be forfeited. The unsuccessful Bidder's Bid Security will be returned to the unsuccessful Bidder upon the award of the contract to the successful bidder.

8. Contract Time

8.1 The number of days within which, or the date by which the Work is to be completed, (the Contract Time) is set forth in Article 4 of the Agreement.

9. Liquidated Damages

9.1 Provisions for liquidated damages, if any, are set forth in Article 4 of the Agreement.

10. Substitute Material and Equipment

10.1 The Contract, if awarded, will be on the basis of material and equipment described in the Construction Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Construction Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the "effective date of the Agreement." The procedure for submitting any such application by Contractor and consideration by Engineer is set forth in Section 80-05 of the General Provisions.

11. Subcontractors

11.1 Proposal requires that the identity of intended Subcontractors be submitted to Sponsor. If Sponsor or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, other person or organization, either may, before giving the Notice of Award, request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid price. If the apparent Successful Bidder declines to make any such substitution, the Contract shall not be awarded to such Bidder, but declining to make any such substitution will not constitute grounds for sacrificing their Bid Security. Any Subcontractor, other person,

or organization so listed and to whom Sponsor or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Sponsor and Engineer.

11.2 In contracts where the Contract Price is on the Basis of Cost-of-the-Work Plus a Fee, the apparent Successful Bidder, prior to the Notice of Award, shall identify, in writing to Sponsor, those portions of the Work that such Bidder proposes to subcontract and after the Notice of Award may only subcontract other portions of the Work with Sponsor's written consent.

11.3 No Contractor shall be required to employ any Subcontractor, other person or organization against which they have reasonable objection.

12. Bid Proposal Form

12.1 The Bid Proposal Form is attached hereto; additional copies may be obtained from Engineer.

12.2 Bid Proposal Forms must be completed in ink or by electronic signature. The Bid price of each item on the form must be stated in words and numerals; in case of a conflict, words will take precedence. No bidder may submit more than one proposal.

12.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

12.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

12.5 For bids submitted by an agent, evidence of the power of attorney shall be attached to the bid.

12.6 All names must be typed or printed below the signature.

12.7 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

12.8 The address to which communications regarding the Bid are to be directed must be shown.

13. Submission of Bids

13.1 Bidders must submit proposals for all the work entailed by all the schedules. A bidder may not submit a proposal for some, but not all, of the schedules. No bidder may submit more than one proposal.

13.2 Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be included in an opaque sealed envelope, marked with the project title and name and address of the Bidder and accompanied by the Bid Security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face thereof. Each Bidder shall prepare his Proposal, including supporting data, in duplicate.

13.3 Each Bidder will submit the following in a sealed opaque envelope:

A. The Sponsor's copy of the Proposal and such other items as may be required to accompany the Proposal. The entire project document book is not required to be submitted.

B. Bid Security. For in-person bidding, the Bid Security shall be included in the sealed envelope and submitted at the time of bid.

14. Modification and Withdrawal of Bids

14.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

15. Opening of Bids

15.1 When Bids are opened publicly, they will be read aloud. Proposals submitted after the stated time and date for receipt of bids will be automatically rejected without consideration and will be returned unopened.

16. Bids to Remain Open

16.1 All Bids shall remain open for the period specified in General Provision 30-02, but Sponsor may, at their sole discretion, release any Bid and return the Bid Security prior to that date.

17. Award of Contract

17.1 Sponsor reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the Successful Bidder. The Sponsor further reserves the right to disregard all nonconforming, nonresponsive, or conditional Bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

17.2 In evaluating Bids, Sponsor shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements and alternates and unit prices, if requested in the Bid forms. It is Sponsor's intent to accept alternates (if any are accepted), but Sponsor may accept them in any order or combination.

17.3 Sponsor may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations must be submitted as provided in the Proposal. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Sponsor. A Certification of Inclusion of Labor and EEO Requirements in Subcontracts shall be submitted to the Sponsor for each subcontract.

17.4 Sponsor may conduct such investigations as deemed necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders,

proposed Subcontractors and other persons and organizations to do the Work in accordance with the Project Documents to Sponsor's satisfaction within the prescribed time.

17.5 Sponsor reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Sponsor's satisfaction.

17.6 The scope of the project may be revised prior to award depending on the availability of funds. The Sponsor reserves the right to award any order or combination of schedules which in the judgment of the Sponsor, best serves the Sponsor's interest. If the Contract is to be awarded, it will be awarded based on the lowest responsive Bid total of the awarded items.

17.7 If the Contract is to be awarded, Sponsor will give the Successful Bidder a Notice of Award within the period specified in General Provision 30-02. The Notice of Award shall not be construed as a binding agreement. The proper execution of a contract agreement shall serve as the binding agreement.

17.8 By submitting a response to this request for proposals, the Bidder acknowledges and agrees that, if selected as the successful Contractor, they shall accept and execute the contract in accordance with all terms, conditions, specifications, and requirements set forth in the bidding documents, without modification. Any attempt by the Contractor to alter, amend, or conditional acceptance of the contract documents shall be deemed non-compliant and may result in disqualification or termination of award.

18. Performance and Other Bonds

18.1 Article 11 of Exhibit B of the Agreement sets forth Sponsor's requirements as to performance and other Bonds. When the Successful Bidder delivers the executed Agreement to Sponsor, it shall be accompanied by the required Contract Security.

19. Agreement

19.1 The successful Bidder shall, within 15 days after Notification of the Award:

A. Enter into an Agreement, in writing, with Sponsor covering all matters detailed in these Specifications and the Proposal.

B. Execute the necessary Bonds with Surety acceptable to the Sponsor as indicated in the Agreement.

C. Show evidence of adequate insurance acceptable to the Sponsor as defined by the General Provisions and Special Provisions.

D. If requested by the Sponsor, provide a fully detailed financial statement.

19.2 Failure to execute the contract agreement within the specified time frame may result in the project being awarded to the next low Bidder and shall result in the forfeiture of the Bidder's bid guarantee as a liquidated damage.

19.3 The aforesaid Agreement and Bonds shall be subject to approval by the Sponsor's Attorney. All Bonds are to be furnished at the sole cost of the successful Bidder. Surety therein provided for shall be a Corporate Surety authorized to do business in the State of New Mexico.

19.4 The Agreement, when executed, shall be deemed to include the entire Agreement between the parties hereto and the Contractor shall not claim any modification thereof resulting from any representation of the Sponsor or any other person.

20. State and Federal Regulations.

20.1 The successful Contractor must fully comply with all applicable Federal and State requirements pertaining to the work, employees used on the job and any special requirements pertaining to work procedures.

21. State Sales Tax on Materials and Supplies Purchased for Use on This Project

21.1 All sales and use taxes, as well as other taxes that might lawfully be assessed against the Sponsor in the execution and performance of the proposed Contract and work covered thereby, are to be paid by the Contractor for the work from monies obtained in satisfaction of his/her Contract. It is to be understood by all Bidders that the bid price or prices submitted shall include the total cost of all such taxes.

22. Buy American Preference (Title 49 U.S.C. § 50101, Executive Order 14005, *Ensuring the Future is Made in All of America by All of America's Workers,* Infrastructure Investment and Jobs Act (IIJA) (P.L. No. 117-58), Build America, Buy America (BABA))

Not Applicable.

23. Civil Rights Title VI Solicitation Notice (49 U.S.C.§ 47123 and FAA Order 1400.11)

Not Applicable.

24. Federal Fair Labor Standards Act (Federal Minimum Wage) (29 U.S.C. § 201, et seq, 2 CFR § 200.430)

Not Applicable.

25. Disadvantaged Business Enterprises (DBE).

Not Applicable.

AGREEMENT

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

BUSINESS UNIT #'S & AMOUNTS: KXXXXXX-XXX_____ $_____

KXXXXXX-XXX_____ $_____

CONTRACT NOT TO EXCEED $_____

BEGINNING DATE OF CONTRACT: Date of Notice to Proceed
ENDING DATE OF CONTRACT: Four (4) years after Notice to Proceed

THIS AGREEMENT is by and between Navajo Nation ("Owner") and

_____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Basic Helipad (Day Operations Only) and Access Road (1,650 LF)

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: .

Basic Helipad (Day Operations Only) and Access Road (1,650 LF)

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Egis.

3.02 The Owner has retained Egis ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

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4.02 *Contract Times: Days*

A. The Contract Time will begin on the date of the Notice to Proceed (NTP). The contract term will end at a maximum of four (4) calendar years after the date of the NTP.

B. The work will be completed in two (2) Schedules. Construction of Schedule I & II work will be substantially completed within 60 days after commencing work according to Section 80-02 of the General Contract Provisions, and completed and ready for final payment in accordance with Section 90-09 of the General Contract Provisions within 100 days after the date when work begins. Business Unit Numbers for work associated with the respective Phases shall remain open and active until all Payments have been distributed inclusive of any approved alterations to the schedule work.

C. If needed, the construction durations in Section 4.03(B) above may be extended per Section 80-07 of the General Contract Provisions or may be temporarily stopped per Section 80-06 of the General Contract Provisions.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02.B above, plus any extensions thereof allowed in accordance with the Contract.

1. Substantial Completion: Contractor shall pay Owner $2,500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.B above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $2,500.00 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of each Schedule of Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. A lump sum of: $ _____

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Section 90-01 of the General Contract Provisions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

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C. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment)

$ _____.

D. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Section 90 of the General Contract Provisions. Applications for Payment will be processed by Engineer as provided in the General Contract Provisions. As the Work will be performed in two (2) Schedules, Pay applications will be submitted separately and paid for each Schedule. Schedule I and Schedule II work will be tracked separately for payment.

6.02 *Progress Payments; Retainage*

A. As provided for in Article 16 of Exhibit B. As the Work will be performed in two (2) Schedules, retainage will be tracked separately for payment for each Schedule.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Section 50-15 of the General Contract Provisions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in Section 90-09 of said General Contract Provisions. As the Work will be performed in two (2) Schedules, retainage will be tracked separately for payment for each phase. Schedule I retainage shall be paid when Schedule I Work is complete and accepted in accordance with Section 90-09 of said General Contract Provisions regardless of the amount of Work completed, if any, for Schedule II. Likewise, Schedule II retainage shall be paid when Schedule II work is completed and accepted in accordance with Section 90-09 of said General Contract Provisions regardless of the amount of Work completed, if any, of Schedule I. Business Unit Numbers for Work associated with the respective phases shall remain open and active until all Payments, including retainage, have been distributed inclusive of any approved alterations to the Schedule Work.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of __0__ percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

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D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement
2. Performance bond
3. Payment bond
4. Supplemental Conditions
5. FAA General Provisions
6. Specifications as listed in the table of contents of the Project Manual.
7. Drawings (not attached but incorporated by reference)
8. Addenda (numbers _____ to _____, inclusive).

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9. New Mexico State Wages

10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:

    a. Notice to Proceed.

    b. Work Change Directives.

    c. Change Orders.

    d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Contract Provisions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Contract Provisions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Assignment of this Contract is prohibited under Article 26 of Exhibit B.

10.03 *Successors and Assigns*

A. As provided for in Article 27 of Exhibit B.

10.04 *Severability*

A. As provided for in Article 30 of Exhibit B.

10.05 *Contractor's Certifications*

1. Contractor agrees to submit an "Affidavit of Non-Collusion" prior to Owner's execution of this Contract.

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____ *(where applicable)*
(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)	*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

Department of Justice Approval. *Pursuant to 1 N.N.C. §554(J)(2) and (K)(2), Navajo Nation Department of Justice approval is required for all agreements that include a limited waiver of sovereign immunity to compel or enforce arbitration under the Navajo Nation Arbitration Act, as amended, 7 N.N.C. §1101 et seq*

_____

Navajo Nation Department of Justice

************END OF DOCUMENT************

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EXHIBIT B
MODIFIED NAVAJO SUPPLEMENTAL GENERAL CONDITIONS

MODIFIED NAVAJO NATION SUPPLEMENTAL GENERAL CONDITIONS

Navajo Nation Administrative Purposes Only

The Parties acknowledge the terms within this box section are referenced in the Contract but are for Navajo Nation governmental purposes. Except as provided in the Contract, changes to the terms within this box section will not require a modification.

Contract Number:_____

Contract Begin Date: Date of Notice to Proceed (NTP)

Contract Term Ends: Four Years After NTP

Business Unit Number(s)	**Amount to Encumber**
KXXXXXX-XXXX	$
KXXXXXX-XXXX	$
Total:	$

1.0 **IDENTIFICATION OF THE PARTIES; PROJECT.** This Contract is entered into by and between the Navajo Nation and _____, who is hereinafter referred to as "Contractor." The Navajo Nation and Contractor are herein jointly referred to as "Parties." The authorized representatives for both Parties are named in the Primary Contract. The Project that is the subject of this Contract is the "BASIC HELIPORT (DAY OPERATIONS ONLY) AND ACCESS ROAD (1,650 LF)" hereinafter referred to as "the Project."

2.0 **DOCUMENTS CONSTITUTING THE CONTRACT.** The following:

2.1 Documents constituting the Contract are specified in Article 9 of the EJCDC C-520 ©2013 - SUGGESTED FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACTS (STIPULATED PRICE), as modified by the Parties;

3.0 **CONTRACT DOCUMENTS & NNSGC GOVERN.** The Parties hereby acknowledge and agree that the written provisions contained in the documents listed in Article 2.0 herein constitute the complete understanding of the Parties with respect to the subject matter of this Contract, and that there are no promises or representations between the Parties other than those set forth herein. Any conflict between any provision(s) contained in the Contract documents shall be resolved by reference to and interpretation of the provision(s) contained in this Navajo Nation Supplemental General Conditions.

4.0 **ORIGINAL CONTRACT AMOUNT:** _____ Dollars and XX/100 ($), which amount is the Original Contract Amount. Any modification of this amount shall comply with Article 32 herein. The Contractor hereby acknowledges and agrees that said payment constitutes the full and adequate consideration for all work fully and satisfactorily performed, for all applicable taxes, permit fees, licensing fees, registration fees, bonding and surety costs, insurance or any other expenses necessary or convenient for the Contractor to perform under this Contract.

5.0 **PRIMARY WORK LOCATION.** In the performance of work or provision of services pursuant to this Contract the Contractor is authorized to travel at Contractor's sole expense. The work to be performed and/or services to be provided shall be primarily in Beclabito, New Mexico.

6.0 **AVAILABILITY OF FUNDS.**

6.1 **Appropriations required.** Pursuant to 2 N.N.C. §223 A, the obligation of the Navajo Nation to pay Contractor the entire Original Contract Amount, or any portion thereof as invoiced, or any amounts under any and all change orders, amendments, or modifications to this Contract, shall be contingent upon the availability of funds, from whatever source, for the Project which is the subject of this Contract.

6.2 **Subsequent fiscal periods.** Pursuant to 12 N.N.C. §350 D, if funds adequate to support continuation of performance under this Contract are not appropriated or otherwise become unavailable during any fiscal period(s) subsequent to that period in which this Contract is entered into, then this Contract may, at the sole discretion of the Navajo Nation, be cancelled and Contractor shall be reimbursed only for the reasonable value of any non-recurring costs incurred as a direct result of work performed under this Contract.

7.0 **CONTRACT NUMBER.** Upon contract execution, the Navajo Nation shall assign a Contract Number which shall be shown in the Administrative Purposes box on page 1 herein. All invoices submitted by Contractor for payment shall reference said Contract Number, including the Project Name and Business Unit Number.

8.0 **EFFECTIVE DATE; TERM, NOTICE TO PROCEED REQUIRED.** The effective beginning and ending date of this Contract are as shown on the first page of the Primary Contract. The Contractor shall not commence any work until the Navajo Nation Division of Transportation issues a formal "Notice to Proceed" for the Project; notwithstanding, the Contractor shall not commence any work until the effective date of all insurance required by Article 9 herein. This Contract shall expire on the date shown unless earlier terminated or extended by modification in accordance with Article 32 herein.

9.0 **INSURANCE REQUIREMENTS.** The Contractor shall, at its sole expense, procure and maintain adequate and sufficient insurance for all of Contractor's potential liabilities, in accordance with this Article, relating to any claims by any party for any injury to persons or damage to property arising out of or connected with any work performed or services provided under this Contract by the Contractor.

9.1 **Minimum Insurance Coverages.** The Contractor shall obtain and maintain for the duration of performance under this Contract, the minimum insurance coverages shown below:

(a) Commercial General Liability – ISO CG 0001 Form or equivalent. Coverages shall include:
- Premises and Operations
- Personal/Advertising Injury
- Products/Completed Operations
- Liability assumed under an Insured Contract (including defense costs assumed under contract)
- Broad Form Property Damage
- Independent Contractors/Consultants

(b) Automobile Liability including all:
- Contractor-Owned Vehicles
- Non-owned Vehicles
- Rented/Hired Vehicles
- Personal Injury Protection (where applicable)

(c) Workers' Compensation:
- Statutory Benefits (Coverage A)
- Employers Liability (Coverage B)

9.2 Limits required. Contractor shall carry the limits of liability as required below (where "State Law" is indicated, such limits shall be in accordance with the laws and regulations of the State wherein this Contract shall be primarily performed):

COMMERCIAL GENERAL LIABILITY	
GENERAL AGGREGATE	$ 2,000,000
PRODUCTS/COMPLETED OPERATIONS AGGREGATE	$ 2,000,000
OCCURRENCE BASIS/ PER EACH OCCURRENCE LIMIT	$ 1,000,000
PERSONAL/ADVERTISING INJURY	$ 1,000,000
FIRE DAMAGE (ANY ONE FIRE)	$ 50,000
MEDICAL PAYMENTS (ANY ONE PERSON)	$ 5,000
AUTOMOBILE LIABILITY	
BODILY INJURY/PROPERTY DAMAGE (EACH ACCIDENT)	$ 1,000,000
PERSONAL INJURY PROTECTION (IF APPLICABLE)	BY STATE LAW
WORKERS' COMPENSATION	
COVERAGE A (WORKERS' COMPENSATION)	BY STATE LAW
COVERAGE B (EMPLOYERS LIABILITY)	$ 500,000

9.3 All policies must be written on a "per-occurrence" basis, unless otherwise approved by the Navajo Nation Risk Management Program.

9.4 **Claims-made basis.** In the event that Contractor's liability insurance required by this Contract is written on a claims-made basis, the Contractor shall warrant that any retroactive date under the policy shall precede the effective date of this Contract, and that either continuous coverage will be maintained or an extended discovery period will be exercised for a period of two (2) years beginning as of the date that performance under this Contract is completed.

9.5 **Primary coverage basis.** For payment of any claims, Contractor's insurance coverage shall be on a primary, non-contributory basis with any other insurance coverages and/or self-insurance carried by the Navajo Nation or all other available sources.

9.6 **Required language.** The Contractor's General Liability and Umbrella Liability policy shall be endorsed to include the following language: "The Navajo Nation, its elected officials, employees, agents, and volunteers are named as an Additional Insured with respect to liability arising out of the activities performed by the Insured [the Contractor] pursuant to a Contract with the Navajo Nation." (ISO Forms CG 2010 and CG 20 37 "Additional Insured-Owners, Lessees or Contractors-Completed Operations, 2004 Editions or equivalent).

9.7 **Waiver of subrogation.** All Contractor's policies shall contain a waiver of subrogation in favor of the Navajo Nation, its divisions, departments, offices, agencies, boards, commissions, committees, enterprises and its employees, officers, officials, and agents for losses arising from work performed or services provided by the Contractor pursuant to a Contract with the Navajo Nation.

9.8 **Separation of Insureds.** The Contractor's policy shall include a "Separation of Insureds" clause (Cross Liability).

9.9 **Insurer rating.** The Contractor's insurance policy shall be issued by a licensed or approved insurer with an "A.M.Best" rating of not less than A- VII. The Navajo Nation in no way warrants that the above-required minimum insurer rating is sufficient to protect the Contractor from potential insurer insolvency.

9.10 **Certificates of insurance.** The Contractor shall provide to the Navajo Nation certificates of insurance as required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. Each insurance policy required by this Contract must be in effect upon, or prior to, commencement of performance under this Contract and shall remain in effect until such time as all of its obligations under this Contract or any subsequent modifications have been fully and satisfactorily completed. Insurance certificates shall be sent to the Navajo Nation Department of Risk Management, P.O. Box 1690, Window Rock, Arizona, 86515. The Contract Number and a description of the work performed or services provided thereunder shall be indicated on such certificates.

9.11 **Subcontractors.** The Contractor's subcontractors, if any, shall be included as insureds under the Contractor's policy, or the Contractor shall provide to the Navajo Nation separate certificates and endorsements for each of its subcontractors holding separate policies. All coverages for subcontractors shall be subject to the minimum policy amounts shown herein.

9.12 **Notification of change required.** The insurance policy required herein shall provide the required coverage and shall not be suspended, voided, canceled, or reduced in coverage or in limits except after thirty (30) calendar days prior written notice has been given to the Navajo Nation. Such notice shall be sent in accordance with Article
20.0 herein.

9.13 **Approval of modifications.** Any modification of the insurance requirements set forth herein shall be approved by the Navajo Nation Risk Management Program, whose decision shall be final. Such modification shall not require a formal Contract modification, but may be approved by administrative action of the Risk Management Program. The Contractor may request, for itself or its subcontractors, that the insurance requirements shown herein be modified, provided that such request be delivered in writing to the Risk Management Program at least ten days prior to the solicitation due date or, if not a solicitation, prior to contract execution or modification. The Contractor shall include with such request a justification for the modification with supporting documentation. Any modifications approved shall on a case-by-case basis and shall not affect the insurance requirements of other subcontractors for whom modifications have not been approved. Any deviations from the standard types and coverages set forth herein shall be approved by the Navajo Nation Risk Management Program prior to the issuance of a Notice to Proceed.

9.14 **Navajo Nation disclaimers.** The insurance requirements and coverages set forth herein are minimum requirements only and in no way limit the indemnity covenants contained in this Contract. The Navajo Nation in no way warrants that the minimum limits herein are sufficient to protect the Contractor or its' subcontractors from any liabilities that might arise from the work performed or services provided under this contract, and the Contractor and its subcontractors are free to purchase additional insurance. By requiring such minimum insurance, the Navajo Nation shall not be deemed to have assessed the risk that may be applicable to the Contractor under the Contract. The Contractor shall assess its own risks and if it deems appropriate and/or prudent, it may maintain higher limits and/or broader coverages. The Contractor is not relieved of any liability or other

obligations assumed or pursuant to this Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration, or types.

9.15 **No sovereign immunity waiver.** The Parties acknowledge and agree that the Navajo Nation is relying on, and does not waive or intend to waive by any provision of this Contract, the monetary limitations and other rights, immunities, and protections provided under 1 N.N.C. §§551 et. seq., as from time to time amended, or otherwise available to the Navajo Nation or its elected officials, employees, agents, and volunteers.

9.16 **Mutual cooperation.** The Navajo Nation and Contractor shall cooperate in good faith in the collection of any insurance proceeds which may be payable in the event of any loss, including the execution and delivery of any proof of loss or other actions required to effect recovery.

9.17 **Insurance documentation required.** The Navajo Nation's Representative must receive written documentation of all required insurance prior to the issuance of a Notice to Proceed for the Project, and the Contractor shall not commence any work to be performed or services to be provided under this Contract unless and until such documentation has been submitted to the Navajo Nation. If the Contractor is able to furnish such documentation prior to the Navajo Nation's execution of this Contract, such documentation shall be made an Attachment to the Primary Contract. The Navajo Nation may terminate this Contract for breach if the Navajo Nation's Representative determines that the Contractor has failed to submit the required documentation in a timely manner and that the Navajo Nation is unable to issue a Notice to Proceed in a timely manner.

10.0 **BUILDER'S RISK INSURANCE**. The Contractor shall obtain, on behalf of the Navajo Nation, a "Builder's Risk" insurance policy for all aspects of the Project; such insurance coverage shall be in amount adequate to cover any potential loss, relating to the Project or any portion thereof, that may occur prior to the effective date and time of the Navajo Nation's property insurance coverage for the Project.

11.0 **BONDING REQUIREMENTS.**

11.1 **Performance Bond.** The Contractor shall provide to the Navajo Nation a Performance Bond underwritten and executed by a surety company that guarantees the Contractor's complete and satisfactory performance under the Contract. The Performance Bond shall be equal to one-hundred percent (100%) of the Original Contract Amount.

11.2 **Payment Bond.** The Contractor shall provide to the Navajo Nation a Payment Bond underwritten and executed by a surety company that will protect all persons, subcontractors, or other entities supplying labor and material to the Contractor or its subcontractors for the performance under this Contract. The Payment Bond shall be in an amount equal to one-hundred percent (100%) of the Original Contract Amount. The Payment Bond must be provided in addition to the Performance Bond required in Article 11.1 herein.

12.0 **LICENSING & REGISTRATION REQUIREMENTS.**

12.1 **State license required.** The Contractor shall hold a current and valid license from an appropriate State Licensing Board or Agency for the type of work and location of the work to be performed under this Contract, which license is customarily maintained in the industry. Said License must be maintained as active and current for the entire duration of performance under this Contract. The Contractor shall indicate its business name, business address, "Qualifying Party," and state license number in the Primary Contract. Regardless of who the "qualifying party" is, the Contractor agrees to immediately notify the Navajo Nation if such license is suspended, revoked, expired, or otherwise

not in effect.

12.2 **Business registration required.** The Contractor shall be registered to do business with the State in which the Project is located. All documents regarding such registration shall be provided to the Navajo Nation prior to the execution of this Contract, and must be active and valid for the effective duration of this Contract. The Contractor shall immediately notify the Navajo Nation if such registration is suspended, revoked, expired, or otherwise not in effect.

12.3 **Documentation required.** The Contractor shall submit written documentation of all required licenses and registrations to the Navajo Nation's Representative. The Navajo Nation may terminate this Contract for material breach if the Navajo Nation's Representative determines that the Contractor has failed to timely submit the required documentation.

12.4 **Licensed subcontractors required.** All subcontractors used by the Contractor in its performance under this Contract shall be duly registered and licensed to practice their professions in the Navajo Nation and/or the State in which the Project is located. Use of unregistered or unlicensed subcontractors shall constitute a material breach and the Navajo Nation may terminate this Contract.

13.0 **RIGHT TO REFUSE CONTRACT.** The Navajo Nation reserves its right to refuse to execute this Contract upon a written determination that any of the following has occurred prior to the Nation's execution of this Contract:

13.1 **faulty procurement;** a document, procedure, decision, action, or other event pertaining to the procurement of this Contract, or to any related pre-procurement activities, is in violation of any applicable Navajo Nation, federal, or state laws or regulations governing said procurement; or

13.2 **ancillary firm(s);** an ancillary firm is ineligible for the award of this Contract or is unavailable to perform on the Project, for any reason; in such case, the Navajo Nation may, in its discretion, either (1) reject the selected Proposal containing the ancillary firm's qualifications and refuse to execute this Contract; or (2) decide not to reject the Proposal and consider only the license and relevant qualifications of the Contractor standing alone; or (3) decide not to reject the Proposal and permit another equally/more qualified firm to perform those Contract services that would have been performed by the ineligible or unavailable firm; or

13.3 **lack of funding availability;** when funding for the Scope of Work has become wholly or partially unavailable; or

13.4 **change to SOW or other requirements;** the Scope of Work or any other mandatory requirement is required to be changed significantly; or

13.5 **change to Budget/MFP;** there has been a revision (whether increase or decrease) of the budget or Maximum Feasible Price that was originally established by the Navajo Nation prior to the initiation of the procurement process for this Contract; or

13.6 **protest filed;** a protest has been timely filed in accordance with 12 N.N.C. §360(A), unless a determination has been made to proceed with a Contract award pursuant to 12 N.N.C. §360(F); or

13.7 **other reasons cited in Regulations;** any of the following pertains to this procurement:

.1 inadequate or ambiguous specifications were cited in the RFP/RSQ;

.2 the services contemplated under this Contract are no longer required;

.3 the RFP/RSQ did not provide for consideration of all factors of cost to the Navajo Nation

.4 all Proposals received indicate that the needs of the Navajo Nation can be satisfied by a less expensive service differing from that described in the RFP/RSQ;

.5 all fee Proposals received exceed the Maximum Feasible Price after opportunity for negotiation pursuant to 12 N.N.C. §346(D);

.6 the selected Proposal was collusive, contained fraudulent statements or information, contained any material misrepresentation, or was submitted in bad faith;

.7 cancellation of proposed Contract serves in the best interest of the Navajo Nation.

14.0 **PROJECT SUPERVISION; AUTHORIZATION OF PAYMENTS.**

14.1 **Navajo Nation's Representative.** In the performance of work or provision of services under this Contract, the Contractor shall at all times be under the supervision and direction of the Nation's representative named in the Primary Contract, or his/her successor or designee.

14.2 **Payment approval required.** No payment shall be authorized or remitted to the Contractor unless and until the Navajo Nation's Representative, or his/her successor or designee, approves in writing in advance the work performed or services provided under this Contract, and has given prior written approval of invoice(s), billing(s), or payment application(s) submitted to the Navajo Nation. All invoices must be supported by adequate verification, documentation, and itemization of all required Project deliverables received by the Navajo Nation.

14.3 **Joint supervision and approval.** Any cooperative or joint supervision, or joint approval authority involving person(s) other than the Navajo Nation's Representative, whether Navajo Nation staff or other person(s), shall be conducted through a duly approved and executed cooperative agreement that sets forth the extent of decision- making, supervision, and approval authority of the Navajo Nation's Representative and such other person(s).

14.4 **Subcontractor Expenses.** The Contractor shall be solely responsible for all consideration, compensation, taxes, fees or any other expenses whatsoever, related to the Contractor's use of any subcontractors, agents, representatives, employees or consultants in the performance of Contractor's obligation under this Contract.

15.0 **TAXES.** Contractor acknowledges and agrees that all work performed and services provided within the territorial jurisdiction of the Navajo Nation is subject to the six percent (6%) Navajo Sales Tax (24 N.N.C. §601 *et seq.*).

15.1 **Identification of taxable activity.** The Contractor shall separately indicate, on each invoice or payment application submitted to the Navajo Nation, any and all of its work performed or services provided within the Navajo Nation pursuant to this Contract, and shall itemize the Navajo Sales Tax.

15.2 **Withholding.** The Contractor acknowledges and agrees that the Navajo Nation shall withhold from each payment six percent (6%) of the amount associated with work performed or services provided within the Navajo Nation under this Contract, and shall transfer such six percent (6%) amount to the Office of the Navajo Tax Commission (ONTC) on behalf of the Contractor. The Contractor shall indicate on its quarterly tax return filed with the ONTC that the Navajo Sales Tax has been withheld and paid.

15.3 **Filing and other payments.** The Contractor acknowledges that the Navajo Nation's withholding of tax in no way removes Contractor's responsibility for timely filing of tax returns and payment of interest, penalties, or any other amounts relating to Contractor's tax obligations under the Navajo Nation's or any other jurisdiction.

16.0 **RETAINAGE.**

16.1 **Percentage withheld.** Contractor agrees that the Navajo Nation shall withhold ten percent (10%) of the payment due under each invoice submitted to the Navajo Nation, as Retainage.

16.2 **Legal release required.** Any remaining portion of the retainage balance shall not be released until the Contractor submits a "Release of All Claims and Liens" which is notarized and signed by the Contractor, and also submits all similar legal releases of subcontractors.

17.0 **SUBMITTAL OF FINAL INVOICES & WORK PRODUCT.** Copies of all work product documents, reports, photographs, drawings, schematics, related correspondence, invoices, and other information or documents regarding the Project shall be provided to the Nation's Representative no later than thirty (30) calendar days following the expiration or termination of this Contract. Final invoice(s) shall be due no later than thirty (30) calendar days following the expiration or termination of this Contract.

18.0 **DEBTS OWED; RIGHT TO OFFSET.** The Contractor acknowledges that pursuant to the Navajo Business and Procurement Act, 12 N.N.C. §§ 1501 *et.seq.*, the Contractor, in its present form or in any other identifiable capacity as an individual, business, corporation, partnership, or other entity, is eligible to do business with the "Navajo Nation" as defined in 12
N.N.C. §1503(A). Contractor further acknowledges that if the Contractor has an outstanding money judgment against it in favor of the Navajo Nation, or there exists a delinquent accounts receivable debt which is due and owing to the Navajo Nation by Contractor, then the Navajo Nation may, upon due notice to the Contractor, offset its money claim against any amount owed for work performed or services provided under this Contract.

19.0 **PRIVATE CONTRACTOR.** The Contractor shall perform and conduct all activities under this Contract as a private independent Contractor and shall not be considered an employee of the Navajo Nation or receive any benefits to which the Navajo Nation's employees are entitled.

20.0 **ISSUANCE OF NOTICES; MAILINGS.** Any notices or correspondence relating to this Contract sent by either Party to the other shall be mailed to the address shown on the front page of the Primary Contract, shall be mailed via certified U.S.P.O. mailing with return receipt requested, and shall be deemed issued or submitted to the receiving Party as of the date of such certified mailing.

21.0 **REQUESTS FOR INFORMATION.** When requested by the Navajo Nation, Contractor shall submit proper verification of invoices, pay applications, reports, documents or any other information related to this Contract within fourteen (14) calendar days of the date of the request.

22.0 **RECORDS; AUDITS.** Pursuant to 12 N.N.C. §352, Contractor shall keep and maintain books, records, documents or other materials related to performance under this Contract for a period of five (5) calendar years from the date of issuance of final payment under this Contract. Upon issuance of a Notice of Audit to Contractor, the Navajo Nation may audit such documents and records any time during the effective period of this Contract, up to the five (5) calendar year period following final payment. Contractor agrees to have an authorized individual execute and have notarized a release authorizing the Navajo Nation to release the Contractor's ledgers, books, records, documents or other materials related to performance under this Contract, as such information may be required by a governmental agency under an agreement with the Navajo Nation for purposes of an audit by such agency of such documents and records. Contractor agrees that said executed release shall constitute permission for disclosure of information pursuant to 2 N.N.C. §85 (A)(5)(d) and 2 N.N.C. §86(C).

23.0 **NAVAJO NATION OWNERSHIP OF WORK PRODUCT.** All intangible and intellectual property or work product that is produced by the Contractor or any of its subcontractors, which work product is embodied in any tangible medium such as notes, plans, or drawings, including the overall form as well as the arrangement and composition of spaces and elements in the medium, and is produced for purposes of fulfilling any duties under this Contract, shall be and remain the property of the Navajo Nation at all times, whether or not such product is completed or certified, and may be used by the Navajo Nation, except as follows:

23.1 **Limited disclosure.** Said property shall not be distributed or disclosed to any party other than the Navajo Nation or its divisions, departments, offices, agencies, boards, commissions, committees, enterprises, employees, officers, officials, and agents, except (1) upon prior written consent of the Contractor; or (2) pursuant to a duly authorized and executed contract between the Navajo Nation and any other tribal, county, state or federal agency; or (3) pursuant to any applicable law requiring disclosure.

23.2 **Right of reuse.** The Contractor acknowledges and agrees that the Navajo Nation may use said property, or any portion thereof, in connection with the Project that is the subject of this Contract, for purposes of completion, modification, restoration, or renovation of such Project, at the sole discretion of the Navajo Nation. Contractor agrees that such reuse shall be without any consideration, compensation or consent of Contractor, and Contractor expressly waives any claims with respect to such reuse. With regard to reuse of said property for any purpose not reasonably related to the Project, said property shall be considered Instruments of Service as provided for in the Primary Contract, and shall be subject to the restrictions on reuse as provided for therein.

24.0 **WARRANTY.**

24.1 **Materials and Labor.** Contractor warrants to the Owner that all labor, materials, equipment and furnishings used in, or incorporated into, the Project will be of good quality, new, that the Work will be free from defects in design, materials and workmanship, and that all Work will conform with the requirements of the Construction Documents. If required by the Owner's Representative, the Contractor shall furnish satisfactory evidence of compliance with this warranty. The type, quality and quantum of such evidence, and whether such evidence is satisfactory, shall be within the sole discretion of the Owner's Representative. Any portion of the Work not conforming to these requirements, including substitutions not properly approved and authorized by the Owner, and including non- conformance relating to any materials, equipment, furnishings, labor, installation, or workmanship, may be considered defective.

24.2 **Repair or replacement.** Contractor agrees to repair, replace, or re-perform, or pay the Owner the reasonable cost of such repair, replacement, or re-performance, any portion of the Work that the Owner deems in its sole discretion to be defective, so long as Owner submits to the Contractor a written notice of any defect within 1 calendar year following the issuance of a Certificate of Occupancy for the Project. The choice among repair, replacement, re-performance, or payment shall be the Contractor's. Any steps taken by the Contractor to correct defects shall not act to extend the term of this warranty. All repairs, replacement, or re-performance by the Contractor shall be at no charge to the Owner and shall be performed within 60 calendar days of the Contractor's receipt of notification of the defect, which period shall be extended for delays outside the Contractor's control.

24.3 **Maintenance.** Failure of the Owner to perform reasonable regular maintenance and proper care of the finished Project shall void this warranty.

24.4 **Access to the Project.** Owner must provide access to the Contractor during its normal business hours, Monday through Friday, 8 a.m. to 5 p.m., to inspect the defect reported and, if necessary, to take corrective action.

24.5 **No liens.** Contractor guarantees that, as of the conclusion of this Contract, all work will be free of liens, claims and security interests of any third parties.

25.0 **NO THIRD PARTY BENEFICIARIES.** Notwithstanding any provision of Navajo Nation law, codified or uncodified, or any Navajo Nation common or fundamental law, no provision of this Contract shall be construed as conferring any rights to, and may not be invoked by or for the benefit of, any other person or entity that is not one of the signatory Parties hereto.

26.0 **ASSIGNMENT RESTRICTED.** The Contractor shall not in any manner whatsoever assign, convey, transfer, or sublet any rights to this Contract or any interest therein including any amendments or modifications thereto, any work product resulting from the work performed or services provided under this Contract including any amendments or modifications thereto, or any monetary claims against the Navajo Nation relating to this Contract or any amendments or modifications thereto, without the prior written consent of the Navajo Nation. Any attempted assignment without such prior consent shall be void; said consent may be granted, granted upon conditions, or withheld, at the Navajo Nation's sole discretion.

27.0 **PARTNERS, SUCCESSORS, SUBCONTRACTORS.** All provisions, conditions and covenants contained in the Contract Documents shall extend to and be binding upon each of the Contractor's owners, partners, team members, successors, heirs, assigns, executors, administrators, employees, officials and agents, including all of the Contractor's subcontractors, and the Contractor expressly agrees that the term "Contractor" whenever used herein, or in any other Contract document, shall be deemed to include all such owners, partners, team members, successors, heirs, assigns, executors, administrators, employees, designees, consultants, officials, agents, and subcontractors.

28.0 **RIGHT TO ASSURANCE.** If at any time prior to the completion of services, the Navajo Nation has reason to believe that the Contractor does not intend to or is unable to complete the contracted services, the Navajo Nation may demand in writing that the Contractor submit written assurance of intent to complete performance. Failure to provide such assurance within fourteen (14) calendar days shall be deemed as a response that the Contractor will not complete services which will allow the Navajo Nation to terminate this Contract.

29.0 **RIGHT TO SUSPEND OR TERMINATE.**

29.1 **Generally.** The rights of the Parties to suspend or terminate this Contract shall be as provided in Section 80-09 of the General Provisions. in the Primary Contract and Exhibit A. In addition, upon prior written notice to the Contractor of not less than thirty (30) calendar days, the Navajo Nation may unilaterally order a temporary stoppage of work. If the Contractor is not at fault for stoppage, any additional payment to the Contractor for such stoppage shall be in accordance with Article 32 herein.

29.2 **Non-compliance or violation of laws.** In addition to the Navajo Nation's right of suspension and termination provided for in the Primary Contract, the Navajo Nation may terminate this Contract for Breach if the Nation's Representative determines in writing that the Contractor or any of its' subcontractors has violated any applicable law or regulation in the procurement or performance of this Contract.

29.3 **Falsification, lack of documentation.** The Navajo Nation may terminate this Contract for breach if:

(a) any statement or documentation regarding any licensing, business registration, insurance coverage, or debts owed, is determined to be false; or

(b) Contractor has failed to submit in a timely manner any requested documentation pertaining to any licensing, business registration, insurance coverage, or debts owed, and the Nation's Representative determines that the Navajo Nation is unable to issue a Notice to Proceed, or to otherwise proceed with the Project, in a timely manner.

29.4 **Financial responsibility, solvency.** The Navajo Nation may terminate this Contract for breach if:

(a) the Contractor becomes insolvent or its insolvency is imminent, or the Contractor files for bankruptcy under any chapter of federal law; or

(b) the provider of the Contractor's insurance is not solvent or its insolvency is imminent; or

(c) the Nation receives notice that the Contractor has failed to pay its subcontractors, employees, suppliers or other ancillary firm(s) for any work on this Project.

29.5 **Debarment, suspension.** The Navajo Nation may terminate this Contract if the Navajo Nation or any of its political subdivisions, enterprises, or other related entities, or if any federal or state governmental entity, has for any reason debarred or suspended the Contractor or any of its subcontractors. Such debarment or suspension shall be considered effective notwithstanding any appeal, and shall be effective unless and until conclusively resolved in favor of the Contractor or subcontractor.

29.6 **Termination for Convenience.** Pursuant to 12 N.N.C. §344 and §350, the Navajo Nation shall have the right to terminate this Contract for the convenience of the Navajo Nation.

30.0 **SEVERABILITY.** If any provision of this Contract is determined, by a court of competent jurisdiction arbitration decision, to be invalid, illegal or incapable of being enforced under any rule of law, all other conditions and provisions of this Contract shall nevertheless remain in full force and effect.

31.0 **INDEMNIFICATION.** Contractor agrees to hold harmless and indemnify the Navajo Nation and its divisions, departments, offices, agencies, boards, commissions, committees, enterprises, employees, officers, officials, and agents against any and all losses, costs, damages, claims, expenses, attorney's fees, or other liabilities whatsoever, for any injury, illness, disease or death to persons and for any damage to Nation property arising from the negligent acts or omissions by the Contractor, as defined in Article 27.0 herein, regardless of whether or not any liability is caused in part by an indemnified party.

32.0 **AMENDMENTS; CHANGE ORDERS, MODIFICATIONS.**

32.1 **Written modification required.** Any revisions, amendments, addendums, alterations, change orders, modifications, increases in payment over and above the Original Contract Amount, or changes whatsoever to any provision of the Contract shall be made only by a duly approved written agreement, deemed a modification signed by the signatories of the Contract or their authorized designee.

32.2 **Prior approval required.** The Navajo Nation's authorized representative shall determine that the modification is reasonably related to the scope of work for the project; all modifications must be approved in writing by the Nation's Representative prior to consideration and execution by the Navajo Nation signatory.

33.0 **GOVERNING LAW; COMPLIANCE WITH NAVAJO NATION LAWS.**

33.1 **Navajo Nation Law Governs.** Navajo Nation law governs the interpretation of the Contract Documents.

33.2 **Other laws.** The Contractor shall comply with all other Navajo Nation laws and regulations and of the United States, now in force and effect or as hereafter may come into force and effect that pertain to the work to be performed or services to be provided under this Contract.

34.0 **NAVAJO NATION JURISDICTION.** By voluntarily entering into and executing this Contract, the Contractor expressly consents to the full territorial, administrative, legislative, executive and judicial jurisdiction of the Navajo Nation, including but not limited to, the jurisdiction to regulate, adjudicate disputes, and to levy fines or enter judgments for injunctive relief and/or compensatory and punitive damages, in connection with all activities conducted by the Contractor within the Navajo Nation or which have a proximate (legal) effect on persons or property within the Navajo Nation. The Contractor hereby acknowledges and agrees that this Contract constitutes a voluntary consensual relationship between the Contractor and the government of the Navajo Nation.

35.0 **SOVEREIGN IMMUNITY.** Nothing herein shall be considered a waiver, express or implied, of the sovereign immunity of the Navajo Nation, except to the limited extent provided for in the Navajo Sovereign Immunity Act, as amended, at 1 N.N.C. §§551 *et seq*.

36.0 **DISPUTE RESOLUTION.** Any claim, dispute, or other matter in question arising out of or relating to this Contract shall be resolved by the negotiation and arbitration procedures set forth as follows:

36.1 **Negotiation.** The Parties shall endeavor to resolve claims or disputes between them by informal good faith negotiation, which negotiation period shall not exceed thirty (30) calendar days, commencing as of the receipt by either Party of the other Party's written "Notice to Invoke Dispute Resolution Procedures."

36.2 **Arbitration.** If the negotiation provided for in Article 36.1 herein does not result in resolution of the Parties' dispute within thirty (30) calendar days of commencement of negotiation, then, unless the Parties agree in writing to extend the time for negotiation, either Party may invoke arbitration by sending Notice of Intent to Commence Arbitration. Any Arbitration invoked against the Navajo Nation shall be in accordance with the procedures referenced in the Navajo Sovereign Immunity Act, as amended, at 1 N.N.C. §554(J) and §554(K), and as set forth in the Navajo Nation Arbitration Act, as amended, at 7 N.N.C. §§1101 *et seq*. Any procedure not expressly provided for under Navajo law may be conducted in accordance with the Commercial Arbitration Rules of the American Arbitration Association, except to the extent that any rules are modified by the following:

(a) unless otherwise agreed to in writing by the Parties, all arbitration procedures shall be held in Window Rock,
Arizona; and

(b) the arbitration shall be conducted by a single arbitrator selected by the Navajo Nation, unless one of the Parties' claims exceeds $1,000,000.00, exclusive of interest, costs, and fees; in such case the arbitration shall be conducted by a panel consisting of three (3) arbitrators, one of which shall be chosen by each Party, with the two arbitrators choosing the third; at least one arbitrator shall possess at least ten (10) years of experience in Indian Law; and

(c) if the Contractor seeks to enforce an arbitration award against the Navajo Nation, a notice of intent to invoke arbitration shall be filed in strict compliance with the notice requirements of the Navajo Sovereign Immunity Act, at 1 N.N.C. § 555; and

(d) whether as a result of an arbitration provided for herein or of any judicial action to enforce an arbitration award resulting from such arbitration, any award against the Navajo Nation shall be in strict conformance with the provisions of 1 N.N.C. §554(K) 1-6; and

(e) whether in the context of an arbitration provided for herein or any judicial action to enforce an arbitration award resulting from arbitration, Navajo Nation laws and regulations shall exclusively govern the interpretation of this Contract, the arbitration provisions herein, the arbitration procedures conducted pursuant thereto, and the application of all provisions of the Contract to the Contractor; and

(f) pursuant to 1 N.N.C. § 554(K) and 7 N.N.C. §1102, the appropriate Navajo Nation district court shall have **exclusive jurisdiction** to compel the Navajo Nation's participation in an arbitration, and shall have exclusive jurisdiction to enforce, modify, or vacate an arbitration award resulting from such arbitration; Contractor understands and agrees that domestication of an arbitration judgment against the Navajo Nation in any other court will violate the Navajo Nation Sovereign Immunity Act such that the Navajo Nation will be able to assert the defense of sovereign immunity in any other foreign (federal, state, tribal) court; and

(g) neither Party can be awarded any attorney's fees and costs.

36.3 **Exclusive Remedy.** The negotiation and arbitration provisions provided herein shall constitute the sole and exclusive remedy to any dispute or controversy arising from this Contract. This dispute resolution agreement shall be a complete defense to any suit, claim, action or proceeding in any federal, state, or tribal judicial or administrative tribunal; and

36.4 **Post-termination; post-expiration.** Regarding any dispute arising from this Contract, the dispute resolution procedures set forth herein shall survive the termination or expiration of this Contract.

36.5 **Challenges limited.** By entering into this Contract, the Contractor expressly covenants and agrees that it shall not contest or challenge the territorial, administrative, legislative, executive or judicial jurisdiction of the Navajo Nation on the basis that such jurisdiction is inconsistent with the status of the Navajo Nation as an Indian tribal Nation, or that the Navajo Nation government is not a government of general jurisdiction, or that the Navajo Nation government does not possess full police power (i.e., the power to legislate and regulate for the public's general health and welfare) over all lands, persons, activities, transactions, or occurrences within its territorial boundaries, or on any other basis not generally applicable in a similar challenge to the jurisdiction of a state government.

37.0 **DEPARTMENT OF JUSTICE APPROVAL.** Pursuant to 1 N.N.C. §554(J)(2) and (K)(2), Navajo Nation Department of Justice approval is required for all agreements that include a limited waiver of sovereign immunity to compel or enforce arbitration under the Navajo Nation Arbitration Act, as amended, 7 N.N.C. §1101 et seq.

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Navajo Nation Department of Justice

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GENERAL PROVISIONS

GENERAL CONTRACT PROVISIONS

SECTION 10
DEFINITION OF TERMS

When the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

Paragraph Number	Term	Definition
10-01	**AASHTO**	The American Association of State Highway and Transportation Officials.
10-02	**Access Road**	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
10-03	**Advertisement**	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
10-04	**Airport**	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a Helipad.
10-05	**Airport Improvement Program (AIP)**	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
10-06	**Air Operations Area (AOA)**	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
10-07	**Apron**	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	**ASTM International (ASTM)**	Formerly known as the American Society for Testing and Materials (ASTM).
10-09	**Award**	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	**Bidder**	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
10-11	**Building Area**	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	**Calendar Day**	Every day shown on the calendar.
10-13	**Certificate of Analysis (COA)**	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.

Paragraph Number	Term	Definition
10-14	**Certificate of Compliance (COC)**	The manufacturer's certification states that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	**Change Order**	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
10-16	**Contract**	A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment. The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.
10-17	**Contract Item (Pay Item)**	A specific unit of work for which a price is provided in the contract.
10-18	**Contract Time**	The number of calendar days or working days stated in the proposal allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
10-19	**Contractor**	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
10-20	**Contractors Quality Control (QC) Facilities**	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).
10-21	**Contractor Quality Control Program (CQCP)**	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	**Control Strip**	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	**Construction Safety and Phasing Plan (CSPP)**	The overall plan for safety and phasing of a construction project developed by the airport operator or developed by the airport operator's consultant and approved by the

Paragraph Number	Term	Definition
		airport operator. It is included in the request for proposals and becomes part of the project specifications.
10-24	**Drainage System**	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	**Engineer**	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	**Equipment**	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	**Extra Work**	An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	**FAA**	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	**Federal Specifications**	The federal specifications and standards, commercial item descriptions, supplements, amendments, and indices prepared and issued by the General Services Administration.
10-30	**Force Account**	**a.** Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis. **b.** Owner Force Account - Work performed for the project by the Owner's employees.
10-31	**Intention of Terms**	Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner. Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

Paragraph Number	Term	Definition
10-32	**Lighting**	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
10-33	**Major and Minor Contract Items**	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	**Materials**	Any substance specified for use in the construction of the contract work.
10-35	**Modification of Standards (MOS)**	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	**Notice to Proceed (NTP)**	A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
10-37	**Owner**	The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is Navajo Nation .
10-38	**Passenger Facility Charge (PFC)**	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	**Pavement Structure**	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	**Payment bond**	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	**Performance bond**	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	**Plans**	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'
10-43	**Project**	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	**Proposal**	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work

Paragraph Number	Term	Definition
		and furnish the necessary materials in accordance with the provisions of the plans and specifications.
10-45	**Proposal guaranty**	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	**Quality Assurance (QA)**	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	**Quality Control (QC)**	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	**Quality Assurance (QA) Inspector**	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
10-49	**Quality Assurance (QA) Laboratory**	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	**Resident Project Representative (RPR)**	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor and acting directly or through an authorized representative.
10-51	**Runway**	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	**Runway Safety Area (RSA)**	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the Construction Safety and Phasing Plan (CSPP) for limits of the RSA.
10-53	**Safety Plan Compliance Document (SPCD)**	Details how the Contractor will comply with the CSPP.
10-54	**Specifications**	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.
10-55	**Sponsor**	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
10-56	**Structures**	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers;

Paragraph Number	Term	Definition
		navigational aids; buildings; vaults; and other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	**Subgrade**	The soil that forms the pavement foundation.
10-58	**Superintendent**	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.
10-59	**Supplemental Agreement**	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%: (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	**Surety**	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	**Taxilane**	A taxiway designed for low-speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	**Taxiway**	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	**Taxiway/Taxilane Safety Area (TSA)**	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	**Work**	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
10-65	**Working day**	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.
10-66	**Owner Defined terms**	None.

END OF SECTION 10

SECTION 20
PROPOSAL REQUIREMENTS AND CONDITIONS

20-01 ADVERTISEMENT (NOTICE TO BIDDERS). See Request for proposals.

20-02 QUALIFICATION OF BIDDERS. Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the Owner with satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

20-03 CONTENTS OF PROPOSAL FORMS. The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

Mobilization is limited to ten (10 percent) of the total project cost per schedule, as bid, with mobilization included into the total.

A non-mandatory Prebid conference will be conducted via videoconference for this project to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield paving construction requirements.

20-04 ISSUANCE OF PROPOSAL FORMS. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.

b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.

c. Documented record of Contractor default under previous contracts with the Owner.

d. Documented record of unsatisfactory work on previous contracts with the Owner.

20-05 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

20-06 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of the proposal shall be prima facie evidence that the bidder has made such examination and is satisfied to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders in the project bid documents. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the bidder, was obtained and is intended for the Owner's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that each bidder is solely responsible for all assumptions, deductions, or conclusions which the bidder may make or obtain from their own examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner.

20-07 PREPARATION OF PROPOSAL. The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, shall govern.

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

20-08 RESPONSIVE AND RESPONSIBLE BIDDER. A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 IRREGULAR PROPOSALS. Proposals shall be considered irregular for the following reasons:

a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.

b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.

c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.

d. If the proposal contains unit prices that are obviously unbalanced.

e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.

f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

20-10 BID GUARANTEE. Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.

20-11 DELIVERY OF PROPOSAL. Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

20-12 WITHDRAWAL OR REVISION OF PROPOSALS. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing by email before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-13 PUBLIC OPENING OF PROPOSALS. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 DISQUALIFICATION OF BIDDERS. A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms,* of this section.

20-15 DISCREPANCIES AND OMISSIONS. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than seven (7) days prior to bid opening.

Any interpretation of the project bid documents by the Owner's Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

END OF SECTION 20

SECTION 30
AWARD AND EXECUTION OF CONTRACT

30-01 CONSIDERATION OF PROPOSALS. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 AWARD OF CONTRACT. The award of a contract, if it is to be awarded, shall be made within 120 calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

30-03 CANCELLATION OF AWARD. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

30-04 RETURN OF PROPOSAL GUARANTY. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals.* Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds.*

30-05 REQUIREMENTS OF CONTRACT BONDS. At the time of the execution of the contract, the successful bidder shall furnish the Owner with a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 EXECUTION OF CONTRACT. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds,* of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 APPROVAL OF CONTRACT. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 FAILURE TO EXECUTE CONTRACT. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract,* of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

END OF SECTION 30

SECTION 40
SCOPE OF WORK

40-01 INTENT OF CONTRACT. The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

40-02 ALTERATION OF WORK AND QUANTITIES. The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

40-03 OMITTED ITEMS. The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

40-04 EXTRA WORK. Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order and shall contain any adjustment to the contract time that, in the RPR's opinion, is necessary for completion of the extra work.

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work that is necessary for acceptable completion of the project but is not within the general scope of the work

covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

If extra work is essential to maintaining the project critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

40-05 MAINTENANCE OF TRAFFIC. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).

c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (http://mutcd.fhwa.dot.gov/), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

40-06 REMOVAL OF EXISTING STRUCTURES. All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,

b. Remove such material from the site, upon written approval of the RPR; or

c. Use such material for the Contractor's own temporary construction on site; or,

d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

40-08 FINAL CLEANUP. Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of the property Owner.

END OF SECTION 40

SECTION 50
CONTROL OF WORK

50-01 AUTHORITY OF THE RESIDENT PROJECT REPRESENTATIVE (RPR). The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

50-02 CONFORMITY WITH PLANS AND SPECIFICATIONS. All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans, or specifications.

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

50-03 COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited

ACs. If any paragraph contained in the Special Provisions conflicts with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

50-04 LIST OF SPECIAL PROVISIONS. See Special Provisions section of these Contract Documents.

50-05 COOPERATION OF CONTRACTOR. The Contractor shall be supplied with an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one (1) hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof and shall cooperate with the RPR and their inspectors and with other Contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

50-06 COOPERATION BETWEEN CONTRACTORS. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

50-07 CONSTRUCTION LAYOUT AND STAKES. The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or re-establishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by Engineer/RPR. In the case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to performing the initial control survey, submit a methodology statement to the Engineer for their review, complete with survey equipment to be utilized and with information as to the accuracy of the equipment.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): as agreed upon in the pre-construction meeting.

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

Construction Staking and Layout includes, but is not limited to:

a. Clearing and Grubbing perimeter staking.

b. Rough Grade slope stakes at 100-foot stations.

c. Drainage Swales slope stakes and flow line blue tops at 50-foot stations.

Subgrade blue tops at 25-foot stations and 25-foot offset distance (maximum) for the following section locations:

a. Runway – minimum five (5) per station

b. Taxiways – minimum three (3) per station

c. Holding apron areas – minimum three (3) per station

d. Roadways – minimum three (3) per station

Base Course blue tops at 25-foot stations and 25-foot offset distance (maximum) for the following section locations:

a. Runway – minimum five (5) per station

b. Taxiways – minimum three (3) per station

c. Holding apron areas – minimum three (3) per station

Pavement areas:

a. Edge of Pavement hubs and tacks (for stringline by Contractor) at 100-foot stations.

b. Between Lifts at 25-foot stations for the following section locations:

(1) Runways – each paving lane width

(2) Taxiways – each paving lane width

(3) Holding areas – each paving lane width

c. After finish paving operations at 50-foot stations:

(1) All paved areas – Edge of each paving lane prior to next paving lot

d. Shoulder and safety area blue tops at 50-foot stations and at all break points with maximum of 50-foot offsets.

e. Fence lines at 100-foot stations minimum.

f. Electrical and Communications System locations, lines and grades including but not limited to duct runs, connections, fixtures, signs, lights, Visual Approach Slope Indicators (VASIs), Precision Approach Path Indicators (PAPIs), Runway End Identifier Lighting (REIL), Wind Cones, Distance Markers (signs), pull boxes and manholes.

g. Drain lines, cut stakes and alignment on 25-foot stations, inlet and manholes.

h. Painting and Striping layout (pinned with 1.5 inch PK nails) marked for paint Contractor. (All nails shall be removed after painting).

i. Laser, or other automatic control devices, shall be checked with temporary control point or grade hub at a minimum of once per 400 feet per pass (that is, paving lane).

The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor.

Controls and stakes disturbed or suspect of having been disturbed shall be checked and/or reset as directed by the Engineer without additional cost to the Owner.

50-08 AUTHORITY AND DUTIES OF QUALITY ASSURANCE (QA) INSPECTORS. QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

50-09 INSPECTION OF THE WORK. All materials and each part or detail of the work shall be subject to inspection. The RPR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract and shall in no way interfere with the rights of the parties to this contract.

50-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under the provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, except as herein specified, or any extra work done without authority, will be considered unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

50-11 LOAD RESTRICTIONS. The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

50-12 MAINTENANCE DURING CONSTRUCTION. The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

50-13 FAILURE TO MAINTAIN THE WORK. Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner shall be recovered as a liquidated damage against the Contractor.

50-14 PARTIAL ACCEPTANCE. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make a final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

50-15 FINAL ACCEPTANCE. Upon due notice from the Contractor of presumptive completion of the entire project, the RPR and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The RPR shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor, and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such an event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

50-16 CLAIMS FOR ADJUSTMENT AND DISPUTES. If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the

Contractor shall, within 10 calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

END OF SECTION 50

SECTION 60
CONTROL OF MATERIALS

60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the RPR as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the RPR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program* and *Addendum*, that is in effect on the date of advertisement.

60-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS. All materials used in the work shall be inspected, tested by the Contractor's laboratory, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Contractor in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), Federal Specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the Contractor. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work.

The Contractor shall employ a testing organization to perform all required Quality Control and Acceptance tests. The Contractor shall submit to the Engineer resumes on all testing organizations and individual persons who will be performing the tests. The Engineer will determine if such persons are qualified. A legible, handwritten copy of all test data shall be provided to the RPR DAILY, along with electronic reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

The Contractor shall employ a Quality Control (QC) testing organization to perform all Contractor required QC tests in accordance with Item C-100 Contractor Quality Control Program (CQCP).

60-05 ENGINEER/RESIDENT PROJECT REPRESENTATIVE (RPR) FIELD OFFICE. The Contractor will provide and maintain temporary sanitary facilities solely for the use of the RPR and Engineering personnel for the duration of the construction project. No other personnel shall be permitted to use the sanitary

facilities. The Contractor is required to maintain the sanitary facilities in a neat and clean manner, ensuring proper ventilation and an adequate supply of toilet room supplies.

60-06 STORAGE OF MATERIALS. Materials shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the RPR. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the RPR a copy of the property Owner's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

60-07 UNACCEPTABLE MATERIALS. Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the RPR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the RPR has approved its use in the work.

60-08 OWNER FURNISHED MATERIALS. The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

END OF SECTION 60

SECTION 70
LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

70-01 LAWS TO BE OBSERVED. The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

70-02 PERMITS, LICENSES, AND TAXES. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

70-03 PATENTED DEVICES, MATERIALS, AND PROCESSES. If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

70-04 RESTORATION OF SURFACES DISTURBED BY OTHERS. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows: None.

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the RPR.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 FEDERAL PARTICIPATION. Not Applicable.

70-06 SANITARY, HEALTH, AND SAFETY PROVISIONS. The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

Representatives of the Owner or the Engineer are not responsible during site visits or as a result of

observations or inspections of the Contractor's work in progress for any safety precautions or programs incident to the Work of the Contractor or for any failure of the Contractor to comply with laws, rules, regulations, ordinances, codes or orders applicable to safety precautions or programs.

70-07 PUBLIC CONVENIENCE AND SAFETY. The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic,* and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the RPR. If the RPR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the RPR reserves the right to assign the task of debris removal to a third party and recover the resulting costs as a liquidated damage against the Contractor.

70-08 CONSTRUCTION SAFETY AND PHASING PLAN (CSPP). The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP plan sheet can be found in the project plans.

70-09 USE OF EXPLOSIVES. The use of explosives is not permitted on this project.

70-10 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE. The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at their expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

70-11 RESPONSIBILITY FOR DAMAGE CLAIMS. The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree.

Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

70-12 THIRD PARTY BENEFICIARY CLAUSE. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

70-13 OPENING SECTIONS OF THE WORK TO TRAFFIC. If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at their expense.

The Contractor shall make their own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

70-14 CONTRACTOR'S RESPONSIBILITY FOR WORK. Until the RPR's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatsoever, the Contractor, at their own expense, shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS. As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and/or in the contract documents a one-call utility location phone number is indicated on the Plans (where one is known to exist).

All utilities within the work limits not located by One-Call shall be located by the Contractor at the contractor's expense prior to beginning work.

