CONTRACT DOCUMENTS
AND
SPECIFICATIONS
FOR IMPROVEMENTS TO

APRON REHABILITATION – PHASE II

DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

GDOT Project No. APXXX-XXXX-XX(XXX) Whitfield County
Croy Engineering Project No. 2106.005

CROY ENGINEERING
200 North Cobb Parkway, Suite 413
Marietta, Georgia 30062

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DIVISION 1 – ADVERTISEMENT

ADVERTISEMENT FOR BIDS

DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

Sealed bids will be received by the *City of Dalton, Dalton, Georgia* at City Hall 300 W Waugh Street, Dalton, Georgia 30720 on **December 7, 2022, until 2:00 PM Local Time** and at that hour opened and publicly read aloud for the improvements to the Airport as listed herein.

Please note that bids will only be considered by those bidders and subcontractors currently pre-qualified with the Georgia Department of Transportation.

A non-mandatory pre-bid meeting will be held Monday, November 21, 2022, 2:00 PM Local Time at the Dalton Municipal Airport 4483 Airport Road, Dalton, GA 30721.

PROJECT DESCRIPTION

The work will consist of, but is not limited to, removal and replacement of existing asphalt pavement adjacent to the airport terminal building, replacement of existing underground storm sewer piping, and placement of airfield pavement markings. The work consists of furnishing all labor, equipment, and materials and performing all work in strict accordance with the plans and specifications for:

APRON PAVEMENT REHABILITATION – PHASE 2

The location of the work is at the *Dalton Municipal Airport, Dalton, Georgia.*

Prospective bidders should read the following instructions carefully before submitting their bids. For each item on the bid form there is a space provided for the price to be shown in numerals and words. All notations must be in ink. Totals read at the opening of bids are not guaranteed to be correct and no final award of contract will be made until the bid and extensions have been verified.

A Bidder's bond must be executed on the form furnished by the Owner, and the required bond, cash, cashier's check, or certified check must accompany each proposal, in the amount of 5% of the total amount of the proposal. A 100% performance bond and a 100% payment bond will be required of the Contractor at time of contract execution. A Georgia Resident Agent must countersign all bonds from a surety company authorized by law to do business in this State pursuant to a current certificate of authority to transact surety business by the Commissioner of Insurance; no bond shall be approved unless the surety is on the United States Department of Treasury's list of approved bond sureties.

The successful bidder will be required to provide the Owner with the affidavit required by OCGA 36-91-21 (e) *Competitive Award Requirements*.

All work under the contract shall be completed within **Ninety (90) Calendar Days** from the issuance of the notice to proceed.

Liquidated Damages: Liquidated damages for delays in completion will be Five Hundred Dollars ($500.00) per calendar day.

Payment will be made monthly on completed work. Retainage will be held by the Owner to a maximum of ten percent (10%) of each progress payment.

Copies of the plans, specifications, and bid forms may be on file at the following locations:

the Document Processing Center, Construct Connect:
- 3825 Edwards Rd., Suite 800, Cincinnati, Ohio 45209

the City of Dalton, Georgia – City Hall:
- 300 W. Waugh Street, Dalton, Georgia 30720

and the Engineer's office, Croy Engineering, LLC:
- 200 North Cobb Pkwy, Bldg. 400, Suite 413, Marietta, GA 30062

They may be examined at these offices without charge.

A non-refundable deposit of $150.00 is required for a hard copy of the plans and bid documents. Construction Plans and Specifications may be obtained at the office of the Engineer. Please email awiersma@daltonga.gov for an electronic copy of the plans and bid documents in pdf format sent via email free of charge.

All Contractor's must be on the plan holders list in order to receive any addendums to the bid package and be considered for work on the project.

Envelopes containing bids must be sealed, addressed to the undersigned, and marked as follows: **"Bid for Construction: Ramp Rehab at Dalton Municipal Airport - Croy Engineering Project *2106.005*."** Bids will be required to remain open for acceptance or rejection for **one-hundred and twenty (120) calendar days** after the date of opening of bids.

IMPORTANT NOTICE TO BIDDERS

IMPORTANT NOTICE TO BIDDERS: The following regulations and requirements apply to this project:

Buy American Preferences (Title 49 USC, Chapter 501) All acquired steel and manufactured products installed under the AIP assisted project must be produced in the United States.

Foreign Trade Restriction: Denial of Public Works contracts to suppliers of goods and services of countries that deny procurement market access to US contractors (DOT Reg. 49 CFR Part 30)

Government wide debarment and suspension and government wide requirements for drug free workplace. (DOT Regulation 49 CFR Part 29)

Davis-Bacon Act (DOL Regulation 29 CFR Part 5)

Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246 and DOL Regulation 41 CFR Part 60)

DBE OBLIGATION. The bidder shall make good faith efforts, as defined in Appendix A of 49 CFR Part 26, Regulations of the Office of the Secretary of Transportation, to subcontract **5.35% percent** of the dollar value of the prime contract to small business concerns owned and controlled by socially and economically disadvantaged individuals (DBE). In the event that the bidder for this solicitation qualifies as a DBE, the contract goal shall be deemed to have been met. Individuals who are rebuttably presumed to be socially and economically disadvantaged including: women, African American, Hispanics, and Native Americans, Asian-Pacific Americans, and Asian-Indian Americans. The apparent successful competitor will be required to submit, with the bid, information concerning the DBE's that will participate in this contract. The information will include the name and

address of each DBE, a description of the work to be performed by each named firm, and the dollar value of the contract. If the bidder fails to achieve the contract goal stated herein, it will be required to provide, with the bid, documentation demonstrating that it made good faith efforts in attempting to do so. A bid that fails to meet these requirements will be considered non-responsive.

Contractor and Subcontractor must state affirmatively that the firm has registered with and is participating in a federal work authorization program in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

Title VI Solicitation Notice:

The City of Dalton, Georgia, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

The bidder must have at his disposal the necessary equipment to put on the project when notice is given to begin work and to do the work within the time specified. The proposal of any bidder will be rejected if the award of the work for which the proposal is submitted, may, in the judgment of the Owner, affect the workmanship, financing or progress of other work awarded to the bidder in the same letting or other work which the bidder may have under contract.

THE RIGHT TO REJECT ANY OR ALL BIDS AND TO WAIVE INFORMALITIES IS RESERVED TO THE OWNER.

Andrew Wiersma, Airport Manager
City of Dalton, Georgia

END OF ADVERTISEMENT

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DIVISION 2 – INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

GENERAL

ALL PROVISIONS OF THE FEDERAL AVIATION ADMINISTRATION SPECIFICATIONS SHALL APPLY AS MODIFIED IN TECHNICAL SPECIFICATIONS SECTION, EXCEPT WHERE SPECIFIED THAT SECTION APPLIES TO GEORGIA STANDARD SPECIFICATIONS CONSTRUCTION OF TRANSPORTATION SYSTEM, 2013 EDITION, AND SPECIAL PROVISIONS, UNLESS MODIFIED BY THE PUBLISHED GEORGIA DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL SPECIFICATION, 2016 EDITION.

The following requirements apply to the contract(s) for this project:

PREQUALIFICATIONS OF BIDDER

As per Rules 672-5-.04 and 672-5-.11 in the Rules and Regulations of the State of Georgia, All persons proposing to bid on Department work, except as otherwise provided in Rule 672-5-.05, for the performance of any contract in excess of $2,000,000, must submit an application under oath on forms to be furnished by the office of the Prequalification Committee. The application must be filed at least ten (10) days prior to the opening of any bids the prospective bidder proposes to submit. All persons proposing to bid on Department work for the performance of any contract below the requirements set forth in Rule 672-5-.04(1) must be registered as a subcontractor as provided for in Rule 672-5-.11. In order for the Department to maintain a register of subcontractors, any person desiring to perform work on Department projects as a subcontractor must submit a notification of such desire under oath to the Department on forms to be furnished by the Department. The original notification may be filed at any time, but in no case less than ten (10) days prior to the prime contractor's requesting approval of the subcontract to which the prospective subcontractor will be a party.

Bidders that are not pre-qualified and have submitted an application with the above stated rules shall also furnish the owner satisfactory evidence of his/her competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of statements covering the bidder’s past experience on similar work, a list of equipment that would be available for the work, and a list of key personnel that would be available. In addition, each bidder shall furnish the owner satisfactory evidence of his/her financial responsibility. Such 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 Contractor’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 his/her 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 his/her (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 he is prequalified with the Georgia DOT and is on the current “bidder’s list” of the state in which the proposed work is located. Such evidence of Georgia DOT prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports hereinbefore specified.

Each bidder shall submit “evidence of competency” and “evidence of financial responsibility” to the Owner at the time of bid opening.

Bids will only be considered by those bidders and subcontractors currently pre-qualified with the Georgia DOT for work in the vicinity of the proposed work.

BID GUARANTEE BOND OF 5%

(49 CFR Part 18.36 (h)(1)) Each Bidder shall post a proposal guarantee bond in the amount of 5% of the bid price. No bids shall be read or considered without a proper form of security.

PERFORMANCE BOND OF 100%

(49 CFR Part 18.36 (h)(2)), Bidder shall post a performance bond in the amount of 100% of the bid price if awarded the contract. Such bond(s) are due prior to contract execution as a guarantee of timely delivery and that equipment, materials and /or goods are delivered according to specifications.

PAYMENT BOND OF 100%

(49 CFR Part 18.36 (h)(3)), Bidder shall post a payment bond payable to the OWNER in the amount of 100% of the bid price if awarded the contract. Such bond(s) are due prior to contract execution to guarantee timely payment of invoices to any subcontractors.

AUTHORITY TO SIGN

If an individual makes a Proposal, his name and post office address must be shown. If made by a firm or partnership, the name and post office address of each member of the firm or partnership must be shown. If made by a corporation, the person or persons signing the Proposal must show the name of the State under the laws of which the corporation is chartered and his, or their, authority for signing same, and the names, titles and addresses of the President, Secretary and Treasurer, and the corporate authority for doing business in this State. In the case of a Limited Liability Corporation a Certificate of Authority shall be executed by the Chief Officer certifying that he/she has the authority to execute contracts between the LLC and OWNER. A bid executed by an attorney or agent on behalf of the Bidder shall be accompanied by an authenticated copy of the Power of Attorney or other evidence of authority to act on behalf of the Bidder.

NON-CONCLUSION

By submitting a bid in response to this solicitation, the Bidder represents that in the preparation and submission of this bid, said Bidder did not either directly or indirectly, enter into any combination or arrangement with any person, Bidder, Corporation or enter into any agreement, participate in any collusion, or otherwise take any action in the restraint of free, competitive bidding in violation of the Sherman Act (15 U.S.C. Section I or Section 59.1-9.1 through 59.1-9.17 or Sections 59.1 – 68.6 through 59.68.8). Collusion and fraud in bid preparation shall be reported to the State of Georgia Attorney General and the United States Justice Department.

DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

(49 CFR Part 29), The bidder/offeror certifies, by submission of this proposal or acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees by submitting this proposal that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the bidder/offeror/Contractor or any lower tier participant is unable to certify to this statement, it shall attach an explanation to this solicitation/proposal.

BUY AMERICAN PREFERENCES

(Title 49 United States Code, Chapter 501). The contractor agrees to comply with 49 USC § 50101, which provides that Federal funds may not be obligated unless all steel and manufactured goods used in AIP-funded projects are produced in the United States, unless the FAA has issued a waiver

for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

A bidder or offeror must submit the appropriate Buy America certification (below) with all bids or offers on AIP funded projects. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive.

FOREIGN TRADE RESTRICTION

(49 CFR Part 30), Denial of Public Works Contracts to Suppliers of Goods and Services of Countries that Deny Contracts to Suppliers of Goods and Services of Countries that Deny Procurement Market Access to U. S. Contractors. The successful bidder must comply with 49 CFR Part 30 and submit the Certification Regarding Foreign Participation provided in the proposal documents.

CERTIFICATION OF NONSEGREGATED FACILITIES

(41 CFR Part 60-1.8), The successful bidder must comply with 41 CFR Part 60-1.8 and submit the Certification of Nonsegregated Facilities provided in the proposal documents.

EQUAL EMPLOYMENT OPPORTUNITY

(Executive Order 11246 & 41 CFR Part 60), The successful bidder must comply with 41 CFR Part 60 and submit the Equal Opportunity Report Statement provided in the proposal documents.

NONDISCRIMINATION

Notwithstanding any other provision of this Agreement, during the performance of this Agreement CONTRACTOR, for itself, its heirs, personal representatives, successors in interest and assigns, as part of the consideration of this Agreement does hereby covenant and agree, as a covenant running with the land, that:

1. No person on the grounds of race, color, religion, sex or national origin shall be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination;
2. In the production of the vehicle(s), and the furnishing of services therein or thereon, no person on the grounds of race, color, religion, sex or national origin shall be excluded from participation in, or denied the benefits of, such activities, or otherwise be subjected to discrimination.

DISADVANTAGED BUSINESS ENTERPRISE

(49 CFR Part 26) The Contractor and/or its subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate. The overall DBE goal for this project is **5.35%.**

DAVIS BACON ACT

(29 CFR Part 5) This project is partially funded by the U. S. Department of Transportation under the Federal Aviation Administration's Airport Improvement Program. Therefore, the project is subject to minimum wages ad determined by the U. S. Dept. of Labor. The applicable Wage Determination is a part of Section 130.

DRUG FREE WORKPLACE CERTIFICATION

The CONTRACTOR must certify that they are in full compliance with the provisions of Code Sections 50-24-1 through 50-24-6 of the Official Code of Georgia Annotated, relating to the "Drug-

free Workplace Act". The undersigned further certifies that:

a. A drug-free workplace will be provided for the CONTRACTOR'S employees during performance of the contract; and
b. Each CONTRACTOR who hires a subcontractor to work in a drug-free work place shall secure from that subcontractor the following written certification:
"As part of the subcontracting agreement with (CONTRACTOR's name), (Subcontractor's name) certifies to the CONTRACTOR that a drug-free workplace will be provided for the subcontractor's employees during the performance of this Contract pursuant to Paragraph (7) of Sub-section (b) of Code Section 50-24-3".
c. The CONTRACTOR further certifies that he will not engage in the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana during the performance of the Contract.
d. CONTRACTOR may be suspended, terminated, or debarred if it is determined that:
(1) The CONTRACTOR has made false certification hereinabove; or
(2) The CONTRACTOR has violated such certification by failure to carry out the requirements of the Official Code of Georgia Section 50-24-3.

SUBCONTRACTORS, SUPPLIERS AND OTHERS

All BIDDERS shall submit as part of their BID on the prescribed schedules a list of all subcontractors and other persons and organizations (including those who are to furnish principle items of material and equipment) proposed for those portions of the Work as to which such identification is required. If requested by OWNER, the low BIDDER shall submit an experience statement with pertinent information as to similar projects and other evidence of qualification for each subcontractor, other person or organization. If OWNER after due investigation has reasonable objection to any proposed subcontractor, other person or organization, the OWNER may before giving the NOTICE OF AWARD require 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 his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security. Any subcontractor, other person, or organization so listed and to whom the OWNER does not make written objection prior to giving the NOTICE OF AWARD will be deemed acceptable to OWNER.

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT

Pursuant to the Georgia Security and Immigration Compliance Act of 2006, the successful CONTRACTOR understands and agrees that compliance with the requirements of O.C.G.A.13-10-91 and Georgia Department of Labor Rule 300-10-02 are conditions of this bid and contract document. The CONTRACTOR further agrees that such compliance shall be attested by the CONTRACTOR and any of his Subcontractors by execution of the appropriate Affidavit and Agreement which will be included and become a part of the Agreement between the OWNER and the successful CONTRACTOR. The Affidavits must be provided to the OWNER within five (5) business days of the Subcontractor being hired to work on the project.

SYSTEMATIC ALIEN VERIFICATION FOR ENTITLEMENTS (SAVE) PROGRAM

Since a contract has been deemed a "public benefit," the CONTRACTOR or other party to the contract must be run through the federal Systematic Alien Verification for Entitlements (SAVE) Program. This program requires that local government verify the legal status of non-U.S. citizens who apply for certain benefits. The CONTRACTOR must execute a SAVE affidavit attesting that either he or she is a U.S. citizen or legally qualified to receive the benefit. If the contractor is not a U.S. citizen, then the local government has to run that contractor through the SAVE system. Only non-U.S. citizens can be processed through the SAVE program.

BID FORM AND SCHEDULES

One copy of the Bid Form and Schedules is included with the Bidding Documents.

All blanks on the Bid Forms and schedules must be completed by permanent marking. Each Bid must be submitted on the prescribed form. The Bid Price must be stated in words and numerals or as indicated in the BID FORM.

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 assistant secretary of the corporation. The corporate address and state of incorporation shall be shown in the space provided.

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. The address and telephone numbers to which communications regarding the BID are to be directed must be shown on the Bid Form.

All names must be typed or printed below the signatures. The individual OWNER and the terms “doing business” must sign BIDS by individuals or "sole OWNER" must appear under the signature.

The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of all addenda and the date each was received shall be filled in on the BID form).

ADDENDA AND INTERPRETATIONS

All questions about the meaning or intent of the Contract Documents are to be directed to ENGINEER. Requests for interpretations of drawings and specifications must be made in writing to the Engineers not later than **three (3) days** prior to receipt of Proposals. Any interpretations made to bidders will be issued in the form of Addenda to the specifications and furnished to all bidders. Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Only questions answered by formal written Addenda will be binding. Oral explanations and interpretations made prior to the bid opening shall not be binding and without legal effect. Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER and ENGINEER.

Failure of any BIDDER to receive and/or acknowledge any such Addendum or interpretation shall not relieve BIDDER from any obligation under this BID as submitted.

EXCEPTIONS AND OMISSIONS

If exceptions are taken to any portion of these specifications, such exception must accompany the bid and must be in writing. If any feature normally included in a complete job of this nature is omitted from these specifications, it too must be so stated in writing and be included with the bid.

PREPARATION OF BIDS

Negligence on the part of the Bidder in preparing the bid confers no right for withdrawal or modification in any way after the deadline for the bid opening.

Unit price must be shown on the Bid Cost Submittal Form in this document. All bids should be tabulated, totaled and checked for accuracy. The unit price will prevail in case of errors.

All product, equipment, article or material must be new and unused or current production. No reconditioned or used item(s) will be accepted except as specifically requested herein. Units that are classified as prototype or discontinued models are not acceptable.

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. 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 the proposed contract. 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 contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. 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 he may make or obtain from his/her examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner.

ESTIMATED QUANTITIES

Estimated Quantities: Where quantities of work are given in the BID they are approximate and are assumed solely for comparison of the BIDS. They are not guaranteed to be accurate statements or estimates of quantities of work that are to be performed under the contract, it being presumed that the BIDDER has verified the quantities necessary to complete the Work of the contract as intended, and any departure therefrom will not be accepted as valid grounds for any claim for damages, for extension of time or for loss of profits; not with any additional payment be made, regardless of the actual quantities required or ordered to complete the Work.

SUBMISSION OF BIDS

BIDS shall be submitted at the time and place indicated in the Advertisement. Each BID shall be enclosed in a sealed envelope and marked and addressed as required in the below and in the Advertisement and shall be 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 for Ramp Rehab at Dalton Municipal Airport" on the face thereof. Submit original and one copy of the Bid Form, Schedules and other required documents.

Indicate the following information on the outside of the sealed envelope containing the bid:

a. Project Name as stated on page one of the Bid Forms
b. Project Number
c. Location of Airport
d. Bidder's Name and Address

Submit Bids to: **City of Dalton**
300 W. Waugh Street
Dalton, Georgia 30722

The Submittal Checklist must be reviewed, and the bidder is to comply with the order of the submittal of documents. This document is to be included with the bid.

Bids may be submitted by mail, common carrier or delivered in person. Fax or electronic bids are not acceptable. It shall be the duty of each Bidder to ensure that their bid is delivered within the time and at the place prescribed in this document. Bids received prior to the time fixed in this bid document will be securely kept unopened. Any bid received at the office designated in this

document after the exact time and date specified, will not be considered. If a late bid is received via carrier, it will be marked “late bid” and will not be opened. If a late bid is hand delivered, it will be returned unopened to the presenter.

At the date and time specified for the opening of the bid, the bid shall be publicly opened and read aloud for the information of Bidders and others present.

If descriptive literature is attached to the bid, your firm’s name must be on all sheets submitted.

Each bid submitted shall be deemed to have been made with full knowledge of all terms, conditions, and requirements contained in this Bid request. The failure or omission of any Bidder to examine any form, instrument or document shall in no way relieve any Bidder from obligations in respect to the bid submittal or the compliance of the terms, conditions and requirements of the bid.

Individual contractors shall provide their Social Security number and proprietorships; partnerships and corporations shall provide their Federal Employer Identification number and provide a completed W9 form to be submitted with the bid.

The authorized representative whose signature will appear on the bid submitted certifies that the Bidder has carefully examined the instructions of this bid and the terms and specifications applicable to and made a part of this bid. The Bidder further certifies that the prices shown on the Bid Price Submittal Form is in accordance with the conditions, terms and specifications of the bid and that any exception taken thereto may disqualify the bid.

Bids shall be made on the enclosed form if a form is provided.

Any documentation submitted with or in support of a bid or bid shall become subject to public inspection under the Georgia Open Records Act. Labeling such information “Confidential”, “Proprietary”, or in any other manner shall not protect this material from public inspection upon request. All records become subject to public inspection only after award of the contract or purchase order.

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 or by telegram 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.

PUBLIC OPENING OF PROPSALS

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.

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 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 the subsection titled IRREGULAR PROPOSALS.

b. If the bidder is disqualified for any of the reasons specified in the subsection titled 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.

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 guarantee specified by the OWNER.

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.

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 the subsection titled ISSUANCE OF PROPOSAL FORMS of this section.

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. 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 contracts bonds.

RIGHTS RESERVED

OWNER reserves the right to reject any and all Proposals, to waive any and all informalities not involving price, time or changes in the work, and to negotiate contract terms with the Successful BIDDER, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional Proposals. Discrepancies between words and figures will be resolved in favor of words. Also, OWNER reserves the right to reject the Proposals of any BIDDER if OWNER believes that it would

not be in the best interest of the Project to make any award to that BIDDER, whether because the Proposal is not responsive or the BIDDER is unqualified or of doubtful financial ability or fails to meet any other pertinent standards or criteria established by OWNER. Discrepancies between the indicated sum or any column of figures and the correct sum thereof will be resolved in favor of the correct sum. On contract where unit prices are required, the right is reserved to increase or decrease the quantities specified, without changing the unit prices bid.

SUBSTITUTE OR "OR-EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" Items. Whenever it is indicated on the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of the Agreement.

AWARD OF CONTRACT

Responsiveness - The determination of the Bidder's responsiveness will be made by the OWNER based on a consideration of whether the Bidder has submitted the following:

- Complete bid documents meeting bid requirements without irregularities, obviously unbalanced unit prices, excisions, special conditions, or alternatives bids for any item unless specifically requested in the bid solicitation.
- A properly executed Bid Bond.

In evaluation of Proposals, OWNER will consider qualifications of the BIDDERS and whether or not the Proposals comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Proposal form or prior to the Notice of Award.

OWNER may consider the qualifications and experience of subcontractors, other persons or organizations (including those who are to furnish the principle items of materials and equipment) proposed for those portions of the work as to which the identity of subcontractors and other persons and organizations must be submitted. OWNER may also consider operating costs, maintenance considerations, performance data and guarantees of materials may also be considered by OWNER, when such data is submitted prior to Notice of Award.

OWNER may conduct such investigations as he deems necessary to assist in the evaluation of any Proposal and to establish the responsibility, qualifications and other persons and organizations to do the work in accordance with the contract documents to Owner's satisfaction within the prescribed time.

Responsibility - The determination of the Bidder's responsibility will be made by the OWNER based on whether the Bidder meets the following minimum standard requirements:

- Maintains a physical location presence and permanent place of business.
- Has the appropriate and adequate technical experience required.
- Has adequate personnel and equipment to perform the work expeditiously
- Able to comply with the required or proposed delivery and installation schedule.
- Has a satisfactory record of performance.
- The ability of Bidder to provide future maintenance and service for the use of the contract under consideration.
- Has adequate financial means to meet obligations incidental to the work.
- Such other factors as appear to be pertinent to either the bid or the contract.

In considering BIDS for this Work, particular attention will be given to the method of construction which the BIDDER plans to follow; the available experienced and skilled men which he plans to use in the prosecution of Work; the types of equipment and materials he plans to install; and, he shall prepare and furnish this information in writing at the OWNER's request.

Furthermore, the successful BIDDER must, prior to the award of the Contract, be prepared to discuss in detail all manners relating to any special features of the Work with the end view of obtaining high-grade workmanship and proper performance of the Contract.

OWNER reserves the right to reject the BID of any BIDDER who does not pass any evaluation to Owner's satisfaction.

If a contract is to award, it will be awarded to the lowest BIDDER whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project.

If the lowest or the best BID exceeds the funds available for the work, the OWNER may reject all BIDS, or reduce the Scope of Work as necessary to diminish the total cost of the project to a sum compatible with the funds available for the specified work.

Award of the Contract, if awarded, will be made by the OWNER, upon the recommendation of the ENGINEER to the lowest responsible, responsive BIDDER, whose Proposal meets the requirement of the OWNER, and complies with the applicable laws of the State of Georgia.

If a contract is to be awarded, OWNER will give the Successful BIDDER a NOTICE OF AWARD within **one-hundred and twenty (120) calendar days** after the day of bid Opening, or such mutually agreeable extension of time.

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.

SIGNING OF AGREEMENT

After the OWNER gives a NOTICE OF AWARD to the successful BIDDER, they will submit **three (3)** unsigned counterparts of the Agreement and all other required Contract Documents. Within **fifteen (15) days** following the effective date of "Award" CONTRACTOR shall sign and deliver all executed counterparts of the Agreement to the OWNER with all other Contract Documents including insurance certificates and executed bonds attached thereto. OWNER will identify those portions of the Contract Documents not fully signed by the OWNER and CONTRACTOR and such identification shall be binding on all parties.

FAILURE TO EXECUTE CONTRACT

Failure to execute contract and file acceptable bonds as provided herein within **fifteen (15) days** from the date of award shall cause forfeiture of the Proposal Guaranty to the OWNER not as a penalty, but in liquidation of damages sustained. At the discretion of the OWNER, the award may then be made to the next lowest responsible BIDDER, or the work may be re-advertised.

CONTRACT ASSURANCE

The BIDDER/OFFERER certifies, by submission of this proposal or acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees by submitting this proposal that it will include this clause without

modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the BIDDER/OFFERER/CONTRACTOR or any lower tier participant is unable to certify to this statement, it shall attach an explanation to this solicitation/proposal.

The CONTRACTOR or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the CONTRACTOR to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate.

PROMPT PAYMENT

The prime CONTRACTOR agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than **thirty (30)** days from the receipt of each payment the prime CONTRACTOR receives from the Airport OWNER. The prime CONTRACTOR agrees further to return retainage payments to each subcontractor within **thirty (30)** days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Airport OWNER. This clause applies to both DBE and non-DBE subcontractors.

INDEMNIFICATION

The vendor that is selected as the contractor shall, at its own expense, protect, defend, indemnify, save and hold harmless the OWNER and its elected and appointed officers, employees, servants and agents from all claims, damages, lawsuits, costs and expenses including, but not limited to, all costs from administrative proceedings, court costs and attorney fees that the OWNER and its elected and appointed officers, employees, servants and agents may incur as a result of the acts, omissions or negligence of the contractor or its employees, servants, agents or subcontractors that may arise out of the agreement.

The CONTRACTOR’s indemnification responsibility under this section shall include the sum of damages, costs and expenses which are in excess of the sum of damages, costs and expenses which are paid out in behalf of or reimbursed to the OWNER, its officers, employees, servants and agents by the insurance coverage obtained and/or maintained by the CONTRACTOR.

CONTRACT TIME

The numbers of days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment (the Contract Time) are set forth in the Bid Form and the Agreement. Contract Time for this project is **NINETY (90) Calendar Days** from issuance of notice to proceed.

LIQUIDATED DAMAGES

Liquidated damages for the delays in completion will be Five Hundred Dollars ($500.00) per calendar day.

PROJECT SCHEDULE

A project schedule showing the work in the order proposed by the CONTRACTOR and the time required to complete each phase will be required before the signing of contract. This schedule shall include the dates for beginning and completion of all phases of the work. If, in the opinion of the ENGINEER, the CONTRACTOR falls behind in his schedule or will not be able to complete the project in the time limits, he may require the CONTRACTOR to revise his schedule and put additional manpower and equipment on the project if so ordered.

Notice to Proceed shall not be issued until the ENGINEER has approved the schedule in writing. Failure of the CONTRACTOR to comply with the schedule may be cause for withholding payments due the CONTRACTOR.

CODES, PERMITS, FEES, LICENSES, AND LAW

All permits, fees, arrangements for inspections, licenses, and costs incurred for the same shall be the sole responsibility of the successful Bidder. All materials, labor and construction must comply with all applicable rules and regulations of local, state and/or national codes, laws and ordinances of all authorities having jurisdiction over the project, shall apply to the contract throughout and will be deemed to be included in the contract the same as though herein written out in full.

Effective July 1, 2008: All General Contractors must have a current valid license from the State Licensing Board for Residential and General Contractors, unless specifically exempted from holding such license pursuant to Georgia law, O.C.G.A. Section 43-41-17.

COPIES FURNISHED

The ENGINEERs shall furnish the successful CONTRACTOR, free of charge**, two (2) copies** of the plans and specifications. If additional copies are the CONTRACTOR requests copies, they will be furnished at the price specified elsewhere in these documents.

DRAWINGS AND SPECIFICATIONS ON THE SITE

The CONTRACTOR shall keep one copy of all drawings and specifications on the site of the work in good order, available to the ENGINEERS and to their representatives.

SANITARY PROVISIONS

The CONTRACTOR shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as may be necessary to comply with the regulations of the State Board of Health and all local ordinances. No nuisance will be permitted.

SAFETY

All vendors and subcontractors performing services are required and shall comply with all Occupational Safety and Health Administration (OSHA), State and County Safety and Occupational Health Standards and any other applicable rules and regulations. Also, all contractors and subcontractors shall be held responsible for the safety of their employees and any unsafe acts or conditions that may cause injury or damage to any persons or property within and around the work site area under this Contract.

RESPONSIBILITY

The CONTRACTOR shall be responsible for all material and work until they are finally accepted by the OWNER and shall repair at his own expense any damage they sustain before their final acceptance. The CONTRACTOR shall be responsible for all damages caused by him of whatever nature and must settle all claims arising from such damage without cost to the OWNER; he shall act as defendant in, and bear the expense of each and every suit, if any, and of every nature, which may be brought against him or the OWNER by reason of, or connected with the work under the contract; should any claim arise, the OWNER may hold back sufficient money to meet said claims until the CONTRACTOR has satisfied the OWNER that all claims against him as the result of his work have been adjusted. He must also show that there are no claims or liens whatsoever outstanding at the completion of the contract before final payment is made.