70-16 FURNISHING RIGHTS-OF-WAY. The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 PERSONAL LIABILITY OF PUBLIC OFFICIALS. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, RPR, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

70-18 NO WAIVER OF LEGAL RIGHTS. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

70-19 ENVIRONMENTAL PROTECTION. The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

70-20 ARCHAEOLOGICAL AND HISTORICAL FINDINGS. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not

contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's finding, and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work,* and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

70-21 INSURANCE REQUIREMENTS. See insurance requirements in Article 9 of Exhibit B.

END OF SECTION 70

SECTION 80
EXECUTION AND PROGRESS

80-01 SUBLETTING OF CONTRACT. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least 25 percent of the total contract cost.

Should the Contractor elect to assign their contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

The Contractor shall provide copies of all subcontracts to the RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

80-02 NOTICE TO PROCEED (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within three (3) days of the NTP date. The Contractor shall notify the RPR at least 24 hours in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

80-03 EXECUTION AND PROGRESS. Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 10 days prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall show all work items identified in the project proposal for each work area and shall include the project start date and end date.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

80-04 LIMITATION OF OPERATIONS. The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

No AOA closures are required for this project.

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

80-04.1 OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION. All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

80-05 CHARACTER OF WORKERS, METHODS, AND EQUIPMENT. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet the requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the RPR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality or take such other corrective action as the RPR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

80-06 TEMPORARY SUSPENSION OF THE WORK. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods the Owner may deem necessary, due to unsuitable

weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it becomes necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 DETERMINATION AND EXTENSION OF CONTRACT TIME. The number of calendar days shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

80-07.1 CONTRACT TIME BASED ON CALENDAR DAYS. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-workdays. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

80-08 FAILURE TO COMPLETE ON TIME. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Schedule	Liquidated Damages Cost	Allowed Construction Time
I & II	$2,500 Per Calendar Day	60 Calendar Days

The Owner has established a maximum contract performance time as defined in Article 4 Contract Time of the Agreement. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a wavier on the part of the Owner of any of its rights under the contract.

80-09 DEFAULT AND TERMINATION OF CONTRACT. The Contractor shall be considered in default of their contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or

b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or

c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or

d. Discontinues the execution of the work, or

e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or

f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or

h. Makes an assignment for the benefit of creditors, or

i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Owner consider the Contractor in default of the contract for any reason above, the Owner shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the RPR of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof or use such other methods as in the opinion of the RPR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

80-10 TERMINATION FOR NATIONAL EMERGENCIES. The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

80-11 WORK AREA, STORAGE AREA AND SEQUENCE OF OPERATIONS. The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

END OF SECTION 80

SECTION 90
MEASUREMENT AND PAYMENT

90-01 MEASUREMENT OF QUANTITIES. All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the RPR.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When requested by the Contractor and approved by the RPR in writing, material specified to be measured by the cubic yard may be weighed, and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment Volume	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
Measurement and Proportion by Weight	The term "ton" will mean the short ton consisting of 2,000 pounds avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.
Measurement by Volume	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

Term	Description
Asphalt Material	Asphalt materials will be measured by the gallon or ton. When measured by volume, such volumes will be measured at 60°F or will be corrected to the volume at 60°F using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton or hundredweight.
Structure	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
Timber	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
Plates and Sheets	The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.
Miscellaneous Items	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.
Scales	Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end. Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound. The use of spring balances will not be permitted. In the event inspection reveals the scales have been "overweighing" (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%. In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded. Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.

Term	Description
	Scale installations shall have available ten standard 50-pound weights for testing the weighing equipment or suitable weights and devices for other approved equipment. All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.
Rental Equipment	Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 *Payment for Extra Work*.
Pay Quantities	When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

90-02 SCOPE OF PAYMENT. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

When the "basis of payment" subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

90-03 COMPENSATION FOR ALTERED QUANTITIES. When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, *Alteration of Work and Quantities,* will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 PAYMENT FOR OMITTED ITEMS. As specified in Section 40, paragraph 40-03, *Omitted Items,* the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the RPR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the RPR's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the RPR's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the RPR's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

90-05 PAYMENT FOR EXTRA WORK. Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 PARTIAL PAYMENTS. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

a. From the total of the amount determined to be payable on a partial payment, five (5) percent of such total amount will be deducted and retained by the Owner for protection of the Owner's interests. Unless otherwise instructed by the Owner, the amount retained by the Owner will be in effect until the final payment is made except as follows:

(1) Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-14. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

(2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than seven (7) days after the Contractor has received a partial payment. Contractor must provide the Owner evidence of prompt and full payment of retainage held by the prime Contractor to the subcontractor within seven (7) days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

c. When at least 95% of the work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

90-07 PAYMENT FOR MATERIALS ON HAND. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the

requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.

b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.

c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.

d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.

e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

90-08 PAYMENT OF WITHHELD FUNDS. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.

b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.

c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.

d. The Contractor shall obtain the written consent of the surety to such agreement.

90-09 ACCEPTANCE AND FINAL PAYMENT. When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in

measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes,* or under the provisions of this paragraph, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

90-10 CONSTRUCTION WARRANTY.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within fourteen (14) days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all

warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

90-11 CONTRACTOR FINAL PROJECT DOCUMENTATION. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR approves the Contractor's final submittal. The Contractor shall:

a. Provide two (2) copies of all manufacturers' warranties specified for materials, equipment, and installations.

b. Provide weekly payroll records (not previously received) from the General Contractor and all subcontractors.

c. Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.

d. Complete all punch list items identified during the Final Inspection.

e. Provide complete release of all claims for labor and material arising out of the Contract.

f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid, monthly and final, to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

g. When applicable per state requirements, return copies of sales tax completion forms.

h. Manufacturer's certifications for all items incorporated in the work.

i. All required record drawings, as-built drawings or as-constructed drawings.

j. Project Operation and Maintenance (O&M) Manual(s).

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

END OF SECTION 90

SPECIAL PROVISIONS

SPECIAL PROVISIONS

1. **GENERAL.** Work to be done under this Agreement consists of furnishing all labor, materials, equipment and accessories and performing all operations necessary to complete the Work in accordance with the Drawings and Specifications.

   The following "Special Provisions" shall govern in case of any discrepancies in any or all of the following Specifications, and the intent, either expressed or implied in these "Special Provisions", shall govern in the interpretation of the Plans and Specifications.

   The Bidder is required to examine carefully the site of the Proposed Work, the Proposal, Plans and Specifications. He shall satisfy himself as to the character, quality and quantities of Work to be performed, materials to be furnished, and as to the requirements of these Specifications. The submission of the Proposal shall be evidence that the Bidder has conducted such an examination.

2. **WORK SCHEDULE AND PROJECT PHASING.** After the Award of Contract and prior to receiving the Notice to Proceed, the Contractor shall submit to the Engineer a Safety Plan Compliance Document. The Sponsor reserves the right to request changes in the sequence of Project schedules if such change is required in the interest of safety or airport operation.

   Construction shall be phased in a manner to minimize disruption to air traffic operations.

3. **PRE-CONSTRUCTION CONFERENCE.** After the Notice to Proceed has been issued and prior to commencement of any Work, the Sponsor's Representative will meet with the Engineer and the Contractor to discuss the Work in general, including administrative matters, the Contractor's Quality Control Program, accident prevention, and safety; to answer any questions of the Engineer or Contractor; and to resolve any potential problems before the Work commences.

4. **UTILITIES.** All known existing utilities have been depicted on the Plans as accurately as possible. In many cases, exact location, depth, and pipe size and type are not known. The Contractor is responsible for contacting appropriate utility locator services prior to construction. The Contractor shall attempt to locate the Sponsor's and/or FAA's underground cables or utilities prior to construction. Damage to the underground cables or utilities by the Contractor will require replacement by the Contractor at no cost to the Sponsor. Any splicing or replacement of damaged cable shall meet current FAA specifications. Any utilities required by the Contractor for the prosecution of the Work shall be paid for by the Contractor.

5. **PERMITS, TAXES, & COMPLIANCE WITH LAWS.** The Contractor shall procure and pay for all permits, taxes, licenses, and bonds necessary for the prosecution of his Work, and/or required by local, State, and Federal regulations, and laws, as pertains particularly to permits and transportation of materials and equipment, or other operations which are not a specific requirement of these Specifications. The Contractor shall give all notices, pay all fees and taxes, and comply with all Federal, State and local laws, ordinances, rules, and regulations, and building and construction codes bearing on the conduct of the Work. Costs of compliance and/or all taxes shall be included in the Unit Prices Bid for each Contract Item.

6. **HAUL ROADS.** The Contractor shall obtain approval from the Engineer prior to establishing haul roads within the airport property. Once established, the haul roads shall be utilized for all equipment traffic, and the equipment shall not be allowed to stray or wander away from the established routes. The haul roads shall be the responsibility of the Contractor and shall be maintained and kept in good order at all times. Water when required, shall be applied at the locations and in the amounts necessary to minimize dust and dirt in the air operations area. Haul roads across any active runway or taxiway shall be kept clean and in

good order at all times. The Contractor shall repair any damage caused by the movement of equipment on any of the haul roads, whether in designated or undesignated areas. After completion of the Project, the Contractor shall be required to regrade any unpaved portions of the haul road and to reseed the area with local native grasses to match the existing conditions of the area. The performance of any Work as specified by this provision, including watering, maintenance, and repair of the haul roads, shall not be measured and paid for directly, but shall be considered as necessary and incidental to the Work.

7. **AIRPORT SECURITY.** During the construction operations, the Contractor will be allowed to utilize an agreed upon number of airport accesses as entrances to the construction site. These gates and the associated haul roads shall be designated by the Engineer. The Contractor shall be required to keep these gates and all other temporary gaps in fencing closed during non-construction hours and guarded as necessary during construction hours to secure the airport property and protect it from unauthorized access from personnel and vehicles, livestock, wildlife, etc. Occupants of any vehicles allowed on the airport shall be the responsibility of the Contractor and the Contractor shall control which vehicles are allowed to enter the airport property during construction except for normal airport operations uses.

8. **CLOSURE OF AIR OPERATIONS AREA.** Barricades are considered a necessary and incidental part of the work, and no separate measurement or payment will be made therefore. The Contractor shall consider the costs and distribute them to the various bid items.

9. **ACCIDENT PREVENTION.** Precautions shall be exercised at all times for the protection of persons (including employees) and property, and that the safety provisions of applicable laws and of applicable building construction codes shall be observed, and that machinery, equipment, and explosives shall be guarded and all hazards shall be eliminated in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law.

10. **STANDARD OF CARE/WARRANTY.** The Contractor shall perform all of the work required under the Contract Documents, in accordance with the expertise and skill that would be expected of a Contractor, expert in airport construction projects in general, and the Work required under the Contract Documents, in particular. In addition, the Contractor warrants that materials and equipment furnished under the Contract Documents will be of good quality and new, unless otherwise required by the Contract Documents, that the Work will be free from defects not inherent in the Work involved, and that the Work will conform, in all respects, to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective. The Contractor's warranty excludes defects due to abuse not caused by the Contractor, Subcontractors, or other third parties operating under the direction or control of the Contractor, modifications not executed or approved by the Contractor, improper or insufficient maintenance, by the Sponsor, improper operation by the Sponsor, or normal wear and tear under normal usage.

11. **CSPP VIOLATION PENALTIES.**

Penalty for moving violation of Airport CSPP. In addition to the suspension of work outlined in GP 80-04 and elsewhere in the Construction Agreement, a driver who causes an incursion into an open runway area will be prohibited from driving any vehicle in the AOA until the contractor demonstrates understanding of the cause of the violation. A written proposed change in construction operations ensuring the cause is remedied shall be submitted by the Contractor to the Sponsor and the change must have been implemented to reinstate their AOA driving privileges. The second violation for the same driver will result in them and their immediate supervisor having their AOA driving privileges revoked for the duration of the project in progress at the time of the second violation.

Penalty for non-moving violations of Airport CSPP. These violations do not include driving violations but all other CSPP violations, such as the improper layout of barricades, construction traffic routing, or lack of communicating required events to Sponsor or Engineer. In addition to the suspension of work outlined in GP 80-04 and elsewhere in the Construction Agreement, all construction items' acceptance testing and measurement for payment shall cease at no cost to the project or Sponsor. Work may only resume after the violation is remedied.

None of this shall be construed as relating to any standard or recognized construction and construction safety activities outside of the CSPP. The Contractor is solely responsible for all recognized safety items relating to all aspects of applicable construction activities and material supply logistics operations. Such activities include, but are not limited to, OSHA requirements, trench shoring, proper driver licensing, personal protective equipment, confined space activities, asphalt and concrete plant safety, etc. The Sponsor and the Engineer have no authority or burden of review or acceptance of any such safety items and practices.

12. **STORMWATER DISCHARGE PERMIT.** The Contractor shall secure and maintain a General Permit for Storm Water Discharges from Construction Sites for this project in accordance with Section 402(p) of the Federal Clean Water Act and Section 405 of the Federal Water Quality Act of 1987. A Notice of Intent shall be filed by the Contractor. Additionally, the Contractor shall maintain any required stormwater or water quality control permits required by the state, municipality, or other governing body or agency.

13. **SAFETY.** Representatives of the Owner or the Engineer are not responsible during site visits or as a result of observations or inspections of the Contractor's work in progress for any safety precautions or programs incident to the Work of the Contractor or for any failure of the Contractor to comply with laws, rules, regulations, ordinances, codes or orders applicable to safety precautions or programs.

14. **FAA ADVISORY CIRCULARS.** The Contractor shall meet the requirements of the following FAA Advisory Circulars, and any others referenced within the project documents.

    FAA AC 150/5370-2G Operational Safety on Airports During Construction
    https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5370-2G.pdf

    FAA AC 150/5340-1M Standards for Airport Markings
    https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5340-1M-Chg-1-Airport-Markings.pdf

15. **CONTRACTORS AFFIDAVIT.** In addition to indemnification of the Owner on the release of claims that is to be delivered prior to the final payment, the Contractor shall extend that indemnification to Egis.

16. **PROTECTION OF PAVEMENT.** Pavement and other structures on the airport project site are not rated the same as the surrounding roadway network. Pavement or other structures damaged by the Contractor's equipment or operations must be repaired or replaced to a condition as good, or better than before the project began. Cost of this repair or replacement shall be borne solely by the Contractor.

17. **EXCAVATION AND EMBANKMENT.** Less material will be excavated than is required for the construction of embankments. For Schedule I, approximately 990 cubic yards of excavation is required and approximately 2,537 cubic yards of embankment is required. For Schedule II, approximately 1,100 cubic yards of excavation is required and approximately 330 cubic yards of embankment is required. These volumes are unadjusted and do not include any estimate of "shrinkage." For acceptance purposes, area shown as future building pads shall be treated as area to be paved.

18. CHANGES TO NMDOT SECTIONS. The following changes and interpretations apply to the attached NMDOT specifications:

a. REPLACE "Department" with "Engineer" for the following sections and/or subsections:

- **i.** 401.3.6 OGFC Placement and Profile Measurement
- **ii.** 401.4 METHOD OF MEASUREMENT
- **iii.** 401.5.1 Pay Adjustments
- **iv.** 401.5.1.1 Pay Adjustment for Category I and Category II HMA/WMA Projects
- **v.** 401.5.1.2 Pay Adjustment for Category I and Category II PCCP Pavement Projects
- **vi.** 402.2.1.5.2 Testing of Asphalt Cement
- **vii.** 402.4 METHOD OF MEASUREMENT
- **viii.** 402.5.1 Work Included in payment
- **ix.** 423.2.2.1.2 Fractured Faces
- **x.** 423.2.6 Mineral Filler
- **xi.** 423.2.9 Job Mix Formula
- **xii.** 423.3.5.4 Joints
- **xiii.** 423.3.6.3.1 Quality Level Analysis (QLA)
- **xiv.** 423.3.6.3.2 Adherence to Specifications and Rejection of Non-Specification Material
- **xv.** 423.3.6.4 Independent Assurance Testing
- **xvi.** 423.5.2 Work Included in Payment
- **xvii.** 902.2.2.4 Aggregate Production
- **xviii.** 902.2.2.5 Batching & Hauling
- **xix.** 902.3 Quality Control Laboratory
- **xx.** 902.6 Testing
- **xxi.** 902.7 Records
- **xxii.** 904.1 DESCRIPTION QUALITY LEVEL ANALYSIS (QLA)
- **xxiii.** 906.1.1 General

b. REPLACE "State Materials Bureau" with "Engineer" for the following subsections:

- **i.** 402.2.1.3.1 Asphalt Rubber Binder Formulation Design
- **ii.** 423.2.3 Asphalt Binder
- **iii.** 423.2.6 Mineral Filler
- **iv.** 902.5 Sampling

c. REPLACE "Project Manager" with "RPR" for the following subsections:

- **i.** 401.3.1.1 Inertial Profiler Calibration and Certification
- **ii.** 401.3.1.4 Inertial Profiler Operations
- **iii.** 401.3.2 Straightedge Measurements (Category III)
- **iv.** 401.3.4 Diamond Grinding
- **v.** 401.3.5 Corrective Work/Must Grind Work

vi. 402.2.1.5.1 Sampling of Asphalt Binder

vii. 402.2.1.5.2 Testing of Asphalt Cement

viii. 402.3 CONSTRUCTION REQUIREMENTS

ix. 423.3.1 General

x. 423.3.2 Mix and Laydown Temperature Requirements

xi. 423.3.4.1.1 Plant Scales

xii. 423.3.4.1.7 Thermometers

xiii. 423.3.5 Placement Operations

xiv. 423.3.5.6 Plan Surfacing Thickness

xv. 423.3.5.7 Test Strip & Shakedown Period

xvi. 423.3.6.1 Contractor Quality Control

xvii. 423.3.6.1.1 Contractor Quality Control of Aggregate

xviii. 423.3.6.1.2 Contractor Quality Control for Compaction

xix. 423.3.6.3.1.1 Acceptance of Pavement Density

xx. 423.3.6.3.2 Adherence to Specifications and Rejection of Non-Specification Material

xxi. 902.2.1.2 Sampling, Testing and Lab Facilities

xxii. 902.2.2.2 Sampling, Testing and Lab Facilities

xxiii. 902.2.2.5 Batching & Hauling

xxiv. 902.2.2.6 Placement and Finishing of Concrete

xxv. 902.3 Quality Control Laboratory

xxvi. 902.5 Sampling

xxvii. 902.6 Testing

xxviii. 902.7 Records

xxix. 902.8 Control Charts

xxx. 904.1 DESCRIPTION QUALITY LEVEL ANALYSIS (QLA)

d. REPLACE "Department" with "RPR" for the following subsections:

i. 423.3.6.2 Department Quality Assurance

ii. 902.2.2.5 Batching & Hauling

e. REPLACE "Department" with "Sponsor" for the following sections and/or subsections:

i. 401.3.5 Corrective Work/Must Grind Work

ii. 401.5 BASIS OF PAYMENT

iii. 402.2.1.1 Performance-Graded Asphalt Binder (PGAB)

iv. 402.2.1.3.1 Asphalt Rubber Binder Formulation Design

v. 423.3.2 Mix and Laydown Temperature Requirements

vi. 423.3.5.2 Compaction

vii. 423.3.5.6 Plan Surfacing Thickness

viii. 423.3.5.7 Test Strip & Shakedown Period

ix. 423.5 BASIS OF PAYMENT

x. 902.2.1.10 OGFC Placement

xi. 902.10 BASIS OF PAYMENT

f. SECTION 401: PAVEMENT SMOOTHNESS MEASUREMENT

i. REPLACE "Project Manager" and "Project Manager's" with "RPR".

ii. Subsection 401.3.1.3 Profile Measurements

1. In the first sentence, REPLACE "Department" with "Engineer".

2. REPLACE "Project Manager", "Department's Representative", and "Department representative" with "RPR".

3. In the first sentence of the fifth paragraph, REPLACE "Department" with "Engineer".

iii. Subsection 401.3.1.1 Inertial Profiler Calibration and Certification

1. REMOVE the third paragraph

iv. Subsection 401.3.1.2 Technician Certification

1. REMOVE all text under this subsection REPLACE it with "The individual performing the profile measurement shall be certified by NMDOT."

v. Subsection 401.3.1.4 Inertial Profiler Operations

1. REPLACE "Roadway surface" with "Airport pavement surface(s)".

2. In the third paragraph, REPLACE "Roadway" with "Airport pavement".

vi. Subsection 401.3.1.5 (ProVAL Profile Data Analysis by the Contractor)

1. REPLACE "Department" with "Contractor".

vii. Subsection 401.3.3 Evaluation for Must Grind Work and Corrective Work.

1. REMOVE "in 0.1-mile sections".

viii. Subsection 401.3.5 Corrective Work/Must Grind Work

1. In the first paragraph, REMOVE "Must grinds shall not extend the entire length of the 0.1-mile section".

2. In the third paragraph, REPLACE "0.1-mile sections" with "areas".

3. In the fourth paragraph, subparagraph 4, REPLACE "Project Manager and District Construction Engineer's" with "RPR's".

ix. Subsection 401.3.7 Independent Assurance Testing

1. REPLACE all text under this subsection with "Not used."

x. Subsection 401.4 METHOD OF MEASUREMENT

1. REMOVE 'travel lanes and 0.1-mile lane length."

g. SECTION 402: ASPHALT MATERIALS AND MINERAL ADMIXTURES

i. Subsection 402.2.1.4 Shipping

1. In subparagraph 2, REPLACE "Department" with "Engineer".

ii. Subsection 402.2.1.5.1 Sampling of Asphalt Binder

1. In the second paragraph, REPLACE "5000 tons" with "300 square yards".

iii. Subsection 402.2.1.5.2 Testing of Asphalt Cement

1. In the third paragraph, REPLACE "5000 tons" WITH "300 square yards".

iv. Subsection 402.2.1.5.3 Appeal Procedure (Asphalt Binders – Only)

1. REPLACE all text under this subsection with "Not used".

v. Subsection 402.2.1.6 Acceptance

1. In the first sentence, REPLACE "The Department will …" with "The Engineer will …."

2. In the second footnote of TABLE 402.2.1.6:1, REPLACE "Assistant District Engineer – Construction" with "Engineer".

3. In the second footnote of TABLE 402.2.1.6:1, REPLACE "department" with "Sponsor".

vi. Subsection 402.2.3.4 Lubricating Antistrip Additive

1. REMOVE "tested and approved by the State Materials Bureau".

2. In the second sentence, REPLACE "State Materials Bureau" with "Contractor".

vii. Subsection 402.5 BASIS OF PAYMENT

1. REMOVE the "*Hydrated Lime*", "*Anhydrite Based Material*", and "*Portland Cement*" pay items along with their corresponding pay units.

h. SECTION 423: HOT MIX ASPHALT (HMA) (MAJOR PAVING)

i. Subsection 423.2.1 General

1. REMOVE the sentence that starts with "Unless otherwise prohibited…".

2. REMOVE the sentence starting with "The Contractor shall…" and REPLACE it with "The Contractor shall test Materials in accordance with applicable AASHTO/ASTM methods, as modified by the Engineer (if applicable) or other test procedures as directed by the RPR.".

3. REPLACE "State Materials Bureau" with "Engineer".

ii. Subsection 423.2.2 Aggregate

1. REMOVE the paragraph starting with "The Contractor shall…" and REPLACE it with "The Contractor shall ensure the aggregate gradation of the HMA mixture meets the requirements of Table 540.2.2.1:1, "HMA Aggregate Gradation Control Points." The RPR may require, at no additional cost to the Sponsor, wet preparation, per AASHTO T 146, Method A, if the RPR determines there are Deleterious Materials present in the aggregate stockpiles before aggregate gradation testing. The Contract will specify the type of HMA the Contractor is to use. The RPR will allow the Contractor to combine Materials from two (2) or more sources to produce aggregate only when each individual aggregate source meets all applicable quality requirements."

iii. Subsection 423.2.7 Reclaimed Asphalt Pavement (RAP)

1. REPLACE all text under this subsection with "RAP shall not be used."

iv. Subsection 423.2.8 Mix Design

1. REMOVE the sentence starting with "The Contractor shall develop the mix design…" and REPLACE it with "The Contractor shall develop the mix design at no additional cost to the Sponsor."

2. REPLACE "State Asphalt Engineer" with "Engineer".

3. REMOVE the sentence starting with "Department concurrence…" and REPLACE it with "Engineer concurrence of a mix design will not relieve the Contractor of full responsibility for producing an Acceptable mixture".

4. In the third paragraph, REPLACE "Department" with "Engineer".

5. In the paragraph immediately preceding Table 423.2.8:1, REPLACE "Department" with "Sponsor".

6. REMOVE the sentence starting with "Department reviewed commercial…".

7. In the paragraph immediately preceding Subsection 423.2.9.1, REPLACE "Department" with "Engineer".

v. Subsection 423.2.9.1 Job Mix Formula Adjustment

1. REMOVE the sentence starting with "Test results and calculations that…" and REPLACE it with "Test results and calculations that verify a proposed JMF adjustment complies with the Specifications will be required prior to being reviewed and approved by the Engineer."

2. REMOVE the sentence starting with "Submittal by the Testing Laboratory…" and REPLACE it with "Submittal by the Testing Laboratory responsible for the original mix design to the RPR with a copy to the Engineer".

3. REMOVE the sentence starting with "Confirmation by the Project Manager…" and REPLACE it with "Confirmation by the RPR that the Quality Control Plan is being followed; and".

4. REMOVE the sentence starting with "Once the adjusted JMF has…" and REPLACE it with "Once the adjusted JMF has been reviewed and concurred by the Engineer; the Contractor shall begin a new lot with the adjusted JMF".

vi. Subsection 423.3.5.4 Joints

1. REPLACE "Project Manager" with "Engineer".

vii. Subsection 423.3.5.7 Test Strip & Shakedown Period

1. REMOVE the sentence starting with "If the Contractor disagrees with removing…" and REPLACE it with "If the Contractor disagrees with removing and replacing unacceptable Material placed in test strips outside the Runway/Taxiway Prism, the Engineer, based on engineering judgement, will decide if the Material can remain in place with a maximum pay factor of 50%, or shall be removed and replaced at no cost to the Sponsor."

2. REMOVE the sentence starting with "Changes may be made to the JMF…" and REPLACE it with "Changes may be made to the JMF or the mix proportions and/or properties with the concurrence of the Engineer."

viii. Subsection 423.3.6.1 Contractor Quality Control

1. REPLACE "District Lab Supervisor" with "Engineer".

ix. Subsection 423.3.6.3 Acceptance

1. REMOVE the sentence starting with "The Department will evaluate…" and REPLACE it with "The Engineer will evaluate Materials using Contractor and Engineer test data from each Random sampling Plan for Acceptance in accordance with this section."

2. REMOVE the sentence starting with "Department personnel may test…" and REPLACE it with "The RPR may test locations other than the random locations generated for statistical analysis."

x. Subsection 423.3.6.3.1.1 Acceptance of Pavement Density

1. REMOVE the sentence starting with "For determination of maximum…" and REPLACE it with "For determination of maximum specific gravity, the Contractor shall obtain and test a minimum of two (2) samples and ensure the RPR obtains and tests a minimum of one (1) sample for each Day that the HMA is placed, in accordance with the random sampling Plan."

2. REMOVE the sentence starting with "The Contractor demonstrates this by providing…" and REPLACE it with "The Contractor demonstrates this by providing non-destructive density results obtained during paving operations witnessed by the RPR at the location in question."

3. REPLACE "Roadway" with "Parking (Paved Area)".

4. REMOVE the sentence starting with "If a lot does not meet…" and REPLACE it with "If a lot does not meet either of the revised density requirements, the RPR will do the following:"

5. REMOVE the sentence starting with "Reject the in-place Material…" and REPLACE it with "Reject the in-place Material and require the Contractor to remove and replace at no cost to the Sponsor."

xi. Subsection 423.3.7 Dispute Resolution

1. REMOVE all text under this subsection and REPLACE it with "Not used".

xii. Subsection 423.4 METHOD OF MEASUREMENT

1. REMOVE all text this subsection and REPLACE it with "Asphalt shall be measured by the number of square yards of asphalt used in the accepted work."

xiii. Subsection 423.5 BASIS OF PAYMENT

1. INSERT the following language above the pay items: "The total project payment for plant mix asphalt pavement shall not exceed 100 percent of the product of the contract unit price and the total number of square yards of asphalt used in the accepted work."

2. REMOVE the pay item, "*HMA Complete*" along with its corresponding pay unit, "Tons or Square Yard".

3. For the "*HMA*" pay item, REMOVE "tons or" from the pay unit.

xiv. Subsection 423.5.1 Price Adjustments

1. REMOVE the sentence starting with "The Department will pay for…" and REPLACE it with "The Sponsor will pay for Accepted quantities of *HMA* at the Bid Item Unit Price, adjusted in accordance with Section 904, "Quality Level Analysis (QLA)."".

2. REMOVE the sentence starting with "The Department will use Table…" and REPLACE it with "The Engineer will use Table 904.1:1, "Weighting Factors," to calculate each lot's composite pay factor."

i. SECTION 902: QUALITY CONTROL

i. Subsection 902.2 Quality Control Plan

1. In the third sentence, REPLACE "Project Manager" with RPR".

2. In the fourth sentence, REPLACE "Project Manager and the District Laboratory Supervisor" with "Engineer".

ii. Subsection 902.2.1.1 Contractor Organization

1. REPLACE "State" with "Engineer".

iii. Subsection 902.2.1.6 Recycled Asphalt Pavement

1. REPLACE all text under this subsection with "RAP shall not be used."

iv. Subsection 902.2.1.9 Base Course Placement

1. REPLACE "Roadway" with "Helipad".

v. Subsection 902.2.1.11 Smoothness

1. REPLACE "Roadway" with "Parking (Paved Area)".

2. In subparagraph 6, REPLACE "Project Manager" with "RPR".

3. In the last sentence, REPLACE "Project Manager and District Lab Supervisor" with "Engineer".

vi. Subsection 902.2.2.1 Contractor Organization

1. REPLACE "State" with "Engineer".

vii. Subsection 902.2.2.7 Smoothness

1. REPLACE "Roadway" with "Parking (Paved Area)".

2. In subparagraph 7, REPLACE "Project Manager" with "RPR".

3. In the last sentence, REPLACE "Project Manager and District Lab Supervisor" with "Engineer".

viii. Subsection 902.3 Quality Control Laboratory

1. REPLACE the second paragraph with "The Contractor shall allow the RPR unrestricted access to the Laboratory. The RPR may conduct independent inspection of the Contractor's field Laboratory. The RPR may determine acceptability of the Quality Control Laboratory. The RPR will provide the Contractor a written accounting of Laboratory deficiencies, if any."

j. SECTION 904: QUALITY LVEL ANALYSIS (QLA)

i. Subsection 904.1 DESCRIPTION QUALITY LEVEL ANALYSIS (QLA)

1. REPLACE "Assistant District Engineer for Construction" with "Engineer".

k. SECTION 906: MINIMUM TESTING REQUIREMENT'S (MTR'S)

i. Subsection 906.1.1 General

1. 1. REPLACE "Agency Testing" with "Engineer Testing".

2. 2. REPLACE "Assistant District Engineer – Construction" with "Engineer".

ii. Table 906.1.2:8

1. Under the Sampling/Testing Location column, REPLACE "Roadway" with

2. "Parking (Paved Area)".

3. Under the Test Required column, REPLACE "Roadway Compaction (Cores)" with "Parking (Paved Area) (Cores)".

4. REPLACE "Agency Testing" with "Engineer Testing".

5. On Page 954, REPLACE "1 per 3000 tons. Gmm will…" with "1 per 300 square yards."

6. On page 954, under the Contractor Testing column, REPLACE "1 per 1000 tons. Gmm will…" with "2 per 300 square yards."

PROPOSAL PACKET

INSTRUCTIONS FOR CONTRACTORS COMPLETING PROPOSAL FORMS

BID SCHEDULE(S) –Fill out the bid schedule form with the unit prices and total prices written in numbers. Write the unit price in words in the space below. Fill out the bid summary with the total bid price for each schedule/alternative written in numbers.

ADDENDUM ACKNOWEDGEMENT – Write down the addendum number, the date you viewed the addendum and initial to certify that you read the addendum.

BID SUBMISSION ACKNOWEDGEMENT – Provide the requested information for Prime Contractor. Sign the appropriate signature line for the type of company bidding on the project. The "Corporation" option is most commonly used. All information must be provided for the applicable signature type.

LIST OF SUBCONTRACTORS – Bidders shall submit this form to the bidding POC within the stated time period. The list is NOT due at time of bidding unless otherwise stated. Provide all information requested for the prime contractor as well as any subconsultants being used on the project above the stated dollar threshold.

PROPOSAL

FOR IMPROVEMENTS TO
BECLABITO COMMUNITY HELIPAD
BASIC HELIPAD & ACCESS ROAD
BECLABITO, NEW MEXICO

RFP BID NO. 26-10-4328JB

TO: Navajo Nation
PO Box 4620
Window Rock, AZ 86515

The undersigned Bidder, having examined the Project Documents as designated and all Addenda thereto; having investigated the location of and conditions affecting the Proposed Work; and being acquainted with and fully understanding the extent and character of the Work covered by this Proposal and all factors and conditions affecting or which may be affected by the Work.

HEREBY PROPOSES, pursuant to the Request for proposals published to furnish all required materials, tools, equipment and plant; to perform all necessary labor and superintendence; and to undertake and complete the Work required for Beclabito Community Helipad, RFP Bid No. 26-10-4328JB, in Beclabito, New Mexico, in full accordance with Project Documents hereto attached or by reference made a part thereof, at and for the following prices:

BID SCHEDULE

"Unit Prices" are to be handwritten or typed in both words and figures. In case of discrepancy, the amount shown in words will govern.

"Unit-Prices" bid shall not include 6.5% New Mexico Gross Receipts Tax. This tax will be included in each payment to the Contractor. The Contractor is responsible for paying this Gross Receipts Tax to the State of New Mexico.

Schedule I - Basic Helipad (Day Operations Only)						
Item No.	**Spec No.**	**Item Description**	**QTY**	**Unit**	**Unit Price**	**Total Price**
I-1	C-105	Mobilization	1	LS	$	$
I-2	P-151	Clearing and Grubbing	Incidental		$	$
I-3	P-152	Embankment In-Place	2,650	CY	$	$
I-4	P-208a	Aggregate Base Course (6-inches thick)	520	SY	$	$
I-5	P-208b	3-inch thick Crushed Aggregate	5,000	SY	$	$
I-6	P-602	Emulsified Asphalt Prime Coat	1,200	GAL	$	$
I-7	P-603	Bituminous Tack Coat	Incidental		$	$
I-8	P-605	Joint Sealing Filler	Incidental		$	$
I-9	P-610a	Structural Portland Cement Concrete	35	CY	$	$
I-10	P-610b	Flush Concrete Ground Marker	144	EA	$	$
I-11	P-620a	Paint Marking	500	SF	$	$
I-12	P-620b	Reflective Media	30	LBS	$	$
I-13	L-107	Type L-806, Style I-A, Size 1 Wind Cone and Foundation, in place	1	EA	$	$
I-14	L-110	Concrete Encased, Electrical Duct Bank, 2-way 4-inch PVC Conduit	30	LF	$	$
I-15	L-125	Splice Base	2	EA	$	$
I-16	S-6	Watering	Incidental		$	$
I-17	S-10	Aircraft Tiedowns (Set of 4)	1	EA	$	$
I-18	NMDOT 423	4-inch Asphaltic Pavement (2 - 2-inch Thick lifts)	320	SY	$	$
TOTAL - SCHEDULE I			**$**			
6% Navajo Nation Sales Tax			**$**			
TOTAL BID AMOUNT – SCHEDULE I			**$**			

SCHEDULE II – Access Road (1,650 LF)						
Item No.	**Spec No.**	**Item Description**	**QTY**	**Unit**	**Unit Price**	**Total Price**
II-1	C-105	Mobilization	1	LS	$	$
II-2	P-152	Embankment In-Place	300	CY	$	$
II-3	P-208a	Aggregate Base Course (6-inches thick)	3,000	SY	$	$
II-4	USDOT 407	Double Chip Seal Type 2A with Prime Coat	3,000	SY	$	$
TOTAL - SCHEDULE II			**$**			
6% Navajo Nation Sales Tax			**$**			
TOTAL BID AMOUNT – SCHEDULE II			**$**			

SUMMARY	
Bid Amount - Schedule I	$
6 % Navajo Nation Sales Tax – Schedule I	$
Bid Amount - Schedule II	$
6 % Navajo Nation Sales Tax – Schedule II	$
TOTAL OF ALL SCHEDULES	**$**

ADDENDUM ACKNOWLEDGEMENT

BIDDER acknowledges receipt of the following ADDENDUM(S):

Addendum No.	Date Acknowledged	Initial

BIDDER MUST FILL IN THE FOLLOWING (if none, write none)

New Mexico Contractor License No.: _____

License Classification: _____

Public Works Minimum Wage Act Registration No.: _____

Department of Work Force Solutions Labor Relations Division No.: _____

Employer Identification Number (EIN): _____

Attach copy of labor Relations Division Department of Workforce Solutions Public Works Bureau Registration as per 8.1 and 13-4-13-1 NMSA 1978 for Contractor and Subcontractor required to register.

BID SUBMISSION ACKNOWEDGEMENT

The submission of a BID will constitute an incontrovertible representation by the BIDDER that he is familiar with conditions of the site as well as with the work required.

BIDDER agrees to perform all the work described in the Project Documents for unit prices or lump sum as shown on the BID SCHEDULE. The Bidder further agrees that no Bid may either be changed or withdrawn without consent of the Owner for the period stated the General Provisions Section 30-02.

The undersigned Bidder hereby agrees to be ready to execute the attached Agreement in conformity with this Bid and also to have ready and furnish the required Proofs of Insurance and Bonds, executed by a Surety Company acceptable to the Owner's Attorney at any time within fifteen (15) days from the date of a Notice of Award, mailed to the address hereinafter.

Enclosed herewith is a Bid Security as defined in the attached Instructions to Bidders which Bid Security the undersigned Bidder agrees is to be paid to and become the property of the Owner as liquidated damages and not as a penalty, for the delay and extra work caused hereby, should the Bidder prevent an award as defined in the Instructions to Bidders, or should the Proposal be accepted and Contract awarded him and he fails to enter into Agreement in the form prescribed and to furnish the required proofs of insurance and bonds within fifteen (15) days as stipulated.

SIGNATURE OF BIDDER:

Dated at _____ this _____ day of _____.

IF AN INDIVIDUAL:

Print Name: _____

Authorized Signature: _____

Doing Business as: _____

Business Address: _____

_____

Phone Number: _____

IF A CORPORATION:

Corporation Name: _____

Authorized Signature: _____

Print Name & Title: _____

Business Address: _____

_____

Phone Number: _____

ATTEST

Authorized Signature: _____

Name & Title: _____

Corporate Seal:

IF A JOINT VENTURE:

Joint Venture Name: _____

Authorized Signature: _____

Name & Title: _____

Business Address: _____

_____

Phone Number: _____

Joint Venture Name: _____

Authorized Signature: _____

Name & Title:: _____

Business Address: _____

_____

Phone Number: _____

LIST OF SUBCONTRACTORS

Bidders shall provide a list of all subcontractors who will provide labor or a portion of the work or improvement to the Contractor. The Prime Contractor shall include his or her name on the list with a description of the Work that the Prime Contractor will perform. Make additional copies as needed.

Prime Contractor:

Company Name: _____ ☐ DBE Firm

Value of Work: $_____

Address: _____

Description of Work to be Performed: _____

Subcontractor 1:

Company Name: _____ ☐ DBE Firm

Value of Work: $_____

Address: _____

Description of Work to be Performed: _____

Subcontractor 2:

Company Name: _____ ☐ DBE Firm

Value of Work: $_____

Address: _____

Description of Work to be Performed: _____

Subcontractor 3:

Company Name: _____ ☐ DBE Firm

Value of Work: $_____

Address: _____

Description of Work to be Performed: _____

Subcontractor 4:

Company Name: _____ ☐ DBE Firm

Value of Work: $_____

Address: _____

Description of Work to be Performed: _____

CONTRACT FORMS

NOTICE OF AWARD

FOR IMPROVEMENTS TO
BECLABITO COMMUNITY HELIPAD
BASIC HELIPAD & ACCESS ROAD
BECLABITO, NEW MEXICO

RFP BID NO. 26-10-4328JB

TO: _____
_____
_____

The OWNER has considered the Bid submitted by you for the above-described Work in response to its Request for proposals and Instructions to Bidders.

You are hereby notified that your Bid for Schedule I and II, has been accepted in the amount of _____ _____Dollars ($_____). (Bid amount does not include NMGRT)

You are required by the Instructions to Bidders to execute the Agreement and furnish the required Contractor's Performance and Payment Bonds and Proofs of Insurance within 15 calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds and Proofs of Insurance within 15 days from the date of this Notice, said Owner will be entitled to consider your Bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the Owner.

Dated this _____day of _____.

NAVAJO NATION
(OWNER)

By _____, President
PO Box 4620
Window Rock, AZ 86515
(505) 371-8320

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

_____, Contractor

By: _____ Date: _____

Title: _____ Telephone: _____

PERFORMANCE BOND

Bond Number

PRINCIPAL *(Legal Name and Business Address)*	STATE OF INCORPORATION	
SURETY *(Legal Name and Business Address)*	GRANT NO.	CONTRACT DATE

PENAL SUM OF BOND *(Expressed in words and numerals)*

OBLIGATION

KNOW ALL PERSONS BY THESE PRESENTS, that the above-named PRINCIPAL, hereinafter referred to and called CONTRACTOR, and the above named SURETY hereby bind themselves unto Navajo Nation, PO Box 4620, Window Rock, AZ 86515, as OBLIGEE, hereinafter referred to and called OWNER, in the penal sum stated above, in lawful money of the United States of America to be paid to OWNER. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

CONTRACTOR has entered into the written contract agreement identified hereinabove with the OWNER for the following project:

Project Name: Basic Helipad (Day Operations Only) & Access Road (1,650 LF)

Project Location: Beclabito Community Helipad

which said contract and associated contract documents, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

CONDITION

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if CONTRACTOR shall promptly and faithfully perform all undertakings, covenants, terms, conditions and agreements of the Contract during the original term of the Contract and any extensions thereof that are granted by the OWNER, with or without notice to the SURETY, and during the period of any guarantee or warranties required under the Contract, and if CONTRACTOR shall perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of the Contract that hereafter are made, then this obligation shall be void; otherwise it shall remain in full force and effect subject to the following additional conditions:

1. SURETY, for value received, hereby stipulates and agrees that no change, extension of time, modification, omission, addition or change in or to the Contract, or the work performed thereunder or the specifications accompanying the same, shall in any way affect the SURETY'S obligation on this bond; and SURETY hereby agrees to waive notice of any and all such extensions, modifications, omissions, alterations, and additions to the terms of the Contract, work or specifications.

2. Whenever CONTRACTOR shall be and declared by the OWNER to be in default under the Contract, the Surety shall promptly and at the SURETY'S expense remedy the default by implementing one or more of the following actions:

    a. Arrange for the CONTRACTOR, with consent of the OWNER, to perform and complete the Contract; or

    b. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

    c. Obtain bids or negotiated proposals from qualified contractors acceptable to the OWNER for a contract for performance and completion of the Contract; arrange for a contract to be prepared for execution by the OWNER and the contractor selected with the OWNER'S concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the Bonds issued on the Contract; and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the penal sum of the bond. The term "balance of the contract price", as used in this paragraph, shall mean the total amount payable by OWNER to CONTRACTOR under the Contract and any amendments thereto, disbursed at the rate provided in the original contract, less the amount properly paid by OWNER to CONTRACTOR.

    d. With written consent of the OWNER, SURETY may waive its right to perform and complete, arrange for completion or obtain a new contractor and with reasonable promptness, investigate and determine the amount the SURETY is liable to the OWNER and tender payment therefore to the OWNER.

3. CONTRACTOR and SURETY agree that if in connection with the enforcement of this Bond, the OWNER is required to engage the services of an attorney, that reasonable attorney fees incurred by the OWNER, with or without suit, are in addition to the balance of the contract price.

4. No right of action shall accrue on this bond to or for the use of any person or corporation other than the OWNER named herein or the successors or assigns of the OWNER.

iii. WITNESS

INDIVIDUAL PRINCIPAL:

Company Name: _____

Signature: _____

Name, Title: _____

CORPORATE PRINCIPAL:

ATTEST: Corporate Name: _____

Signature: _____ Signature: _____

Name, Title: _____ Name, Title: _____
(Affix Corporate Seal)

SURETY:

ATTEST: Surety Name: _____

Signature: _____ Signature: _____

Name, Title: _____ Name, Title: _____
(Affix Seal) (Attach Power of Attorney)

OWNER ACCEPTANCE

The OWNER approves the form of this Performance Bond.

ATTEST:

Signature: _____ Signature: _____

Name, Title: _____ Name, Title: _____
(Affix Seal)

PAYMENT BOND

Bond Number

PRINCIPAL *(Legal Name and Business Address)*	STATE OF INCORPORATION	
SURETY *(Legal Name and Business Address)*	GRANT NO.	CONTRACT DATE

PENAL SUM OF BOND *(Expressed in words and numerals)*

OBLIGATION

KNOW ALL PERSONS BY THESE PRESENTS, that the above-named PRINCIPAL, hereinafter referred to and called CONTRACTOR, and the above-named SURETY hereby bind themselves unto Navajo Nation, PO Box 4620, Window Rock, AZ 86515, as OBLIGEE, hereinafter referred to and called OWNER, in the penal sum stated above, in lawful money of the United States of America to be paid to OWNER. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,
CONTRACTOR has entered into the written contract agreement identified hereinabove with the OWNER for the following project:

Project Name: Basic Helipad (Day Operations Only) & Access Road (1,650 LF)

Project Location: Beclabito Community Helipad

which said contract and associated contract documents, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

CONDITION

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if CONTRACTOR shall promptly make payment to all employees, persons, firms or corporations for all incurred indebtedness and just claims for labor, supplies, materials and services furnished for or used in connection with the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect subject to the following additional conditions:

1. CONTRACTOR and SURETY indemnify and hold harmless the OWNER for all claims, demands, liens or suits that arise from performance of the Contract

2. SURETY, for value received, hereby stipulates and agrees that no change, extension of time, modification, omission, addition or change in or to the Contract, or the work performed thereunder or the specifications accompanying the same, shall in any way affect the SURETY'S obligation on this

bond; and SURETY hereby agrees to waive notice of any and all such extensions, modifications, omissions, alterations, and additions to the terms of the Contract, work or specifications.

3. No final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

4. The amount of this bond shall be reduced by and to the extent of any payments made in good faith hereunder.

5. Amounts owed by the OWNER to the CONTRACTOR under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the CONTRACTOR furnishing and the OWNER accepting this Bond, they agree that all funds earned by the CONTRACTOR in the performance of the Contract are dedicated to satisfy obligations of the CONTRACTOR and the SURETY under this Bond, subject to the OWNER'S priority to use the funds for the completion of the project.

iv. WITNESS

INDIVIDUAL PRINCIPAL:

Company Name: _____

Signature: _____

Name, Title: _____

CORPORATE PRINCIPAL:

ATTEST:

Signature: _____

Name, Title: _____

(Affix Corporate Seal)

Corporate Name: _____

Signature: _____

Name, Title: _____

SURETY:

ATTEST: Surety Name: _____

Signature: _____ Signature: _____

Name, Title: _____ Name, Title: _____
(Affix Seal) (Attach Power of Attorney)

OWNER ACCEPTANCE

The OWNER approves the form of this Payment Bond.

ATTEST:

Signature: _____ Signature: _____

Name, Title: _____ Name, Title: _____
(Affix Seal)

NOTICE TO PROCEED

FOR IMPROVEMENTS TO
BECLABITO COMMUNITY HELIPAD
BASIC HELIPAD & ACCESS ROAD
BECLABITO, NEW MEXICO

RFP BID NO. 26-10-4328JB

TO: DATE: _____

You are notified that the Contract Time under the above Contract will commence to run on _____. By that date, you are to start performing your obligations under the Contract Documents and you are to complete the Work within 60 calendar days thereafter. The date of completion of all Work is therefore _____.

NAVAJO NATION

By _____, President
PO Box 4620
Window Rock, AZ 86515
(505) 371-8320

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

_____, Contractor

this the _____ day of _____

By: _____
(Title)

CONTRACT CHANGE ORDER NO. ____
or
SUPPLEMENTAL AGREEMENT NO. ____

AIRPORT: Beclabito Community Helipad **DATE:** _____

LOCATION: Beclabito, New Mexico **RFP BID NO.**: 26-10-4328JB

CONTRACTOR: _____

You are requested to perform the following described Work upon receipt of an approved copy of this document or as directed by the Engineer:

ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
This Change Order Total			$		
Previous Change Order(s) Total			$		
Original Contract Price			$		
Revised Contract Total			$		

The time provided for completion in the Contract is (unchanged) (decreased) (increased) by _____ calendar days. This document shall become an Amendment to the Contract and all provisions of the Contract will apply. Changes are shown on the attached Quantities Tabulation.

Recommended by: _____ _____
Engineer Date

Approved by: _____ _____
Owner Date

Accepted by: _____ _____
Contractor Date

Reviewed by: _____ _____
State Aviation Date

NOTE: Change Orders and Supplemental Agreements require State concurrence prior to construction. Otherwise, no State participation can be granted.

RFP BID NO. 26-10-4328JB **CHANGE ORDER NO.** _____

AIRPORT: Beclabito Community Helipad **LOCATION:** Beclabito, New Mexico

JUSTIFICATION FOR CHANGE

1. Brief description of the proposed Contract change(s) and location(s).

2. Reason(s) for the change(s). (Continue on reverse if necessary.)

3. Justifications for Unit Prices or Total Cost.

4. The Sponsor's share of this cost is available from:

5. If this is Supplemental Agreement involving more than $2,000, is the Cost Estimate based on the latest wage rate decision? Yes ____ No ____ Not Applicable ___

6. Has Consent of Surety been obtained? Yes ____ No ____ Not Applicable ___

7. Will this change affect the insurance coverage? Yes ____ No ___

8. If yes, will the policies be extended? Yes ____ No ___

9. Has this Change Order been discussed with State officials?
   Yes ____ No ____ When _____ With Whom _____

Comment _____

Submit executed copies to the State.

APPLICATION FOR PAYMENT NO. ____

To Navajo Nation (OWNER). Contract for Beclabito Community Helipad Improvements dated _____. OWNER'S RFP Bid No. 26-10-4328JB and EGIS No. 28364 for Work accomplished through the date of _____. Remit to: _____
Address: _____, Contact: _____ , and Phone Number: _____ .

ATTACH ITEMIZED LIST

Accompanying Documentation:	GROSS AMOUNT DUE	$ _____
_____	LESS _____ % RETAINAGE	$ _____
_____	NMGRT 6.5%	$ _____
_____	AMOUNT DUE TO DATE	$ _____
_____	LESS PREVIOUS PAYMENTS	$ _____
_____	AMOUNT DUE THIS APPLICATION	$ _____

CONTRACTOR'S Certification:

The undersigned CONTRACTOR certifies that (1) all previous Progress Payments received from OWNER on account of Work done under the Contract referred to above have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with Work covered by prior Applications for Payment numbered 1 through _____ inclusive; and (2) title to all materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of final acceptance of Project free and clear of all liens, claims, security interests and encumbrances.

Dated _____

_____
CONTRACTOR

By_____

ENGINEER'S Recommendation:

This Application (with accompanying documentation) meets the requirements of the Contract Documents and payment of the above AMOUNT DUE THIS APPLICATION is recommended.

Dated _____

Egis
ENGINEER

By _____

OWNER'S Approval:

This Application is approved.

Dated _____

Navajo Nation
SPONSOR

By _____

For this Pay Application (excluding the initial Payment Application) to be considered complete, it must be submitted with a Prompt Payment Certification in reference to the previous pay application documenting all subcontractor payments. Following the Final Prime Contractor Pay Application, a Prompt Payment Certification will be submitted to document project completion. A W-9 must be submitted for payment to be issued.

PROMPT PAYMENT CERTIFICATION

The Sponsor requires that all Subcontractors performing work on DOT-assisted and non-DOT contracts be promptly paid for work performed pursuant to their agreements in accordance with all relevant federal, state, and local laws. Prompt payment and return of retainage requirements also apply to lower-tier Subcontractors.

Prompt Payment Certification is required for all Pay Applications except the initial one.

A Final Prompt Payment Certification will be submitted following the Final Payment and Release of Retention.

The Prime Contractor will not be reimbursed for work performed by Subcontractors unless and until the Prime Contractor ensures that the Subcontractors are promptly paid for the work they have performed and provides proof of payment.

Prime Contractor

Firm Name _____ **In Reference to Payment Application No.** _____

Contact Name _____ Project No. _____

Email Address _____ Phone _____

Total Amount Paid in Referenced Pay Application $_____

Subcontractors Paid from the Reference Pay Application

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Amount Paid in Pay Application $_____ Total amount to date $_____

Type of Work Performed _____ Final Payment ☐ Yes ☐ No

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Amount Paid in Pay Application $_____ Total amount to date $_____

Type of Work Performed _____ Final Payment ☐ Yes ☐ No

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Amount Paid in Pay Application $_____ Total amount to date $_____

Type of Work Performed _____ Final Payment ☐ Yes ☐ No

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Amount Paid in Pay Application $_____ Total amount to date $_____

Type of Work Performed _____ Final Payment ☐ Yes ☐ No

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Amount Paid in Pay Application $_____ Total amount to date $_____

Type of Work Performed _____ Final Payment ☐ Yes ☐ No

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Amount Paid in Pay Application $_____ Total amount to date $_____

Type of Work Performed _____ Final Payment ☐ Yes ☐ No

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Amount Paid in Pay Application $_____ Total amount to date $_____

Type of Work Performed _____ Final Payment ☐ Yes ☐ No

Certification

By signing this document, the Prime Contractor certifies to the best of their knowledge that the information presented above is true and accurate. All work attributed to the referenced Payment Application has been performed in a satisfactory manner. The Prime Contractor has paid each Subcontractor listed in this form for satisfactory performance of its contract. Payment has been issued in accordance with Article 6 of the Agreement and all relevant federal, state, and local laws.

The Prime Contractor further has return retainage payments due to each Subcontractor after the Subcontractor's work is satisfactorily completed in accordance with General Provision 90-06 and all relevant federal, state, and local laws. Any delay or postponement of payment may only occur for good cause following written approval of the Sponsor.

Proof of payment is attached to this certification for each listed Subcontractor firm.

Signature _____ Date _____

Print Name _____ Title _____

Firm Name _____

Please copy page if you need to add more Subcontractors.

SPECIFICATIONS

ITEM C-102
TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL

DESCRIPTION

102-1. This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed, and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

MATERIALS

102-2.1 GRASS. Grass that will not compete with the grasses sown later for permanent cover per Item T-901 shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

102-2.2 MULCHES. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

102-2.3 FERTILIZER. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

102-2.4 SLOPE DRAINS. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 SILT FENCE. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

102-2.6 OTHER. All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

102-3.1 GENERAL. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

102-3.2 SCHEDULE. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

102-3.3 CONSTRUCTION DETAILS. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

102-3.4 INSTALLATION, MAINTENANCE AND REMOVAL OF SILT FENCE. Silt fences shall extend a minimum of 16 inches and a maximum of 34 inches above the ground surface. Posts shall be set no more

than 10 feet on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch overlap and securely sealed. A trench shall be excavated approximately 4 inches deep by 4 inches wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the RPR. Completed and accepted work will be measured as follows:

Completed and accepted work will not be measured for payment but shall be considered incidental to the bid items to which they apply or to the project in general.

102-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

BASIS OF PAYMENT

102-5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the RPR and measured as provided in paragraph 102-4.1 will be incidental to the project.

Quantities of temporary water pollution, soil erosion, and siltation control work ordered by the Engineer will not be measured and will not be paid as separate bid items.

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items.

Temporary control features not covered by contract items that are ordered by the RPR will be paid for in accordance with Section 90, paragraph 90-05 *Payment for Extra Work*.

REFERENCES

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

Advisory Circulars (AC)

AC 150/5200-33 *Hazardous Wildlife Attractants on or Near Airports*

AC 150/5370-2 *Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461 *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM C-102

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ITEM C-105
MOBILIZATION

105-1 DESCRIPTION. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project, except as provided in the contract as separate pay items.

105-2 MOBILIZATION LIMIT. Mobilization shall be limited to 10 percent of the total project cost, per schedule, as bid, with mobilization included in the total.

105-3 POSTED NOTICES. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-4 ENGINEER/RPR FIELD OFFICE. See General Contract Provisions 60-05 Engineer/Resident Project Representative (RPR) Field Office for detailed description of field office requirements.

METHOD OF MEASUREMENT

105-5 BASIS OF MEASUREMENT AND PAYMENT. Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows:

a. With first pay request, 25%.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, *Contractor Final Project Documentation,* the final 10%.

BASIS OF PAYMENT

105-6 Payment will be made under:

Item C-105 Mobilization – per lump sum

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.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

ITEM P-151
CLEARING AND GRUBBING

DESCRIPTION

151-1.1 This item shall consist of clearing or clearing and grubbing, including the disposal of materials, for all areas within the limits designated on the plans or as required by the Resident Project Representative (RPR).

a. Clearing. Clearing shall consist of the cutting and removal of all trees, stumps, brush, logs, hedges, the removal of fences and other loose or projecting material from the designated areas. The grubbing of stumps and roots will not be required.

b. Clearing and Grubbing. Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of grass or weeds, fences, structures, debris, and rubbish of any nature, natural obstructions or such material which in the opinion of the RPR is unsuitable for the foundation of strips, pavements, or other required structures, including the grubbing of stumps, roots, matted roots, foundations, and the disposal from the project of all spoil materials resulting from clearing and grubbing.

c. Tree Removal. Tree removal shall consist of the cutting and removal of isolated single trees or isolated groups of trees, and the grubbing of stumps and roots. The removal of all the trees of this classification shall be in accordance with the requirements for the particular area being cleared.

CONSTRUCTION METHODS

151-2.1 GENERAL. The areas denoted on the plans to be cleared and grubbed shall be staked on the ground by the Contractor as indicated on the plans.

The removal of existing structures and utilities required to permit orderly progress of work shall be accomplished by local agencies, unless otherwise shown on the plans. Whenever a telephone pole, pipeline, conduit, sewer, roadway, or other utility is encountered and must be removed or relocated, the Contractor shall advise the RPR who will notify the proper local authority or owner to secure prompt action.

151-2.1.1 DISPOSAL. All materials removed by clearing or by clearing and grubbing shall be disposed of outside the Airport's limits at the Contractor's responsibility, except when otherwise directed by the RPR. As far as practicable, waste concrete and masonry shall be placed on slopes of embankments or channels. When embankments are constructed of such material, this material shall be placed in accordance with requirements for formation of embankments. Any broken concrete or masonry that cannot be used in construction and all other materials not considered suitable for use elsewhere, shall be disposed of by the Contractor. In no case, shall any discarded materials be left in windrows or piles adjacent to or within the airport limits. The manner and location of disposal of materials shall be subject to the approval of the RPR and shall not create an unsightly or objectionable view. When the Contractor is required to locate a disposal area outside the airport property limits, the Contractor shall obtain and file with the RPR permission in writing from the property owner for the use of private property for this purpose.

151-2.1.2 BLASTING. Blasting shall not be allowed.

151-2.2 CLEARING. The Contractor shall clear the staked or indicated area of all materials as indicated on the plans. Trees unavoidably falling outside the specified clearing limits must be cut up, removed, and disposed of in a satisfactory manner. To minimize damage to trees that are to be left standing, trees shall be felled toward the center of the area being cleared. The Contractor shall preserve and protect from injury all trees not to be removed. The trees, stumps, and brush shall be cut flush with the original ground surface. The grubbing of stumps and roots will not be required.

Fences shall be removed and disposed of as directed by the RPR. Fence wire shall be neatly rolled and the wire and posts stored on the airport if they are to be used again or stored at a location designated by the RPR if the fence is to remain the property of a local owner or authority.

151-2.3 CLEARING AND GRUBBING. In areas designated to be cleared and grubbed, all stumps, roots, buried logs, brush, grass, and other unsatisfactory materials as indicated on the plans, shall be removed, except where embankments exceeding 3-1/2 feet in depth will be constructed outside of paved areas. For embankments constructed outside of paved areas, all unsatisfactory materials shall be removed, but sound trees, stumps, and brush can be cut off flush with the original ground and allowed to remain. Tap roots and other projections over 1-1/2 inches in diameter shall be grubbed out to a depth of at least 18 inches below the finished subgrade or slope elevation.

Any buildings and miscellaneous structures that are shown on the plans to be removed shall be demolished or removed, and all materials shall be disposed of by removal from the site. The cost of removal is incidental to this item. The remaining or existing foundations, wells, cesspools and like structures shall be destroyed by breaking down the materials of which the foundations, wells, cesspools, etc., are built to a depth at least 2 feet below the existing surrounding ground. Any broken concrete, blocks, or other objectionable material that cannot be used in backfill shall be removed and disposed of at the Contractor's expense. The holes or openings shall be backfilled with acceptable material and properly compacted.

All holes in embankment areas remaining after the grubbing operation shall have the sides of the holes flattened to facilitate filling with acceptable material and compacting as required in Item P-152. The same procedure shall be applied to all holes remaining after grubbing in areas where the depth of holes exceeds the depth of the proposed excavation.

METHOD OF MEASUREMENT

151-3.1 The quantities of clearing and grubbing as shown by the limits on the plans shall be considered incidental to this item.

BASIS OF PAYMENT

151-4.1 Payment for clearing and grubbing shall be considered incidental to this item.

Payment will be made under:

Item P-151 Clearing and Grubbing – incidental

END OF ITEM P-151

ITEM P-152
EXCAVATION, SUBGRADE, AND EMBANKMENT

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 CLASSIFICATION. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature.

152-1.3 UNSUITABLE EXCAVATION. Unsuitable material shall be disposed in designated waste areas as shown on the plans. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

CONSTRUCTION METHODS

152-2.1 GENERAL. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4-inches, to loosen and pulverize the soil. Stones or rock fragments larger than 4-inches in their greatest dimension will not be permitted in the top 6-inches of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 EXCAVATION. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the

ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces, finished surfaces and other various surfaces were used to develop the design plans.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective grading. When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12-inches below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of at locations shown on the plans. This excavated material shall be paid for at the contract unit price per cubic yard for unclassified excavation. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified excavation.

c. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as authorized by the RPR. The RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

d. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 BORROW EXCAVATION. Borrow areas within the airport property are indicated on the plans. Borrow excavation shall be made only at these designated locations and within the horizontal and vertical limits as staked or as directed by the RPR. All unsuitable material shall be disposed of by the Contractor as shown on the plans. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant.

There are no borrow sources within the boundaries of the airport property. The Contractor shall locate and obtain borrow sources, subject to the approval of the RPR. The Contractor shall notify the RPR at least 15 days prior to beginning the excavation so necessary measurements and tests can be made by the RPR. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant.

152-2.4 DRAINAGE EXCAVATION. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 PREPARATION OF CUT AREAS OR AREAS WHERE EXISTING PAVEMENT HAS BEEN REMOVED. In those areas on which a subbase or base course is to be placed, the top 12-inches of subgrade hall be compacted to not less than 100 % of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

152-2.6 PREPARATION OF EMBANKMENT AREA. No placement of embankment material shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor the survey notes of the elevations and measurements of the existing ground surface. The Contractor and RPR shall agree that the original ground lines shown on original topographic mapping are accurate or agree to any adjustments made to the original ground lines.

All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6-inches and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12-inches and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 CONTROL STRIP. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12-inches upon the Contractor's

demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

152-2.8 FORMATION OF EMBANKMENTS. The material shall be constructed in lifts as established in the control strip, but not less than 6-inches nor more than 12-inches of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The Contractor will take samples of excavated materials which will be used in embankment for testing to develop a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D698. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the Contractor for every 1,000 square yards of compacted embankment for the top lift and one test (minimum) per 1,000 cubic yards of the lower lifts, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. Under all areas to be paved, the embankments shall be compacted to a depth of 12-inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D698. As used

in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4-inches which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4-inches in their greatest dimensions will not be allowed in the top 12-inches of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4-feet below the finished subgrade.

Payment for compacted embankment will be made under embankment in-place and no payment will be made for excavation, borrow, or other items.

152-2.9 PROOF ROLLING. The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. After compaction is completed, the subgrade area shall be proof rolled with a 20 ton Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 100 psi in the presence of the RPR. Apply a minimum of three (3) wheel coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch or show permanent deformation greater than 1 inch shall be removed and replaced with suitable material or reworked to conform to the moisture content and in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

152-2.10 COMPACTION REQUIREMENTS. The subgrade under areas to be paved shall be compacted to a depth of 6-inches and to a density of not less than 95 percent of the maximum dry density as determined by ASTM D698. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12-inches and to a density of not less than 90 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within ±2% of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the ¾ inch sieve, follow the methods in ASTM D698. Tests for moisture content and compaction will be taken at a minimum of 1,000 Square yards of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

152-2.11 FINISHING AND PROTECTION OF SUBGRADE. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

152-2.12 HAUL. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.13 SURFACE TOLERANCES. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3-inches, reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

a. Smoothness. The finished surface shall not vary more than +/- ½ inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.

A 12-foot straight edge shall be provided by the Contractor and made available to the RPR at all times for testing of surface smoothness tolerances.

b. Grade. The grade and crown shall be measured on a 50-foot grid and shall be within +/-0.05 feet of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to placed, grade shall not vary more than 0.10 feet from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 TOPSOIL. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.

No additional payment will be made for topsoil that has to be stockpiled.

METHOD OF MEASUREMENT

152-3.1 Measurement for payment specified by the cubic yard shall be computed by the comparison of digital terrain model (DTM) surfaces for computation of neat line design quantities. The end area is that bound by the original ground line established by field measurements and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR.

No measurement of the plan excavation or embankment quantity shall be made. Plan quantities include all ditches, "grading to drain" areas and adjustments for stripping of vegetation areas and adjustments for pavement templates. Plan quantities do not include rehandling and processing/compaction of designated minimum thickness of subgrade under areas to be paved. Payment will be based on plan quantities.

If plan width of excavations are changed by more than ± 1.0 foot; and/or plan elevations of excavations are changed by more than ± 0.5 foot, the volume of the changes will be measured and the awarded quantity of excavations will be adjusted to coincide with the changes.

Measurement of changes shall not include the quantity of material placed or removed without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

BASIS OF PAYMENT

152-4.1 For embankment in place, payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

There will be no separate payment for haul of any excavation or embankment materials or for placement and compaction of any material. All costs incidental to clearing and grubbing, hauling, embankments construction, processing and compaction of subgrade under areas to be paved, disposal of unsuitable materials and other necessary operations for construction of excavations or embankments shall be included in the Contract Unit Prices for "Embankment in Place."

It is estimated that approximately 1,300 cubic yards of material will be available from Project limit excavations on the airport property. If more or less excavation is needed to balance the Project earthwork, material shall be borrowed from location(s) on the airport or obtain an offsite borrow source as indicated by the RPR or shall be wasted at location(s) on the airport as indicated by the RPR.

Payment will be made under:

Item P-152 Embankment In-Place - per cubic yard

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 T-180 Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)

ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)

ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2 Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66 Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

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ITEM P-208
AGGREGATE BASE COURSE

DESCRIPTION

208-1.1 This item shall consist of a base course composed of course aggregate bonded with fine aggregate base. It shall be constructed on a prepared subgrade or subbase course per these specifications and shall conform to the dimensions and typical cross-section shown on the plans.

MATERIALS

208-2.1 AGGREGATE BASE. The aggregate base material shall consist of both fine and coarse aggregate. Material shall be clean, sound, durable particles and fragments of stone or gravel, crushed stone, crushed slag, or crushed gravel mixed or blended with sand, screenings, or other materials. Materials shall be handled and stored in accordance with all federal, state, and local requirements. The aggregate shall be free from clay lumps, organic matter, or other deleterious materials or coatings. The method used to produce the crushed gravel shall result in the fractured particles in the finished product as nearly constant and uniform as practicable. The fine aggregate portion, defined as the portion passing the No. 4 sieve produced in crushing operations, shall be incorporated in the base material to the extent permitted by the gradation requirements. Aggregate base material requirements are listed in the following table.

AGGREGATE BASE MATERIAL REQUIREMENTS

Material Test	Requirement	Standard
Coarse Aggregate		
Resistance to Degradation	Loss: 50% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate **or** Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Percentage of Fractured Particles	Minimum 60% by weight of particles with at least two fractured faces and 75% with at least one fractured face[1]	ASTM D5821
Flat Particles, Elongated Particles, or Flat and Elongated Particles	10% maximum, by weight, of flat, elongated, or flat and elongated particles [2]	ASTM D4791
Bulk density of slag	Weigh not less than 70 pounds per cubic foot	ASTM C29
Clay lumps and friable particles	Less than or equal to 3 percent	ASTM C142
Fine Aggregate		
Liquid limit	Less than or equal to 25	ASTM D4318
Plasticity Index	Not more than five (5)	ASTM D4318

[1]The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

[2]A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

208-2.2 GRADATION REQUIREMENTS. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation shall be well graded from coarse to fine and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa.

GRADATION OF AGGREGATE BASE

Sieve Size	Design Range Percentage by Weight passing	Contractor's Final Gradation	Job Control Grading Band Tolerances for Contractor's Final Gradation[1] Percent
2 inch	100		±0
1-1/2 inch	70-100		±5
1 inch	55-85		±8
3/4 inch	50-80		±8
No. 4	30-60		±8
No. 40	10-30		±5
No. 200	5-10		±3

[1]The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.

208-2.3 SAMPLING AND TESTING.

a. Aggregate base materials. The Contractor shall take samples of the aggregate base in accordance with ASTM D75 to verify initial aggregate base requirements and gradation. Material shall meet the requirements in paragraphs 208-2.1 and 208-2.2. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

b. Gradation requirements. The Contractor shall take at least two aggregate base samples per day in the presence of the Resident Project Representative (RPR) to check the final gradation. Sampling shall be per ASTM D75. Material shall meet all the requirements in paragraph 208-2.2. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the RPR.

208-2.4 SEPARATION GEOTEXTILE. Not used.

CONSTRUCTION METHODS

208-3.1 CONTROL STRIP. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches upon the Contractor's demonstration that approved equipment, and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted or removed and replaced at the Contractor's expense. Full operations shall not continue until the control strip has been

accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved by the RPR.

208-3.2 PREPARING UNDERLYING SUBGRADE AND/OR SUBBASE. The underlying subgrade and/or subbase shall be checked and accepted by the RPR before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase in accordance with Item P-152, at the Contractor's expense, may be required by the RPR if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

208-3.3 PRODUCTION. The aggregate shall be uniformly blended and, when at a satisfactory moisture content per paragraph 208-3.5, the approved material may be transported directly to the placement.

208-3.4 PLACEMENT. The aggregate shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

The aggregate shall meet gradation and moisture requirements prior to compaction. The base course layer shall be constructed in lifts as established in the control strip, but not less than 4 inches nor more than 12 inches of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications at the Contractor's expense.

208-3.5 COMPACTION. Immediately upon completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade.

The field density of each compacted lift of material shall be at least 100% of the maximum density of laboratory specimens prepared from samples of the base material delivered to the jobsite. The laboratory specimens shall be compacted and tested in accordance with ASTM D698. The moisture content of the material during placing operations shall be within ±2 percentage points of the optimum moisture content as determined by ASTM D698. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

208-3.6 WEATHER LIMITATIONS. Material shall not be placed unless the ambient air temperature is at least 40 °F and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

208-3.7 MAINTENANCE. The base course shall be maintained in a condition that will meet all specification requirements. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, prior to placement of additional material, the Contractor shall verify that materials still meet all specification

requirements. Equipment may be routed over completed sections of base course, provided that no damage results and the equipment is routed over the full width of the completed base course. Any damage resulting to the base course from routing equipment over the base course shall be repaired by the Contractor at their expense.

208-3.8 SURFACE TOLERANCES. After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches, reshaped and recompacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

A 12-foot straight edge shall be provided by the Contractor and made available to the RPR at all times for testing of surface smoothness tolerance.

a. Smoothness. The finished surface shall not vary more than 3/8-inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.

b. Grade. The grade and crown shall be measured on a 50-foot grid and shall be within +0 and -1/2 inch of the specified grade.

208-3.9 ACCEPTANCE SAMPLING AND TESTING. Aggregate base course shall be accepted for density and thickness on an area basis. Two tests will be made for density and thickness for each 1,200 square yards. Sampling locations will be determined on a random basis per ASTM D3665.

a. **Density.** The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

b. Thickness. Depth tests shall be made by test holes at least 3 inches in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2 inch, the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches, adding new material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

If approved by the RPR, lift thickness testing may also be performed via survey at no cost to the Sponsor. If survey is to be used, Contractor shall provide the RPR with electronic survey of both the final accepted underlying surface prior to placing of base course material and after the placement of base course. Thickness checks will use this survey as the basis for determining base course thickness. Format of electronic survey shall be approved by RPR.

c. The Contractor shall remove all survey and grade hubs from base courses prior to placing any surface course.

METHOD OF MEASUREMENT

208-4.1 The quantity of aggregate base course shall be measured by the number of square yards of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

208-5.1 Payment shall be made at the contract unit price per square yards for aggregate base course. This price shall be full compensation for furnishing all materials and for all operations, hauling, placing, and compacting of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-208a	Aggregate Base Course (6-inches thick) - per square yard
Item P-208b	3-inch thick Crushed Aggregate – per square yard

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 C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM D75	Standard Practice for Sampling Aggregates

ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)

ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)

ASTM D2167 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method

ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D3665 Standard Practice for Random Sampling of Construction Materials

ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ASTM D4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity

ASTM D4643 Standard Test Method for Determination of Water Content of Soil and Rock by Microwave Oven Heating

ASTM D4751 Standard Test Methods for Determining Apparent Opening Size of a Geotextile

ASTM D4791 Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

ASTM D5821 Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate

ASTM D6938 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

ASTM D7928 Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis

American Association of State Highway and Transportation Officials (AASHTO)

M288 Standard Specification for Geosynthetic Specification for Highway Applications

END OF ITEM P-208

ITEM P-602
EMULSIFIED ASPHALT PRIME COAT

DESCRIPTION

602-1.1 This item shall consist of an application of emulsified asphalt material on the prepared base course in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

602-2.1 EMULSIFIED ASPHALT MATERIAL. The emulsified asphalt material shall be as specified in ASTM D3628 for use as a prime coat appropriate to local conditions. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the emulsified asphalt material. The COA shall be provided to and approved by the Resident Project Representative (RPR) before the emulsified asphalt material is applied. The furnishing of the COA for the emulsified asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

CONSTRUCTION METHODS

602-3.1 WEATHER LIMITATIONS. The emulsified asphalt prime coat shall be applied only when the existing surface is dry; the atmospheric temperature is 50°F or above, and the temperature has not been below 35°F for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the RPR.

602-3.2 EQUIPMENT. The equipment shall include a self-powered pressure asphalt material distributor and equipment for heating asphalt material.

Provide a distributor with pneumatic tires of such size and number that the load produced on the base surface does not exceed 65.0 psi of tire width to prevent rutting, shoving or otherwise damaging the base, surface or other layers in the pavement structure. Design and equip the distributor to spray the asphalt material in a uniform coverage at the specified temperature, at readily determined and controlled rates from 0.05 to 1.0 gallons per square yard, with a pressure range of 25 to 75 psi and with an allowable variation from the specified rate of not more than ±5%, and at variable widths. Include with the distributor equipment a separate power unit for the bitumen pump, full-circulation spray bars, tachometer, pressure gauges, volume-measuring devices, adequate heaters for heating of materials to the proper application temperature, a thermometer for reading the temperature of tank contents, and a hand hose attachment suitable for applying asphalt material manually to areas inaccessible to the distributor. Equip the distributor to circulate and agitate the asphalt material during the heating process. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

A power broom and power blower suitable for cleaning the surfaces to which the asphalt coat is to be applied shall be provided.

Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

602-3.3 APPLICATION OF EMULSIFIED ASPHALT MATERIAL. Immediately before applying the prime coat, the full width of the surface to be primed shall be swept with a power broom to remove all loose dirt and other objectionable material.

The asphalt emulsion material shall be uniformly applied with an asphalt distributor at the rate of 0.15 to 0.30 gallons per square yard depending on the base course surface texture. The type of asphalt material and application rate shall be approved by the RPR prior to application.

Following application of the emulsified asphalt material and prior to application of the succeeding layer of pavement, allow the asphalt coat to cure and to obtain evaporation of any volatiles or moisture. Maintain the coated surface until the succeeding layer of pavement is placed, by protecting the surface against damage and by repairing and recoating deficient areas. Allow the prime coat to cure without being disturbed for a period of at least 48 hours or longer, as may be necessary to attain penetration into the treated course. Furnish and spread sand to effectively blot up and cure excess asphalt material. The Contractor shall remove blotting sand prior to asphalt concrete lay down operations at no additional expense to the Owner. Keep traffic off surfaces freshly treated with asphalt material. Provide sufficient warning signs and barricades so that traffic will not travel over freshly treated surfaces.

602-3.4 TRIAL APPLICATION RATES. The Contractor shall apply a minimum of three lengths of at least 100 feet for the full width of the distributor bar to evaluate the amount of emulsified asphalt material that can be satisfactorily applied with the equipment. Apply three different application rates of emulsified asphalt materials within the application range specified in paragraph 602-3.3. Other trial applications can be made using various amounts of material as directed by the RPR. The trial application is to demonstrate the equipment can uniformly apply the emulsified asphalt material within the rates specified and determine the application rate for the project.

602-3.5 FREIGHT AND WAYBILLS. The Contractor shall submit waybills and delivery tickets during the progress of the work. Before the final estimate is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

METHOD OF MEASUREMENT

602-4.1 The emulsified asphalt material for prime coat shall be measured by the gallon. Volume shall be corrected to the volume at 60°F in accordance with ASTM D4311. The emulsified asphalt material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of emulsified asphalt material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the emulsified asphalt material is necessary. Water added to emulsified asphalt will not be measured for payment.

BASIS OF PAYMENT

602-5.1 Payment shall be made at the contract unit price per gallon for emulsified asphalt prime coat. This price shall be full compensation for furnishing all materials and for all preparation, delivering, and applying the materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item P-602 Emulsified Asphalt Prime Coat - per gallon

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 D2995 Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors

ASTM D3628 Standard Practice for Selection and Use of Emulsified Asphalts

END OF ITEM P-602

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ITEM P-603
EMULSIFIED ASPHALT TACK COAT

DESCRIPTION

603-1.1 This item shall consist of preparing and treating an asphalt or concrete surface with asphalt material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

603-2.1 ASPHALT MATERIALS. The asphalt material shall be an emulsified asphalt as specified in ASTM D3628 as an asphalt application for tack coat appropriate to local conditions. The emulsified asphalt shall not be diluted. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the asphalt material to the Resident Project Representative (RPR) before the asphalt material is applied for review and acceptance. The furnishing of COA for the asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

CONSTRUCTION METHODS

603-3.1 WEATHER LIMITATIONS. The tack coat shall be applied only when the existing surface is dry, and the atmospheric temperature is 50°F or above; the temperature has not been below 35°F for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when indicated by the RPR.

603-3.2 EQUIPMENT. The Contractor shall provide equipment for heating and applying the emulsified asphalt material. The emulsion shall be applied with a manufacturer-approved computer rate-controlled asphalt distributor. The equipment shall be in good working order and contain no contaminants or diluents in the tank. Spray bar tips must be clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type of tip or pressure source is suitable that will maintain predetermined flow rates and constant pressure during the application process with application speeds under eight (8) miles per hour or 700-feet per minute.

The equipment will be tested under pressure for leaks and to ensure proper set-up before use to verify truck set-up (via a test-shot area), including but not limited to, nozzle tip size appropriate for application, spray-bar height and pressure and pump speed, evidence of triple-overlap spray pattern, lack of leaks, and any other factors relevant to ensure the truck is in good working order before use.

The distributor truck shall be equipped with a minimum 12-foot spreader spray bar with individual nozzle control with computer-controlled application rates. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion and have an operable mechanical tank gauge that can be used to cross-check the computer accuracy. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

The distributor truck shall be equipped to effectively heat and mix the material to the required temperature prior to application as required. Heating and mixing shall be done in accordance with the manufacturer's recommendations. Do not overheat or over mix the material.

The distributor shall be equipped with a hand sprayer.

Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

A power broom and/or power blower suitable for cleaning the surfaces to which the asphalt tack coat is to be applied shall be provided.

603-3.3 APPLICATION OF EMULSIFIED ASPHALT MATERIAL. The emulsified asphalt shall not be diluted. Immediately before applying the emulsified asphalt tack coat, the full width of surface to be treated shall be swept with a power broom and/or power blower to remove all loose dirt and other objectionable material.

The emulsified asphalt material shall be uniformly applied with an asphalt distributor at the rates appropriate for the conditions and surface specified in the table below. The type of asphalt material and application rate shall be approved by the RPR prior to application.

EMULSIFIED ASPHALT

Surface Type	Residual Rate, gal/sy	Emulsion Application Bar Rate, gal/sy
New asphalt	0.02-0.05	0.03-0.07
Existing asphalt	0.04-0.07	0.06-0.11
Milled Surface	0.04-0.08	0.06-0.12
Concrete	0.03-0.05	0.05-0.08

After application of the tack coat, the surface shall be allowed to cure without being disturbed for the period of time necessary to permit drying and setting of the tack coat. This period shall be determined by the RPR. The Contractor shall protect the tack coat and maintain the surface until the next course has been placed. When the tack coat has been disturbed by the Contractor, tack coat shall be reapplied at the Contractor's expense.

603-3.4 FREIGHT AND WAYBILLS. The Contractor shall submit waybills and delivery tickets, during progress of the work. Before the final statement is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

METHOD OF MEASUREMENT

603-4.1 The bituminous material for tack coat shall not be measured.

BASIS OF PAYMENT

603.5-1 No payment shall be made for bituminous tack coat material. The price for furnishing all materials, for all preparation, delivery, and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item shall be incidental to 4-inch Asphaltic Pavement.

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 D1250 Standard Guide for Use of the Petroleum Measurement Tables

ASTM D2995 Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors

ASTM D3628 Standard Practice for Selection and Use of Emulsified Asphalts

END ITEM P-603

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ITEM P-605
JOINT SEALANTS FOR PAVEMENTS

DESCRIPTION

605-1.1 This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints in pavement; joints between different types of pavements; and cracks in existing pavement.

MATERIALS

605-2.1 JOINT SEALANTS. Joint sealant materials shall meet the requirements of ASTM D5893 Standard Specifications for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements and ASTM D6690 Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

Backer rod shall be installed in a saw cut joint to prevent the sealant from flowing to the bottom. The back rod shall be compatible with the joint sealant to act as a bond breaker and shall be rubber, butyl rubber or other material that will not absorb moisture.

Expansion joint filler shall meet the requirements of ASTM D 1751. The expansion joint filler shall be Ceramar Flexible Foam Joint Filler manufactured by Sealtight, or an approved equal.

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

605-2.2 BACKER ROD. The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant in accordance with ASTM D5249. The backer-rod material shall be 25% ± 5 % larger in diameter than the nominal width of the joint.

605-2.3 BOND BREAKING TAPES. Provide a bond breaking tape or separating material that is a flexible, non-shrinkable, non-absorbing, non-staining, and non-reacting adhesive-backed tape. The material shall have a melting point at least 5°F greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately ⅛-inch wider than the nominal width of the joint and shall not bond to the joint sealant.

CONSTRUCTION METHODS

605-3.1 TIME OF APPLICATION. Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

605-3.2 EQUIPMENT. Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, 10 days prior to use on the project.

a. Concrete saw. Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified.

b. Sandblasting equipment. The Contractor must demonstrate sandblasting equipment including the air compressor, hose, guide and nozzle size, under job conditions, before approval in accordance with paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the Resident Project Representative (RPR), that the method cleans the joint and does not damage the joint.

c. Waterblasting equipment. The Contractor must demonstrate waterblasting equipment including the pumps, hose, guide and nozzle size, under job conditions, before approval in accordance with paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

d. Hand tools. Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces. Hand tools should be carefully evaluated for potential spalling effects prior to approval for use.

e. Hot-poured sealing equipment. The unit applicators used for heating and installing ASTM D6690 joint sealant materials shall be mobile and shall be equipped with a double-boiler, agitator-type kettle with an oil medium in the outer space for heat transfer; a direct-connected pressure-type extruding device with a nozzle shaped for inserting in the joint to be filled; positive temperature devices for controlling the temperature of the transfer oil and sealant; and a recording type thermometer for indicating the temperature of the sealant. The applicator unit shall be designed so that the sealant will circulate through the delivery hose and return to the inner kettle when not in use.

f. Cold-applied, single-component sealing equipment. The equipment for installing ASTM D5893 single component joint sealants shall consist of an extrusion pump, air compressor, following plate, hoses, and nozzle for transferring the sealant from the storage container into the joint opening. The dimension of the nozzle shall be such that the tip of the nozzle will extend into the joint to allow sealing from the bottom of the joint to the top. Maintain the initially approved equipment in good working condition, serviced in accordance with the supplier's instructions, and unaltered in any way without obtaining prior approval. Small hand-held air-powered equipment (i.e., caulking guns) may be used for small applications.

605-3.3 PREPARATION OF JOINTS. Pavement joints for application of material in this specification must be dry, clean of all scale, dirt, dust, curing compound, and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

a. Sawing. All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

b. Sealing. Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by sandblasting, concrete saw, or waterblaster as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of 1/2 inch from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

c. Backer Rod. When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a backer rod in accordance with paragraph 605-2.2 to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backer rod is placed at the specified depth and is not stretched or twisted during installation.

d. Bond-breaking tape. Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-separating tape breaker in accordance with paragraph 605-2.3 to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

605-3.4 INSTALLATION OF SEALANTS. Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the RPR before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to ¼-inch ±1/16 inch below the top of pavement surface; or bottom of groove for grooved pavement. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until authorized by the RPR. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

605-3.5 INSPECTION. The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

605-3.6 CLEAN-UP. Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

METHOD OF MEASUREMENT

605-4.1 Joint sealing material shall be incidental to the project. No measurement will be made of joint sealing materials required in the construction of concrete pavements or structures. The cost of furnishing and installing joint materials shall be included in the Contractor's price for pavements and structures.

BASIS OF PAYMENT

605-5.1 Payment for joint sealing material shall be incidental to the project.

Payment will be made under:

Item P-605 Joint Sealing Filler - incidental

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 D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5249	Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D5893	Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt

Advisory Circulars (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids

END ITEM P-605

ITEM P-610
CONCRETE FOR MISCELLANEOUS STRUCTURES

DESCRIPTION

610-1.1 This item shall consist of concrete and reinforcement, as shown on the plans, prepared and constructed in accordance with these specifications. This specification shall be used for all concrete other than airfield pavement which are cast-in-place.

MATERIALS

610-2.1 GENERAL. Only approved materials, conforming to the requirements of these specifications, shall be used in the work. Materials may be subject to inspection and tests at any time during their preparation or use. The source of all materials shall be approved by the Resident Project Representative (RPR) before delivery or use in the work. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be stored and handled to ensure preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed in them.

The use of pit-run aggregates shall not be permitted unless the pit-run aggregate has been screened and washed, and all fine and coarse aggregates stored separately and kept clean. The mixing of different aggregates from different sources in one storage stockpile or alternating batches of different aggregates shall not be permitted.

a. Reactivity. Fine aggregate and coarse aggregates to be used in all concrete shall have been tested separately within six months of the project in accordance with ASTM C1260. Test results shall be submitted to the RPR. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.08% at 14 days (16 days from casting). If the expansion either or both test specimen is greater than 0.08% at 14 days, but less than 0.20%, a minimum of 25% of Type F fly ash, or between 40% and 55% of slag cement shall be used in the concrete mix. If expansion of either the coarse or fine aggregate exceeds 0.08% at 14 days, limit the alkali of the concrete to be less than or equal to 3.0 lb per cubic yard, calculated in accordance with EB 106.

If the expansion is greater than 0.20% the aggregates shall not be used, and test results for other aggregates must be submitted for evaluation; or aggregates that meet P-501 reactivity test requirements may be utilized.

610-2.2 COARSE AGGREGATE. The coarse aggregate for concrete shall meet the requirements of ASTM C33 and the requirements of Table 4, Class Designation 5S; and the grading requirements shown below, as required for the project.

COARSE AGGREGATE GRADING REQUIREMENTS

Maximum Aggregate Size	ASTM C33, Table 3 Grading Requirements (Size No.)
1 ½-inch	467 or 4 and 67
1-inch	57
¾-inch	67
½-inch	7

610-2.2.1 COARSE AGGREGATE SUSCEPTIBILITY TO DURABILITY (D) CRACKING. Coarse aggregate may only be accepted from sources that have a 20-year service history for the same gradation to be supplied with no history of D-Cracking. Aggregates that do not have a 20-year record of service free from major repairs (less than 5% of slabs replaced) in similar conditions without D-cracking shall not be used unless the material currently being produced has a durability factor greater than or equal to 95 per ASTM C666. The Contractor shall submit a current certification and test results to verify the aggregate acceptability. Test results will only be accepted from a State Department of Transportation (DOT) materials laboratory or an accredited laboratory. Certification and test results which are not dated or which are over one (1) year old or which are for different gradations will not be accepted.

610-2.3 FINE AGGREGATE. The fine aggregate for concrete shall meet all fine aggregate requirements of ASTM C33.

610-2.4 CEMENT. Cement shall conform to the requirements of ASTM C150, Type II.

610-2.5 CEMENTITIOUS MATERIALS.

a. Fly ash. Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash shall have a Calcium Oxide (CaO) content of less than 15% and a total available alkali content less than 3% per ASTM C311. Fly ash produced in furnace operations using liming materials or soda ash (sodium carbonate) as an additive shall not be acceptable. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the concrete mix, and shall furnish each additional report as they become available during the project. The reports can be used for acceptance or the material may be tested independently by the RPR.

b. Slag cement (ground granulated blast furnace (GGBF)). Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

610-2.6 WATER. Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

610-2.7 ADMIXTURES. The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the RPR may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the RPR from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

a. Air-entraining admixtures. Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entrainment agent and any water reducer admixture shall be compatible.

b. Water-reducing admixtures. Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

c. Other chemical admixtures. The use of set retarding and set-accelerating admixtures shall be approved by the RPR. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and

set-accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

610-2.8 PREMOLDED JOINT MATERIAL. Premolded joint material for expansion joints shall meet the requirements of ASTM D1751**.**

610-2.9 JOINT FILLER. The filler for joints shall meet the requirements of Item P-605, unless otherwise specified.

610-2.10 STEEL REINFORCEMENT. Reinforcing shall consist of reinforcing steel conforming to the requirements of ASTM A615**.**

610-2.11 MATERIALS FOR CURING CONCRETE. Curing materials shall conform to ASTM C309 White-pigmented Liquid Membrane-Forming Compound, Type 2, Class B.

CONSTRUCTION METHODS

610-3.1 GENERAL. The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified here. All machinery and equipment used by the Contractor on the work, shall be of sufficient size to meet the requirements of the work. All work shall be subject to the inspection and approval of the RPR.

610-3.2 CONCRETE MIXTURE. The concrete shall develop a compressive strength of 4,000 psi in 28 days as determined by test cylinders made in accordance with ASTM C31 and tested in accordance with ASTM C39. The concrete shall contain not less than 470 pounds of cementitious material per cubic yard. The water cementitious ratio shall not exceed 0.45 by weight. The air content of the concrete shall be 5% +/- 1.2% as determined by ASTM C231 and shall have a slump of not more than 4 inches as determined by ASTM C143.

All required testing that must be submitted as part of the concrete mix design shall have been done within the last year from the date the submittal is received.

610-3.3 MIXING. Concrete may be mixed at the construction site, at a central point, or wholly or in part in truck mixers. The concrete shall be mixed and delivered in accordance with the requirements of ASTM C94 or ASTM C685.

The concrete shall be mixed only in quantities required for immediate use. Concrete shall not be mixed while the air temperature is below 40°F without the RPRs approval. If approval is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50°F nor more than 100°F. The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at his expense.

Retempering of concrete by adding water or any other material is not permitted.

The rate of delivery of concrete to the job shall be sufficient to allow uninterrupted placement of the concrete.

610-3.4 FORMS. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the RPR. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The

surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy.

The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms shall be constructed so they can be removed without injuring the concrete or concrete surface.

610-3.5 PLACING REINFORCEMENT. All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concrete placement. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

610-3.6 EMBEDDED ITEMS. Before placing concrete, all embedded items shall be firmly and securely fastened in place as indicated. All embedded items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The concrete shall be spaded and consolidated around and against embedded items. The embedding of wood shall not be allowed.

610-3.7 CONCRETE CONSISTENCY. The Contractor shall monitor the consistency of the concrete delivered to the project site; collect each batch ticket; check temperature; and perform slump tests on each truck at the project site in accordance with ASTM C143.

610-3.8 PLACING CONCRETE. All concrete shall be placed during daylight hours, unless otherwise approved. The concrete shall not be placed until the depth and condition of foundations, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved by the RPR. Concrete shall be placed as soon as practical after mixing, but in no case later than one (1) hour after water has been added to the mix. The method and manner of placing shall avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. The concrete shall not be dropped from a height of more than 5 feet. Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to procedures which cause segregation. Concrete shall be placed on clean, damp surfaces, free from running water, or on a properly consolidated soil foundation.

610-3.9 VIBRATION. Vibration shall follow the guidelines in American Concrete Institute (ACI) Committee 309R, Guide for Consolidation of Concrete.

610-3.10 JOINTS. Joints shall be constructed as indicated on the plans.

610-3.11 FINISHING. All exposed concrete surfaces shall be true, smooth, and free from open or rough areas, depressions, or projections. All concrete horizontal plane surfaces shall be brought flush to the proper elevation with the finished top surface struck-off with a straightedge and floated.

610-3.12 CURING AND PROTECTION. All concrete shall be properly cured in accordance with the recommendations in American Concrete Institute (ACI) 308R, Guide to External Curing of Concrete. The concrete shall be protected from damage until project acceptance.

610-3.13 COLD WEATHER PLACING. When concrete is placed at temperatures below 40°F, follow the cold weather concreting recommendations found in ACI 306R, Cold Weather Concreting.

610-3.14 HOT WEATHER PLACING. When concrete is placed in hot weather greater than 85ºF, follow the hot weather concreting recommendations found in ACI 305R, Hot Weather Concreting.

QUALITY ASSURANCE (QA)

610-4.1 QUALITY ASSURANCE SAMPLING AND TESTING. Concrete for each day's placement will be accepted on the basis of the compressive strength specified in paragraph 610-3.2. The RPR will sample the concrete in accordance with ASTM C172; test the slump in accordance with ASTM C143; test air content in accordance with ASTM C231; make and cure compressive strength specimens in accordance with ASTM C31; and test in accordance with ASTM C39. The QA testing agency will meet the requirements of ASTM C1077.

The Contractor shall provide adequate facilities for the initial curing of cylinders.

610-4.2 DEFECTIVE WORK. Any defective work that cannot be satisfactorily repaired as determined by the RPR, shall be removed and replaced at the Contractor's expense. Defective work includes, but is not limited to, uneven dimensions, honeycombing and other voids on the surface or edges of the concrete.

METHOD OF MEASUREMENT

610-5.1 Structural Portland Cement Concrete shall be measured by the number of cubic yards based on batch tickets of material of concrete complete in place and accepted.

610-5.2 Flush Concrete Ground Marker shall be measured by the number of each marker completed in-place and accepted.

BASIS OF PAYMENT

610-6.1 Payment for Structural Portland Cement Concrete shall be made at the contract price by the number of cubic yards based on batch tickets of material. This price shall be full compensation for furnishing all materials including reinforcement and embedded items and for all preparation, delivery, installation, and curing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

610-6.2 Payment for Flush Concrete Ground Marker shall be made at the contract price by the number of each marker completed in-place and accepted. This price shall be full compensation for furnishing all materials including reinforcement and embedded items and for all preparation, delivery, installation, and curing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-610a	Structural Portland Cement Concrete - per cubic yards
Item P-610b	Flush Concrete Ground Marker – per each

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 A184	Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement

ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A704	Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
ASTM A706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A775	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A934	Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C114	Standard Test Methods for Chemical Analysis of Hydraulic Cement
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete

ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C685	Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1017	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1157	Standard Performance Specification for Hydraulic Cement
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1365	Standard Test Method for Determination of the Proportion of Phases in Portland Cement and Portland-Cement Clinker Using X-Ray Powder Diffraction Analysis
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

American Concrete Institute (ACI)

ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 308R	Guide to External Curing of Concrete
ACI 309R	Guide for Consolidation of Concrete

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ITEM P-620
RUNWAY AND TAXIWAY MARKING

DESCRIPTION

620-1.1 This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Resident Project Representative (RPR). The terms "paint" and "marking material" as well as "painting" and "application of markings" are interchangeable throughout this specification.

MATERIALS

620-2.1 MATERIALS ACCEPTANCE. The Contractor shall furnish manufacturer's certified test reports, for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. This certification along with a copy of the paint manufacturer's surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive; and application requirements must be submitted and approved by the Resident Project Representative (RPR) prior to the initial application of markings. The reports can be used for material acceptance or the RPR may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the RPR upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the RPR.

620-2.2 MARKING MATERIALS.

TABLE 1
MARKING MATERIALS

Paint[1]				Glass Beads[2]	
Type	**Color**	**Fed Std. 595 Number**	**Application Rate Maximum**	**Type**	**Application Rate Minimum**
FINAL MARKING APPLICATION					
Waterborne, Type II	White	37925	115 ft^2/gal	I	7 lb/gal
Waterborne, Type II	Yellow	33538 or 33655	115 ft^2/gal	I	7 lb/gal
Waterborne, Type II	Black	37038	115 ft^2/gal	N/A	N/A

[1] See paragraph 620-2.2a
[2] See paragraph 620-2.2b

a. Paint. Paint shall be waterborne in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595.

Waterborne. Paint shall meet the requirements of Federal Specification TT-P-1952F, Type II. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

b. Reflective media. Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D Type I, Gradation A.

Glass beads for red and pink paint shall meet the requirements for Type I, Gradation A.

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black and green paint.

Type III glass beads shall not be used in red and pink paint.

CONSTRUCTION METHODS

620-3.1 WEATHER LIMITATIONS. Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures do not meet the manufacturer's recommendations. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Markings shall not be applied when weather conditions are forecasts to not be within the manufacturers' recommendations for application and dry time.

620-3.2 EQUIPMENT. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless type marking machine with automatic glass bead dispensers suitable for application of traffic paint. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray. The marking equipment for both paint and beads shall be calibrated daily.

620-3.3 PREPARATION OF SURFACES. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminates that would reduce the bond between the paint and the pavement. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the RPR. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

a. Preparation of new pavement surfaces. The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the RPR to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface.

b. Preparation of pavement to remove existing markings. Existing pavement markings shall be removed by rotary grinding, water blasting, or by other methods approved by the RPR minimizing damage to the pavement surface. The removal area may need to be larger than the area of the markings to eliminate ghost markings. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings.

c. Preparation of pavement markings prior to remarking. Prior to remarking existing markings, loose existing markings must be removed minimizing damage to the pavement surface, with a method approved by the RPR. After removal, the surface shall be cleaned of all residue or debris.

Prior to the application of markings, the Contractor shall certify in writing that the surface is dry and free from dirt, grease, oil, laitance, or other foreign material that would prevent the bond of the paint to the pavement or existing markings. This certification along with a copy of the paint manufactures application

and surface preparation requirements must be submitted to the RPR prior to the initial application of markings.

620-3.4 LAYOUT OF MARKINGS. The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the plans.

620-3.5 APPLICATION. A period of seven (7) days shall elapse between placement of surface course or seal coat and application of the final permanent paint markings. Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the RPR.

The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and marking dimensions and spacing shall be within the following tolerances:

MARKING DIMENSIONS AND SPACING TOLERANCE

Dimension and Spacing	Tolerance
36 inch or less	±1/2 inch
greater than 36 inch to 6 feet	±1 inch
greater than 6 feet to 60 feet	±2 inch
greater than 60 feet	±3 inch

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted. A period of one (1) day shall elapse between placement of a bituminous surface course or seal coat and application of temporary paint. Temporary paint may be applied sooner if the seal coat has broken and is no longer tacky. However, if discoloration is evident, painting shall be discontinued, and additional cure time of the seal coat will be required. All discolored paint shall be replaced at the Contractor's expense.

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment and distribution should be performed.

620-3.6 APPLICATION--PREFORMED THERMOPLASTIC AIRPORT PAVEMENT MARKINGS. Preformed thermoplastic pavement markings not used.

620-3.7 CONTROL STRIP. Prior to the full application of airfield markings, the Contractor shall prepare a control strip in the presence of the RPR. The Contractor shall demonstrate the surface preparation method and all striping equipment to be used on the project. The marking equipment must achieve the prescribed application rate of paint and population of glass beads (per Table 1) that are properly embedded and evenly distributed across the full width of the marking. Prior to acceptance of the control strip, markings must be evaluated during darkness to ensure a uniform appearance.

620-3.8 RETRO-REFLECTANCE. Reflectance shall be measured with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 reading shall be taken over a 6 square foot area with three (3) readings taken from each direction. The average shall be equal to or above the minimum levels of all readings which are within 30% of each other.

MINIMUM RETRO-REFLECTANCE VALUES

Material	Retro-reflectance mcd/m^2/lux		
	White	Yellow	Red
Initial Type I	300	175	35
Initial Type III	600	300	35
Initial Thermoplastic	225	100	35
All materials, remark when less than[1]	100	75	10

[1] 'Prior to remarking determine if removal of contaminants on markings will restore retro-reflectance

620-3.9 PROTECTION AND CLEANUP. After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the RPR. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

METHOD OF MEASUREMENT

620-4.1a The quantity of markings to be paid for shall be measured by the number of square feet of painting.

620-4.1b The quantity of reflective media shall be paid for by the number of pounds of reflective media.

620-4.1c Temporary markings not required.

BASIS OF PAYMENT

620-5.1 This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item complete in place and accepted by the RPR in accordance with these specifications.

620-5.1a Payment for markings shall be made at the contract price for by the number of square feet of painting.

620-5.1b Payment for reflective media shall be made at the contract unit price for the number of pounds of reflective media**.**

Payment will be made under:

Item P-620a Paint Marking - per square foot
Item P-620b Reflective Media - per pound

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 D476 Standard Classification for Dry Pigmentary Titanium Dioxide Products

ASTM D968 Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive

ASTM D1652 Standard Test Method for Epoxy Content of Epoxy Resins

ASTM D2074 Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method

ASTM D2240 Standard Test Method for Rubber Property - Durometer Hardness

ASTM D7585 Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments

ASTM E303 Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester

ASTM E1710 Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer

ASTM E2302 Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer

ASTM G154 Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

Code of Federal Regulations (CFR)

40 CFR Part 60, Appendix A-7, Method 24
Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings

29 CFR Part 1910.1200 Hazard Communication

Federal Specifications (FED SPEC)

FED SPEC TT-B-1325D Beads (Glass Spheres) Retro-Reflective

FED SPEC TT-P-1952F Paint, Traffic and Airfield Marking, Waterborne

FED STD 595 Colors used in Government Procurement

Commercial Item Description

A-A-2886B Paint, Traffic, Solvent Based

Advisory Circulars (AC)

AC 150/5340-1 Standards for Airport Markings

AC 150/5320-12 Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces

END OF ITEM P-620

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ITEM L-107
AIRPORT WIND CONES

DESCRIPTION

107-1.1 This item shall consist of furnishing and installing an airport wind cone per these specifications and per the dimensions, design, and details shown in the plans.

The work shall include the furnishing and installation of a support for mounting the wind cone, the specified interconnecting wire, and a concrete foundation. The item shall also include all cable connections, conduit and conduit fittings, the furnishing and installation of all lamps, ground rod and ground connection, the testing of the installation, and all incidentals necessary to place the wind cone in operation (as a completed unit) to the satisfaction of the RPR.

EQUIPMENT AND MATERIALS

107-2.1 GENERAL.

a. Airport lighting equipment and materials covered by advisory circulars (ACs) shall be certified in AC 150/5345-53, Airport Lighting Equipment Certification Program (ALECP) and listed in the ALECP Addendum.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when identified by the RPR) and replaced with materials that comply with these specifications, at the Contractor's cost.

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

e. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be in electronic pdf format. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes, specified in this document.

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

107-2.2 WIND CONES. The primary wind cone assembly shall be Type L-806, Style I-A, Size 1.

107-2.3 ELECTRICAL WIRE AND CABLE. Cable rated up to 5,000 volts in conduit shall conform to AC 150/5345-7, Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits. For ratings up to 600 volts, moisture and heat-resistant thermoplastic wire conforming to Commercial Item Description A-A-59544A Type THWN-2 shall be used. The wires shall be of the type, size, number of conductors, and voltage shown in the plans or in the proposal.

107-2.4 CONDUIT. Rigid steel conduit and fittings shall conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242.

107-2.5 PLASTIC CONDUIT (FOR USE BELOW GRADE ONLY). Plastic conduit and fittings shall be per the following:

- UL 514B covers W-C-1094 - Conduit fittings all types, Classes 1 thru 3 and 6 thru 10
- UL 514C covers W-C-1094 - all types, Class 5 junction box and cover in plastic (polyvinyl chloride (PVC))
- UL 651 covers W-C-1094 - Rigid PVC Conduit, types I and II, Class 4
- UL 651A covers W-C-1094 - Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4

Underwriters Laboratories Standard UL-651 shall be one of the following, as shown in the plans:

a. Type I–Schedule 40 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

Plastic conduit adhesive shall be a solvent cement manufactured specifically for the purpose of gluing the type of plastic conduit and fitting.

107-2.6 CONCRETE. The concrete for foundations shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

107-2.7 PAINT.

a. Priming paint for non-galvanized metal surfaces shall be a high solids alkyd primer compatible with the manufacturer's recommendations for the intermediate or topcoat.

b. Priming paint for galvanized metal surfaces shall be zinc dust-zinc oxide primer paint conforming to MIL-DTL-24441C/19B. Use MIL-24441 thinner per paint manufacturer's recommendations.

c. Orange paint for the body and the finish coats on metal and wood surfaces shall consist of a ready-mixed non-fading paint per Master Painter's Institute (MPI) Reference #9 (gloss). The color shall be per Federal Standards 595, International Orange, Number 12197.

d. White paint for body and finish coats on metal and wood surfaces shall be ready-mixed paint conforming to the MPI, Reference #9, Exterior Alkyd, Gloss.

e. Priming paint for wood surfaces shall be mixed on the job by thinning the above specified aviation-orange or white paint by adding ½-pint of raw linseed oil to each gallon.

CONSTRUCTION METHODS

107-3.1 INSTALLATION. The hinged support or hinged pole shall be installed on a concrete foundation per the plans.

107-3.2 SUPPORT POLE ERECTION. The Contractor shall erect the pole on the foundation following the manufacturer's requirements and erection details. The pole shall be level and secure.

107-3.3 ELECTRICAL CONNECTION. The Contractor shall furnish all labor and materials and shall make complete electrical connections per the wiring diagram furnished with the project plans. The electrical installation shall conform to the requirements of the latest edition of National Fire Protection Association, NFPA-70, National Electric Code (NEC).

Underground cable and duct for cable installation shall be installed in accordance with Item L-108, Underground Power Cables for Airports, and Item L-110, Airport Underground Electrical Duct Banks and Conduits in locations as shown on the plans.

107-3.4 BOOSTER TRANSFORMER. Not used.

107-3.5 GROUND CONNECTION AND GROUND ROD. The Contractor shall furnish and install a ground rod, grounding cable, and ground clamps for grounding the "A" frame of the 12-foot assembly or pipe support of the 8-foot support near the base. The ground rod shall be of the type, diameter and length specified in Item L-108, Underground Power Cable for Airports. The ground rod shall be driven into the ground adjacent to the concrete foundation (minimum distance from foundation of 2-feet) so that the top is at least 6-inches below grade. The grounding cable shall consist of No. 6 American wire gauge (AWG) minimum stranded copper wire or larger and shall be firmly attached to the ground rod by exothermic welding. If an exothermic weld is not possible, connections to the grounding bus shall be made by using connectors approved for direct burial in soil or concrete per UL 467. The other end of the grounding cable shall be securely attached to a leg of the frame or to the base of the pipe support with non-corrosive metal and shall be of substantial construction. The resistance to ground shall not exceed 25 ohms. If a single rod grounding electrode has a resistance to earth of over 25 ohms, then install one supplemental rod not less than 10-feet from the first rod. If desired resistance to ground levels are still not achieved, see FAA-STD-019 for guidance on the application of coke breeze.

107-3.6 PAINTING. Three coats of paint shall be applied (one prime, one body, and one finish) to all exposed material installed under this item except the fabric cone, obstruction light globe, and lamp reflectors. The wind cone assembly, if already painted upon receipt, shall be given one finish coat of paint in lieu of the three coats specified above. The paint shall be per MPI Reference #9 (gloss). The color shall be per Federal Standard 595, International Orange, Number 12197.

107-3.7 LIGHT SOURCES. The Contractor shall furnish and install lamps per the manufacturer's instruction book.

107-3.8 CHAIN AND PADLOCK. The Contractor shall furnish and install a suitable operating chain for lowering and raising the hinged top section. The chain shall be attached to the pole support in a manner to prevent the light fixture assembly from striking the ground in the lowered position.

A padlock shall also be furnished by the Contractor on the 8-foot wind cone for securing the hinged top section to the fixed lower section. Keys for the padlock shall be delivered to the RPR.

107-3.9 SEGMENTED CIRCLE. The segmented circle shall be constructed as shown on the Plans.

METHOD OF MEASUREMENT

107-4.1 The quantity to be paid shall be the number of wind cones installed as completed units in place, accepted, and ready for operation.

BASIS OF PAYMENT

107-5.1 Payment will be made at the contract unit price for each completed and accepted job. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item L-107 Type L-806, Style I-A, Size 1 Wind Cone and Foundation, in Place -- per each

REFERENCES

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

Advisory Circulars (AC)

AC 150/5340-5 Segmented Circle Airport Marker System

AC 150/5340-30 Design and Installation Details for airport Visual Aids

AC 150/5345-7 Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits

AC 150/5345-27 Specification for Wind Cone Assemblies

AC 150/5345-53 Airport Lighting Equipment Certification Program

Commercial Item Description

A-A-59544 Cable and Wire, Electrical (Power, Fixed Installation)

Federal Standard (FED STD)

FED STD 595 Colors Used in Government Procurement

Master Painter's Institute (MPI)

MPI Reference #9 Alkyd, Exterior, Gloss (MPI Gloss Level 6)

Mil Standard

MIL-DTL-24441C/19B Paint, Epoxy-Polyamide, Zinc Primer, Formula 159, Type III

Underwriters Laboratories (UL)

UL Standard 6 Electrical Rigid Metal Conduit – Steel

UL Standard 514B Conduit, Tubing, and Cable Fittings

UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit
UL Standard 1242	Electrical Intermediate Metal Conduit - Steel

National Fire Protection Association (NFPA)

NFPA-70	National Electric Code (NEC)

END OF ITEM L-107

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ITEM L-110
AIRPORT UNDERGROUND ELECTRICAL DUCT BANKS AND CONDUITS

DESCRIPTION

110-1.1 This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing of all underground electrical duct banks and individual and multiple underground conduits. It shall also include all turfing trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

EQUIPMENT AND MATERIALS

110-2.1 GENERAL

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

b. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, that comply with these specifications, at the Contractor's cost.

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

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall electronically submitted in pdf format. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes specified in this document.

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

110-2.2 STEEL CONDUIT. Rigid galvanized steel (RGS) conduit and fittings shall be hot dipped galvanized inside and out and conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242. All RGS conduits or RGS elbows installed below grade, in concrete, permanently wet locations or other similar environments shall be painted with a 10-mil thick coat of asphaltum sealer or shall have a factory-bonded polyvinyl chloride (PVC) cover. Any exposed galvanizing or steel shall be coated with 10 mils of asphaltum sealer. When using PVC coated RGS conduit, care shall be exercised not to damage the factory PVC coating. Damaged PVC coating shall be repaired per the manufacturer's written instructions. In lieu of PVC coated RGS, corrosion wrap tape shall be permitted to be used where RGS is in contact with direct earth."

110-2.3 PLASTIC CONDUIT. Plastic conduit and fittings-shall conform to the following requirements:

- UL 514B covers W-C-1094-Conduit fittings all types, classes 1 thru 3 and 6 thru 10.
- UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).
- UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.
- UL 651A covers W-C-1094-Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

a. Type I–Schedule 40 and Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

110-2.4 SPLIT CONDUIT. Split conduit shall be pre-manufactured for the intended purpose and shall be made of steel or plastic.

110-2.5 CONDUIT SPACERS. Conduit spacers shall be prefabricated interlocking units manufactured for the intended purpose. They shall be of double wall construction made of high-grade, high-density polyethylene complete with interlocking cap and base pads. They shall be designed to accept No. 4 reinforcing bars installed vertically.

110-2.6 CONCRETE. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

110-2.7 PRECAST CONCRETE STRUCTURES. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program. Precast concrete structures shall conform to ASTM C478.

110-2.8 FLOWABLE BACKFILL. Flowable material used to back fill conduit and duct bank trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

110-2.9 DETECTABLE WARNING TAPE. Plastic, detectable, American Public Works Association (APWA) red (electrical power lines, cables, conduit and lighting cable), orange (telephone/fiber optic cabling) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches wide. Detectable tape is incidental to the respective bid item.

CONSTRUCTION METHODS

110-3.1 GENERAL. The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The RPR shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2-inches inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3-inches per 100-feet. On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points or conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. Under pavement, the top of the duct bank shall not be less than 18 inches below the subgrade; in other locations, the top of the duct bank or underground conduit shall not be less than 18-inches below finished grade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than ¼-inch smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed the light bases, manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor's expense. All accessible points shall be kept closed when not installing cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 200-pound test polypropylene pull rope. The ends shall be secured and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet.

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

When rock is encountered, the rock shall be removed to a depth of at least 3-inches below the required conduit or duct bank depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a ¼-inch sieve. Flowable backfill may alternatively be used.

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. Contractor shall submit a sample of the proposed warning tape for approval by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet.

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the RPR, the unsuitable material shall be removed per Item P-152 and replaced with suitable material. Additional duct bank supports shall be installed, as approved by the RPR.

All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion per federal, state, and local requirements is incidental to Item L-110.

Unless otherwise specified, excavated materials that are deemed by the RPR to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the RPR and compacted per Item P-152.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables) cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

a. Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred

b. Trenching, etc., in cable areas shall then proceed with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair.

110-3.2 DUCT BANKS. Unless otherwise shown in the plans, duct banks shall be installed so that the top of the concrete envelope is not less than 18 inches below the bottom of the base or stabilized base course layers where installed under runways, taxiways, aprons, or other paved areas, and not less than 18 inches (0.5 m) below finished grade where installed in unpaved areas.

Unless otherwise shown on the plans, duct banks under paved areas shall extend at least 3 feet beyond the edges of the pavement or 3 feet beyond any under drains that may be installed alongside the paved area. Trenches for duct banks shall be opened the complete length before concrete is placed so that if any obstructions are encountered, provisions can be made to avoid them. Unless otherwise shown on the plans, all duct banks shall be placed on a layer of concrete not less than 3 inches thick prior to its initial set. The Contractor shall space the conduits not less than 3 inches apart (measured from outside wall to outside wall). All such multiple conduits shall be placed using conduit spacers applicable to the type of conduit. As the conduit laying progresses, concrete shall be placed around and on top of the conduits not less than 3 inches thick unless otherwise shown on the plans. All conduits shall terminate with female ends for ease of access in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Conduits forming the duct bank shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches to anchor the assembly into the earth prior to placing the concrete encasement. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where shown on the plans. Under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot intervals.

All pavement surfaces that are to have ducts installed therein shall be neatly saw cut to form a vertical face. All excavation shall be included in the contract with price for the duct.

Install a plastic, detectable, color as noted, 3 to 6-inches wide tape, 8-inches minimum below grade above all underground conduit or duct lines not installed under pavement. Utilize the 3-inch wide tape only for single conduit runs. Utilize the 6-inch wide tape for multiple conduits and duct banks. For duct banks equal to or greater than 24-inches in width, utilize more than one tape for sufficient coverage and identification of the duct bank as required.

When existing cables are to be placed in split duct, encased in concrete, the cable shall be carefully located and exposed by hand tools. Prior to being placed in duct, the RPR shall be notified so that he may inspect the cable and determine that it is in good condition. Where required, split duct shall be installed as shown on the drawings or as required by the RPR.

110-3.3 CONDUITS WITHOUT CONCRETE ENCASEMENT. Trenches for single-conduit lines shall be not less than 6-inches nor more than 12-inches wide. The trench for 2 or more conduits installed at the same level shall

be proportionately wider. Trench bottoms for conduits without concrete encasement shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 4-inches thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a ¼-inch sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24-inches below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed not less than 3 inches apart (measured from outside wall to outside wall) in a horizontal direction and lot less than 6 inches apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

110-3.4 MARKERS. The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet square and 4 - 6 inches thick extending approximately one inch above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word "DUCT" or "CONDUIT" on each marker slab. Impression of letters shall be done in a manner, approved by the RPR, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the RPR. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the RPR. The letters shall be 4-inches high and 3-inches wide with width of stroke ½-inch and ¼-inch deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay item.

110-3.5 BACKFILLING FOR CONDUITS. For conduits, 8-inches of sand, soft earth, or other fine fill (loose measurement) shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted per Item P-152 except that material used for back fill shall be select material not larger than 4 inches in diameter.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.6 BACKFILLING FOR DUCT BANKS. After the concrete has cured, the remaining trench shall be backfilled and compacted per Item P-152 "Excavation and Embankment" except that the material used for backfill shall be select material not larger than 4 inches in diameter. In addition to the requirements of Item P-152, where duct banks are installed under pavement, one moisture/density test per lift shall be made for each 250 linear feet of duct bank or one work period's construction, whichever is less.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.7 RESTORATION. Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to its original condition. The restoration shall include topsoiling as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

110-3.8 OWNERSHIP OF REMOVED CABLE. Not Applicable.

METHOD OF MEASUREMENT

110-4.1 Underground conduits and duct banks shall be measured by the linear feet of conduits and duct banks installed, including encasement, locator tape, trenching and backfill with designated material, and restoration, and for drain lines, the termination at the drainage structure, all measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes.

BASIS OF PAYMENT

110-5.1 Payment will be made at the contract unit price per linear foot for each type and size of conduit and duct bank completed and accepted, including trench and backfill with the designated material, and, for drain lines, the termination at the drainage structure. This price shall be full compensation for removal and disposal of existing duct banks and conduits as shown on the plans, furnishing all materials and for all preparation,

assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals, necessary to complete this item per the provisions and intent of the plans and specifications.

Payment will be made under:

Item L-110 Concrete Encased, Electrical Duct Bank, 2-way 4-inch PVC Conduit - per linear foot

REFERENCES

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

Advisory Circular (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program

ASTM International (ASTM)

ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)

Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit - Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 1242	Electrical Intermediate Metal Conduit Steel
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit

END OF ITEM L-110

ITEM L-125
INSTALLATION OF AIRPORT LIGHTING SYSTEMS

DESCRIPTION

125-1.1 This item shall consist of airport lighting systems furnished and installed in accordance with this specification, the referenced specifications, and the applicable advisory circulars (ACs). The systems shall be installed at the locations and in accordance with the dimensions, design, and details shown in the plans. This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the RPR.

EQUIPMENT AND MATERIALS

125-2.1 GENERAL.

a. Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified under the Airport Lighting Equipment Certification Program in accordance with AC 150/5345-53, current version. FAA certified airfield lighting shall be compatible with each other to perform in compliance with FAA criteria and the intended operation. If the Contractor provides equipment that does not performs as intended because of incompatibility with the system, the Contractor assumes all costs to correct the system for to operate properly.

b. Manufacturer's certifications shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when indicated by the RPR and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

c. All materials and equipment used shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be clearly made with arrows or circles (highlighting is not acceptable). The Contractor shall be responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be submitted in electronic PDF format, tabbed by specification section. The RPR reserves the right to reject any or all equipment, materials or procedures, which, in the RPR’s opinion, does not meet the system design and the standards and codes specified herein.

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

EQUIPMENT AND MATERIALS

125-2.2 CONDUIT/DUCT. Conduit shall conform to Specification Item L-110 *Airport Underground Electrical Duct Banks and Conduits*.

125-2.3 CABLE AND COUNTERPOISE. Cable and Counterpoise shall conform to Item L-108 *Underground Power Cable for Airports*.

125-2.4 TAPE. Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88 respectively, as manufactured by 3M Company or an approved equal.

125-2.5 CABLE CONNECTIONS. Cable Connections shall conform to Item L-108 *Underground Power Cable for Airports*.

125-2.6 RETROREFLECTIVE MARKERS. Not required.

125-2.7 RUNWAY AND TAXIWAY LIGHTS. Runway and taxiway lights shall conform to the requirements of AC 150/5345-46. Lamps shall be of size and type indicated, or as required by fixture manufacturer for each lighting fixture required under this contract. Filters shall be of colors conforming to the specification for the light concerned or to the standard referenced.

125-2.8 RUNWAY AND TAXIWAY SIGNS. Runway and Taxiway Guidance Signs should conform to the requirements of AC 150/5345-44.

125-2.9 RUNWAY END IDENTIFIER LIGHT (REIL). Not required.

125-2.10 PRECISION APPROACH PATH INDICATOR (PAPI). Not required.

125-2.11 CIRCUIT SELECTOR CABINET. Not Required.

125-2.12 LIGHT BASE AND TRANSFORMER HOUSINGS. Light Base and Transformer Housings should conform to the requirements of AC 150/5345-42. Type Class and Size shall be as indicated on the plans. Base plates, cover plates, and adapter plates shall be provided to accommodate various sizes of fixtures.

125-2.13 ISOLATION TRANSFORMERS. Not Required.

INSTALLATION

125-3.1 INSTALLATION. The Contractor shall furnish, install, connect and test all equipment, accessories, conduit, cables, wires, buses, grounds and support items necessary to ensure a complete and operable airport lighting system as specified here and shown in the plans.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and state and local code agencies having jurisdiction.

The Contractor shall install the specified equipment in accordance with the applicable advisory circulars and the details shown on the plans.

125-3.2 TESTING. All lights shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance. The test shall include operating the constant current regulator in

each step not less than 10 times at the beginning and end of the 24-hour test. The fixtures shall illuminate properly during each portion of the test.

125-3.3 SHIPPING AND STORAGE. Equipment shall be shipped in suitable packing material to prevent damage during shipping. Store and maintain equipment and materials in areas protected from weather and physical damage. Any equipment and materials, in the opinion of the RPR, damaged during construction or storage shall be replaced by the Contractor at no additional cost to the owner. Painted or galvanized surfaces that are damaged shall be repaired in accordance with the manufacturer's recommendations.

125-3.4 ELEVATED AND IN-PAVEMENT LIGHTS. Water, debris, and other foreign substances shall be removed prior to installing fixture base and light.

A jig or holding device shall be used when installing each light fixture to ensure positioning to the proper elevation, alignment, level control, and azimuth control. Light fixtures shall be oriented with the light beams parallel to the runway or taxiway centerline and facing in the required direction. The outermost edge of fixture shall be level with the surrounding pavement. Surplus sealant or flexible embedding material shall be removed. The holding device shall remain in place until sealant has reached its initial set.

METHOD OF MEASUREMENT

125-4.1 Splice bases will be measured by the number of each installed as completed units in place, ready for operation, and accepted by the RPR.

BASIS OF PAYMENT

125-5.1 Payment will be made at the Contract unit price for each complete Splice Base installed by the Contractor and accepted by the RPR. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

Payment will be made under:

Item L-125 Splice Base - per each

REFERENCES

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

Advisory Circulars (AC)

AC 150/5340-18 Standards for Airport Sign Systems

AC 150/5340-26 Maintenance of Airport Visual Aid Facilities

AC 150/5340-30 Design and Installation Details for Airport Visual Aids

AC 150/5345-5 Circuit Selector Switch

AC 150/5345-7 Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits

AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-28	Precision Approach Path Indicator (PAPI) Systems
AC 150/5345-39	Specification for L-853, Runway and Taxiway Retroreflective Markers
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5345-44	Specification for Runway and Taxiway Signs
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Specification for Series to Series Isolation Transformers for Airport Lighting Systems
AC 150/5345-51	Specification for Discharge-Type Flashing Light Equipment
AC 150/5345-53	Airport Lighting Equipment Certification Program

Engineering Brief (EB)

EB No. 67	Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures

END OF ITEM L-125

ITEM S-6
WATERING

DESCRIPTION

S-6-1.1 This item shall consist of furnishing and applying water required in the compaction of embankments, subgrades, subbases, base courses, for dust control, and for other purposes in accordance with the requirements of these Specifications or as directed by the Engineer.

CONSTRUCTION METHODS

S-6-2.1 Water, when required, shall be applied at the locations, in the amounts, and during the hours, including nights, as directed by the Engineer. An adequate water supply shall be provided by the Contractor. The equipment used for watering shall be of ample capacity and of such design as to assure uniform application of water in the amounts directed by the Engineer.

METHOD OF MEASUREMENT

S-6-3.1 No measurement shall be made of water on any part of the Work. If any material is prewetted prior to weighing, the weight of the water shall be deducted from the scale weight.

BASIS OF PAYMENT

S-6-4.1 No payment shall be made separately or directly for water on any part of the Work. Water shall be considered a necessary and incidental part of the Work and the Contractor shall include its cost in the Contract Unit Price for the pay items of Work involved.

END OF ITEM S-6

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ITEM S-10
AIRCRAFT TIEDOWNS

DESCRIPTION

S-10-1.1 This Work shall consist of the installation of new aircraft tiedowns in accordance with this Specification at the locations, and in accordance with the dimensions, designs and details shown on the Construction Drawings. This item shall include all excavation, backfilling and restoration of paved areas to the satisfaction of the Engineer.

MATERIALS

S-10-2.1 GENERAL. All materials shall be subject to acceptance by the Engineer.