TESTING - GENERAL

The CONTRACTOR shall use an independent testing laboratory for Quality Control project tests. A separate independent testing laboratory will be selected by the OWNER for the Quality Assurance

Testing. The CONTRACTOR is responsible for Quality Control Testing, including costs. (See General Provisions Section 100-07 Quality Control Testing Plan.)

When the CONTRACTOR has prepared an item of work to the stage where testing is required, he shall notify the ENGINEER what portion of the project he desires to have tested. The ENGINEER shall initiate the tests required by the contract specifications.

However, the payment of the tests by the OWNER and scheduling by the ENGINEER does not relieve the CONTRACTOR of any responsibility in regards to meeting the job specification. If the CONTRACTOR desires additional tests, he may provide same for his own information.

Major testing to be done during construction is listed for each item in the Construction Details for that item.

DESIGN, STANDARDS AND PRACTICES

Design, strength, quality of materials and workmanship must conform to the highest standards of engineering practices and/or professional services.

CLAIMS

The OWNER reserves the right to refuse to issue any vouchers and to direct that no payment shall be made to the CONTRACTOR in case the OWNER has reason to believe that said CONTRACTOR has neglected or failed to pay any subcontractor, materialmen, workmen, or employee for work performed on or about the work included in these specifications until the OWNER is satisfied that such subcontractors, materialmen, workmen, or employees have been fully paid.

MANUFACTURER'S CERTIFICATION AND DELIVERY TICKETS

The CONTRACTOR shall furnish a manufacturer's certificate of compliance with the Specifications on all materials furnished. A delivery ticket on all material delivered to job site shall be furnished to the ENGINEER.

STATEMENT OF WARRANTY

A Statement of Warranty should include all applicable manufacturers' warranty as well as the manufacturer's required minimum 1 year warranty in regard to equipment, materials and workmanship. This statement shall include the terms, conditions and the period of warranty coverage. Any exclusion(s) must be clearly stated.

CONSTRUCTION OPERATIONS PLANS

Specific guidelines for working on the airport apply to this project. These minimum guidelines are set forth on the Plans and in Section 01030 "Airport Project Procedures".

CONSTRUCTION AS INDEPENDENT CONTRACTOR

In conducting its business hereunder, CONTRACTOR acts as an independent contractor and not as an employee or agent of the OWNER. The selection, retention, assignment, direction and payment of CONTRACTOR's employees shall be the sole responsibility of CONTRACTOR.

ASSIGNMENT

The Agreement, in whole or any part hereof, created by the award to the successful CONTRACTOR shall not be sold, not be assigned or transferred by CONTRACTOR by process or operation of law or in any other manner whatsoever, including intra-corporate transfers or reorganizations between or among a subsidiary of CONTRACTOR, or with a business entity which is merged or consolidated with CONTRACTOR or which purchases a majority or controlling interest

in the ownership or assets of CONTRACTOR without the prior written consent of the OWNER.

PERFORMANCE OF CONTRACT

The OWNER reserves the right to enforce the CONTRACTOR's performance of this Agreement in any manner prescribed by law or deemed to be in the best interest of the OWNER in the event of breach or default or resulting contract award. It will be understood that time is of the essence in the Bidder's performance.

The successful CONTRACTOR shall execute the entire work described in the Contract Documents, except to the extent specifically indicated in the Contract documents to be the responsibility of others.

The CONTRACTOR accepts the relationship of trust and confidence established by the award of this bid solicitation. The CONTRACTOR covenants with the OWNER to utilize the CONTRACTOR's best skill, efforts and judgment in furthering the interest of the OWNER; to furnish efficient business administration and supervision; to make best efforts to furnish at all times an adequate supply of workers and materials; and to perform the work in the best way and most expeditious and economical manner consistent with the interest of the OWNER.

All purchases for goods or services are subject to the availability of funds for this particular purpose.

FAILURE TO COMPLY WITH PROVISIONS

Failure to comply with the terms of these contract provisions may be sufficient grounds to:

1) Withhold progress payments or final payment,

2) Terminate the contract,

3) Seek suspension/debarment, or

4) Any other action determined to be appropriate by the sponsor or the FAA.

DEFAULT AND TERMINATION

Termination by CONTRACTOR: The agreement resulting from this bid shall be subject to termination by CONTRACTOR in the event of any one or more of the following events: The default by OWNER in the performance of any of the terms, covenants or conditions of this Agreement, and the failure of OWNER to remedy, or undertake to remedy such default, for a period of thirty (30) days after receipt of notice from CONTRACTOR to remedy the same.

Termination by OWNER: The agreement resulting from this bid shall be subject to termination by the OWNER at any time in the opinion of the OWNER; the CONTRACTOR fails to carry out the contract provisions of any one or more of the following events:

1. The default by CONTRACTOR in the performance of any of the terms, covenants or conditions of the Agreement, and the failure of CONTRACTOR to remedy, or undertake to remedy with sufficient forces and to the OWNER's reasonable satisfaction, the OWNER shall provide the vendor with notice of any conditions which violate or endanger the performance of the Agreement. If after such notice the CONTRACTOR fails to remedy such conditions within thirty (30) days to the satisfaction of the OWNER, the OWNER may exercise their option in writing to terminate the Agreement without further notice to the

CONTRACTOR and order the CONTRACTOR to stop work immediately and vacate the premises, to cancel ordered products and/or services with no expense to the OWNER.

2. CONTRACTOR files a voluntary petition in bankruptcy, including a reorganization plan, makes a general or other assignment for the benefit of creditors, is adjudicated as bankrupt or if a receiver is appointed for the benefit of creditors, is adjudicated as bankrupt or if a receiver is appointed for the property or affairs of CONTRACTOR and such receivership is not vacated within thirty (30) days after the appointment of such receiver.
3. CONTRACTOR'S failure to conduct services according to the approved bid specifications.
4. CONTRACTOR'S failure to keep, perform, or observe any other term or condition of this Agreement.
5. CONTRACTOR'S performance of the contract is unreasonably delayed.
6. Should the successful Bidder fail to provide the commodities or services when ordered, and in accordance with the General Terms and Conditions, specifications and any other requirements contained herein are not met, the OWNER reserves the right to purchase commodities or services covered by this contract elsewhere if available from an alternate source.
7. The CONTRACTOR agrees by its bid submission that the OWNER's decision is final and valid.

Force Majeure: Neither party shall be held to be in breach of the Agreement resulting from this bid, because of any failure to perform any of its obligations hereunder if said failure is due to any act of God, fire, flood, accident, strike, riot, insurrection, war, or any other cause over which that party has no control. Such party shall give notice and full particulars of such Force Majeure in writing to the other party within a reasonable time after occurrence of the event and the obligation of the party giving such notice shall endeavor to remove or overcome such inability with all reasonable dispatch.

Waiver: The waiver of any breach, violation or default in or with respect to the performance or observance of the covenants and conditions contained herein shall not be taken to constitute a waiver any subsequent breach, violation or default in or with respect to the same or any other covenant or condition hereof.

END OF INSTRUCTIONS TO BIDDERS

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DIVISION 3 – PROPOSAL DOCUMENTS

PROPOSAL

IMPROVEMENTS TO DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

Failure to furnish all requested data will be cause for considering Bidder nonresponsive and may render this Bid invalid on that basis.

BID FOR: **DALTON MUNICIPAL AIRPORT**
APRON REHABILITATION – PHASE II

SUBMITTED TO: **CITY OF DALTON**
300 W. WAUGH STREET
DALTON, GEORGIA 30722

SUBMITTED BY: _____
Bidder's Name

_____
Address

_____
City, State and Zip Code

_____
Telephone email

The undersigned bidder has carefully examined the site of the work described herein, has become familiar with local conditions and the character and extent of the work, has carefully examined the drawings, the Advertisement, Proposal, Proposal Bond, Contract, Performance and Payment Bonds, Instructions to Bidders, General Conditions, General Provisions, and Special Provisions; and thoroughly understands their stipulations, requirements and provisions.

The undersigned bidder has determined the quality and quantity of materials required; has investigated the location and determined the sources of supply of the materials required; has investigated labor conditions; and has arranged for the continuous prosecution of the work herein described.

The undersigned bidder hereby agrees to be bound by the award of the contract and, if awarded the contract on this Proposal, to execute within **fifteen** calendar days after notice of award, the required Contract and the Performance Bond and Payment Bond, of which Contract this Proposal, the Plans for the work, and the Standard Specifications, with subsequent revisions shall be a part.

The undersigned bidder further agrees if awarded the contract on this proposal to begin work within **ten** days after the date of issuance of the Notice to Proceed unless otherwise authorized by the Engineer, and further agrees that within **fifteen** days after the date of the notice to proceed to have

at work all the equipment specified, along with such other necessary equipment as set out in the specifications.

The undersigned bidder further agrees to provide all necessary equipment, tools, labor, incidentals and other means of construction to do all the work, and furnish all the materials of the specified requirements which are necessary to complete the work in accordance with the Proposal, the Plans and the Specifications and set forth in the Proposal and to all "extra work" which may be required in connection with the construction and completion of the work as required by the Specifications Plans and Special Provisions.

For construction, the undersigned bidder has confirmed that the bidder's organization and equipment are available to perform the project. The bidder agrees, if deemed necessary by the Engineer, to increase this schedule of operations in order to complete the work within the time stated and to the satisfaction of the Engineer.

The bidder understands that the quantities of work shown herein are approximate only and are subject to increase or decrease and agrees that all quantities of work, whether increased or decreased, are to be performed at the unit prices stated in the following estimate of quantities and schedule of prices for the work described.

The undersigned bidder declares that this proposal is made without connection with any other person or persons making proposals for the same work, and is in all respects fair and without collusion or fraud. The bidder also declares that he/she will perform a minimum of 30 percent of the contract work by his/her own forces.

The bidder/offeror certifies, by submission of this proposal or acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees by submitting this proposal that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the bidder/offer/Contractor or any lower tier participant is unable to certify to this statement, it shall attach an explanation to this solicitation/proposal.

Contract Time: Bidder agrees that:

(A) The Project Work will be completed within **NINETY (90) Calendar Days** from the date when the Contract Time commences.

(B) He will commence work with an adequate force and equipment at the time stated in the Notice to Proceed, and complete all work in the number of days stipulated from the date stated in said notice.

(C) The quantities of work listed in the Bid Schedule are approximate and are assumed solely for comparison of Bids. Compensation will be based upon the price bid and actual quantities of work performed in accordance with the Contract Documents.

(D) Liquidated damages for the delay in completion will be Five Hundred Dollars ($500.00) per calendar day.

The undersigned bidder submits herewith proposal guarantee in an amount of not less than five percent (5%) of the total amount of the proposal offered and agrees and consents that the proposal guarantee shall be forfeited to the Owner as liquidated damages if the required Contract,

Performance Bond and Payment Bond are not executed within fifteen (15) calendar days from the Notice of Award and work has not started as required in the previous statements.

_____

NAME OF BIDDER

BY: _____

NAME

_____

TITLE

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PROPOSAL BID FORM

IMPROVEMENTS TO DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

APRON REHABILITATION – PHASE II

SUMMARY OF QUANTITIES							
Item No.	FAA Item No.	GDOT Item No.	Description	Approx. Qty	Unit	Unit Price	Amount
1	C-105		Mobilization (Including Staging area preparation and repair to pre-construction conditions) @_____	1	LS		
2	C-102-5.1a		Construction Entrance/Exit, including installation, maintenance, and removal @_____	1	EA		
3	C-102-5.1b		Silt Fence, Non-Sensitive, including installation, maintenance and removal @_____	500	LF		
4	C-102-5.1c		Inlet Sediment Trap, including installation, maintenance, and removal @_____	5	EA		
5	T-901-5.1		Temporary Seeding @_____	0.25	AC		
6	T-901-5.2		Permanent Seeding @_____	0.25	AC		
7	T-908-5.1		Mulching @_____	0.25	AC		
8	P-101-5.1		Pavement Removal (Including Aggregate Base) @_____	14,200	SY		
9	P-152-4.1		Unclassified Excavation @_____	500	CY		
10		430	6" Reinforced Concrete Paving (Including Steel) @_____	910	SY		

11		441	24" Concrete Curb and Gutter @_____	145	LF		
12		441	6" Concrete Header Curb @_____	110	LF		
13		310	Graded Aggregate Base Course, 4" - including material @_____	14,300	SY		
14	P-220-6.1		Soil-Cement Stabilized Base 8" - Including Material @_____	14,300	SY		
15		402	Recycled Asphaltic Concrete 19 mm Superpave including Bituminous Material and Hydrated Lime - 2" @_____	1,600	TON		
16		402	Recycled Asphaltic Concrete 12.5 mm Superpave including Bituminous Material and Hydrated Lime - 2" @_____	1,525	TON		
17	P-602-5.1		Emulsified Asphalt Prime Coat @_____	6,200	GAL		
18	P-603-5.1		Bituminous Tack Coat @_____	870	GAL		
19	P-620-5.1a		Removal of Existing Striping by Water Blasting @_____	850	SF		
20	P-620-5.1b		Taxiway Marking, Type II, Yellow, including Reflective Media (Type III, Gradation A) and Microbicide @_____	2,300	SF		
21	P-620-5.1c		Temporary Taxiway Marking @_____	2,300	SF		
22	P-620-5.1d		Taxiway Marking, Type II, Green, including Microbicide @_____	5,600	SF		

23	C-101-5.1		Aircraft Tie Down, per set (including 3 anchors, foundations, ropes, striping, etc.) @_____	2	EA		
24	D-751-5.1		GDOT STD 1019A Drop Inlet - 72" Dia @_____	2	EA		
25	D-751-5.2		Raised Weir Inlet - 72" Dia @_____	1	EA		
26	D-751-5.3		GDOT STD 1011A Junction Box - 72" Dia @_____	1	EA		
27		600	Flowable Fill (30" CMP Abandonment) @_____	7	CY		
28		682	Remove and Replace Existing Induction Loop at Access Gate (including testing) @_____	1	EA		
29	D-701-5.1		30" RCP, Class III @_____	363	LF		
30	P-101-5.2		Removal of Existing 30" CMP (including disposal) @_____	312	LF		

TOTAL BID:	

Signature: _____
(Bidder)

Bidder hereby acknowledges receipt of the following addenda:

Addendum No.	Dated

_____
NAME OF BIDDER

BY: _____
NAME

_____
TITLE

Business Address: _____

_____

Telephone Number _____

Manufacturer's or
Contractor's I.D. No. _____

SUBCONTRACTORS, SUPPLIERS AND OTHERS:

Subcontractor/Supplier/Others	Subcontract Work Item	Dollar value of Subcontract work
		$
		$
		$
		$
		$

PROPOSAL GUARANTEE (5%)

DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

Know All Men By These Presents, that _____

_____

_____

of _____
(Address)

has tendered the attached (cashier's or certified) check payable to CITY OF DALTON, DALTON, GEORGIA to be held, cashed, forfeited or returned, pending the fulfillment of the following obligating conditions.

The conditions of this obligation are such as to operate as a guarantee that the Contractor will fully and promptly execute a contract and cause to be executed Performance and Payment Bonds acceptable to the Owner, as set forth in the Proposal or bid, should the same be accepted, and that not longer than fifteen (15) days after the receipt of notification of acceptance of his proposal and the receipt by the Contractor of contract forms from the Owner, he will execute in his Proposal or bid, together with and accompanied by Performance and Payment Bonds, satisfactory to the Owner, in the amount of the contract. It is also required that the Contractor begin work within ten (10) days after notice to proceed by the Owner, and further agrees that within fifteen (15) days after given notice to proceed by the Owner to have at work all of the equipment specified, along with such other necessary equipment as set out in the Special Provisions; and that failure to perform or comply with any or all of the foregoing requirements, within the time set forth above, shall be just and adequate cause for the annulment of the award, and it is understood that, in the event of the annulment of the award, the amount of this guarantee shall immediately be at the disposal of the Owner, not as a penalty, but as an agreed liquidated damage. Should each and all of the foregoing conditions be fulfilled, this obligation shall be null and void, otherwise to remain in full force and effect.

In testimony whereof, the Contractor has caused these presents to be fully signed, witnessed and attested.

WITNESS: _____ CONTRACTOR: _____

ATTEST: _____ ADDRESS: _____

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PROPOSAL GUARANTEE BOND (5%)

DALTON MUNICIPAL AIRPORT
DALTON, GEORGIA

KNOW All Men By These Presents, that _____

_____

(hereinafter called the "Principal"), Principal and the_____

a corporation created and existing under the laws of the State of_____

with its principal office in the City of _____ and licensed to do business in the State of Georgia (hereinafter called the "Surety"), is held and firmly bound unto CITY OF DALTON, DALTON, GEORGIA or their duly authorized representative, acting for the Owner, hereinafter called the "Owner"), in the full and just sum of _____

_____

_____($_____)

good and lawful money of the United States of America, to be paid at sight, without protest, of which sum of money will and truly to be paid, the said Surety binds itself, its heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such as to operate as a guarantee that the Principal will fully and promptly execute a contract and cause to be executed performance and payment bonds acceptable to the Owner, all set forth in the Proposal or bid, should the same be accepted, and that not longer than fifteen (15) days after the receipt by the notification of acceptance of this Proposal and this receipt by the Principal of contract forms from the Owner, he will execute a contract on the basis of the terms, conditions and unit prices set forth in his Proposal or bid, together with and accompanied by performance and payment bonds, satisfactory to the Owner, in the amount determined by the Owner, not to exceed the total amount of the contract; it is also required that the Contractor begin work within ten (10) days after notice to proceed by the Owner, and further agrees that within fifteen (15) days after given notice to proceed by the Owner to have at work all of the equipment specified,

along with other necessary equipment as set out in the Special Provision; and that failure to perform or comply with any or all of the foregoing requirements within the time set forth above, shag be just and adequate cause for the annulment of the award, the amount of this guarantee shall immediately be at the disposal of the Owner, not as a penalty, but as an agreed liquidated damage. Should each and all of the foregoing conditions be fulfilled and Performance and Payment Bonds, as set forth in the Proposal, be executed, bonds being satisfactory to the Owner, this obligation shall be null and void, otherwise in full force and effect.

In testimony whereof, the Principal and Surety have caused these presents to be duly signed and sealed.

This _____ day of _____, A.D. 2022.

WITNESS: _____

_____
(Principal)

BY: _____

_____
(Surety)

BY: _____
General Agent of Attorney-in Fact

(SEAL)

NOTE: Each agent representing such Surety Company must file with the Owner his Power of Attorney duly executed by said Surety Company. The Surety Company must be listed on U.S. Treasury Circular 570.

CERTIFICATE OF CORPORATE BIDDER

I, _____, certify that I am Secretary of the corporation named as bidder herein, same being organized and incorporated to do business under the laws of the State of_____; that _____ and _____ who executed this proposal on behalf of the bidder were, then and there, _____ and _____ respectively, and that said proposal was duly signed by said officers for and in behalf of said corporation, pursuant to the authority of its governing body and within the scope of its corporate powers.

I further certify that the names and addresses of the owners of all outstanding stock of said corporation as of this date are as follows:

_____

_____

_____

_____

This _____ day of _____, 2022.

_____
Secretary

(Corporate Seal)

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CERTIFICATE OF AUTHORITY FOR LIMITED LIABILITY CORPORATION, PARTNERSHIP OR SOLE OWNER

I, the undersigned_____, am the _____of _____, a Georgia limited liability company (the "LLC") or Partnership, or Sole Owner. In order to induce CITY OF DALTON, DALTON, GEORGIA (the AUTHORITY) to enter into a contract with the LLC, Partnership, or Sole Owner executed on its behalf by me, I do hereby personally guarantee to the AUTHORITY that I, acting alone as_____, am vested with full power and authority to act for and on behalf of the LLC, Partnership, or Sole Owner in the execution of contracts between the LLC, Partnership or Sole Owner and the AUTHORITY, and any such contract(s) will be binding on the LLC, Partnership, or Sole Owner.

This _____ day of _____, 2022.

_____

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FORM OF NONCONCLUSION AFFIDAVIT

(This Affidavit is Part of Bid)

STATE OF _____

COUNTY OF _____

_____
being first duly sworn, deposes and says that he/she is

_____
(Sole owner, a partner, president, secretary, etc.)

of _____

the party making the foregoing Proposal or BID that such BID is genuine and not collusive or sham; that said BIDDER has not colluded, conspired, connived, or agreed, directly or indirectly, with any BIDDER or person, to put in a sham BID, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the Bid Price of affiant or any other BIDDER, or to fix any overhead, profit or cost element of said Bid Price, or of that of any other BIDDER, or to secure any advantage against OWNER any person interested in the proposed Contract; and that all statements in said Proposal or Bid are true; and further, that such BIDDER has not, directly or indirectly submitted this BID, or the contents thereof, or divulged information or date relative thereto to any association or to any member or agent thereof.

_____
(Bidder)

Sworn to an subscribed before me this
_____ day of _____, 20___.

_____
Notary Public in and for

_____ County _____

My Commission expires _____, 20___.

(SEAL)

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CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

The Bidder/offer certifies, by submission of this Proposal or acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntary excluded from participation in this transaction by any Federal department or agency. It further agrees by submitting this proposal that it will include this clause without modification in all lower tier, transactions, proposals, contracts, and subcontracts. Where the Bidder/offeror or any lower tier participant is unable to certify to this statement, it shall attach an explanation of this solicitation/proposal.

_____ _____

Signature of Contractor Title

Date: _____

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CERTIFICATE OF BUY AMERICAN COMPLIANCE FOR MANUFACTURED PRODUCTS

(Non-building construction projects, equipment acquisition projects)

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

a) Only installing steel and manufactured products produced in the United States, or;
b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing, or;
c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

1. To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
2. To faithfully comply with providing US domestic product
3. To furnish US domestic product for any waiver request that the FAA rejects
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

1. To the submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination may result in rejection of the proposal.
3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver - The cost of the item components and subcomponents produced in the United States is more that 60% of the cost of all components and subcomponents of the "item". The required documentation for a type 3 waiver is:

a) Listing of all product components and subcomponents that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition

Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety)

b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.

c) Percentage of non-domestic component and subcomponent cost as compared to total "item" component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver – Total cost of project using US domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a type 4 of waiver is:

a) Detailed cost information for total project using US domestic product

b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

CERTIFICATION REGARDING FOREIGN PARTICIPATION

The contractor or subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

a. Is not owned or controlled by one or more citizens or nationals of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);

b. Has not knowingly entered into any contract or subcontract for this project with a contractor that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list;

c. Has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in foreign country on said list.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If the Contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on the said list for use on the project, the Federal Aviation Administration may direct, through the sponsor, cancellation of the contract at no cost to the Government.

Further, the Contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. This /Contractor may rely upon the certification of a prospective subcontractor unless it has knowledge of the certification of erroneous.

The Contractor shall provide immediate written notice to the sponsor if the Contractor learns that is certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide immediate written notice to the Contractor, if at any time it learns that its certification was erroneous by reason of changed circumstances.

This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct, through the sponsor, cancellation of the contract or subcontract for default at no cost to the Government.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a Contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

This certification concerns a matter within the jurisdiction of an agency of the United State of America and the making of a false, fictitious, fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

_____ _____

Signature of Contractor Title

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CERTIFICATE OF NONSEGREGATED FACILITIES

The federally-assisted construction contractor certifies that she or he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that she or he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that she or he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that she or he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directives or are, in fact, segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason. The federally-assisted construction contractor agrees that (except where she or he has obtained identical certifications from proposed subcontractors for specific time periods) she or he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause and that she or he will retain such certifications in his files.

If the bidder has participated in a previous contract subject to the nondiscrimination clause and has not submitted compliance reports as required by applicable instructions, the bidder shall submit written evidence of required compliance prior to award and within ten (10) days after opening of bids.

The Contractor or Subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

a. is not owned or controlled by one or more citizens or nationals of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);

b. has not knowingly entered into any contract or subcontract for this project with a contractor that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list.

c. has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on the said list for use on the project, the Federal Aviation Administration may direct, through the sponsor, cancellation of the contract at no cost to the Government.

Further, the Contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier

subcontracts. The Contractor may rely upon the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

The Contractor shall provide immediate written notice to the sponsor if the Contractor learns that its certification or that a subcontractor was erroneous when submitted or has become erroneous by reason of charged circumstances. The subcontractor agrees to provide immediate written notice to the Contractor, if at any time it learns that its certification was erroneous by reason of changed circumstances.

This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct, through the sponsor, cancellation of the contract or subcontract for default at no cost to the Government.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings. This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under title 18, United States Code, Section 1001.

_____

Contractor Date

EQUAL OPPORTUNITY REPORT STATEMENT

The bidder shall complete the following statement by checking the appropriate spaces. Failure to complete these blanks may be grounds for rejection of bid.

The Bidder _____ has not _____ participated in a previous contract subject to the nondiscrimination clause prescribed by Executive Order 11246 dated 24 September, 1965, or Executive Order 11114, dated 2 June, 1963.

The Bidder _____ has not _____ submitted compliance reports in connection with any such contract as required by applicable instructions.

If the bidder has participated in a previous contract subject to the nondiscrimination clause and has not submitted compliance reports as required by applicable instruction, the bidder shall submit written evidence of required compliance within **ten (10)** days after opening of bids.

The bidder certifies that he does _____ does not _____ employ **fifty (50)** or more employees.

PERFORMANCE OF WORK BY SUBCONTRACORS

The BIDDER hereby states that he proposes, if awarded the Contract, to use the following subcontractors on this project: List below all proposed subcontractors and trade specialties. (List only one subcontractor for each item.)

Item	Subcontractor

Other (Describe)

_____

_____

_____

Estimated Total Cost of Items that BIDDER states will be performed by Subcontractor(s):

($_____)

_____ _____

Signature of Contractor Title

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REQUIREMENT OF 49 CFR PART 26 – (AS AMENDED)
DISADVANTAGED BUSINESS ENTERPRISE

The following bid conditions apply to this Department of Transportation (DOT) assisted contract. Submission of a bid/proposal by a prospective Contractor shall constitute full acceptance of these bid conditions.

1. Definition - Disadvantaged Business Enterprise (DBE) as used in this Contract shall have the same meaning as defined in 49 CFR Part 26, as amended.

2. Policy - It is the policy of DOT that disadvantaged business enterprise as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with federal funds. Consequently, the DBE requirements of 49 CFR Part 26 apply to this contract.

3. DBE Obligation - The Contractor agrees to ensure that disadvantaged business enterprises as defined in 49 CFR Part 26 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with federal funds. In this regard, all Contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 to ensure that disadvantaged business enterprises have the maximum opportunity to compete for and perform contracts. Contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of DOT assisted contracts.

4. Compliance - All bidders, potential contractors, or subcontractors for this DOT assisted contract are hereby notified that failure to carry out the DOT policy and the DBE obligations, as set forth above, shall constitute a breach of contract which may result in termination of the contract or such other remedy as deemed appropriate by the Owner.

5. Subcontract Clause - All bidders and potential Contractors hereby assure that they will include the above clauses in all subcontracts which offer further subcontracting opportunities.

6. Contract Award - Bidders are hereby advised that meeting DBE subcontract goals or making an acceptable good faith effort to meet such goals are conditions of being awarded this DOT assisted contract.

The Owner proposes to award the contract to the lowest responsive and responsive bidder submitting a reasonable bid provided he has met the goals for DBE participation or, if failing to meet the goals, he has made an acceptable good faith effort to meet the established goals for the DBE participation. The bidder is advised that the owner reserves the right to reject any or all bids submitted.

7. Subcontract Goals - The attainment of goals established for this contract are to be measured as a percentage of the total dollar value of the contract. The goals established for this contract is **5.35%** to be performed by the DBE's.

8. Available Certified DBEs - The Owner has developed an DBE Program and DBE Directory as required by 49 CFR Part 26. For this contract, the Owner will accept as certified, those DBE firms which are identified by the Small Business Administration (SBA) as 8(a) firms and those firms which are currently certified by other Department of Transportation (DOT) agencies (such as the Department of Transportation). Firms which desire certification which

do not meet the SBA or other DOT agencies previous certification criteria are required by the Owner to complete the DOT recommended Schedule A or Schedule B (as applicable) in its entirety before they can be certified for this contract. Copies of Schedule A or Schedule B may be obtained from Owner. The act of simply filling out the Schedule A or Schedule B does not mean automatic certification by the Owner. The rules and procedures of 49 CFR Part 26 shall govern the certification process of the Owner.

9. Contractor's Required Submission - Prospective Contractors shall submit with his bid the following summary of "Letters of Intent" information concerning DBE participation.

The bidder/offeror will also be required to submit the following information:

1. The names and addresses of DBE firms that will participate in the contract;
2. Written documentation of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet the contract goal;
3. Written confirmation from the DBE that it is participating in the contract as provided in the commitment made under (2);

MINORITY SUBCONTRACTS

Minority Subcontractor	Subcontract Work Item	Dollar value of Subcontract work
_____	_____	$ _____
_____	_____	$ _____
_____	_____	$ _____
_____	_____	$ _____
_____	_____	$ _____

WOMEN SUBCONTRACTS

Minority Subcontractor	Subcontract Work Item	Dollar value of Subcontract work
_____	_____	$ _____
_____	_____	$ _____
_____	_____	$ _____
_____	_____	$ _____
_____	_____	$ _____
	Total Value of Subcontract Work	$ _____
	Total Dollar Value of Base Bid	$ _____
	Percent of Total	$ _____

If the Contractor fails to meet the DBE subcontract goals established in paragraph 7 above, the following information must be submitted with prospective Contractor's bid to assist the Owner in evaluating the efforts of the Contractor toward meeting DBE goals.

a. Specify efforts used to identify and award contracts to minority businesses on this project;
b. Describe the method used to notify the public and minority community of your solicitation of bids, quantities, specifications and delivery schedule;

c. Identify the solicitation time set up in b. above and describe any follow-up action taken after the initial solicitation to determine if DBEs were interested in subcontract work;

d. Under this contract what work do you feel will be suitable for subcontracting?
(1) Number of Contracts _____

(2) Total Dollar Value $_____

e. List the name, address and bid prices of minority businesses that submitted bids for subcontracts under this project;

f. List DBEs that were rejected and give reasons for rejection; and,

g. Describe efforts made to assist DBEs in obtaining bonding or insurance and sub-mission of bids.

h. Other actions to secure DBE participation.

10. CONTRACTOR ASSURANCES - The bidder hereby assures that he will meet one of the following as appropriate:

a. The DBE participation goals as established in paragraph 7 above.

b. The DBE participation percentage shown in paragraph 9 which was submitted as a condition of contract award.

Agreements between bidder/proposer and a DBE in which the DBE promises not to provide subcontracting quotations to other bidders/proposers are prohibited. The bidder shall make an acceptable good faith effort to replace a DBE subcontractor that is unable to perform successfully with another DBE subcontractor. Substitutions must be coordinated with and approved by the Owner.

The bidder shall establish and maintain records and submit regular reports, as required, which will identify and assess progress in achieving DBE subcontract goals and other DBE affirmative action efforts.