S-10-2.2 CONCRETE. Concrete shall conform to Specification P-610 *Structural Portland Cement Concrete*.

S-10-2.3 REINFORCING BARS. Reinforcing bars shall be ⅝-inch diameter, Grade 60, billet steel, conforming to the requirements of ASTM A615.

METHOD OF MEASUREMENT

S-10-3.1 An aircraft tiedown shall consist of four (4) separate anchors. The quantity of aircraft tiedowns to be paid for shall be the number of four (4) anchor units installed, and accepted.

BASIS OF PAYMENT

S-10-4.1 Payment will be made at the Contract Unit Price for each four (4) anchor tiedown unit completed and accepted. This price shall be full compensation for furnishing all materials and for all preparation, assembly and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item. Aircraft tiedowns which are removed or paved over shall be incidental to, and included in, Contract Unit Prices for the various pavement items.

Payment shall be made under:

Item S-10	Aircraft Tiedowns (Set of 4) – per each

MATERIAL REQUIREMENTS

ASTM A615	Concrete Rebar

END OF ITEM S–10

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SECTION 401: PAVEMENT SMOOTHNESS MEASUREMENT

401.1 DESCRIPTION

This Work consists of providing and using profile testing Equipment that incorporates the Mean Roughness Index (MRI) measurement for the established categories provided within this Section. The MRI is the average International Roughness Index (IRI) of left and right wheel paths.

Unless otherwise specified in the Contract, Category One (1) Table 401.5.1.1:1, "MRI Based Profile Pay Adjustment Schedule for Category I HMA/WMA Projects," will be applicable to all Hot Mix Asphalt (HMA)/Warm Mix Asphalt (WMA) Projects. Unless otherwise specified in the Contract, Table 401.5.1.2:1, "MRI Based Profile Pay Adjustment Schedule for PCCP Projects" – Category I will be applicable to all Portland Cement Concrete Pavement (PCCP) Projects.

This Specification applies to all construction Projects, with one (1) opportunity for pavement smoothness. An example of one (1) opportunity for pavement smoothness is a single lift of paving operations for HMA/WMA or PCCP.

References to Open Graded Friction Course (OGFC} in Section 401, "Pavement Smoothness Measurement" include OGFC, WMA-OGFC, and Rubberized Open Graded Friction Course (ROGFC).

401.2 MATERIALS—Reserved

401.3 CONSTRUCTION REQUIREMENTS

401.3.1 Inertial Profiler

The Contractor shall provide an inertial profiler that meets the requirements of AASHTO M 328 "Inertial Profiler," or a State Materials Bureau's approved equal. The Inertial Profiler shall use dual height and vertical acceleration sensors. The height sensors shall have a centerline distance of seventy (70.0) inches ± one (1.0) inch between sensors.

401.3.1.1 Inertial Profiler Calibration and Certification

The inertial profiler shall be certified in accordance with the Department's *Standard Practice "Certification of Inertial Profilers."* Inertial Profiler used for Acceptance testing on NMDOT Projects shall have a current TTCP annual calibration sticker or manufacturer's calibration and certification certificate. The manufacturer's certificate is valid only until the date of the next TTCP sponsored profile measuring device certification.

The Contractor shall verify the accuracy of the horizontal and vertical sensors daily in accordance with the manufacturer's and TTCP procedures. If the inertial profiler is used on multiple Projects in one (1) day, verification of the horizontal and vertical sensors will be required before use on each Project. The Contractor shall perform verifications in the presence of the representative designated by the Project Manager. The Project Manager may require additional verifications. The Contractor shall provide documentation to the Project Manager and maintain copies of the verifications documentation and manufacturer's procedures.

The Contractor shall remove the inertial profiler from the Project if it does not meet the manufacturer's verification and calibration requirements. The Project Manager will report the TTCP inertial profiler certification number to the TTCP Administrator in order to provide

notification that the Contractor cannot use the machine on other Projects until inertial profiler obtains re-certification. Once the manufacturer re-certifies the inertial profiler, provide a copy of the certificate to the Department's TTCP Administrator. The TTCP Administrator will provide a temporary TTCP certification valid until the next scheduled certification.

401.3.1.2 Technician Certification

The Department's TTCP will certify individuals performing profile measurement. The Department will base certification on demonstrated ability and a written test. The TTCP will establish the term and expiration date of certification and requirements for renewal. The Department State Materials Engineer, through the TTCP, will investigate any concerns submitted in writing as to the competence of a certified individual and implement corrective action if necessary in accordance with the TTCP Board of Directors established procedures.

401.3.1.3 Profile Measurements

The Department will consider profile testing as part of the paving operation.

The Contractor shall provide the proposed frequency and schedule for profile testing to the Project Manager no later than the Pre-Paving Conference.

The Contractor shall collect raw profile data utilizing the initial profiler's settings used during the TTCP "Certification of Inertial Profilers" process. For HMA/WMA/OGFC data collection, an upper wavelength cutoff filter of 300 feet shall be applied. For PCCP data collection, the Contractor shall use a Butterworth Band-Pass filter short cutoff wavelength of 0.5 ft and a long cutoff wavelength of 300 ft. The Contractor shall allow the Department's Representative to witness the collection of raw data by riding in the vehicle while collecting the data.

The Contractor shall export all raw profile data to create files conforming to the University of Michigan Transportation Research Institute's Engineering Research Division (ERD) format. The Contractor shall provide the collected data in ERD format, along with the current calibration documentation on either a CD or Universal Serial Bus (USB) memory storage device to the accompanying Department representative, within one (1) hour after the data has been collected. The Contractor shall provide additional data files or text files upon request by the Project Manager or Department's Representative.

If the Contractor does not submit the profile measurements files within one (1) hour, the Department may alter the Pay Adjustments according to the pavement type and category established for the Project by applying an additional five percent (5%) price deduction to the total price reduction for the Profiled area in question.

The Contractor shall maintain the profile data files. Take additional profiles to retest paved surfaces that have received corrective Work. The Project Manager may require additional profiles to check previously submitted data or to identify the limits of surface irregularities. The Contractor shall include the following information for each data file:

1. Project number,
2. Date,
3. Lane profiled,
4. Beginning and ending stations,
5. Net total linear feet of each lane,
6. Filter settings, and

7. Operator's signature.

401.3.1.4 Inertial Profiler Operations

The Contractor shall obtain the Project Manager's approval and sweep the Roadway surface before beginning profile operations.

The Contractor shall operate and maintain the inertial profiler in accordance with AASHTO R 57 "Operating Inertial Profiling Systems" and manufacturer's recommendations and procedures established by TTCP. The inertial profiler shall be equipped with dual-sensors, bar lasers up to four (4.0) inches long, that measures the profile traces for each wheel path.

The Contractor shall measure the longitudinal smoothness of the final surface of HMA, WMA, OGFC, and PCCP using a Department certified inertial profiler. The Contractor shall operate the device on the driving surface of the Roadway at the manufacturer's recommended speed without interfering with traffic or its own operation.

The Contractor shall measure the profile traces for each wheel path at the outside trace three (3) feet from and parallel to the approximate location of the pavement edge line.

For the transverse joints, at the beginning of Project (BOP) and end of project (EOP), the first one hundred (100) feet before and after the transverse joint shall be excluded from the data used to determine price adjustments. For Bridge approach and departure tie-ins, the one hundred (100) feet before approach and after departure shall be excluded from the data used to determine price adjustments. The areas excluded shall be evaluated in accordance with Section 401.3.1, "Straightedge Measurements (Category III)." See Section 401.5.1, "Pay Adjustments" for more information.

On HMA/WMA/OGFC Projects, the Contractor shall perform profile measurements and corrective actions on the final surface of HMA/WMA. The final surface is the surface immediately behind the paving operations prior to any surface modification. PCCP Projects, perform profile measurements and corrective actions on the finished surface after tining or grooving.

401.3.1.5 ProVAL Profile Data Analysis by the Department

The Department will use the current version of "ProVAL" software to determine the MRI for each 0.1 mile section of each lane, reported to the nearest 0.1 inch per mile using the average of the two (2) wheel paths' IRI's, using Ride Quality Analysis. Using the ProVAL software, the Department will apply the 250 mm filter in "ProVAL." The Contractor shall export the data with no filters applied. Data obtained through analysis by the Department will be used for evaluations of all "Must Grind Work," "Corrective Work," and "Pay Adjustments."

401.3.2 Straightedge Measurements (Category III)

The Contractor shall test the final surface of HMA, WMA, or PCCP with an approved profile measurement device that complies with Section 401.3.1, "Inertial Profiler." The Project Manager will analyze the profile in the current version of ProVAL utilizing the Rolling Straightedge with a ten (10) foot straightedge length and Deviation Threshold of 0.25 inches. The Contractor shall correct surface deviations greater than ¼ inch within ten (10) ft, as directed by the Project Manager.

Upon completion of the profile measurement and before corrective measures, the Contractor may request in writing for approval by the Project Manager to drive the area

profiled with the Project Manager to verify any surface deviations. Areas in question shall be validated with a ten (10) foot mechanical straightedge at both right angles and parallel to centerline to validate ¼ inch surface deviation. Areas ¼ inch and greater surface deviation in ten (10) feet shall be corrected.

In lieu of a profile measurement device the Contractor may request in writing for approval by the Project Manager to use a physical ten (10) foot straightedge. If approved the Contractor shall use Contractor's personnel, to measure with a physical ten (10) foot straightedge measurement at both right angles and parallel to the centerline, advancing the straightedge in five (5) foot increments in the presence of the Project Manager or his designee. The Contractor shall correct surface deviations greater than ¼ inch within ten (10) ft, as directed by the Project Manager.

Failure by Contractor to correct any and all validated surface deviations ¼ inch and greater will result in a fifty percent (50%) price reduction to all the HMA, WMA, or PCCP for the Project.

401.3.3 Evaluation for Must Grind Work and Corrective Work

The Contractor shall evaluate the pavement in 0.1-mile sections for determining needed Must Grind Work, Corrective Work, and Pay Adjustments.

401.3.4 Diamond Grinding

Diamond grinding Equipment uses diamond tipped saw blades, composed of industrial diamonds and metallurgical powder that are gang mounted on a cutting head ranging in width from 36 inches to 48 inches. The diamond grinding Equipment shall use water to cool the cutting head. The slurry or residue resulting from the grinding operation shall be continuously removed from the pavement with a wet vacuum process. The slurry or residue shall not be allowed to flow across lanes occupied by traffic or to flow into gutters or other drainage facilities. Diamond grinding Equipment shall be self-propelled, self-contained and without external attachments acting as cutting / grinding devices.

Diamond grinding operations of the final HMA/WMA lift shall not dislodge aggregate or binder creating rock pockets or deviations on pavement surface. If occurring, the Contractor shall cease operation and notify the Project Manager and submit a corrective action Plan for approval.

401.3.5 Corrective Work/Must Grind Work

The Contractor shall identify potential must grind locations using "Ride Quality Analysis" under the "Analysis Type" with the "Continuous" feature of the latest version of the FHWA's "ProVAL" software. The Contractor shall use a MRI threshold (inch/mi) of 105.00 and a segment length of 25.00 feet. The Contractor shall identify must grind locations for each lane using the "MRI" Ride Quality Index feature of ProVAL. Any locations with a MRI of 105.00 to 140.00 will be evaluated by the Project Manager and the Contractor, to determine if diamond grinding is required, final determination will be made by the Project Manager. All locations with an MRI above 140.00 must be corrected. Localized roughness defining the must grind areas shall be limited to the extent of the area to be corrected. Must grinds shall not extend the entire length of the 0.1-mile section.

The Contractor shall develop a written corrective Work/must grind Plan and submit for approval by the Project Manager. This plan shall include methods and procedures to be utilized to achieve the specified MRI values for "Corrective Work Required" (CWR) sections for

the specified category indicated in the Contract or determined to be a must grind. Upon approval of the Plan, the Contractor shall complete corrective Work/must grinds, including necessary traffic control, at no additional cost to the Department. After completion of the corrective Work/must grinds, re-profile the corrected area to verify compliance with Specification requirements. Re-profiled areas will receive a maximum pay adjustment of 0.00 ($/sy).

The Contractor shall limit corrective Work/must grinds to diamond grinding, overlaying, or removing and replacing rejected 0.1-mile sections. The Contractor shall not begin corrective Work/must grinds until the Project Manager approves the methods and procedures in writing. The Project Manager's approval does not relieve the Contractor of the responsibility to comply with the Specifications.

The Contractor shall perform corrective Work/must grinds in accordance with the following:

1. Surface Diamond Grinding. Use diamond grinding to bring the measured "CWR" or must grind areas in accordance with the applicable table(s), category (ies), and Specifications as indicated in the Contract.

   Grind corrective Work/must grind areas to produce a smooth transition to the surrounding pavement. If the corrective Work or must grind areas are not the full width of the lane, only half of the lane containing the corrective Work or must grind area shall be ground and smoothly feathered into the surrounding pavement.

   Do not reduce planned pavement thickness by more than 0.3 inches without written approval of the Project Manager.

   For HMA/WMA, if the Contract does not require an OGFC/ROGFC/WOGFC, or OGFC will not be placed before Project Suspension, apply a fog seal to the ground areas as approved by the Project Manager. All operations necessary to apply fog seal will be Incidental to the Bid Item Unit Price for HMA/WMA; the Department will make no separate payment.

   For PCCP, perform additional diamond grinding as necessary in the following situations:

   1.1. The transverse direction, so the lateral diamond grinding limits are at a constant offset from and parallel to the nearest lane line or pavement edge; and

   1.2. The longitudinal direction, so the diamond grinding begins and ends at lines perpendicular to the pavement centerline. Maintain diamond grinding locations as neat rectangular areas of uniform appearance. If tining is eliminated by diamond grinding, machine groove the hardened concrete in the same pattern as adjacent tining at no additional cost to the Department.

2. Overlaying. If the Contractor uses an additional lift of HMA/WMA to correct rough pavement, the HMA/WMA shall meet the requirements of the appropriate Specification. Extend the overlay lift the full width of the underlying pavement surface to a finished compacted thickness sufficient to correct the existing pavement roughness.

   The Department will not allow a second overlay if the first overlay does not meet the longitudinal smoothness requirement.

   Correct a corrective overlay that does not meet the smoothness requirement by diamond grinding or removing and replacing as specified in Section 401.3.5, "Corrective Work/Must Grind Work."

3. Removing and Replacing. Remove pavement the full width of the lane and the full thickness of the course. The removal area shall begin and end with a transverse

saw cut perpendicular to centerline. Use the type of approved HMA, WMA or PCCP as originally specified in the Project Contract as replacement Material.

4. Extrapolation. For Category I and II, after grinding, in lieu of items 2 and 3 above, the Contractor may use this option with the Project Manager and District Construction Engineer's approval. The Contractor may request in writing, areas in CWR to remain in place and use an extrapolated value from the appropriate Table ## below.

The Contractor shall re-profile the 0.1 mile section of travel lane after performing corrective Work/must grinds and use the re-profile's reported measured smoothness data to represent the particular section for Pay Adjustment purposes in accordance with Section 401.5, "Basis of Payment."

401.3.6 OGFC Placement and Profile Measurement

The Contractor shall ensure HMA/WMA profile measurements, corrective work/must grinds have been completed before placing OGFC. Pay Adjustment will be based on the MRI of the final surface of HMA/WMA unless the measured MRI of the OGFC is greater than the measured MRI of the HMA/WMA on the same 0.1 mile section, then the Department will base the Pay Adjustment for the HMA/WMA section on the OGFC's measured MRI.

401.3.7 Independent Assurance Testing

The Department may perform Independent Assurance testing with a Department certified Inertial Profiler from a District Laboratory in order to verify and compare Contractor obtained data.

401.4 METHOD OF MEASUREMENT

The Department will determine smoothness Pay Adjustments on the calculated square yards of the surface area of the travel lane bound by the plan typical section travel lanes and 0.1-mile lane length.

401.5 BASIS OF PAYMENT

Surface smoothness testing and corrective Work/must grinds to bring the final surface within Specification smoothness in accordance with the applicable table(s) and category (ies) as indicated in the Contract is Incidental to the Bid Item Unit Price for HMA, WMA, or PCCP; the Department will make no separate payment. All traffic control required to determine and correct pavement smoothness is Incidental to the HMA, WMA, or PCCP item.

All adjustments of manhole and utility valves for the facilitation of pavement smoothness shall be performed after paving of the finish grade. This Work shall be paid in accordance with Section 662, "Manholes" and 663 "Utility Items."

401.5.1 Pay Adjustments

The Department will calculate a Pay Adjustment for each 0.1 mile section of travel lane. The Pay Adjustments will apply to the total Accepted area of each 0.1 mile section of HMA, WMA, or PCCP constructed for the Plan typical section travel lane width and Roadway length.

The Department will not include the following areas for payment adjustment purposes:

1. BOP and EOP transverse joint (tie-in) of existing pavement (100 feet on each side of transverse joint);

2. Bridge approach and departure tie-in (100 feet before and after approach and departure); and
3. Shoulders and turnouts.

The Contractor shall follow the requirements of Section 401.3.2, “Straightedge Measurements (Category III)” for areas one (1) and two (2) listed above. The Pay Adjustment will be determined utilizing the MRI data obtained after corrective Work/must grinds in accordance with Section 401.3.5, “Corrective Work/Must Grind Work” has been completed. Re-profiled areas will receive a maximum pay adjustment of 0.00($/sy). Pay Adjustment for a 0.1 mile section greater than 0.00($/sy) will be utilized to determine the overall Pay Adjustment for smoothness of the Project. If the overall Pay Adjustment calculated is greater than 0.00, the Pay Adjustment for smoothness will be 0.00 ($/sy).

401.5.1.1 Pay Adjustment for Category I and Category II HMA/WMA Projects

The Department will base Pay Adjustments on the final MRI for each 0.1 mile section in accordance with Table 401.5.1.1:1, “MRI Based Profile Pay Adjustment Schedule for Category I HMA/WMA Projects” and Table 401.5.1.1:2, “MRI Based Profile Pay Adjustment Schedule for Category II HMA/WMA Projects,” after the Contractor performs and measures corrective Work. Re-profiled areas will receive a maximum pay adjustment of 0.00 ($/sy).

Table 401.5.1.1:1
MRI Based Profile Pay Adjustment Schedule
for Category I HMA/WMA/OGFC Projects

Pay Adjustment ($ per square Yard)			
MRI (Mean Roughness Index) inch/0.1mi			Category I
<46.1			+0.24
46.1	To	47.0	+0.20
47.1	To	48.0	+0.16
48.1	To	49.0	+0.12
49.1	To	50.0	+0.08
50.1	To	51.0	+0.04
51.1	To	52.0	0.00
52.1	To	53.0	-0.14
53.1	To	54.0	-0.28
54.1	To	55.0	-0.42
55.1	To	56.0	-0.56
56.1	To	57.0	-0.70
57.1	To	58.0	-0.84
58.1	To	59.0	-0.98
59.1	To	60.0	-1.12
>60.0			Corrective Work Required

Table 401.5.1.1:1
MRI Based Profile Pay Adjustment Schedule
for Category I HMA/WMA/OGFC Projects

Pay Adjustment ($ per square Yard)			
MRI (Mean Roughness Index) inch/0.1mi			Category I
60.1	to	61	-1.26
61.1	to	62	-1.40
62.1	to	63	-1.54
63.1	to	64	-1.68
64.1	to	65	-1.82
65.1	to	66	-1.96
66.1	to	67	-2.10
67.1	to	68	-2.24
68.1	to	69	-2.38
69.1	to	70	-2.52
70.1	to	71	-2.66
71.1	to	72	-2.80
72.1	to	73	-2.94
73.1	to	74	-3.08
74.1	to	75	-3.22
75.1	to	76	-3.36
76.1	to	77	-3.50
77.1	to	78	-3.64
78.1	to	79	-3.78
79.1	to	80	-3.92
80.1	to	81	-4.06
81.1	to	82	-4.20
82.1	to	83	-4.34
83.1	to	84	-4.48
84.1	to	85	-4.62
85.1	to	86	-4.76
86.1	to	87	-4.90
87.1	to	88	-5.04
88.1	to	89	-5.18

Table 401.5.1.1:1
MRI Based Profile Pay Adjustment Schedule
for Category I HMA/WMA/OGFC Projects

Pay Adjustment ($ per square Yard)			
MRI (Mean Roughness Index) inch/0.1mi			Category I
89.1	to	90	-5.32
90.1	to	91	-5.46
91.1	to	92	-5.60
92.1	to	93	-5.74
93.1	to	94	-5.88
94.1	to	95	-6.02
95.1	to	96	-6.16
96.1	to	97	-6.30
97.1	to	98	-6.44
98.1	to	99	-6.58
99.1	to	100	-6.72
100.1	to	101	-6.86
101.1	to	102	-7.00
102.1	to	103	-7.14
103.1	to	104	-7.28
104.1	to	105	-7.42
105.1	to	106	-7.56
106.1	to	107	-7.70
107.1	to	108	-7.84
108.1	to	109	-7.98
109.1	to	110	-8.12

Table 401.5.1.1:2
MRI Based Profile Pay Adjustment Schedule
for Category II HMA/WMA/OGFC Projects

Pay Adjustment ($ per square Yard)			
MRI (Mean Roughness Index) inch/0.1mi			Category II
<56.1			+0.18
56.1	To	57.0	+0.15
57.1	To	58.0	+0.12

Table 401.5.1.1:2
MRI Based Profile Pay Adjustment Schedule
for Category II HMA/WMA/OGFC Projects

Pay Adjustment ($ per square Yard)			
MRI (Mean Roughness Index) inch/0.1mi			Category II
58.1	To	59.0	+0.09
59.1	To	60.0	+0.06
60.1	To	61.0	+0.03
61.1	To	62.0	0.00
62.1	To	63.0	-0.12
63.1	To	64.0	-0.24
64.1	to	65.0	-0.36
65.1	to	66.0	-0.48
66.1	to	67.0	-0.60
67.1	to	68.0	-0.72
68.1	to	69.0	-0.84
69.1	to	70.0	-0.96
70.1	to	71.0	-1.08
71.1	to	72.0	-1.20
72.1	to	73.0	-1.32
73.1	to	74.0	-1.44
>74.0			Corrective Work Required
74.1	to	75	-1.56
75.1	to	76	-1.68
76.1	to	77	-1.80
77.1	to	78	-1.92
78.1	to	79	-2.04
79.1	to	80	-2.16
80.1	to	81	-2.28
81.1	to	82	-2.40
82.1	to	83	-2.52
83.1	to	84	-2.64
84.1	to	85	-2.76
85.1	to	86	-2.88

Table 401.5.1.1:2
MRI Based Profile Pay Adjustment Schedule
for Category II HMA/WMA/OGFC Projects

Pay Adjustment ($ per square Yard)			
MRI (Mean Roughness Index) inch/0.1mi			Category II
86.1	to	87	-3.00
87.1	to	88	-3.12
88.1	to	89	-3.24
89.1	to	90	-3.36
90.1	to	91	-3.48
91.1	to	92	-3.60
92.1	to	93	-3.72
93.1	to	94	-3.84
94.1	to	95	-3.96
95.1	to	96	-4.08
96.1	to	97	-4.20
97.1	to	98	-4.32
98.1	to	99	-4.44
99.1	to	100	-4.56
100.1	to	101	-4.68
101.1	to	102	-4.80
102.1	to	103	-4.92
103.1	to	104	-5.04
104.1	to	105	-5.16
105.1	to	106	-5.28
106.1	to	107	-5.40
107.1	to	108	-5.52
108.1	to	109	-5.64
109.1	to	110	-5.76
110.1	to	111	-5.88
111.1	to	112	-6.00
112.1	to	113	-6.12
113.1	to	114	-6.24
114.1	to	115	-6.36

Table 401.5.1.1:2
MRI Based Profile Pay Adjustment Schedule
for Category II HMA/WMA/OGFC Projects

Pay Adjustment ($ per square Yard)			
MRI (Mean Roughness Index) inch/0.1mi			Category II
115.1	to	116	-6.48
116.1	to	117	-6.60
117.1	to	118	-6.72
118.1	to	119	-6.84
119.1	to	120	-6.96
120.1	to	121	-7.08
121.1	to	122	-7.20
122.1	to	123	-7.32
123.1	to	124	-7.44

401.5.1.2 Pay Adjustment for Category I and Category II PCCP Pavement Projects

The Department will base Pay Adjustments and credit adjustments on the final average MRI for each 0.1 mile section in accordance with Table 401.5.1.2:1, "MRI Based Profile Pay Adjustment and Credit Ajustment Schedule for PCCP Projects," after the Contractor performs and measures corrective Work. Re-profiled areas will receive a maximum pay adjustment of 0.00($/sy). Credits will not result in positive payment. Maximum positive payment is $0.00.

TABLE 401.5.1.2:1
MRI Based Profile Pay Adjustment Schedule
for PCCP Projects

Category II (Speed < 45 MPH)		Category I (Speed ≥ 45 MPH)	
MRI	Adjustment	MRI	Adjustment
<55	Credit Adjustment +$0.56/sq yd	<40	Credit Adjustment +$0.56/sq yd
55 to 74	Credit Adjustment ((75-MRI)*0.1125)/4	40 to 59	Credit Adjustment ((60-MRI)*0.1125)/4
75 to 90	0	60-75	0
91 to 110	Pay Adjustment (90-MRI)*0.1125	76 to 90	Pay Adjustment (75-MRI)*0.1125
>110	Corrective Action	>90	Corrective Action

401.5.1.3 Pay Adjustment for Category III HMA/WMA/OGFC/PCCP Projects

Failure by Contractor to correct any and all validated surface deviations ¼ inch and greater will result in a fifty percent (50%) price reduction to all the HMA, WMA, OGFC, or PCCP for the Project.

SECTION 402: ASPHALT MATERIALS AND MINERAL ADMIXTURES

402.1 DESCRIPTION

This Work consists of providing, mixing, and applying asphalt Materials and mineral admixtures (hydrated lime, anhydrite based Material, Portand cement or lubricating antistrip additive).

402.2 MATERIALS

402.2.1 Asphalt Binder

Asphalt binders are uncracked petroleum asphalts. The Supplier shall prepare asphalt binders by refining petroleum at a maximum temperature of 700 °F. The Supplier shall not use Materials that are prone to cracking. The asphalt binder will be:

1. Free of thermal decomposition products;
2. Free of residue from non-asphalt sources;
3. Homogeneous and free from water;
4. Non-foaming when heated to 350 °F; and
5. Conforming to the requirements of performance-graded asphalt binder.

402.2.1.1 Performance-Graded Asphalt Binder (PGAB)

The Supplier shall provide performance-graded asphalt binder in accordance with AASHTO M 320. The Contractor may substitute a performance-graded asphalt binder with a high-end or low-end temperature grade in excess of that shown in the Plans, at no additional cost to the Department.

402.2.1.2 Polymer-Modified Asphalt Binder

The Contractor shall provide a Polymer-Modified Asphalt Binder that meets the requirements for a PG 76-22+, PG 76-28+, PG 70-22+, PG 70-28+, PG 76-28R+ and PG 70-28R+ per AASHTO M 320 in addition to the requirements in Table 402.2.1.2:1, “Polymer-Modified Asphalt Binders.”

Table 402.2.1.2:1
Polymer-Modified Asphalt Binders

Properties	**Requirements**	
	PG 76-22+, PG 76-28+, PG 70-22+ PG 70-28+	**PG 76-28R+ PG 70-28R+**
Terminal-Blended Tire Rubber Content, % minimum	------	5.0

Table 402.2.1.2:1
Polymer-Modified Asphalt Binders

Styrene-Butadiene-Styrene (SBS) Polymer Content by Weight of Total Formulation, % minimum	------	2.0
Solubility in Trichloroethylene, % minimum (Note 1), ASTM D 2042	97.5	97.5
Elastic Recovery @ 77°F, % minimum, AASHTO T 301	65	65

Note 1: If the solubility of the binder is less than 97.5 percent, test the base asphalt binder. The solubility of the base asphalt binder shall be greater than 99 percent.

402.2.1.3 Tire Rubber Modifier (TRM)

Tire rubber modifier (TRM) shall be produced from the recycling of automobile and/or truck tires. The specific gravity of the TRM shall be 1.15 +/- 0.05. The fiber content shall be less than 0.5% by weight for all other applications. The TRM shall contain no metal particles. Mineral contaminates shall be less than 0.25% by weight.

402.2.1.3.1 Asphalt Rubber Binder Formulation Design

The asphalt rubber binder shall contain a minimum of five percent (5%) TRM. The terminal-blended asphalt rubber binder shall conform to the requirements of AASHTO M320, as well as the requirements in Table 402.2.1.2:1, “Polymer-Modified Asphalt Binders.” The Asphalt Rubber Binder Supplier shall perform the design for the asphalt rubber binder formulation. Testing shall be the responsibility of the Contractor, at no additional cost to the Department.

The Contractor shall provide the State Materials Bureau with a copy of the terminal-blended asphalt rubber binder formulation design at the time of mix design submittal.

The design shall include:

1. Source;
2. Grade;
3. Type;
4. Proportion expressed as a percentage of total weight of the formulation for each component material;
5. Physical properties of the asphalt rubber binder in accordance with Table 402.2.1.2:1, “Polymer-Modified Asphalt Binders;” and
6. Recommended mixing and compaction temperatures for intended use.

402.2.1.4 Shipping

The Contractor shall:

1. Ship asphalt Material in sealed, insulated tank vehicles with convenient access to the Material so that it may be sampled;

2. Keep the shipping tanks free of foreign matter. The Department will reject contaminated asphalt Material;
3. Ship the performance-graded binder as shown in the requirements of Department's *Standard Practice for Certifying Suppliers of Performance-Graded Asphalt Binders* and in accordance with Section 402.2.1.1, "Performance-Graded Asphalt Binder (PGAB)."

402.2.1.5 Sampling and Testing

402.2.1.5.1 Sampling of Asphalt Binder

The Contractor shall perform all Quality Assurance sampling using AASHTO T 40, Standard Method of Test for Sampling Bituminous Materials under the direct supervision of TTCP certified sampling personnel, and witnessed by the Project Manager or his designee. The samples will be taken either from the discharge side of the storage tank or from the delivery trucks. The samples will be taken after a sufficient amount, a minimum of one (1) gallon, of PGAB is run out to clear any residual PGAB or other asphalt Material and/or solvent that may have built up in the sampling valve. All approved sample containers shall be identified using Department Form A-1231.

The minimum sampling frequency for asphalt cement shall be one (1) sample during the test strip operation and every 5000 tons of HMA or WMA thereafter. One (1) sample of asphalt cement shall be taken representing OGFC, WOGFC, or ROGFC operations. A minimum of two (2) samples shall be taken per Project representing asphalt binder from HMA or WMA, and a minimum of one (1) sample representing asphalt binder for OGFC, WOGFC, or ROGFC. A sample shall consist of (3) separate one (1)-quart sub-samples. All samples shall be maintained in a secure, dry location at the Project office or at a pre-agreed upon location that is satisfactory to the Contractor and Project Manager.

402.2.1.5.2 Testing of Asphalt Cement

The Contractor shall sample and test performance-graded asphalt binders in accordance with the Department's *Standard Practice for Certifying Suppliers of Performance-Graded Asphalt Binders* and in accordance with Section 402.2.1.1, "Performance-Graded Asphalt Binder (PGAB)." The Department will assume no obligation to Accept the CTR's and may additionally test the certified Materials. The Department may test asphalt Materials at the manufacture shipping or Project storage location.

One (1) sub-sample shall be tested by NMDOT Chemistry Unit when the test strip is performed. Another randomly selected sub-sample shall be tested by the NMDOT Chemistry Unit during the course of the Project.

If the results of any of the sub-samples designate failing material, the second sub-sample shall be submitted to and tested by the NMDOT Chemistry Unit. If the second sub-sample does not meet Specifications in accordance with AASHTO M 320, Table 402.2.1.6:1, "Pay Adjustment Factor Based on PGAB Test Results" will be implemented by the Project Manager. The Pay Adjustment Factor will represent the total asphalt binder used for 5000 Tons of HMA or the tonnage of HMA used for the test strip. If there are multiple failures for each binder test on the same sample, the Project Manager will base the adjustment on the lowest pay factor of all the tests. The Price Adjustment will be executed with a Change Order (Field Sheet).

402.2.1.5.3 Appeal Procedure (Asphalt Binders – Only)

If desired, the Supplier at no expense to the Department may submit the third sub-sample (referee) to a mutually agreed upon Independent Laboratory. The Independent Laboratory shall be currently accredited to perform such testing by the AASHTO Accreditation Program (AAP).

If the Supplier desires to appeal the price adjustment for a particular PGAB grade production lot (5000 Tons of HMA or WMA), the Supplier shall submit a written request to the Project Manager, with a copy to the QC Engineer, within ten (10) Calendar Days of the reported test results. The request must describe in full the grounds of circumstances for the appeal. The appeal request will be reviewed by the Project Manager and Assistant District Engineer - Construction and either Accepted or denied. If the appeal is denied, a letter from the Project Manager stating the grounds for denial will be sent to the Contractor and the price adjustment will be executed with a Change Order (Field Sheet).

402.2.1.6 Acceptance

The Department will Accept asphalt cement in accordance with the Department's *Standard Practice for Certifying Suppliers of Performance-Graded Binders* and in accordance with Section 402.2.1.1, "Performance-Graded Asphalt Binder (PGAB)."

TABLE 402.2.1.6:1
Pay Adjustment Factor[1]
Based on Binder Test Results

Binder Property	Measured Value	Pay Factor Applied
DSR on Original Binder	<1.00 – 0.98	0.98
G*/sinδ (kPa)	<0.98 – 0.96	0.95
Min. 1.00 kPa	<0.96 – 0.94	0.92
	<0.94 – 0.90	0.85
	<0.90	0.75 or Removal[2]
DSR on RTFO Aged Material	<2.20 – 2.15	0.98
G*/sinδ (kPa)	<2.15 – 2.09	0.95
Min. 2.20 kPa	<2.09 – 2.02	0.92
	<2.02 – 2.00	0.85
	<2.00	0.75 or Removal[2]
DSR on PAV Aged Material	>5000 – 5100	0.98
G*□sinδ (kPa)	>5100 – 5250	0.95
Max. 5000 kPa	>5250 – 5400	0.92
	>5400 – 5600	0.85
	>5600	0.75 or Removal[2]
BBR Slope value (m) of PAV Aged Binder	<0.300 – 0.298	0.98
Min. 0.300	<0.298 – 0.293	0.95
	<0.293 – 0.290	0.92
	<0.290 – 0.285	0.85
	<0.285	0.75 or Removal[2]
BBR Stiffness of PAV Aged Binder	>300 – 306	0.98
S (MPa)	>306 – 315	0.95

TABLE 402.2.1.6:1
Pay Adjustment Factor[1]
Based on Binder Test Results

Binder Property	Measured Value	Pay Factor Applied
Max. 300 MPa	>315 – 324	0.92
	>324 – 330	0.85
	>330	0.75 or Removal[2]
% Elastic Recovery on RTFO Aged Material[3] Min 65%	<65 – 60	0.95
	<60	0.75 or Removal[2]

[1]Price Reduction will be applied to Contactor's invoice price of asphalt binder.

[2]The Assistant District Engineer - Construction will determine if the non-compliant HMA Material will be removed. Removal and replacement will be at no additional cost to the department. If the non-compliant Material is Accepted, a price reduction factor of 0.75 will apply.

[3]Elastic-Recovery is only applicable to PG+ and PGR+ Binders.

402.2.2 Emulsified Asphalt

Emulsified asphalt consists of uncracked petroleum asphalt uniformly emulsified with water and an emulsifying or stabilizing agent. The Contractor shall ensure that emulsified asphalt is homogenous after mixing. The Supplier shall provide anionic emulsified asphalt in accordance with AASHTO M 140 and cationic emulsified asphalt in accordance with AASHTO M 208.

402.2.2.1 High-Float Emulsions

The Supplier shall provide high-float emulsions (HFE-60, HFE-90, HFE-150, and HFE-300) in accordance with Table 402.2.2.1:1, "High-Float Emulsions Requirements."

Table 402.2.2.1:1
High-Float Emulsions Requirements

Test	HFE-60	HFE-90	HFE-150	HFE-300
Viscosity, Saybolt Furol at 122 °F, Seconds	50+	50+	50+	50+
Sieve Test, Retained on No. 20 Sieve, %	0.10-	0.10-	0.10-	0.10-
Settlement, 5 Days, %	5-	5-	5-	5-
Storage Stability Test, 1 Day, %	1-	1-	1-	1-
Demulsibility, 1.2 fl oz 0.10 N, CaCl, %	30+	30+	—	—
Residue from Distillation Test to 500 °F	65+	65+	65+	65+
Oil Distillate by Volume of Emulsion, %	1-	3-	7-	7-
Coating Test, 3 minutes	Grades, stones coated thoroughly			
Tests on Residue from Distillation Test				
Penetration at 77 °F, 3.5 oz., 5 sec, 0.1 mm	60–90	90–150	150–300	300+
Float Test at 140 °F, Seconds	1,200+	1,200+	1,200+	1,200+

402.2.2.2 Polymer-Modified High-Float Emulsions

This Material is a high-float emulsion containing polymer-modified asphalt and water in accordance with the requirements of Table 402.2.2.2:1, "Polymer-Modified High-Float Emulsions Requirements."

Table 402.2.2.2:1
Polymer-Modified High-Float Emulsions Requirements

Test	HFE-60P	HFE-100P	HFE-150P	HFE-300P
Viscosity, Saybolt Furol at 122 °F, Seconds	50+	50+	50+	50+
Sieve Test, Retained on No. 20 Sieve, %	0.10-	0.10-	0.10-	0.10-
Storage Stability Test, 1 Day, %	1-	1-	1-	1-
Demulsibility, 1.2 fl oz 0.10 N, CaCl, %	30+	30+	—	—
Residue from Distillation Test to 400 °F	65+	65+	65+	65+
Oil Distillate by Volume of Emulsion, %	1-	3-	7-	7-
Tests on Residue from Distillation Test				
Penetration at 77 °F, 3.5 oz., 5 s, 0.1 mm	60–90	90–150	150–300	300+
Ductility 77 °F, 2 inch/min	40+	40+	40+	—
Elastic Recovery, %	55+[a]	58+[a]	25+[b]	25+[b]
Float Test @ 140 °F, Seconds	1,200+	1,200+	1,200+	1,200+

[a]Test in accordance with AASHTO T 301 at a test temperature of 50 °F.

[b]Test in accordance with AASHTO T 301 at a test temperature of 39.2 °F.

402.2.2.3 Polymer-Modified High-Float Emulsion, Rapid Set

The Supplier shall provide a high-float rapid-set, polymerized emulsion (HFRS-2P) that contains polymer-modified asphalt, water, and an emulsifier. The Supplier shall provide high-float rapid-set, polymerized emulsion (HFRS-2P) in accordance with Table 402.2.2.3:1, "Rapid-Set Polymer-Modified High-Float Emulsion Requirements."

Table 402.2.2.3:1
Rapid-Set Polymer-Modified High-Float Emulsion Requirements

Test	HFRS-2P
Viscosity, Saybolt Furol at 122 °F, Seconds	100–400
Sieve Test, Retained on No. 20 Sieve, %	0.10
Demulsibility, 1.2 fl oz 0.02 N, CaCl, %	40+
Residue from Distillation Test to 450 °F	65+
Oil Distillate by Volume of Emulsion, %	3.0-
Tests on Residue from Distillation	
Penetration at 77 °F, 3.5 oz., 5 s, 0.1 mm	90–150
Ductility 39.2 °F, 2 inch/min	20+
Elastic Recovery, %[a]	58+
Float Test at 140 °F, Seconds	1,200+

[a]Test in accordance with AASHTO T 301 at a test temperature of 50 °F.

402.2.2.4 Asphalt-Emulsified Prime (AE-P)

The Supplier shall provide AE-P designated asphalt-emulsified prime in accordance with Table 402.2.2.4:1,"Asphalt Emulsified Prime."

Table 402.2.2.4:1
Asphalt Emulsified Prime

Test	AE-P
Viscosity Saybolt Furol at 122 °F, Seconds	15–150
Settlement 24 h, %	1-
Residue from Distillation Test, %	65+
Oil Distillate by volume of Emulsion, %	25-
Tests on Residue from Distillation	
Solubility in Trichloroethylene, %	97.5+

402.2.2.5 Penetrating Emulsified Prime (PE-P)

The Supplier shall provide PE-P designated penetrating emulsified prime in accordance with Table 402.2.2.5:1, "Penetrating Emulsified Prime."

Table 402.2.2.5:1
Penetrating Emulsified Prime

Test	PE-P
Viscosity, Saybolt Furol at 122 °F, Seconds	75-
Sieve Test, Retained on 0.35 in Sieve, %	0.1-
Residue from Distillation Test, %	38+
Oil Distillate by volume of Emulsion, %	0–4

402.2.2.6 Emulsified Petroleum Resin Prime (EPR-1)

The Supplier shall provide EPR-1 designated emulsified petroleum resin prime in accordance with Table 402.2.2.6:1, "Emulsified Petroleum Resin Prime."

Table 402.2.2.6:1
Emulsified Petroleum Resin Prime

Test	EPR-1
Particle Charge Test	Positive
Residue from Evaporation Test, %[a]	60+
Sieve Test, Retained on 0.850mm Sieve, %[b]	0.1-
Viscosity, Saybolt Furol at 77 °F, Seconds	14–60

[a]ASTM D-244 Evaporation Test for percent of residue is modified by heating 50 gram sample to 300°F until foaming ceases, then cool immediately and calculate results.

[b]Test procedure with ASTM except that distilled water shall be used in place of two percent (2%) sodium oleate solution.

402.2.2.7 Cutback Asphalts (Medium-Curing Type)

The Contractor shall provide cutback asphalt in accordance with AASHTO M 82. The Contractor shall not use MC-30.

402.2.3 Mineral Admixtures

402.2.3.1 Hydrated Lime

The Supplier shall provide hydrated lime in accordance with ASTM C 1097, with the following exception:

1. Delete ASTM C 1097, section 4.1, and
2. Substitute the following: "Hydrated lime, dry or slurry, will have a maximum of three percent (3%) retained on a No. 30 sieve and a maximum of 25% retained on a No. 200 sieve."

The Supplier shall determine the fineness of hydrated lime in accordance with AASHTO T 219. The Contractor shall use a ¼-pound sample to perform tests in accordance with AASHTO T 219 sections 6.1 and 6.1.1.

402.2.3.2 Anhydrite Based Material

The Supplier shall provide anhydrite based Material in accordance with Tables 402.2.3.2:1, "Anhydrite Based Material Chemical Composition" and Table 402.2.3.2:2, "Anhydrite Based Material Physical Properties." The Contractor shall use ASTM C 114 for the chemical analysis.

Table 402.2.3.2:1
Anhydrite Based Material Chemical Composition

Chemical Compound	Percent by Weight
SiO_2	6.7 to 10.7
Al_2O_3	1.0 to 3.0
Fe_2O_3	1.0 to 1.4
MgO	0.2 to 1.2
CaO	44.5 to 54.5
SO_3	32.3 to 42.3

Table 402.2.3.2:2
Anhydrite Based Material Physical Properties

Property	Range
LOI, %	0.37 to 1.37
Passing #200 Sieve, %	98.8 to 100.0
Passing #325 Sieve, %	98.0 to 100.0
Specific Gravity	2.970 to 3.030

402.2.3.3 Portland Cement

The Contractor shall provide Type I, Type II, or Type I/II Portland Cement in accordance with ASTM C 150.

402.2.3.4 Lubricating Antistrip Additive

Lubricating Antistrip Additive shall be tested and approved by the State Materials Bureau and be on the NMDOT's Approved Product List (APL). The State Materials Bureau will provide Hamburg Wheel Tracking Device and Tensile Strength (AASHTO T-283) testing in order to verify the additive will meet the requirements of an antistrip agent.

402.3 CONSTRUCTION REQUIREMENTS

The Contractor shall submit the Material Supplier's name and address to the Project Manager. If required by the Project Manager, the Contractor shall submit representative samples of each grade or classification of asphalt Materials for testing. The Contractor shall mix and apply asphalt Materials within the approved temperature range.

The Contractor shall not make changes in the crude stock source, manufacture method, or the Supplier without written approval from the Project Manager.

402.4 METHOD OF MEASUREMENT

If asphalt Materials are not stored in tanks for exclusive use on the Project, the Department will determine the Acceptable quantity of Virgin *Asphalt Material*, per lot, based on the following equation:

$$Q = T \times X \quad (1)$$

Where,

Q is the quantity of Virgin *Asphalt Material* (in tons)

T is the quantity of placed and Accepted asphalt pavement (in tons)

X is the average percent virgin asphalt content in the asphalt pavement (per lot)

If mineral admixtures are not stored in silos for exclusive use on the Project, the Department will determine the Acceptable quantity of mineral admixture, per lot, based on the following equation:

$$MA = T \times XMA \quad (1)$$

Where,

MA is the quantity of mineral admixture (in tons)

T is the quantity of placed and Accepted asphalt pavement (in tons)

XMA is the average percent mineral admixture content in the asphalt pavement (per lot)

402.5 BASIS OF PAYMENT

Pay Item	Pay Unit
Virgin Asphalt Material	Ton
Hydrated Lime	Ton
Anhydrite Based Material	Ton
Portland Cement	Ton

402.5.1 Work Included in Payment

The Department will consider as included in the payment for the pay item(s) listed in this section and will not measure or pay separately for the following Work:

1. Providing and mixing asphalt Materials and mineral admixtures (Hydrated lime, anhydrite based Material, Portland cement, or lubricating antistrip additive);
2. Shipping/Delivery to Project site;

3. Sampling and Testing;
4. Water; and

   Application of Asphalt Material onto roadbed.

SECTION 423: HOT MIX ASPHALT (HMA) (MAJOR PAVING)

423.1 DESCRIPTION

This Work consists of constructing one (1) or more pavement courses of Hot-Mix Asphalt (HMA) on a prepared base, to include crushing, stockpiling, hauling, binder, mineral admixture, mix design, mixing, providing cold feeds, process control testing and placement.

423.2 MATERIALS

423.2.1 General

HMA is a mixture of asphalt binder, aggregate, blending sand, mineral filler, and mineral admixture. Unless otherwise prohibited in the Contract, the Department will allow Recycled Asphalt Pavement (RAP) in HMA mixtures as long as the resulting mixture conforms to all Specification requirements.

The Contractor shall size, uniformly grade, and combine aggregate fractions in accordance with the Contract. The Contractor shall test Materials in accordance with applicable AASHTO/ASTM methods, as modified by the Department (if applicable) or other test procedures as directed by the Department. The State Materials Bureau will decide all questions pertaining to the interpretation of test procedures.

423.2.2 Aggregate

The Contractor shall ensure the aggregate gradation of the HMA mixture meets the requirements of Table 540
.2.2.1:1, “HMA Aggregate Gradation Control Points.” The Project Manager may require, at no additional cost to the Department, wet preparation, per AASHTO T 146, Method A, if the Project Manager determines there are Deleterious Materials present in the aggregate stockpiles before aggregate gradation testing. The Contract will specify the type of HMA the Contractor is to use. The Department will allow the Contractor to combine Materials from two (2) or more sources to produce aggregate only when each individual aggregate source meets all applicable quality requirements.

423.2.2.1 Gradation and Quality Requirements

Table 423.2.2.1:1
HMA Aggregate Gradation Control Points

	% passing per HMA type							
	SP-II		SP-III		SP-IV		SP-V	
Sieve size	Min	Max	Min	Max	Min	Max	Min	Max
Two (2) inch	—	—	—	—	—	—	—	—
1 1/2 inch	100	—	—	—	—	—	—	—
One (1) inch	90	100	100	—	—	—	—	—
3/4 inch	—	90	90	100	100	—	—	—
1/2 inch	—	—	—	90	90	100	100	
3/8 inch	—	—	—	—	—	90	90	100
No. 8	19	45	23	49	28	58	32	67
No. 200	1.0	7.0	2.0	8.0	2.0	10.0	2.0	10.0

423.2.2.1.1 Aggregate Quality

For each Material source, the Contractor shall ensure the HMA coarse aggregate has an AI of 25 or less when calculated in accordance with Section 901, "QUALITY CONTROL/QUALITY ASSURANCE (QC/QA)."

The Contractor shall regulate the crushing of aggregate to:

1. Minimum Fractured Faces content of the plus No. 4 Material complies with the requirements of Table 423.2.2.1.2:1, "Fractured Faces, Sand Equivalent, and Fine Aggregate Angularity," and evaluation by AASHTO 335-09, "*Fractured Face Determination for Coarse Aggregate;*"
2. Ensure the combined plus 3/8 inch material contains no more than 20% flat, elongated particles with a dimensional ratio of 3:1 or greater as determined by ASTM D 4791 (TTCP Modified);
3. Ensure the combined Material, excluding RAP; passing the No. 40 sieve is non-plastic;
4. Ensure that before the addition of mineral admixtures, the minimum sand equivalent value and the minimum fine aggregate angularity value of the combined aggregate, excluding RAP, complies with the requirements of Table 423.2.2.1.2:1, "Fractured Faces, Sand Equivalent, and Fine Aggregate Angularity;" and
5. Determine the Sand Equivalent value in accordance with AASTHO T 176, Alternate Method No. 1, and Fine Aggregate Angularity value in accordance with AASHTO T 304, Method A.

423.2.2.1.2 Fractured Faces

The Department will consider a face to be fractured when at least one-half of the projected particle area exhibits a rough, angular, or broken texture with well-defined edges.

Table 423.2.2.1.2:1
Minimum Fractured Faces, Sand Equivalent, and Fine Aggregate Angularity for Virgin Aggregates

Design Traffic, ESALs[a] x 10^6	Fractured Faces[b]	Sand Equivalent (%)	Fine Aggregate Angularity
< 3.0	75.0 / —	45.0	40.0
≥ 3.0 – < 10.0	85.0 / 80.0	45.0	45.0
≥ 10.0 – < 30.0	95.0 / 90.0	45.0	45.0
≥ 30.0	99.0 / 95.0	50.0	45.0

[a]ESALs are based on a 20-year design life for all scenarios.

[b]Under "Fractured Faces," 85.0 / 80.0 denotes that 85.0% of the coarse aggregate has at least one (1) Fractured Face and 80.0% has at least two (2) Fractured Faces.

Ensure RAP provided from sources outside the Project has at least 75% Fractured Faces (one (1) Fractured Face); however, Sand Equivalent and Fine Aggregate Angularity do not apply.

423.2.2.2 Production

When producing aggregates for HMA, the Contractor shall:

1. Remove natural fines by screening and stockpiling separately;

2. Use a No. 4 screen, minimum, or a larger screen if needed to properly control the crushing and screening operation;
3. Crush the aggregate retained on the scalping screen and separate the crushed Material into at least two (2) stockpiles of fine and coarse aggregates; and
4. Regulate crushing operations to produce Material that meets design requirements when combined.

423.2.2.3 Stockpiling

The following requirements apply to stockpiles, the Contractor shall:

1. Place stockpiles upon prepared sites;
2. Make stockpiles neat and regular to prevent segregation;
3. Provide enough storage space for each size of aggregate;
4. Separate the aggregate stockpiles far enough apart to prevent mixing, or with walls or partitions;
5. Prevent contamination (store stockpiles away from vehicular and Equipment traffic);
6. Keep the storage yard neat and orderly and keep the stockpiles accessible for sampling; and
7. Keep the aggregate sizes separated until delivered to the cold feed system that feeds the drier.

423.2.2.4 Combining

When combining crushed Materials from different stockpiles, including RAP (if in the mixture); the Contractor shall ensure the product is in accordance with the mix design gradation requirements. The Contractor shall use controlled feeders from each stockpile to combine crushed Material.

423.2.3 Asphalt Binder

The Contract will specify the type and grade of asphalt binder. The Contractor shall provide asphalt binders in accordance with Section 402, “Asphalt Materials and Mineral Admixtures.” The Contractor shall not change the asphalt source after approval of the mix design without written approval of the State Materials Bureau.

423.2.4 Mineral Admixtures

The Contractor shall provide mineral admixtures in accordance with Section 402, “Asphalt Materials and Mineral Admixtures.”

423.2.5 Blending Sand

Blending sand consists of the following:

1. Natural fines from the scalping process;
2. Concrete sand;
3. Sandy Material; or
4. A combination of these, graded to the mix design requirements.

The Contractor shall determine the need for and percentage (a maximum of 20.0%) of blending sand using mix design tests on samples taken from stockpiles during crushing operations and submitted to an approved testing Laboratory.

423.2.6 Mineral Filler

The Contractor shall, if required by mix design, provide mineral filler in accordance with AASHTO M 17 and approved by the State Materials Bureau. The Department will not allow fly ash as mineral filler for HMA.

423.2.7 Reclaimed Asphalt Pavement (RAP)

Unless otherwise specified in the Contract, the Contractor may use RAP removed under the Contract consisting of salvaged, milled, pulverized, broken, or crushed asphalt pavement. The Contractor may use RAP produced from outside sources provided the following is met: after the Contractor obtains sufficient quantities of RAP aggregate samples in accordance with AASHTO T 308; the Department will Accept RAP for which the coarse aggregate has a percent wear of 40.0 or less, at 500 revolutions, when tested in accordance with AASHTO T 96. The Contractor shall provide plus No. 4 RAP Material with a minimum of 75% Fractured Faces content (one (1) face). The Department will make no additional payment for the asphalt binder in the RAP or asphalt binder due to asphalt binder grade adjustment.

The Contractor may use a maximum of 15% RAP (by weight) in the production of HMA mixtures without changing the asphalt binder.

For quantities greater than 15% and up to 25% RAP, the Contractor shall:

1. Either lower the asphalt binder's high and low temperature grades by one (1) grade (e.g. lower a PG 76-22 to a PG 70-28); or
2. Extract, recover, and combine the RAP's asphalt binder with a virgin asphalt binder per AASHTO M 323, Appendix A, ensuring the resultant binder meets the entire AASHTO M 320 (excluding direct tension) required Project PG asphalt binder properties indicated on the approved mix design.

For quantities greater than 25% and up to 35% RAP, the Contractor shall:

1. Extract, recover, and combine the RAP's asphalt binder with a virgin asphalt binder per AASHTO M 323, Appendix A; and
2. Ensure the resultant binder meets the entire AASHTO M 320 (excluding direct tension) required Project PG asphalt binder properties indicated on the approved mix design.

The Department will not allow the Contractor to use more than 35% RAP in the production of HMA mixtures.

For Projects of entirely new construction, the Contractor shall:

1. Limit the RAP to 15% in the top mat or extract, recover and combine the RAP's asphalt binder with a virgin asphalt binder per AASHTO M323, Appendix A; and
2. Ensure the resultant binder meets the entire AASHTO M320 (excluding direct tension) required Project PG asphalt binder properties indicated on the approved mix design.

If Plus Grades of PG asphalt binder is specified on the project, for quantities greater than 15% RAP, the Contractor shall extract, recover, and combine the RAP's asphalt binder with a virgin asphalt binder per AASHTO M 323, Appendix A. The Contactor shall ensure the

resultant binder meets the entire AASHTO M 320 required Project PG asphalt binder properties indicated on the approved mix design including the additional Plus Grade requirements for Elastic Recovery and Solubility.

The Contractor shall:

1. Process RAP so that 100% passes a 1-1/2-inch sieve;
2. Maintain adequate stockpile management (i.e. sufficient quantities and shaping of the stockpiles);
3. Address in the Quality Control Plan how RAP will be controlled, such as which screen will be used to split into two (2) stockpiles, or by what method the RAP will be controlled to keep the resultant mix within Acceptable limits;
4. Account for the weight of the binder in the RAP when batching aggregates;
5. Provide RAP that is free of Deleterious Materials; and
6. Perform process control testing in accordance with Section 901, "Quality Control/Quality Assurance (QC/QA)" and Table 901.5:3, "Minimum Process Control Guidelines for Aggregates, Base Course, and RAP (QC);" as RAP is produced and prepared for inclusion in the HMA.

If problems with HMA consistency or compliance with Project Specifications occur, additional efforts taken to achieve Acceptable levels of consistency and compliance with Contract Specifications, at the Contractor's discretion (at no additional cost to the Department), include, but are not limited to:

1. Reduce the top size of the RAP from 1-1/2 inch to one (1) inch;
2. Fractionate the aggregates on a second screen, such as the 3/8 inch or ¼ inch Screen so that the RAP is maintained in three (3) stockpiles, one being RAP larger than 1-1/2 inch to two (2) inches, Coarse RAP and the third being Fine RAP;
3. Ensure that the RAP used in the HMA mix design is representative of the RAP available on the Project;
4. Cover the RAP pile(s) so that ambient moisture is not absorbed; and
5. Process and maintain the stockpiles so that the RAP Material is equally and uniformly distributed throughout the entire stockpile(s) and is withdrawn such that uniform, non-segregated RAP is delivered to the hoppers.

423.2.8 Mix Design

The Contractor shall provide a mix design developed by a Department approved testing Laboratory, reviewed and signed by a professional Engineer licensed by the New Mexico Board of Registration for Professional Engineers and Land Surveyors. A list of approved private testing laboratories is available from the State Materials Bureau. The Contractor shall develop the mix design at no additional cost to the Department. The Contractor may develop the mix design at any time prior to the Project Pre-Paving Conference.

The Contractor shall provide to the State Asphalt Engineer the mix design developed in accordance with the Contract documents and AASHTO R35 as modified by NMDOT for review and concurrence. The Contractor shall summarize the mix design results from the Department approved testing Laboratory in a format approved by the State Materials Bureau. Department concurrence of a mix design will not relieve the Contractor of full responsibility for producing an Acceptable mixture. The mix design may require adjustment in accordance with Section 423.2.9, "Job Mix Formula."

The Department will require a minimum of one percent (1.0%) for mix designs that include hydrated lime, anhydrite based Material, or Portland cement. The Contractor shall include these mineral admixtures in the gradation for developing the mix design. AASHTO T 354 may be used in lieu of AASHTO T 84/T 85. If lubricating antistrip is used as a mineral admixture, the percent dosage shall be done in accordance with the manufacturer's recommendation and approved by the Contractor's design Lab. Lubricating antistrip shall be approved by the Department and included in the most current Approved Products List (APL). The mix design shall be in accordance with Table 423.2.8:1, "HMA Superpave Design Requirements for Aggregates with Less Than three percent (3.0%) Absorption," or Table 423.2.8:2, "HMA Superpave Design Requirements for Aggregates with three percent (3.0%) or Greater Absorption."

The Contractor shall test the HMA in accordance with AASHTO T 283, as indicated below:

1. Use six (6) inch diameter specimens; Compact all test specimens in accordance with AASHTO T 312;
2. Conditioned specimens shall include one (1) freeze thaw cycle;
3. On the AASHTO T283 Section 11.3 scale of zero (0)-five (5), with five (5) exhibiting the most damage from moisture, visually estimate the amount of damage caused by moisture on the interior surfaces of each broken specimen; and
4. The tensile stress ratio shall be a minimum of 85%.

The Contractor shall provide a mixture that meets all applicable criteria. If tests indicate the need for additives or modifiers not specified in the Contract or a change in source of binder to satisfy mix design requirements, the Contractor shall perform the required changes at no additional cost to the Department.

Table 423.2.8:1
HMA Superpave Design Requirements for Aggregates with Less Than 3.0% Absorption

20-year design ESALs (a)	**N initial**	**N design** (b)	**N max**	**Percent Voids in the Mineral Aggregate (VMA) per nominal maximum aggregate size**				**Voids Filled with Asphalt (VFA) Range, %** (c)	**Dust to Binder Ratio Range**
				One (1) inch (SP-II)	**3/4 inch (SP-III)**	**1/2 inch (SP-IV)**	**3/8inch (SP-V)**		
< 0.3	<91.5	96.0	< 98.0	12.5 – 14.0	13.5 – 15.0	14.5 – 16.0	15.5 – 17.0	72.0–80.0	0.6 to 1.4
0.3-3.0	<90.5							68.0–78.0	
≥3.0	<89.0							68.0–75.0	

Table 423.2.8:1
HMA Superpave Design Requirements for Aggregates with Less Than 3.0% Absorption

20-year design ESALs	N initial	N design (b)	N max	Percent Voids in the Mineral Aggregate (VMA) per nominal maximum aggregate size	Voids Filled with Asphalt (VFA)	Dust to Binder Ratio Range

[a]In Millions.

[b]Design Air Void Content of four percent (4%).

[c]For one (1) inch nominal maximum size mixtures, the specified lower limit of the VFA shall be 70% for the design traffic level <0.3 million ESALs.

Table 423.2.8:2
HMA Superpave Design Requirements for Aggregates with 3.0% or Greater Absorption

20-year design ESALs (a)	N initial	N design (b)	N max	Percent Voids in the Mineral Aggregate (VMA) per nominal maximum aggregate size				Voids Filled with Asphalt (VFA) Range, % (c)	Dust to Binder Ratio Range
				One(1) inch (SP-II)	3/4 inch (SP-III)	1/2 inch (SP-IV)	3/8 inch (SP-V)		
<0.3	<91.5							70.0–80.0	
0.3–<3.0	<90.5	96.5	< 98.0	12.0 – 14.0	13.0 – 15.0	14.0 – 16.0	15.0 - 17.0	65.0–78.0	0.6 to 1.4
≥3.0	<89.0							65.0–78.0	

[a]In Millions.

[b]Design Air Void Content of 3.5%.

[c]For one (1) inch nominal maximum size mixtures, the specified lower limit of the VFA will be 70% for the design traffic level <0.3 million ESALs.

Department reviewed commercial mix designs are Acceptable for use on NMDOT Projects with the concurrence of the State Asphalt Engineer. The commercial mix design will be submitted for review and concurrence by the State Asphalt Engineer for conformance with the Contract documents and re-issued with Project information.

An approved mix design is valid up to one (1) year from the date of review. If the Aggregate Index expires within that year, a new Aggregate Index needs to be established in order to keep the mix design valid. The Contractor shall submit a new mix design if changing the source of Materials.

For Projects that are longer than one (1) year and aggregate Materials are produced and stockpiled the mix design and Aggregate Index (AI) may be approved for an extension by the State Asphalt Engineer.

423.2.9 Job Mix Formula

The Job Mix Formula (JMF) must be in accordance with all aggregate gradation requirements and result in a mix that meets all specified mix design requirements. The Department will refer to the result of the Laboratory mix design developed in accordance with Section 423.2.8, “Mix Design,” as JMF1.

423.2.9.1 Job Mix Formula Adjustment

The Contractor may request a modification to the JMF based on field testing of Material produced through the plant. Test results and calculations that verify a proposed JMF adjustment complies with the Specifications will be required prior to being reviewed by the Project Manager, District Lab Supervisor, and concurred by the State Asphalt Engineer. Review and concurrence of a JMF adjustment can only be made after:

1. JMF adjustment results in a new TV that is within the tolerance from the design TV. (Example: If design TV for No. 4 sieve is 30%, then a new TV may be approved in the field from 23% - 37%);
2. Submittal by the Testing Laboratory responsible for the original mix design to the Project Manager with a copy to the State Asphalt Engineer;
3. Confirmation by the Project Manager that the Quality Control Plan is being followed; and
4. If the JMF is adjusted after the Shakedown Period, the Contractor shall terminate the current lot. Once the adjusted JMF has been reviewed and concurred by the Project Manager, Assistant District Engineer for Construction and the State Asphalt Engineer; the Contractor shall begin a new lot with the adjusted JMF.

423.3 CONSTRUCTION REQUIREMENTS

423.3.1 General

The Contractor shall:

1. Provide sufficient storage space for each size of aggregate and RAP;
2. Keep the different sizes separate and ensure that segregation, degradation, or combination of Materials of different aggregate sizes does not occur until delivery to the cold feed system;
3. Re-screen or waste segregated or degraded Material;
4. Provide separate storage and feeder for mineral filler if the Contract requires mineral filler; and
5. If the Project Manager determines that uncoated aggregate exists, the Contractor shall take corrective action.

423.3.2 Mix and Laydown Temperature Requirements

The Contractor shall not allow the temperature of the HMA discharged from the mixer into the transport vehicle to be greater or less than ten percent (10%) of the target mixing temperature specified in the mix design, not to exceed 350° F, unless written concurrence by the asphalt binder supplier and design lab are provided to the Project Manager.

HMA delivered to the Project with mix temperatures outside the acceptable laydown temperature range as specified in the mix design shall, at the sole discretion of the Project Manager, be removed and replaced at no cost to the Department.

423.3.3 Addition of Mineral Admixtures

The Contractor shall:

1. Monitor the out feed of the mineral admixture with sensors that provide audible and visual signals to control the out feed with an accuracy of ± three percent (3.0 %) by weight;
2. Control the mineral admixture content such that it meets the range specified in the approved mix design;
3. Add the mineral admixture to the aggregate in an enclosed pug mill immediately after leaving the cold feed and just before introduction into the drier drum or aggregate drier; and
4. Minimize the loss of mineral admixture while adding to the aggregate.

When mixing the aggregate and mineral admixture, the Contractor shall maintain the moisture content of the combined aggregate at the recommended moisture content as shown on the approved mix design.

423.3.4 Equipment

423.3.4.1 Mixing Plants

423.3.4.1.1 Plant Scales

The Contractor shall ensure that the scales are accurate to 0.5% of the maximum allowable load in accordance with the Federal Motor Carrier Safety Administration (FMCSA) publication, as certified by a licensed scale technician. The Contractor shall submit a copy of the certification to the Project Manager.

423.3.4.1.2 Storage of Asphalt Binder Materials

The Contractor shall provide storage tanks for asphalt binder capable of holding, heating and circulating the asphalt at the required temperatures and measuring the temperature of the asphalt in the tank.

The Contractor shall allow measuring and sampling of asphalt binder from the delivery trucks upon arrival.

423.3.4.1.3 Feeder for Drier

The Contractor shall equip the plant with an accurate feeding mechanism to deliver the aggregate into the drier and maintain uniform production.

423.3.4.1.4 Drier

The Contractor shall equip the plant with a system to continuously agitate the aggregate during the heating and drying process. The Contractor shall use a drier that can dry and heat the aggregate and prevent fuel oil or carbon from coating the aggregate. The Contractor shall take corrective action if the aggregate becomes coated with burner fuel.

423.3.4.1.5 Bins

The Contractor shall equip the plant with storage bins large enough to supply the mixer when it is operating at full capacity and arrange the bins to ensure separate and adequate

storage of the appropriate aggregate sizes. The Contractor shall equip the bins with warning devices that notify the control panel when the bins are low.

423.3.4.1.6 Asphalt Binder Control Unit

The Contractor shall equip the plant with a scale or meter to control the rate of flow to determine the amount of asphalt binder added to the mix.

423.3.4.1.7 Thermometers

The Contractor shall equip the discharge chute of the drier with a recording thermometer to register the temperature of the heated aggregates or mix. The Contractor shall provide the Project Manager with a record of discharge temperatures at the end of each week's production or as requested by the Project Manager.

423.3.4.1.8 Truck Scales

The Contractor shall weigh the HMA on approved plant or truck scales provided by the Contractor or public scales in accordance with Section 109.1, "Measurement of Quantity."

423.3.4.1.9 Requirements for Batching Plants

423.3.4.1.9.1 Weigh Box or Hopper

The Contractor shall provide a batching plant that can accurately weigh aggregate in a weigh box or hopper suspended on scales. The Contractor shall use a weigh box or hopper that can hold a full batch. The Contractor shall ensure that the gate of the weigh box or hopper does not allow Material to leak into the mixer while being weighed. The Contractor shall test the scales in accordance with Section 109.1, "Measurement of Quantity."

423.3.4.1.9.2 Mixer

The Contractor shall provide a batch mixer with a capacity of at least 2,000 lb, capable of producing a uniform mixture within specified tolerances.

423.3.4.1.9.3 Control of Mixing Time

The Contractor shall equip the mixer with an accurate timing device that signals the end of the mixing time.

423.3.4.1.10 Drum Mix Plants

The Contractor shall equip the drum mix plant with the following auxiliary Equipment and capabilities:

1. Separate cold feed controls for each Material;
2. An automatic interlocking device for cold feed, asphalt, and mineral admixtures;
3. A means for controlling moisture content of aggregate. A means for sampling individual cold feeds and provisions for sequential sampling of aggregate, RAP, asphalt binder, and mineral admixtures;
4. Equip the bins with mechanical or electrical devices that provide an audible or visual warning when the bins are less than 1/4 full;
5. Bins shall be designed and equipped to prevent segregation;

6. Equip the bin containing fine aggregate and filler, if required, with a device that prevents Material hang-up during plant operation;
7. A minimum of one (1) cold feed bin for each aggregate size in the mix;
8. Equip the cold feed with mechanical or electrical devices that indicate with an audible or visual warning when the cold feed belt is not carrying the proper amount of Material;
9. A separate cold feed for RAP Material. Introduce RAP so that it does not come into direct contact with the burner flame; and
10. Couple the asphalt feed control with the total-aggregate-weight measurement device to automatically vary the asphalt feed rate to maintain the required proportion.

423.3.4.2 Haul Equipment

The Contractor shall haul asphalt mixtures with trucks that are tarped and have tight, clean, smooth metal beds and a thin coat (a minimal amount) of a Department approved release agent in accordance with Section 423.3.4.2.1, “Asphalt Release Agent (ARA).”

423.3.4.2.1 Asphalt Release Agent (ARA)

The Contractor shall use Asphalt Release Agents (ARA) for prevention of asphalt mixtures adhering to haul trucks and any other type of Equipment that is used for asphalt paving operations. ARA shall meet the requirements of Table 423.3.4.2.1:1, “Asphalt Release Agent Properties” and shall be on the NMDOT’s Approved Products List. All testing will be in accordance with NTPEP Evaluation of Asphalt Release Agents AASHTO ARA 14.

Table 423.3.4.2.1:1
Asphalt Release Agent Properties

Test	Result
7-Day Asphalt Stripping Test	
Diluted	No Stripping
Full Strength	No Stripping
Mixture Slide Test (truck beds)	10 g retained, maximum
Asphalt Performance Test	Does not fall after 3 pours

423.3.4.3 Pavers

The Contractor shall use self-contained, self-propelled pavers, with activated screeds or strike-off assemblies, heated if necessary, and capable of spreading and finishing courses of HMA in accordance with the Plans.

423.3.4.4 Compaction Equipment

The Contractor shall provide a sufficient number, weight, and type of rollers to obtain the required compaction and specified pavement density while the HMA is in a workable condition. All rollers must be capable of reversing direction without shoving or tearing the mixture.

423.3.5 Placement Operations

For cold milled surfaces, the Contractor shall prepare the surface in accordance with Section 414, “Cold Milling.” The Contractor shall clean the existing surfaces and apply a tack coat as required in the Plans or at an application rate as approved by the Project Manager in accordance with Section 407, “Tack Coat.”

The Contractor shall place HMA on prepared Base Course in accordance with Section 303, “Base Course.” The Contractor shall apply prime coat as required in the Plans or at an application rate as approved by the Project Manager in accordance with Section 408, “Prime Coat.”

The Contractor shall place the HMA on the Accepted surface, spread and compact to specified width, lift thickness, and cross slope in accordance with the Plans.

Materials Transfer Vehicle (MTV): The Contractor shall use a MTV with storage and remixing capabilities on all mainline construction that utilizes greater than 25% RAP when placing HMA State approved designs. The MTV will independently remix and deliver mixture from the hauling Equipment to the paving Equipment.

The Contractor shall furnish an MTV with the following capabilities:

1. An unloading system to receive mixtures from the hauling Equipment;
2. A minimum storage capacity of 13 tons with a remixing system in the MTV storage bin;
3. A discharge conveyor to deliver the mixture to the paver hopper; and
4. The MTV system cannot exceed maximum legal loading on Structures.

Pick-up machines, hopper inserts and Material transfer devices are not considered MTVs.

In the event the MTV malfunctions during paving operations, the Contractor can finish the Day without the MTV. The Contractor shall not resume further mainline mix placement until the MTV is operational.

Consistently overloading the HMA mix into the paving machine is not Acceptable. The Contractor shall coordinate the speed of the paving machine with the production of the plant and keep enough haul Equipment available to achieve continuous operation.

The Contractor shall use the control system on the paving machine to control the grade and the transverse slope by either of the following methods:

1. One end directly and the other indirectly through controlling the transverse slope; or
2. Each end independently, including screed attachments.

The Contractor shall suspend operations if the control system does not achieve the typical section in accordance with the Plans. The Contractor shall place, spread, and finish the courses of HMA according to the following:

1. Without segregation or tearing;
2. True to the line, grade, and crown in accordance with the Plans; and
3. With self-propelled pavers, except as otherwise directed.

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing Equipment impracticable, the Contractor shall dump, spread, and level the HMA by other methods to achieve the required compacted thickness.

423.3.5.1 Weather Limitations

The Contractor shall not place HMA on wet or frozen surfaces or if weather conditions prevent proper handling, finishing, and compacting. The Contractor shall place HMA when the

Chill Factor is at least 40 °F and rising. If the air temperature is 60 °F or warmer do not consider the Chill Factor.

423.3.5.2 Compaction

The Contractor shall:

1. Compact the HMA thoroughly and uniformly immediately after placement. Operate rollers at speeds slow enough to minimize displacement of the HMA, including the lines and grades of the asphalt edges. Remove marks from pneumatic rollers;
2. Prevent the HMA from sticking to the roller wheels by keeping the wheels moistened with water; water mixed with very small quantities of detergent or other approved Material. Do not use diesel fuel or other petroleum diluents;
3. At locations inaccessible to the rollers, the Contractor shall compact the HMA with hot hand tampers, smoothing irons, or mechanical tampers;
4. Use a trench roller or cleated compression strips under the roller to transmit compression to depressed areas; and
5. Remove areas that become loose, broken, mixed with dirt, segregated or defective, replace with fresh HMA, and compact to match the surrounding area, at no additional cost to the Department.

423.3.5.3 Not Used

423.3.5.4 Joints

The Contractor shall off set longitudinal joints at least six (6) inches relative to the longitudinal joints of the underlying course.

Unless otherwise specified, the Contractor shall taper transverse and longitudinal joints as follows:

1. At least a three (3) ft taper for transverse joints, with a taper slope no steeper than 24:1;
2. At least a one (1) ft taper or a notched taper, for longitudinal joints, with a taper slope no steeper than 6:1 or a notched taper with a one (1) inch vertical edge at the top of the taper connected to a slope no steeper than 6:1;
3. Cut and square off transverse tapers before commencing new Work;
4. Clean and tack coat longitudinal joints from previous operations; and
5. Avoid placing longitudinal joints in the wheel paths, unless approved by the Project Manager.

The Contractor shall completely bond joints and provide smooth surface for each course at the joints. The Department will not allow deviations greater than 3/16 inch when tested with a ten (10) ft straightedge in any direction. When paving under traffic, the Contractor shall schedule the daily surfacing operations so that tapered longitudinal joints are not exposed for longer than seven (7) Days.

423.3.5.5 Surface Tolerances

The Contractor shall provide a final HMA surfacing course that conforms to Section 401, “Pavement Smoothness Measurement.”

423.3.5.6 Plan Surfacing Thickness

The Contractor shall:

1. Place pavement at the thickness specified in the Contract;
2. Monitor thickness by calculating continuous production yields using the formula found in the MT-1, as maintained by the State Materials Bureau;
3. Calculate the required yield and the corresponding yields for 0.25 inch increase (upper limit) and decrease (lower limit). The Project Manager may adjust the required yield to fit field conditions. If adjusted, the new target yield will be communicated to the Contractor in writing;
4. Control production to keep yield within the upper and lower limits;
5. Correct deficiencies at no cost to the Department;
6. Correct deficient depths during placement; and
7. Address Plan Surfacing thickness in the Quality Control Plan.

423.3.5.7 Test Strip & Shakedown Period

Prior to the Test Strip & Shakedown Period, the Contractor shall provide binder ignition oven calibration samples in accordance with the State Materials Bureau's, current *Binder Ignition Calibration Procedure.* All Quality Control, Quality Assurance and Independent Assurance ovens must be calibrated by this procedure. The Project Manager will suspend paving operations until calibration of the ovens has been completed. No additional time or compensation will be granted for completion of this requirement.

The "NMDOT Binder Ignition Calibration Procedure" is available by accessing the NMDOT website, and navigating within the Construction and Civil Rights Bureau's (CCRB) link.

The Contractor shall construct a test strip for each HMA mix design to be incorporated in the Project prior to placing the Material on mainline. The test strip will consist of a maximum of 1,000 tons, the minimum test strip size will be 500 tons or as approved by the Project Manager. The Contractor shall construct test strip on shoulders, low volume segments of the pavement, or area approved by the Project Manager.

The Contractor shall obtain a minimum of three (3) Contractor and three (3) agency samples to evaluate the JMF, process control, and placement operations. If necessary, based on the results obtained from the test strip, the Contractor shall develop a revised JMF, modify placement operations, and/or implement adjustments to process control procedures. Production and placement operations performed prior to approval of a revised JMF are at the Contractor's risk.

The test strip will be evaluated for Acceptance according to Table 423.3.5.7:1, "Test Strip Acceptance Limits." If Accepted, the test strip will be paid at the unit price for HMA Complete or HMA per Section 423.5, "Basis of Payment." If rejected, said Material shall be handled in accordance with Section 423.3.6.3.2," Adherence to Specifications and Rejection of Non-Specification Material." The Contractor shall remove rejected test strip Material placed within the Roadway Prism at no cost to the Department. If the Contractor disagrees with removing and replacing unacceptable Material placed in test strips outside the Roadway Prism, the Assistant District Engineer for Construction, based on engineering judgment, will decide if the Material can remain in place with a maximum pay factor of 50%, or shall be removed and replaced at no cost to the Department.

If the test strip is rejected, the Contractor shall construct a subsequent test strip. The Contractor shall not proceed to full production until an Accepted test strip is produced. After the test strip is Accepted, the Contractor shall continue to evaluate the mix properties and the JMF during the placement of the first two (2) sublots in the first lot. Changes may be made to the JMF or the mix proportions and/or properties with the concurrence of the State Materials Bureau, Project Manager, and Assistant District Engineer for Construction. For changes made prior to the completion of the first two (2) sublots, the adjustments will be applied to the entire lot for purposes of payment.

The Project Manager may waive test strip requirements for the Project, if requested by the Contractor based on prior experience with the JMF.

The Shakedown Period is defined as the first two (2) sublots produced in the first lot.

As the test strip is placed, the Contractor shall evaluate the mix properties and the JMF. Changes may be made to the JMF or the mix proportions and/or properties with the concurrence of the State Materials Bureau, Project Manager, and the Assistant District Engineer for Construction.

Table 423.3.5.7:1
Test Strip Acceptance Testing Limits [a,c]

Characteristic	Allowable Tolerances from TV
Air Voids, %	± 2.0
Pavement Density %[c]	90% to 97%
Mineral Admixture %	±0.2%
Voids in the Mineral Aggregate (VMA), % [a]	± 2.0
Asphalt Content %[a,b]	± 0.50

[a] Asphalt Content will be determined using AASHTO T308 as modified by TTCP.

[b] HMA will not be rejected based on Asphalt Content Determined by AASHTO T 308.

[c] Acceptance will be based on the average test values.

423.3.6 Sampling and Testing

The Contractor shall sample and test in accordance with Section 901, “Quality Control Quality Assurance General Provisions,” and Section 906, “Minimum Testing Requirements.” The Department will sample and test in accordance with Section 901, “Quality Control /Quality Assurance General Provisions,” and Section 906, “Minimum Testing Requirements.”

423.3.6.1 Contractor Quality Control

The Contractor shall administer a Quality Control Plan, referred to hereafter as “the Plan”. The Contractor shall ensure the Plan conforms to Section 902, “Quality Control.” The Contractor shall submit the Plan a minimum of two (2) weeks prior to commencement of crushing operations and at a minimum comply with “Contractor Quality Control Plan Guidelines.” No HMA operations are allowed until the Plan has been approved by the Project Manager and the District Lab Supervisor. The Contractor shall sample and test the mixture and pavement on a statistically random basis in accordance with Section 906, “Minimum Testing Requirements.”

423.3.6.1.1 Contractor Quality Control of Aggregate

The Contractor shall obtain samples in accordance with Section 902.5, “Sampling.”

The Project Manager may sample and test the aggregate at any time during production or stockpiling, or may request to split samples with the Contractor.

423.3.6.1.2 Contractor Quality Control for Compaction

The Contractor shall:

1. Monitor the compaction process by determining the density of the HMA with a portable densometer in accordance with the Plan;
2. Establish calibration of the portable densometer from cut pavement samples;
3. Determine the density readings of the cut pavement samples in accordance with AASHTO T 166 (weight, volume method); determine the density readings of the pavement with the portable densometer and correlate these test results;
4. Conduct Quality Control testing in accordance with Division 900, “QUALITY CRITERIA” and provide test results to the Project Manager;
5. Perform Quality Control density testing while the asphalt mixture is hot enough to permit further compaction;
6. Not roll for compaction when it becomes ineffective or damages the HMA; and
7. Not use vibratory mode when it becomes ineffective or damages the HMA.

423.3.6.2 Department Quality Assurance

The Department will sample and test the mixture and pavement on a statistically random basis in accordance with Section 906, “Minimum Testing Requirements.”

423.3.6.3 Acceptance

The Department will evaluate Materials using Contractor and Department test data from each Random sampling Plan for Acceptance in accordance with this section.

Table 423.3.6.3:1
Acceptance Testing Tolerances[a]

Characteristic	Specification limit, percentage points from TV
Air Voids, %	± 1.4
Pavement Density %[c]	± 2.5
Mineral Admixture%[e]	Minimum of JMF Target Value
Voids in the Mineral Aggregate (VMA), % [a,d]	± 1.6
Asphalt Content %[a,b]	± 0.50

[a] All gradation, Asphalt Content, VMA, and VFA values shall be determined using the AASHTO T 308 testing results.

[b] HMA will not be rejected based on Asphalt Content Determined by AASHTO T 308.

[c] Density payment will be adjusted in accordance with Section 901.3.11, “QLA.”

[d] If Gmm fluctuates more than ±0.03 on a consistent basis, it is recommended that the Specific Gravity of the aggregates be checked in order to verify VMA.

[e] If Mineral Admixture is below Design TV cease hot mix production, investigate and correct.

Department personnel may test locations other than the random locations generated for statistical analysis. These tests will not be used for pay factor determination, but may be used to determine Acceptance or rejection of localized Material.

423.3.6.3.1 Quality Level Analysis (QLA)

The Department will determine Acceptance of the Materials in accordance with Section 904, "Quality Level Analysis (QLA)," using the Acceptance limits in Table 423.3.6.3, "Acceptance Testing Tolerances." Acceptance lot sizes shall be determined at the Pre-Paving Conference. The Department will have the final authority for determination of Acceptance lot size. For all QLA Projects, if a composite pay factor of more than one (1.00) is calculated, the composite pay factor will be a one (1.00) for the purposes of payment.

423.3.6.3.1.1 Acceptance of Pavement Density

The target density for Acceptance of HMA will be 94.50% of the theoretical maximum density as determined from AASHTO T 209. For determination of maximum specific gravity, the Contractor shall obtain and test a minimum of two (2) samples and ensure the Department obtains and tests a minimum of one (1) sample for each Day that the HMA is placed, in accordance with the random sampling Plan. Each individual density test value obtained less than 92.0% or more than 97.0% of the theoretical maximum density will be evaluated in accordance with Section 423.3.6.3.2, **"**Adherence to Specifications and Rejection of Non-specification Material."

For purposes of Acceptance and pay factor determination:

1. Determine the density from cut pavement sections (cores) with six (6) inch diameters extending through the full thickness of the HMA;
2. Determine the pay factor in accordance with Section 904, "Quality Level Analysis;"
3. To be prepared for dispute resolution, the Contractor shall provide one (1) additional core for each core tested by the Department for Acceptance of density in accordance with section 423.3.7, "Dispute Resolution;" and
4. If a composite pay factor of more than one (1.00) is calculated, the composite pay factor will be a one (1.00) for the purposes of payment.

For Projects consisting of single lift overlays or mill and inlay with a single lift of two and a half inches or less, the Project Manager may grant an exception to the mean density target requirement of at least 94.5% of the theoretical maximum density if the Contractor can demonstrate that a minimum of 92.0% cannot be reasonably obtained because of the existing conditions of the Pavement Structure or Subgrade Materials. The Contractor demonstrates this by providing non-destructive density results obtained during paving operations witnessed by a State Inspector at the location in question. If the Project Manager grants this exemption, the Contractor shall construct a Roadway test strip and develop an HMA compaction process to get the highest possible density based on an approved roller's density gain per pass, in accordance with Section 423.3.4.4, "Compaction Equipment." The Project Manager will approve the process, establish a new target value for density and establish a new Acceptance lot only for the portion of the Project addressed herein (except for the Roadway test strip) before paving begins or continues. Lot density shall not fall below 91%. If a lot does not meet either of the revised density requirements, the Project Manager will, with the concurrence of the Assistant District Engineer for Construction do the following:

1. Accept and pay for the lot of HMA at 50% of the Bid Item Unit Price; or
2. Reject the in-place Material and require the Contractor to remove and replace at no cost to the Department.

423.3.6.3.2 Adherence to Specifications and Rejection of Non-Specification Material

The Contractor shall produce Material in substantial compliance with all Specification requirements. The Department will evaluate Air Voids, Pavement Density, Void in Mineral Aggregate (VMA), and Asphalt Content test results for Specification compliance. Evaluation of Material that does not meet Specifications will be in accordance with the following:

Individual Test Results. If an individual test is outside the Specification limits but is less than two (2) standard deviations from the mean of previously produced Material of the current lot, investigate and propose corrective actions but production may continue and the result will be entered into QLA. If an individual test result (for the current lot) is outside the Specification limits and is two (2) or more standard deviations from the mean of previously produced Material, the Contractor shall cease production, investigate the causes of the failure, and propose corrective actions. The Contractor shall not resume production until the proposed corrections are approved by the Project Manager.

Consecutive Test Results. If two (2) consecutive test results of the same property (for the current lot) are outside the Specification limits, cease production, investigate the causes of the failure, and propose corrective action. The Contractor shall not resume production until the proposed corrections are Accepted by the Project Manager in writing. Limit production to a maximum of 1,000 tons, production will include a minimum of two (2) Contractor tests and one (1) Department test. If testing indicates that the problem has been corrected, the Contractor shall resume full operations. If the problem has not been corrected, the Contractor shall perform further trial runs and testing.

Pavement Density Below 90.000%. All pavement density tests that are below 90.000% are rejected and the Contractor shall remove and replace all Material represented by the test with Specification Material at the Contractors expense. The Contactor shall submit a Plan in writing for approval by the Project Manager that determines the limits of Material to be removed within 48 hours of reporting a Quality Control test or receiving a Quality Assurance test for pavement density below 90.000% density. If the test below 90.000% is a Department test, the Department will obtain a new test from the Material replaced by the Contractor to replace the density test reported by the Department. If the test below 90.000% is a Contractor test, the Contractor shall obtain a new test from the Material replaced by the Contractor to replace the test reported by the Contractor. The test obtained from the replaced Material will be input into the QLA to replace the test below 90.000%.

All Material that is rejected, at the sole discretion of the Department, shall be removed and replaced with Specification Material at the Contractor's expense. If the Material is allowed to remain in place by the Department all random, sample data will be entered into QLA, this does not apply to pavement density below 90.000% that shall be removed and replaced. Sampling for corrective action will not be entered into QLA.

The Project Manager may reject Material that appears to be defective based on visual inspection.

423.3.6.4 Independent Assurance Testing

The Department will perform Independent Assurance sampling and testing in accordance with Section 906, "Minimum Testing Requirements."

423.3.7 Dispute Resolution

For any test incorporated into the pay factor, if a dispute exists the Project Manager and Contractor will investigate to determine why and make corrections if possible. If the

discrepancy cannot be resolved, then either party may invoke the dispute resolution process. The State Asphalt Engineer will maintain a list of labs that are willing and capable of performing referee testing. All referee Labs shall be AASHTO Materials Reference Laboratory (AASHTO RE: SOURCE) certified for the test(s) to be performed. Neither the Department's Project staff, nor the Contractor will know who is performing the referee testing. The State Asphalt Engineer will select a Laboratory, without disclosing the name of the Lab to Department Project personnel or Contractor personnel, from the following, not in priority order:

1. A District Laboratory not from the District in which the Project resides;
2. A Laboratory currently listed on the State Material's Bureau's list of approved testing labs not involved in the subject Project in any manner, such as mix design submittal, preliminary testing for design, etc. Only Laboratories that are in the routine business of providing testing and designs will be considered; or
3. State Materials Bureau Laboratory.

For all testing incorporated into the pay factor, an additional sample from the Department's Acceptance Samples and the Contractor's Quality Control Samples shall be obtained for referee testing purposes. Failure to provide the referee samples will result in the Project Manager suspending the Project at no cost to the Department. Additional time will not be added to the Contract for Project suspension caused by failure to comply with Dispute Resolution Process. Work shall not resume until the Contractor provides the sample(s) and satisfies the Project Manager, in writing, that future samples will be provided in compliance with this requirement. The referee sample(s) is (are) to be retained by the Department. The Department will retain the referee samples at a location determined by the Project Manager. Once the pay factor is determined, the Contractor shall dispose of the unused samples at no cost to the Department. In no case will the unused samples be disposed of prior to the ten (10) Calendar Day period in which the Dispute Resolution process may be invoked.

For Pavement Density, the additional core(s) will be stored and retained in a location approved by the Project Manager. Should the Dispute Resolution Process for Density be invoked, the additional core will be provided to the Referee Lab per the NMDOT REFEREE TESTING POLICY. The original density value obtained will be replaced by the data obtained from the Referee Lab result.

When a referee Lab is used, the referee Lab's test results will be used in determining the pay factor. The request to referee must be invoked in writing within ten (10) Calendar Days of receiving the test results from the other party. If not invoked within ten (10) Calendar Days, the test results are deemed Accepted. The test results from the referee Lab will replace the Department's or the Contractor's test results for the sample in question. If the composite pay factor decreases from applying the referee Lab's results, the Contractor shall pay for the testing performed by the referee Lab. If the composite pay factor increases from applying the referee Lab's results, the Department will pay for the testing performed by the referee Lab. If the composite pay factor remains unchanged, the cost shall be split with each party responsible for 50% of the total cost.

The "NMDOT REFEREE TESTING POLICY" will be used to coordinate the efforts of managing Dispute Resolution by both the Department and Contractor. This policy is made available by accessing the NMDOT website, and navigating within the Construction and Civil Rights Bureau's (CCRB) link.

Failure to comply with the requirements contained herein will result in the pay factor being calculated in accordance with the applicable Sections of 423, "Hot Mix Asphalt (HMA) (Major Paving) and 904, "Quality Level Analysis" and no test results will be replaced by referee results.

423.4 METHOD OF MEASUREMENT

If the Department measures *HMA* by the square yard, the Department will use the average width of the HMA in place and the length from station to station along the centerline of the Roadway when calculating quantities.

423.5 BASIS OF PAYMENT

Pay Item	Pay Unit
HMA Complete	Ton or Square Yard
HMA	Ton or Square Yard

The Department will pay for Accepted quantities at the Bid Item Unit Price, adjusted in accordance with Section 423.5.1, "Price Adjustments." Providing and transporting all cores, samples and storage containers shall be Incidental to the Pay Items above.

423.5.1 Price Adjustments

The Department will pay for Accepted quantities of *HMA* or HMA Complete at the Bid Item Unit Price, adjusted in accordance with Section 904, "Quality Level Analysis (QLA)." The HMA will be evaluated on a lot-by-lot basis at a price determined by multiplying the Bid Item Unit Price by the weighting factor. The Department will use Table 904.1:1, "Weighting Factors," to calculate each lot's composite pay factor. The pay factor for the entire Project will be calculated by applying weighted averages, based on tonnage contained within each lot, to each lot's composite pay factor. If the composite pay factor for a lot is greater than one (1.0), the pay factor will be set at one (1.0).

423.5. 2 Work Included in Payment

The Department will consider as included in the payment for the pay item(s) listed in this section and will not measure or pay separately for the following Work:

1. Asphalt binder, aggregate, blending sand, mineral filler, mineral admixture, and WMA additive or process as appropriate;
2. Mixing, hauling, placement, and compaction of HMA or WMA;
3. Quality Control in accordance with Section 902, "Quality Control;"
4. Providing and transporting all cores for correlation;
5. Providing Mix Design in accordance with Section 423.2.8, "Mix Design;" and
6. Providing storage container for samples and cores if referee testing is used.

SECTION 902: QUALITY CONTROL

902.1 DESCRIPTION

902.1.1 General

This Work consists of the Contractor performing Quality Control which includes sampling, testing, and inspection to monitor and adjust its processes.

902.2 Quality Control Plan

Where a Contractor Quality Control Plan is required in the specifications, the Contractor shall provide a Quality Control plan as specified in this section. At the Pre-Construction Conference, the Contractor shall be prepared to discuss Quality Control responsibilities for specific Contract Items. The Contractor shall submit the Quality Control plan to the Project Manager at least two (2) weeks before starting Work on requiring the Plan. The Contractor shall not begin Work on HMA, WMA, OGFC, Base Course and PCCP that requires a Quality Control Plan until the Plan is reviewed and approved by the Project Manager and the District Laboratory Supervisor. The Quality Control Plan shall itemize inspections, testing procedures, sampling and testing frequencies, and corrective action strategies that the Contractor will use to control the Work. The Contractor shall develop the Quality Control Plan in accordance with Section 902.2.1, “Contractor Process Quality Control Plan.”

902.2.1 Contactor Quality Control Plan for HMA/WMA and Base Course

The Plan shall address pertinent specifications.

902.2.1.1 Contractor Organization

Contractor Organization:

1. The Plan shall address authority levels/duties by position and name of persons holding those positions.
2. The Plan shall include those who can be contacted by State personnel and have decision making authority with regard to Quality Control, Materials, sampling and testing.

902.2.1.2 Sampling, Testing and Lab Facilities

Sampling, Testing and Lab Facilities:

1. The Plan shall include copies of TTCP certification or Wallet Card of all personnel who will be performing Process Quality Control testing for the Contractor.
2. The Plan shall identify lab location.
3. The Plan shall identify person(s) responsible for identifying random sampling locations.
4. The Plan shall identify how and when lab Equipment will be calibrated.
5. The Plan shall identify person(s) responsible for contacting Project Manager when lab facilities are ready for inspection.
6. The Plan shall identify person(s) responsible for maintaining control charts and all records associated with Materials sampling, testing and calibration of lab Equipment.
7. The Plan shall identify person(s) responsible for dispute resolution.

902.2.1.3 HMA/WMA Mix Design

HMA/WMA Mix Design:

1. The Plan shall identify which Department approved testing lab is responsible for mix design(s).
2. The Plan shall identify amount of Material that will be crushed or stockpiled prior to mix design submittal.
3. The Plan shall identify asphalt supplier.
4. The Plan shall outline asphalt sampling program to include frequency, storage and person(s) responsible for obtaining samples.
5. The Plan shall outline asphalt storage tank inspection procedure prior to initial loading, it shall identify the person responsible for storage tank inspection.

902.2.1.4 Aggregate Production

Aggregate Production:

1. The Plan shall identify pit location(s), and type of Material.
2. The Plan shall identify which approved testing lab is responsible for determining aggregate index (HMA, WMA, Base Course, and OGFC).
3. The Plan shall identify anticipated production rate during crushing.
4. The Plan shall identify number of stockpiles anticipated to be utilized in HMA/WMA mix design.
5. The Plan shall identify crushing Equipment that will be used to produce aggregate for HMA, WMA, Base Course and OGFC.
6. The Plan shall identify smallest sieve used to remove natural fines.
7. The Plan shall describe how test data will be utilized to identify inconsistencies and changes in aggregate being produced.
8. The Plan shall describe corrections that will be made when test data indicates Material properties have changed.
9. The Plan shall identify testing/sampling methods and frequencies that will be performed during crushing.

902.2.1.5 Stockpile Management, Stockpiled Material, and Quality Components

Stockpile Management, Stockpiled Material, and Quality Components:

1. The Plan shall describe how stockpiles will be constructed. Describe as a minimum how each requirement in Section 423.2.2.3, "Stockpiling" or Section 424.2.2.3, "Stockpiling" will be achieved.
2. The Plan shall identify testing/sampling methods and frequencies that was performed on stockpiled Material (LL, PL, FF, SE, flat & elongated, fine aggregate angularity, wet prep, gradation) for HMA, WMA, Base Course and OGFC.
3. The Plan shall describe how test data will be utilized to identify out of specification Material and what corrective actions will be taken.

902.2.1.6 Recycled Asphalt Pavement

Recycled Asphalt Pavement:

1. The Plan shall define RAP source and how representative samples will be obtained of sufficient quantity for mix design development.

2. The Plan shall identify approved testing lab that will perform AASHTO T-96 LA Wear, FF, Flat & Elongated and any additional testing that will be performed.
3. The Plan shall identify percent of RAP that will be used in each mix design.
4. The Plan shall describe process that will be used to develop mix design when using less 15% RAP.
5. The Plan shall describe process that will be used to develop mix design when using greater than 15% but less than 25% RAP.
6. The Plan shall describe process that will be used to develop mix design when using 25% to 35% RAP.
7. The Plan shall identify stockpile management and how many stockpiles will be maintained (minimum of two (2)).
8. The Plan shall identify what fractionation each stockpile will be divided into.
9. The Plan shall describe where RAP will be introduced into mixing drum.

902.2.1.7 Production of HMA/WMA

Production of HMA/WMA:

1. The Plan shall describe Equipment that will be used to produce HMA/WMA.
2. The Plan shall identify plant production rate.
3. The Plan shall describe how lime/anhydrite will be introduced into the mix and protected from wind loss.
4. The Plan shall describe how and when moisture will be added to activate lime/anhydrite.
5. The Plan shall identify amount of moisture that will be added and how cold feed moisture will be measured.
6. The Plan shall describe how consistent mixing temperature will be maintained.
7. The Plan shall describe how samples will be taken on combined Material (cold feed), excluding RAP and before addition of lime/anhydrite based Material.
8. The Plan shall identify sampling and testing frequency on combined Material for determination of Material passing the No. 40 sieve to be non-plastic, the plus 3/8" Material to contain a maximum of 20% flat, elongated particles with a dimensional ratio of 3:1 or greater, determination of fine aggregate angularity, SE, FF.
9. The Plan shall describe how test data will be used to identify consistency and changes in HMA/WMA being produced.
10. The Plan shall describe what corrective action process will start when test results are out of specification; this will include what increased frequency of testing is until corrective measures have brought mix back into specification.
11. The Plan shall describe method of loading and Equipment used to transport HMA/WMA.
12. The Plan shall describe length of haul and how adequate Material temperatures will be maintained.
13. The Plan shall identify specific WMA technology (must be on approved products list) and how it will be introduced in the production of WMA.
14. The Plan shall describe process used to manage WMA temperatures.

902.2.1.8 Placement of HMA/WMA

Placement of HMA/WMA:

1. The Plan shall identify how Material will be transferred from haul vehicles to placement Equipment.
2. The Plan shall describe how segregation will be prevented during placement.
3. The Plan shall describe paver speed, roller speed, number of rollers, number of trucks and plant production that will maintain a continuation of placement operations without stopping and starting.
4. The Plan shall describe proper use of auger extensions, if required and how proper amount of head in front of augers will be maintained.
5. The Plan shall describe pull widths and placement sequence that will achieve quantities/dimensions as shown on the plans.
6. The Plan shall describe how joints will be constructed and compaction of taper joints will be obtained.
7. The Plan shall describe how hand Work such as raking will be conducted on joints and how broadcasting aggregate onto mat will be prevented.
8. The Plan shall describe how acceptable compaction will be achieved including roller pattern and compaction monitoring process.
9. The Plan shall identify person(s) who will be tracking yield and person authorized to make adjustment to prevent overruns.
10. The Plan shall identify Department approved release agent that will be used to prevent mix from adhering to truck beds and other Equipment.
11. The Plan shall describe random sampling plan that will be utilized.
12. The Plan shall identify lot and sub lot sizes.
13. The Plan shall define how and where test strip will be constructed and evaluated for compliance with mix design.
14. The Plan shall define shakedown period and how it will be evaluated for compliance with mix design.
15. The Plan shall describe Process Quality Control sampling and testing frequency for each test that will be performed on the placed HMA/WMA.
16. The Plan shall identify time periods when WMA mixture can be sampled and testing can be performed.
17. The Plan shall describe how test data will be used to identify consistency and changes in HMA/WMA being placed.
18. The Plan shall describe what information will be utilized to make JMF changes.
19. The Plan shall describe what corrective action process will start when test results are out of specification; this will include what increased frequency of testing is until corrective measures have brought mix back into specification.

902.2.1.9 Base Course Placement

Base Course Placement:

1. The Plan shall identify any mixing and processing that will take place before Base Course (BC) is transported to the Roadway.
2. The Plan shall describe how BC will be transported to the Roadway.
3. The Plan shall describe how BC will be placed and spread.
4. The Plan shall describe how compaction will be monitored and achieve.
5. The Plan shall describe how line and grade control will be achieved.
6. The Plan shall identify lot and sub lot sizes.

7. The Plan shall identify person(s) who will be tracking yield and person authorized to make adjustment to prevent overruns.
8. The Plan shall describe random sampling plan that will be utilized.
9. The Plan shall describe Process Quality Control sampling and testing frequency for each test that will performed on the placed BC (FF, gradation, LL, PI, moisture content, thickness, and density).
10. The Plan shall describe what corrective action process will start when test results are out of specification; this will include what increased frequency of testing is until corrective measures have brought BC back into specification.

902.2.1.10 OGFC Placement

OGFC Placement:

1. The Plan shall identify that the Contractor shall develop the mix design at no additional cost to the Department.
2. The Plan shall identify any anticipated differences in plan quantity tonnage due to Material types.
3. The Plan shall describe how plan depth will be maintained.
4. The Plan shall describe how design target AC content will be maintained.
5. The Plan shall define how low and defective areas will be corrected with hot OGFC before compaction.
6. The Plan shall define how finished surface will be smooth and free of irregularities larger than 1/8”.

902.2.1.11 Smoothness

Smoothness:

1. The Plan shall identify if smoothness specification applies to this Project.
2. The Plan shall identify Department approved profiler that will be utilized.
3. The Plan shall identify Roadway surface preparation prior to profiling.
4. The Plan shall describe sequence measurements will be taken with accompanying NMDOT representative and submission of data.
5. The Plan shall describe evaluation of profile data using ProVAL for must grind Work and corrective Work required.
6. The Plan shall describe format of written corrective Work plan that will be submitted to the Project Manager.

Changes and data not available at time of submittal of the Plan can be added, although need to be approved by the Project Manager and District Lab Supervisor.

902.2.2 Contactor Quality Control Plan for PCCP

The plan shall address pertinent specifications.

902.2.2.1 Contractor Organization

Contractor Organization:

1. The Plan shall address authority levels/duties by position and name of persons holding those positions.

2. The Plan shall include those who can be contacted by State personnel and have decision making authority with regard to Quality Control, Materials, sampling and testing.
3. The Plan shall identify when Joint Layout Plan will be submitted in accordance with Section 450.3.4, “Joints.”

902.2.2.2 Sampling, Testing and Lab Facilities

Sampling, Testing and Lab Facilities:

1. The Plan shall include copies of TTCP certification of all personnel who will be performing Process Quality Control testing for the Contractor.
2. The Plan shall identify lab location.
3. The Plan shall identify person(s) responsible for determining random sampling locations, and how the original random sampling locations will be confirmed.
4. The Plan shall identify how and when lab Equipment will be calibrated.
5. The Plan shall identify person(s) responsible for contacting the Project Manager when lab facilities are ready for inspection in accordance with Section 901, “Quality Control/Quality Assurance (QC/QA) - General Provisions.”
6. The Plan shall identify person(s) responsible for maintaining control charts and all records associated with Materials sampling, testing and calibration of lab Equipment.
7. The Plan shall identify person(s) responsible for dispute resolution.

902.2.2.3 Concrete Mix Design

Concrete Mix Design:

1. The Plan shall identify concrete supplier.
2. The Plan shall provide copies of all approved mix designs and field report forms to be used;
    a. If approved mix design is not available, the Plan shall identify how and when the approved mix will become available.

902.2.2.4 Aggregate Production

Aggregate Production:

1. If concrete mix design is approved using Standard Stockpile procedures, the Plan shall identify how stockpiles will be maintained and monitored to comply with;
    a. Required master-band gradations; and
    b. Fineness-modulus requirements.
2. If concrete mix design is approved using the Combined Gradation procedures, the Plan shall identify;
    a. How the required gradations will be performed;
    b. Who will perform the required gradations;
    c. Where the required gradations will be performed;
    d. How often the required gradations will be performed; and
    e. How the information will be provided to the Department.
3. The Plan shall describe aggregate production and compliance. Includes control charts tracking items as indicated in Section 906, “Minimum Testing Requirements” and Section 902.8, “Control Charts.”

4. The Plan shall describe stockpile management.

902.2.2.5 Batching & Hauling

Batching & Hauling:

1. The Plan shall identify manufacturer and type of Equipment.
2. The Plan shall define all batching procedures, including order of addition of individual ingredients.
3. The Plan shall identify how cement and fly ash will be:
   a. Stored;
   b. Kept separate;
   c. Kept dry; and
   d. Maximum anticipated time on-site before use.
4. The Plan shall identify how chemical admixtures will be stored and protected; and introduced into the mix.
5. The Plan shall identify the process used to manage concrete temperatures.
6. The Plan shall identify how aggregate moistures will be determined, monitored and communicated to the Department.
7. The Plan shall describe wash-down and final mixing procedures; after concrete mix has been loaded into trucks. Include process control performed, if any, at this point.
8. The Plan shall identify pre-departure procedures for all delivery trucks.
9. The Plan shall provide written approval of Batch Plant and all operations by NMDOT; to include scale certification.
10. The Plan shall identify proposed delivery rate.
11. The Plan shall identify Certificate of Inspection and Certification of all mixer trucks to be used on the Project.
12. The Plan shall identify proposed delivery route (haul road).
13. The Plan shall describe how Material temperatures will be maintained.
14. The Plan shall describe the corrective action process if batch weights are out of specification. This will include how the problem will be recognized, and at what point production will cease and a written corrective action Plan will be presented and approved by the Project Manager before resuming production.

902.2.2.6 Placement and Finishing of Concrete

Placement and Finishing of Concrete:

1. The Plan shall address verification process that subgrade/base has been approved and grades have been verified prior to concrete placement.
2. The Plan shall identify and describe placement method (slip form or construction by form).
3. The Plan shall describe placement and securing of dowels and tie bars.
4. The Plan shall describe Equipment and tools to be utilized.
5. The Plan shall identify how Material will be transferred from haul vehicles to placement location.
6. The Plan shall describe how Material handling Equipment will prevent segregation.
   a. Include discussion on how segregation will be recognized, and how it will be eliminated, if detected; and

b. Indicate how much Material will be maintained and monitored in front of the paver to prevent paste segregation.

7. The Plan shall describe method(s) for vibrating and consolidating concrete.
8. The Plan shall provide balance sheets that demonstrate how paver speed, number of trucks and plant production will maintain a continuation of placement operations without stopping and starting.
9. The Plan shall describe pull widths and placement sequence that will achieve quantities/dimensions as shown on the Plans.
10. The Plan shall describe method used to measure and maintain plan thickness.
11. The Plan shall describe joint Construction, longitudinal and transverse.
12. The Plan shall describe sawing operations.
    a. What kind of sawing Equipment will be used;
    b. How many units will be used;
    c. How sawing operations will insure initial saw-cuts are made within the allotted time; and
    d. How many and what kind of spare Equipment and parts will be maintained on-site.
13. The Plan shall describe joint sealing operations and Materials.
14. The Plan shall describe grooving or tining operations.
15. The Plan shall describe method(s) for curing concrete.
16. The Plan shall describe how evaporation potential will be monitored and provided to the Project Manager.
17. The Plan shall describe random sampling plan that will be utilized and documented.
18. The Plan shall identify lot and sub lot sizes.
19. The Plan shall define Shakedown Period and how it will be evaluated for compliance with mix design.
20. The Plan shall describe Process Quality Control sampling and testing used for compliance and control charts for tracking items in Section 906, “Minimum Testing Requirements” and Section 902.8, “Control Charts.”
21. The Plan shall describe what corrective action process will be taken, and when it will be started when test results are out of specification; this will include what increased frequency of testing is until corrective measures have brought mix back into compliance. This will include a measure of threshold at which time concrete placement will cease and a written corrective action Plan will be presented and approved by the Project Manager before resuming placement.
22. The Plan shall describe method and Material available for constructing a bulk-head if it becomes necessary. This should just be that the concrete is cut back to the nearest joint that the surface plane meets the ten (10) ft straightedge tolerance.
23. The Plan shall describe what emergency covering and protective measures will be available in case of unforeseen weather or other events forcing unanticipated protection of the concrete.

902.2.2.7 Smoothness

Smoothness:

1. The Plan shall identify measures to be taken to insure smoothness.
2. The Plan shall identify if profiler smoothness specification applies to this Project.

3. The Plan shall identify Department approved profiler that will be utilized.
4. The Plan shall identify Roadway surface preparation prior to profiling.
5. The Plan shall describe sequence measurements will be taken with accompanying NMDOT representative and submission of data.
6. The Plan shall describe evaluation of profile data using ProVAL for must grind Work and corrective Work required.
    a. The Plan shall insure proper version of ProVAL is available before Project begins. As with HMA we should be considering the filter to be used also.
7. The Plan shall describe format of written corrective Work Plan that will be submitted to the Project Manager.

Changes and data not available at time of submittal of the Plan can be added, although need to be approved by the Project Manager and District Lab Supervisor.

902.3 Quality Control Laboratory

The Contractor shall perform the Quality Control testing using a private testing Laboratory or a Contractor provided Laboratory. The Contractor shall use, at minimum, a portable or permanent Quality Control Type II Laboratory in accordance with Section 622.3.2.2, “Field Office Equipment.” The Contractor shall calibrate or check testing Equipment in accordance with AASHTO R-18. The Contractor shall provide written documentation that testing Equipment is calibrated and meets the applicable Specifications.

The Contractor shall allow the Department unrestricted access to the Laboratory. The Department may conduct an independent inspection of the Contractor’s field Laboratory. The Project Manager in conjunction with the District Lab Supervisor may determine acceptability of the Quality Control Laboratory. The Project Manager will provide the Contractor a written accounting of Laboratory deficiencies, if any.

902.4 Plan Administration and Technician Qualification

The Contractor shall identify the individual who will administer the Plan. The individual shall have full authority to take actions necessary for the successful operation of the Plan. Quality Control Technicians (QCT’s) performing the actual sampling, testing, or inspection shall be TTCP certified as described in Section 901.1.2, “Technician Certification.” The Contractor shall cease production if certified personnel are unavailable on the Project.

902.5 Sampling

The sampling plan shall contain a random sampling selection technique in accordance with specified Department, AASHTO, or ASTM procedures, as modified by the State Materials Bureau. The sampling plan shall be submitted as a component of the Quality Control Plan. The Contractor shall allow the Project Manager to witness all sampling and testing. The Contractor shall take additional samples if directed by the Project Manager.

902.6 Testing

The Department will use only test results from the random sampling plan in the quality level analysis for pay factor determination. Additional informational test results will not be used in the quality level analysis. The Contractor shall provide original Quality Control test results (on approved forms and to include all calculations, scratch sheets, internal forms etc.) to the Project Manager within two (2) Working Days of sampling. Failure to provide the test

results of sampling may result in the Project Manager ordering the Contractor to cease associated operations until said results are provided to the Project Manager.

902.7 Records

The Contractor shall maintain copies of the complete set of original Quality Control test records including supporting documents (calculations, scratch sheets, internal forms etc.), upon request, make them available to the Project Manager within 24 hours. The Technician performing the testing shall sign and certify the results as "true and accurate to the best of my belief and knowledge" prior to providing the results to the Department. No hard copy Laboratory testing documentation shall be destroyed for any reason, even after the data is entered into the computer spreadsheet for analysis. If complete records are not provided as requested, the Department may determine the pay factor using the Department's test values only for all testing characteristics. The Contractor shall maintain copies of test documentation for a minimum of three (3) years after the Physical Completion Date of the Project.

902.8 Control Charts

The Contractor shall update test control charts daily on all tests in accordance with Section 906, "Minimum Testing Requirements." The Contractor shall keep at a location approved by the Project Manager. The Contractor shall provide at least the following information on the charts:

1. Project number;
2. Contract Item number;
3. Test number;
4. Applicable test parameter; and
5. Upper and lower specification limit applicable to each test parameter.

902.9 METHOD OF MEASUREMENT—Reserved

902.10 BASIS OF PAYMENT

The Department will pay for *Contractor Process Quality Control* on Projects as follows:

1. 25% of the Lump sum pay item or 0.5% of the Total Original Contract Amount, whichever is less upon approval of the Quality Control Plan; and
2. The remaining Lump sum prorated based on total job progress.

The Department will withhold payment if the Contractor does not provide test result documentation in accordance with the Contract.

Pay Item	**Pay Unit**
Contractor Process Quality Control	Lump Sum

SECTION 904: QUALITY LEVEL ANALYSIS (QLA)

904.1 DESCRIPTION QUALITY LEVEL ANALYSIS (QLA)

The Department will analyze lot test results collectively and statistically using the Quality Level Analysis method. Quality Level Analysis is a statistical procedure for estimating the percent compliance with a specification; it is affected by shifts in the arithmetic mean, and by the sample standard deviations. The Department will use this analysis to estimate the total percent of the lot that is within specification limits. The maximum pay factor per lot is one (1.0).

If the Department's Assurance testing validates the Contractor's Quality Control testing, then the Department will use both sets for pay factor determination. Use of the Contractor's test results is dependent on the following conditions:

1. The Contractor uses Quality Control procedures as described in Section 902, "Quality Control."
2. The Department validates the Contractor's test results against the Department's test results using the *F-test* and *T-test*, conducted at a level of significance of 0.01.
3. The Contractor shall use all test results from the Contractor's random sampling plan as detailed in the Quality Control plan per Section 902, "Quality Control Plan." The Contractor shall not include informational test data obtained by test results beyond the Contractor's random sampling plan locations. If a split sample is taken to determine deviations between Contractor and Department process, only data obtained from a random sampling plan location can be utilized in the Quality Level Analysis. If a split sample is tested by the Contractor and Department for informational purposes and the location does not represent either the Contractor's or Department's random sampling plan locations, neither test data results are to be included in the Quality Level Analysis.

If the Department cannot validate the Contractor's test data at any time during the Project; the Project Manager and Quality Control technician will investigate to determine why and make corrections if possible. If the discrepancy cannot be resolved, then, unless otherwise approved by the Assistant District Engineer for Construction, the Department will determine the pay factor using the Department's test values only for characteristics that do not validate. Characteristics that do validate will use both Contractors and Departments data to determine pay factors.

The Contractor shall use the following steps to calculate the standard deviation:

1. Do not include test results for Material not used in the Work;
2. Calculate the arithmetic mean of the test results using the following equation:

$$\bar{x} = \frac{\sum x}{n} \qquad \text{(Equation 1)}$$

Where,

$\bar{x}$ is the arithmetic mean

$\sum$ is the summation of

x is the individual test value

n is the number of test values

3. Calculate the sample standard deviations using the following equation:

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{(n-1)}}$$ (Equation 2)

Where,

s is the sample standard deviation

$\sum$ is the summation of

x is the individual test value

$\bar{x}$ is the arithmetic mean

n is the number of test values

4. Calculate the upper quality index using the following equation:

$$Q_U = \frac{USL - \bar{x}}{s}$$ (Equation 3)

Where,

Q_U is the upper quality index

USL is the upper specification limit, or TV plus allowable deviation above TV

$\bar{x}$ is the arithmetic mean

s is the sample standard deviation

TV is the Target Value

5. Calculate the lower quality index using the following equation:

$$Q_L = \frac{\bar{x} - LSL}{s}$$ (Equation 4)

Where,

Q_L is the lower quality index

$\bar{x}$ is the arithmetic mean

LSL is the lower specification limit or TV minus allowable deviation below TV

s is the sample standard deviation

6. Determine P_U (the percent of test values below the upper specification limit, which corresponds to a given Q_U) from Table 901.7:1, "Quality Level Analysis by the Standard Deviation Method Upper Quality Index QU or Lower Quality Index QL." If a USL is not specified, P_u is 100.

7. Determine P_L (the percent of test values above the lower specification limit, which corresponds to a given Q_L) from Table 901.7:1, "Quality Level Analysis by the Standard Deviation Method Upper Quality Index QU or Lower Quality Index QL." If an LSL is not specified, P_L is 100.

8. Calculate the quality level (the total percent within specification limits) using the following equation:

$$Q = (P_U + P_L) - 100$$ (Equation 5)

Where,

Q is the quality level

P_U is the percent of test values below the upper specification limit which corresponds to a given upper quality index (Q_U)

P_L is the percent of test values above the lower specification limit which corresponds to a given lower quality index (Q_L)

9. Using the quality level, determine the lot pay factor from Table 904.7:2, "Pay Factors."

10. Calculate the composite pay factor for each lot, using the following equation:

$$CPF = \frac{\left[f_1(PF_1) + f_2(PF_2) \text{K } f_j(PF_j)\right]}{\left[f_1 + f_2 \text{K } f_j\right]} \qquad \text{(Equation 6)}$$

Where,

CPF is the composite pay factor

f is the price adjustment factor specified for the applicable Material pursuant to the tables below

j is the number of evaluated components

PF is the individual pay factor determined for each component

The Contractor shall carry the numbers in the above calculations to significant figures and round them in accordance with AASHTO R 11.

Table 904.1:1
HMA/WMA Weighting Factors

Characteristic	"f" Factor (%)
Mat Density	35
Air voids	35
Voids in the mineral aggregate (VMA)	20
Asphalt Content*	10

*If the individual pay factor for asphalt content is less than 0.75, it will be set at 0.75 for the purpose of calculating payment.

Table 904.1:2
PCCP Weighting Factors

Measured characteristic	Factor "f"
Entrained air	25
Compressive strength	25
Thickness	50

Table 904.1:3
QUALITY LEVEL ANALYSIS BY THE STANDARD DEVIATION METHOD
UPPER QUALITY INDEX QU OR LOWER QUALITY INDEX QL

Pu or Pl	n= 3	4	5	6	7	8	9	10 to 11	12 to 14	15 to 17	18 to 22	23 to 29	30 to 42	43 to 66	67 to x∞
100	1.16	1.49	1.72	1.88	1.99	2.07	2.13	2.20	2.28	2.34	2.39	2.44	2.48	2.51	2.56
99	—	1.46	1.64	1.75	1.82	1.88	1.91	1.96	2.01	2.04	2.07	2.09	2.12	2.14	2.16
98	1.15	1.43	1.58	1.66	1.72	1.75	1.78	1.81	1.84	1.87	1.89	1.91	1.93	1.94	1.95
97	—	1.40	1.52	1.59	1.63	1.66	1.68	1.71	1.73	1.75	1.76	1.78	1.79	1.80	1.81
96	—	1.37	1.47	1.52	1.56	1.58	1.60	1.62	1.64	1.65	1.66	1.67	1.68	1.69	1.70
95	1.14	1.34	1.42	1.47	1.49	1.51	1.52	1.54	1.55	1.56	1.57	1.58	1.59	1.59	1.60
94	—	1.31	1.38	1.41	1.43	1.45	1.46	1.47	1.48	1.49	1.50	1.50	1.51	1.51	1.52
93	1.13	1.28	1.33	1.36	1.38	1.39	1.40	1.41	1.41	1.42	1.43	1.43	1.44	1.44	1.44
92	1.12	1.25	1.29	1.31	1.33	1.33	1.34	1.35	1.35	1.36	1.36	1.37	1.37	1.37	1.38
91	1.11	1.22	1.25	1.27	1.28	1.28	1.29	1.29	1.30	1.30	1.30	1.31	1.31	1.31	1.31
90	1.10	1.19	1.21	1.23	1.23	1.24	1.24	1.24	1.25	1.25	1.25	1.25	1.25	1.26	1.26
89	1.09	1.16	1.18	1.18	1.19	1.19	1.19	1.19	1.20	1.20	1.20	1.20	1.20	1.20	1.20
88	1.07	1.13	1.14	1.14	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
87	1.06	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.11	1.11	1.11	1.11	1.11	1.11	1.11
86	1.04	1.07	1.07	1.07	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
85	1.03	1.04	1.03	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
84	1.01	1.01	1.00	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
83	0.99	0.98	0.97	0.96	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94	0.94
82	0.97	0.95	0.93	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90
81	0.95	0.92	0.90	0.89	0.88	0.88	0.88	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
80	0.93	0.89	0.87	0.86	0.85	0.85	0.84	0.84	0.84	0.83	0.83	0.83	0.83	0.83	0.83
79	0.91	0.86	0.84	0.82	0.82	0.81	0.81	0.81	0.80	0.80	0.80	0.80	0.80	0.80	0.79
78	0.88	0.83	0.81	0.79	0.79	0.78	0.78	0.77	0.77	0.77	0.76	0.76	0.76	0.76	0.76
77	0.86	0.80	0.77	0.76	0.75	0.75	0.74	0.74	0.74	0.73	0.73	0.73	0.73	0.73	0.73
76	0.83	0.77	0.74	0.73	0.72	0.72	0.71	0.71	0.70	0.70	0.70	0.70	0.70	0.70	0.70
75	0.81	0.74	0.71	0.70	0.69	0.69	0.68	0.68	0.67	0.67	0.67	0.67	0.67	0.67	0.66
74	0.78	0.71	0.68	0.67	0.67	0.65	0.65	0.65	0.64	0.64	0.64	0.64	0.64	0.64	0.63
73	0.75	0.68	0.65	0.64	0.63	0.62	0.62	0.62	0.61	0.61	0.61	0.61	0.61	0.61	0.60

Table 904.1:3
QUALITY LEVEL ANALYSIS BY THE STANDARD DEVIATION METHOD
UPPER QUALITY INDEX QU OR LOWER QUALITY INDEX QL

Pu or Pl	n= 3	4	5	6	7	8	9	10 to 11	12 to 14	15 to 17	18 to 22	23 to 29	30 to 42	43 to 66	67 to x∞
72	0.73	0.65	0.62	0.61	0.60	0.59	0.59	0.59	0.58	0.58	0.58	0.58	0.58	0.58	0.57
71	0.70	0.62	0.59	0.58	0.57	0.57	0.56	0.56	0.55	0.55	0.55	0.55	0.55	0.55	0.54
70	0.67	0.59	0.56	0.55	0.54	0.54	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	0.52
69	0.64	0.56	0.53	0.52	0.51	0.51	0.50	0.50	0.50	0.49	0.49	0.49	0.49	0.49	0.49
68	0.61	0.53	0.50	0.49	0.48	0.48	0.48	0.47	0.47	0.47	0.46	0.46	0.46	0.46	0.46
67	0.58	0.50	0.47	0.46	0.45	0.45	0.45	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43
66	0.55	0.47	0.45	0.43	0.43	0.42	0.42	0.42	0.41	0.41	0.41	0.41	0.41	0.41	0.40
65	0.51	0.44	0.42	0.40	0.40	0.39	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38	0.38
64	0.48	0.41	0.39	0.38	0.37	0.37	0.36	0.36	0.36	0.36	0.35	0.35	0.35	0.35	0.35
63	0.45	0.38	0.36	0.35	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.32
62	0.41	0.35	0.33	0.32	0.32	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30
61	0.38	0.30	0.30	0.30	0.29	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
60	0.34	0.28	0.28	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
59	0.31	0.27	0.25	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
58	0.30	0.25	0.23	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
57	0.25	0.20	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
56	0.20	0.18	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
55	0.18	0.15	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
54	0.15	0.13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
53	0.10	0.10	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
52	0.08	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
51	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: For negative values of Qu or Ql, Pu or Pl is equal to 100 minus the table value for Pu or Pl. If the value of Qu or Ql does not correspond exactly to a figure in the table, use the next lower figure.

Table 904.1:4Pay Factors

Pay factor	*Minimum* Required Percent of Work Within Specifications Limits for a Given Pay Factor (Pu+PL) – 100														
	n=														
	3	4	5	6	7	8	9	10 to 11	12 to 14	15 to 17	18 to 22	23 to 29	30 to 42	43 to 66	67 to ∞
1.05	—	—	—	—	—	100	100	100	100	100	100	100	100	100	100
1.04	—	—	—	—	100	99	97	95	96	96	96	97	97	97	97
1.03	—	—	—	100	98	96	94	92	93	93	94	95	95	96	96
1.02	—	—	—	99	97	94	91	89	90	91	92	93	93	94	94
1.01	100	100	100	98	95	92	89	87	88	89	90	91	92	92	93
1.00	69	75	78	80	82	83	84	85	86	87	88	89	90	91	92
0.99	66	72	76	78	80	81	82	83	84	85	86	87	89	90	91
0.98	64	70	74	76	78	79	80	81	82	84	85	86	87	88	90
0.97	63	68	72	74	76	77	78	79	81	82	83	84	86	87	88
0.96	61	67	70	72	74	75	76	78	79	81	82	83	84	86	87
0.95	59	65	68	71	72	74	75	76	78	79	80	82	83	84	86
0.94	58	63	67	69	71	72	73	75	76	78	79	80	82	83	85
0.93	57	62	65	67	69	71	72	73	75	76	78	79	80	82	84
0.92	55	60	63	66	68	69	70	72	73	75	76	78	79	81	82
0.91	54	59	62	64	66	68	69	70	72	74	75	76	78	79	81
0.90	53	57	61	63	65	66	67	69	71	72	74	75	77	78	80
0.89	51	56	59	62	63	65	66	68	69	71	72	74	75	77	79
0.88	50	55	58	60	62	64	65	66	68	70	71	73	74	76	78
0.87	49	53	57	59	61	62	63	65	67	68	70	71	73	75	77
0.86	48	52	55	58	59	61	62	64	66	67	69	70	72	74	76
0.85	46	51	54	56	58	60	61	62	64	66	67	69	71	72	75
0.84	45	49	53	55	57	58	60	61	63	65	66	68	70	71	73
0.83	44	48	51	54	56	57	58	60	62	64	65	67	69	70	72
0.82	43	47	50	53	54	56	57	59	61	62	64	66	67	69	71
0.81	41	46	49	51	53	55	56	58	59	61	63	64	66	68	70
0.80	40	44	48	50	52	54	55	56	58	60	62	63	65	67	69
0.79	39	43	46	49	51	52	54	55	57	59	61	62	64	66	68
0.78	38	42	45	48	50	51	52	54	56	58	59	61	63	65	67
0.77	36	41	44	46	48	50	51	53	55	57	58	60	62	64	66

Table 904.1:4Pay Factors

Pay factor	*Minimum* Required Percent of Work Within Specifications Limits for a Given Pay Factor (Pu+PL) – 100														
	n=														
	3	4	5	6	7	8	9	10 to 11	12 to 14	15 to 17	18 to 22	23 to 29	30 to 42	43 to 66	67 to ∞
0.76	35	39	43	45	47	49	50	52	54	56	57	59	61	63	65
0.75	33	38	42	44	46	48	49	51	53	54	56	58	60	62	64
Reject	Values less than those shown above														

Note: If the value of (Pu+PL) – 100 does not correspond to a (Pu+PL) – 100 value in this table, use the next lower (Pu+PL) – 100 value

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SECTION 906: MINIMUM TESTING REQUIREMENT'S (MTR'S)

906.1 DESCRIPTION

906.1.1 General

This Work consists of Minimum Testing Requirement's (MTR's) for the Department and Contractor which includes construction sampling, tests, and testing frequencies of Materials incorporated into the Work for Acceptance and Quality Control. Project Quantities less than the minimum Agency Testing requirement do not require IA Testing if Agency Testing is certified by the Assistant District Engineer – Construction.