NAME OF BIDDER: _____

IRS NUMBER: _____

BY: _____

TITLE: _____

DATE: _____

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CONTRACTOR - GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned Contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of the CITY OF DALTON has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned Contractor will continue to use the federal work authorization program throughout the contract period and the undersigned Contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the Contractor with the information required by O.C.G.A. § 13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____
Federal Work Authorization/ E-Verify User Identification Number

_____
Date of Authorization

_____
Name of Contractor

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, ___, 2022 in _____ (city), _____ (state).

_____
Signature of Authorized Officer or Agent

_____
Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____, 2022.

_____
NOTARY PUBLIC

My Commission Expires:

_____

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SUBCONTRACTOR - GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of the CITY OF DALTON has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____
Federal Work Authorization/ E-Verify User Identification Number

_____
Date of Authorization

_____
Name of Contractor

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, ___, 2022 in _____ (city), _____ (state).

_____
Signature of Authorized Officer or Agent

_____
Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____, 2022.

_____
NOTARY PUBLIC

My Commission Expires:

_____

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SAFE AFFIDAVIT

REQUIRED FOR LOCAL GOVERNMENT THAT MUST BE EXECUTED BY ANYONE ENTERING INTO A CONTRACT WITH A LOCAL GOVERNMENT

STATE OF GEORGIA
WHITFIELD COUNTY, CITY OF DALTON

By executing this affidavit under oath, as an applicant for a Whitfield County, Dalton, Georgia contract as referenced in O.C.G.A. § 50-36-1 and the August 1, 2010, "Report of the Attorney General on Public Benefits," I am stating the following with respect to my ability to enter into a contract with Whitfield County, Dalton, Georgia:

_____
[Name of natural person applying on behalf of individual, business, corporation, partnership or other private entity]

As a representative of:

_____
(Name of the business, corporation, partnership, or other private entity)

1) _____ I am a United States citizen

OR

2) _____ I am a legal permanent resident 18 years of age or older or I am an otherwise qualified alien or non-immigrant under the Federal Immigration and Nationality Act 18 years of age or older and lawfully present in the United States.*

In making the above representation under oath, I understand that any person who knowingly and willfully makes a false, fictitious, or fraudulent statement or representation in an affidavit shall be guilty of a violation of O.C.G.A. § 16-10-20.

This ____ day of _____, 20____.

Signature of Applicant: _____

Printed Name: _____

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE
____ DAY OF _____, 20__

_____
Notary Public
My Commission Expires:

***Note**: O.C.G.A. § 50-36-1(e)(2) requires that aliens under the federal Immigration and Nationality Act, Title 8 U.S.C., as amended, provide their alien registration number. Because legal permanent residents are included in the federal definition of "alien," legal permanent residents must also provide their alien registration number. Qualified aliens that do not have an alien registration number may supply another identifying number below:
Alien Registration number for non-citizens: *_____

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APRON REHABILITATION – PHASE II

CHECKLIST FOR BID DOCUMENTS

Failure to include all required documents will result in proposal being removed for consideration for award.

DOCUMENTATION DESCRIPTION	Please check
1. Proposal	☐
2. Proposal Bid Form	☐
3. Addenda Acknowledgement	☐
4. Proposal Guarantee (5%)	☐
5. Proposal Guarantee Bond (5%)	☐
6. Certificate of Corporate Bidder ***OR*** Certificate of Authority for LLC, Partnership or Sole Owner	☐
7. Form of Noncollusion Affidavit	☐
8. Certification Regarding Debarment, Suspension, Ineligibility and Volunteer Exclusion	☐
9. Buy American Certification	☐
10. Certification Regarding Foreign Participation	☐
11. Certification of Nonsegregated Facilities	☐
12. Equal Opportunity Report Statement	☐
13. Performance of Work by Subcontractors	☐
14. Disadvantaged Business Enterprise Program	☐
15. Contractor – Georgia Security and Immigration Compliance Act Affidavit and Agreement	☐
16. Subcontractor – Georgia Security and Immigration Compliance Act Affidavit and Agreement	☐
17. SAVE Affidavit	☐
18. Proof of Insurance	☐
19. GDOT DBE Certification	☐
20. Bid Documents Submittal Checklist (This Page)	☐

This affirms that all documents are included with the bidder's bid package.

_____ _____

Company's Name Date

_____ _____

Authorized Representative's Name (Print or Type) Authorized Representative's Signature

END OF PROPOSAL DOCUMENTS

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DIVISION 4 – CONTRACT DOCUMENTS

CONTRACT

STATE OF GEORGIA
WHITFIELD COUNTY, CITY OF DALTON

THIS AGREEMENT made and entered into this _____ day of _____, 2022 by and between **CITY OF DALTON, DALTON, GEORGIA** (Party of the, First Part, hereinafter called the Owner) and _____(Party of the Second Part, hereinafter called the Contractor).

WITNESSETH: That the said Contractor has agreed, and by these presents does agree with the said Owner, for the consideration herein mentioned and under the provision of the Performance Bond and Labor and Materials Payment Bond required by the Specifications to furnish all equipment, tools, materials, skill and labor of every description necessary to carry out and complete in a good, firm and substantial and workmanlike manner, the work specified, in strict conformity with the drawings and specifications, together with the foregoing proposal made by the Contractor, the Advertisement, the Instructions to Bidders, General Conditions and this Agreement, shall all form essential parts to this Agreement. The work covered by this Agreement includes all work shown on plans and specifications and listed in the conditions and specifications, to wit: Improvements to DALTON MUNICIPAL AIRPORT, DALTON, GEORGIA and CROY Engineering, LLC project No. 2106.005.

The Contractor awarded work under this contract shall commence work within **ten** days after the issuance of the Notice to Proceed. **All work shall be fully completed within NINETY (90) Calendar Days** from the Notice to Proceed.

If said work is not completed within the time stated, the Contractor shall be liable and hereby agrees to pay the owner as liquidated damages and not as a penalty, the amount of Five Hundred Dollars ($500.00) per calendar day for a delay in completion.

The Owner shall pay and the Contractor shall receive the prices stipulated in the proposal hereto attached as full compensation for everything furnished and done by the Contractor under this contract, the full sum of _____ **($_____)** based on the quantities shown in the proposal which sum shall be paid in the manner and terms specified in the Contract Documents, but before issuance of certificate of payment, if the Contractor shall not have submitted evidence satisfactory to the Owner that all payrolls, materials bills, and other indebtedness connected with the work have been paid, the Owner may withhold, in addition to the retained percentages, such amount or amounts as may be necessary to pay just claims for labor and services rendered and materials in and about the work, and such amount or amounts withheld or retained may be applied by the Owner to the payment of such just claims

It is further mutually agreed between the Parties hereto that if, at any time after the execution of agreement and the Performance Bond for its faithful performance and the Labor and Materials Payment bond, the first party shall deem the surety or sureties upon such bond to be inadequate to cover the performance of the work, the second party shall, at its expense, within five (5) days after the receipt of notice from the first party to do so, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the first party. In such event, no further payment to the second party shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in a manner and form satisfactory to the first party.

IN WITNESS WHEREOF the parties hereto have executed this agreement in triplicate this day of _____ day of _____, 2022.

ATTEST: (As to Contractor)
Signed and sealed in the
Presence of:

_____L.S.

_____L.S.

(SEAL)

By: _____L.S.

Title:

ATTEST:

(SEAL)

_____L.S.
Secretary

ATTEST:(As to Owner)

CITY OF DALTON
WHITFIELD COUNTY/DALTON, GEORGIA

By:_____L.S.

By: _____L.S.

APPROVED AS TO FORM BEFORE EXECUTION

By:_____L.S.
Attorney for City of Dalton

CERTIFICATE OF CORPORATE AUTHORITY

I, _____, certify that I am Secretary of the Corporation named as Contractor herein, same being organized and incorporated to do business under the laws of the State of _____; that _____ _____ who executed this contract on behalf of the Contractor was, then and there, _____; and that said contract was duly signed by said officer and in behalf of said corporation, pursuant to the authority and its governing body and within the scope of its corporate powers.

I further certify that the names and addresses of the owners of all the outstanding stock of said corporation as of this date are as follows:

_____

_____

_____

_____

_____

_____

_____

This _____ day of _____, 2022.

_____ (Corporate Seal)

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CERTIFICATE OF AUTHORITY FOR LIMITED LIABILITY CORPORATION, PARTNERSHIP OR SOLE OWNER

I, the undersigned_____, am the

_____of _____, a Georgia limited liability company (the "LLC") or Partnership, or Sole Owner. In order to induce CITY OF DALTON (the AUTHORITY) to enter into a contract with the LLC, Partnership, or Sole Owner executed on its behalf by me, I do hereby personally guarantee to the AUTHORITY that I, acting alone as_____, am vested with full power and authority to act for and on behalf of the LLC, Partnership, or Sole Owner in the execution of contracts between the LLC, Partnership or Sole Owner and the AUTHORITY, and any such contract(s) will be binding on the LLC, Partnership, or Sole Owner.

This _____ day of _____, 2022.

_____

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PERFORMANCE BOND (100%)

KNOW ALL MEN BY THESE PRESENTS, that we, _____**,** as Principal, and _____, as Surety, licensed to do business in the State of Georgia, are held and firmly bound unto **CITY OF DALTON, DALTON, GEORGIA** as Obligee, hereinafter called the Owner, in the sum of _____**($_____)**, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally firmly by these presents.

The condition of this obligation is such, as whereas the Principal entered into a certain contract, hereto attached, with the Owner, dated _____ 2022, for **IMPROVEMENTS TO DALTON MUNICIPAL AIRPORT, DALTON, GEORGIA, and CROY ENGINEERING Project No. 2106.005.**

NOW, THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Owner, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made, except that no change will be made which increases the total contract price more than twenty percent in excess of the original contract price without notice to the Surety, then this obligation to be void, otherwise to remain in full force and effect.

Whenever Principal shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or

shall promptly:

(1) Complete the Contract in accordance with its terms and conditions, or

(2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Owner, 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 amount set forth in the first paragraph hereof. The term 'balance of the contract price", as used in this paragraph, shall mean the total amount payable by Owner to Principal under the Contract and any amendments thereto, less the amount properly paid by Owner to Principal.

Signed, Sealed and Dated this _____ day of _____, A.D., 2022.

_____ (SEAL)
(Principal)

BY: _____

_____ (SEAL)
(Surety)

BY: _____

Power of Attorney is attached.

PAYMENT BOND (100%)

KNOW ALL MEN BY THESE PRESENTS: That _____, as Principal, and_____ a corporation of the State of _____with its principal office in City of _____ (hereinafter called the Surety), as Surety, licensed to do business in the State of Georgia, are held and firmly bound unto **CITY OF DALTON, DALTON, GEORGIA** (hereinafter called the Obligee), for the use and protection of all subcontractors and all persons supplying labor, machinery, materials, and equipment in the prosecution of the work provided for in the contract hereinafter referred to in the full and just sum of _____ _____ **($_____)**, to the payment of which sum, well and truly to be made, the Principal and Surety bind themselves, their, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract, dated the _____day of _____, 2022, with the Obligee for **IMPROVEMENTS TO DALTON MUNICIPAL AIRPORT, DALTON, GEORGIA, and CROY ENGINEERING Project No. 2106.005** which Contract is by reference made a part hereof.

NOW, THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall faithfully perform said Contract according to its terms, covenants and conditions, and shall promptly pay all persons furnishing labor or material for use in the performance of said Contract, then this obligation shall be void; otherwise it shall remain in full force and effect.

ALL persons who have furnished labor, material, machinery or equipment for use in the performance of said contract shall have a direct right of action on this Bond, provided payment has not been made in full within **ninety (90) days** after the last day on which labor was performed, materials, machinery, and equipment furnished or the subcontract completed.

PROVIDED, HOWEVER, that no suit or action shall be commenced hereunder by any person furnishing labor or material having a direct contractual relationship with a subcontractor, but no contractual relationship express or implied with the Principal:

Unless such person shall have given notice to the Principal within ninety (90) days after such person did, or performed the last of the work or labor, or furnished the last of the materials for which claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such a notice shall be served by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Principal, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State in which the aforesaid project is located, save that such service need not be made by a public officer.

PROVIDED, FURTHER, that any suit under this bond must be instituted before the expiration of one (1) year after the acceptance of the public works covered by the contract by the proper authorities.

Signed, Sealed and Dated this _____ day of _____, A.D., 2022.

_____ (SEAL)
(Principal)

BY: _____

_____ (SEAL)
(Surety)

BY: _____

Power of Attorney is attached.

The Surety Company must be listed on U.S. Treasury Circular 570.

END OF CONTRACT DOCUMENTS

DIVISION 5 - FAA – 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 heliport.
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).

Paragraph Number	Term	Definition
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.
10-14	**Certificate of Compliance (COC)**	The manufacturer's certification stating 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.

Paragraph Number	Term	Definition
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 airport operator. It is included in the invitation for bids 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.

Paragraph Number	Term	Definition
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, and 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.
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

Paragraph Number	Term	Definition
		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 **CITY OF DALTON.**
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

Paragraph Number	Term	Definition
		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 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.

Paragraph Number	Term	Definition
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; 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 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.

Paragraph Number	Term	Definition
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**	**Airport** – The specific airport referred to in these documents is **Dalton Municipal Airport, Dalton, Georgia.**

END OF SECTION 10

Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). See Advertisement in Front End Documents.

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 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 10 percent of the total project cost.

> **Any mobilization costs over 10% of the project total must be documented and will be paid on an as-incurred basis. Any non-incurred costs will not be paid.**

A non-mandatory pre-bid meeting will be held Monday, November 21, 2022, 2:00 PM Local Time at the Dalton Municipal Airport 4483 Airport Road, Dalton, GA 30721.

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 the 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 a 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.

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, unless obviously incorrect, shall govern.

Prices should generally be written in whole dollars and cents. The extended total amount of each item should not be rounded.

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. See Instructions to Bidders

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 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 **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 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.

All Bonds (Proposal, Payment and Performance) must be signed or countersigned by the surety company's proper resident agent, authorized to do business in the State of Georgia, on whom service can be made in the event of litigation.

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 shall 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.

d. The Contractor shall make his/her own estimate of all labor, materials, equipment, and incidentals necessary for providing the maintenance of aircraft and vehicular traffic as specified in this subsection.

e. The cost of maintaining the aircraft and vehicular traffic specified in this subsection shall not be measured or paid for directly, but shall be included in the various contract items.

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 paragraphs contained in the Special Provisions conflict 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.

SPECIAL PROVISION: Section 70 – Legal Regulations and Responsibility to Public

SPECIAL PROVISION: Section 100 Construction Contract Clauses – Airport Development Program

SPECIAL PROVISION: Item P-620 Runway and Taxiway Marking

50-05 Cooperation of Contractor. The Contractor shall be supplied with five hard copies or an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one 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 reestablishment 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 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 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): **hard copy and electronic format (pdf and AutoCAD and/or Microstation version 2004 or later)**.

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.

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 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 as 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 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 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.

> **Federal Contract Clauses are available at the following FAA website:**
> **www.faa.gov/airports/aip/procurement/federal_contract_provisions/**

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, 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 Owner 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 RPR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed 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).

60-03 Certification of compliance/analysis (COC/COA). The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the RPR.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

a. Conformance to the specified performance, testing, quality or dimensional requirements; and,

b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

60-04 Plant inspection. The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the RPR conduct plant inspections, the following conditions shall exist:

a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.

b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

60-05 Engineer/ Resident Project Representative (RPR) field office. An Engineer/RPR field office is not required.

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

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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.

Effective July 1, 2008: All General Contractors must have a current valid license from the State Licensing Board for Residential and General Contractors, unless specifically exempted from holding such license pursuant to Georgia law, O.C.G.A. Section 43-41-17.

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) **shall be indicated in writing prior to the work being performed.**

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. The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

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.

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 is on sheet(s) **G-101** of 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 whatever, the Contractor 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.

Contractor shall make every effort to protect the utilities in place. Contractor shall coordinate with utility companies for relocation where necessary. Airport Owner and/or Engineer will provide contact information when needed. Utility companies to be contacted prior to making modifications.

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two

normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the RPR.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the RPR and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the RPR continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or their own surety.

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 **and shall comply with 49 CFR § 18.36(i)(12).**

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. Contractor shall purchase and maintain such comprehensive general liability, comprehensive automobile liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance and furnishing of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;

2. Claims for damages because of bodily injury, occupational sickness or disease or death of Contractor's employees;

3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or (b) by any other person for any other reason;

5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use of resulting therefrom;

6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

7. Claims for damages because of bodily injury or death of any person or property damage arising out of the Ownership, maintenance or use of any motor vehicle.

The insurance required shall include the specific coverages and be written for no less than the limits of liability and coverages specified or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or

endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to Owner and Engineer by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when Contractor may be correcting, removing or replacing defective Work in accordance with subsection 50-18. In addition, Contractor shall maintain such completed operations insurance for at least two years after final payment and furnish Owner with evidence of continuation of such insurance at final payment and one year thereafter, with the exception of Owner's Protective Liability coverage.

Indemnification: In any and all claims against Owner or Engineer or any of their consultants, agents or employees by any employee of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 70-11 above shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

Coverages: The limits of liability for the insurance required by Paragraph 70-11 shall provide coverage for not less than the following amounts or greater where required by law:

1. Workers' Compensation, etc.:

    a. State: Statutory

    b. Applicable Federal: Statutory
    (e.g. Longshoreman's)

    c. Employer's Liability: $500,000

2. Comprehensive General Liability:

    a. Bodily Injury and Property Damage: Combined Single Limit
    $5,000,000 Per Occurrence

    b. The Contractor's General Liability insurance shall provide coverage for the following: (1) Premises - Operations, (2) Independent Contractors, (3) Products/Completed Operations Hazard, (5) Underground Hazard, (6) Broad Form Property Damage, (7) Where applicable, Explosion and Collapse Hazard, and (8) Personal Injury.

3. Comprehensive Automobile Liability:

    a. Bodily Injury and Property Damage: Combined Single Limit
    $1,000,000(Per Occurrence)

    b. The Contractor's Comprehensive Automobile Liability Insurance shall provide coverage for Bodily Injury and Property Damage Per Occurrence for owned, hired and non-owned vehicles.

Contractor will provide such additional information in respect of insurance provided by him as the Owner may reasonably request. Failure by Owner to give any such notice of objection within the time provided

shall constitute an acceptance of such insurance purchased by Contractor as complying with the Contract Documents.

The Owner, its officials and staff and the Engineer shall be names as additional insured with respect of notice in the Policy, A Certificate of Insurance naming the Owner as a certificate holder shall be issued by the Contractor's insurance provider to Owner. Certificates in triplicate from the insurance carrier stating the limits of liability and expiration date shall be filed with Owner before operations are begun. Certificates shall not merely name the types of policy provided but shall specifically refer to this Contract and shall contain a separate express statement of compliance with each of the requirements as set forth in this subsection. The certificates shall, in addition to the information relative to the insurance required, contain the following:

(1) Inception and expiration dates of insurance policy.

(2) Limits of liability provided (Public Liability and Property Damage).

(3) Coverage provided, including special hazards if required.

(4) Name of insurance company.

(5) Policy Number.

(6) Additional interests covered.

(7) Statement that the Explosion, Collapse, and Underground exclusions do not apply.

(8) Certificate shall reflect self-insured retention applicable to any contract of insurance.

(9) Excess liability certified contracts must state underlying insurance requirements.

(10) Project number and nature of work.

No certificate will be accepted which exculpates the issuer or reduces any rights conferred on the Owner by the above certificates, nor will they be accepted unless the certificates bear a live signature of a direct representative of a company authorized to do business in the state where the work is located.

No certificate will be accepted unless the person signing the certificate certifies, in a separate letter, his exact relationship with the insurance carrier or carriers indicated in the certificate.

The Owner may, at his discretion, modify or waive any of the foregoing requirements.

No contract of insurance containing a "claims made" insuring agreement will be acceptable unless the Contractor offering such insurance to fulfill the requirements of this Contract agrees that each such contract of insurance shall be renewed for the entire existence of the Contractor, their successors or assigns; and that on termination of such coverage which is not replaced by a similar contract with the required limits of liability, a "tail policy" will be purchased with limits not less than those required by this Contract."

The Contractor shall additionally provide insurance as described in Section 9 of the GDOT Construction Contract with the Owner. Prior to beginning work, Contractor shall furnish to the Georgia Department of Transportation (the DEPARTMENT), a copy of the certificates and the endorsement page for the minimum

amounts of insurance indicated below:

1. Prior to beginning the work, the CONTRACTOR shall obtain and furnish certificates and the endorsement page to the DEPARTMENT for the following minimum amount of insurance from insurers rated at least A- by A. M. Best's and registered to do business in the State of Georgia: Commercial General Liability Insurance of at least $1,000,000 per occurrence $3,000,000 aggregate, including Automobile Comprehensive Liability Coverage with bodily injury in the minimum amount of $1,000,000 combined single limits each occurrence. The DEPARTMENT shall be named as an additional insured and a copy of the policy endorsement shall be provided with the insurance certificate. The above-listed insurance coverages shall be maintained in full force and effect for the entire term of the Contract.
2. The insurance certificate must provide the following:
    a. Name, address, signature and telephone number of authorized agents.
    b. Name and address of insured.
    c. Name of Insurance Company.
    d. Description of coverage in standard terminology.
    e. Policy number, policy period and limits of liability.
    f. Name and address of the DEPARTMENT as certificate holder.
    g. Thirty (30) day notice of cancellation.
    h. Details of any special policy exclusions.
3. Waiver of Subrogation: There is no waiver of subrogation rights by either party with respect to insurance.

70-22 Distracted Driving. *In accordance with Executive Order 1351, "Federal Leadership on Reducing Text Messaging While Driving" (10/1/2009) and DOT Order 3902.10, "Text Messaging While Driving" (12/30/2009), the FAA encourages recipients of Federal grant funds to adopt and enforce policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or a sub-grant.*

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding $3,500 and involve a driving motor vehicle in performance of work activities associated with the project.

END OF SECTION 70

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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 **7** 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 such 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 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 described in the CSPP.

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 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-work days. 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.

See Proposal Form for Schedule of Liquidated Damages.

The maximum construction time allowed for Schedules **is shown on the Proposal Form**. 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 (0.8 square meters) 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 (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) 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 (907 km) 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.

Term	Description
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.
Asphalt Material	Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) 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 (kg) or hundredweight (km).
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

Term	Description
	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 (454 grams). 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. Scale installations shall have available ten standard 50-pound (2.3 km) 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. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than **30 days** after the Contractor has received a partial payment. The Owner must ensure prompt and full payment of retainage from the prime Contractor to the subcontractor within 30 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.

From the total of the amount determined to be payable on a partial payment, **10 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.

3. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 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 30 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.

4. 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.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the RPR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

90-07 Payment for materials on hand. Partial payments for **materials on hand are not allowed in this contract.**

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. Light Emitting Diode emitting diode (LED) light fixtures with the exception of obstruction lighting, must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.

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 **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 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 PROVISION: Section 100 Construction Contract Clauses

Airport Development Program

PART I - WAGE AND LABOR PROVISIONS

DAVIS-BACON REQUIREMENTS:

A. Minimum Wages

1. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

2. (i) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

   a. The work to be performed by the classification requested is not performed by a classification in the wage determination; and

   b. The classification is utilized in the area by the construction industry; and

c. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(ii) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(iii) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(iv) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

2. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

4. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

B. Withholding. The Federal Aviation Administration or the Sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or

advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

C. Payrolls and basic records.

1. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

   (i) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.* , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will

submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(a) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i) and that such information is correct and complete;

(b) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(c) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(iv) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

2. The contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying or transcription by authorized representatives of the Sponsor, the Federal Aviation Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

D. Apprentices and Trainees.

1. Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

2. Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division

determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

3. Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

E. Compliance With Copeland Act Requirements. The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

F. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

G. Contract Termination: Debarment. A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

H. Compliance With Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

I. Disputes Concerning Labor Standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

J. Certification of Eligibility.

1. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

2. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

3. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

K. Contract Workhours and Safety Standards Act Requirements:

1. Overtime requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basis rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) above, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 1 above, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1 above.

3. Withholding for unpaid wages and liquidated damages. The Federal Aviation Administration or the Sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 above.

4. Subcontracts. The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1 through 4 of this section.

5. Working Conditions. No Contractor or subcontractor may require any laborer or mechanic employed in the performance of any contract to work in surroundings or under working conditions that are unsanitary, hazardous or dangerous to his health or safety as

determined under construction safety and health standards (29 CFR Part 1926) issued by the Department of Labor.

Veteran's Preference. In the employment of labor (except in executive, administrative, and supervisory positions), preference must be given to Vietnam era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns owned and controlled by disabled veterans as defined in Title 49 United States Code, Section 47112. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

Copeland "Anti-Kickback" Act Requirements:

The United States Department of Labor Wage and Hours Division oversee the Copeland "Anti-Kickback" Act Requirements. All contracts and subcontracts must meet comply with the Occupational Safety and Health Act of 1970.

United States Department of Labor Wage and Hours Division can provide information regarding any specific clauses or assurances pertaining to the Copeland "Anti-Kickback" Act Requirements required to be inserted in solicitations, contracts or subcontracts.

Federal Fair Labor Standards Act (Federal Minimum Wage)

All contracts and subcontracts that result from this solicitation incorporate the following provisions by reference, with the same force and effect as if given in full text. The contractor has full responsibility to monitor compliance to the referenced statute or regulation. The contractor must address any claims or disputes that pertain to a referenced requirement directly with the Federal Agency with enforcement responsibilities.

Requirement	**Federal Agency with Enforcement Responsibilities**
Federal Fair Labor Standards Act (29 USC 201)	U.S. Department of Labor – Wage and Hour

General Decision Number: GA20220281 02/25/2022

Superseded General Decision Number: GA20210281

State: Georgia

Construction Type: Highway

County: Whitfield County in Georgia.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the

Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	**Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $15.00 per hour (or the applicable wage rate listed on this wage determination, if it higher) for all hours spent performing on the contract in 2022.**
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least $11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at https://www.dol.gov/agencies/whd/government-contracts.

Modification Number	Publication Date
0	01/07/2022
1	02/25/2022

* SUGA2014-115 10/03/2016

	Rates	Fringes
CARPENTER, Includes Form Work....	$ 15.48	0.00
CEMENT MASON/CONCRETE FINISHER...	$ 15.60	2.09
FORM WORKER.....	$ 14.86**	0.00
HIGHWAY/PARKING LOT STRIPING:		
Operator (Striping Machine).....	$ 12.39 **	1.94

INSTALLER - GUARDRAIL.....	$ 13.10 **	0.00
IRONWORKER, REINFORCING.....	$ 15.46	0.00
IRONWORKER, STRUCTURAL.....	$ 15.13	0.00
LABORER: Grade Checker.....	$ 11.45 **	0.00
LABORER: Mason Tender - Cement/Concrete.....	$ 11.96 **	0.00
LABORER: Pipelayer.....	$ 12.57 **	0.00
LABORER: Asphalt (Includes Distributor, Raker, Screed, Shoveler, and Spreader).....	$ 13.23 **	1.26
LABORER: Common or General, Includes Erosion Control.....	$ 10.77 **	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	$ 16.39	1.29
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	$ 12.22 **	0.00
OPERATOR: Broom/Sweeper.....	$ 14.04 **	1.43
OPERATOR: Bulldozer.....	$ 15.70	1.82
OPERATOR: Compactor.....	$ 14.04 **	0.00
OPERATOR: Concrete Saw.....	$ 18.47	0.00
OPERATOR: Crane.....	$ 21.37	0.00
OPERATOR: Grader/Blade.....	$ 19.35	0.00
OPERATOR: Hydroseeder.....	$ 13.93 **	0.00
OPERATOR: Loader.....	$ 13.82 **	1.88
OPERATOR: Mechanic.....	$ 21.08	0.00
OPERATOR: Milling Machine.....	$ 15.57	2.10
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	$ 16.05	3.19
OPERATOR: Piledriver.....	$ 16.70	0.00

OPERATOR: Roller.....	$ 13.62 **	1.60
OPERATOR: Scraper.....	$ 12.64 **	0.00
OPERATOR: Screed.....	$ 14.68 **	2.19
PAINTER: Spray.....	$ 23.30	0.00
TRAFFIC CONTROL: Flagger.....	$ 13.20 **	0.00
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....	$ 12.37 **	0.00
TRAFFIC SIGNALIZATION: Laborer.....	$ 12.76 **	0.00
TRUCK DRIVER: Dump Truck.....	$ 13.00 **	0.00
TRUCK DRIVER: Flatbed Truck.....	$ 14.96 **	1.19
TRUCK DRIVER: Hydroseeder Truck.....	$ 14.92 **	0.00
TRUCK DRIVER: Lowboy Truck.....	$ 17.68	0.00
TRUCK DRIVER: Off the Road Truck.....	$ 12.38 **	0.00
TRUCK DRIVER: Water Truck.....	$ 13.42 **	1.86
TRUCK DRIVER: Semi/Trailer Truck.....	$ 16.13	0.00

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

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($15.00) or 13658 ($11.25). Please see the Note at the top of the wage determination for more information.

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

Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed,in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-

OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination

* a survey underlying a wage determination

* a Wage and Hour Division letter setting forth a position on

a wage determination matter

* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

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

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

Administrative Review Board

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

PART II - EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

A. Standard Federal Equal Employment Opportunity Construction Contract Specifications (41 CRF 60-4.3).

1. As used in these specifications:

"Covered area" means the geographical area described in the solicitation from which this contract resulted;

"Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;

"Employer identification number" means the federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;

"Minority" includes:

(1) Black (all persons having origins in any of the black African racial groups not of Hispanic origin);

(2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin regardless of race);

(3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast, Asia, the Indian Subcontinent, or the Pacific Islands); and

(4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North American and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the plan area (including goals and timetables) shall be in accordance with that plan for those trades which have unions participating in the plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved plan does not excuse

any covered Contractor's or subcontractor's failure to take good faith efforts to achieve the plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 18.7a through 18.7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction Contractors performing construction work in a geographical area where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal Procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the Contractor has a collective bargaining agreement to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246 or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period and the Contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:

    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

    b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, a community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or female sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any jobsite. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to

minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation, at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction Contractors and suppliers, including circulation of solicitations to minority and female Contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (18.7a through 18.7p). The efforts of a Contractor association, joint Contractor-union, Contractor-community, or other similar groups of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 18.7a through 18.7p of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which

demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular groupis employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally,) the Contractor may be in violation of the executive order if a specific minority group of women is underutilized.

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any subcontract with any person or firm debarred from government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 18.7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of

requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

B. Compliance with Nondiscrimination Requirements. During the performance of this contract, the Contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "Contractor") agrees as follows:

1. COMPLIANCE WITH REGULATIONS. The Contractor (hereinafter includes consultants) will comply with the **Title VI List of Pertinent Nondiscrimination Statutes and Authorities**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. NONDISCRIMINATION. The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.

3. SOLICITATIONS FOR SUBCONTRACTS, INCLUDING PROCUREMENTS OF MATERIALS AND EQUIPMENT. In all solicitations, either by competitive bidding, or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the Contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. INFORMATION AND REPORTS. The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

5. SANCTIONS FOR NONCOMPLIANCE. In the event of a Contractor's noncompliance with the Non-discrimination provisions of this contract, the Sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:

   a. Withholding payments to the Contractor under the contract until the Contractor complies; and/or

   b. Cancelling, terminating, or suspending a contract, in whole or in part.

6. INCORPORATION OF PROVISIONS. The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Sponsor to enter into any litigation to protect the interests of the Sponsor. In addition, the Contractor may request the United States to enter into litigation to protect the interests of the United States.

C. Equal Employment Opportunity Clause. During the performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

3. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising that said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible

for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

7. The Contractor will include the portion of the sentence immediately preceding paragraph 1 and the provisions of paragraphs 1 through 7 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

1. 8. The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 CRF Part 26 in the award and administration of DOT assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as the recipient deems appropriate.

9. Prompt Payment: The prime Contractor agrees to pay each subcontractor under this prime Contract for satisfactory performance of its Contract no later than seven (7) days from the receipt of each payment, the prime contractor received from the Owner. The prime Contractor agrees further to return retainage payments to each subcontractor within seven (7) days after the subcontractor's Work is satisfactorily completed. Any delay or postponement of payment form the above referenced time frame may occur only for good cause following written approval of the Owner. This clause applies to both DBE and non-DBE subcontractors. Failure to comply with the prompt payment provision of the Contract may result in sanctions under the Contract, as listed below.

(1) Refusal to issue proposals

(2) Damages

(3) Suspension of Work on the project

(4) No additional progressive payments may be processed

(5) Suspension of prequalification

D. Notices to be Posted. The "Equal Employment Opportunity is the Law" poster is to be posted by the Contractor in a conspicuous place available to employees and applicants for employment as required by paragraphs (1) and (3) of the EEO clause. Copies of this poster will be furnished to Contractors at the preconstruction conference.

E. Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246, As Amended).

1. The Offerer's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

   A. Timetables

   B. Goals for minority participation for each trade
   (Vol. 45 Federal Register pg. 65984 10/3/80)

   C. Goals for female participation in each trade - (6.9%)

   These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor is also subject to the goals for both federally funded and non-federally funded construction regardless of the percentage of federal participation in funding.

   The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and trainingshall be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project, for the sole purpose of meeting the Contractor's goals, shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director, Office of Federal Contract Compliance Programs (OFCCP), within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone

number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" [insert description of the geographical areas where the contract is to be performed giving the state, county, and city, if any].

F. Required Reports.

1. Monthly Employment Utilization Report. This report is to be prepared on Form CC 257 (Rev. 9-78) and sent to the Area Office, Federal Contract Compliance Program (OFCCP) that serves the geographical area in which this project is located. The report is due by the 10TH day of each month after work has commenced. The Contractor will be advised further regarding this report including the address of the OFCCP Area Office, at the preconstruction conference.

2. Annual EEO-1 Report. Contractors/Subcontractors working on federally assisted airport construction projects are required to file annually, on or before March 31, complete and accurate reports on Standard Form 100 (Employee Information Report, EEO-1). The first such report is required within 30 days after award unless the Contractor/Subcontractor has submitted such a report within 12 months preceding the date of award (the FAA or Department of Labor OFCCP can designate other intervals). This form is normally furnished based on a mailing list, but can be obtained from the Joint Reporting Committee, 1800 G. Street, NW, Washington, DC 20506. This report is required if a Contractor or Subcontractor meets all of the following conditions.

   a. Nonexempt. Contractors/Subcontractors are not exempt based on 41 CFR 60-1.5, and

   b. Number of Employees. Has 50 or more employees.

   c. Contractor/Subcontractor. Is a prime Contractor of first tier subcon-tractor, and a financial institution which is an issuing and paying agent for US savings bonds and savings notes. Some Subcontractors below the first tier who work at the site are required to file if they meet the requirements of 41 CFR 60-1.7.

3. Records. The FAA or Department of Labor OFCCP may require a Contractor to keep employment or other records and to furnish, in the form requested within reasonable limits, such information as necessary.

G. Requirement for Certification of Nonsegregated Facilities.

1. NOTICE TO PROSPECTIVE FEDERALLY ASSISTED CONSTRUCTION CONTRACTORS.

a. Certification of Nonsegregated Facilities shall be submitted prior to the award of a federally-assisted construction contract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause.

b. Contractors receiving federally-assisted construction contract awards exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of the following notice to prospective Subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Opportunity Clause.

c. The penalty for making false statements in offers is prescribed in 18 U.S.C. § 1001.

2. NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR CERTIFICATION OF NONSEGREGATED FACILITIES

a. A Certification of Non-segregated Facilities shall be submitted prior to the award of a subcontract exceeding $10,000, which is not exempt from the provisions of the Equal Opportunity Clause.

b. Contractors receiving subcontract awards exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of this notice to prospective Subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Opportunity Clause.

c. The penalty for making false statements in offers is prescribed in 18 U.S.C. § 1001.

Certification of Nonsegregated Facilities

The federally-assisted construction contractor certifies that she or he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that she or he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that she or he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that she or he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directives or are, in fact, segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason. The federally-assisted construction contractor agrees that (except where she or he has obtained

identical certifications from proposed subcontractors for specific time periods) she or he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause and that she or he will retain such certifications in his files.

General Civil Rights Provisions

The contractor agrees that it will comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or handicap be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision binds the contractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

This provision also obligates the tenant/concessionaire/lessee or its transferee for the period during which Federal assistance is extended to the airport through the Airport Improvement Program, except where Federal assistance is to provide, or is in the form of personal property; real property or interest therein; structures or improvements thereon.

In these cases the provision obligates the party or any transferee for the longer of the following periods:

(a) the period during which the property is used by the airport sponsor or any transferee for a purpose for which Federal assistance is extended, or for another purpose involving the provision of similar services or benefits; or

(b) the period during which the airport sponsor or any transferee retains ownership or possession of the property.

Title VI List of Pertinent Nondiscrimination Authorities

(Source: Appendix E of Appendix 4 of FAA Order 1400.11, Nondiscrimination in Federally-Assisted Programs at the Federal Aviation Administration)

During the performance of this contract, the Contractor, for itself, it assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq*., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);

- 49 CFR part 21 (Non-discrimination In Federally-Assisted Programs of The Department of Transportation—Effectuation of Title VI of The Civil Rights Act of 1964);

- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);

- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq*.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR part 27;

- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq*.), (prohibits discrimination on the basis of age);

- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);

- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38;

- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).PART III - MISCELLANEOUS CONTRACT PROVISIONS

A. Airport Improvement Program Project. The work in this contract is included in Airport Improvement Program which is being undertaken and accomplished by the Owner in accordance with the terms and conditions of a grant agreement between the Owner and the United States, under the Airport and Airway Improvement Act of 1982 and Part 152 of the Federal Aviation Regulations (14 CFR Part 152), pursuant to which the United States has agreed to pay a certain percentage of the costs of the project that are determined to be allowable project costs under that Act. The United States is not a party to this contract and no reference in this contract to the FAA or any representative thereof, or to any rights granted to the FAA or any representative thereof, or the United States, by the contract, makes the United States a party to this contract.

B. Consent to Assignment. The Contractor shall obtain the prior written consent of the OWNER to any proposed assignment of any interest in or part of this contract.

C. Veterans Preference. In the employment of labor (except in executive, administrative, and supervisory positions), preference must be given to Vietnam era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns owned and controlled by disabled veterans as defined in Title 49 United States Code, Section 47112. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

D. FAA Inspection and Review. The Contractor shall allow any authorized representative of the FAA to inspect and review any work or materials used in the performance of this contract.

E. Subcontracts. The Contractor shall insert in each of his subcontracts the provisions contained in paragraphs A, C, and D of this section and also a clause requiring the Subcontractors to include these provisions in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

F. Clean Air and Water Pollution Control. (Reference 2 CFR 200 Appendix II (G)) Contractors and subcontractors agree:

1. That any facility to be used in the performance of the contract or subcontract or to benefit from the contract is not listed on the Environmental Protection Agency (EPA) List of Violating Facilities;

2. To comply with all the requirements of Section 114 of the Clean Air Act, as amended, 42 U.S.C. 1857 et seq. and Section308 of the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 and Section 308 of the Acts, respectively, and all other regulations and guidelines issued thereunder;

3. That, as a condition for award of this contract, the contractor or subcontractor will notify the awarding official of the receipt of any communication from the EPA indicating that a facility to be used for the performance of or benefit from the contract is under consideration to be listed on the EPA List of Violating Facilities;

4. To include or cause to be included in any construction contract or subcontract which exceeds $100,000 the aforementioned criteria and requirements.

G. Drug Free Workplace Certification: The CONTRACTOR must certify that they are in full compliance with the provisions of Code Sections 50-24-1 through 50-24-6 of the Official Code of Georgia Annotated, relating to the "Drug-free Workplace Act". The undersigned further certifies that:

a. A drug-free workplace will be provided for the CONTRACTOR'S employees during performance of the contract; and

b. Each CONTRACTOR who hires a subcontractor to work in a drug-free work place shall secure from that subcontractor the following written certification:

"As part of the subcontracting agreement with (CONTRACTOR's name), (Subcontractor's name) certifies to the CONTRACTOR that a drug-free workplace will be provided for the subcontractor's employees during the performance of this Contract pursuant to Paragraph (7) of Sub-section (b) of Code Section 50-24-3".

c. The CONTRACTOR further certifies that he will not engage in the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana during the performance of the Contract.

d. CONTRACTOR may be suspended, terminated, or debarred if it is determined that:

(1) The CONTRACTOR has made false certification hereinabove; or

(2) The CONTRACTOR has violated such certification by failure to carry out the requirements of the Official Code of Georgia Section 50-24-3.

H. Certificate Regarding Debarment and Suspension (Bidder or Offeror).

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that at the time the bidder or offeror submits its proposal that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

Certification Regarding Debarment and Suspension (Successful Bidder Regarding Lower Tier Participants)

The successful bidder, by administering each lower tier subcontract that exceeds $25,000 as a "covered transaction", must verify each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: http://www.sam.gov
2. Collecting a certification statement similar to the Certificate Regarding Debarment and Suspension (Bidder or Offeror), above.

3. Inserting a clause or condition in the covered transaction with the lower tier contract

If the FAA later determines that a lower tier participant failed to tell a higher tier that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedy, including suspension and debarment.

I. Termination of Contract.

1. The Sponsor may, by written notice, terminate this contract in whole or in part at any time, either for the Sponsor's convenience or because of failure to fulfill the contract obligations. Upon receipt of such notice services shall be immediately discontinued (unless the notice directs otherwise) and all materials as may have been accumulated in performing this contract, whether completed or in progress, delivered to the Sponsor.

2. If the termination is for the convenience of the Sponsor, an equitable adjustment in the contract price will be made, but no amount will be allowed for anticipated profit on unperformed services.

3. If the termination is due to failure to fulfill the Contractor's obligations, the Sponsor may take over the work and prosecute the same to completion by contract or otherwise. In such case, the Contractor is liable to the Sponsor for any additional cost occasioned to the Sponsor thereby.

4. If, after notice of termination for failure to fulfill contract obligations, it is determined that the Contractor had not so failed, the termination shall be deemed to have been effected for the convenience of the Sponsor. In such event, adjustment in the contract price will be made as provided in paragraph 2 of this clause.

5. The rights and remedies of the Sponsor provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

J. Inspection of Records (Reference 2 CFR 200.326, 200.333). The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Sponsor, the Federal Aviation Administration, and the Comptroller General of the United States or any of the duly authorized representatives' access to any books, documents, papers, and records of the contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made.

K. Rights to Inventions. All rights to inventions and materials generated under this contract are subject to regulations issued by the FAA and the Sponsor of the Federal grant under which this contract is executed. Information regarding these rights is available from the FAA and the Sponsor.

L. Breach of Contract Terms. Any violation or breach of terms of this contract on the part of the contractor or its subcontractors may result in the suspension or termination of this contract or such

other action that may be necessary to enforce the rights of the parties of this agreement. The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

M. Lobbying and Influencing Federal Employees. The bidder or offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the bidder or offeror, to any person for influencing or attempting to influence an office or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

N. Energy Conservation Requirements. The contractor agrees to comply with mandatory standards and policies relating to energy efficiency that are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Public Law 94-163).

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

P. Occupational Safety and Health Act of 1970. All contracts and subcontracts that result from this solicitation incorporate the following provisions by reference, with the same force and effect as if given in full text. The contractor has full responsibility to monitor compliance to the referenced statute or regulation. The contractor must address any claims or disputes that pertain to a referenced requirement directly with the Federal Agency with enforcement responsibilities.

Requirement	Federal Agency with Enforcement Responsibilities
Occupational Safety and Health Act of 1970 (20 CFR Part 1910)	U.S. Department of Labor – Occupational Safety and Health Administration

Q. Trade Restriction Clause. The contractor or subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

a. is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);

b. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list;

c. has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on said list for use on the project, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract at no cost to the Government.

Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

The contractor shall provide immediate written notice to the sponsor if the contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide written notice to the contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the Sponsor cancellation of the contract or subcontract for default at no cost to the Government.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

END OF SECTION 100

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DIVISION 6 – TECHNICAL SPECIFICATIONS

SECTION 00001 - TECHNICAL SPECIFICATIONS

All items of work shall be in accordance with the Federal Aviation Administration Standard Specifications for Airports and Special provisions except as modified in this Section, or in accordance with Georgia Standard Specifications of Transportation Systems, 2021 Edition and special provisions.

END OF SECTION 00001

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SECTION 01010 - SUMMARY OF WORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General Provisions and Supplementary Conditions, Specifications sections in this manual and applicable Advisory Circular 150/5370-10H Standards for Specifying Construction of Airports or State of Georgia, Department of Transportation Standard Specification sections, as specified, apply to work of this section.

B. Division 1 - General Requirements of the contract specifications is an integral part of the Contract Documents of the Contract.

C. Related Requirements specified in other sections of the specifications:

Restrictions on use of site, safety requirements and work within Air Operations Areas are specified in Section 01030-Airport Project Procedures (Construction Safety Plan.)

1.02 PROJECT IDENTIFICATION:

A. Apron Rehabilitation – Phase II

1.03 WORK COVERED BY CONTRACT DOCUMENTS:

A. Work covered by the contract documents is located at the Dalton Municipal Airport, Dalton, Georgia. The work of this project includes, but is not limited to:

All labor, materials and supervision for the removal and replacement of existing asphalt pavement adjacent to the airport terminal building, replacement of existing underground storm sewer piping, and placement of airfield pavement markings.

1.04 SUMMARY BY REFERENCES:

A. Work of the Contract can be summarized by references to the Contract, General Provisions, Supplementary Conditions, Specification Sections, Drawings, addenda, and modifications to the contract documents issued subsequent to the initial printing of this project manual and including but not necessarily limited to printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the contract documents.

END OF SECTION 01010

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SECTION 01030 - AIRPORT PROJECT PROCEDURES
(CONSTRUCTION SAFETY PHASING PLAN)

Part 1 GENERAL

1.01 INTRODUCTION:

A. This project involves Contractor operations within active Airport Operational Areas (A.O.A.). The Airport will conduct normal aircraft operations (subject to certain restrictions which shall be called out in this section) during the course of this project. Therefore, in order to provide for the security and safety of Airport users and the Contractor's forces, as well as to minimize interruptions to aircraft operations, the Contractor shall limit his work within the areas as designated on the plans and conduct his operations as set forth in the specifications.

THE CONTRACTOR AND ALL PERSONNEL SHALL NOT ENTER OR CROSS THE ACTIVE RUNWAYS OR TAXIWAYS WHEN THEY ARE NOT CLOSED OR WITHOUT SPECIFIC APPROVAL OF THE AIRPORT MANAGER. ANY PERSON IN VIOLATION OF A RUNWAY/TAXIWAY INTRUSION OF THE OPERATIONAL RUNWAY AREAS MAY BE CAUSE FOR DISMISSAL FROM THE PROJECT.

1.02 REFERENCED STANDARDS:

A. U.S. Department of Transportation, Federal Aviation Administration Advisory Circulars AC No. 150/5370-2G and AC No. 150-/5340-1M will be used as guidelines to assist in maintaining operational safety during construction activities. These documents also refer to other applicable Advisory Circulars.

B. Controlling Requirements: The purpose of this Construction Safety Plan is to describe the procedures, rules and requirements to be followed during construction of this project. The material set forth in this section is based upon Department of Transportation, Federal Aviation Administration Advisory Circular 150/5370-2G, Operational Safety on Airports During Construction, dated December 13, 2017, and its references and current changes. The requirements stated in the Advisory Circular, its references and current changes are minimum standards for the project. This section amends the requirements of the referenced standards. In case of a conflict between the referenced standards and this specification the more stringent requirement shall govern.

1.03 CONTRACTOR'S RESPONSIBILITY:

A. IT REMAINS THE CONTRACTOR'S RESPONSIBILITY TO ADHERE TO ALL SAFETY REGULATIONS OF THE SPECIFICATION, THE ADVISORY CIRCULAR, ITS REFERENCES AND CHANGES AND TO ALL OTHER ADVISORY MATERIAL PERTAINING TO OPERATIONAL SAFETY OF AIRPORTS, ESPECIALLY DURING PERIODS ON CONSTRUCTION ACTIVITY. THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING AND CONTROLLING ALL CONSTRUCTION ACTIVITIES IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE REFERENCED FAA ADVISORY

CIRCULARS AND THIS SAFETY PLAN.

B. Contractor shall designate an individual in his organization responsible for all construction safety including implementation of the specific requirements of this safety plan. The individual shall instruct all Contractors' employees in the requirements of this safety plan and of construction safety in general. This individual shall also be responsible for ensuring that all subcontractors have an understanding of the safety requirements.

1.04 MODIFICATIONS TO THE PLAN:

A. Changes to the requirements of the specification will only be allowed if approved by Owner.

1.05 UNAUTHORIZED CROSSINGS OF ACTIVE AIRFIELD OPERATION AREAS:

A. This safety plan requires that Contractor control the operation of his employees, equipment, and Subcontractors, and that all work areas within the airfield operations area have a responsible person with a radio in constant radio contact with the airport UNICOM.

1.06 CONSTRUCTION SAFETY REQUIREMENTS:

A. 1. Protection of Utilities: The Contractor shall be responsible for field marking and protecting all utilities within the construction limits.
2. Storage of Equipment, Vehicles, and Materials: All equipment, vehicles, and materials must be stored in the designated storage or staging area or in areas acceptable to the Engineer.
3. Construction Methods Limitation: No open flames or burning will be allowed on the airport property without prior approval.
4. Safety and Accident Protection: The Contractor shall comply with all applicable federal, state, and local laws, ordinances, and regulations governing safety, health, and sanitation, and shall provide barricades, and shall take any other needed actions, on his own responsibility that are reasonably necessary to protect the life and health of employees on the job and the safety of the airport users, and to protect moving and parked aircraft and other property in connection with the performance of the work covered by the plans and specifications.

1.07 CONTRACTOR USE OF PREMISES :

A. Use of the Site: Confine operations at the site to the areas designated on the Drawings. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work as stated on this Safety Plan while engaged in project construction.

B. Keep existing drives, entrances, and air operations areas designated to remain open, clear and available to the Owner, his employees and the public at all times. Do not use these areas for parking or storage of materials.

C. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated. If additional storage is necessary, obtain Engineer's approval.

D. Lock automotive types vehicles, such as passenger cars and trucks, and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.

E. RESTRICTED AREAS

Due to the necessity to accomplish construction in areas on and adjacent to the runways and taxiways, the construction equipment, vehicles, and men are authorized to operate without interruption within the project limits.

Construction activities within these areas shall only be performed at times when the runway or taxiways are closed to aircraft.

Construction within a restricted area shall be performed in such a manner that, at the end of the closure period, the runway and taxiway areas with be clear of debris.

1.08 MOTORIZED VEHICLES AND EQUIPMENT:

A. Construction equipment and vehicles not engaged in construction during non-working hours will be parked at the Contractor’s staging area indicated on the Contract Drawings.

1.09 OTHER SAFETY AND SECURITY MEASURES:

A. All areas of construction will be off-limits to personnel not involved in construction work or operations of the Airport.

1.10 COMMUNICATIONS (GENERAL):

A. All communications relating to the construction work on this project will pass through the Engineer's site representative. Engineer's site representative must be furnished the Contractor's representative's telephone number where he can be contacted on a 24-hour basis. Contractor's representative shall be available on a 24-hour basis.

B. Radio Communication Requirements:
The foreman of each work crew operating adjacent to or within active aircraft operating areas shall be equipped with a VHF two-way radio capable of communicating with the UNICOM frequency. The Contractor shall furnish the radios. The radio frequency of the airport UNICOM is 122.975.

PART 2 EXECUTION :

2.01 GENERAL OPERATIONAL CONDITIONS AND RESTRICTIONS:

A. The contractor cannot work within seventy-five (75) feet of the runway centerline or within

sixty-two (62) feet of a taxiway centerline without a runway or taxiway closure. Airport operations will be impacted by the work of the contractor. Runways and taxiways will be closed. Contractor can work next to the apron area as long as the airport operator agrees and that there is adequate clearance between the equipment or materials and any part of an aircraft using the apron. Appropriate NOTAMS shall be issued by airport management prior to the operation.

B. The contractor must get permission from the Engineer prior to use of construction equipment over twenty (20) feet in height.

2.02 MEASUREMENT AND PAYMENT:

A. There will be no separate measurement and payment for work specified in this Section.

END OF SECTION 01030

SECTION 01150 - MEASUREMENT AND PAYMENT

1.01 DESCRIPTION:

A. This section establishes the method of measurement and payment for work performed under this contract.

B. Payment for work performed shall be made on a unit price basis in accordance with the accepted bid and the method of payment provided in the General Conditions.

C. Related requirements in other parts of the Specifications:

1. Bid (Proposal)
2. Agreement
3. Conditions of the Contract

D. Related requirements specified in other sections:

1. Summary of Work - Section 01010
2. Submittals - Section 01300
3. Contract Closeout - Section 01700

E. No additional payment will be made for items of work for which a separate payment item is not specified herein or contained in the Bid Schedule; such work being deemed incidental to the Project and payment for said work shall be considered as included in the various unit bid prices.

1.02 APPLICATIONS FOR PAYMENT:

A. Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Contract and Agreement between Owner and Contractor.

B. Format and Data Required

1. Submit Applications for Partial Payment on the form required by Owner with itemized data typed on 8 ½ inch x 11 white paper continuation sheets.
2. Provide itemized data on continuation sheet: Format, schedules, line items and values: Those of the Schedule of Values accepted by the Engineer.

C. Preparation of Application for each Progress Payment

1. Application Form
   a. Fill in required information, including that for Change Orders executed prior to the date of submittal of application.

b. Fill in summary of dollar values to agree with the respective totals indicated on the continuation sheets.
c. Execute certification with the signature of a responsible officer of the contract firm.

2. Continuation Sheets
   a. Fill in total list of all scheduled component items of work, with item number and the scheduled dollar value for each item.
   b. Fill in the dollar value in each column for each scheduled line item when work has been performed or products stored. Round off values to the nearest dollar, or as provided in the bid.

3. List each Change Order executed prior to the date of submission, at the end of the continuation sheets.
   a. List by Change Order and description, as for an original component item of work.

4. Submit Applications for Payment to Owner at the times stipulated in the Agreement.
   a. Number: Four copies of each Application.

D. Substantiating Data

1. When the Owner or Engineer requires substantiating data, Contractor shall submit suitable information with cover letter identifying:

   a. Project
   b. Application number and date
   c. Detailed list of enclosures
   d. For stored products: Item number and identification as shown on application. Description of specific material.

2. Submit one copy of data and cover letter for each copy of application.

E. Preparation of Application for Final Payment

1. Fill in application form as specified for Progress payments.
2. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.

1.03 CHANGE ORDER PROCEDURES:

A. Format and Data Required

1. Change Orders shall be prepared/submitted/ processed in accordance with requirements of General Conditions and Funding Agency Requirements.

2. Engineer will transmit Certificate for Change to Owner and Agency for approval.
3. When Owner and Agency approval is received, Change Order will be included under next partial Application for Payment.

1.04 MEASURES AND WEIGHTS:

A. To aid the Owner in determining all quantities, the Contractor shall, whenever so requested, provide scales, equipment and assistance for weighing or for measuring any of the materials.

B. It is understood and agreed that a "ton" shall mean the short ton of two thousand (2,000) pounds.

C. Weights and measures of quantity for payment will be the actual weight or actual measure, and no special or trade or so-termed customary allowances will be made, nor will any material which is lost or misplaced be included for payment.

D. For estimating quantities in which computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision to the measurement of such areas.

E. Figured dimensions on drawings shall take precedence over measurement by scale, and detailed working drawings are to take precedence over general drawings and shall be considered as explanatory of them and not as indicating extra work.

END OF SECTION 01150

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SECTION 01300 - SUBMITTALS

1.01 GENERAL:

A. Submittals by Contractor:

1. Construction Progress Schedule: provide Bar Chart.
2. Certifications as specified in the various sections.
3. Shop Drawings: as specified in the various sections.
4. Operation and Maintenance Manual
5. Miscellaneous.

1.02 PRELIMINARY PROGRESS SCHEDULE:

A. Bar-Chart Schedule: Submit a bar-chart type progress schedule 10 working days after the preconstruction conference for Engineer's review. On the schedule, indicate a time bar for each major category or unit of work to be performed at the site, properly sequenced and coordinated with other elements of work. Show completion of the work sufficiently in advance of the date established for substantial completion of the work.

1. Superimpose an S-curve on the schedule to show the "estimated" total dollar-volume of work performed at any date during the Contract Time, with a column of cost figures in the left hand margin ranging from zero to the Contract Sum.

2. Submittal Tabulation: With the bar-chart submittal, submit a tabulation, by date, of the submittals which are required during Construction Time. At the Contractor's option, submittal dates may be shown on the bar-chart schedule, in lieu of being tabulated.

B. Update and distribute copies of schedule monthly.

1.03 SHOP DRAWINGS AND PRODUCT DATA:

A. Submit shop drawings, certifications, and product data for all products to be incorporated in the Work.

B. Shop Drawings will:

1. Be original drawings, prepared by the Contractor, subcontractor, supplier or distributor, which illustrate some portion of the work; showing fabrication, layout, setting, or erection details. The submittal will include contractor stamp and certification that the submittal meets the job specifications. If not, show details and reasons for requested variance.

2. Be prepared by a qualified detailer.

3. Identify details by reference to sheet and detail numbers shown on Contract Drawings.

C. Product Data will:

1. Include manufacturer's standard schematic drawings. The Contractor will:
   a. Modify drawings to delete information, which is not applicable to project.
   b. Supplement standard information to provide additional information applicable to project.

2. Include manufacturer's catalog sheets, standard color charts, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.

Contractor will:

   a. Clearly mark each copy to identify pertinent materials or products.
   b. Show dimensions and clearances required.
   c. Show performance characteristics and capacities.

D. The Contractor will be responsible for all submittals and will:

1. Review Shop Drawings and Product Data prior to submission.

2. Verify:
   a. Field Measurements
   b. Field Construction criteria
   c. Catalog numbers and similar data

3. Coordinate each submittal with the requirements of the work and of the Contract Documents.

4. PRIOR TO SUBMISSION TO THE ENGINEER, A CONTRACTOR IS TO REVIEW AND APPROVE ALL SHOP DRAWINGS. BY THIS REVIEW AND APPROVAL, THE CONTRACTOR REPRESENTS THAT IT HAS DETERMINED AND VERIFIED ALL FIELD MEASUREMENTS, FIELD CONSTRUCTION CRITERIA, MATERIALS, CATALOGUE NUMBERS AND SIMILAR DATA, AND THAT IT HAS CHECKED AND COORDINATED EACH SHOP DRAWING WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS. THE CONTRACTOR IS TO INDICATE ITS REVIEW AND APPROVAL BY INCLUDING THE DATE AND THE SIGNATURE OF A RESPONSIBLE PERSON ON EACH SHOP DRAWING.

5. Notify the Engineer, in writing at time of submission, of deviations in submittals from requirements of the Contract Documents.

6. Begin no work which requires submittals until the return of submittals with the Engineer's stamp and initials or signature indicating review.

7. After the Engineer's review, distribute copies.

E. Contractor's responsibility for errors and omissions in submittals is not relieved by the Engineer's review of submittals.

F. CONTRACTOR'S RESPONSIBILITY FOR DEVIATIONS IN SUBMITTALS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS IS NOT RELIEVED BY THE ENGINEER'S REVIEW OF SUBMITTALS, UNLESS THE ENGINEER GIVES WRITTEN ACCEPTANCE OF SPECIFIC DEVIATIONS.

G. Submission requirements will include:

1. THE SHOP DRAWINGS SHALL BE SUBMITTED IN SUFFICIENT TIME TO ALLOW DISCUSSION AND CORRECTION PRIOR TO BEGINNING THE WORK. WORK SHALL NOT BE PERFORMED NOR MATERIALS ORDERED PRIOR TO THE REVIEW OF THE DRAWINGS EXCEPT AT THE CONTRACTOR'S RISK.

2. SUBMIT THREE COPIES OF ALL SHOP DRAWINGS AFTER WHICH ONE COPY WILL BE RETURNED FOR CORRECTION OR MARKED REVIEWED AS NOTED. ANY DRAWINGS RETURNED FOR CORRECTION MUST BE RESUBMITTED IN TRIPLICATE.

3. ALL SUBMITTALS MUST BE ACCOMPANIED BY A TRANSMITTAL LETTER, IN DUPLICATE, CONTAINING:

   a. Date
   b. Project title and number
   c. Contractor's name and address
   d. The number of each Shop Drawing and Product Data submitted
   e. Notification of deviations from Contract Documents
   f. Other pertinent data

4. Submittals shall include:

   a. Data and revision dates
   b. Project title and number
   c. The names of:
      (1) Engineer
      (2) Contractor
      (3) Subcontractor
      (4) Supplier
      (5) Manufacturer
      (5) Separate detailer when pertinent

   d. Identification of product or material
   e. Relation to adjacent structure or materials
   f. Field dimensions, clearly identified as such
   g. Specification section number
   h. Applicable standards, such as ASTM number or Federal Specification
   I. A blank space, 5 in. x 5 in., for the Engineer's stamp
   j. Identification of deviations from the Contract Documents
   k. Contractor's stamp, initialed or signed, certifying Contractor's review of submittal, verification of field measurements, and compliance with Contract Documents.

H. Resubmission requirements shall include:

1. Revision of initial drawings as required and resubmittal, as specified, for initial submittal.

2. An indication on the drawings of any changes which have been made, other than those requested by the Engineer.

3. On Product Data submittals, include new data as required for initial submittal.

After review and approval, the Contractor will distribute copies of Shop Drawings and Product Data which carry the Engineer's stamp to others as may be required.

I. Shop Drawings and Product Data:

Submit notarized certifications consigned by manufacturer/supplier and Contractor for:

a. Fuel System Products
b All other products as required by Engineer.

J. Equipment Manual - Provide two (2) copies of operating and maintenance data in the form of Operation and Maintenance Manuals (O & M Manuals). The manuals shall be in 3-ring binders and developed into suitable sets of manageable size. The manual shall cover the fuel storage and dispensing system and the fuel management system. The manuals should at a minimum Include the following:

1. Approved Shop Drawings on each piece of equipment and specialty items furnished.

2. Maintenance operation and lubrication instruction, parts lists, and control and wiring diagrams on each piece of equipment furnished.