906.1.2 Minimum Testing Requirements

Table 906.1.2:1
Earthwork

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Embankment, Unclassified Excavation (Section 203)	In-Place Density and Moisture	Roadway	1 per 2,000 cy	N/A	1 per 20,000 cy	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile / Roadway	1 per material type per 15,000 cy		1 per 100,000 cy		
Borrow (Section 203.2.1.3)	AASHTO T-190 R-Value, Soils Classification	Borrow Pit	N/A	1 per 10,000 cy 1 per material type	N/A	1 every 3 months with each sampling/ testing technician	R-Value as needed. Testing performed by State Materials Bureau
Road Bed Embankment (Section 203.3.5.1)	In-Place Density and Moisture	Roadway	1 per 2,500 sq. yd.	N/A	1 per 25,000 sq. yd.	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification		1 per material type		1 per project		
Foundations / Backfill for Culverts and Minor Structures	In-Place Density and Moisture	Structure	See Table 906.1.2:2	N/A	1 per project	1 every 3 months with each sampling/ testing	N/A

Table 906.1.2:1
Earthwork

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
(Section 206)	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type			technician	
	Electrochemical, where specified.		N/A	1/material type	N/A	N/A	Upon Request
Subgrade Preparation (Section 207)	In-Place Density and Moisture	Roadway	1 per 2,000 sq. yd.	N/A	1 per 20,000 sq. yd.	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification		1 per material type		1 per project		
Blading and Re-shaping (Section 209)	In-Place Density and Moisture	Roadway	One per half mile	N/A	1 per 5 miles	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification		1 per material type		1 per project		
Backfill for Major Structures (Section 210)	In-Place Density and Moisture	Structure	See Table 906.1.2:2	N/A	1 per 5,000 cy	1 every 3 months with each sampling/ testing technician	N/A
	Gradation, PI	Stockpile	1 per 300 cy		1 per project		
	Moisture/ Density Tests (Proctor), Soils Classification		1 per material type				
Treated Sub grade (Section 306)	In-Place Density and Moisture	Roadway	1 per 3,000 sq yd	N/A	1 per 30,000 sq yd	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density						

Table 906.1.2:1
Earthwork

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
	Tests (Proctor), Soils Classification		1 per material type		1 per project		
	AASHTO T-290 Sulfate Testing	Borrow Pit	N/A	1 per 10,000 cy	N/A		Upon Request
Backfill for Mechanical Stabilized Earth (MSE) Retaining Structures (Section 506)	In-Place Density and Moisture	Structure	See Table 906.1.2:2	N/A	1 per 3,000 cy	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor)	Stockpile	1 per material type	1 per material type	1 per project		
	Gradation, LL, PI		1 per 300 cy		1 per 3,000 cy		
	Direct Shear, Electro Chemical		N/A		N/A		Upon Request
Foundations for Slope and Erosion Protection Structures (Section 602)	In-Place Density and Moisture	Structure	1 per structure	N/A	1 per project	1 every 3 months with each sampling/ testing technician	N/A
	Moisture / Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type				
Backfill for Soil and Drainage Geotextiles (Section 604)	In-Place Density and Moisture	Roadway	1 per lift	N/A	1 per project	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type				
Backfill for Drains (section 605.3.4)	In-Place Density and Moisture	Roadway	1 per 1,000 lf	N/A	1 per 10,000 lf	1 every 3 months with each sampling/ testing	N/A

Table 906.1.2:1
Earthwork

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type	N/A	1 per project	technician	
Foundations for Sidewalks, Drive Pads and Concrete Median Paving (Section 608)	In-Place Density and Moisture	Roadway	1 per 150 sq. yd.	N/A	1 per 1,500 lf	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type		1 per project		
Bed Course Material for Sidewalks, Drive Pads and Concrete Median Paving (Section 608)	In-Place Density and Moisture	Roadway	1 per 150 sq. yd.	N/A	1 per 1,500 lf	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		1 per project		
Foundations for Curb and Gutter (Section 609)	In-Place Density and Moisture	Roadway	1 per 500 lf or as site locations require	N/A	1 per 5,000 lf	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type		1 per project		
Bed Course Material for Curb and Gutter (Section 609)	In-Place Density and Moisture	Roadway	1 per 500 lf or as site locations require	N/A	1 per 5,000 lf	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		1 per project		
Foundations / Backfill for Cattle Guards (Section	In-Place Density and Moisture	Structure	See Table 906.1.2:2	N/A	1 per project	1 every 3 months with each sampling/ testing	N/A

Table 906.1.2:1
Earthwork

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
610)	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type			technician	
Bedding Material for Cattle Guards (Section 610)	In-Place Density and Moisture	Structure	1 per structure	N/A	1 per project	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type				
Foundations / Backfill for Drop Inlets and Junction Boxes (Section 623)	In-Place Density and Moisture	Structure	See Table 906.1.2:2	N/A	1 per project	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type				
Foundations / Backfill for Utilities (Section 660)	In-Place Density and Moisture	Structure	See Table 906.1.2:2	N/A	1 per project	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type				

Table 906.1.2:2
Structure Definitions, Foundation and Backfill Requirements for Acceptance

1. Transverse or skewed Culvert or concrete box Culvert (CBC), not connected to an underground drainage network, including end sections, wing walls if backfilled simultaneously, structural plate pipe, storm drains, and sewer lines (Note 1):

   Foundation: One density per 100 linear feet. For pipe in a battery, up to 4 pipes may be considered as a unit for purposes of foundation density.

   Backfill Density: One (1) per two (2) foot of fill per side* and to top of trench per 100 linear feet (Note 2).

   *For a battery of pipes, the number of backfill densities required will be as follows:

   One-Half (1/2) of the required densities for up to four (4) pipes.

Table 906.1.2:2
Structure Definitions, Foundation and Backfill Requirements for Acceptance

One-Third (1/3) of the required densities for more than four (4) pipes.

2. End section or CBC wing wall if backfilled separately from culvert pipe or CBC (Note 2):

   Backfill Density: One (1) per two (2) foot of fill per side.

3. Drop inlet (D.I.), junction box, cattle guard, light and signal base, manhole, etc.:

   Foundation: One (1) per structure.

   Backfill Density: One (1) per two (2) foot of fill.

4. Underground drainage network including interruptions such as D.I., manhole, junction box, plug, service connection, slotted drain, etc., if backfilled simultaneously:

   Foundation: One (1) per 100 linear feet.

   Backfill Density: One (1) per two (2) foot of fill per side and to top of trench per 100 linear feet (Note 2).

5. Retaining wall / MSE wall:

   Foundation: One (1) foundations density per 100 linear feet.

   Backfill Density: One (1) per two (2) foot of fill per 100 linear feet.

6. Bridge abutment back wall, wing wall or approach slab:

   Backfill Density: One (1) per six (6) inches of fill.

7. Pier footing:

   Foundation: One (1) per footing.

   Backfill Density: One (1) per six (6) inches of fill.

8. Waterlines, electrical conduit, telephone cable or gas line, etc., within Roadway Prism (traveled area and Shoulder) if trench width is sufficient for density testing:

   Foundation: One (1) per 100 linear feet.

   Backfill Density: One (1) per two (2) foot of fill per 100 linear feet.

9. Waterline, electrical conduit, telephone cable or gas line, etc. outside the Roadway Prism (traveled area and Shoulders) if trench width is sufficient for density testing:

   Foundation: One (1) per 300 linear feet.

   Backfill Density: One (1) per two (2) foot of fill per 300 linear foot.

Notes:

1. All extensions will be considered increments and as such structure units.
2. Determination of Backfill Depths Governing Minimum Testing Criteria Requirements:
   a) When backfill construction is performed in trench conditions, the depth of compacted backfill to be tested shall be measured from the foundation to the top of the trench.
   b) When backfill construction is performed in non-trench conditions, the depth of compacted backfill to be tested shall be determined through the use of the appropriate NMDOT Standard Drawings.

Table 906.1.2:3
Base Course

Item	Test Required	Sampling/ Testing	Agency Testing	Contractor Testing	Independent Assurance (a)	State Materials

		Location			Project Approach	System Approach	Bureau
Base Course (Section 303)	In-Place Density and Moisture	Roadway after compaction	1 per 1,000 tons	N/A	1 per 20,000 tons with Agency	1 every 3 months with each sampling/ testing technician	N/A
	Moisture/ Density Tests (Proctor)	Stockpile	1 per material type		1 per project		
	Gradations	Processed material	1 per 2,000 tons		1 per 20,000 tons with Agency		
	FF, LL, PI		1 per 4,000 tons				
	Thickness	Roadway after compaction	1 per 1,000 tons		N/A		

***For Projects whose total is less than 1000 tons, IA testing is not required.**

Table 906.1.2:4
Aggregates

ITEM	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Processing, Placing and Compacting Existing Pavement (Section 302)	In-Place Density	Roadway	1 per 1,000 sq yd	N/A	1 per 50,000 sq yd	1 every 3 months with each sampling/ testing technician	N/A
	Gradation (Dry field sieve verification per TTCP)		1 per 5,000 sq yd				
Rip Rap Material (Section 602)	LA Wear & Soundness (AASHTO T-96 AASHTO T-104)	Source	N/A	1/year per pit	N/A	N/A	N/A

Table 906.1.2:5
Minor Paving - Hot Mix Asphalt (HMA)/Warm Mix Asphalt (WMA)

ITEM	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
HMA/WMA Minor Paving (Section 416)	Asphalt Content (Strap Method or Meter)	Asphalt Plant	N/A	1 per day	N/A	1 every 3 months with each sampling/ testing technician	N/A
	Air Voids	Roadway	3 per lot	N/A	1 per project		
	Roadway Compaction Nuclear Densometer		10 per lot	Contractor to provide three (3) cores for Correlation of Densometer	1 per lot		
	Thickness		3 per lot	Obtain Cores	N/A		
Open Graded Friction Course (Section 403)	Gradation, FF	Cold Feed	1 per 3,000 tons with a minimum of 1 per day	1 per 250 tons 1st 2,000 tons then 1 per 500 tons after 2,000 tons	1 per 15,000 tons with Agency	1 every 3 months with each sampling/ testing technician	N/A
		Crushing	N/A	1 per 1,000 tons	N/A		
	Performance Graded Asphalt Binder	From storage tank or Delivery Truck	1 sample consisting of three separate 1-quart increments per Project	Samples will be obtained by contractor personnel and observed by Department personnel	N/A	N/A	Material will be accepted in accordance with contract documents. A min. of one sample per project will be tested.

Table 906.1.2:6
Asphalt Recycling

ITEM	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Hot In-Place Recycling (Remixing Method) (Section 412)	Roadway Density (Nuclear Densometer)	Roadway	1 per 3,000 sq yd	N/A	1 per 30,000 sq yd	1 every 3 months with each sampling/ testing technician	N/A
Single-Machine Hot In-Place Surface Repaving (Section 413)	Roadway Density (Nuclear Densometer)	Roadway	1 per 3,000 sq yd	N/A	1 per 30,000 sq yd	1 every 3 months with each sampling/ testing technician	N/A
	HMA/WMA	Windrow / Hopper	See Section 416 Minor Paving		N/A		
Pavement Surface Restoration (In-Situ) (Section 415)	Roadway Density	Roadway	1 per 3,000 sq yd	N/A	1 per 30,000 sq yd	1 every 3 months with each sampling/ testing technician	N/A
	Bulk Specific Gravity		2 sets/day				
Performance Graded Asphalt Binder (Section 402)	As required in the Contract Documents	From storage tank or delivery truck	Minimum 2 samples consisting of three separate 1 quart increments per Project. One from the Test Strip and one randomly selected from the project	Samples will be obtained by contractor personnel and observed by Department personnel. One sample will be obtained from the Test Strip, and one sample will be obtained for each 5000 tons asphalt mix	Random samples will be selected by District Laboratory Personnel and submitted to the SMB.	1 every 3 months with each sampling/ testing technician	Material will be accepted in accordance with the Contract Requirements. A minimum of two samples per project will be tested.

Table 906.1.2:7
Asphalt Mineral Admixture Materials

ITEM	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Asphalt Emulsion (Section 402)	Manufactures certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A	N/A	Material shall be provided by approved suppliers, in accordance with SMB procedures for Certification of Asphalt Suppliers.
Mineral Admixtures (Section 402)	Manufactures certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A	N/A	N/A

Table 906.1.2:8
Major Paving (Sections 423/424/900's) - Hot Mix Asphalt (HMA), Warm Mix Asphalt (WMA)

ITEM	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance		State Materials Bureau
					Project Approach	System Approach	
HMA/WMA Superpave (Section 423/424)	Asphalt Content, Gradation, Gmm, Gmb, Air Voids, VMA, VFA, DP	Roadway	1 per 3000 tons. Gmm will be determined at least once per day.	1 per 1000 tons. Gmm will be determined at least twice per day.	1 per 15,000 tons	1 every 3 months with each sampling/ testing technician	Referee Testing
	Roadway Compaction (Cores)						
	Roadway Compaction (nuclear/non-destructive)		N/A	As needed	N/A		
	FF, SE, F&E, FAA, Moisture	Cold Feed before addition of Mineral Admixtures					

Table 906.1.2:8
Major Paving (Sections 423/424/900's) - Hot Mix Asphalt (HMA), Warm Mix Asphalt (WMA)

ITEM	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance		State Materials Bureau
					Project Approach	System Approach	
Performance Graded Asphalt Binder (Section 402)	As required in the Contract Documents	From storage tank or delivery truck	Minimum 2 samples consisting of three separate 1 quart increments per sample per Project. One from the Test Strip and one randomly selected from the project	Samples will be obtained by contractor personnel and observed by Department personnel. One sample will be obtained from the Test Strip, and one sample will be obtained for each 5000 tons asphalt mix	Random samples will be selected by District Laboratory Personnel and submitted to the SMB.	Random samples will be selected by District Laboratory Personnel and submitted to the SMB	Material will be accepted in accordance with contract requirements A minimum of two samples per project will be tested.
Asphalt Emulsion (Section 402)	Manufactures certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A	Random samples will be selected by District Laboratory Personnel and submitted to the SMB	N/A

Table 906.1.2:8
Major Paving (Sections 423/424/900's) - Hot Mix Asphalt (HMA), Warm Mix Asphalt (WMA)

ITEM	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance		State Materials Bureau
					Project Approach	System Approach	
Mineral Admixtures (Section 402)	Manufacturers certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A	Random samples will be selected by District Laboratory Personnel and submitted to the SMB	N/A

Table 906.1.2:9
Non-QLA Portland Cement Concrete

Minor Structures, Curb & Gutter, Side Walks, etc. (509, 510, 511, 521)							
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Fine Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete production	1 per week during concrete production	1 per 10,000 cy, not required if less than 2,000 cy.	1 every 3 months with each sampling/ testing technician	N/A
Course Aggregates							
	FF, F&E		N/A	Minimum 1 per project per coarse aggregate type	N/A		

Table 906.1.2:9
Non-QLA Portland Cement Concrete

Minor Structures, Curb & Gutter, Side Walks, etc. (509, 510, 511, 521)							
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Non-Shrink Grout Aggregate	Manufacture certificate of compliance will suffice for testing credits	N/A	N/A	NA	N/A	N/A	N/A
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties	See Table 906.1.2:14	Each mix design per day of placement. Test the first three loads, with one randomly sampled for one set of cylinders. Sample for testing and cylinders, one random load from each subsequent 6 load sublot	N/A	1 per project	1 every 3 months with each sampling/ testing technician	N/A

Table 906.1.2:10
Non-QLA Portland Cement Concrete

Major Structures, Substructures, Drilled Shafts (502, 509, 510, 511, 521)							
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approa ch	

Table 906.1.2:10
Non-QLA Portland Cement Concrete

<table>
<tr><th colspan="8">Major Structures, Substructures, Drilled Shafts (502, 509, 510, 511, 521)</th></tr>
<tr><th rowspan="2">Item</th><th rowspan="2">Test Required</th><th rowspan="2">Sampling/ Testing Location</th><th rowspan="2">Agency Testing</th><th rowspan="2">Contractor Testing</th><th colspan="2">Independent Assurance (a)</th><th rowspan="2">State Materials Bureau</th></tr>
<tr><th>Project Approach</th><th>System Approach</th></tr>
<tr><td rowspan="2">Fine Aggregates

Course Aggregates</td><td>Gradation</td><td rowspan="2">Stockpile</td><td>1 per 2 weeks during concrete production</td><td rowspan="2">1 per week during concrete production</td><td>1 per 5,000 cy, not required if less than 500 cy.</td><td>1 every 3 months with each sampling/ testing technician</td><td rowspan="2">N/A</td></tr>
<tr><td>FF, F&E</td><td>N/A</td><td colspan="2">N/A</td></tr>
<tr><td>Non-Shrink Grout Aggregate</td><td>Manufacture certificate of compliance will suffice for testing credits</td><td>N/A</td><td>N/A</td><td>NA</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
</table>

Table 906.1.2:10
Non-QLA Portland Cement Concrete

Major Structures, Substructures, Drilled Shafts (502, 509, 510, 511, 521)							
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties	See Table 906.1.2:14	Each mix design per day of placement. Test the first three loads, with one randomly sampled for one set of cylinders. Sample for testing and cylinders, one random load from each subsequent 6 load sublot	Each mix design per day of placement. Test the first three loads and one load from each 6 load sublot for plastic properties	1 per project	1 every 3 months with each sampling/ testing technician	N/A

Table 906.1.2:11
Non-QLA Portland Cement Concrete Pavement (Section 509 and 451)

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Fine Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete production	1 per week during concrete production	1 per 5,000 cy, not required if less than 500 cy	1 every 3 months with each sampling/ testing technician	N/A

Table 906.1.2:11
Non-QLA Portland Cement Concrete Pavement (Section 509 and 451)

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Coarse Aggregates							
	F.F, F&E		N/A	Minimum 1 per project per coarse aggregate type	N/A		
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties	See Table 906.1.2:14	Per day of placement. Test the first three loads, with one randomly sampled for one set of cylinders. Sample one random load from each subsequent 6 load sublot	Per day of placement. Test the first three loads and one load from each subsequent 6 load sublot for plastic properties	1 per 10,000 sy	1 every 3 months with each sampling/ testing technician	N/A
	Thickness	Roadway	1 per 300 cy	N/A	N/A		
Environmental Conditions	Evaporation Rate	Placement Site	N/A	Evaporation Potential determined at intervals not greater than 5 minutes until final curing system in place	N/A	N/A	N/A

Table 906.1.2:12
Non-QLA Superstructure Concrete (Section 509, 510, and 512)

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Fine Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete production	1 per week during concrete production	1 per project.	1 every 3 months with each sampling/ testing technician	N/A
Coarse Aggregates	Gradation						
	F.F., F&E		N/A	Minimum 1 per project per coarse aggregate type	N/A		
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties	See Table 906.1.2:14	For each mix design per day of placement. Test the first three loads, with one randomly sampled for one set of cylinders. Test and sample one random load from each subsequent 3 load sublot	Each mix design per day of placement. Test the first three loads and one load from each 3 load sublot for plastic properties	1 per 300 cy	1 every 3 months with each sampling/ testing technician	N/A

Table 906.1.2:12
Non-QLA Superstructure Concrete (Section 509, 510, and 512)

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance (a)		State Materials Bureau
					Project Approach	System Approach	
Environmental Conditions	Evaporation Rate	Placement Site	N/A	Evaporation Potential determined at intervals not greater than 5 minutes until final curing system in place	N/A	1 every 3 months with each sampling/ testing technician	N/A

Table 906.1.2:13
QLA Portland Cement Concrete Pavement (Section 450)

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance		State Materials Bureau
					Project Approach	System Approach	
Fine Aggregates	Gradation	Stockpile	1 per week during concrete production	1 per day per day of production	Minimum 2 per project	1 every 3 months with each project sampling/ testing technician	Referee Testing
Coarse Aggregates	Gradation, F.F., F&E						
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties	See Table 906.1.2:14	1 per 500 cy	One set of cylinders from one of the first three trucks. 1 set per 125 cy thereafter	1 per 2,500 cy	1 every 3 months with each project sampling/ testing technician	Referee Testing

Table 906.1.2:13
QLA Portland Cement Concrete Pavement (Section 450)

Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance		State Materials Bureau
					Project Approach	System Approach	
				For each of the first three trucks. 1 set per 125 cy from the trucks selected for compressive strength testing thereafter.			
	Thickness	Roadway	1 per 5,000 sq. yd.	1 per 2,500 sq. yd.	N/A		
Environmental Conditions	Evaporation Rate	Placement Site	N/A	Evaporation Potential determined at intervals not greater than 5 minutes until final curing system in place	N/A	N/A	N/A

Table 906.1.2:14

Method of Placement	Sample Location
Pumped	Point of discharge from pump into Structure
Direct Discharge from Truck	At end of discharge chute of truck
Crane and Bucket	From discharge chute of bucket
Conveyor belt	From Material on Roadway after being discharged from conveyor
Slip Form (Curb and Gutter/Barrier Walls)	Point of discharge into extrusion machine
Slip Form Paver (PCCP)	From grade in front of paving machine
Drill Shafts	At end of discharge chute of truck

Table 906.1.2:15
Tolerances for Comparison of Independent Assurance Sample Tests to Acceptance and Process Control Tests

Characteristics	Tolerances

Moisture/Density Test (Proctor)	± 3.0 PCF*, ± 2 Units for Moisture
In Place Moisture/Density (Roadway)	± 3.0 PCF, ± 2 Units for Moisture
Plasticity Index (P.I.)	± 3 Units

*Only if proctors are run by both District and Project. If proctors are not run by both District and Project ± 5.0 PCF.

Gradation	**Tolerances**
1 1/2" to ¾	± 6 Units
1/2" to No. 4	± 5 Units
No. 8 through No. 200	± 4 Units
Fractured Faces	± 5 Units
Flat & Elongated	± 5 Units
Fine Aggregate Angula	± 3 Units
Sand Equivalent	± 4 Units
Aggregate Specific Gra	± 0.020

Concrete	**Tolerances**
Slump	± 0.5 Inch
Unit Weight	± 2.0 PCF
Compressive Strength	10% or less = Range / Average x 100%

Hot Mix Asphalt (HMA)/Warm Mix Asphalt (WMA)	**Tolerances**
Roadway Density (Cores from Project, retained by Agency and Contractor Personnel)	± 0.025 Units
Density (Nuclear)	± 4 Units
VMA	± 1.0 Units
Asphalt Content (Ignition Burn Oven)	± 0.50
Bulk Specific Gravity at Ndes	± 0.025 Units
Maximum Specific Gravity	± 0.020 Units
Air Voids	± 1.5 Units

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SOIL BORING LOGS

GEOTECHNICAL ENGINEERING REPORT
BECLABITO HELIPORT
BECLABITO, NEW MEXICO

Draft Report
Dated September 6, 2022

Submitted To:

Tim Archibeque, P.E.
Armstrong Consultants, Inc.
2201 Buena Vista Drive SE, Suite 204
Albuquerque, New Mexico 87106

Submitted By:

GEOMAT Inc.
915 Malta Avenue
Farmington, New Mexico 87401

September 6, 2022
GEOMAT Project 222-4082

GEOMAT INC
915 Malta Avenue ◆ Farmington, NM 87401 ◆ Tel (505) 327-7928 ◆ Fax (505) 326-5721

September 6, 2022

Tim Archibeque, P.E.
Armstrong Consultants, Inc.
2201 Buena Vista Drive SE, Suite 204
Albuquerque, New Mexico 87106

RE: Geotechnical Engineering Study
Beclabito Heliport
Beclabito, New Mexico
GEOMAT Project No. 222-4082

Draft Report Dated September 6, 2022

GEOMAT Inc. (GEOMAT) has completed the geotechnical engineering study for the proposed heliport located in Beclabito, New Mexico. This study was performed in general accordance with our Proposal No. 222-06-13R, dated June 7, 2022.

The results of our engineering study, including the site plan, boring records, and laboratory test results are attached. Based on the geotechnical engineering analyses, subsurface exploration and laboratory test results, the existing subgrade soils and rock consist of silty sands underlain by sandstone and limestone. Other requested details, based upon geotechnical conditions, are presented in the report.

We have appreciated being of service to you in the geotechnical engineering phase of this project. If you have any questions concerning this report, please contact us.

Sincerely yours,
GEOMAT Inc.

Douglas N. Hood
Staff Professional

Matthew J. Cramer, P.E.
President, Principal

Copies to: Addressee (1)

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Dated Draft Report September 6, 2022

GEOTECHNICAL ENGINEERING REPORT
BECLABITO HELIPORT
BECLABITO, NEW MEXICO
GEOMAT PROJECT NO. 222-4082

INTRODUCTION

This report contains the results of our geotechnical engineering exploration and laboratory testing for the proposed heliport located in Beclabito, New Mexico, as shown on the Site Plan in Appendix A of this report.

The purpose of these services is to provide information and geotechnical engineering recommendations about:

- subsurface soil conditions
- groundwater conditions
- laboratory test results
- drainage

The opinions and recommendations contained in this report are based upon the results of field and laboratory testing, engineering analyses, and experience with similar soil conditions, structures, and our understanding of the proposed project as stated below.

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Dated September 6, 2022

PROPOSED CONSTRUCTION

We understand that the project will consist of the construction of a new concrete helipad, base course access road, fencing, and associated improvements. The proposed site is currently undeveloped. Final concrete and pavement section design will be by others.

SITE EXPLORATION

Our scope of services performed for this project included a site reconnaissance by a GEOMAT staff professional, a subsurface exploration program, laboratory testing, and engineering analyses.

Field Exploration:

Subsurface conditions at the site were explored on June 27, 2022 by drilling three (3) exploratory borings at the approximate locations shown on the Site Plans in Appendix A. The number of borings and the boring locations were chosen by Armstrong Consultants, Inc. (Armstrong) prior to our exploration. The borings, designated B-1 through B-3, had planned depths of 15 feet

below existing surface grade. Boring B-1 was drilled near the existing roadway. Borings B-2 and B-3 were drilled in the vicinity of the proposed helipad.

The borings were continuously monitored by a staff professional from our office who examined and classified the subsurface materials encountered, observed groundwater conditions, and maintained a continuous log of each boring. Representative bulk samples of the subgrade soils were obtained from the auger cuttings from each boring.

In addition to the bulk samples, we also obtained drive samples from selected borings using a combination of standard 2-inch O.D. split spoon and 3-inch O.D. ring-lined barrel samplers. The samplers were driven using a 140-pound hammer falling 30 inches. The standard penetration resistance was determined by recording the number of hammer blows required to advance the sampler in six-inch increments.

Groundwater evaluations were made in each boring at the time of site exploration. Soils were classified in accordance with the Unified Soil Classification System described in Appendix A. Logs of the borings were prepared and are presented in Appendix A.

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Dated September 6 2022

SITE CONDITIONS

The project site is located in Beclabito, New Mexico to the northeast of the Chapter House. The entrance to proposed project site is located on the north side of US Highway 64 approximately 1,225 feet east of the intersection of U.S. Highway 64 and the turnoff to the Chapter House. The existing roadway is single lane with gravel surfacing that leads to a cemetery and water storage area. The site of the proposed heliport is along an offroad trail, that splits off from the existing roadway and goes to the top of a hill. The ground surface for the existing roadway has a slight decreasing slope from U.S. Highway 64 to a drainage channel, then a slight increasing slope away from the drainage channel to the turn off on the offroad trail. From the offroad trail to the site for the heliport, there is a short steep increasing slope then relatively level ground. The site is vegetated with small to medium bushes and small to medium trees, with occasional gravel and cobbles at the surface.

The following photographs depict the typical conditions along the project alignment.



Drill Rig at Boring B-1
View to the North



Drill Rig at Boring B-2
View to the South

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SUBSURFACE CONDITIONS

As presented on the Boring Logs in Appendix A, in boring B-1 we encountered a thin surficial layer of sandy soil that was underlain by sandstone that extended to 15 feet below ground surface (bgs). In boring B-2 and B-3, we encountered a thin layer of sandy soils with gravels that were underlain by limestone that extended to approximately 4 ½ feet bgs.

The surficial sandy soils were fine- to coarse-grained, and occasionally contained gravels. They ranged in color from red to brown with a moisture of slightly damp. The sandstone encountered was fine- to medium-grained with weak to moderate cementation and was slightly to highly weathered. The sandstone ranged in color from red to brown to tan, was medium dense to very dense, with a moisture of slightly damp to damp. The limestone encountered ranged in color from black to gray to white and had a moisture of slightly damp.

Groundwater was not encountered in any of the borings, though it should be noted that groundwater elevations can fluctuate over time depending upon precipitation, irrigation, runoff and infiltration of surface water. We do not have any information regarding the historical fluctuation of the groundwater level in this vicinity.

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LABORATORY TESTING:

Samples retrieved during the field exploration were transported to our laboratory for further evaluation. At that time, the field descriptions were confirmed or modified as necessary, and laboratory tests were performed to evaluate the engineering properties of the subsurface materials. The following tests were performed on selected samples as requested in the Request for Proposal document provided by Armstrong:

- Moisture-Density of Ring Samples
- Chemical Analyses (soluble sulfate content)
- One-Dimensional Consolidation Properties of Soils (ASTM D4546)

Since rock was encountered at shallow depths in each boring, the samples collected consisted of highly disturbed material were not representative of in-situ conditions of the rock. As such, the classification and parameter tests originally requested in the Request for Proposal document provided by Armstrong were not conducted since the results of those tests would not be representative of the actual in-situ conditions. In addition, insufficient sample sizes of the surficial sandy soils were obtained due to the thin nature of this strata. As a result, the following tests were not conducted as a result of the shallow rock encountered on the site:

- Sieve Analysis (ASTM C136/ C117)
- Atterberg Limits (ASTM D4318)
- Soil Classification (ASTM D2487)

- California Bearing Ratio (CBR) (ASTM D1883)
- Hydrometer (ASTM D422/D7928)
- Moisture-Density Relationship (Proctor) (ASTM D1557)

Results of all laboratory tests conducted are presented in Appendix B.

Frost Susceptibility:

The design of pavements in areas subject to seasonal frost action requires special design consideration and the design of reconstructed pavement sections at the Beclabito Heliport should take into consideration the adverse effects of seasonal frost in accordance with FAA design recommendations (FAA 2016) Advisory Circular (AC) No. 150/5320-6E.

The detrimental effects of frost action may be manifested by non-uniform heave, loss of soil strength during frost melting, development of pavement roughness, and cracking and deterioration of the pavement surface. The conditions for detrimental frost action to occur are: 1) the soil is frost susceptible; 2) free moisture is available in sufficient quantities to form ice lenses; and 3) freezing temperatures penetrate into the frost susceptible soil.

As stated in the FAA AC document, "the frost susceptibility of a soil is dependent to a large extent on the size and distribution of voids in the soil mass. Voids must be of a certain critical size for the development of ice lenses. Empirical relationships have been developed correlating the degree of frost susceptibility with soil classification and the amount of material finer than 0.02 mm by weight. Soils are categorized into four frost groups for frost design purposes as defined in FAA AC150/5320-6F Table 2-2: Frost Group 1 (FG-1), FG-2, FG-3, and FG-4. The higher the frost group number, the more susceptible the soils, i.e., soils in FG-4 are more frost susceptible than soils in frost groups 1, 2, or 3".

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For the purpose of frost design, the project site can primarily be categorized as Frost Group FG-1 due to the shallow rock with the small amount of surficial soil being considered FG-2. The samples were given an estimated Frost Group based off their visual classification per the ASTM D2488 the Unified Soil Classification System and their relationship to FAA AC150/5320-6F Table 2-2 below:

TABLE 2-2. Soil Frost Groups

Frost Group	Kind of Soil	Percentage Finer than 0.02 mm by Weight	Soil Classification
FG-1	Gravelly Soils	3 to 10	GW, GP, GW-GM, GP-GM
FG-2	Gravelly Soils Sands	10 to 20 3 to 5	GM, GW-GM, GP-GM SW, SP, SM, SW-SM, SP-SM
FG-3	Gravelly Soils Sands, except very fine silty soils Clays, PI above 12	Over 20 Over 15 - -	GM, GC SM, SC CL, CH
FG-4	Very fine silty sands All Silts Clays, Pi = 12 or less Varved Clays and other fine grained banded sediments	Over 15 - - -	SM ML, MH CL, CL-ML CL, CH, ML, SM

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Soluble Sulfates:

Samples of rock from the borings were tested for soluble sulfates. Results of these tests are summarized in the following table.

Soluble Sulfates Test Results			
Sample No.	**Boring No.**	**Sample Depth (ft)**	**Sulfates (%)**
9541	B-1	0.5 to 5	0.41
9542	B-2	0.5 to 4.5	< 0.02

Opinions and Additional Considerations:

Construction of the concrete helipad is likely feasible based upon the geotechnical conditions encountered and tested for in this report. We anticipate that the concrete pad could be constructed directly on the bedrock perhaps with a base course leveling pad constructed between the top of the bedrock and concrete. Pavement sections utilizing aggregate base course over prepared subgrade and/or rock appears feasible based upon the geotechnical conditions

encountered and tested for in this report. As previously noted, final pavement section design for the project will be performed by others.

Site Drainage and Moisture Protection:

Positive site drainage should be provided during construction and maintained thereafter. The ground surface should be sloped away from pavements and concrete surfaces in a manner to allow positive flow away from the surfaces. At no times should water be allowed to pond on or adjacent to the paved or concrete surfaces.

GENERAL COMMENTS

It is recommended that GEOMAT be retained to provide a general review of final design plans and specifications in order to confirm that the recommendations in this report have been interpreted and implemented. In the event that any changes of the proposed project are planned, the opinions and recommendations contained in this report should be reviewed and the report modified or supplemented as necessary.

GEOMAT should also be retained to provide services during the construction phase of the work. Construction testing, including field and laboratory evaluation of fill, backfill, and pavement materials, should be performed to determine whether applicable project requirements have been met.

The analyses and recommendations in this report are based in part upon data obtained from the field exploration. The nature and extent of variations beyond the location of test borings may not become evident until construction. If variations then appear evident, it may be necessary to re-evaluate the recommendations of this report.

Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities at the same time. No warranty, express or implied, is intended or made. We prepared the report as an aid in design of the proposed project. This report is not a bidding document. Any contractor reviewing this report must draw his own conclusions regarding site conditions and specific construction equipment and techniques to be used on this project.

This report is for the exclusive purpose of providing geotechnical engineering and/or testing information and recommendations. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site or identification of contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken. This report has also not addressed any geologic hazards that may exist on or near the site.

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Dated September 6, 2022

This report may be used only by the Client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on and off site), or other factors may change over time and additional work may be required with the passage of time. Any party, other than the Client, who wishes to use this report, shall notify GEOMAT in writing of such intended use. Based on the intended use of the report, GEOMAT may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements, by the Client or anyone else, will release GEOMAT from any liability resulting from the use of this report by an unauthorized party.

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Dated September 6, 2022

Appendix A

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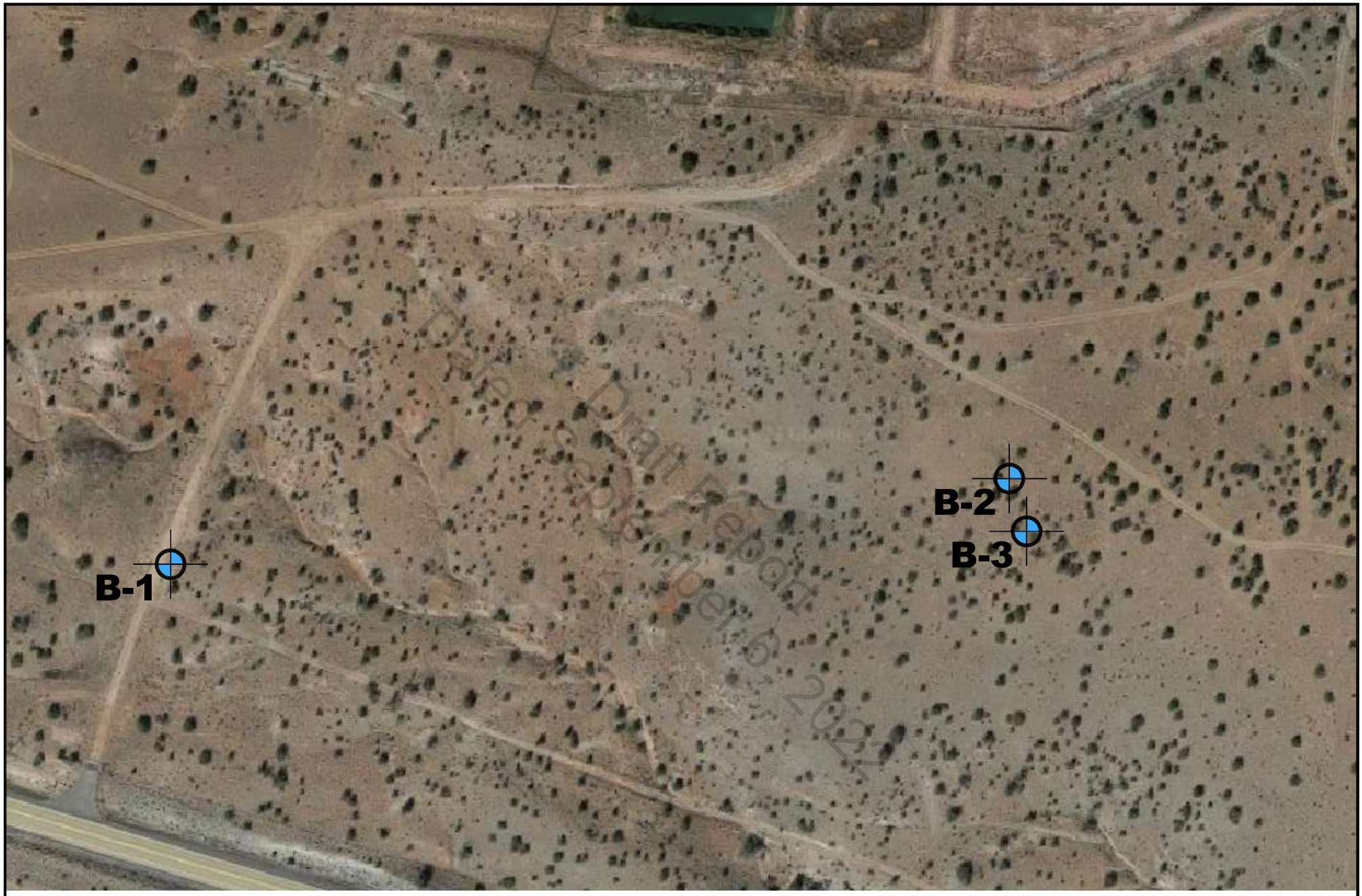
Dated September 6, 2022



Approximate Not to Scale	SITE PLAN Boring Locations (approximate) GEOMAT Project No. 222-4082 Date of Exploration: June 27, 2022	PROJECT Beclabito Heliport Beclabito, New Mexico

GEOMAT INC.

GEOMAT INC.
915 Malta Ave
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Boring B-1

Project Name: Beclabito Heliport
Project Number: 222-4082
Client: Armstrong Consultants, Inc.
Site Location: Beclabito, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Bulk, Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 6/27/2022
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: None Encountered
Logged By: DH
Remarks: None

Laboratory Results											
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
108.2			3.0	13-29	A R		SM		1	Silty SAND, red/tan, fine- to medium-grained, slightly damp
				16-16-20	SS				2	SANDSTONE interlayered with Shale, red/tan/white, fine- to medium-grained, moderately to highly weathered, weak cementation, medium dense to very dense, slightly damp
									3	
125.3			5.1	16-30	R				4	
				19-26-48	SS				5	
									6	moderately weathered, slightly damp to damp
				33-50/3"	R				7	
							RK		8	
									9	
				50/3"	SS				10	
									11	SANDSTONE, red/brown, fine- to medium-grained, slightly to moderately weathered, moderate cementation, slightly damp
									12	
									13	
									14	
									15	
				50/3"	SS				16	no recovery Total Depth 15 feet
									17	
									18	
									19	
									20	

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample SH = Shelby Tube Sampler

Draft Report Dated September 6, 2022

GEOMAT INC.
915 Malta Ave
Farmington, NM 87401
Tel (505) 327-7928
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Boring B-2

Project Name: Beclabito Heliport
Project Number: 222-4082
Client: Armstrong Consultants, Inc.
Site Location: Beclabito, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Bulk, Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 6/27/2022
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: None Encountered
Logged By: DH
Remarks: None

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
						SM				Silty SAND with trace gravel, red/brown, fine- to medium-grained, slightly damp
				15-18-37	A SS				1	LIMESTONE, gray/black/white, fine- to coarse-grained, calcium carbonation, very dense, slightly damp
109.1			4.9	15-50/6"	R		RK		2	
									3	
				43-40-40	SS				4	
									5	Auger Refusal due to Hard Limestone Total Depth 4 ½ feet
									6	
									7	
									8	
									9	
									10	

Draft Report
Date: September 6, 2022

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample SH = Shelby Tube Sampler

GEOMAT INC.
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Farmington, NM 87401
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Boring B-3

Project Name: Beclabito Heliport
Project Number: 222-4082
Client: Armstrong Consultants, Inc.
Site Location: Beclabito, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Bulk, Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 6/27/2022
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: None Encountered
Logged By: DH
Remarks: None

Laboratory Results: Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)	Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
99.3			8.5	14-28	GRAB A R		SM		0	Silty SAND with trace gravel, red/brown, fine- to medium-grained, slightly damp
									1	LIMESTONE, gray/black/white, fine- to coarse-grained, calcium carbonation, very dense, slightly damp
				29-40-50/5"	SS		RK		2	
									3	hard drilling
				32-50/5"	SS				4	
									5	Auger Refusal due to Hard Limestone Total Depth 4 ½ feet
									6	
									7	
									8	
									9	
									10	

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Date: September 6, 2022

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample SH = Shelby Tube Sampler

UNIFIED SOIL CLASSIFICATION SYSTEM					CONSISTENCY OR RELATIVE DENSITY CRITERIA		
Major Divisions			Group Symbols	Typical Names			
Coarse-Grained Soils More than 50% retained on No. 200 sieve	**Gravels** 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Standard Penetration Test Density of Granular Soils		
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines	Penetration Resistance, N (blows/ft.)	Relative Density	
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures	0-4	Very Loose	
			GC	Clayey gravels, gravel-sand-clay mixtures	5-10	Loose	
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines	11-30	Medium Dense	
			SP	Poorly graded sands and gravelly sands, little or no fines	31-50	Dense	
		Sands with Fines	SM	Silty sands, sand-silt mixtures	>50	Very Dense	
			SC	Clayey sands, sand-clay mixtures	Standard Penetration Test Density of Fine-Grained Soils		
Fine-Grained Soils 50% or more passes No. 200 sieve	**Silts and Clays** Liquid Limit 50 or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands	Penetration Resistance, N (blows/ft.)	Consistency	Unconfined Compressive Strength (Tons/ft2)
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	<2	Very Soft	<0.25
			OL	Organic silts and organic silty clays of low plasticity	2-4	Soft	0.25-0.50
	Silts and Clays Liquid Limit greater than 50		MH	Inorganic silts, micaceous or diatomaceous free sands or silts, elastic silts	4-8	Firm	0.50-1.00
			CH	Inorganic clays of high plasticity, fat clays	8-15	Stiff	1.00-2.00
			OH	Organic clays of medium to high plasticity	15-30	Very Stiff	2.00-4.00
Highly Organic Soils			PT	Peat, mucic & other highly organic soils	>30	Hard	>4.0

U.S. Standard Sieve Sizes

>12"	12"	3"	3/4"	#4	#10	#40	#200

Boulders	Cobbles	Gravel		Sand			Silt or Clay
		coarse	fine	coarse	medium	fine	

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MOISTURE CONDITIONS	
Dry	Absence of moist, dusty, dry to the touch
Slightly Damp	Below optimum moisture content for compaction
Moist	Near optimum moisture content, will moisten the hand
Very Moist	Above optimum moisture content
Wet	Visible free water, below water table

MATERIAL QUANTITY	
trace	0-5%
few	5-10%
little	10-25%
some	25-45%
mostly	50-100%

OTHER SYMBOLS
R Ring Sample
S SPT Sample
B Bulk Sample
▼ Ground Water

BASIC LOG FORMAT:

Group name, Group symbol, (grain size), color, moisture, consistency or relative density. Additional comments: odor, presence of roots, mica, gypsum, coarse particles, etc.

EXAMPLE:

SILTY SAND w/trace silt (SM-SP), Brown, loose to med. Dense, fine to medium grained, damp

UNIFIED SOIL CLASSIFICATION SYSTEM

TEST DRILLING EQUIPMENT & PROCEDURES

Description of Subsurface Exploration Methods

Drilling Equipment – Truck-mounted drill rigs powered with gasoline or diesel engines are used in advancing test borings. Drilling through soil or softer rock is performed with hollow-stem auger or continuous flight auger. Carbide insert teeth are normally used on bits to penetrate soft rock or very strongly cemented soils which require blasting or very heavy equipment for excavation. Where refusal is experienced in auger drilling, the holes are sometimes advanced with tricone gear bits and NX rods using water or air as a drilling fluid.

Coring Equipment – Portable electric core drills are used when recovery of asphalt or concrete cores is necessary. The core drill is equipped with either a 4" or 6" diameter diamond core barrel. Water is generally used as a drilling fluid to facilitate cooling and removal of cuttings from the annulus.

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Sampling Procedures - Dynamically driven tube samples are usually obtained at selected intervals in the borings by the ASTM D1586 test procedure. In most cases, 2" outside diameter, 1 3/8" inside diameter, samplers are used to obtain the standard penetration resistance. "Undisturbed" samples of firmer soils are often obtained with 3" outside diameter samplers lined with 2.42" inside diameter brass rings. The driving energy is generally recorded as the number of blows of a 140-pound, 30-inch free fall drop hammer required to advance the samplers in 6-inch increments. These values are expressed in blows per foot on the boring logs. However, in stratified soils, driving resistance is sometimes recorded in 2- or 3-inch increments so that soil changes and the presence of scattered gravel or cemented layers can be readily detected and the realistic penetration values obtained for consideration in design. "Undisturbed" sampling of softer soils is sometimes performed with thin-walled Shelby tubes (ASTM D1587). Tube samples are labeled and placed in watertight containers to maintain field moisture contents for testing. When necessary for testing, larger bulk samples are taken from auger cuttings. Where samples of rock are required, they are obtained by NX diamond core drilling (ASTM D2113).

Boring Records - Drilling operations are directed by our field engineer or geologist who examines soil recovery and prepares boring logs. Soils are visually classified in accordance with the Unified Soil Classification System (ASTM D2487), with appropriate group symbols being shown on the logs.

Appendix B

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LAB NO.	BORING NO.	SAMPLE DEPTH (ft)	ASTM D698		MOISTURE CONT. (%)	DENSITY		ATTERBERG LIMITS			SWELL (%)	CONSOL TEST	% PASS #200 SIEVE	CLASSIFICATION
			Density	Moisture		WET (pcf)	DRY (pcf)	LL	PL	PI				
9541*	B-1	0.5 to 5	-	-	-	-	-	-	-	-	-	-	-	**SANDSTONE** (RK)
9542*	B-2	0.5 to 4.5	-	-	-	-	-	-	-	-	-	-	-	**LIMESTONE** (RK)
9547	B-1	0.5	-	-	3.0	111.5	108.2	-	-	-	-	-	-	**SANDSTONE** (RK)
9548	B-1	3.5	-	-	5.1	119.2	125.3	-	-	-	-	Attached	-	**SANDSTONE** (RK)
9549	B-2	2	-	-	4.9	104.0	109.1	-	-	-	-	Attached	-	**LIMESTONE** (RK)
9550	B-3	0.5	-	-	8.5	91.7	99.3	-	-	-	-	Attached	-	**LIMESTONE** (RK)

NLL = No Liquid Limit
NPL = No Plastic Limit
NP = Non-Plastic
* = Soluble Sulfates Sample

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GEOMAT INC.

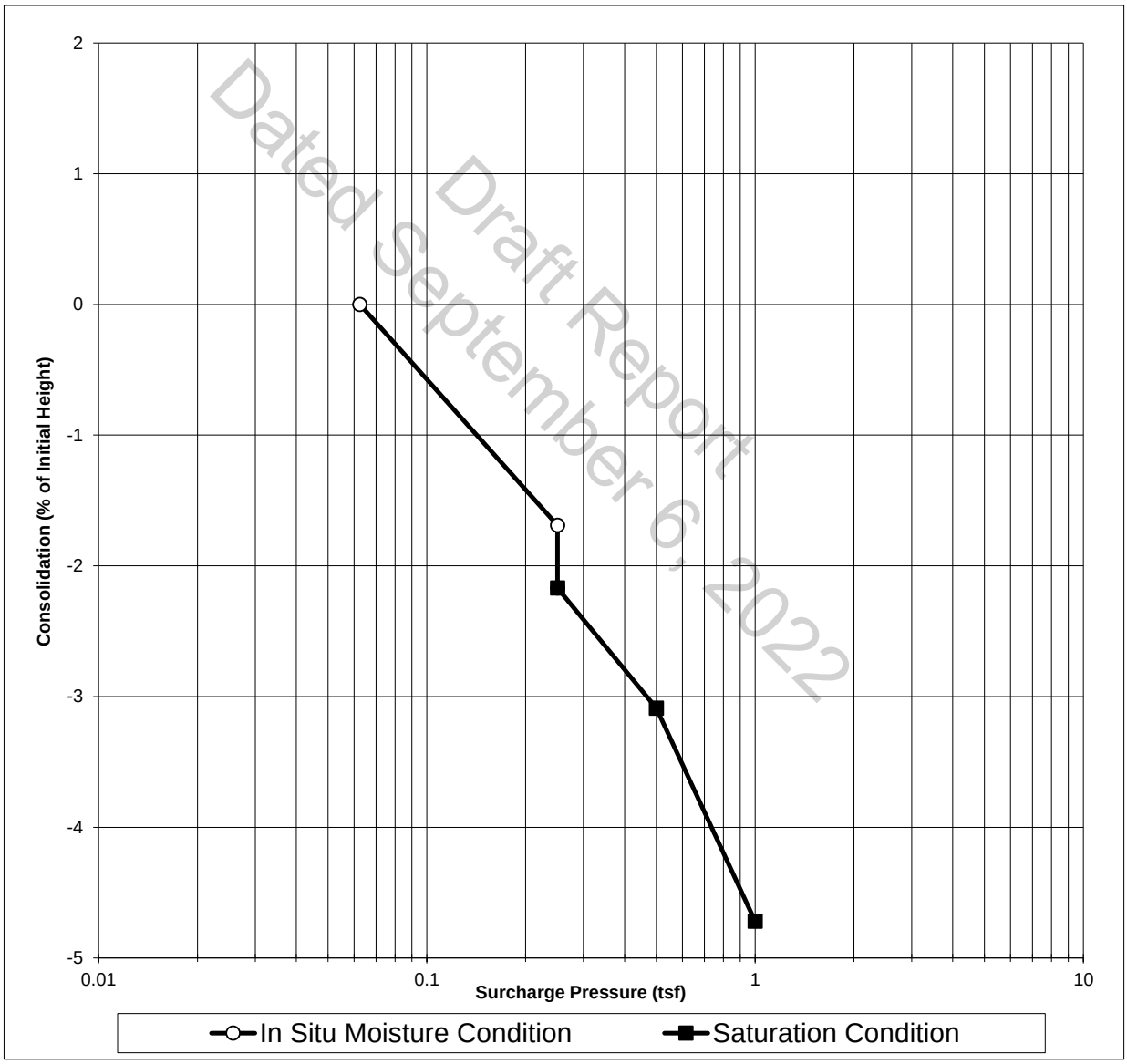
SUMMARY OF SOIL TESTS

Project	Beclabito Heliport
Job No.	222-4082
Location	Beclabito, New Mexico
Date of Exploration	June 27, 2022

PROJECT:	Beclabito Heliport	**JOB NO:**	222-4082
CLIENT:	Armstrong Consultants, Inc	**WORK ORDER NO:**	NA
MATERIAL:	SANDSTONE (RK)	**LAB NO:**	9548
SAMPLE SOURCE:	B-1 @ 3.5'	**DATE SAMPLED:**	6/27/2022
SAMPLE PREP.:	In Situ	**SAMPLED BY:**	DH

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D2435)

INITIAL VOLUME (cu.in)	4.60	FINAL VOLUME (cu.in)	4.39
INITIAL MOISTURE CONTENT	5.1%	FINAL MOISTURE CONTENT	13.6%
INITIAL DRY DENSITY(pcf)	119.2	FINAL DRY DENSITY(pcf)	124.5
INITIAL DEGREE OF SATURATION	23%	FINAL DEGREE OF SATURATION	67%
INITIAL VOID RATIO	0.39	FINAL VOID RATIO	0.33
ESTIMATED SPECIFIC GRAVITY	2.651	SATURATED AT	0.25 tsf



Draft Report
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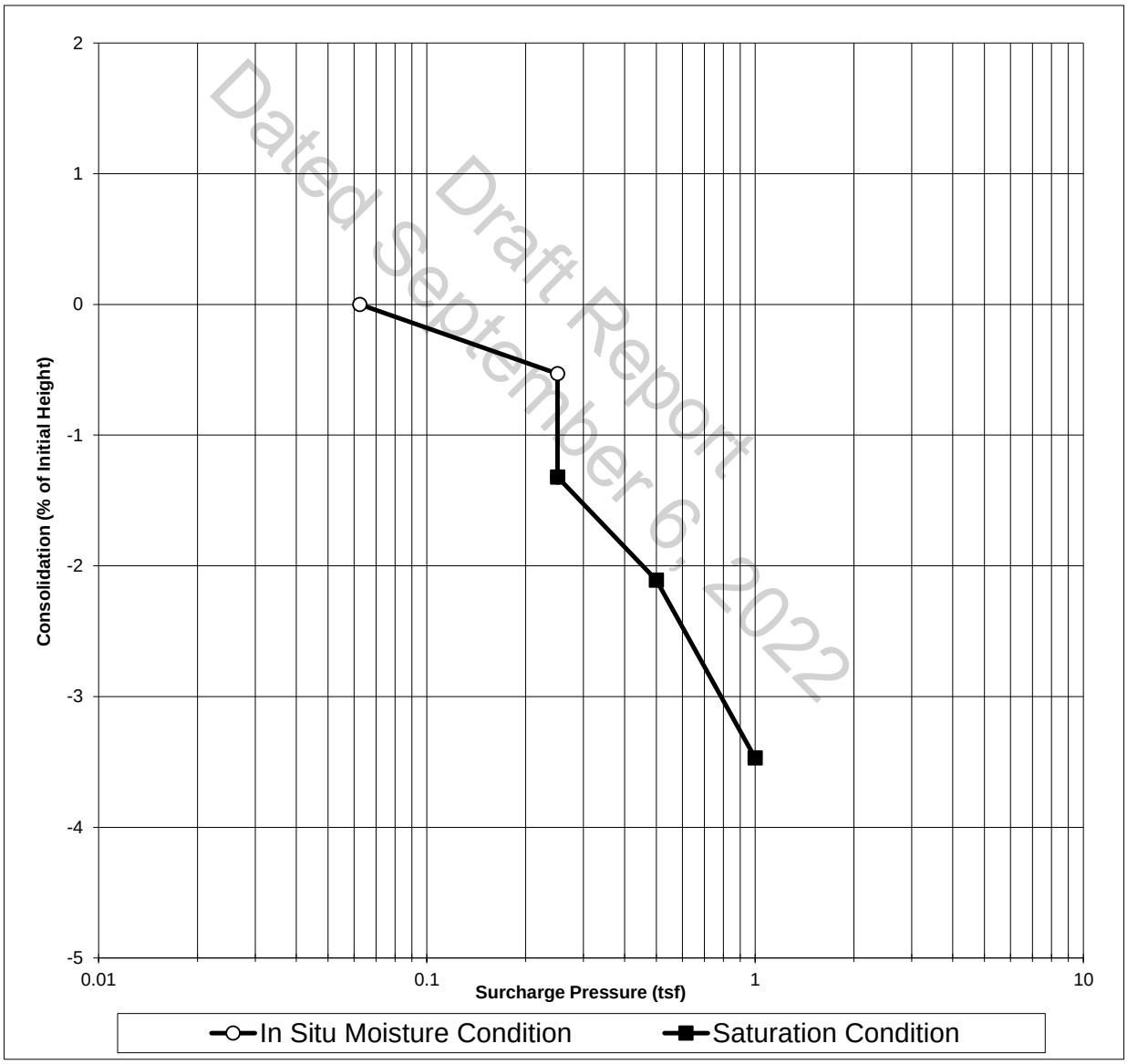
GEOMAT INC.

PROJECT:	Beclabito Heliport	**JOB NO:**	222-4082
CLIENT:	Armstrong Consultants, Inc	**WORK ORDER NO:**	NA
MATERIAL:	LIMESTONE (RK)	**LAB NO:**	9549
SAMPLE SOURCE:	B-2 @ 2'	**DATE SAMPLED:**	6/27/2022
SAMPLE PREP.:	In Situ	**SAMPLED BY:**	DH

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D2435)

INITIAL VOLUME (cu.in)	4.60	FINAL VOLUME (cu.in)	4.44
INITIAL MOISTURE CONTENT	4.9%	FINAL MOISTURE CONTENT	20.8%
INITIAL DRY DENSITY(pcf)	104.0	FINAL DRY DENSITY(pcf)	107.2
INITIAL DEGREE OF SATURATION	16%	FINAL DEGREE OF SATURATION	73%
INITIAL VOID RATIO	0.60	FINAL VOID RATIO	0.54
ESTIMATED SPECIFIC GRAVITY	2.651	SATURATED AT	0.25 tsf



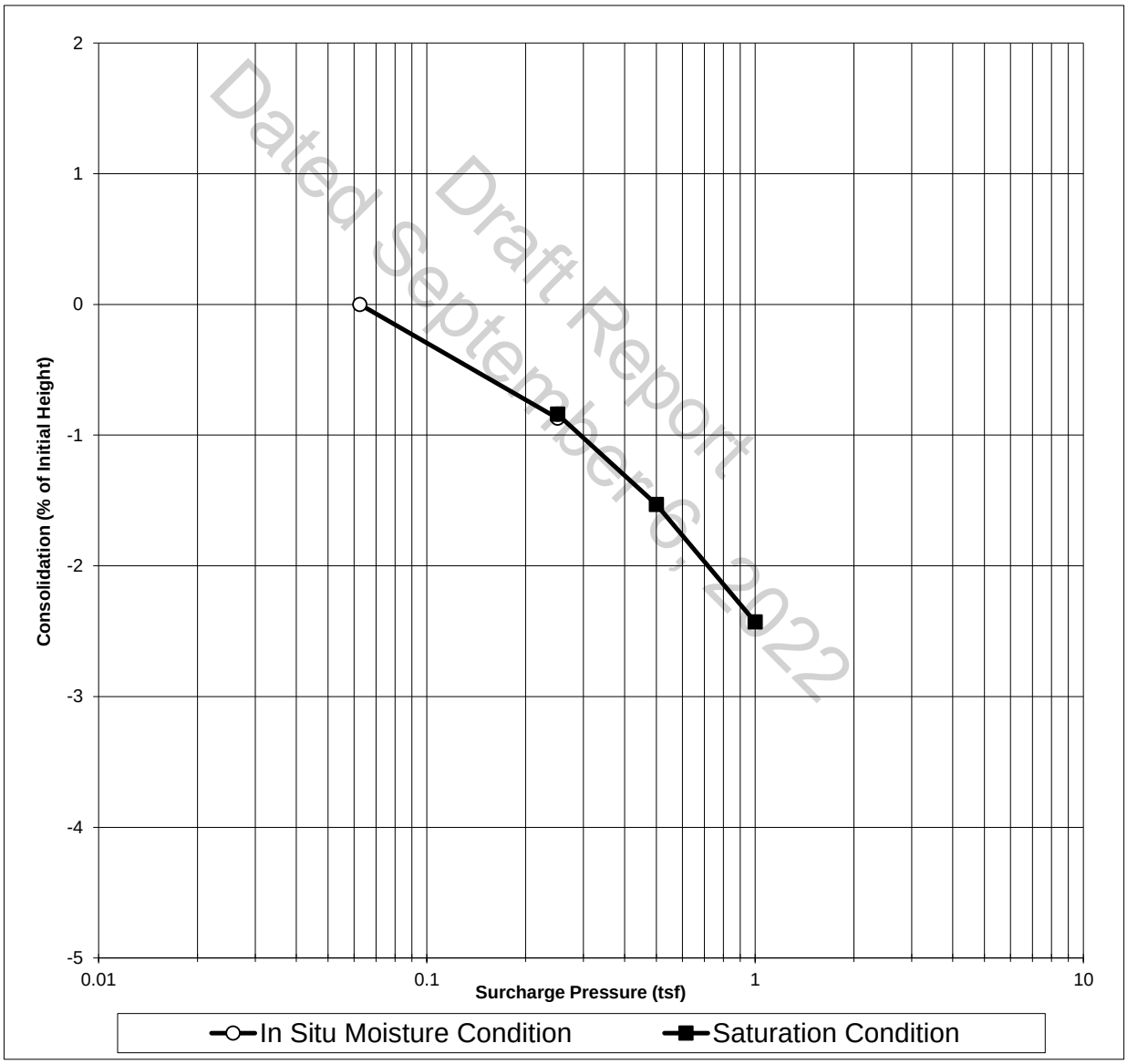
Draft Report
Dated September 6, 2022

GEOMAT INC.