3. Dispenser pump control diagram prepared by the manufacturer

4. A “one-line diagram” and troubleshooting guide to help the user to determine what steps must be taken to correct any problem that may exist in the system.

5. Brief description of each system and components, starting and stopping procedures and emergency instructions and inspection, reporting and record keeping procedures, and forms.

6. Manufacturer’s warranties.

1.04 MISCELLANEOUS:

A. EEO Reports:

1. Contractor shall submit Monthly Employment Utilization Report and Annual EEO-1 Report to the appropriate Federal Labor Area Office in accordance with Section 120 of the General Conditions. Submit copy of submittal to Owner for his records.

2. Prime Contractor shall insure that all his first tier subcontractors submit these reports and shall submit a sworn statement to Owner monthly certifying that all subcontractor reports have been submitted as required.

END OF SECTION 01300

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SECTION 01510 - TEMPORARY FACILITIES

1.01 DESCRIPTION:

A. Contractor shall furnish, install and maintain temporary facilities required for construction; remove on completion of Work.

B. Related requirements specified in other sections: The respective Sections of the Specifications.

1.02 REQUIREMENTS OF REGULATORY AGENCIES:

A. Comply with national electric code.

B. Comply with Federal, State, and Local codes and regulations and with utility company requirements.

1.03 MATERIALS - GENERAL:

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

1.04 TEMPORARY ELECTRICITY AND LIGHTING:

A. Provide temporary electrical service required for power, lighting, and field offices, and pay all costs for service and for power used.

1.05 TEMPORARY WATER:

A. Provide water for construction purposes; pay all costs for installation, maintenance and removal, and service charges for water used.

B. The site is served by a well owned by the Airport Owner. The Contractor shall provide and pay all costs for water required for the performance of the work.

1.06 TEMPORARY SANITARY FACILITIES:

A. Provide sanitary facilities in compliance with laws and regulations.

B. SERVICE, CLEAN AND MAINTAIN FACILITIES AND ENCLOSURES.

1.07 TEMPORARY SUPPORT FACILITIES:

A. General: Provide a reasonably neat and uniform appearance in temporary Support Facilities acceptable to the Engineer and the Owner.

B. Locate field offices, storage and fabrication sheds and other support facilities for easy access to the Work. Position offices so that windows give the best possible view of construction activities.

C. Maintain field offices, storage and fabrication sheds, temporary sanitary facilities, waste collection and disposal systems, and project identification and temporary signs until near substantial completion. Immediately prior to substantial completion remove these facilities.

D. Access Roads:

1. Location of access roads will be approved by the Engineer and will be set to minimize conflict with the Airport operations and shall be maintained, be well defined and be confined to the minimum area required.

2. The Contractor shall construct the access roads and shall maintain the roads as required to create no dust. All project traffic must be routed through these areas. The Contractor shall provide all markings required to clearly define the access roads.

3. The Contractor may be required to obtain driveway permits for certain access roads. If access roads cross a utility, the Contractor shall protect the utility as directed by the owner of the utility.

1.08 EXECUTION - GENERAL:

Maintain and operate systems to assure continuous service.

1.09 REMOVAL:

Completely remove temporary materials and equipment when their use is no longer required. Clean and repair damage caused by temporary installations or use of temporary facilities.

2.01 MEASUREMENT AND PAYMENT:

THERE WILL BE NO SEPARATE MEASUREMENT AND PAYMENT FOR WORK SPECIFIED IN THIS SECTION.

END OF SECTION 01510

SECTION 01600 - MATERIAL AND EQUIPMENT

1.01 GENERAL:

A. All material and equipment (products) incorporated into the work shall:

1. Conform to applicable specifications and standards.
2. Comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer.
3. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

B. Related requirements in other parts of the project manual:

1. Conditions of the Contract.

C. Standardization

1. Unless otherwise approved by the Engineer, items of a similar type and function shall be furnished by one manufacturer to standardize on matters and to avoid a division of responsibility among several manufacturers.

1.02 PRODUCT SUBSTITUTIONS AND OPTIONS:

A. Products List

1. Contractor shall submit a complete list of products to be incorporated into the work (with the name of the installing contractor) at the Preconstruction conference required by these specifications.

B. Contractor's Options

1. For products specified only by reference standard, select any product meeting that standard.
2. For products specified by naming several products, select any one of the products named, which complies with the specifications.

C. Product Specifications

1. Contractor shall submit, at the Preconstruction Conference, all requests for product substitutions. No requests for substitutions will be accepted from manufacturers or suppliers.

2. SUBMIT A SEPARATE WRITTEN REQUEST FOR EACH PRODUCT, SUPPORTED WITH COMPLETE DATA, WITH DRAWINGS AND SAMPLES AS APPROPRIATE, INCLUDING:

a. Comparison of the qualities of the proposed substitution with that specified.
b. Changes required in other elements of the work because of the substitution.
c. Effect on the construction schedule.
d. Cost data comparing the proposed substitution with the product specified.
e. Any required license fees or royalties.

3. Engineer shall be the judge of the equality and acceptability of the proposed substitution.
4. If Engineer determines the proposed substitute product is not "equal" to the specified product, the Contractor must provide the specified product.
5. No further requests for substitutions will be considered after Preconstruction Conference.

D. Contractor's Representation

1. A request for a substitution constitutes a representation that Contractor;

a. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.
b. Will provide the same warranties for the substitution as for the product specified.
c. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.

E. Engineer will review requests for substitutions with reasonable promptness and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

1.03 MANUFACTURER'S INSTRUCTIONS:

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, Contractor shall obtain and distribute copies of such instructions to parties involved in the installation, including copies to Engineer.

1. Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition, and adjust products in strict accord with such instructions and in conformity with specified requirements.

1. SHOULD JOB CONDITIONS OR SPECIFIED REQUIREMENTS CONFLICT WITH MANUFACTURER'S INSTRUCTION, CONSULT WITH ENGINEER FOR FURTHER INSTRUCTIONS.

2. Do not proceed with work without clear instructions.

C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.04 TRANSPORTATION AND HANDLING:

A. Contractor shall arrange deliveries of products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.

1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.

2. Immediately on delivery, inspect shipments to assure compliance with requirements of contract documents and approved submittals, and that products are properly protected and undamaged.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage of products or packaging.

1.05 STORAGE AND PROTECTION:

A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

1. Store products subject to damage by the elements in weather tight enclosures.
2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

B. Exterior storage

1. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
2. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. ARRANGE STORAGE IN A MANNER TO PROVIDE EASY ACCESS FOR INSPECTION. MAKE PERIODIC INSPECTIONS OF STORED PRODUCTS TO ASSURE THAT PRODUCTS ARE MAINTAINED UNDER SPECIFIED CONDITIONS, AND FREE FROM DAMAGE OR DETERIORATION

D. Protection after installation

1. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

END OF SECTION 01600

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SECTION 01700 - CONTRACT CLOSEOUT

1.01 GENERAL:

A. Comply with requirements stated in conditions of the contract and in specifications for administrative procedures in closing out the work.

B. Related requirements in other parts of the Project Manual:
   1. Fiscal provisions, legal submittals and additional administrative requirements: Conditions of the contract.

C. Related Requirements Specified in Other Sections:
   1. Closeout submittals required of trades: The respective sections of specifications.

1.02 SUBSTANTIAL COMPLETION:

A. The conditions and procedures for inspection; and Contractor's, Engineer's and Owner's responsibilities pertaining to Substantial Completion are as specified in Section 50 of the General Conditions.

1.03 FINAL INSPECTION:

A. Shall be in accordance with conditions and procedures outlined in the General Provisions.

B. When Engineer finds that the work is acceptable under the Contract Documents, he will request required Contractor's Closeout Submittals.

1.04 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER:

A. Evidence of payment and release of liens: To requirements of General and Supplementary Conditions.

B. Certificates of Insurance for products and completed operations.

C. Evidence of compliance with requirements of governing authorities:
   1. CERTIFICATES OF INSPECTION

END OF SECTION 01700

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SECTION 01710 - CLEANING AND DISPOSAL

PART 1 GENERAL:

1.01 DESCRIPTION:

A. Contractor shall execute cleaning during progress of the work and at completion of the work, as required by General Provisions.

1.02 DISPOSAL REQUIREMENTS:

A. Conduct cleaning and disposal operations to comply with all local, state and federal codes, ordinances, regulations, and anti-pollution laws.

B. Disposal of waste soil materials may be onsite or off-site at approved locations, at Contractor's option.

C. Contractor shall be responsible for arranging for and obtaining off-site disposal areas, including payment for all costs associated with such disposal.

PART 2 EXECUTION:

2.01 CLEANING:

A. Execute periodic cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at approved locations.

END OF SECTION 01710

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SECTION 01720 - PROJECT RECORDS DOCUMENTS

1.01 GENERAL:

A. Contractor shall maintain at the site as specified herein for the Owner one record copy of:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change orders and other modifications.
5. Engineer field orders or written instructions.
6. Approved shop drawings, product data and samples.
7. Field test records.

B. Related requirements in other parts of the Project Manual:

1. Conditions of the Contract.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES:

A. Store documents and samples in Contractor's field office apart from documents used for construction.

B. File documents and samples in accordance with data filing format of the Construction Specifications Institute - MASTERFORMAT.

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by Engineer.

1.03 RECORDING:

A. Stamp or label each document "PROJECT RECORD" in 3/4" letters.

B. During the daily progress of the Work, the job superintendent for the Contractor shall record information concurrently with construction progress.

1. Do not conceal any work until required information is recorded.

C. DRAWINGS: LEGIBLY MARK TO RECORD ACTUAL CONSTRUCTION IN THE COLOR CODES DESIGNATED BY THE ENGINEER.

D. Record Information includes but is not limited to the following:

1. Depths of various elements of foundation in relation to finish reference datum.

2. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

3. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

4. Field changes of dimension and detail.

5. Changes made by field order or by change order.

6. Details not on original Contract Drawings.

E. Specifications and addenda; legibly mark each section to record:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.

2. Changes made by field order or by change order.

F. All horizontal control dimensions shall be to the nearest tenth of a foot. Elevations shall be to the nearest one-hundredths of a foot.

1.04 SUBMITTAL:

A. At the close of the job and prior to receipt of final payment, the Contractor shall deliver to Engineer for Owner one complete set of Record Documents.

B. Accompany submittal with transmittal letter containing:

1. Date.
2. Project title and number.
3. Contractor's name and address.
4. Title and number of each record document.
5. Signature of Contractor or his authorized representative.

END OF SECTION 01720

SECTION 01740 - WARRANTIES AND BONDS

1.01 GENERAL:

A. Contractor shall:

1. Compile specified warranties and bonds.
2. Compile specified service and maintenance contracts.
3. Co-execute submittals to verify compliance with Contract Documents.
4. Review submittals to verify compliance with Contract Documents.
5. Submit to Engineer for review and transmittal to Owner.
6. Related requirements in other parts of the Project Manual:
   a. Bid Bonds: Instructions to bidders.
   b. Performance Bond and Payment Bond: conditions of the contract.
   c. General warranty of construction: conditions of the contract.

B. Related Requirements Specified in other Sections:

1. Contract closeout: Section 01700
2. Equipment Manuals: Section 01300
3. Warranties and Bonds required for specific products: Each respective section of specifications as listed below.

1.02 SUBMITTAL REQUIREMENTS:

A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.

The contractor shall warrant that all labor and materials furnished and work performed are in accordance with the Contract Documents and authorized modifications thereto, and will be free from defect due to defective materials or workmanship for a period of one year from Date of Substantial Completion.

Should any defect develop during the warranty period due to improper materials, workmanship or arrangement, the defect shall, upon written notice by the Owner, be made good by the Contractor at no expense to the Owner.

B. Number of original signed copies required: **Two** each.

C. TABLE OF CONTENTS: NEATLY TYPED, IN ORDERLY SEQUENCE. PROVIDE COMPLETE INFORMATION FOR EACH ITEM:

1. Product or work item.

2. Firm, with name of principal, address and telephone number.
3. Scope.
4. Date of beginning of warranty, bond or service and maintenance contract.
5. Duration of warranty, bond or service maintenance contract.
6. Provide information for Owner's personnel:
   a. Proper procedure in case of failure.
   b. Instances which might affect the validity of warranty or bond.
7. Contractor, name of responsible principal, address and telephone number.

1.03 FORM OF SUBMITTALS:

A. Prepare in duplicate packets.

B. Format Size 8 ½ inches x 11 inches, punch sheets for 3-ring binder.
Fold larger sheets to fit into binders.

Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS."
List: a. Project title and number.
b. Owner's name.
c. Contractor's name and address.

C. Binders: Commercial quality, 3.-.ring, with durable and cleanable plastic covers.

1.04 TIME OF SUBMITTALS:

A. Submittals within **ten** days after date of Substantial Completion, and prior to final request for payment.

B. For items of work, where acceptance is delayed materially beyond the date of substantial completion, provide updated submittal within **ten** days after acceptance, listing the date of acceptance as the start of the warranty period.

1.05 SUBMITTALS REQUIRED:

A. Submit warranties, bonds, service and maintenance contracts as specified in the respective sections of specifications.

END OF SECTION 01740

DIVISION 7 – CROY– Specifications

Section C-101 Aircraft Tie Down

DESCRIPTION

C-101-1.1 This item shall consist of one (1) set of three (3) aircraft tie-downs in apron pavement as shown on the plans.

MATERIALS

C-101-2.1 Materials shall conform to details shown on the Plans.

C-101-2.2 Shop drawings of tie-down anchors shall be submitted for approval by the engineer prior to ordering of materials.

C-101-2.3 Tie-down anchors for single-engine aircraft shall provide a minimum holding power of approximately 3,000 pounds each. Tie-down anchors shall not protrude more than 1-inch above the ground.

CONSTRUCTION METHODS

C-101-3.1 Installation shall conform to location and details shown on the Plans.

C-101-3.2 When the Plans show installation of anchors that are required to be augured into place, augur them in a manner that will not loosen or displace the soil in contact with the anchor.

C-101-3.3 Locations of tie-downs are indicated by yellow or white paint. See plans for paint color.

METHOD OF MEASUREMENT

C-101-4.1 Aircraft Tie Downs will be measured for payment on a unit price basis per set. A set includes three anchors unless shown otherwise on the Plans.

BASIS OF PAYMENT

C-101-5.1 Payment shall be made at the Contract unit price per set of Aircraft Tie Downs provided and anchored in place. This price will be full compensation for furnishing all materials and for preparation, delivering and installation of tie downs, including restoration of existing surfaces, and all labor, equipment, tools and incidentals necessary to complete this item.

C-101-5.2 Pavement tie-down markings will be performed as described in Specification P–620. This work will be considered incidental to the installation of tie-downs. No separate payment for white tie-down markings shall be made.

Payment will be made under:

Item C-101-5.1 Aircraft Tie Down, per set (including 3 anchors, foundations, ropes, striping, etc.) – per each

END OF SECTION C-101

DIVISION 8 – GDOT – Specifications

Section 310 Graded Aggregate Construction

310.1 General Description

This work includes constructing a base, subbase or shoulder course composed of mineral aggregates. Construct according to

these Specifications and to the lines, grades, thickness, and typical cross-sections shown on the Plans or established by the Engineer.

The provisions of Section 300 apply to this work.

310.1.1 Definitions

General Provisions 101 through 150.

310.1.2 Related References

A. Standard Specifications

Section 105—Control of Work

Section 300—General Specifications for Base and Subbase Courses

Section 412—Bituminous Prime

Section 815—Graded Aggregate

Section 821—Cutback Asphalt

Section 823—Cutback Asphalt Emulsion

B. Referenced Documents

AASHTO T 180

GDT 21

GDT 59

310.1.03 Submittals

General Provisions 101 through 150.

310.2 Materials

Ensure that materials meet the requirements of the following Specifications:

Material	Section
Graded aggregate	815
Cutback asphalt, RC-30, RC-70, RC-250 or MC-30, MC-70, MC-250	821.2.01
Cutback Asphalt Emulsion, CBAE-2	823.2.01
Blotter material (sand)	412.3.05.G.3

310.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

1. **Construction Requirements**

a. **Personnel**

General Provisions 101 through 150.

b. **Equipment**

Provide equipment in satisfactory condition for proper construction of the base, subbase or shoulder course. Use any applicable equipment specified in Subsection 412.3.02, “Equipment” for Bituminous Prime.

c. **Preparation**

Prepare the subgrade or subbase as specified in Subsection 300.3.03.C, “Preparing the Subgrade” or Subsection 300.3.03.D, “Preparing the Subbase.” Place graded aggregate materials only on dry, thawed subgrade or subbase.

d. **Fabrication**

General Provisions 101 through 150.

e. **Construction**

A. Placing Material

Use the central plant mix method unless producing aggregates (from an approved source or deposit) that conform to the requirements of Section 815.

Use the following steps to mix base and spread subbase or shoulder course.

1. Mixing

When blending two sizes of aggregate, proportion the aggregate and water, if needed, into the central plant. Mix until producing a homogeneous and uniform mixture.

A. Spreading

To obtain the specified thickness, uniformly spread materials to the proper depth with a mixture spreader. Do not use materials containing frost or frozen particles.

a. One-Course Construction

Lay one course to a maximum thickness of 8 in (200 mm) compacted.

b. Multiple-Course Construction

If the thickness of the base, subbase or shoulder course exceeds 8 in (200 mm), construct it in 2 or more courses of equal thickness.

A. Compacting Material

Use the following steps to compact and finish a base, subbase, or shoulder course.

1. Moisture Content

Ensure that the moisture content of materials is uniformly distributed and allows compaction to the specified density.

Unless approved by the Office of Materials, no graded aggregate will be shipped to a project when the moisture content of the material exceeds two percent of optimum moisture.

2. Compaction

After shaping the spread material to line, grade, and cross-section, roll to uniformly compact the course. If using Group 1 aggregate, roll to at least 98 percent of maximum dry density. If using Group 2 aggregate, roll to at least 100 percent of the maximum dry density.

If using graded aggregate mixtures composed of either group as base for paved shoulders 6 ft (1.8 m) wide or less, compact to at least 96 percent of the maximum dry density.

Regardless of compaction, ensure that the compacted base is sufficiently stable to support construction equipment without pumping. If the base material is unstable from too much moisture, dry and rework the base material. Dry and rework the underlying subgrade, if necessary.

a. One-Course Construction

1) After compaction, shape to the required grade, line, and cross- section.

2) Add water as necessary to develop the proper moisture content.

3) Roll until the surface is smooth, closely knit, and free of cracks.

4) Correct all defects according to Subsection 300.3.06.B, “Repairing Defects.”

b. Multiple-Course Construction

1) After compacting the first course, shape the surface again to line, grade, and cross section.

2) Add water as necessary to develop the proper moisture content.

3) Spread and compact the second and any succeeding courses without rolling the first course again.

4) Finish the surface according to the procedure specified for one-course construction.

c. Irregular Areas

In places inaccessible to the roller, obtain the required compaction with mechanical tampers approved by the Engineer. Apply the same density requirements as stated above in Subsection 310.3.05.B.

B. Finishing

Finish the surface of the subbase for Portland cement concrete pavement or the base of asphaltic concrete pavement with automatically controlled screed equipment when required by Subsection 300.3.02.H, “Fine Grading Machine” of the Specifications. Furnish, install, and maintain the sensing wires needed to control the finish operation as a part of the Pay Item. When automatically controlled screed equipment is not required, fine grading with motor graders is permitted.

Finish immediately after the placing and compacting operations. After finishing, compact the subbase again, according to Subsection 310.3.05.B, “Compacting Material.”

D. Protecting the Base, Subbase or Shoulders

Maintain the course until the Engineer determines that it has cured sufficiently and is ready to prime. Maintain by additional wetting, rolling, and blading as necessary. Repair any defects according to Subsection 300.3.06.B, “Repairing Defects.”

These protection measures do not relieve the Contractor of maintaining the Work until final acceptance as specified in Section 105.

E. Priming the Base

Apply bituminous prime according to Section 412 unless using:

Graded aggregate base under Portland cement concrete pavement

Graded aggregate base under asphaltic concrete 5 in (125 mm) or more in total thickness

310.3.06 Quality Acceptance

A. Compaction Tests

1. Determine the maximum dry density from representative samples of compacted material, according to AASHTO T180, Method D.
2. Determine the in-place density of finished courses according to GDT 21 or GDT 59 , where applicable.

B. Finished Surface

Check the finished surface of the base, subbase, or shoulder course as follows:

1. Check the longitudinal surface using a 15 ft (4.5 m) straightedge parallel to the centerline.
2. Check the transverse surface by using one of the following tools:

A template, cut true to the required cross-section and set with a spirit level on non-superelevated sections A system of ordinates, measured from a stringline

A surveyor’s level

3. Ensure that ordinates measured from the bottom of the template, stringline, or straightedge, to the surface do not exceed 1/4 in (6 mm) at any point. Rod readings shall not deviate more than 0.02 ft (6 mm) from required readings.
4. Correct any variations from these requirements immediately according to Subsection 300.3.06.B, “Repairing Defects.”

C. Thickness Tolerances

1. Thickness Measurements

   a. Thickness requirements apply to shoulder construction where the Plans specify a uniform thickness, or where the shoulders will be surfaced.

   b. Determine the thickness of the base, subbase, or shoulder course, by making as many checks as necessary to determine the average thickness.

2. Deficient Thickness

   a. If any measurement is deficient in thickness more than 1/2 in (13 mm), make additional measurements to determine the deficient area.

   b. Correct any area deficient between 1/2 in (13 mm) and 1 in (25 mm) to the design thickness by using one of the following methods according to these Specifications:

Add additional quantities of the same materials and reconstruct to the required thickness

Leave in place and accept payment for the materials and area at ½ the Contract Unit Price for the deficient area.

   A. Correct any area deficient in thickness by more than 1 inch (25 mm) by adding additional quantities of the same material and reconstructing to the required thickness in accordance with these Specifications.

   B. If payment is made by the ton (megagram), payment for additional material to correct deficiencies will be made at the Contract Unit Price with no additional cost to the Department for scarification, mixing or compaction.

   C. If payment is made by the square yard (meter), no payment will be made for additional material required to correct deficiencies or for reconstructing deficient work.

1. Average Thickness

1. The average thickness per linear mile (kilometer) is determined from all measurements within the mile (kilometer) increments except the areas deficient by more than 1/2 in (13 mm) and not corrected.
2. The average thickness shall not exceed the specified thickness by more than 1/2 in (13 mm).
3. If the basis of payment is per ton (megagram), and the average thickness for any mile (kilometer) increment exceeds the allowable 1/2 in (13 mm) tolerance, the excess quantity in that increment will be deducted from the Contractor's payments.
4. The excess quantity is calculated by multiplying the average thickness that exceeds the allowable 1/2 in (13 mm) tolerance by the surface area of the base, subbase, or shoulder.
5. If the basis of payment is per square yard (meter), no deduction will be made for excess thickness.

310.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

310.4 Measurement

A. Graded Aggregate

Where specified for payment by the ton (megagram), graded aggregate base, subbase or shoulder materials are measured in tons (megagrams), mixed and accepted. When hauling material to the roadway, the actual weight of each loaded vehicle is determined with an approved motor truck scale.

Where specified for payment by the square yard (meter) for a certain thickness, the surface length is measured along the centerline, and the width is specified on the Plans. Measure irregular areas, such as turnouts and intersections, by the square yard (meter).

B. Bituminous Prime

Bituminous prime is not measured for separate payment.

310.4.01 Limits

General Provisions 101 through 150.

310.5 Payment

A. Graded Aggregate

Graded aggregate base, subbase, or shoulder course will be paid for at the Contract Unit Price per ton (megagram) or per square yard (meter), complete, in place, and accepted. This payment shall be full compensation for:

- Materials
- Shaping and compacting the existing roadbed Loading, hauling, and unloading
- Crushing and processing Mixing
- Spreading
- Watering
- Compacting and shaping Maintenance
- Priming, when required
- All incidentals necessary to complete The Work

Payment will be made under:

Item No. 310	Graded aggregate base course, 4”— including material	Per square yard (meter)

310.5.01 Adjustments

General Provisions 101 through 150.

END OF SECTION 310

Section 402 Hot Mix Recycled Asphaltic Concrete

402.1 General Description

This work includes producing and placing hot mix recycled asphaltic concrete that incorporates reclaimed asphalt pavement (RAP), reclaimed asphalt shingles (RAS), virgin aggregate, hydrated lime, and neat asphalt cement.

402.1.01 Definitions

General Provisions 101 through 150.

402.1.02 Related References

A. Standard Specifications

Section 400—Hot Mix Asphaltic Concrete Construction

Section 800—Coarse Aggregate

Section 828—Hot Mix Asphaltic Concrete Mixtures

B. Referenced Documents

Guidelines for RAP Stockpile Approval

402.1.03 Submittals

A. Certified Weight Tickets

Notify the Engineer before removing RAP from a stockpile that belongs to the Department. Submit to the Engineer the certified weight tickets of materials removed from the stockpile.

B. Affidavit

Submit to the laboratory an affidavit stating the sources of stockpiled materials to be used on a State project. Include the following information in the letter:

State
- project number
- Location from which the material was removed
- Approximate removal dates

Mix
- types removed and the estimated quantity of each type in the stockpiles

Other available information about the stockpiled material such as percentage of local sand in the RAP Obtain specific approval from the laboratory to use RAP or RAS stockpiles.

Adhere to Guidelines for RAP Stockpile Approval.

402.2 Materials

A. RAP Material Composition

Use RAP materials from any of the following:

- Existing roadway
- Contractor's RAP stockpile that has been approved by the Department
- Department stockpile

NOTE: The location of Department RAP material stockpiles will be given on the Plans.

Do not use RAP materials that contain alluvial gravel or local sand in any mixture placed on interstate projects except for mixtures used in shoulder construction. When used in shoulder construction, limit RAP containing local sand or alluvial gravel so that the sand or gravel contributes no more than 20% of the total aggregate portion of the mix.

1. RAP Percentage

For non-interstate projects, limit the percentage of RAP allowed in recycled mixes so that the overall amount of alluvial gravel does not exceed 5 percent of the total mix. The percentage of alluvial gravel, local sand, and Group I material in the RAP will be determined through petrographic analysis or available records.

RAP furnished to the Contractor but not used in the work remains the Contractor's property.

RAP used in the recycled mixtures for mainline or ramps (if applicable) may make up from 0 to 40 percent of the mixture depending on the amount of RAP available, the production facilities, and whether the mixture meets the requirements in Section 828.

The maximum ratio of RAP material to the recycled mixture is 40 percent for continuous mix type plants and 25 percent for batch type plants. 2. Process RAP Material

Process RAP material to be used in the recycled mixture so that 100 percent will pass the 2 in (50 mm) sieve. Additional crushing and sizing may be required if the RAP aggregate exceeds the maximum sieve size for the mix type as shown in Section 828. Obtain representative materials from the RAP stockpile for the mix design.

B. RAS Material

RAS materials are produced as a by-product of manufacturing roofing shingles and/or discarded shingle scrap from the reroofing of buildings.

1. Limit the amount of RAS material used in the recycled mixture to no greater than 5 percent of the total mixture weight.
2. Shred the RAS material before incorporating it into the mix to ensure that 100 percent of the shredded pieces are less than 1/2 in (12.5 mm) in any dimension.
3. Remove all foreign materials such as paper, roofing nails, wood, or metal flashing.
4. Provide test results for Bulk Sample Analysis, known as Polarized Light Microscopy, if post-consumer shingles are used to certify the RAS material is free of asbestos. Test stockpiles at the rate of one test per 1000 tons (megagrams) prior to processing.

Other than as specifically stated in this Subsection, ensure that RAS material is used according to the same requirements as described for RAP material.

C. Asphaltic Concrete Removed from an Existing Roadway

Asphaltic concrete removed from an existing roadway becomes the Contractor's property unless specified otherwise on the Plans. RAP material retained by the Department is designated on the Plans, and the RAP shall be stockpiled at the location specified on the Plans.

D. Local Sand and Group I Material in RAP

Use of local sand in recycled mixes is restricted as stipulated in Section 828 for the Project. However, RAP which contains local sand may be used in surface and intermediate layers of non-interstate projects so long as the RAP percentage used does not contribute more than 5% local sand to the total aggregate portion of the mix. The amount of local sand in the RAP material shall be considered when determining the percentage of local sand in the total mix.

Where Pay Items specify that Group II only aggregate is to be used, RAP which consists primarily of Group II aggregate, but contains some Group I aggregate, shall be limited such that the Group I aggregate makes up no more than 5% of the total aggregate portion of the mix. When a Blend I mix is specified, any Group I materials in the RAP will be considered when determining the Group I portion allowed in the total mix as specified in Subsection 828.2.A.2.

E. Asphalt Cement

Using laboratory evaluations, the Department will determine the asphalt cement grade to be used in the recycled mixture. The asphalt cement shall meet the requirements of Section 820.

When the asphalt cement is blended with asphalt cement recovered from the RAP material and after tests on residue from thin film oven tests, the asphalt cement shall have a viscosity of 6,000 to 16,000 poises (600 to 1600 Pa) or as approved by the Engineer. Recover asphalt cement from the recycled mixture to verify that the specified viscosity is being met.

If the Engineer determines during construction that the selected asphalt cement grade is not performing satisfactorily, the Department may change the asphalt cement grade in the mixture, with no change in the Contract Unit Price.

F. Recycled Mixture

The recycled mixture shall be a homogenous mixture of RAP or RAS material, virgin aggregate, hydrated lime, and neat asphalt cement. Ensure that the mixture conforms to an approved mixture design outlined in Section 828.

402.2.01 Delivery, Storage, and Handling

Separate the stockpiles by Project sources and by Group I and Group II aggregate types. Erect a sign on each stockpile to identify the source(s).

If RAP material from different project sources becomes intermixed in a stockpile, only use those materials when approved by the laboratory.

The Department may reject by visual inspection stockpiles that are not clean and free of foreign materials.

402.3 Construction Requirements

402.3.01 Personnel

General Provisions 101 through 150.

402.3.02 Equipment

A. Hot Mix Plant

Use a hot mix plant for the recycling process with necessary modifications approved by the Engineer to process recycled material. Design, equip, and operate the plant so that the proportioning, heating, and mixing yields a uniform final mixture within the job mix formula tolerances.

B. Cold Feed Bin

Proportion the RAP or RAS material using a separate cold feed bin. Ensure that the material meets the size requirements in Subsection 402.2, "Materials." The ratio of the RAP or RAS to virgin aggregate shall be controlled gravimetrically.

C. Electronic Belt Weighing Devices

Use electronic belt weighing devices to monitor the flow of RAP or RAS and the flow of virgin aggregate. For batchtype plants, the RAP or RAS portion of the mix may be weighed in a weigh hopper before incorporating it into the pugmill.

D. Feeders and Conveyors

Equip plants with an interlocking system of feeders and conveyors that synchronize the RAP or RAS material flow with the virgin aggregate flow. Ensure that the electronic controls track the flow rates indicated by the belt weighing devices and develop the signal to automatically maintain the desired ratio at varying production rates. Design the RAP or RAS feeder bins, conveyor system, and auxiliary bins (if used) to prevent RAP material from segregating and sticking.

402.3.03 Preparation

General Provisions 101 through 150.

402.3.04 Fabrication

General Provisions 101 through 150.

402.3.05 Construction

Follow the requirements in Section 400 for hot mix recycled asphaltic concrete production and placement, materials, equipment, and acceptance plans except as noted or modified in this Specification.

402.3.06 Quality Acceptance

The Department may require additional quality control tests to determine the RAP stockpile consistency and the RAP aggregate quality. In this case, conduct at least three extraction/gradation tests from each individual source. Ensure that aggregate meets the quality standards in Section 800.

402.3.07 Contractor Warranty and Maintenance General Provisions 101 through 150.

402.4 Measurement

Recycled asphaltic concrete mixture, complete in place and accepted, is measured in tons (megagrams). The weight is determined by recorded weights if an approved recording device is used. Or, the weight is determined by weighing each loaded vehicle on an approved motor truck scale as the material is hauled to the roadway.

402.4.01 Limits

General Provisions 101 through 150.

402.5 Payment

The work performed and the materials furnished as described in this Specification will be paid for at the Contract Unit Price per ton (megagram). Payment is full compensation for providing materials, hauling and necessary crushing, processing, placing, rolling and finishing the recycled mixture, and providing labor, tools, equipment, and incidentals necessary to complete the work, including hauling and stockpiling RAP or RAS material.

Payment will be made under:

Item No. 402	Recycled Asphaltic Concrete 12.5 mm Superpave including Bituminous Material and Hydrated Lime	Per ton
Item No. 402	Recycled Asphaltic Concrete 19 mm Superpave including Bituminous Material and Hydrated Lime	Per ton

402.5.01 Adjustments General Provisions 101 through 150.

END OF SECTION 402

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Section 430 Portland Cement Concrete Pavement

430.1 General Description

This work includes constructing pavement composed of Portland cement concrete, with or without reinforcement as specified, on a prepared subgrade or subbase course.

Follow the requirements of these Specifications and conform to the lines, grades, thicknesses, and cross-sections shown on the plans or by the Engineer.

430.1.01 Definitions

General Provisions 101 through 150.

430.1.02 Related References

A. Standard Specifications

Section 106—Control of Materials
Section 152—Field Laboratory Building
Section 431—Grind Concrete Pavement
Section 461—Sealing Roadway and Bridge Joints and Cracks
Section 500—Concrete Structures
Section 800—Coarse Aggregate
Section 801—Fine Aggregate
Section 830—Portland Cement
Section 831—Admixtures
Section 832—Curing Agents
Section 833—Joint Fillers and Sealers
Section 853—Reinforcement and Tensioning Steel
Section 880—Water
Section 886—Epoxy Resin Adhesives

B. Referenced Documents

AASHTO T 126
AASHTO T 97
AASHTO T 22
AASHTO T 23
ACI 214
ASTM C 94, Requirements for Uniformity ASTM C 684, Method A
GDT 26
GDT 27
GDT 28

GDT 31
GDT 32
GDT 72
GDT 78
SOP 34
Report form, furnished by the Engineer
Requests for certification

430.1.03 Submittals

A. Profilograph Equipment and Operator Certification

Include in the Contract Unit Bid Price the cost to furnish and operate a Rainhart (Model 860) Profilograph to measure pavement profile deviations.

Before paving, ensure that the operator and the profilograph are certified by the Office of Materials and Research in accordance with Standard Operating Procedure No. 34, Certification of Contractor Personnel and Equipment for Smoothness Testing of Portland Cement Concrete Pavement with the Rainhart Profilograph. Certification includes a mechanical check of the profilograph functions and a written examination by the operator.

Request certification in writing to the Office of Materials and Research at least two weeks before it is needed.

B. Concrete Design

Submit for approval a concrete design that is prepared by a testing laboratory approved by the Office of Materials and Research. The Contractor will transmit the design to the Engineer for approval at least 35 days before use.

C. Approval of Mix Design Proportions

Obtain approval from the Office of Materials and Research for proposed concrete mix designs. Class 1 and 2 concrete mix designs will be verified for early compressive strength according to ASTM C-684, Method A. Class HES concrete mix designs will be verified for compressive strength development at 72 hours according to AASHTO T 126 and AASHTO T 22.

430.2 Materials

Ensure that materials meet the requirements of the following Specifications:

Material	Section
Portland cement	830.2.01
Portland Pozzolan cement	830.2.03
Water	880.2.01
Fine Aggregate, Size No. 10	801.2.02
Coarse Aggregate, Class A or B Crushed Stone or Gravel, Sizes as Specified	800.2.01

Steel Bars for Reinforcement	853.2.01
Steel Wire for Concrete Reinforcement	853.2.06
Welded Steel Wire Fabric for Concrete Reinforcement	853.2.07
Dowel Bars and Bar Coatings	853.2.08
Curing Agents	832
Air Entraining Admixtures	831.2.01
Fly Ash and Slag	831.2.03
Joint Fillers and Sealers	833
Low Modulus Silicone Sealant for Roadway Construction Joints	833.2.06
Epoxy Adhesive for Repairing Cracks	886.2.01
Chemical Admixtures	831.2.02

A. Fly Ash

Use fly ash, if appropriate, as a concrete additive to promote workability and plasticity. It may be used as a partial replacement for Portland cement in concrete, but follow these limits:

1. Do not replace the cement quantity more than 15 percent by weight.
2. Replace cement with fly ash at the rate of 1.25 to 2.0 lbs. (1.25 to 2.0 kg) of fly ash to 1 lb. (1.0 kg) of cement.
3. Ensure that the fly ash mix conforms to Subsection 430.3.06, *Quality Acceptance*.
4. Do not use Type IP cement in fly ash mixes.

B. Granulated Iron Blast-Furnace Slag

If high early strengths are not desired, use granulated slag as a partial replacement for Portland cement in concrete. Follow these limits:

1. Replace the quantity of cement 50 percent or less by weight if the 5-day forecast of the National Weather Service expects temperatures higher than 60 °F (15 °C).
    a. If the 5-day expected low temperature is less than 60 °F (15 °C) but not less than 40 °F (4 °C), replace the quantity of cement 30 percent or less by weight.
    b. If the 5-day expected low temperature is less than 40 °F (4 °C), do not use granulated slag.
2. Replace cement with slag at the rate of 1 lb. (1 kg) of slag to 1 lb. (1 kg) of cement.
3. Ensure that the granulated slag mix conforms to Subsection 430.3.06, “Quality Acceptance.”
4. Do not use Type IP cement or fly ash in slag mixes.

C. Composition of Concrete

Design the concrete mix to conform to the following requirements:

1. Coarse Aggregate

   Use coarse aggregate size No. 467, 67, or 57 for plain Portland cement concrete pavement. Use size No. 67 or 57 coarse aggregate for continuous reinforced concrete pavement.

   Separate size No. 467 or 456 in individual stockpiles of size No. 4 and size No. 67. Blend according to approved mix proportions.

2. Fine Aggregate

   Use fine aggregate that meets the requirements for size No. 10.

   When using two sizes or sources of fine aggregate to produce the proper gradation, blend according to the approved design proportions.

D. Protective Materials

Provide materials to protect the concrete edges and surface from rain, including:

C. Standard metal forms or wood planks to protect the pavement edges

D. Covering material such as burlap or cotton mats, curing paper, or plastic sheeting material to protect the pavement surface

430.2.01 Delivery, Storage, and Handling

Store aggregate from different sources in separate stockpiles.

430.3 Construction Requirements

430.3.01 Personnel

A. Certified Operator

Before paving, have the Office of Materials and Research, certify a profilograph equipment operator. Certification includes a written examination by the operator.

430.3.02 Equipment

310.1.3

F. Equipment Requirements

Provide equipment and tools to perform the work. Provide equipment that allows the paver to operate at a constant production rate and rarely start and stop. The Engineer may limit the production rate or batch size if equipment does not keep pace with the other operations or causes poor workmanship.

G. Scales

Before use, the Engineer will inspect and approve the scales to weigh concrete materials and the devices to measure water. Tolerances are ± 1.0 percent throughout the operating range. Measure admixtures to

± 3.0 percent.

H. Paving Equipment

Ensure that equipment operating on the pavement has rubber-tired wheels or flat steel wheels. Wait to operate concrete or shoulder paving equipment on the pavement until the concrete slab is 14 days old or has 2,500 psi (15 MPa) compressive strength.

Paving equipment may be either slip-form or fixed form.

I. Surface Finish Equipment

Use mechanical equipment to produce the surface finish of the mainline and transverse plastic concrete grooving. Ensure that the equipment uses rectangular-shaped steel tines of the same size and uniform length. Use tines with a width between 0.08 in. (2 mm) and 0.130 in. (3.5 mm). Space the tines approximately 1/2 in. (13 mm) apart.

J. Field Laboratory

Provide a field laboratory according to Section 152.

K. Mechanical Sprayers

Provide fully atomizing spraying equipment with a tank agitator to place curing compounds.

430.3.03 Preparation

A. Prepare the Road Bed

Prepare the roadbed as required by the Plans and Specifications before placing concrete pavement.

B. Observe Condition of Subgrade and Subbase

Check the subgrade and subbase as follows:

1. Prepare the full width of the subgrade and subbase according to the plans and specifications.
2. Ensure that the surface immediately under the concrete pavement allows proper pavement thickness and yield.
3. Trim high areas to the proper elevation.
4. Ensure that the subbase can support paving equipment without rutting or bogging.

430.3.04 Fabrication

General Provisions 101 through 150.

430.3.05 Construction

A. Mix the Concrete

Produce Portland cement concrete by combining authorized proportions of materials in batches according to the construction methods in this Specification.

Mix the concrete produced in a stationary central mix plant for at least 60 seconds after all materials have entered the drum. Reduce the mix time if representative tests show that the concrete meets requirements of ASTM C 94, Requirements for Uniformity. Never reduce the mix time to less than 50 seconds.

B. Set Forms

Set the forms as follows:

1. Compact the foundation under the forms true to grade. Set the form so that it firmly contacts the foundation for the entire length at the specified grade.
2. Prevent the forms from settling or springing under the finishing machine.
3. Clean and oil the forms before placing the concrete.

C. Dowel Bars

Provide dowel bars at transverse joints unless otherwise noted in the Contract Plans.

D. Place Concrete

After depositing the concrete on the grade, avoid re-handling. Unload and place it as follows:

1. Unload the concrete into an approved spreading device and mechanically spread it on the grade.
2. Place the concrete continuously between transverse joints without using intermediate bulkheads.
3. Hand spread the concrete with shovels, not rakes.

NOTE: Do not allow personnel to walk in freshly mixed concrete with shoes coated with dirt or other materials.

4. Thoroughly consolidate the concrete against the faces of forms and along the full length and sides of joint assemblies.
5. Ensure that vibration does not cause puddling or grout accumulation on the surface. For construction or expansion joints, do not use grout that accumulates ahead of the paver.
6. Deposit concrete near the formed joints. Dump or discharge concrete only in the center of a joint assembly.
7. Take slab depth measurements as follows:
   a. Probe the plastic concrete behind the paver.
   b. Record the station number and depth measurements at least every 500 ft. (150 m) at 3 random increments across the slab.
   c. Provide these measurements to the Engineer when requested.
8. Take air and slump determination tests at a rate of at least three of each test evenly distributed during the workday. Provide the results to the Engineer when requested.

9. Keep reinforcing steel free of dirt, oil, paint, grease, mill scale, and loose or thick rust that could impair the bond of the steel to the concrete.
10. Arrange operations to prevent “leave-outs” in continuous reinforced concrete pavement. The Engineer may approve “leave-outs” in emergencies if a plan is approved to increase the reinforcement. The Department will not pay for extra leave-outs.

E. Place Reinforcement

Place reinforcement according to the plans and as follows:

1. Do not insert lane tie bars in unsupported sides of fresh concrete.
2. Ensure that the steel placement method does not damage or disrupt concrete.
3. Use bent lane tie bars if needed in longitudinal formed joints construction. However, replace broken or damaged bars at no additional cost to the Department.

F. Construct the Ramps

Prevent pavement slab stress by constructing a ramp of compacted earth or other material for movement on and off the pavement. Do not allow equipment that exceeds legal load limits on the pavement.

G. Consolidate and Finish

Ensure that the sequence of operations is continuous from placement to final finish.

1. Consolidation

Perform vibration for the full width and depth of the pavement as follows:

a. Do not allow the vibrators to misalign load transfer devices, or to contact forms or base.

b. Ensure that the vibrator amplitude is within the range recommended by the manufacturer.

   Use spud vibrators with an adjustable operating frequency between 8,000 and 12,000 vibrations per minute.

   Use surface pan vibrators with an adjustable operating frequency between 3,000 and 6,000 vibrations per minute.

c. If appropriate, use surface vibrators and internal vibrators on concrete greater than 8 in. (200 mm) thick.

d. If appropriate, use surface vibrators exclusively on pavements less than 8 in. (200 mm) thick.

e. Stop vibration when the machine cannot go forward.

f. Obtain uniform consolidation and density throughout the pavement.

   If it is not uniform, stop the operation and provide methods or equipment that will produce pavement that conforms to the Specifications.

2. Finishing

After striking off and consolidating the concrete, follow these steps:

a. Smooth and true the concrete using a float or finishing machine to minimize or eliminate hand finishing. Perform hand finishing only under the following conditions:

Irregular dimension areas where operating mechanical equipment is impractical

Mechanical equipment breakdown (only finish the concrete already deposited when the breakdown occurred)

Abnormal circumstances approved by the Engineer

b. Ensure that the pavement surface final finish is true to grade, uniform in appearance, and free of irregular, rough, or porous areas.

c. Prevent the surface within 6 in. (150 mm) of the pavement edge to deviate more than 0.25 in. (6 mm) in 10 ft. (3 m) when tested with a 10 ft. (3 m) straightedge in both transverse and longitudinal directions.

d. Use mechanical equipment to produce a surface finish of transverse plastic concrete grooving for the mainline and ramps.

e. Have the Engineer determine the texture depth by conducting pavement surface tests such as GDT 72 at selected locations.

f. Transversely saw-groove mainline and ramp areas with a surface texture depth less than 0.018 in. (0.5 mm). Meet the depth requirement of 0.035 in. (0.9 mm) or greater.

Perform saw-grooving to meet the following dimensions:

Width	1/8 in. (3 mm)
Depth	3/16 in. (5 mm)
Spacing	3/4 in. (19 mm) center-to-center

g. If required, use hand tools to texture ramps, acceleration lanes, and deceleration lanes to surface texture mainline requirements. Finish irregular sections to a surface texture of at least 0.025 in. (0.64 mm) as shown in GDT 72.

3. Numbering Stations

Cast station numbers with a die in the pavement every 500 ft. (200 m) and 1 ft. (300 mm) from the right edge of the travel lane.

4. Protection from Rain

Protect the unhardened concrete from rain. See Subsection 430.2.D, *Protective Materials*.

When rain is imminent, stop paving operations and place forms against the sides of the pavement. Cover the surface of the unhardened concrete with the protective covering.

H. Remove Forms

Do not remove forms from freshly placed concrete until it has set for at least 12 hours, unless otherwise provided.

1. Remove forms carefully to avoid damaging the pavement.
2. After removing the forms, immediately cure the sides of the slab using the same method used to cure the pavement surface.
3. Remove and replace major honeycombed areas.

I. Work at Night

Provide adequate lighting for work performed at night. If lighting will not be provided at night, stop the concreting operation in time to finish and saw during daylight hours.

J. Provide Joints

Ensure that joints are designed, configured, and located as shown on the Plans or required by the specifications.

1. Provide dowel bars at transverse joints unless otherwise noted.
2. Remove and replace plain concrete pavement that cracks during construction with no additional cost to the Department, at the Engineer's discretion.
3. When chipping out random cracks for sealing, use nonrigid epoxy on cracks that are not under expansion- contraction influence and that meet Subsection 886.2.01.
4. Seal continuous cracks that are under movement with sealant that meets Subsection 833.2.06.
5. When removing and replacing a pavement section, remove an area at least 6 ft. (1.8 m) long and the full width of the lane.
    a. Saw to vertical face the sections to be removed and replace the concrete as a construction joint with dowels.
    b. Use deformed bars as dowels in the saw-cut construction joint. Use the size specified for contraction joints in the plans.
6. Thoroughly clean the drilled holes of contaminants and set the dowels into the hardened concrete face of the existing pavement with a Type VIII epoxy bonding compound. See Section 886 for epoxy bonding requirements.
7. For contraction joints, use undamaged and properly positioned dowels in existing construction or slab replacement areas. Coat the protruding dowel portions with a thin film of heavy grease.
8. When both sides of an existing construction or contraction joint require slab replacements, replace slabs continuously from saw-cut construction joint to saw-cut construction joint. Use dowels specified for contraction joints.

9. Before placing concrete, uniformly apply a thin coat of heavy grease to epoxy-coated dowels.

10. When placing slabs continuously across transverse contraction joint locations, use saw-cuts to provide planes of weakness according to the requirements of this Specification and the standard drawing for contraction joints.

K. Types of Joints

1. Longitudinal Joints

   For longitudinal joints, use unpainted and uncoated deformed steel bars that are the size and length specified on the plans.

   Place the bars perpendicular to the joint using a mechanical device, or rigidly secure the bars in place with supports.

2. Longitudinal Formed Joints

   Construct longitudinal formed joints while the concrete is in a plastic state.

   Use methods and equipment that locate the joint reinforcement properly without disrupting it during construction.

3. Longitudinal Sawed Joints

   Cut longitudinal sawed joints with a mechanical saw within three days after the concrete is placed and before traffic or equipment enters the pavement.

4. Transverse Joints

   Transverse joints consist of construction joints, contraction joints, or expansion joints constructed at required locations.

   a. Construct transverse joints in partial width or adjoining lanes to abut the same joint of adjacent lanes unless otherwise specified on the plans.

   b. Ensure that transverse joints in plain Portland cement concrete requiring load transfer devices contain either plastic-coated or epoxy-coated dowels.

   c. Before placing concrete, secure dowel bars in place with supporting assemblies.

   d. Secure the assemblies in position on the subbase to keep the dowels from moving during concrete placement.

   e. Place dowel bars to a vertical and horizontal tolerance of plus or minus 1 in. (25 mm) of the plan position. Do not misalign the dowel bar more than 3/8 in per 1 ft. (10 mm per 300 mm) in the horizontal or the vertical plane.

   f. Remove and replace dowel assemblies displaced from the Plan position more than the tolerances in Subsection 430.3.05.J.

   g. When using epoxy-coated dowels, coat the entire surface with a thin film of heavy waterproof grease.

h. Ensure accurate positioning of transverse sawed joints by marking the position of dowel bar assembly locations.

5. Construction Joints

Construct transverse construction joints when interrupting concreting operations for more than one hour.

NOTE: Do not construct transverse construction joints within 10 ft (3 m) of an expansion joint, contraction joint, or transverse plane of weakness.

a. Move an unanticipated construction joint back to the last plan joint, if necessary. Remove and dispose of excess concrete.

b. Form construction joints by securing in place a removable bulkhead or header board.

1. Place the board so that it conforms to the full cross section of the pavement. Secure it flush with the subbase and parallel to the normal transverse joints.

2. Slot or drill the board to allow placement of reinforcement as required by the plans.

NOTE: Do not use the roll of laitance and grout that forms in front of the paver adjacent to transverse construction joints.

c. Consolidate to full width and depth concrete adjacent to transverse construction joints with mechanical hand-type spud vibrators. Keep one auxiliary vibrator available in case of mechanical malfunctions.

d. Before applying the final finish to the concrete, string line and correct variations of the concrete surface within 30 ft. (9 m) on either side of the transverse construction joints. Provide equipment and tools such as:

- Work bridges
- Personnel
- String lines
- Straightedges
- Lighting

e. While the concrete is in a plastic condition, stringline the surface longitudinally and correct surface deviations greater than 1/8 in. per 15 ft. (3 mm per 4.6 m) in any direction.

f. When using plain Portland cement concrete pavement, place dowel bars in construction joints. Cast half the length of each dowel bar in the concrete during each phase of joint construction.

g. When using epoxy coated dowels, coat the protruding half of each dowel bar with a thin film of heavy waterproof grease before resuming joint construction. Grease coating is not required on plastic coated dowels.

h. After the concrete has hardened, dismantle the bulkhead supporting the dowels. Do not disturb the dowels.

6. Contraction Joints

Create planes of weakness in plain Portland cement concrete pavement by cutting joints in the pavement surface. Create the planes according to the Plans as follows:

a. Saw transverse contraction joints before the pavement cracks. Begin sawing when the concrete has hardened enough to prevent surface raveling, usually 4 hours after placement, but no more than 24 hours.

b. Continue sawing day and night regardless of weather conditions.

7. Expansion Joints

Transverse expansion joints are required at locations shown on the plans.

a. Form expansion joints by securing a removable bulkhead that conforms to the full cross section of the pavement. Use bulkheads that can construct a vertical expansion wall without offsets, indentations, or burrs.

b. Use expansion joint filler required by the plans.

c. Furnish and install preformed joint filler in lengths equal to the pavement width or the width of one lane. Do not use damaged or repaired joint fillers.

d. Position the expansion joint filler vertically in the joint and at the proper grade. Use an installing bar or other device to secure the expansion joint filler at the proper grade and alignment.

L. Cure the Concrete

Immediately after finishing the concrete, cure the entire surface when the concrete will not mar. Use one or more of these methods:

1. Impervious Membrane Method To use this method:

a. Spray the entire surface of the pavement with white pigmented curing compound immediately after finishing the surface and before the concrete has set.

If the pavement is cured initially with cotton mats, burlap, or cotton fabric, apply the compound after removing the mats.

NOTE: Do not apply curing compound during rain.

b. Use mechanical sprayers to apply curing compound under pressure at a minimum rate of 1 gal per 150 ft² (1 L per 3.5 m²).

c. Thoroughly mix the compound with uniformly dispersed white pigments.

d. During application, use a mechanical device to stir the compound continuously.

e. Use a hand sprayer (if required) to spray odd widths, odd shapes, and concrete surfaces exposed by removing forms.

f. Do not apply curing compound to the inside faces of joints to be sealed.

g. If the membrane film becomes damaged within the curing period, repair the damaged portions immediately with additional compound.

2. White Polyethylene Sheeting To use this method:

a. Cover the top surface and sides of the pavement with polyethylene sheeting. Lap the units at least 18 in. (450 mm).

b. Place the sheeting and weigh it down so that it contacts the surface.

c. Extend the sheeting beyond the edges of the slab at least twice the thickness of the pavement.

d. Unless otherwise specified, maintain the covering in place for 72 hours after placing the concrete.

3. Burlap, Cotton Fabric, or Other Methods

Contractors may cure the pavement with burlap, cotton fabrics, or other materials if the section remains wet for the duration specified by the Engineer.

4. Cold Weather Curing To use this method:

a. Remove and replace concrete that freezes before the initial set time at no cost to the Department.

b. Use polyethylene or canvas to protect concrete that has set but is exposed to freezing temperatures within 24 hours of placement. Ensure that the internal concrete temperature is above freezing for at least 24 hours after placing the concrete.

c. Obtain approval from the Engineer to use other protection methods such as hay, straw, or grass, or to change the duration of the protection.

M. Seal the Joints

Clean and seal the joints according to Section 461 and the plans.

Immediately after completing the curing period, fill in the joints with joint sealing material before opening the pavement to traffic.

During sealing, do not spill the material on the concrete surface. Immediately remove excess material on the concrete surface and clean the surface.

Do not use sand or similar material as a cover for the seal. Seal joints according to the plans.

N. Open Pavement to Traffic

Wait to open the pavement slab to traffic, except for joint sawing vehicles, until the concrete is 14 days old unless representative compressive tests show that the slab has a compressive strength of 2,500 psi (15 MPa). Cure compressive test specimens used for traffic opening as near as possible to the roadway.

Protect the pavement against traffic from the public, employees, and agents.

1. Erect and maintain barricades. Employ watchmen to block traffic from the newly constructed pavement for the period required in this specification.
2. Arrange the barriers away from public traffic on lanes remaining open.
3. Maintain signs that clearly indicate the lanes open to public traffic.
4. If traffic must go across the pavement, construct crossings satisfactory to the Engineer to bridge over the concrete. Construct the crossing without additional compensation.
5. Repair or replace pavement damaged by traffic or other causes before Final Acceptance without additional compensation. Make repairs to the Engineer's satisfaction.

430.3.06 Quality Acceptance

General Provisions 101 through 150. The typical section sheet in the Plans gives specific uses for each concrete classification. Refer to this specification for the minimum requirements of the concrete classifications for concrete design approval, concrete mix design proportions, batching control responsibilities, and acceptance of hardened concrete based upon compressive strength development.

A. Transit Mixed Concrete

Ensure that transit mixed concrete meets the requirements of Subsection 500.2, *Materials*.

B. Mix Design Criteria

Proportion concrete mix designs using the following requirements:

	Minimum Cement Content per Cubic Yard Concrete (CWT)	Max. Water-Cement Ratio (lbs./lb.)	Design Air Content Range (%)
Class 1	5.41	0.53	4.0 to 5.5
Class 2	5.64	0.50	4.0 to 5.5
Class HES	6.58	0.47	4.0 to 5.5

	Minimum Cement Content per Cubic Meter Concrete (kg)	Maximum Water-Cement Ratio (kg/kg)	Design Air Content Range (%)
Class 1	320	0.53	4.0 to 5.5
Class 2	335	0.50	4.0 to 5.5
Class HES	390	0.47	4.0 to 5.5

Produce evidence that the mix design proportions for Class 1 and 2 concrete have strength development potential for 24 hours plus or minus 15 minutes and at 28 days as specified in Subsection 430.3.06.C, *Approval of Mix Design Proportions*.

C. Approval of Mix Design Proportions

The Department will approve each proposed combination of materials and mix designs based on the use of approved materials, compliance with Subsection 430.3.06.B, *Mix Design Criteria*, and the following:

1. Flexural Strength

   Prepare at least 9 normally cured flexural specimens and test according to AASHTO T 126 and T 97 to ensure that the demonstrated laboratory flexural design strength at 28 days meets the following minimum Design Acceptance Requirement (DAR).

NOTE: Take the 9 flexural specimens from 3 separate trial batches. Make 3 specimens from each

Class No. 1	Concrete DAR = 600 psi + .67 s Concrete DAR = 4.1 MPa + .67 s
Class No. 2	Concrete DAR = 700 psi + .50 s Concrete DAR = 4.8 MPa + .50 s
Class HES	Concrete DAR = 700 psi + .50 s Concrete DAR = 4.8 MPa + .50 s
s = a standard deviation of all 28-day flexural specimens for a given combination of materials and mix proportions prepared together. Do not use a value of “s” greater than 37 psi (255 kPa) to calculate DAR.	

2. Compressive Strength

   Prepare and test at least 6 cylinders according to AASHTO T 126 and T 22 to ensure that the demonstrated laboratory compressive strength at 28 days for Class 1 and 2 concrete exceeds the minimum Job Performance Value (JPV).

   Produce similar evidence that demonstrates strength development at 72 hours for Class HES concrete.

Class 1	Concrete JPV Minimum = 3,000 psi + .18 R Concrete JPV Minimum = 20 MPa + .18 R

Class 2	Concrete JPV Minimum = 3,500 psi + .21 R Concrete JPV Minimum = 25 MPa + .21 R
Class HES	Concrete JPV Minimum = 3,000 psi + .05 R Concrete JPV Minimum = 20 MPa + .05 R
R = the difference between the largest observed value and the smallest observed value for all compressive strength specimens at 28 days for a combination of materials and mix proportions prepared together.	

d. Class 1 and 2 Concrete

1) Submit early compressive strength test results made at 24 hours plus or minus 30 minutes for at least 12 cylinders. Prepare and test according to ASTM C 684, Method A.

2) Prepare cylinders from three separate trial batches and make four specimens from each batch.

3) Determine the average strength, standard deviation, and coefficient of variation for the design according to ACI 214. Do not use designs that produce a coefficient variation greater than 10 percent.

e. Class HES Concrete

Submit evidence that designs proposed for use as Class HES concrete have compressive strength development potential at 72 hours of 3,000 psi (20 MPa) plus .05 R.

D. Field Adjustments on Concrete Mixes

Determine the aggregate surface moisture and apply free moisture corrections to the approved mix design. The Engineer will verify that the corrections are made properly.

Adjust the approved proportions of the fine and coarse aggregate and water as desired, provided:

1. The cement factor is not decreased.
2. The water-cement ratio is not increased.
3. Adjustments produce concrete proportions according to this Specification.
4. The Engineer is notified before use.

E. Concrete Mix Tolerances

Keep concrete consistency and air content to vary within the following limits:

1. Consistency

Immediately before placement, use GDT 27 to determine concrete slump. Do not use concrete for Portland cement concrete pavement with a slump value greater than 2.5 in. (65 mm).

2. Air Content

Immediately before placement, use GDT 26, GDT 28, or GDT 32 to determine the air content of the concrete. Concrete will not be accepted that has an air content outside of these limits:

Lower acceptance limit	3.0%
Upper acceptance limit	6.5%

F. Concrete Strength Acceptance

The concrete strength of Portland cement concrete pavement is accepted based upon development of compressive strength at a specific time.
Strength development is determined by a lot acceptance plan. The pavement is subdivided into separate concrete lots of approximately 5,334 yd² (4400 m²) placed continuously, except for required work stoppages.

1. Ramps

   Ramps may be set apart as individual lots. Include acceleration or deceleration lanes, wedges, or other varied width sections in other lots if the total paving quantity is not greater than 7,500 yd² (6300 m²). The Engineer will randomly select three production units from each lot for strength determination tests.

2. Class 1 and 2 Concrete
   a. Cast at least two cylinder sets for each production unit selected for acceptance testing. Cure one set according to ASTM C-684, Method A. Cure the other set according to AASHTO T 23.