PROJECT:	Beclabito Heliport	**JOB NO:**	222-4082
CLIENT:	Armstrong Consultants, Inc	**WORK ORDER NO:**	NA
MATERIAL:	LIMESTONE (RK)	**LAB NO:**	9550
SAMPLE SOURCE:	B-3 @ 0.5'	**DATE SAMPLED:**	6/27/2022
SAMPLE PREP.:	In Situ	**SAMPLED BY:**	DH

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D2435)

INITIAL VOLUME (cu.in)	4.60	FINAL VOLUME (cu.in)	4.49
INITIAL MOISTURE CONTENT	8.5%	FINAL MOISTURE CONTENT	29.1%
INITIAL DRY DENSITY(pcf)	91.5	FINAL DRY DENSITY(pcf)	93.3
INITIAL DEGREE OF SATURATION	22%	FINAL DEGREE OF SATURATION	79%
INITIAL VOID RATIO	0.82	FINAL VOID RATIO	0.77
ESTIMATED SPECIFIC GRAVITY	2.651	SATURATED AT	0.25 tsf



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Draft Report

GEOMAT INC.

LABORATORY TESTING PROCEDURES

Laboratory testing is performed by trained personnel in our accredited laboratory or may be subcontracted by GEOMAT through a qualified outside laboratory if necessary. Actual types and quantities of tests performed for any project will be dependent upon subsurface conditions encountered and specific design requirements.

The following is an abbreviated table of laboratory testing that may be performed by GEOMAT with the applicable standards listed. Testing for a specific project may include all or a selected subset of the laboratory work listed. Laboratory testing beyond those listed may be available and could be incorporated into the project scope at the discretion of GEOMAT.

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PROCEDURE	ASTM	AASHTO
Moisture Content	ASTM D2216	AASHTO T 265
Sieve Analysis	ASTM C136	AASHTO T 27
Fines Content	ASTM D1140	T 11
Hydrometer	ASTM D422	T 88
Atterberg Limits	ASTM D4318	AASHTO T 89/T 90
Soil Compression/Expansion	ASTM D2435	T 216
Soil Classification	ASTM D2487	M 145
Direct Shear	ASTM D3080	T 236
Unconfined Compressive Strength of Soils	ASTM D2166	T 208
Unconfined Compressive Strength of Rock Cores	ASTM D4543	-

Appendix C

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Important Information about This

Geotechnical-Engineering Report

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

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

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responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

Draft Report September 6, 2019

GEOPROFESSIONAL BUSINESS ASSOCIATION

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Schedule I - Basic Helipad (Day Operations Only)						
Item No.	**Spec No.**	**Item Description**	**QTY**	**Unit**	**Unit Price**	**Total Price**
I-1	C-105	Mobilization	1	LS	$	$
I-2	P-151	Clearing and Grubbing	Incidental		$	$
I-3	P-152	Embankment In-Place	2,650	CY	$	$
I-4	P-208a	Aggregate Base Course (6-inches thick)	520	SY	$	$
I-5	P-208b	3-inch thick Crushed Aggregate	5,000	SY	$	$
I-6	P-602	Emulsified Asphalt Prime Coat	1,200	GAL	$	$
I-7	P-603	Bituminous Tack Coat	Incidental		$	$
I-8	P-605	Joint Sealing Filler	Incidental		$	$
I-9	P-610a	Structural Portland Cement Concrete	35	CY	$	$
I-10	P-610b	Flush Concrete Ground Marker	144	EA	$	$
I-11	P-620a	Paint Marking	500	SF	$	$
I-12	P-620b	Reflective Media	30	LBS	$	$
I-13	L-107	Type L-806, Style I-A, Size 1 Wind Cone and Foundation, in place	1	EA	$	$
I-14	L-110	Concrete Encased, Electrical Duct Bank, 2-way 4-inch PVC Conduit	30	LF	$	$
I-15	L-125	Splice Base	2	EA	$	$
I-16	S-6	Watering	Incidental		$	$
I-17	S-10	Aircraft Tiedowns (Set of 4)	1	EA	$	$
I-18	NMDOT 423	4-inch Asphaltic Pavement (2 - 2-inch Thick lifts)	320	SY	$	$
TOTAL - SCHEDULE I			**$**			
6% Navajo Nation Sales Tax			**$**			
TOTAL BID AMOUNT – SCHEDULE I			**$**			

SCHEDULE II – Access Road (1,650 LF)						
Item No.	**Spec No.**	**Item Description**	**QTY**	**Unit**	**Unit Price**	**Total Price**
II-1	C-105	Mobilization	1	LS	$	$
II-2	P-152	Embankment In-Place	300	CY	$	$
II-3	P-208a	Aggregate Base Course (6-inches thick)	3,000	SY	$	$
II-4	USDOT 407	Double Chip Seal Type 2A with Prime Coat	3,000	SY	$	$
TOTAL - SCHEDULE II			**$**			
6% Navajo Nation Sales Tax			**$**			
TOTAL BID AMOUNT – SCHEDULE II			**$**			

SUMMARY	
Bid Amount - Schedule I	$
6 % Navajo Nation Sales Tax – Schedule I	$
Bid Amount - Schedule II	$
6 % Navajo Nation Sales Tax – Schedule II	$
TOTAL OF ALL SCHEDULES	**$**

BECLABITO HELIPAD

BECLABITO, NEW MEXICO

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION

RFP BID No. 26-10-4328JB

PROJECT DESCRIPTION:

SCHEDULE I

DESIGN & CONSTRUCT BASIC HELIPAD

SCHEDULE II

DESIGN & CONSTRUCT ACCESS ROAD

INDEX OF SHEETS	
COVER SHEET	1.0
GENERAL LAYOUT	1.1
HELIPAD LAYOUT, PLAN & PROFILE & GRADING PLAN	2.0
HELIPAD TYPICAL SECTIONS	2.1
CONCRETE DETAILS	2.2
HELIPAD APPROACH CROSS SECTIONS	2.3 - 2.7
HELIPAD PLAN & MARKING DETAILS	3.0
MARKER LAYOUT & DETAILS	4.0
WIND CONE LAYOUT	4.1
WIND CONE DETAILS	4.2
ACCESS ROAD PLAN & PROFILE	5.0 - 5.1
ACCESS ROAD PLAN & PROFILE, TYPICAL SECTIONS	5.2
ACCESS ROAD CROSS SECTIONS	5.3 - 5.7
EROSION CONTROL & SEEDING PLAN	6.0

VICINITY MAP



NO SCALE

BECLABITO HELIPAD



NOVEMBER 2026

JOSE FRANCISCO RIVERA
NEW MEXICO
24574
PROFESSIONAL ENGINEER

egis

715 HORIZON DR. STE 225
GRAND JUNCTION,
CO 81506
P 970.242.0101

BECLABITO HELIPAD

BECLABITO, NEW MEXICO
RFP BID No. 26-10-4328JB

PROJECT NO.	28364
DRAWN BY / DATE	AMP / 09/22/2026
CHECKED BY / DATE	DWK / 09/21/2026
DESIGNED BY / DATE	DWK / 09/11/2026
REVISIONS / DATE	

COVER SHEET

1.0

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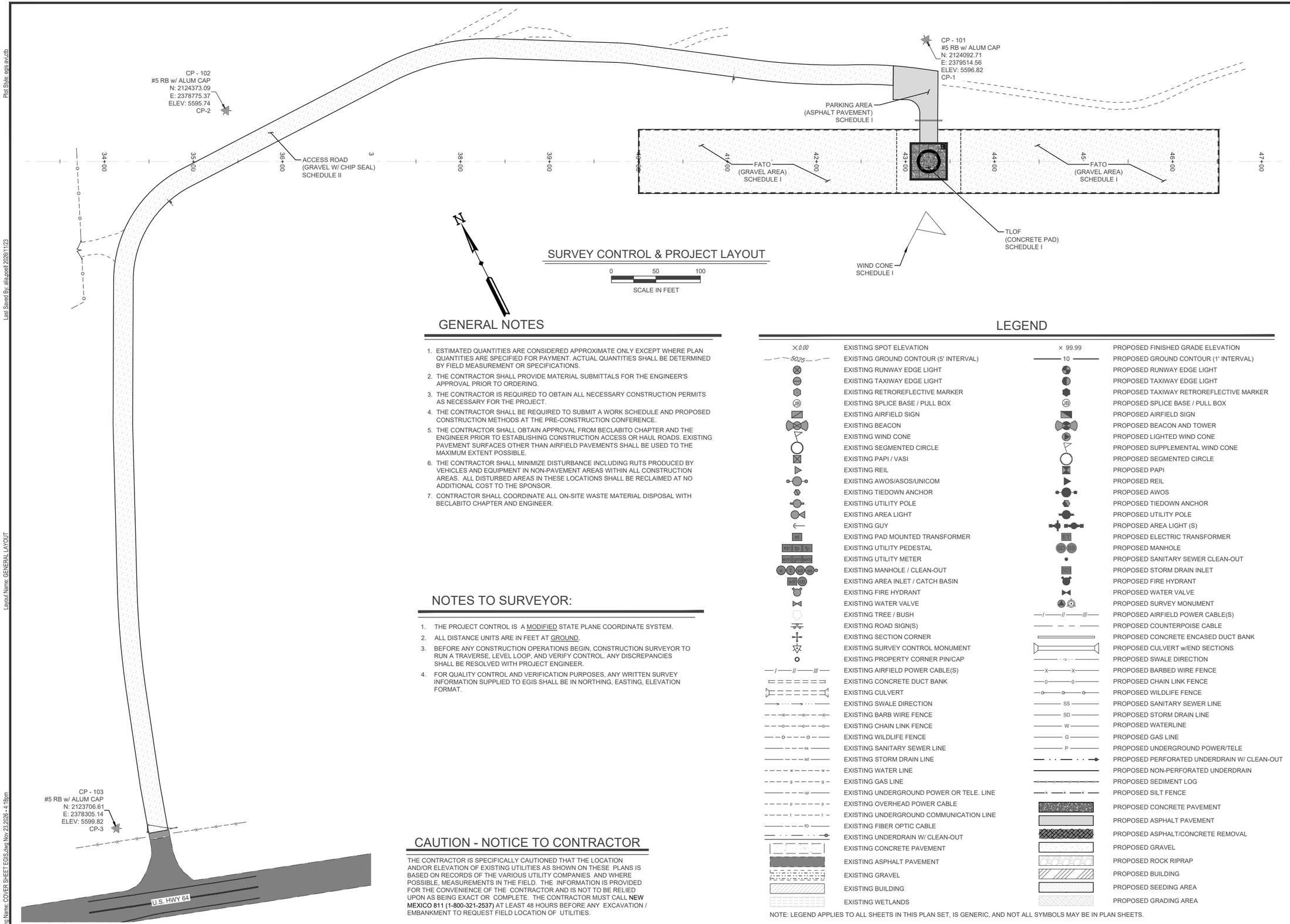
Drawing Name: COVER SHEET EGIS.dwg Nov 23,2026 - 4:18pm



GENERAL NOTES

1. ESTIMATED QUANTITIES ARE CONSIDERED APPROXIMATE ONLY EXCEPT WHERE PLAN QUANTITIES ARE SPECIFIED FOR PAYMENT. ACTUAL QUANTITIES SHALL BE DETERMINED BY FIELD MEASUREMENT OR SPECIFICATIONS.
2. THE CONTRACTOR SHALL PROVIDE MATERIAL SUBMITTALS FOR THE ENGINEER'S APPROVAL PRIOR TO ORDERING.
3. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY CONSTRUCTION PERMITS AS NECESSARY FOR THE PROJECT.
4. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT A WORK SCHEDULE AND PROPOSED CONSTRUCTION METHODS AT THE PRE-CONSTRUCTION CONFERENCE.
5. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM BECLABITO CHAPTER AND THE ENGINEER PRIOR TO ESTABLISHING CONSTRUCTION ACCESS OR HAUL ROADS. EXISTING PAVEMENT SURFACES OTHER THAN AIRFIELD PAVEMENTS SHALL BE USED TO THE MAXIMUM EXTENT POSSIBLE.
6. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE INCLUDING RUTS PRODUCED BY VEHICLES AND EQUIPMENT IN NON-PAVEMENT AREAS WITHIN ALL CONSTRUCTION AREAS. ALL DISTURBED AREAS IN THESE LOCATIONS SHALL BE RECLAIMED AT NO ADDITIONAL COST TO THE SPONSOR.
7. CONTRACTOR SHALL COORDINATE ALL ON-SITE WASTE MATERIAL DISPOSAL WITH BECLABITO CHAPTER AND ENGINEER.

NOTES TO SURVEYOR:

1. THE PROJECT CONTROL IS A MODIFIED STATE PLANE COORDINATE SYSTEM.
2. ALL DISTANCE UNITS ARE IN FEET AT GROUND.
3. BEFORE ANY CONSTRUCTION OPERATIONS BEGIN, CONSTRUCTION SURVEYOR TO RUN A TRAVERSE, LEVEL LOOP, AND VERIFY CONTROL. ANY DISCREPANCIES SHALL BE RESOLVED WITH PROJECT ENGINEER.
4. FOR QUALITY CONTROL AND VERIFICATION PURPOSES, ANY WRITTEN SURVEY INFORMATION SUPPLIED TO EGIS SHALL BE IN NORTHING, EASTING, ELEVATION FORMAT.

CAUTION - NOTICE TO CONTRACTOR

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS IN THE FIELD. THE INFORMATION IS PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR AND IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL **NEW MEXICO 811 (1-800-321-2537)** AT LEAST 48 HOURS BEFORE ANY EXCAVATION / EMBANKMENT TO REQUEST FIELD LOCATION OF UTILITIES.

LEGEND

×0.00	EXISTING SPOT ELEVATION	× 99.99	PROPOSED FINISHED GRADE ELEVATION
5025	EXISTING GROUND CONTOUR (5' INTERVAL)	10	PROPOSED GROUND CONTOUR (1' INTERVAL)
	EXISTING RUNWAY EDGE LIGHT		PROPOSED RUNWAY EDGE LIGHT
	EXISTING TAXIWAY EDGE LIGHT		PROPOSED TAXIWAY EDGE LIGHT
	EXISTING RETROREFLECTIVE MARKER		PROPOSED TAXIWAY RETROREFLECTIVE MARKER
JB	EXISTING SPLICE BASE / PULL BOX	JB	PROPOSED SPLICE BASE / PULL BOX
	EXISTING AIRFIELD SIGN		PROPOSED AIRFIELD SIGN
	EXISTING BEACON		PROPOSED BEACON AND TOWER
	EXISTING WIND CONE		PROPOSED LIGHTED WIND CONE
	EXISTING SEGMENTED CIRCLE		PROPOSED SUPPLEMENTAL WIND CONE
	EXISTING PAPI / VASI		PROPOSED SEGMENTED CIRCLE
	EXISTING REIL		PROPOSED PAPI
	EXISTING AWOS/ASOS/UNICOM		PROPOSED REIL
	EXISTING TIEDOWN ANCHOR		PROPOSED AWOS
	EXISTING UTILITY POLE		PROPOSED TIEDOWN ANCHOR
	EXISTING AREA LIGHT		PROPOSED UTILITY POLE
	EXISTING GUY		PROPOSED AREA LIGHT (S)
pad	EXISTING PAD MOUNTED TRANSFORMER	ET	PROPOSED ELECTRIC TRANSFORMER
ep tp fp	EXISTING UTILITY PEDESTAL	SS	PROPOSED MANHOLE
em gm wm	EXISTING UTILITY METER		PROPOSED SANITARY SEWER CLEAN-OUT
	EXISTING MANHOLE / CLEAN-OUT	SD	PROPOSED STORM DRAIN INLET
sdi cb	EXISTING AREA INLET / CATCH BASIN		PROPOSED FIRE HYDRANT
	EXISTING FIRE HYDRANT		PROPOSED WATER VALVE
	EXISTING WATER VALVE		PROPOSED SURVEY MONUMENT
	EXISTING TREE / BUSH		PROPOSED AIRFIELD POWER CABLE(S)
	EXISTING ROAD SIGN(S)		PROPOSED COUNTERPOISE CABLE
	EXISTING SECTION CORNER		PROPOSED CONCRETE ENCASED DUCT BANK
	EXISTING SURVEY CONTROL MONUMENT		PROPOSED CULVERT w/END SECTIONS
	EXISTING PROPERTY CORNER PIN/CAP		PROPOSED SWALE DIRECTION
	EXISTING AIRFIELD POWER CABLE(S)	X	PROPOSED BARBED WIRE FENCE
	EXISTING CONCRETE DUCT BANK	O	PROPOSED CHAIN LINK FENCE
	EXISTING CULVERT		PROPOSED WILDLIFE FENCE
	EXISTING SWALE DIRECTION	SS	PROPOSED SANITARY SEWER LINE
x	EXISTING BARB WIRE FENCE	SD	PROPOSED STORM DRAIN LINE
o	EXISTING CHAIN LINK FENCE	W	PROPOSED WATERLINE
	EXISTING WILDLIFE FENCE	G	PROPOSED GAS LINE
ss	EXISTING SANITARY SEWER LINE	P	PROPOSED UNDERGROUND POWER/TELE
sd	EXISTING STORM DRAIN LINE		PROPOSED PERFORATED UNDERDRAIN W/ CLEAN-OUT
w	EXISTING WATER LINE		PROPOSED NON-PERFORATED UNDERDRAIN
g	EXISTING GAS LINE		PROPOSED SEDIMENT LOG
up	EXISTING UNDERGROUND POWER OR TELE. LINE		PROPOSED SILT FENCE
p	EXISTING OVERHEAD POWER CABLE		PROPOSED CONCRETE PAVEMENT
t	EXISTING UNDERGROUND COMMUNICATION LINE		PROPOSED ASPHALT PAVEMENT
fo	EXISTING FIBER OPTIC CABLE		PROPOSED ASPHALT/CONCRETE REMOVAL
	EXISTING UNDERDRAIN W/ CLEAN-OUT		PROPOSED GRAVEL
	EXISTING CONCRETE PAVEMENT		PROPOSED ROCK RIPRAP
	EXISTING ASPHALT PAVEMENT		PROPOSED BUILDING
	EXISTING GRAVEL		PROPOSED SEEDING AREA
	EXISTING BUILDING		PROPOSED GRADING AREA
	EXISTING WETLANDS		

NOTE: LEGEND APPLIES TO ALL SHEETS IN THIS PLAN SET, IS GENERIC, AND NOT ALL SYMBOLS MAY BE IN PLAN SHEETS.

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BECLABITO HELIPAD

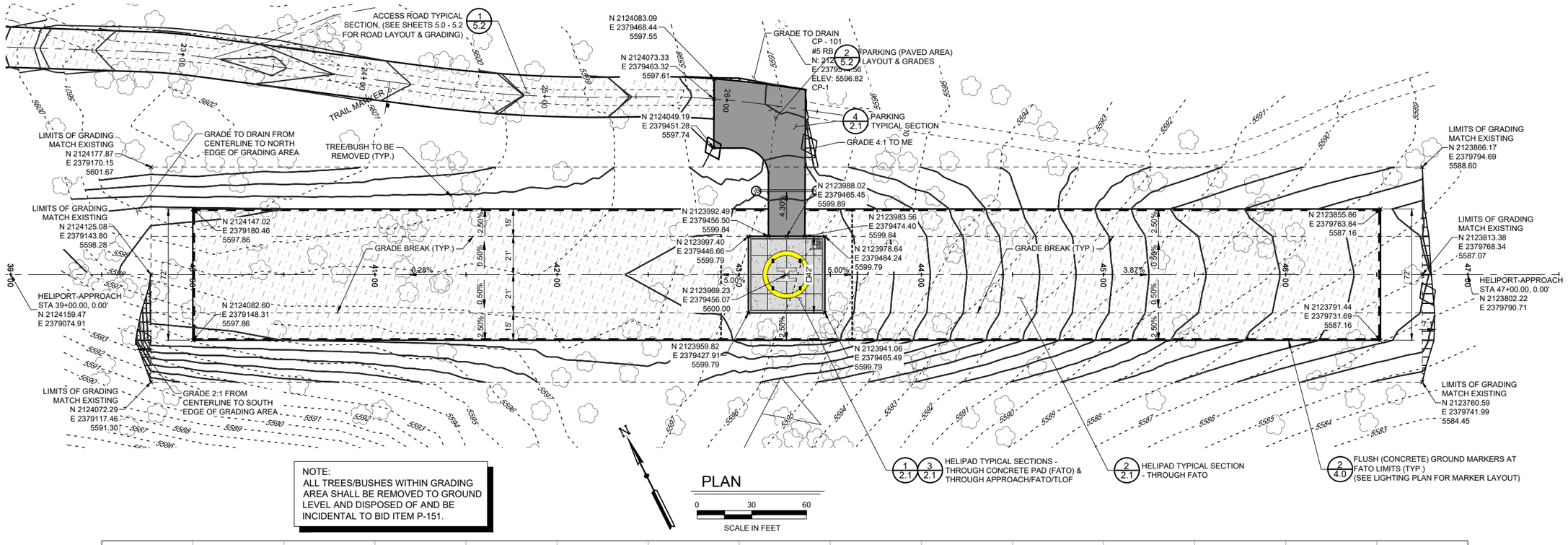
BECLABITO, NEW MEXICO
RFP BID No. 26-10-4328JB

PROJECT NO.	28364
DRAWN BY	AMP
DATE	09/22/2026
CHECKED BY	DWK
DATE	09/21/2026
DESIGNED BY	DWK
DATE	09/11/2026
REVISIONS	DATE

GENERAL LAYOUT

1.1

Plot Style: egis av.ctb
Last Saved By: alla.ocell 2026/11/23
Layout Name: GENERAL LAYOUT
Drawing Name: COVER SHEET EGIS.dwg Nov 23,2026 - 4:18pm

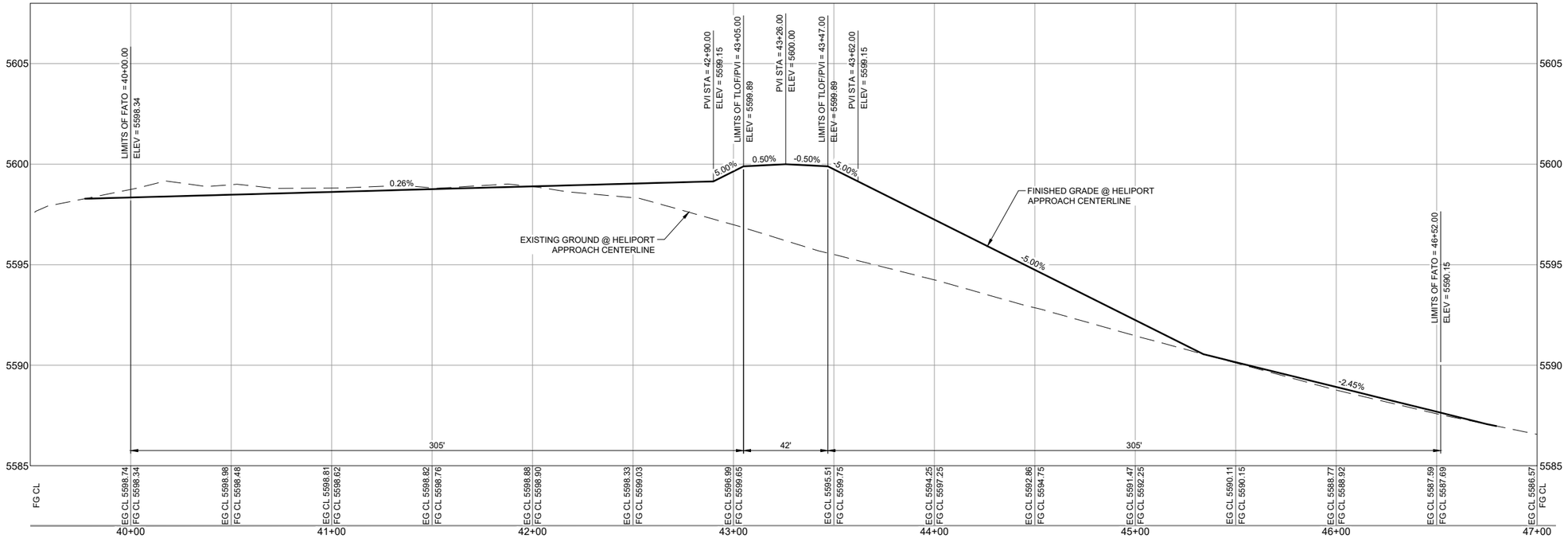


NOTE:
ALL TREES/BUSHES WITHIN GRADING AREA SHALL BE REMOVED TO GROUND LEVEL AND DISPOSED OF AND BE INCIDENTAL TO BID ITEM P-151.

PLAN

0 30 60

SCALE IN FEET



PROFILE

0 30 60

SCALE IN FEET: HORIZONTAL

0 3 6

SCALE IN FEET: VERTICAL

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BECLABITO HELIPAD

BECLABITO, NEW MEXICO

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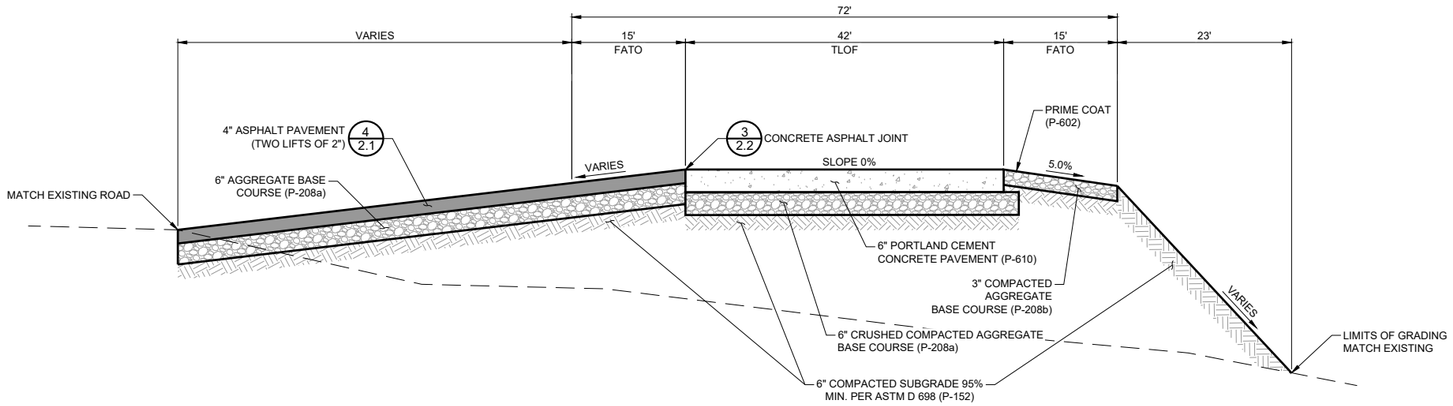
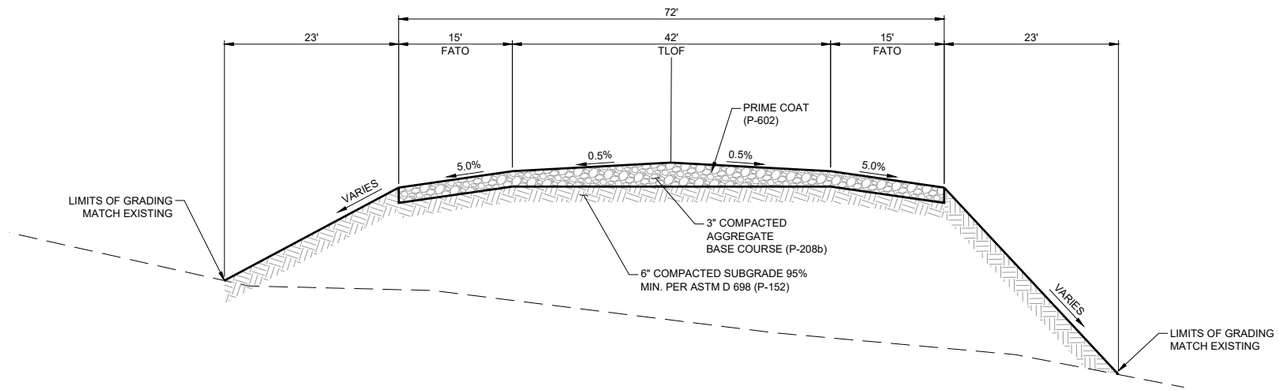
HELIPAD LAYOUT, PLAN & PROFILE & GRADING PLAN

2.0



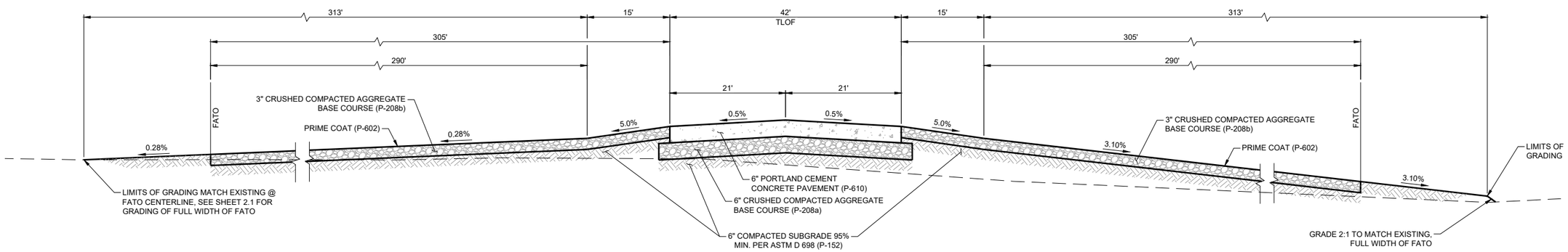
1 / 2.1 HELIPAD TYPICAL SECTION - THROUGH CONCRETE PAD
NOT TO SCALE



2 / 2.1 HELIPAD TYPICAL SECTION - THROUGH FATO
NOT TO SCALE

NOTE:
ASPHALT PARKING PAD WILL BE
INCIDENTAL TO THE VEHICLE GATE ITEM.

4 / 2.1 PARKING TYPICAL SECTION
NOT TO SCALE



3 / 2.1 HELIPAD TYPICAL SECTION - THROUGH APPROACH/FATO/TLOF
NOT TO SCALE

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BECLABITO HELIPAD

BECLABITO, NEW MEXICO

RFP BID No. 26-10-4328-JB

PROJECT NO.	28364
DRAWN BY AMP	DATE 09/11/2026
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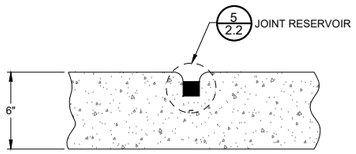
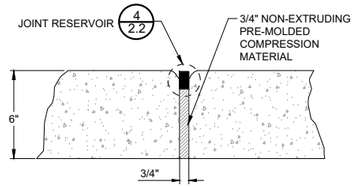
HELIPAD TYPICAL SECTIONS

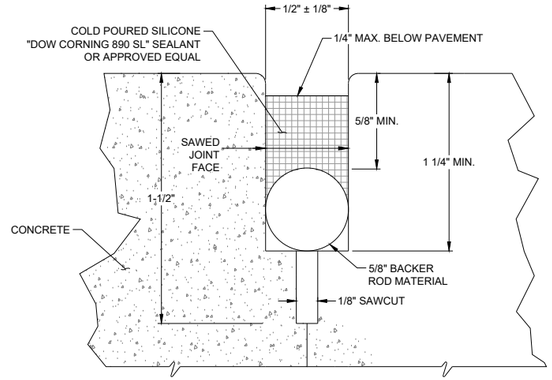
2.1



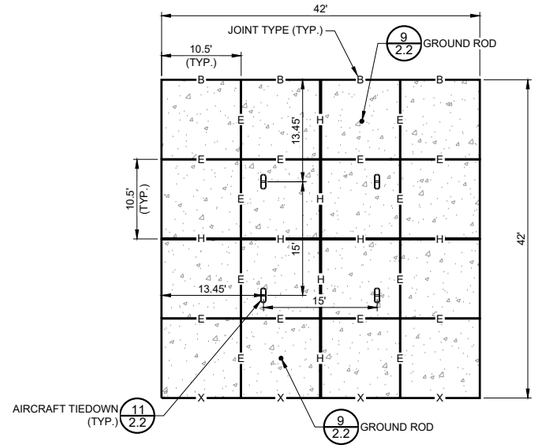
1 2.2 TYPE H - DUMMY JOINT
NOT TO SCALE



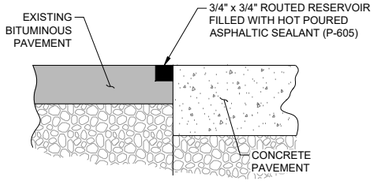
2 2.2 TYPE A - EXPANSION JOINT
NOT TO SCALE



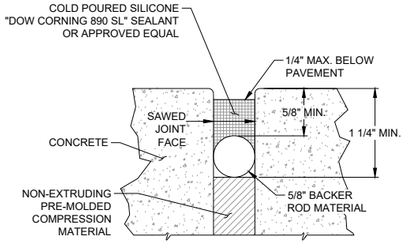
5 2.2 DUMMY JOINT RESERVOIR
NOT TO SCALE



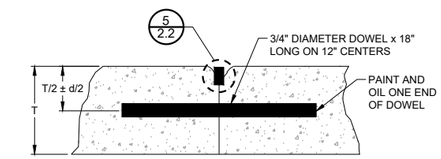
10 2.2 CONCRETE PAD JOINT DETAIL
SCALE IN FEET



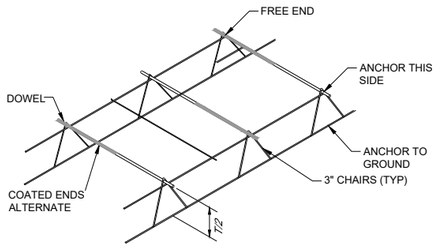
3 2.2 TYPE B - CONCRETE / ASPHALT JOINT
NOT TO SCALE



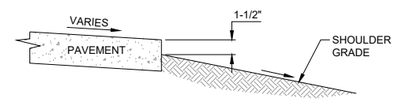
4 2.2 EXPANSION JOINT RESERVOIR
NOT TO SCALE



6 2.2 TYPE E - DOWELED CONSTRUCTION JOINT
NOT TO SCALE

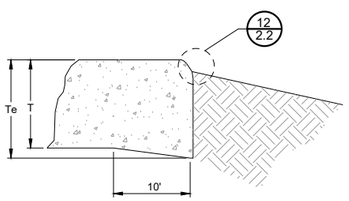


7 2.2 CONSTRUCTION JOINT DOWEL BASKET
NOT TO SCALE



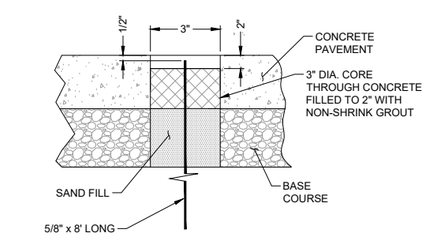
NOTE: EDGE DROP SHALL NOT
EXCEED 2 INCHES BELOW
ADJACENT PAVEMENT POST
COMPACTION.

12 2.2 PAVEMENT EDGE DROP
NOT TO SCALE

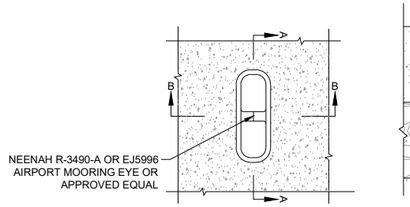


Te = 1.25 T TO NEAREST 1" (3mm)
BUT AT LEAST T + 2" (5mm)

8 2.2 TYPE X - THICKENED EDGE
NOT TO SCALE

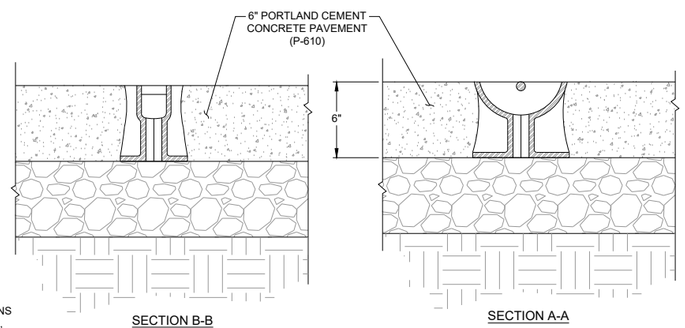


9 2.2 GROUND ROD
NOT TO SCALE
PLACE GROUND ROD(S) IN
LOCATIONS DIRECTED BY ENGINEER



PLAN VIEW

NOTE: CONTRACTOR SHALL ENSURE TIEDOWNS
ARE CLEAR OF ANY DEBRIS INCLUDING,
BUT NOT LIMITED TO, PAINT MATERIAL



SECTION B-B

SECTION A-A

11 2.2 AIRCRAFT TIEDOWN DETAIL
NOT TO SCALE

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BECLABITO HELIPAD

BECLABITO, NEW MEXICO

RFP BID No. 26-10-4328JB

PROJECT NO.	28364
DRAWN BY AMP	DATE 09/11/2026
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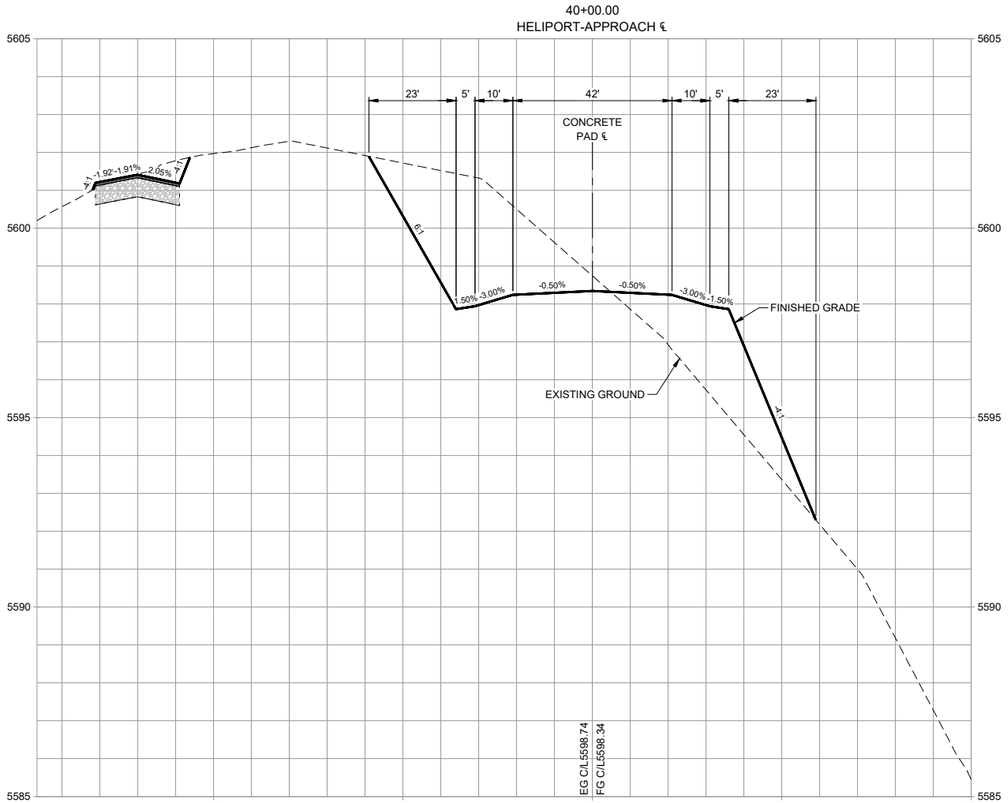
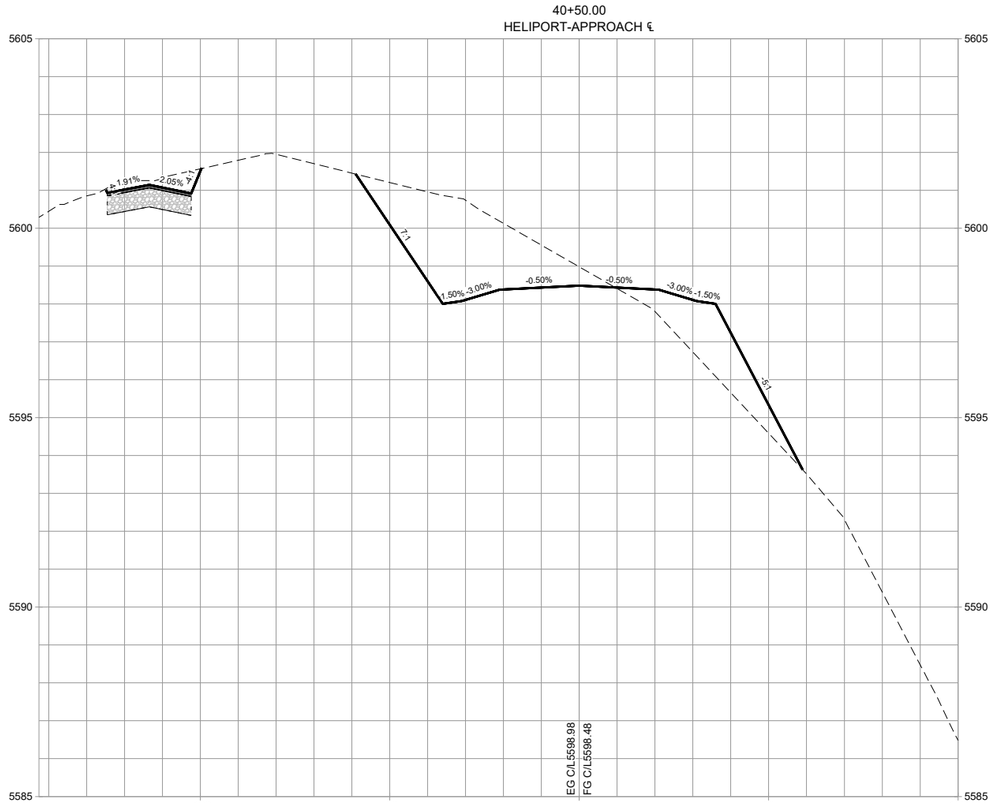
REVISIONS	DATE

CONCRETE DETAILS

2.2





0 20 40
SCALE IN FEET: HORIZONTAL

0 2 4
SCALE IN FEET: VERTICAL

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BECLABITO HELIPAD

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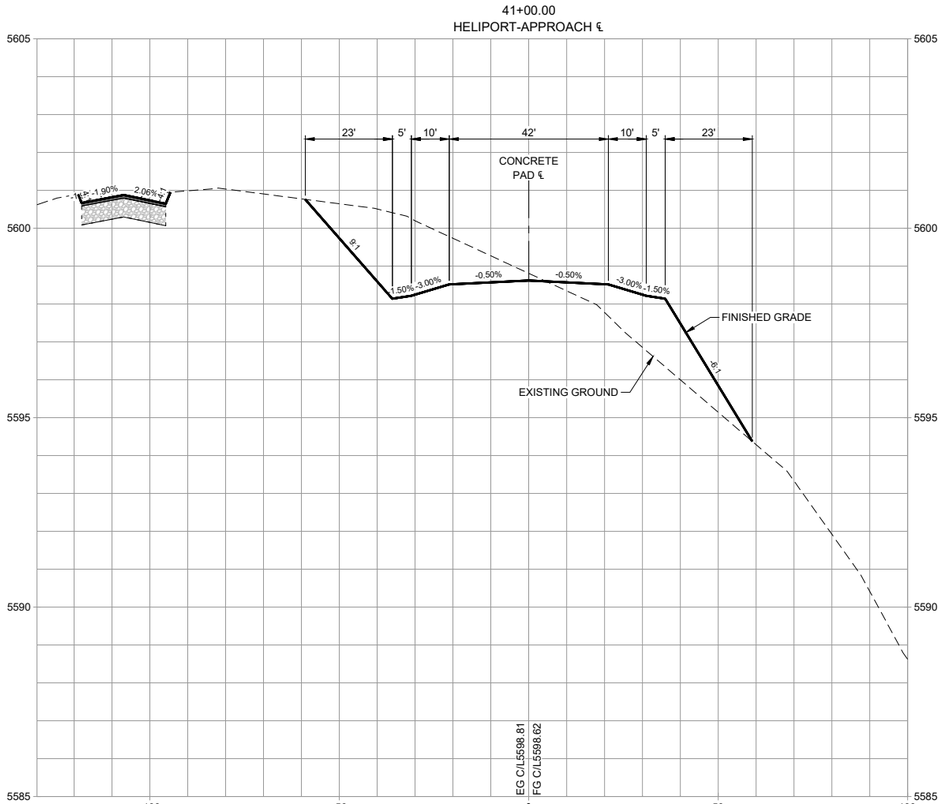
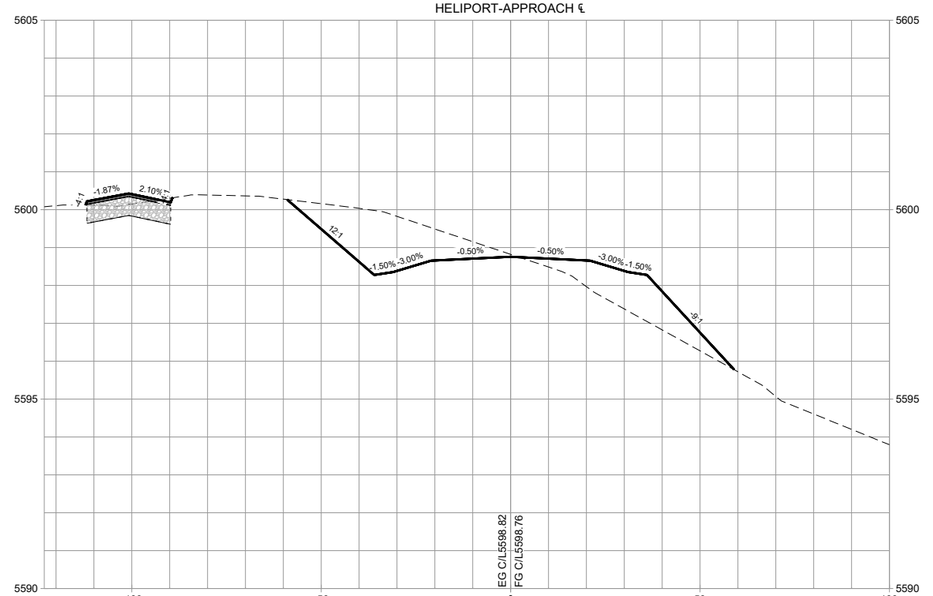
HELIPAD APPROACH
CROSS SECTIONS

2.3







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BECLABITO HELIPAD

BECLABITO, NEW MEXICO

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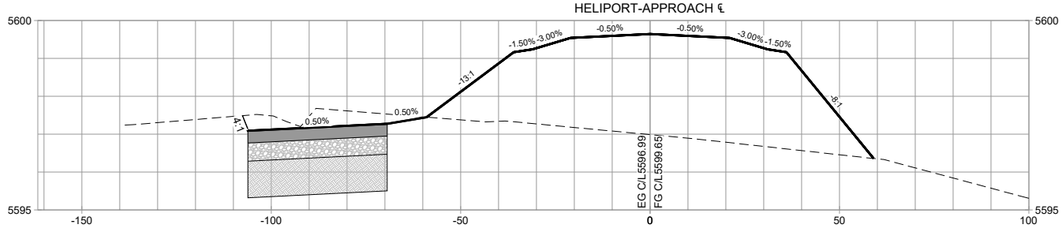
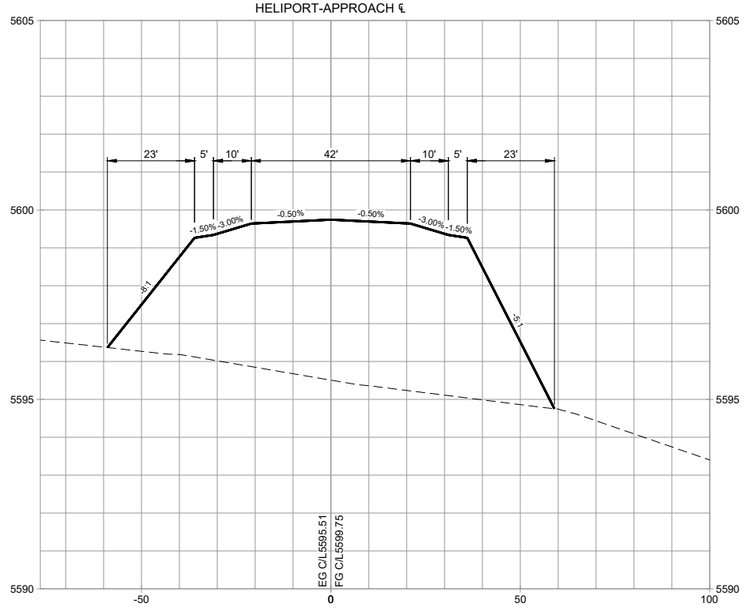
HELIPAD APPROACH
CROSS SECTIONS

2.4

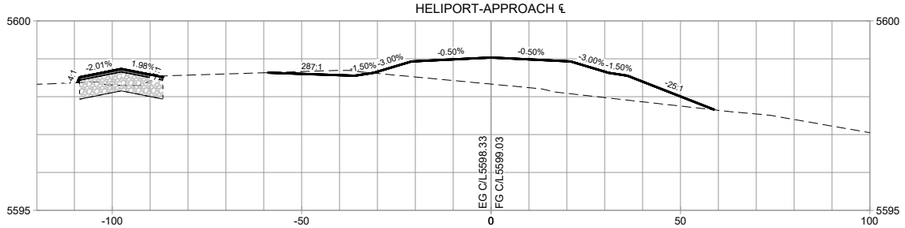
43+00.00
HELIPORT-APPROACH ℄

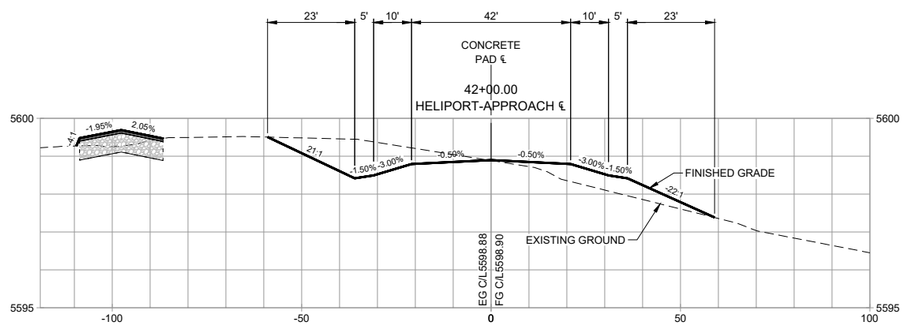


43+50.00
HELIPORT-APPROACH ℄

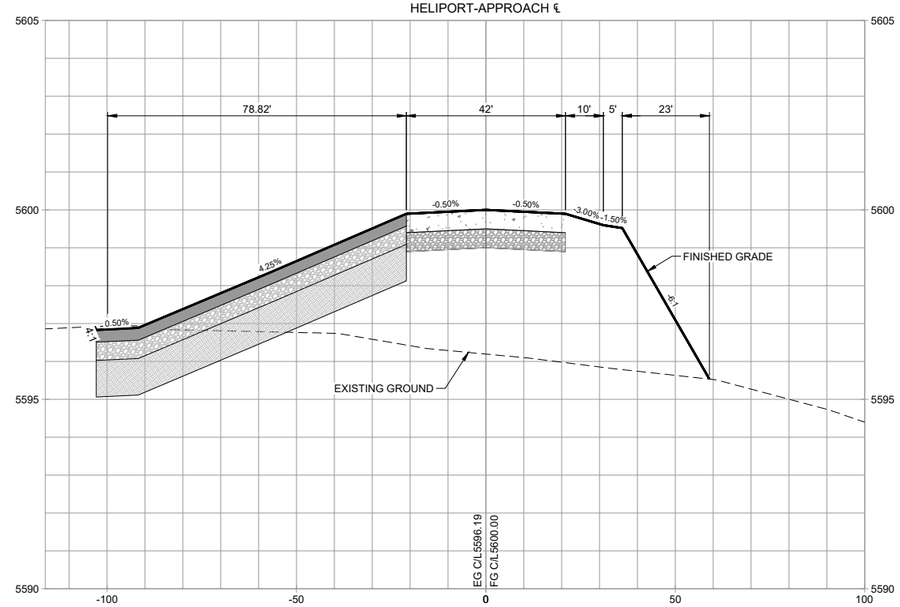


42+50.00
HELIPORT-APPROACH ℄





43+26.00
HELIPORT-APPROACH ℄



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BECLABITO HELIPAD

BECLABITO, NEW MEXICO

RFP BID No. 26-10-4328-IB

PROJECT NO.	28364
DRAWN BY	AMP
DATE	09/11/2026
CHECKED BY	DWK
DATE	09/11/2026
DESIGNED BY	DWK
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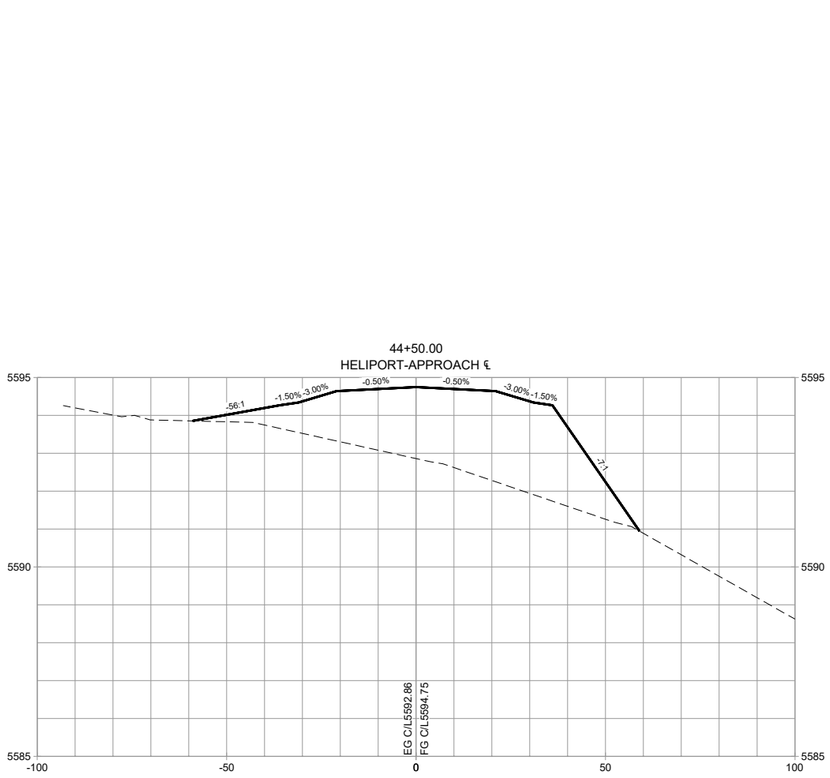
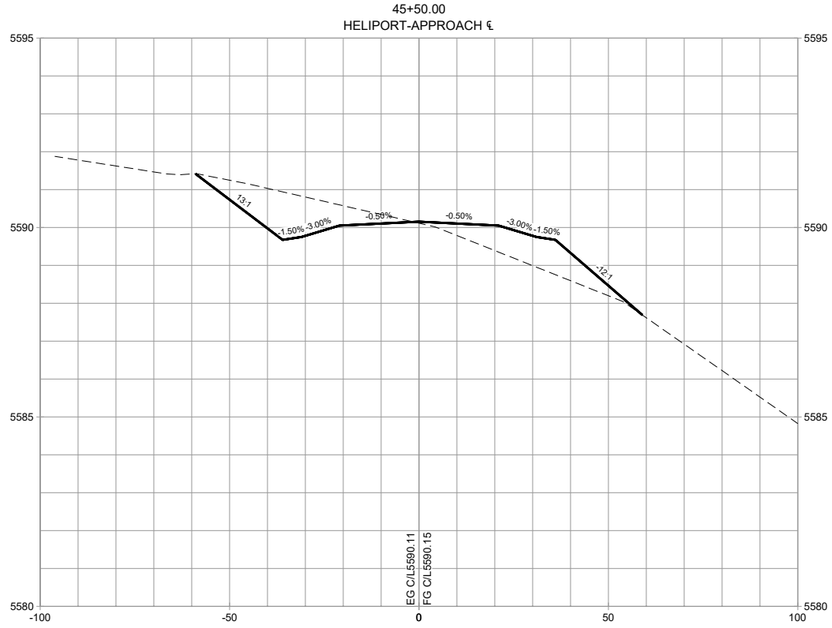
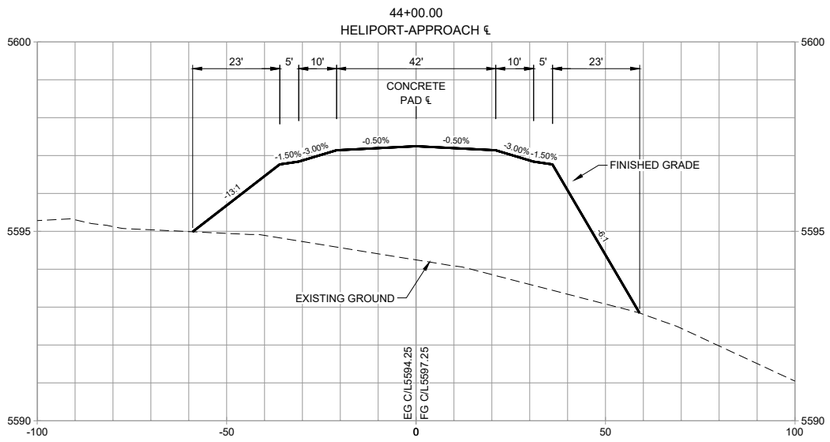
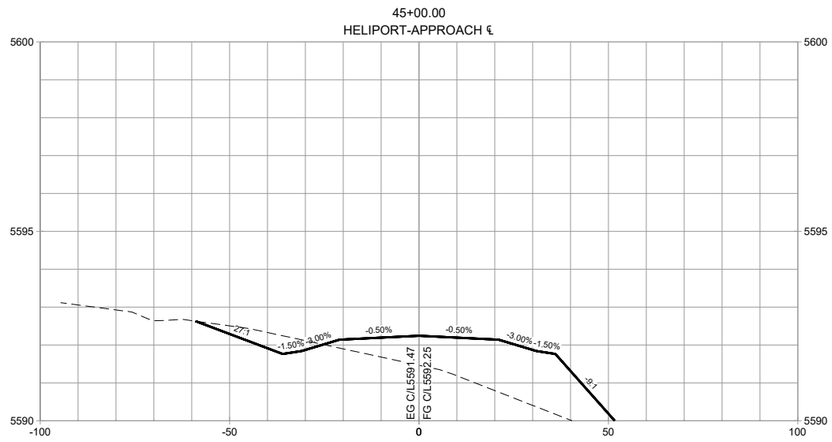
HELIPAD APPROACH
CROSS SECTIONS

2.5









0 20 40
SCALE IN FEET: HORIZONTAL

0 2 4
SCALE IN FEET: VERTICAL

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BECLABITO HELIPAD

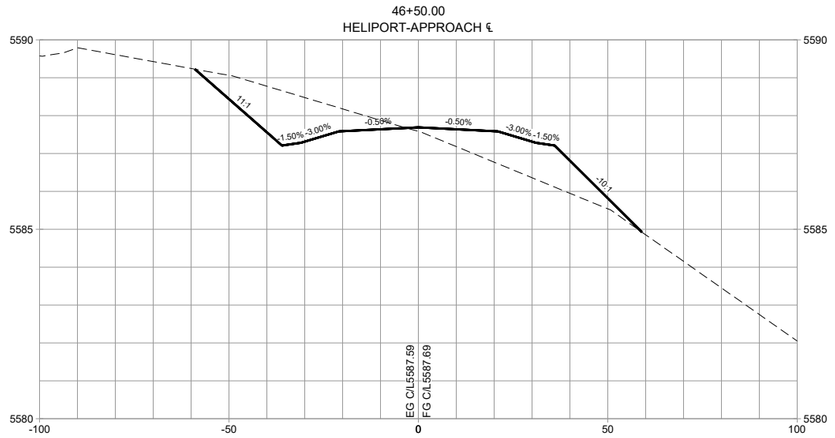
BECLABITO, NEW MEXICO

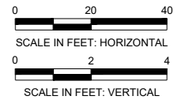
RFP BID No. 26-10-4328.IB

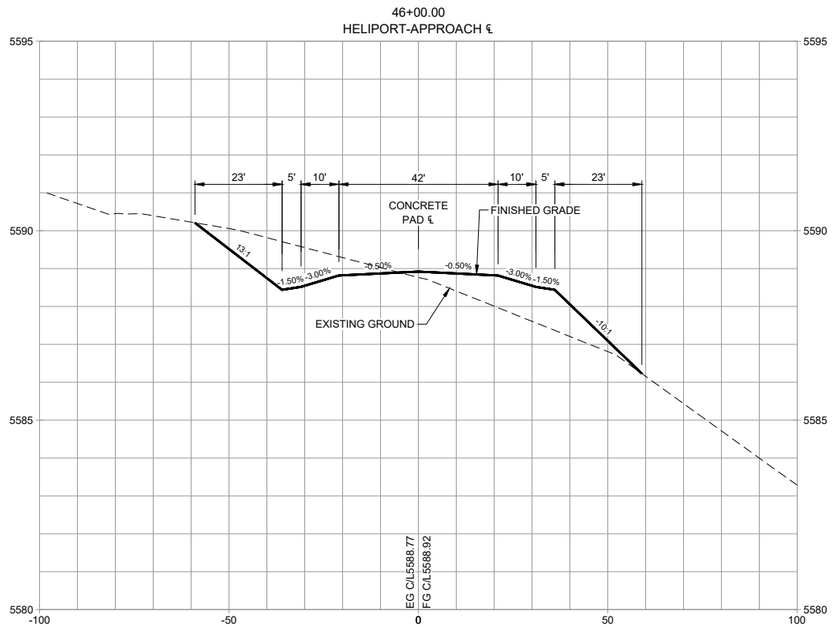
PROJECT NO.	28364
DRAWN BY	AMP
DATE	09/11/2026
CHECKED BY	DWK
DATE	09/11/2026
DESIGNED BY	DWK
DATE	09/11/2026
REVISIONS	DATE

HELIPAD APPROACH
CROSS SECTIONS

2.6







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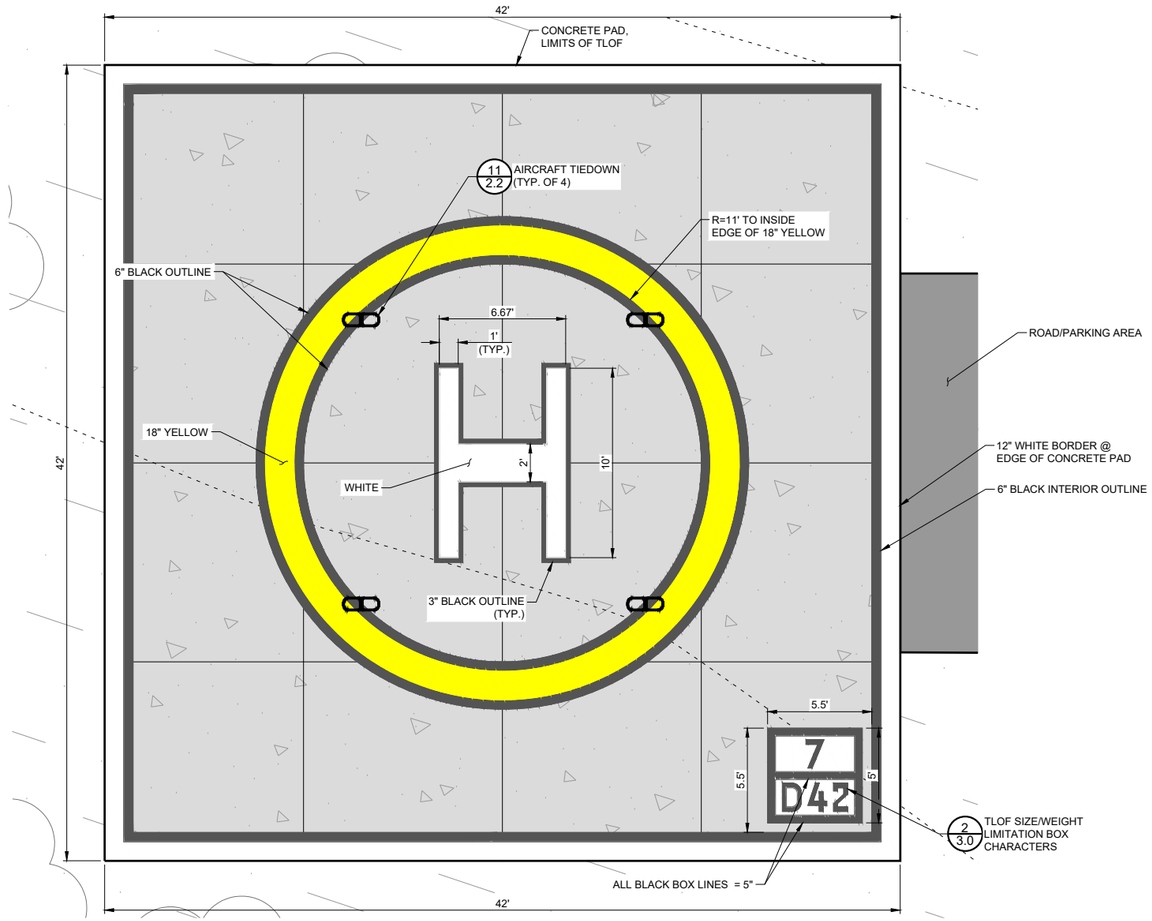
HELIPAD APPROACH
CROSS SECTIONS

2.7



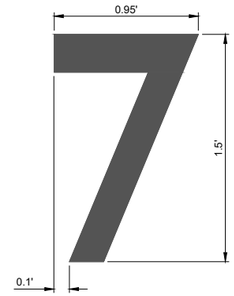
1 3.0 TLOF MARKING

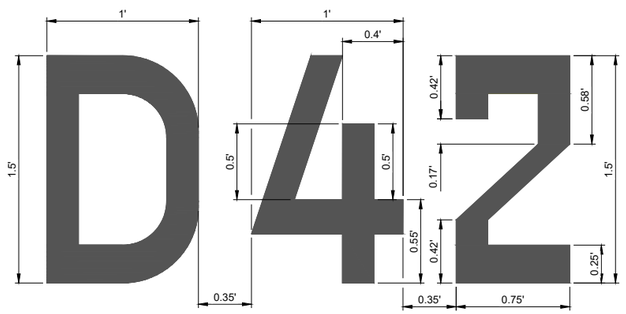
4 0 4 8

Scale in Feet

NOTE:

1. "H" AND YELLOW CIRCLE SHALL BE CENTERED ON CONCRETE PAD.
2. BACKGROUND SHALL NOT BE MARKED.
3. CONTRACTOR SHALL ENSURE CONCRETE CURING COMPOUND HAS BEEN REMOVED FROM PAINT AREA PRIOR TO MARKING.