NOTE: A set is defined as two 6 by 12 inch (150 by 300 mm) or three 4 by 8 inch (100 by 200 mm) cylinders.

   b. After curing, test each concrete cylinder according to AASHTO T 22. The test result is the average strength of the two cylinders.
3. Acceptance Based on 24-Hour Strength
   Concrete may be accepted by early strength determinations. However, concrete will not be accepted based on early strength development when the difference between the largest observed strength value and the smallest observed strength value exceeds 35 percent of the average.
   a. Compute the average (X) and the range (R) from the three acceptance tests results.
   b. Have the Engineer establish the minimum early strength (S) to be used for concrete acceptance.
      The minimum early acceptance strength is the average strength at 24 hours plus or minus 30 minutes of the laboratory design less 1.5 times the standard deviation of the laboratory design.
   c. If the average (X) of the three lot acceptance tests equal or exceed the value (S), the lot will be accepted at the full contract price, and 28-day cylinders for this lot can be discarded.
   d. If the average of the three lot acceptance tests fails to meet the acceptance limit, the Engineer will contact the Contractor immediately. The Contractor may immediately remove the concrete in the lot or leave it in place pending acceptance or rejection from the 28-day strength test results.
4. Acceptance Based on 28-Day Strength Tests
   When a lot is potentially defective based on the early strength determinations and the Contractor leaves the lot in place to be judged by the 28-day strength tests results, retain and cure all 3 sets of 28-day cylinders.
   a. If the average 28-day strength of the lot does not meet the lower acceptance limit for a 0.70 pay factor, the Engineer may either:
      Order removal of the concrete in the lot

Apply a pay factor of 0.50 for the lot

b. The Unit Price of concrete pavement will be reduced for areas represented by each lot that does not meet the specified compressive strength at 28 days according to the following schedule:

Pay Factor Schedule for Strength Determinations at 28 Days			
Acceptance Limits for Pay Factor Levels			
	1.00 LAL*	**0.95 LAL**	**0.70 LAL**
Concrete Class 1	3,000 psi (20 MPa) + 0.18 R	3,000 psi (20 MPa) - 0.07 R	3,000 psi (20 MPa)- 0.30 R
Concrete Class 2	3,500 psi (25 MPa)+ 0.21 R	3,500 psi (25 MPa)- 0.07 R	3,500 psi (25 MPa)-0.30 R
* Lower acceptance limit (LAL)			

5. Classification HES Concrete
   Cast at least two sets of cylinders for each production unit selected for acceptance testing.
   a. Cure one set for 72 hours under conditions similar to those under which the pavement is cured. Cure the other set of cylinders for 28 days according to AASHTO T 23.
   b. Test each cylinder according to AASHTO T 22 when the specified curing is complete. The test results are the average strength of the two cylinders.
   c. The Engineer may accept the concrete at full contract price if the average of the three 72-hour test results exceeds the JPV established in Subsection 430.3.06.C.
   d. When the 72-hour strength tests determine that a lot is potentially defective, the Engineer will immediately notify the Contractor. At this time, the Engineer may require the immediate removal of the pavement in question.
      If the Engineer does not require immediate removal of the pavement, select removal or acceptance on the basis of the 28-day strength development.
   e. When the 72-hour strength tests determine that a lot is potentially defective and the concrete is retained for subsequent judgment, conduct acceptance tests at 28 days on selected cylinders cured according to AASHTO T 23.
      Questionable lots will be accepted based on the 28-day strength and provisions for testing, computations, and payment for Classification No. 2 concrete in Subsection 430.3.06.F.2, *Class 1 and 2 Concrete*.

G. Smoothness

Pavement smoothness will be accepted only after the Engineer determines that the work was performed according to this and other specifications. The completed pavement, including corrective work, must meet the applicable profile index value requirements.

Perform smoothness testing as follows:

1. Ensure that the mainline riding surface produces a profile index value no greater than 7 in./mile (100 mm/km) on each travel lane. Conduct tests according to GDT 78.
2. Determine a profile index value for each tracing for each 0.25-mile (0.5 km) segment. Correct individual bumps or depressions that exceed the blanking band by more than 0.2 in. (5 mm) at no additional expense to the Department.
3. If a paving operation exceeds a profile index value of 7 in./mile (100 mm/km) per lane for any segment, suspend the paving operation and take corrective action approved by the Engineer.
4. Use GDT 78 to test ramps and acceleration and deceleration lanes to attain an average profile index value no greater than 12 in./mile (200 mm/km) by Rainhart Profilograph for the entire section length. Correct individual bumps or depressions that exceed 0.2 in. (5 mm) from the blanking band at no additional expense to the Department.
5. Take pavement profiles that are 4 ft. (1.2 m) away from and parallel to the new pavement edges on pavements greater than 16 ft. (4.8 m) wide and up to 24 ft. (7.2 m) wide.
   Test pavement 6 to 16 ft. (1.8 to 4.8 m) wide parallel to and at the center line of the pavement section.
6. Begin the 0.25-mile (0.5 km) record segments at the first day's placement and continue until project completion, except as noted in this specification.
7. Combine pavement sections less than 700 ft. (200 m) long that approach a bridge. Use the previous 0.25-mile (0.5 km) segment to determine the profile index.
   Calculate as a separate record segment 700 ft. (200 m) sections or greater that approach a bridge. This exception applies also to sections at project limits.
8. Determine a separate profile index value using GDT 78 for the 100 ft. (30 m) of roadway approaching each end of a bridge up to and including the joint with the approach slab.
   Average the profile index from the right and left wheel paths for each 100 ft. (30 m) segment for each lane for each approach. The average profile index value shall not exceed 30 in./mile (500 mm/km).
9. Before paving farther, perform and evaluate profiles from the first day's placement.
   a. After completing and evaluating this test run, adjust equipment as required by the Engineer to improve smoothness before paving continues.
   b. Complete the report form furnished by the Engineer and attach to the profilograph tracings of each day. Include the following information in each trace:
      - Project number
      - Beginning and ending station numbers
      - 500 ft. (150 m) paving stations
      - Traffic direction
      - Lane number
      - Date paved and tested
      - Construction joint locations

   Have the certified profilograph operator obtain and evaluate the traces and submit the evaluation to the Engineer. Provide results no later than the end of the second work day following placement.
10. For mainline pavement, correct 0.25 mile (0.5 km) segments not meeting the profile index requirement using one of these methods:

a. Grind the entire lane surface of the 0.25-mile (0.5 km) segment to a profile index value less than 7 in./mile (100 mm/km). Use equipment that meets requirements in Section 431.
b. Grind roughness in small segment areas no more than 50 ft. (15 m) of full lane width to produce a profile index value no greater than 7 in./mile (100 mm/km).
If more than 50 ft. (15 m) of grinding is required, grind the complete 0.25-mile (0.5 km) segment according to Method a, above.

11. Correct ramps and acceleration and deceleration lanes that do not meet the profile index requirement to a profile index no greater than 12 in./mile (200 mm/km). Prevent individual bumps from exceeding 0.2 in. (5 mm) from the blanking band. Use equipment specified in Section 431.
12. Correct 100 ft. (30 m) bridge approach sections that do not meet the profile index requirement.
    a. Grind according to Section 431.
    b. If appropriate, use a bump grinder to correct bumps with a baseline of 5 ft. (1.5 m) or less.
    c. Grind the full lane width even when grinding including individual bumps.
    d. Retest pavement segments containing corrective slab replacements for Final Acceptance.
13. Correct segments that do not meet the profile index criteria of this specification at no additional expense to the Department. Retest segments after correction with the Rainhart Profilograph.
14. Notify the Engineer before profile testing. The Engineer will verify the results by randomly selecting a minimum of 1 out of every 10 consecutive record segment profiles to compute the profile index and to compare with Contractor results.

The Engineer may conduct profilograph tests at any time to verify Contractor results. The Department may test record segments if the Engineer determines that the Contractor test results are inaccurate. See Subsection 430.5.01, *Adjustments*.

H. Thickness

The Engineer shall determine the pavement thickness using average core measurements tested according to GDT 31.

The following table contains units for paving widths:

Paving Widths – Feet (meters)	Length of Unit (Bridges Excluded)—Feet (meters)
0 – 24.0 (0 – 7.2)	1000 (300)
24.1 – 36.0 (7.2 – 10.8)	750 (225)
36.1 – 48.0 (10.8 – 14.4)	500 (150)

Areas of equal depth in intersections, entrances, crossovers, ramps, etc. are considered one unit, and the thickness of each unit is determined separately. If appropriate, include small irregular areas as part of another unit.

15. Take one core for each 2,000 yd² (1675 m²) of pavement, or fraction of pavement, in each unit where the Engineer selects.

The Department will take one core at random in each unit.

- **a.** When the core measurement is deficient 0.2 in. (5 mm) or less from the plan thickness, full payment is made.
- **b.** When the measurement is deficient more than 0.2 in. (5 mm) and not more than 1 in. (25 mm) from the plan thickness, two additional cores are secured from the unit and used to determine the average thickness.
- **c.** A random selection process determines where to secure additional cores. However, do not secure cores within 50 ft. (15 m) of other thickness measurement cores. The adjusted Unit Price in Subsection 430.5.01.A, *Concrete Pavement Thickness Deficiency* is used to determine payment for the unit.

16. Consider pavement more than 0.2 in. (5 mm) thicker than the specified thickness to be the specified thickness plus 0.2 in. (5 mm). Measurements more than 1 in. (25 mm) less than the specified thickness are not included in the average.

17. When the core measurement is at least 1 in. (25 mm) less than the specified thickness:

- **a.** Determine the pavement thickness in the affected location by taking additional cores at no less than 10 ft. (3 m) intervals parallel to the center line in each direction.
- **b.** Continue until a core is found that is not deficient by more than 1 in. (25 mm).
- **c.** Have the Engineer evaluate areas more than 1 in. (25 mm) deficient in thickness. Remove deficient areas and replace with concrete pavement of the thickness shown on the plans, if the Engineer requires.

  Exploratory cores for deficient thickness are not used in averages for adjusted Unit Price.

430.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

430.4 Measurement

The area that will be paid for under this Item is the number of square yards (meters) of concrete pavement accepted as measured complete in place. The pavement width measured is shown on the typical cross section of the plans, including additional widening as required or widening directed in writing by the Engineer.

The length is measured along the pavement surface.

Work is accepted lot-to-lot according to Section 106 and this specification.

430.4.01 Limits

General Provisions 101 through 150.

430.5 Payment

Concrete pavement completed and accepted that meets the Specification requirements will be paid for at the full Contract Unit Price per square yard (meter).

Payment for other accepted concrete pavement will be based on an adjusted Unit Price per square yard (meter). This price will be adjusted for payment for concrete pavement accepted but deficient in depth or compressive strength at 28 days. Price adjustments are specified in Subsection 430.5.01, Adjustments.

No additional payment over the Contract Unit Price will be made for pavement units with an average thickness greater than on the Plans. No additional payment over the Contract Unit Price will be made for a lot of concrete that develops more strength at 28 days than the compressive strength established in Subsection 430.3.06.F, Concrete Strength Acceptance.

Payment is full compensation for furnishing and placing materials, reinforcements, dowel and joint materials, supplies, and incidentals to complete the work.

Payment will be made under:

Item No 430	Continuously reinforced concrete pavement (including steel), class no. 1 concrete 6 in (mm) thick	Per square yard (meter)

430.5.01 Adjustments

The Contract Unit Price per square yard (meter) of concrete pavement will be adjusted for concrete pavement accepted but deficient in thickness or compressive strength at 28-days. Adjusted Unit Prices per square yard (meter) of concrete pavement are based on one or both of the following conditions:

A. Concrete Pavement Thickness Deficiency

1. If the core is deficient 0.2 in. (5 mm) or less from the plan thickness, full payment will be made. If the core is deficient in thickness more than 0.2 in. (5 mm), but not more than 1 in. (25 mm) from the Plan thickness, 2 additional cores will be taken from the area.

a. If the average measurement of these 3 cores is deficient 0.2 in. (5 mm) or less from the plan thickness, full payment will be made.

b. Where the average pavement thickness is deficient by more than 0.2 in. (5 mm), but not more than 1 in. (25 mm), payment will be made at a portion of the Unit Price per square yard (meter) of concrete pavement as shown in the following table:

Concrete Pavement Deficiency	
Deficiency in Thickness Determined by Cores–in. (mm)	**Proportional Part of Contract Price Allowed**
0.0 through 0.20 (0.0 through 5.0)	100 percent
0.21 through 0.25 (5.1 through 6.4)	95 percent
0.26 through 0.30 (6.5 through 7.6)	91 percent
0.31-0.40 (7.7 through 10.0)	86 percent
0.41-0.50 (10.1 through 12.8)	80 percent

0.51-0.75 (12.9 through 19.2)	70 percent
0.76-1.00 (19.3 through 25.0)	60 percent

c. When the thickness of pavement is deficient by more than 1 in. (25 mm) and the Engineer determines that the deficient area should not be removed or replaced, 50 percent of the Contract Unit Price will be paid.

2. No payment or compensation for cost will be made for removing concrete according to this provision.

B. Compressive Strength Deficiency

When the compressive strength at 28-days, expressed as an average strength (X) for a lot of concrete pavement is less than the values established by the Pay Factor Table, payment will be made at a reduced Unit Price per square yard (meter) as shown in the Pay Factor Table.

C. Combined Deficiencies

When a pavement section is deficient in thickness and compressive strength, the Contract Unit Price will be adjusted by the total reduction from applying the percentages in Subsections 430.5.01.A and Subsection 430.5.01.B, above.

For combined deficiencies of 50 percent or more, the Engineer may leave the pavement in place at the combined payment reduction or order the deficient areas removed and replaced at no additional cost to the Department.

If the Engineer orders removal of the pavement, payment will not be made for the original pavement or removal. Pavement replaced will be paid for at the appropriate Unit Price.

D. Profilograph Testing

If, based on the Department's profilograph tests, the Engineer determines that the Contractor profilograph test results are inaccurate, the Contractor will be charged for profilograph testing at $500 for each trace mile ($250 for each trace kilometer), with a minimum charge of $500.

END OF SECTION 430

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Section 441 Miscellaneous Concrete

441.1 General Description

This work includes removing, salvaging, or disposing of items listed in the Proposal as Pay Items to be removed, and backfilling the excavations made during removal.

This work includes placing Portland cement concrete as follows:

- As slope paving on end rolls, cut slopes, paved ditches, spillways, and ditch slopes
- In median pavement
- As sidewalks
- In concrete curbs, gutters, curb and gutters, and valley gutters
- As nonreinforced headwalls
- As velocity dissipators and concrete slope drains
- As concrete spillways
- Curb cut wheel chair ramps
- At other locations designated on the Plans or as directed

This work includes subgrade preparations including:

- Fine grading and backfilling
- Forming, furnishing, placing, and finishing concrete
- Constructing weep holes and furnishing and placing the coarse aggregate
- Furnishing and placing preformed joint fillers as shown on the plans
- Placing driveway concrete as shown on the Plans. Nominal 4 in. (100 mm) or 6 in. (150 mm) thick as specified or to match existing pavement.

441.1.01 Definitions

General Provisions 101 through 150.

441.1.02 Related References

A. Standard Specifications

Section 209—Subgrade Construction
Section 430—Portland Cement Concrete Pavement Section 500—Concrete Structures
Section 832—Curing Agents
Section 833—Joint Fillers and Sealers
Section 853—Reinforcement and Tensioning Steel

B. Referenced Documents

General Provisions 101 through 150.

441.1.03 Submittals

General Provisions 101 through 150.

441.2 Materials

Use concrete that conforms to the minimum requirements for Class "B," as specified in Section 500, except that a one-bag mixer may be used. The requirements of Subsection 500.1.03.G, *Cold Weather Concrete Curing and Protection Plan* and Subsection 500.3.05.X, *Pour Concrete in Cold Weather* for cold weather concrete placement are deleted.

Place miscellaneous concrete only when the air temperature is 40 °F (4 °C) and rising. Protect concrete from freezing for the first 24 hours. Hand finishing is allowed.
Other materials and their Specifications are as follows:

Material	Section
Steel Bars for Concrete Reinforcement	853.2.01
Membrane Curing Compound, Type 2	832.2.03
Dowel and Tie Bars and Reinforcing Steel	853.2.03
Joint Fillers and Sealers	833
Welded Steel Wire for Concrete Reinforcement	853.2.07

441.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

441.3 Construction Requirements

441.3.01 Personnel

General Provisions 101 through 150.

441.3.02 Equipment

A. **Forms**
Forms are subject to the Engineer's approval. Use forms that are:
- Wood or metal that is readily available
- Straight and oiled before each use

Use metal divider plates and templates.

Use the slip form placement method when applicable. If the slip form method does not produce a product with the proper quality, shape, grade, or alignment, the Engineer may require using fixed forms.

B. **Weep Holes**

Provide weep hole drain pockets filled with coarse aggregate to use with weep hole drain pipe or formed openings according to the plan details.

441.3.03 Preparation

Before placing the concrete, excavate for toe walls, edge walls, and weep hole drain pockets; place coarse aggregate in weep hole drain pockets; and grade, finish, and compact the subgrade surface. Use mechanical tamps for compaction if necessary.

441.3.04 Fabrication

General Provisions 101 through 150.

441.3.05 Construction

A. Extent and Thickness of Pavement

See the plans to determine the areas to be paved and the dimensions.

Thicknesses are subject to a minus tolerance of 0.5 in. (13 mm). Do not perform overlay pours.

B. Preparation of Subgrade

Finish the subgrade for miscellaneous concrete to the line and grade on the Plans and the following:

1. Compact the subgrade to the same degree as the roadway on which it is placed. Compact the subgrade according to Section 209.
2. If a Contract involves a Roadway and a Bridge Contractor, the Roadway Contractor shall complete the grading for the slope paving.

The Bridge Contractor shall complete final grading, compacting, dressing, placing, and maintenance to the structures until completion.

3. When placing paving on the front slopes of ditches and shoulders, place any required special materials during the roadway construction.
4. Do not excavate for velocity dissipators, spillways, and slope drains below the foundation elevation. Do not excavate wider than necessary to provide working space or to remove soft, unsuitable material. Backfill with selected material.
5. When fitting spillways to concrete pavement, set the specified dowel bars into the pavement when it is laid. Use metal parting strips to hold the ends of dowels bent into the grooves.

C. Concrete

1. Mixing

   Mix Class B concrete as specified in Section 500 with the following exceptions:

   a. Use of small capacity job-site batchers and one-bag mixers is allowed. The rate of concrete placement in Subsection 500.3.05.P, *Meet the Minimum Placement Rates* is waived for miscellaneous concrete.
   b. Proportion concrete ingredients volumetrically if the Engineer has approved equipment calibration and operation and the operator is certified by the Office of Materials.

2. Placing and Finishing

   Place and finish concrete as follows:

   a. Deposit concrete within forms or against other pavements on a compacted and wetted subgrade to the depth to produce the specified thickness.

NOTE: Do not place concrete on a muddy or frozen surface.

b. Vibrate the headwalls.

c. Strike off the concrete to a plane surface and finish it with a Type IV or Type V finish as defined in Subsection 500.3.05.AB, *Finish Concrete* and complete the following:

1) **Concrete Slope Paving.** Give a final finish with a stiff-bristle broom. With the Engineer's approval, mechanically convey the concrete to the forms.

2) **Concrete Sidewalks.** Give a Type V finish unless otherwise noted on the Plans. Test the surface with a 10 ft. (3 m) straightedge laid parallel to the center line. Eliminate irregularities greater than 0.25 in. (6 mm) per 10 ft. (3 m) while the concrete is still plastic.

Ensure that concrete sidewalk constructed as curb cut (wheelchair) ramps has a rough or textured finish.

3) **Concrete Paved Ditches.** Ensure that the surface of the bottom and sides of paved ditches are uniform and true to grade and cross section.

Ensure that straight-grade tangents do not deviate more than 1 in. (25 mm) within 10 ft. (3 m) when tested with a 10 ft. (3 m) straightedge. Do not allow deviation if it reduces the ditch paving thickness, causes water to pond, or alters the direction of flow.

Finish the ditch paving by floating with wood or metal floats to bring mortar to the surface to cover the coarse aggregate.

Use reinforcing that conforms to Plan details if required.

4) **Concrete Curbs, Gutters, and Median.** Finish according to Subsection 441.3.05.C.2, *Placing and Finishing*. Remove face forms as soon as possible and finish the exposed surfaces with a wood float.

Use a straightedge to test the edge of the gutter and top of the curb and median to conform to the requirements for the adjacent pavement. Irregularities shall not exceed 0.25 in. (6 mm) in 10 ft. (3 m).

Place the curb and gutter using a machine as long as the results are satisfactory.

5) **Curb Cut Wheel chair Ramps.** Construct a Type I, II, or III ramp according to Georgia Standard 9031W. Tie ramps into adjacent paved or unpaved sidewalk and use a rough or textured finish.

3. Joints

Follow these procedures to construct joints on slopes, ditches, sidewalks, and curbs, gutters, and medians.

a. Slope Paving

Place paving on slopes in horizontal or vertical courses, but not a mixture of both.

1) Construct horizontal courses approximately level and at least 3 ft. (1m) but no more than 6 ft. (1.8 m) wide measured along the slope.

When needed, construct trapezoidal courses at the top and bottom to accommodate sloping berm and ditch line conditions.

2) Edge the paving at construction joints between courses with a 0.25 in. (6 mm) radius tool.

3) Provide vertical contraction or construction joints spaced along the horizontal course at right angles to the horizontal construction joints at approximately 40 ft. (12 m) intervals, in line not staggered.

No other vertical lines will be required in horizontal courses.

When using vertical contraction joints, cut them with a tool one-third the depth of the paving during the finishing operation. Edge the contraction joints the same as construction joints.

Vertical courses approximately equal and at least 3 ft. (1 m) but no more than 5 ft. (1.5 m) wide across the plane of the slope. The desired width is 4 ft. (1.2 m). Horizontal lines are not required in vertical courses.

Separate slope paving from the masonry of structures, sidewalks, curbs, and rigid-type roadway pavements of preformed joint filler that are 0.5 in. (13 mm) thick.

b. Concrete Paved Ditches

Form joints in concrete paved ditches as follows:

1) Space contraction joints at 30 ft. (9 m) intervals.
2) Place expansion joints only where the paved ditch joins the roadway pavement or some other structure.
3) Do not use joint sealers for expansion or contraction joints.

c. Concrete Sidewalk

Form transverse contraction joints using a tool designed to form a groove one-third the depth of the sidewalk at intervals shown on the Plans.

Where sidewalks abut the curb and gutter, ensure that alternate joints coincide. Round the edges with a

0.25 in. (6 mm) edger. Make expansion joints according to the materials, dimensions, and locations specified on the plans.

d. Concrete Curbs, Gutters, and Medians

Form contraction joints or expansion joints on curbs, gutters, and medians.

1) **Contraction Joints.** Ensure that joints in curb, gutters, and medians are spaced the same as the joints in paving. Form joints by using metal divider plates or sawing them as in Section 430.

   Form joints at least one-fifth but not greater than one-fourth the depth of the concrete. Except for sawed joints, finish the joints with a 0.25 in. (6 mm) edging tool. For curbs, gutters, and medians adjacent to pavement other than concrete, contraction joints shall be as follows:

   - For header curb and combination curb and gutter, install contraction joints spaced no more than 20 ft. (6 m) apart.
   - For gutter median, install a contraction joints spaced no more than 20 ft. (6 m) apart.

2) **Expansion Joints.** Form expansion joints according to the plan details or as directed. Ensure that they coincide with the expansion joints in the adjoining pavement or gutter.

   Cut the joint fillers to the same cross section as the construction. Trim flush the material that protrudes after the concrete is finished.

   When miscellaneous concrete items are not adjacent to concrete construction, provide expansion joints at an interval of at least 500 ft. (150 m).

e. Curb Cut Wheelchair Ramps

Locate and form expansion joints for curb cut wheelchair ramps according to the Special Details for ramp Type A, B, C, or D.

4. Curing

Use curing methods specified in Subsection 430.3.05.L, *Cure the Concrete*. Ensure that the membrane curing compound is Type 2, if used. Pack honeycombed areas immediately after removing the forms.

D. Backfilling
Backfill the areas as soon as possible without damaging the work.

E. Clean-Up
When concrete work is complete, clean each surface. Protect the work from stains or other damage until Final Acceptance.

441.3.06 Quality Acceptance

General Provisions 101 through 150.

441.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

441.4 Measurement

A. Concrete Slope Paving
Concrete slope paving is measured for payment in square yards (meters) of accepted surface area of paving of the specified thickness. Concrete in toe or edge walls, excavation, backfill, weep holes, and aggregates are not measured for separate payment.

B. Concrete Sidewalks
Concrete sidewalks are measured in square yards (meters) of the specified thickness, complete in place and accepted. The length is the actual measured length along the surface. The width is the plan width or as directed. Excavation and backfill are not measured separately for payment.

C. Concrete Paved Ditches
The area measured for payment is the square yards (meters) of exposed surface area, exclusive of top edges, of the specified thickness placed according to the plans or as directed. Reinforcing steel, excavation, preparation of subgrade including Type I backfill, forms, and concrete in toe or edge walls are not measured separately for payment.
Type II backfill, when required, will be paid according to Section 207.

D. Concrete Curbs, Gutter, Median, Pavement, and Combination Curb and Gutter
The following are measured by the linear foot (meter) along the face of the curb:

- Concrete curb and gutter
- Concrete curb
- Concrete header curb

The following are measured by the square yard (meter) or by the linear foot (meter), whichever is specified:

- Concrete gutter
- Concrete valley gutter
- Concrete valley gutter with curb
- Concrete median pavement
- Concrete gutter with raised edge

The length used to compute the square yards (meters) or linear foot (meter) is measured along the center line of the gutter. The width is the total width of the gutter including the curb or raised edge. Concrete doweled integral curb includes dowels.

E. Concrete Headwalls

Headwalls are measured for payment according to Subsection 500.4.01.B, *Payment per Cubic Yard (Meter)* and Subsection 500.5.01.E, *Filler Concrete*. Filler concrete, where required, will be paid for at 60 percent of the Contract Unit Price for Class B concrete.

F. Concrete Spillways
Concrete spillways regardless of the type specified are measured by the actual number poured complete and accepted.

G. Concrete Slope Drains
Concrete slope drains are measured in square yards (meters) along the surface, complete and accepted.

H. Velocity Dissipators
Velocity dissipators are measured in square yards (meters), surface measure, complete and accepted.

I. Concrete Driveways
Driveway pavement is measured along the surface from the paving edge or back of the curb to where old and new concrete join. The width is the average width constructed.

J. Curb Cut Wheelchair Ramps
For new construction, curb cut wheelchair ramps will not be measured. For new construction, linear feet (meters) of curb and gutter will include the transitioned curb in front of ramps and square yards (meters) of concrete sidewalk will include ramps. No additional payment will be made for curb cut ramps.
For existing sidewalks, curb cut wheelchair ramps are measured as the actual number formed and poured, complete and accepted. No additional payment will be made for sawing existing sidewalk and removal and disposal of removed material for new ramp construction.

441.4.01 Limits

General Provisions 101 through 150.

441.5 Payment

These Items, measured as specified above, will be paid for at the Contract Unit Price per each, per square yard (meter), per linear foot (meter), or per cubic yard (meter).
Payment will be made under:

A. Curbs, Gutters, Combination Curb and Gutter, Headers, and Medians

Item No. 441	Concrete curb and gutter, 6 in. (mm)x 6 in. (mm) type 2	Per linear foot (meter)
Item No. 441	Concrete header curb, 6 in. (mm), type 2	Per linear foot (meter)

441.5.01 Adjustments

General Provisions 101 through 150.

END OF SECTION 441

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Section 600 Controlled Low Strength Flowable Fill

600.1 General Description

This work consists of furnishing and placing ready-mixed or volumetric mixed Flowable Fill as an alternate to compacted soil as approved by the Engineer. Applications for this material include beddings, encasements, and closures for tanks and pipe, and general backfill for trenches and abutments.

600.1.01 Definitions

General Provisions 101 through 150.

600.1.02 Related References

A. Standard Specifications
Section 500—Concrete Structures
Section 801—Fine Aggregate
Section 830—Portland Cement
Section 831—Admixtures
Section 880—Water

B. Referenced Documents
SOP-10
General Provisions 101 through 150.

600.1.03 Submittals

Mix designs for flowable fill and other documentation listed in Subsection 500.1.03.

600.2 Materials

All materials shall meet the requirements of the following specifications:

Material	Section
*Fine Aggregate	Subsection 801.2.02
Portland Cement	Subsection 830.2.01
**Fly Ash	Subsection 831.2.03
***Air-Entraining Admixtures	Subsection 831.2.01
Water	Subsection 880.2.01

NOTES:

***Gradation requirement is waived.**

****The requirements of Subsection 831.2.03 will be waived for fly ash.**

*****High air generators or foaming agents may be used in lieu of conventional air entraining admixtures and may be added at the job site and mixed according to the manufacturer's recommendation.**

600.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

600.3 Construction Requirements

600.3.01 Personnel

General Provisions 101 through 150.

600.3.02 Equipment

General Provisions 101 through 150.

600.3.03 Preparation

A. Mix Design

Flowable fill can be batched by ready-mix or volumetrically mixed on site.

Ready-mixed flowable fill is a mixture of Portland cement, fly ash, fine aggregate, air entraining admixture, and water. Ready-mixed flowable fill contains a low cement content for reduced strength development.

Volumetric mixed flowable fill is a mixture of Class C fly ash or Portland cement, Class F fly ash, and water mixed on site.

1. Submit mix designs for flowable fill to the Engineer for approval by the Office of Materials and Research. The following table lists mix design proportion ranges for excavatable and non-excavatable flowable fill:

***Table 1—Mix Designs for Flowable Fill**

	Ready-Mixed		**Volumetric Mixed**	
	Excavatable	**Non-Excavatable**	**Excavatable**	**Non-Excavatable**
Cement, Type I	75-100 lbs./yd^3 (45-60 kg/m^3)	75-150 lbs./yd^3 (45-90 kg/m^3)	90 lbs./yd^3 (53 kg/m^3)	150 lbs./yd^3 (90 kg/m^3)

Class C Fly Ash	-	-	735-840 lbs./yd^3 (333-381 kg/m^3)	841-1045 lbs./yd^3 (381-474 kg/m^3)
Class F Fly Ash	-	150-600 lbs./yd^3 (90-355 kg/m^3)	1250-2000 lbs./yd^3 (567-1186 kg/m^3)	1045-1940 lbs./yd^3 (474-1150 kg/m^3)
Water	**	**	**	**
***Air	15 to 35%	5-15%	NA	NA
***28-Day Compressive Strength	Maximum 100 psi (690 kPa)	Minimum 125 psi (860 kPa)	Maximum 100 psi (690 kPa)	Minimum 125 psi (860 kPa)
***Unit Weight (Wet)	90-100 lbs./$ft.^3$ (1440-1600 kg/m^3)	100-125 lbs./$ft.^3$ (1600-2000 kg/m^3)	90-100 lbs./$ft.^3$ (1440-1600 kg/m^3)	100-125 lbs./$ft.^3$ (1600-2000 kg/m^3)

***Amounts singly or in combination to make the mix yield one cubic yard (meter).**

****Mix designs shall produce a consistency that will result in a flowable self-leveling product at time of placement.**

*****The requirements for percent air, compressive strength, and unit weight are for laboratory designs only and are not intended for jobsite acceptance requirements.**

600.3.04 Fabrication

A. Ready-Mixed

Ensure ready-mixed flowable fill is manufactured at plants that qualify as approved sources according to the Standard Operating Procedure for Quality Assurance for Ready-Mix Concrete Plants in Georgia (SOP-10). Mix and deliver according to Subsection 500.2.01 of the specifications or other methods approved by the Engineer.

Revolution counter requirements are waived.

B. Volumetric Mixed

Ensure volumetric mixed flowable fill is manufactured through the use of volumetric mixers according to Subsection 500.3.02 of the specifications or other methods approved by the Engineer.

600.3.05 Construction

When using as backfill for pipe, where flotation or misalignment may occur, assure correct alignment of the pipe by using straps, soil anchors, or other approved means of restraint.

Protect flowable fill from freezing for 36 hours after placement.

600.3.06 Quality Acceptance

A. Jobsite Acceptance

Acceptance of flowable fill is based on documentation as outlined in Subsection 500.1.03 of the specifications and a minimum temperature of flowable fill at the point of delivery of 50 °F (10 °C).