2 3.0 TLOF SIZE/WEIGHT LIMITATION BOX CHARACTERS

NOT TO SCALE

NOTE:

ALL CHARACTERS SHALL HAVE THE FOLLOWING CHARACTERISTICS
(UNLESS OTHERWISE SPECIFIED)
18" HIGH
9" WIDE
2.5 " VERTICAL STROKE
3" HORIZONTAL STROKE
ALL NUMERALS ARE BLACK

CENTER CHARACTERS INSIDE OF BOXES

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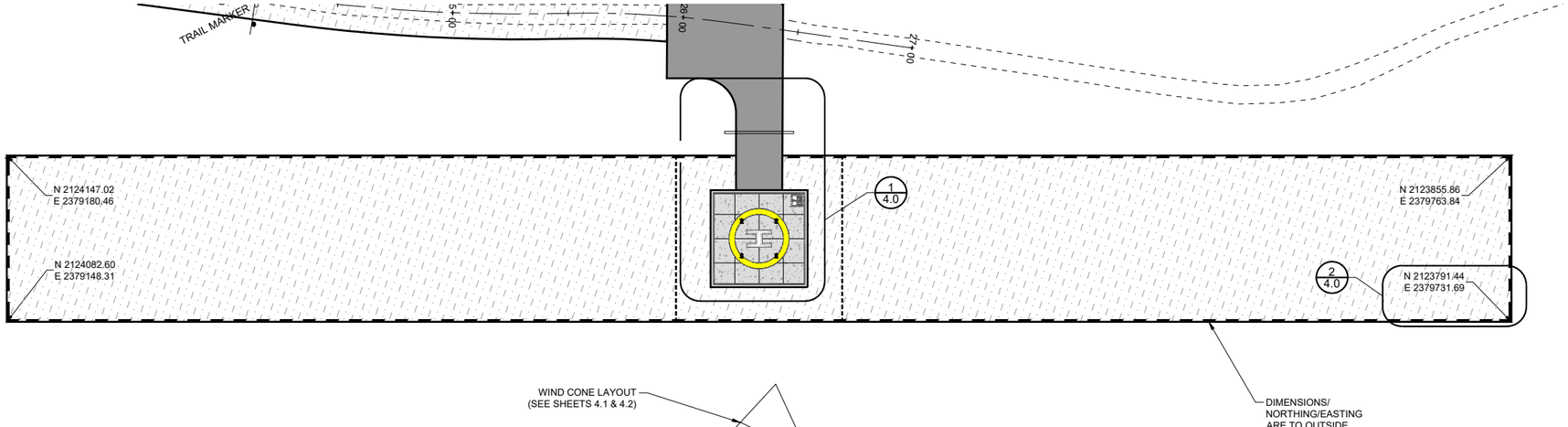
HELIPAD PLAN & MARKING DETAILS

3.0



CAUTION - NOTICE TO CONTRACTOR

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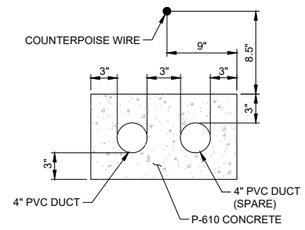
MARKER LAYOUT

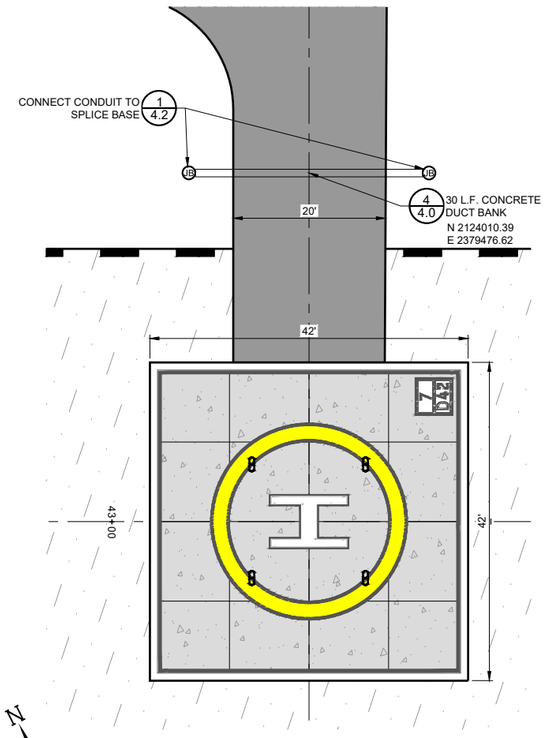
0 60 120

SCALE IN FEET



2-WAY

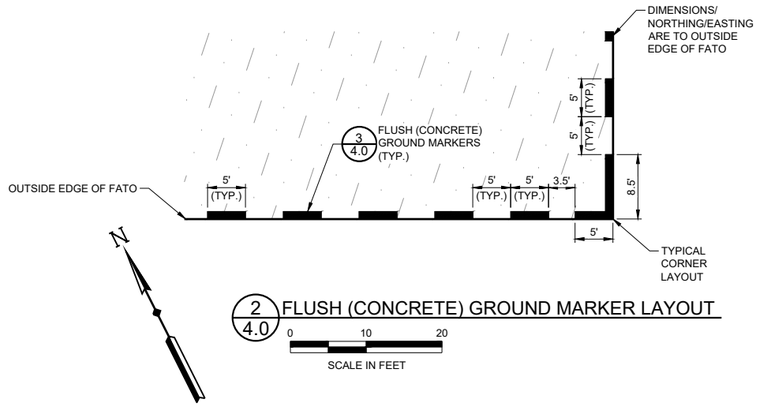
5 4.0 DUCT CROSS SECTIONS
NOT TO SCALE



1 4.0 TLOF LAYOUT

0 10 20

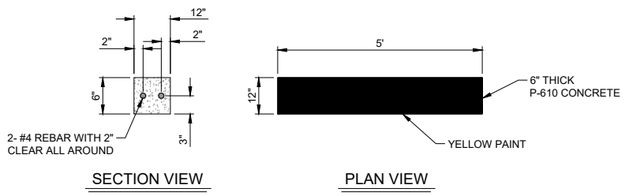
SCALE IN FEET



2 4.0 FLUSH (CONCRETE) GROUND MARKER LAYOUT

0 10 20

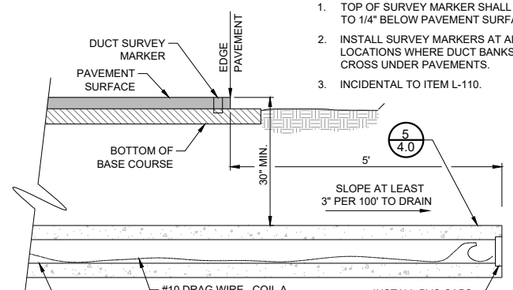
SCALE IN FEET



SECTION VIEW PLAN VIEW

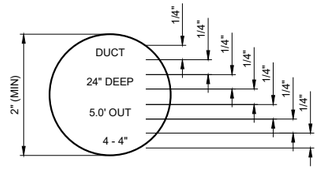
NOTE:
SET MARKERS WITH TOP SURFACE AT 2" ABOVE GROUND SURFACE.

3 4.0 FLUSH (CONCRETE) GROUND MARKERS
NOT TO SCALE

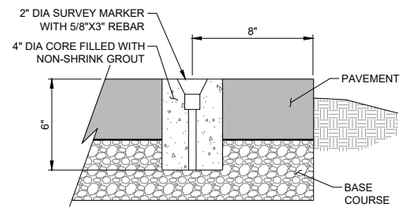


DUCT SURVEY MARKER NOTES:

1. TOP OF SURVEY MARKER SHALL BE 0" TO 1/4" BELOW PAVEMENT SURFACE.
2. INSTALL SURVEY MARKERS AT ALL LOCATIONS WHERE DUCT BANKS CROSS UNDER PAVEMENTS.
3. INCIDENTAL TO ITEM L-110.



NOTE: DUCT MARKERS SHALL BE THE SIZE INDICATED. THE WORDS DUCT (PLUS QUANTITY, SIZE DEPTH AND END LOCATION) SHALL BE STAMPED ON THE CAP AS REQUIRED.



DUCT SURVEY MARKER

4 4.0 DUCT & DUCT MARKER
NOT TO SCALE

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BECLABITO, NEW MEXICO

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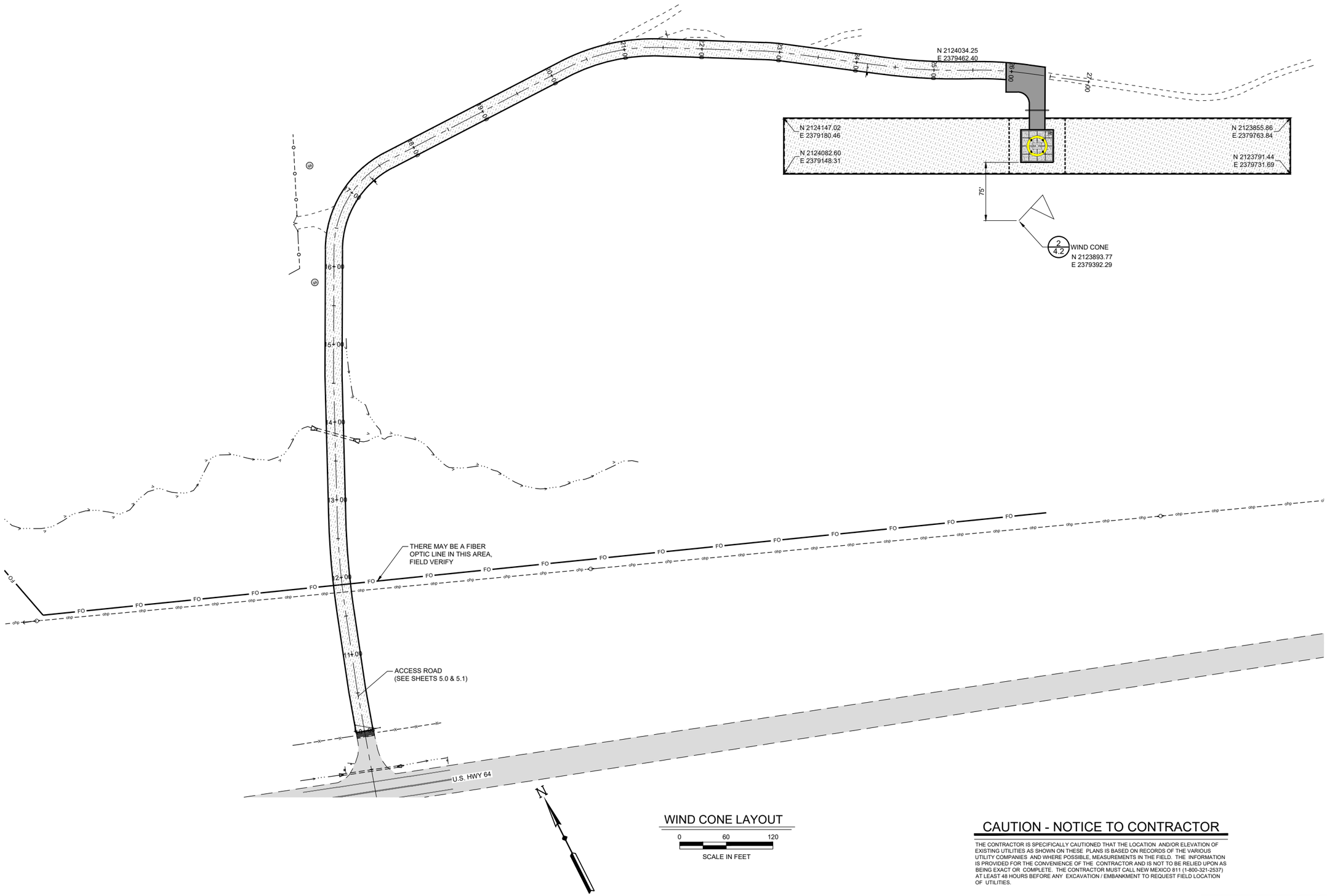
MARKER LAYOUT & DETAILS

4.0



WIND CONE LAYOUT

0 60 120

SCALE IN FEET

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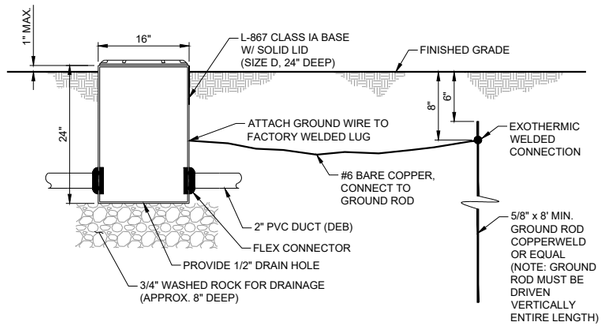
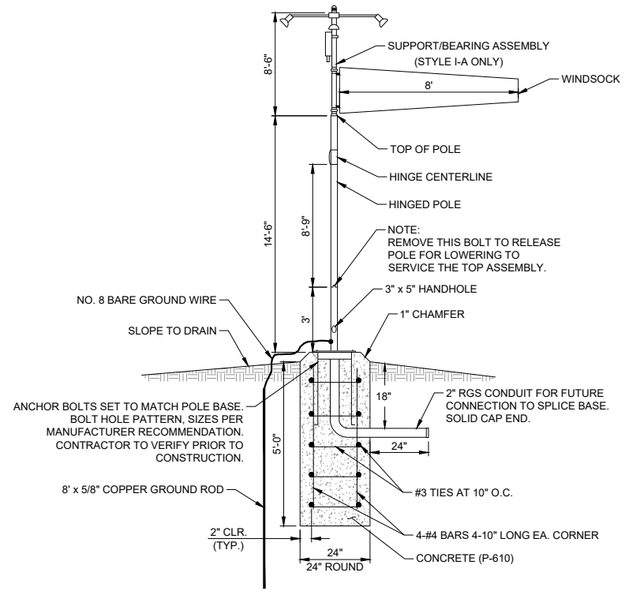
WIND CONE LAYOUT

4.1



1 4.2 SPLICE BASE DETAIL
NOT TO SCALE



NOTE: WIND CONE SHALL BE INSTALLED WITHOUT ANY LIGHTS OR ELECTRICAL COMPONENTS. THE WIND CONE SHALL BE INSTALLED SO THAT ELECTRICAL COMPONENTS MAY BE ADDED IN THE FUTURE.

2 4.2 WIND CONE DETAIL
NOT TO SCALE

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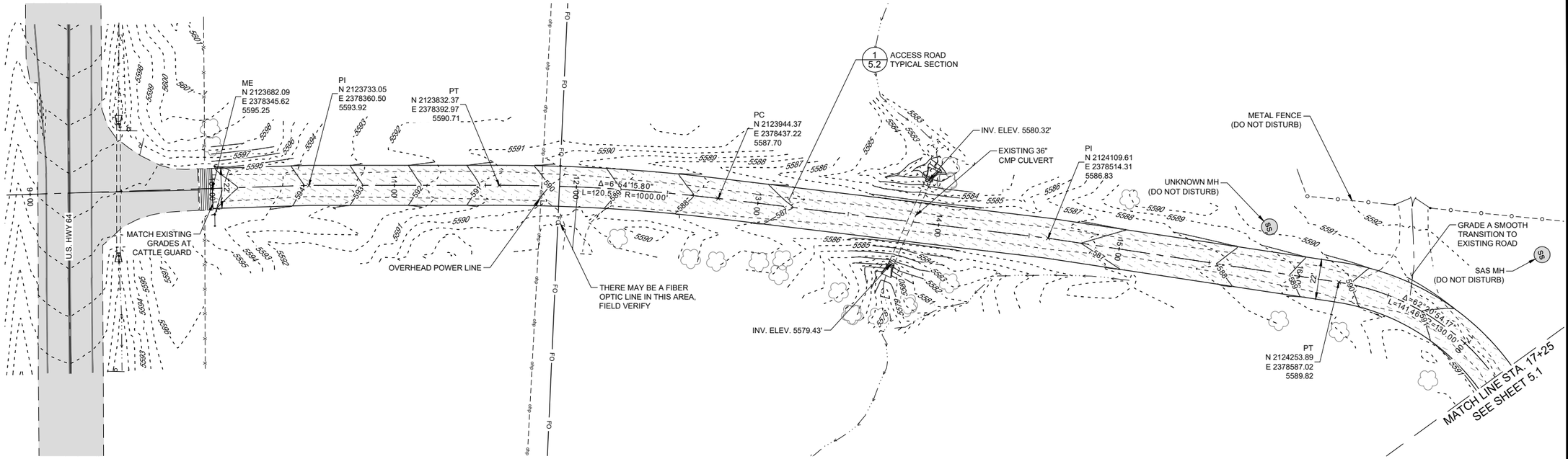
WIND CONE
DETAILS

4.2

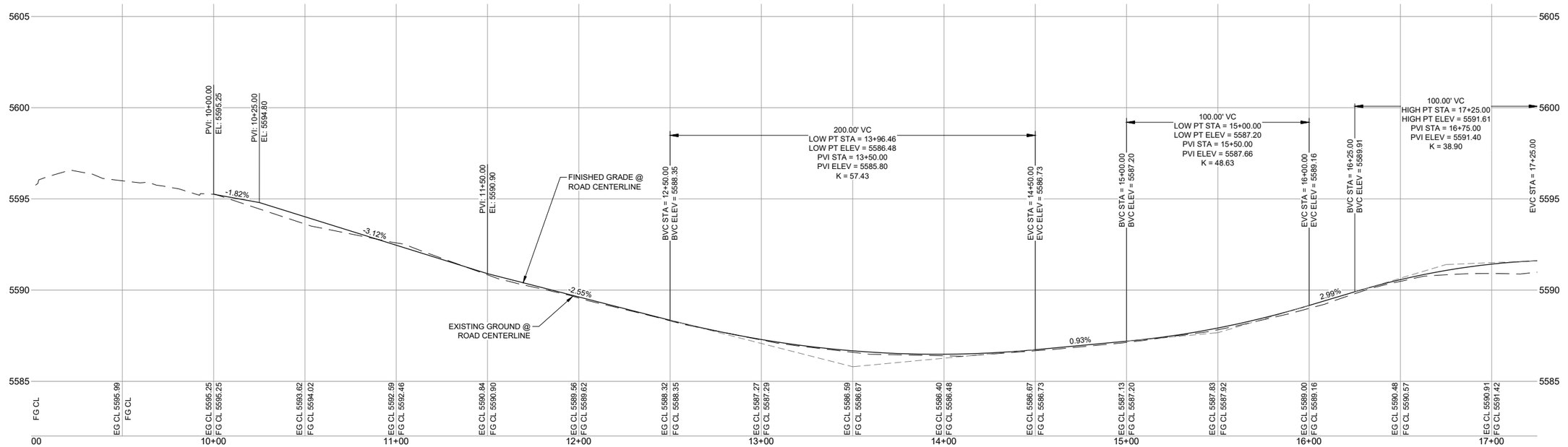


PLAN

0 30 60

SCALE IN FEET

GEOMETRIC LAYOUT ABBREVIATIONS	
PI	POINT OF INTERSECTION/POINT ON LINE
PT	POINT OF TANGENCY
PC	POINT OF CURVATURE
ME	MATCH EXISTING



PROFILE

0 30 60

SCALE IN FEET: HORIZONTAL

0 3 6

SCALE IN FEET: VERTICAL

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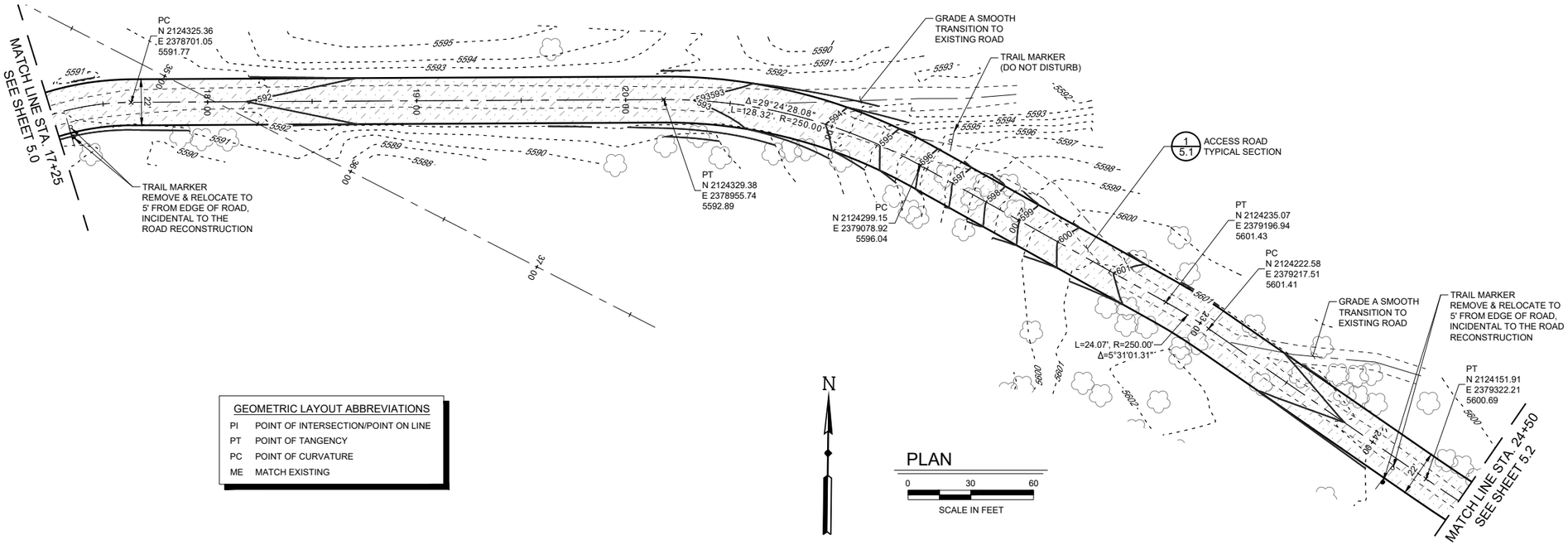
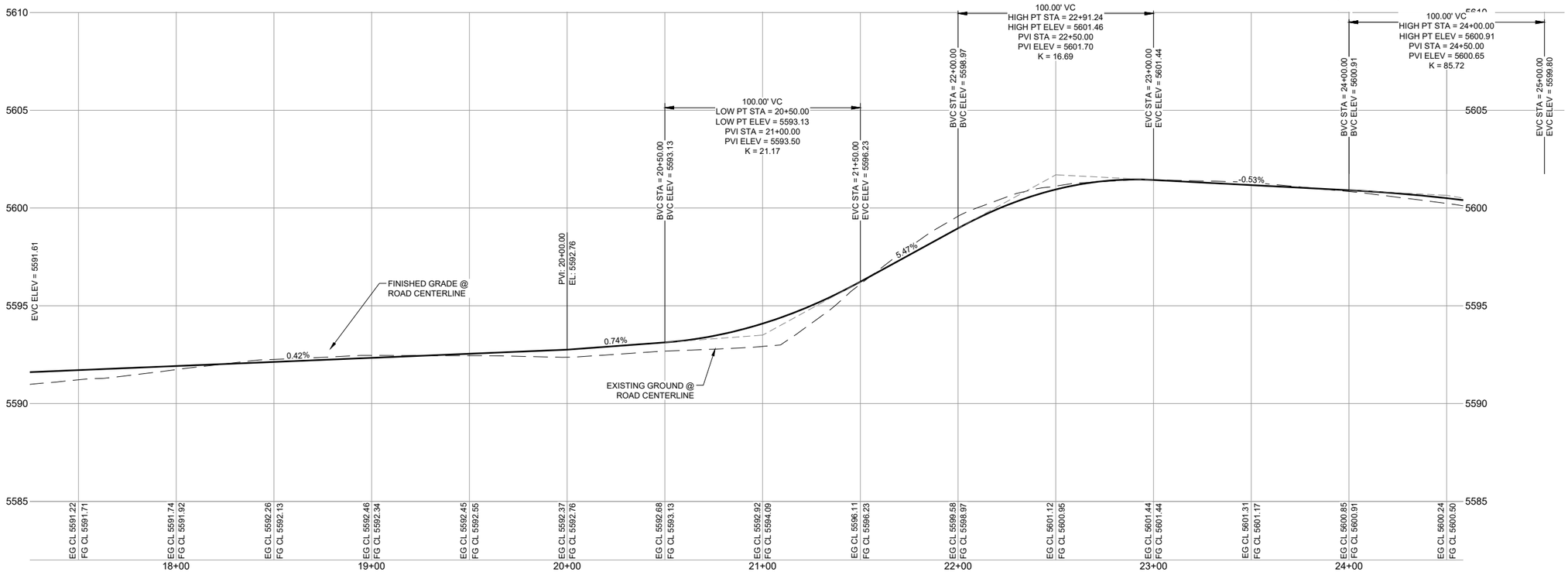
ACCESS ROAD
PLAN & PROFILE

5.0



GEOMETRIC LAYOUT ABBREVIATIONS

PI	POINT OF INTERSECTION/POINT ON LINE
PT	POINT OF TANGENCY
PC	POINT OF CURVATURE
ME	MATCH EXISTING



PROFILE

0 30 60

SCALE IN FEET: HORIZONTAL

0 3 6

SCALE IN FEET: VERTICAL

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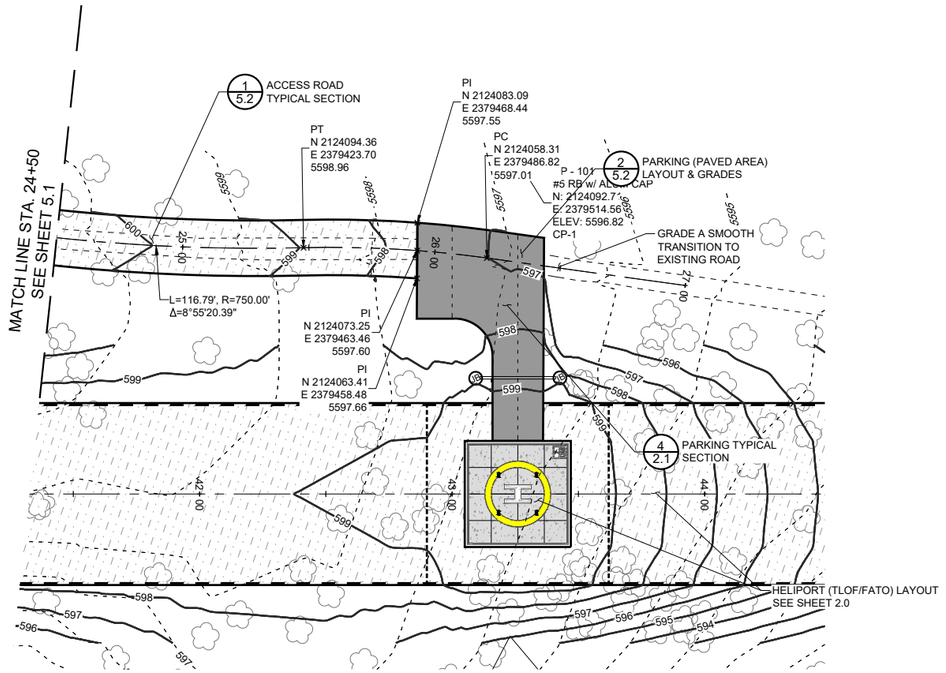
ACCESS ROAD
PLAN & PROFILE

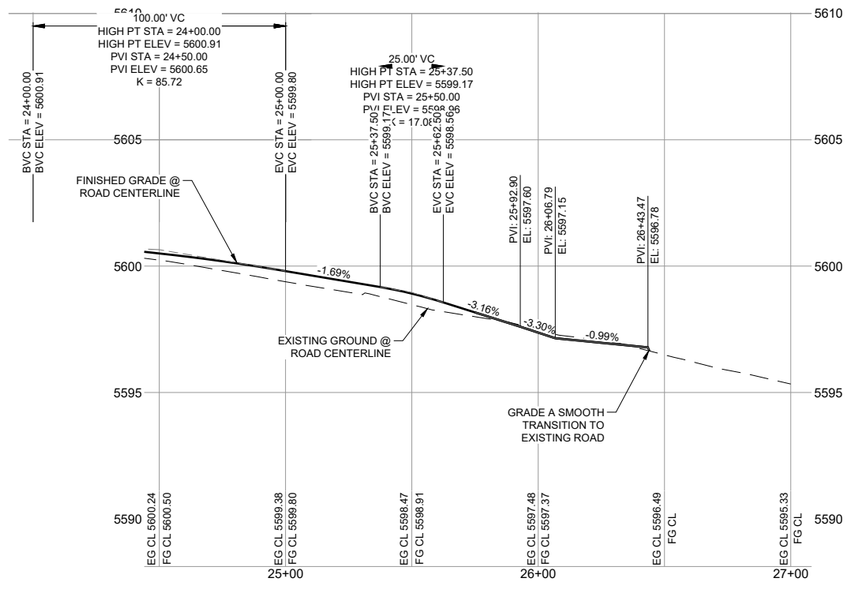
5.1



PLAN

0 30 60

SCALE IN FEET



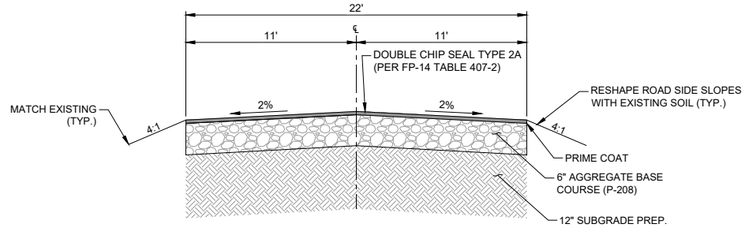
PROFILE

0 30 60

SCALE IN FEET: HORIZONTAL

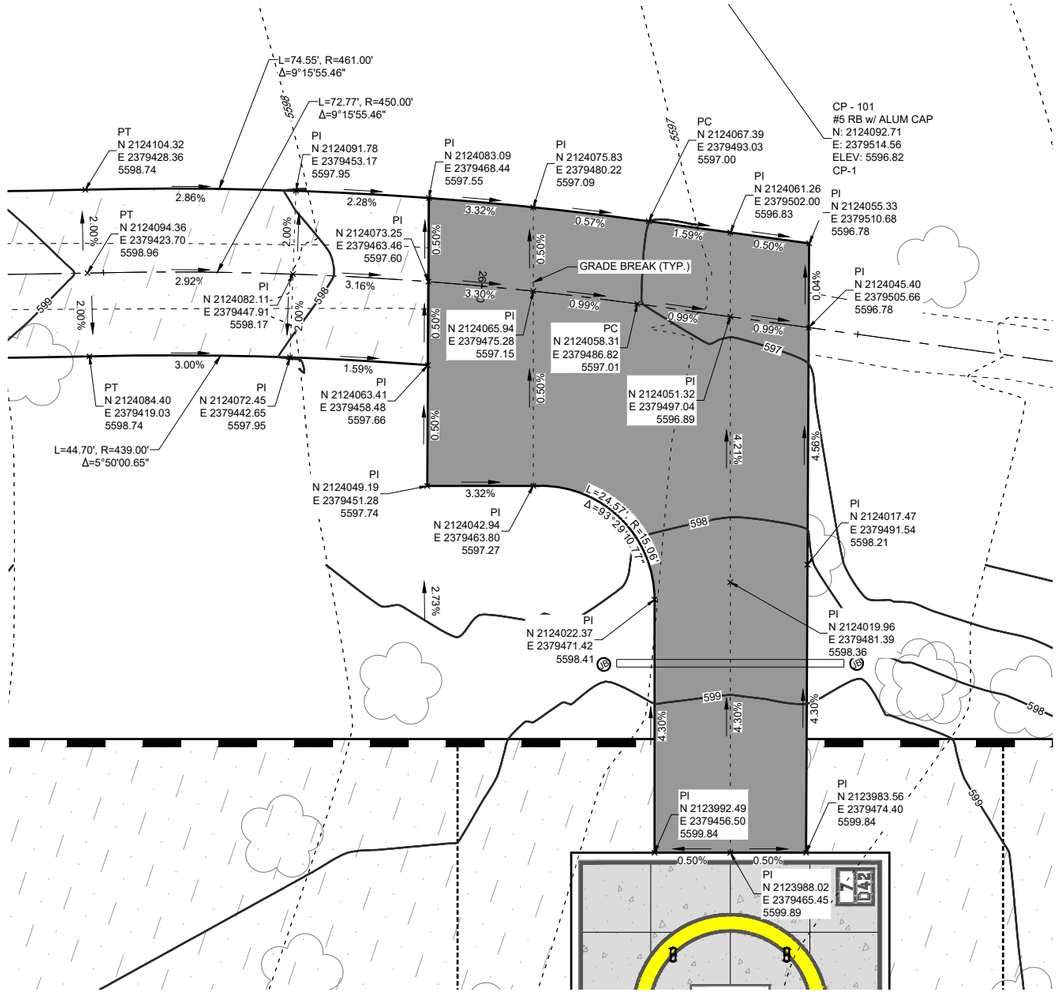
0 3 6

SCALE IN FEET: VERTICAL



NOTE:
CONTRACTOR TO RESHAPE ROAD TO
MATCH TYPICAL SECTION.

1
5.2
ACCESS ROAD TYPICAL SECTION
NOT TO SCALE



2
5.2
PARKING (PAVED AREA) LAYOUT & GRADES

0 10 20

SCALE IN FEET

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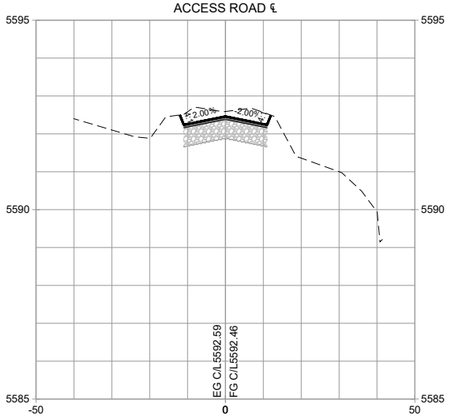
ACCESS ROAD PLAN
& PROFILE, TYPICAL
SECTIONS

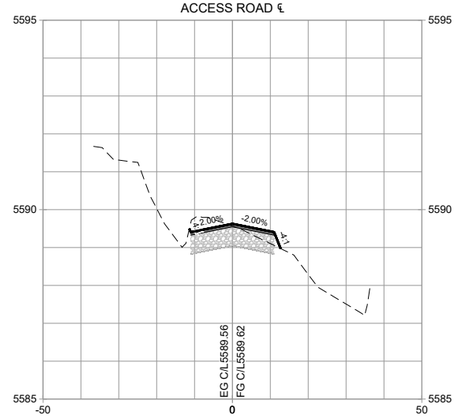
5.2

0 20 40
SCALE IN FEET: HORIZONTAL
0 2 4
SCALE IN FEET: VERTICAL

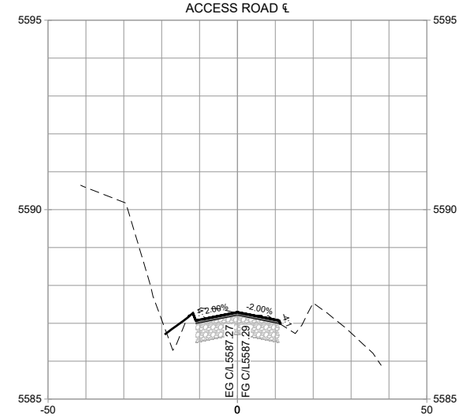
11+00.00
ACCESS ROAD ℄



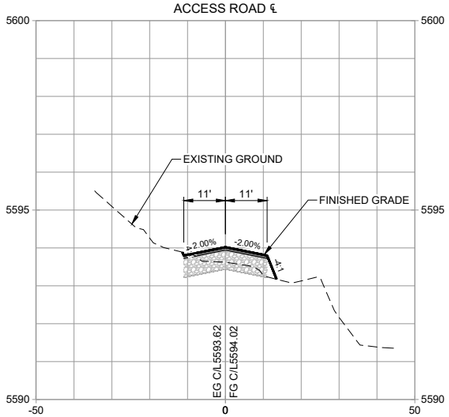
12+00.00
ACCESS ROAD ℄



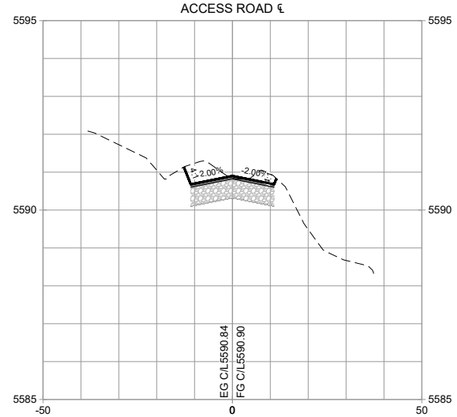
13+00.00
ACCESS ROAD ℄



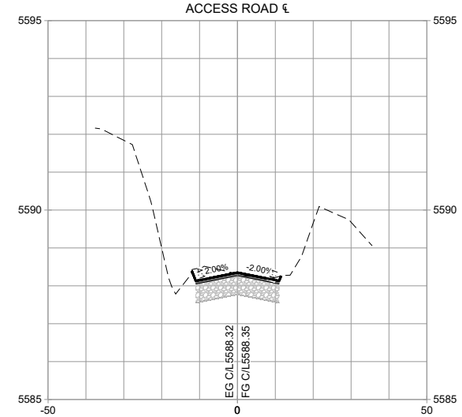
10+50.00
ACCESS ROAD ℄



11+50.00
ACCESS ROAD ℄



12+50.00
ACCESS ROAD ℄



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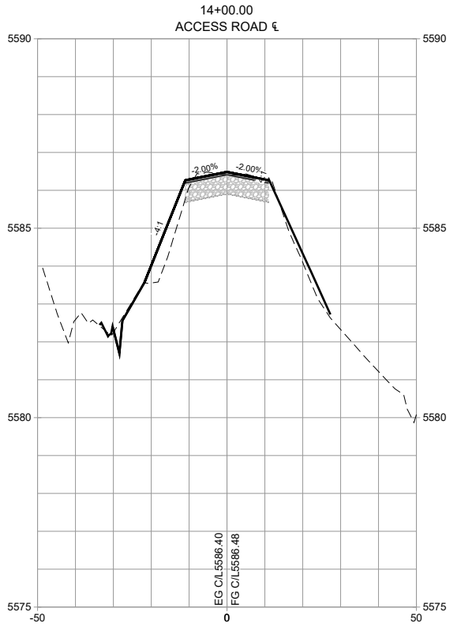
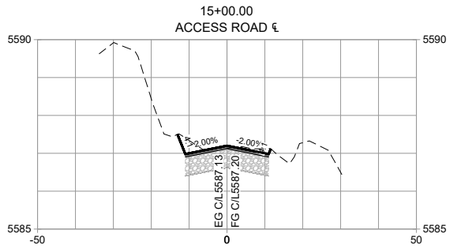
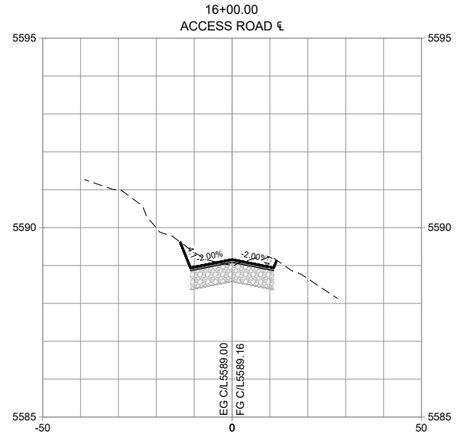
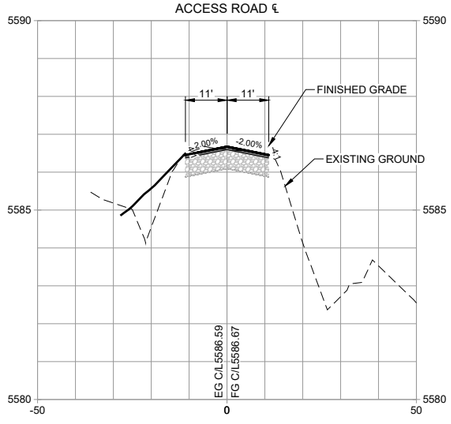
ACCESS ROAD
CROSS SECTIONS

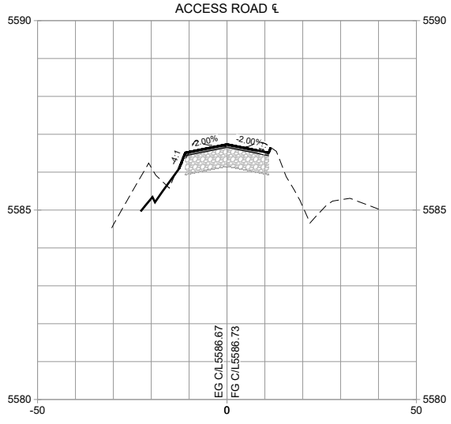
5.3

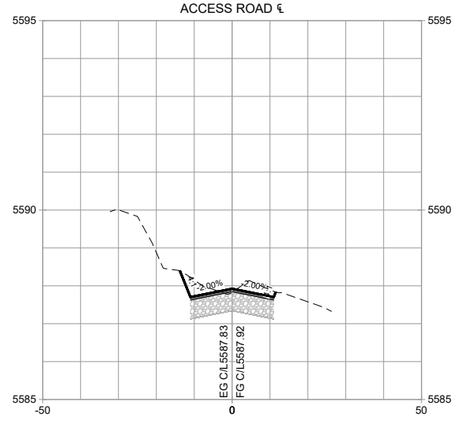












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SCALE IN FEET: HORIZONTAL
0 2 4
SCALE IN FEET: VERTICAL

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BECLABITO, NEW MEXICO

RFP BID No. 26-10-4328JB

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ACCESS ROAD
CROSS SECTIONS

5.4

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SCALE IN FEET: HORIZONTAL
0 2 4
SCALE IN FEET: VERTICAL

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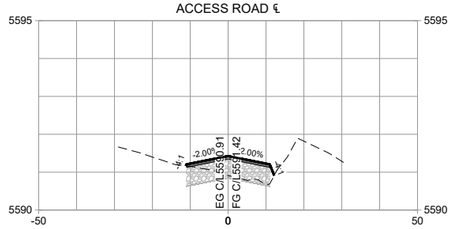

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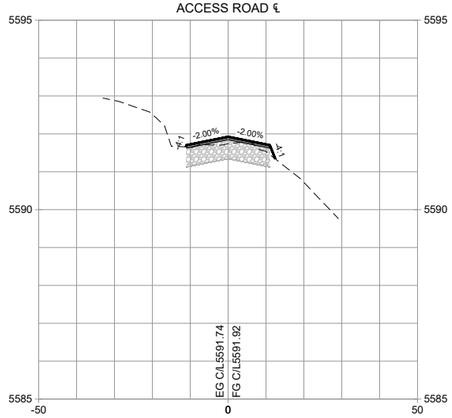

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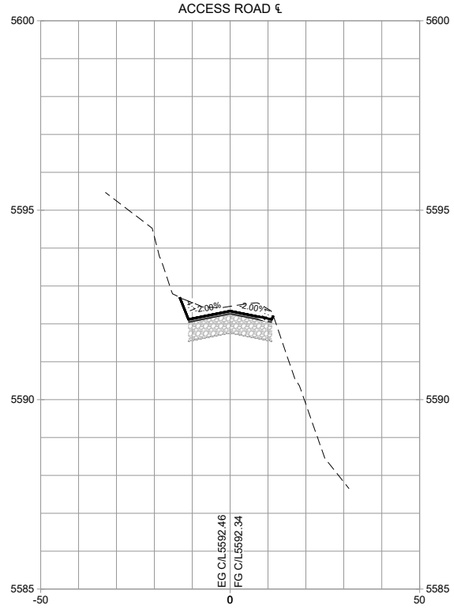

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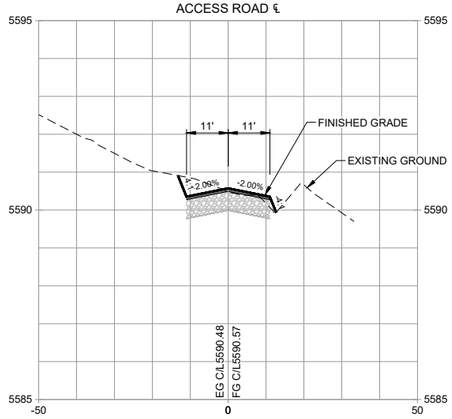

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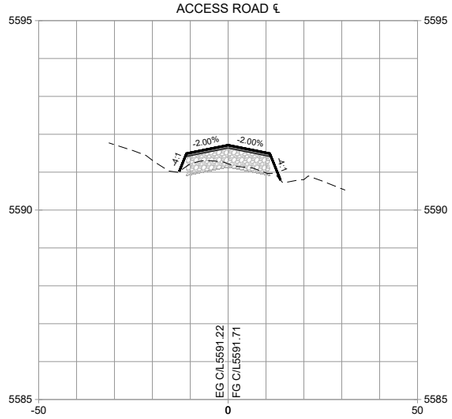

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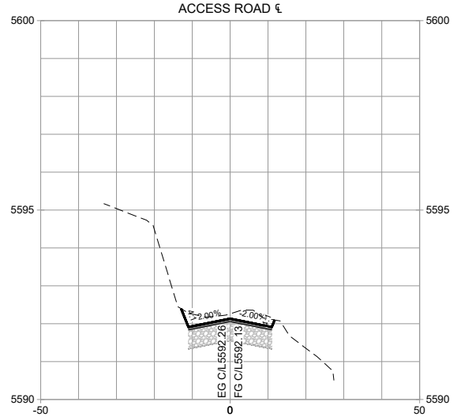

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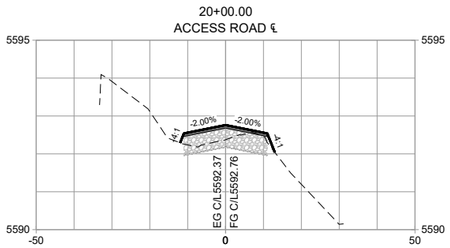
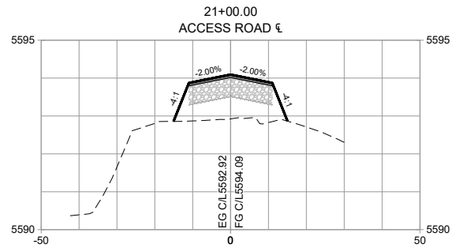
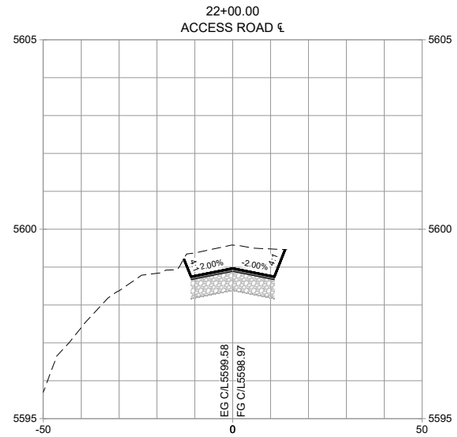
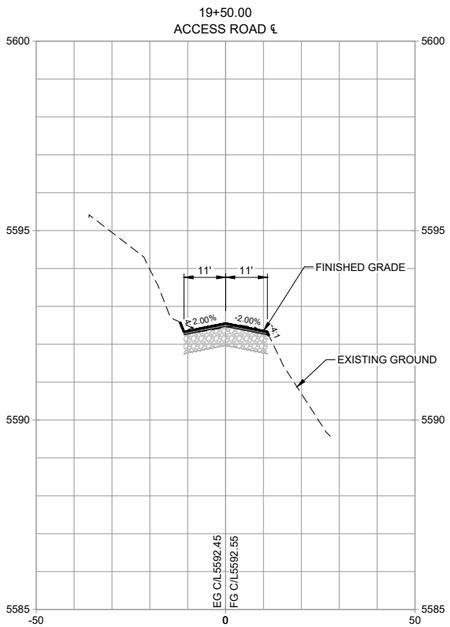
ACCESS ROAD
CROSS SECTIONS

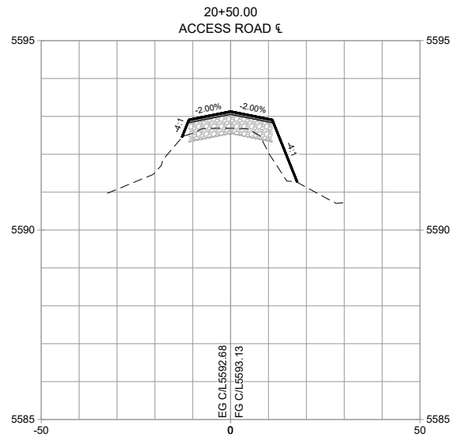
5.5

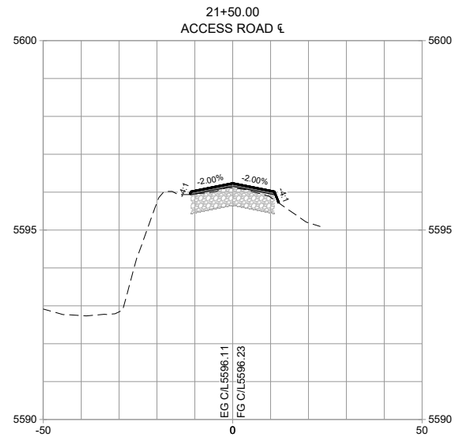












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SCALE IN FEET: HORIZONTAL

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SCALE IN FEET: VERTICAL

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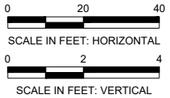
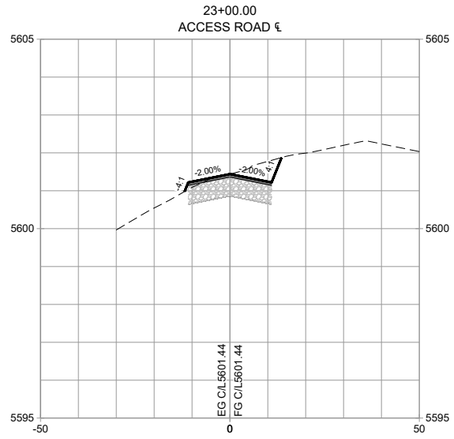
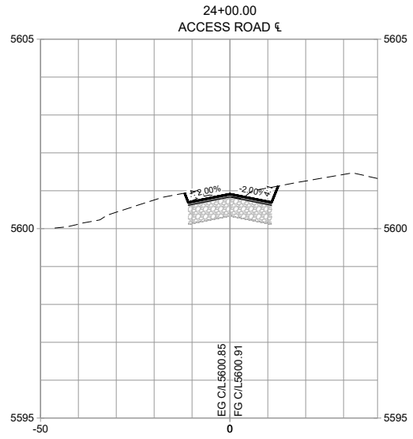
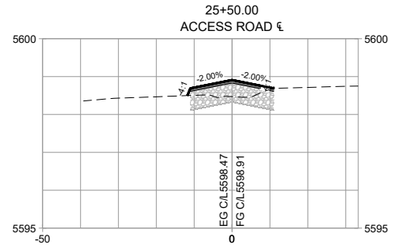
ACCESS ROAD
CROSS SECTIONS

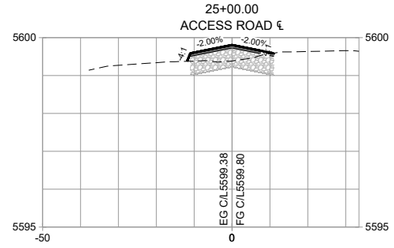
5.6

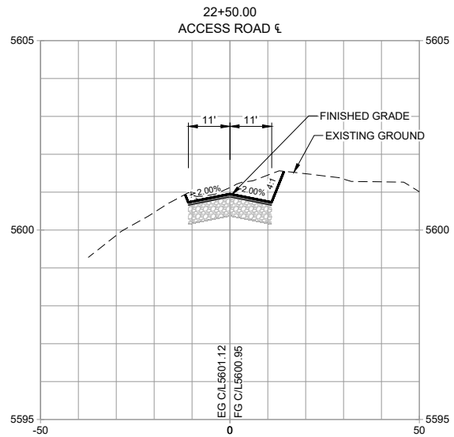


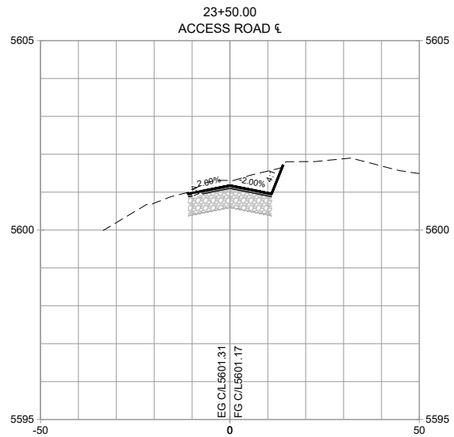


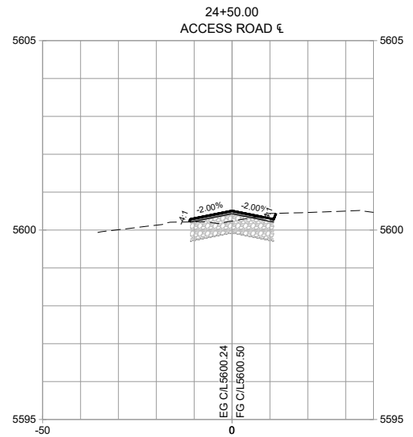












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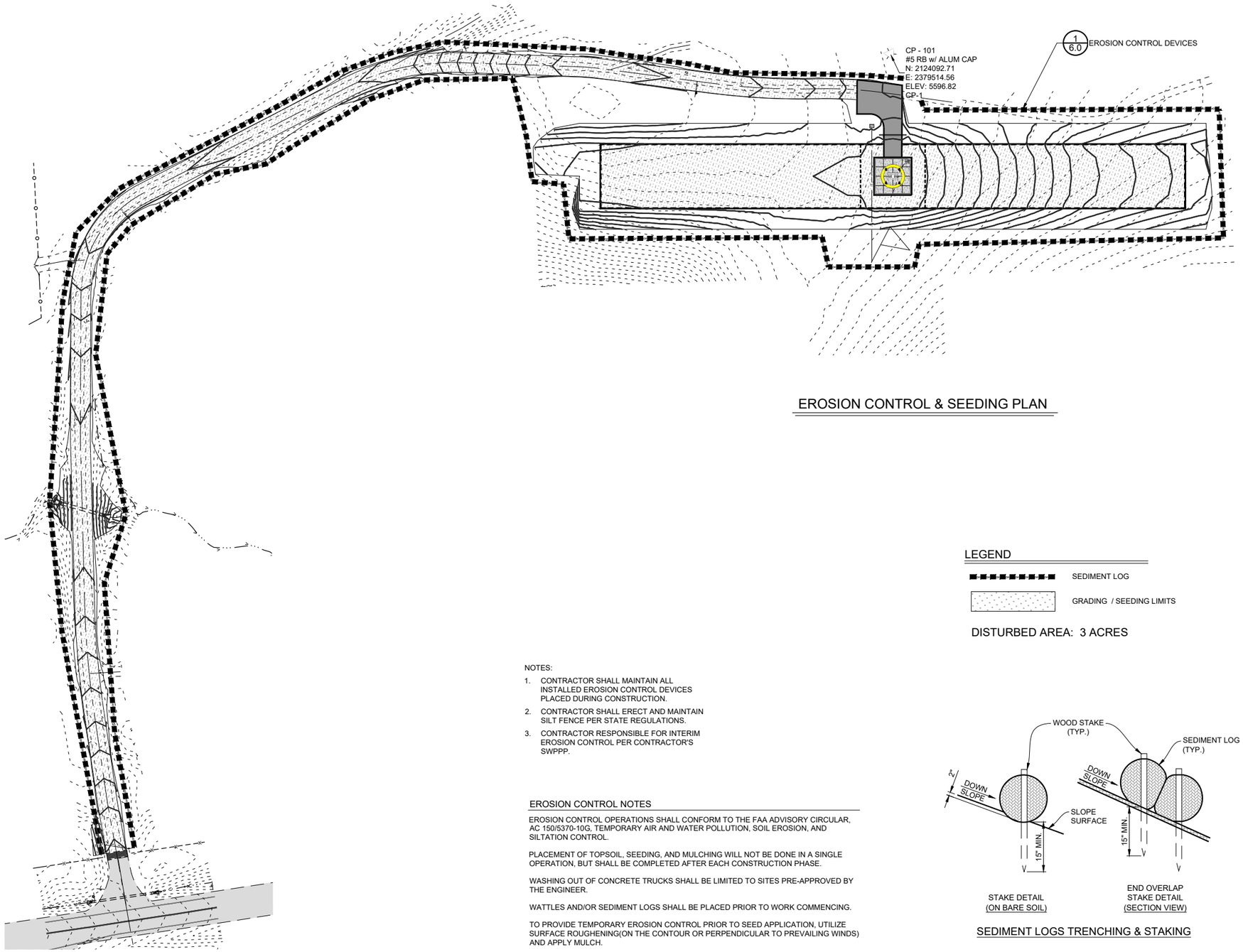
5.7



EROSION CONTROL & SEEDING PLAN

NOTES:

1. CONTRACTOR SHALL MAINTAIN ALL INSTALLED EROSION CONTROL DEVICES PLACED DURING CONSTRUCTION.
2. CONTRACTOR SHALL ERECT AND MAINTAIN SILT FENCE PER STATE REGULATIONS.
3. CONTRACTOR RESPONSIBLE FOR INTERIM EROSION CONTROL PER CONTRACTOR'S SWPPP.

EROSION CONTROL NOTES

EROSION CONTROL OPERATIONS SHALL CONFORM TO THE FAA ADVISORY CIRCULAR, AC 150/5370-10G, TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL.

PLACEMENT OF TOPSOIL, SEEDING, AND MULCHING WILL NOT BE DONE IN A SINGLE OPERATION, BUT SHALL BE COMPLETED AFTER EACH CONSTRUCTION PHASE.

WASHING OUT OF CONCRETE TRUCKS SHALL BE LIMITED TO SITES PRE-APPROVED BY THE ENGINEER.

WATTLES AND/OR SEDIMENT LOGS SHALL BE PLACED PRIOR TO WORK COMMENCING.

TO PROVIDE TEMPORARY EROSION CONTROL PRIOR TO SEED APPLICATION, UTILIZE SURFACE ROUGHENING(ON THE CONTOUR OR PERPENDICULAR TO PREVAILING WINDS) AND APPLY MULCH.

CONTRACTOR SHALL NOT STAGE IN A WETLAND OR RIPARIAN AREA.

UPON GRADING COMPLETION, SITE SHALL BE SEEDED WITH THE SPECIFIED MIX AND MULCHED.

LEGEND

SEDIMENT LOG

GRADING / SEEDING LIMITS

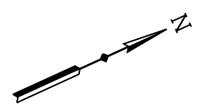
DISTURBED AREA: 3 ACRES

STAKE DETAIL
(ON BARE SOIL)

END OVERLAP
STAKE DETAIL
(SECTION VIEW)

SEDIMENT LOGS TRENCHING & STAKING

1
6.0
EROSION CONTROL DEVICES
NOT TO SCALE



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SCALE IN FEET

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6.0