600.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

600.4 Measurement

Flowable fill will be measured for payment in cubic yards (meters) in place and accepted when shown as a pay item in the Contract. When flowable fill is not shown as a pay item, include the cost of the work in the bid price for the appropriate item.

600.4.01 Limits

General Provisions 101 through 150.

600.5 Payment

Removing miscellaneous roadway items will be paid for at the Contract Unit Price. Payment is full compensation for removing and disposing of the structures according to these Specifications.

Payment will be made under:

Item No. 600 Flowable Fill per cubic yard

600.5.01 Adjustments

General Provisions 101 through 150.

END OF SECTION 600

Section 682 Electrical Wire, Cable, And Conduit

682.1 General Description

This work includes furnishing and installing wire, cable, conduit, junction boxes and grounding for electrical power for roadway electrical systems, such as roadway lighting, traffic signals, ramp meters, and intelligent transportation systems (ITS), among others, as indicated in the Contract. See Section 647 for traffic signal installations.

682.1.01 Definitions, Acronyms, and Abbreviations

Refer to General Provisions 101 through 150.

A. Definitions

1. Cable - a bundle of insulated electrical current conducting wires covered with a protective sheath relevant to the environment in which it is installed.
2. Conduit - a pipe, trough, or channel used for protecting electrical cable. Conduit can be metallic or non- metallic; rigid or flexible, depending on the application. Conduit trade sizes are commercially available based on diameter. See NEC for trade sizes.
3. Wire - metal that has been drawn into a thin strand or rod, usually having a round cross section. Wire is to meet the requirements within Section 922.

682.1.02 Related References

A. Standard Specifications

Section 105—Control of Work
Section 106—Control of Materials
Section 107—Legal Regulations and Responsibility to the Public Find
Section 205—Roadway Excavation
Section 208—Embankments
Section 500—Concrete Structures
Section 615—Jacking or Boring Pipe
Section 647 – Traffic Signal Installation
Section 680—Highway Lighting
Section 755—Electrical Work
Section 800—Coarse Aggregate
Section 801—Fine Aggregate
Section 830—Portland Cement
Section 832—Curing Agents
Section 833—Joints Fillers and Sealers
Section 853—Reinforcement and Tensioning Steel
Section 854—Castings and Forgings
Section 870—Paint

Section 920—Lighting Standards and Towers
Section 922—Electrical Wire and Cable
Section 923—Electrical Conduit
Section 924— Miscellaneous Electrical Materials
Section 927—Luminaires, LED
Section 942 – ITS General Requirements
GDT 7 - Determining Maximum Density of Soil
GDT 24a - Determining the Maximum Dry Density of Soils or Soil/Aggregate Mixtures Containing > 45% retained on the no. 10 sieve
GDT 24b - Determining the Maximum Dry Density of Soils or Aggregate Containing > 5% retained on a 2 inch sieve using a 5.5-pound rammer and a 12 inch drop
GDT 67 - Family of Curves Method for Determining Maximum Density of Soils

B. Referenced Documents

It is the Contractor's responsibility to utilize the standards, codes, manuals, and guidelines that apply to the work required to complete the work.

All materials are to be consistent and compliant with the latest version or edition of the standards and industry practices as specified.

American Association of State Highway Transportation Officials (AASHTO),

American National Standards Institute (ANSI)

American Society for Testing and Materials (ASTM)

Insulated Cable Engineers Association (ICEA)

Institute of Electrical and Electronics Engineers (IEEE)

Illuminating Engineering Society of North America (IESNA)

National Electric Code (NEC), (NFPA 70), current edition

NESC (ANSI C2), current edition; National Electrical Safety Code (NESC)

National Electrical Contractors Association (NECA)

National Electrical Installation Standards (NEIS)

National Electrical Manufacturer’s Association (NEMA)

National Electrical Testing Association (NETA)

Underwriter’s Laboratories, Inc. (UL)

Local codes, regulations and rules within the work area.

AASHTO, Clear zone and Horizontal Clearance Design Standards, latest edition

ANSI/ICEA S-81-570-2012, standard for 600 Volt Rated Cables of Ruggedized design for Direct Burial installations as Single Conductors or assemblies of Single Conductors

ANSI C119.1, Electric Connectors - Sealed Insulated Underground Connector Systems Rated 600 Volts, latest edition

ANSI/NECA/IESNA 501-2006, Standard for Installing Exterior Lighting Systems

ANSI/ NECA 101-2013, Standard for Installing Steel Conduit (Rigid, IMC, EMT)

ANSI/NETA ATS, Standard for Acceptance Testing Specifications for Electrical Power Equipment & Systems

ANSI/NETA ETT, Standard for Certification of Electrical Testing Technicians

ASTM D 149, Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies, latest edition

ASTM D 570, Standard Test Method for Water Absorption of Plastics, latest edition

ASTM D 792, Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement, latest edition

ASTM D 2105, Standard Test Method for Longitudinal Tensile Properties of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe and Tube, latest edition

ASTM D 2583, Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor, latest edition

ASTM D 3035, Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter, latest edition

American Petroleum Institute (API) Specification 15LR, Specification for Low Pressure Fiberglass Line Pipe, latest edition

Federal Specification W-C-1904-A, Conduit and Conduit Fittings Plastic, Rigid, latest edition Federal Specification WW-C-540a, Conduit, Metal, Rigid (Electrical, Aluminum)

Institute of Electronic and Electrical Engineers (IEEE) Standard 81, Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System

NEMA FB 2.10- 2013, Selection and Installation Guidelines for Fittings for Use With Non-Flexible Metallic Conduit or Tubing (Rigid Metal Conduit, Intermediate Metal Conduit, and Electrical Metallic Tubing)

NECA-1-2010 (also ANSI and NEIS Approved) Standard for Good Workmanship in Electrical Construction, published by the National Electrical Contractors Association, Bethesda, MD.

NECA 101-2006, Standard for Installing Steel Conduits (Rigid, IMC, EMT) (ANSI)

NECA/NACMA 120-2006, Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC) (ANSI) (NACMA, National Armored Cable Manufacturer's Association)

682.1.03 Submittals

A. Purchase List

Before purchasing materials, electronically submit (in PDF format) the complete materials and structures list, including Shop Drawings, to the Engineer for approval. Include the manufacturer's name, catalog number(s), and other descriptive data needed to clearly define each Item Acceptable conduit products are contained within QPL-5

B. Manufacturer's Certifications

Certification of Construction Items

Secure supplier or manufacturer certifications, including mill certificates, guaranteeing the construction items were manufactured according to the Specifications.

Ensure that the certificate shows that representative samples were tested, and test results conform to the specifications.

Certification of Quantity

Attach a copy of the bill of lading, sales order, or list showing the quantity of materials furnished for a specific project. Make this part of the certification by reference.

C. Manufacturer's Guarantees

After the work is complete and accepted, obtain manufacturer's guarantees for the mechanical and electrical equipment used.

Provide these to the Engineer and the agency responsible for continued equipment maintenance.

682.2 Materials

Furnish only new materials and equipment for this work. Ensure that materials meet the following requirements unless otherwise indicated:

Material	Section
Portland Cement Concrete, Class A	500
Coarse Aggregate	800
Fine Aggregate	801
Cement Concrete Curing Materials	832
Bar Reinforcement for Concrete Structures	853.2.01
Gray Iron Castings	854.2.01
Paints (Field Painting)	870
Lighting Standards and Towers	920
Electric Wire and Cable	922
Electric Conduit	923
Miscellaneous Electrical Materials	924
Luminaires, LED	927

The Contractor shall furnish a letter to the Engineer certifying that all electrical materials used for the project comply with the Contract and have been listed by an OSHA approved NRTL to the appropriate UL Standard and bear the Mark of the NRTL. If any materials used in the project are found to be deficient, the Contractor will replace them at their own expense at no cost to the Department.

682.2.01 Delivery, Storage, and Handling

Refer to General Provisions 101 through 150.

682.3 Construction Requirements

Ensure that construction and installation of specified equipment, materials, components, and assemblies comply with the manufacturer's requirements and recommendations and meet Standard Detail Drawings. General work practices for electrical construction shall be in accordance with NECA 1-2010, Standard for Good Workmanship in Electrical Construction (ANSI).

682.3.01 Personnel

A. Qualified Electricians

Refer to Subsection 755.1.01 for the definition of a qualified electrician. Contractors and Sub-Contractors shall be approved by the Department to install roadway lighting, traffic signals, ramp meters, and ITS devices. Ensure that the Contractor performing this work is on the Department's list of approved electrical contractors or electrical subcontractors.

682.4 Preparation

Before beginning work, pay applicable fees and obtain needed permits from power companies or governmental agencies.

Before beginning any mechanized boring, trenching or digging call 811, GDOT and any other local agencies which may be in GDOT ROW for instructions and clearance. This must be done at least 72 hours in advance excluding weekends and holidays. Calls made after 4:30 PM count as the next day.

Outline the areas to be excavated with white paint or flags before the utility location service is performed. Follow the Best Practice Guidelines published by the Common Ground Alliance (CGA), of which Georgia 811 is a member.

682.5 Fabrication

Refer to General Provisions 101 through 150.

682.6 Construction

682.6.01 Conduit, Pull and Junction Box and Cable Installation Requirements

A. General Requirements for Conduit

1. Install the specified size, type (rigid galvanized steel [RGS], HDPE, PVC) and quantity of conduit at the locations according to the Contract. Refer to the NEC for maximum allowable conduit fill percentages. Obtain written approval from the Engineer prior to installing conduit other than the size, type or quantity specified in the Contract.

2. Cut and ream conduit as follows:

a. Cut metallic conduit threads and then ream the ends.

b. Ream other conduit as necessary to ensure pull ropes or cables can be properly pulled through.

c. Cut conduit ends square.

d. Ensure that conduit ends butt solidly in the joints to form a smooth raceway for cables.

e. Ensure that all chips, burrs, and sharp edges have been removed.

3. Ensure conduit joints form a watertight seal by doing the following:

a. Coat metallic conduit threads with a suitable corrosion resistant thread sealant that is UL Listed to UL1356 such as Rector-Seal T plus 2, or thermoplastic seal approved by the Engineer, and then securely connect them per ANSI/NECA/IESNA 501-2006 Standard for Installing Exterior Lighting Systems, or ANSI/ NECA 101-2013, Standard for Installing Steel Conduit (Rigid, IMC, EMT).

1) Form fiber cement conduit joints with hot tar, asphalt, or bitumen paint, then drive tightly per NEMA FB 2.10- 2013 Selection and Installation Guidelines for Fittings for Use With Non-Flexible Metallic Conduit or Tubing (Rigid Metal Conduit, Intermediate Metal Conduit, and Electrical Metallic Tubing). See “other threaded connections” in Table 2-2 for tightening torque values.

2) Use a suitable sealant on conduit joints as recommended by the conduit manufacturer and as approved by the Engineer.

4. Install bushings in conduit to protect the conductors.

5. Build conduit runs in straight lines where possible.

6. Separate power cables from fiber cables except inside poles.

7. Use flexible conduit only where shown in the Standard Detail Drawings or in the Contract.

8. Clear all water from the conduit and debris before installing any cabling.

9. Conduit Couplings

a. Make every effort to minimize the use of couplings. There shall be no more than three (3) couplings in a 20 foot linear section of a conduit run.

b. Couplings shall be airtight and watertight. All couplings shall be installed in accordance with the conduit and coupling manufacturer’s recommendations.

c. Use an approved HDPE to polyvinyl chloride conduit (PVC) coupling or an underground-type conduit adhesive where joining conduit or conduit bodies of dissimilar materials, such as HDPE-to-PVC sweeps into pull boxes or installing into pull box conduit terminators.

d. Coupling of metallic conduit shall be accomplished only by hydraulic press-on or electro-fusion coupling methods unless otherwise approved by the Engineer

e. For metallic aluminum conduit, use compression couplings of seamless tool-grade tubular aluminum with sealing barbs and center stop.

f. Use hydraulic compression duct coupling tools and follow all manufacturer’s installation procedures, fully inserting both conduit sections to the coupling center stop.

g. Use pre-fabricated electro-fusion couplings that are field-installed using the coupling manufacturer’s recommended automatic self-monitoring fusing machine and installation procedures.

h. In constricted spaces, it is acceptable to use alternate coupling methods and elbow geometry with approval by the Engineer, such as band clamp/locking ring solutions or mechanical bolt-on solutions.

10. Install insulated grounding/bonding bushings to protect conductors. If sweeps are necessary, use long sweep bends with a radius of at least 6 times the conduit's nominal diameter, unless otherwise specified.

11. Ensure that empty conduit for future wire or cable and conduit with existing wires and cables has a pull tape as described in Section 682.6.01.J installed. Secure pull tape at each open end and at each pull box.

12. Continuous conduit runs shall not exceed 360° in bends without a junction box or cabinet.

13. Provide four (4) copies of the as-built documentation for underground conduit boring from the Contractor to include conduit quantity, size, location, depth, and pull box information. One copy will stay at the installation; one copy goes to the Engineer; one copy goes to the Office of Design Policy & Support Roadway Lighting Group and the last copy goes to the maintaining agency.

B. Installing Conduit and Fittings on Poles

1. Install a weather head at the end of exterior conduit runs on a pole or other structure to prevent moisture or other matter from entering the conduit. All weather heads shall have the proper plastic or neoprene insert for the wires to pass through.

2. Ream the ends of the conduit after cutting or creating threads as necessary. Make sure that there are no burrs or sharp edges to damage wire insulation.

3. Cut ends square, and butt solidly in the joints to form a smooth raceway for cables.

4. Ensure a watertight seal at joints.

5. Ensure that conduit on pole exteriors are mounted with galvanized, two-hole straps or clamps. Place clamps no more than 3 feet from junction boxes, condulets, or weather heads. Place at 3-foot maximum intervals elsewhere.

6. Fasten the clamps to wood poles with galvanized screws or lag bolts at 3-foot maximum intervals.

7. Do not install conduit risers on concrete, steel, or mast arm poles unless approved by the Engineer.

8. After installation, ensure that the conduit or fitting placement has not warped or distorted any condulet, terminal, control, or junction box.

9. Ensure that RGS conduit terminated at poles is grounded to the pole ground rod using an insulated grounding/bonding bushing and bonded in the pull box to the supply source via an effective ground-fault current path per the NEC.

C. Installing Conduit on Structures

1. Install conduits, condulets, hangers, expansion fittings, and accessories on structures according to the Contract and the following, unless otherwise specified.

2. Provide proper support hardware for all conduit attached to structure in accordance with the manufacturer's recommendations. Support hardware shall be installed as specified by the NEC.

3. Run conduit parallel to beams, trusses, supports, pier caps, etc., as directly as possible.
4. Install horizontal runs in a slight grade (0.25%) without forming low spots that may prevent proper drainage.
5. Run conduits with smooth, easy bends to ensure cables can be easily pulled through. Hold the conduit ends in boxes with locknuts and insulated grounding/bonding bushings to protect the conductors. Use a minimum bend radius of 36 in. (900 mm) and maximum bend angle of 90º.
6. When not specified in the Contract, submit the type and method for attachment to structures to the Engineer for approval.
7. Do not clamp or attach conduit to bridge beam flanges.

D. Installing Conduit Underground

1. Conduit installed underground must be Type II conduit as described in Section 923, unless otherwise approved by the Engineer.
2. Use direct burial conduit, encased conduit or conduit duct banks installed in a trench excavated according to the Contract dimensions and lines. Unless specified in the Contract, do not excavate trenches in existing pavement or surfaced shoulders to install conduit.
3. Install the conduit by directional boring, trenching and backfilling, or other approved means. When placing conduit under existing pavement; bore at least 36 inches beneath the base of the pavement. Obtain the Engineer's approval prior to installing conduit by means of boring method.
4. Provide at least 18 inches finished cover, unless otherwise specified.
5. Determine the location of electrical lines, drainage, or utility facilities in the area before excavation. Digging or excavation within 18 in. of existing utilities must be performed by hand.
6. Place conduit where it will not conflict with proposed guardrail, sign posts, etc.
7. Where possible, provide at least 12 in. between the finished lines of the conduit runs and utility facilities such as gas lines, water mains, and other underground facilities not associated with the electrical system.
8. When the conduit run is adjacent to concrete walls, piers, footings, etc., or when the conduit is encased between the encasement and the adjacent concrete, maintain at least 4 in. of undisturbed earth or firmly compacted soil between the conduit and adjacent concrete.
9. Unless specified in the Contract, do not excavate conduit trenches through existing pavement or surfaced shoulders. Install the conduit under the existing pavement by jacking, boring, or using other approved means.
10. When the Contract specifically allows a trench through an existing pavement or surfaced shoulder, restore the pavement, surface, base, and subgrade to the Engineer's satisfaction. All costs associated with this restoration shall be included in the conduit installation price.
11. Excavate trenches as follows:
    a. Cut trenches on a slight longitudinal grade (0.25% minimum) for drainage, unless otherwise specified.

b. When the grade cannot be maintained all one way, grade the duct lines from the center in both directions, down to the ends. Avoid pockets or traps where moisture may accumulate.

c. Tamp the trench bottom as necessary for a firm conduit foundation. It should be compacted to the density of the surrounding undisturbed soil. Ensure the trench bottom is smooth and free of bricks, rock or other material that could damage the conduit or cable before the trench is backfilled.

d. Support pipe and other structures at least every 10 ft. to prevent damage with approved support mechanisms. Furnishing, installing, and removing sheeting, bracing, and supports will not be paid for separately. Cost of these items shall be included in the overall bid price.

12. Before excavating, follow the instructions in Section 682.4 (above).

13. If necessary due to obstructions, slightly change the locations of conduit runs, pull boxes, etc., as approved by the Engineer.

14. Obstructions to Excavation

Make the following allowances around obstructions:

a. Where possible, provide at least 12 in. (300 mm) between the finished conduit runs and utility facilities, such as gas lines, water mains, and other underground facilities not related to the electrical system.

b. Where the conduit run is adjacent to concrete walls, piers, footings, etc., maintain at least 4 in. (100 mm) of undisturbed earth or firmly compacted soil between the conduit and the adjacent concrete

c. When rock is in the bottom of the trench, install the conduit on a bed of compacted, fine-grain soil at least 4 in. thick.

15. Conduit installed for fiber optic cable installation shall have a detectable tone or locator wire No. 14 (AWG) minimum with insulation suitable for direct burial applications. The locator wire shall have no splices.

E. Installing Encased Conduit

Place in locations shown in the Contract unless otherwise specified by Engineer. Construct as follows:

1. Conduit shall be Type II, as described in Section 923, unless otherwise approved by the Engineer.

2. Construct encasement using Class A concrete that meets requirements in Section 500.

3. Use precast concrete encasement only if approved by the Engineer.

4. Excavate trenches as follows:

a. Cut trenches on a slight longitudinal grade (0.25% minimum) for drainage, unless otherwise specified. When the grade cannot be maintained all one way, grade the duct lines from the determined high point in both directions down to the ends. Avoid pockets or traps where moisture may accumulate.

b. Tamp the trench bottom as necessary for a firm conduit foundation. It should be compacted to the density of the surrounding undisturbed soil.

c. Support pipe and other structures at least every 10 ft. to prevent damage with approved support mechanisms. Furnishing, installing, and removing sheeting, bracing, and supports will not be paid for separately. Cost of these items shall be included in the overall bid price.

5. Before excavating, follow the instructions in Section 682.4 above.

6. If necessary due to obstructions, slightly change the locations of conduit runs, pull boxes, etc., as approved by the Engineer.

7. Obstructions to Excavation

Make the following allowances around obstructions:

a. Where possible, provide at least 12 in. (300 mm) between the finished conduit runs and utility facilities, such as gas lines, water mains, and other underground facilities not related to the electrical system.

b. Where the conduit run is adjacent to concrete walls, piers, footings, etc., maintain at least 4 in. (100 mm) of undisturbed earth or firmly compacted soil between the conduit and the adjacent concrete.

c. When the conduit is encased, maintain at least 4 in. (100 mm) of undisturbed earth or firmly compacted soil between the encasement and adjacent concrete.

8. Construct encasement under pavements or surfaces so that it extends at least 12 in. (300mm) beyond the outside edges of pavement, paved shoulders, sidewalks, or curbs, when no shoulder or sidewalk is indicated.

9. Ensure that the end of installed conduit extends at least 6 in. (150mm) beyond the encasement.

10. Place 3 in. (75 mm) of concrete in the trench bottom to support the conduit.

11. Plug the conduit ends temporarily to keep concrete or foreign material out, then place the conduit in the trench.

12. Do not encase conduit in concrete until tested, inspected, and approved by the Engineer.

13. Cure concrete encasement according to Subsection 500.3.05.Z, with a curing period of 24 hours.

14. Cover the conduit with at least 3 in. of concrete.

F. Backfilling Over Underground Conduit

1. When applicable, do not backfill encased conduit until the concrete encasement has cured at least 24 hours.

2. Once the Engineer has inspected and approved the installation, promptly backfill to the required grade. Use soil without rocks or other foreign matter. Backfill with approved material in layers no deeper than 6 in. loose depth up to the original ground level.

3. Compact each layer to one hundred percent (100%) of the maximum laboratory dry density as determined by GDT 7, GDT 24a, GDT 24b, or GDT 67, whichever applies.

G. Directionally Boring Conduit

1. Conduit used for directional boring shall be as specified within Section 923.2.03

2. Suitable pits or trenches shall be excavated for the boring operation and for placing end joints or termination connectors of conduit when required. Pits or trenches shall be securely sheeted and braced where necessary to prevent caving.

3. Bore width shall not exceed 125 percent of the conduit diameter specified within the Contract.

4. Contractor shall produce documentation showing the directional bore location, path, and depth of each section of conduit. The documentation shall be provided to the Engineer and have an accuracy within 2 percent.

5. Where directional boring is required under railroads, highways, streets, or other facilities, construction shall be done in the manner that will not interfere with the facility operation and shall not weaken the roadbed or structure. Roadway pavement, subgrade, roadbed, paved shoulder, or unpaved median shall not be disturbed or excavated without written authorization by the Engineer. In these areas, any broken or damaged boring rod/stem, boring head (including transmitter/transponder locating heads and cutter heads), couplings (including back reaming, swivel or connector couplings), or any other material that cannot be retrieved as part of the pullback operation shall become the property of the Department and shall be abandoned in place unless otherwise authorized in writing by the Engineer. There shall be no additional payment for abandoned material.

6. Continuously monitor the location and alignment of the pilot drill progress to ensure compliance with the proposed installation alignment and to verify depth of the bore. Monitor by manual plotting based on location and depth readings provided by the locating/tracking system or by computer-generated bore logs. Readings or plots shall be obtained on every drill rod and provided to the Engineer on a daily basis for as-builts electronically in PDF format.

7. Monitoring drilling fluids, such as the pumping rate, pressures, viscosity, and density, during the pilot bore, back reaming, and/or pipe installation stages shall be undertaken to ensure adequate removal of soil cuttings and to ensure that the stability of the borehole is maintained.

a. Drilling fluid pressures should not exceed that which can be supported by the overburden (soil) pressure to prevent heaving or a hydraulic fracture of the soils.

1) At no time, shall the flow pressure exceed 500 psi and should normally not exceed 200 psi.

2) Excess drilling fluids shall be contained at the entry and exit points until recycled or removed from the site.

3) Ensure that all drilling fluids are disposed of in a manner acceptable to the appropriate local, state, and federal regulations.

4) The Contractor's work will be immediately suspended whenever drilling fluids seep to the surface other than in the boring entrance or exit pit. The Contractor must propose a method to prevent further seepage and must remove and dispose of any drilling fluid on the surface prior to resuming the boring operation.

8. The pullback rate should be determined to maximize removal of soil cuttings and minimize discomposure of the ground surrounding the borehole. The pullback rate shall also minimize over cutting of the borehole during the back-reaming operation to ensure that excessive voids are not created resulting in post installation settlement. Any surfaces damaged by the work

shall be restored to their preconstruction conditions. The Contractor shall be responsible for all costs associated with the restoration.

9. The distance that the excavation extends beyond the end of the bore will depend upon the character of the excavated material but shall not exceed 2 feet in any case. This distance shall be decreased on instructions from the Engineer if the character of the material being excavated makes it desirable.

10. Once the directional boring is begun, the operation shall be carried on without interruption, insofar as practical.

11. The pits or trenches excavated to facilitate boring operations shall be backfilled immediately after the boring has been completed.

12. The boring shall proceed from a surface staging area provided for the boring equipment and workers and approved by the Engineer. The holes shall be bored mechanically. Excavated material shall be placed near the top of the working pit and disposed of as required. The use of water or other fluids in connection with the boring operation will be permitted only to the extent necessary to lubricate cutting. Jetting will not be permitted.

13. Excavation will not be paid for separately, according to the provisions in Sections 205 and 208.

14. In unconsolidated soil formations, a gel-forming colloidal drilling fluid consisting of at least 10 percent high- grade, carefully processed bentonite may be used to consolidate excavated material, seal the walls, and furnish lubrication for subsequent removal of material and immediate back reaming/installation of conduit.

15. Allowable variation from line and grade established by the Engineer shall be a maximum of 2 percent. Any voids that develop during the installation operation and are determined by the Engineer to be detrimental to the work shall be pressure grouted with an approved mix.

16. Directional boring operations inherently include the risk of encountering under grade obstructions that begin to alter the bore direction. The Engineer shall be notified immediately if an obstruction occurs.

a. Attempts at corrective measures to restore the proper bore alignment should include but are not limited to boring deeper or shallower (if minimum pipe depth can be maintained), moving the boring head to the right or left of the obstruction, or attempting to bore through the obstruction (if other than solid rock).

b. To restore the bore alignment, a minimum of three attempts shall be made to the Engineer's satisfaction at each encountered obstruction with different corrective measures. If a suitable bore alignment cannot be restored, the Engineer may authorize a relocation of the bore.

c. Unsuccessful boring attempts shall be paid in accordance with Sections 682.6 and 682.7, using the obstruction location as one end of the measured length of directional boring.

H. Jacking Conduit

1. Refer to the requirements of Section 615.

I. Constructing Pull and Junction Boxes

1. Ground Mounted Pull Boxes

a. Install pull boxes according to the type, design, dimensions, and locations shown in the Contract.

b. For pull box construction and material details, see Section 924.2.02

c. Pull boxes shall be installed at least 12 feet away from active lanes. Pull boxes for traffic signals may be less than 12 ft. from active lanes but must have appropriate traffic rated covers.

d. Ground mounted pull boxes shall be installed per Article 300.5 of the NEC. Trenching, cover, and back fill requirements of Table 300.5 shall apply.

e. Orient pull boxes with the longest dimension parallel to the roadway.

f. Include provisions for drains in pull box excavations as specified.

g. When applicable, do not locate pull boxes on the curb side of the signal pole in the intersection radius return.

h. Install the pull box at a location that is level with the surrounding ground or pavement. Do not place a pull box in a ditch or depression. Unless otherwise shown in the Contract Documents, when installed either in a sidewalk or in the ground, the top of the pullbox shall be level with the sidewalk or ground surface.

2. Above Grade Junction Boxes

a. Construct pull boxes according to the design, dimensions, and locations shown in the Contract.

b. For junction box construction and material details, see Section 924.2.02

c. Junction boxes are to be installed in the locations as indicated within the Contract, unless otherwise directed by the Engineer.

d. Junction and pull boxes should be used where necessary to facilitate the pulling of wire or cable. Article 314 of the NEC provides minimum sizing and installation requirements for junction and pull boxes used in wiring systems.

e. Position the box and secure it to a structural or rigidly supported member. Members may be made of metal or fiberglass suitable for the application.

f. Attach conduit or cable fittings to the box per the manufacturer's instructions and insure that they are watertight.

g. Feed conductors into the box and make connections.

h. All connections should be insulated and watertight. Provide adequate strain relief for the conductors in accordance with manufacturer's recommendations.

i. Secure the box cover to the box using corrosion resistant fasteners and a suitable gasket, making a watertight seal.

3. Embedded Junction Boxes

a. Construct pull boxes according to the design, dimensions, and locations shown in the Contract.

b. For junction box construction and material details, see Section 924.2.02

c. Use the proper size box per the Contract (ref. Article 314 in the NEC which provides minimum sizing and installation requirements for junction and pull boxes used in wiring systems).

d. Position the box and secure it to a rigidly supported member in the hole. Members shall be made of metal or fiberglass suitable for the application. The top lip of the box should be flush with the finish height of the concrete fill.

e. Attach conduit or cable fittings to the box per the manufacturer's instructions and ensure that they are watertight.

f. Feed conductors into the box and make connections.

g. All connections shall be insulated and watertight. Provide adequate strain relief for the conductors.

h. Secure the box cover to the box using a suitable gasket and making a watertight seal.

i. Make sure that all conduit or cable entering the box is properly supported in accordance with NEC Article 314.23.

4. Conduit Termination in Pull and Junction Boxes

a. Conduit shall be terminated in junction and pull boxes as shown in the Contract.

b. Conduits terminated in concrete pull boxes shall be installed into factory-installed knockout windows only, which shall be fully grouted and sealed around all conduits and to the full thickness of the box wall.

c. Conduits terminated in metallic junction boxes shall be installed into factory-installed knockout windows only and fitted with properly sized couplings.

d. Conduits terminated in polymer pull boxes shall be installed into factory-installed conduit terminators; conduit adhesive sealants recommended by the terminator and conduit manufacturers shall be used.

e. After installing conduit, seal the conduit entrance holes in pull or junction boxes per the manufacturer's recommendations and to the Engineer's satisfaction.

f. Plug unused entrance holes and openings that may be used in the future. Use suitable plastic, bituminous fiber, or other approved plugs that keep foreign matter out.

5. Drainage in Pull and Junction Boxes

a. Provide non-metallic pull and junction boxes with a drainage hole unless the application or the Engineer dictate otherwise.

b. Provide a drainage system for each ground-mounted box to ensure that no water accumulates inside the box.

J. Pull Tape

1. Install pull tape, by hand pulling, blowing, or via vacuum method, into each empty conduit during conduit installation.

2. Install the pull tape after conduit testing has been completed.

3. Install and secure 5 feet of slacked pull tape in each empty conduit or cell at each vault.

4. Install and secure 5 extra feet of pull tape inside conduit being used and secured on each end for future use.

5. Secure the pull tape by tying it to the duct plug for the conduit in which it is installed.

K. Conduit Detection (Tracer) Wire

1. Install conduit detection wire in conduit used for fiber optic communications and where specified within the Contract.

2. If more than one conduit is being installed in a single bore, only one conduit detection wire is required.

3. The conduit detection wire shall be continuous and un-spliced between pull boxes or vaults and shall enter the pull boxes or vaults at the same location as the conduit for which it is installed. Coil and secure 5 extra feet of conduit detection wire in each pull box or vault.

4. Bonding wire suitable for direct burial may be used in place of conduit detection wire but shall be approved by the Engineer.

L. Direct Buried Conductors

1. Direct buried conductor packages used shall be as described in Section 922.2.01

2. Do not unreel and pull package into the trench from one end. Unreel and lay them alongside the trench, then lay them in the trench as follows:

   a. Serpentine the cables slightly in the trench to allow for settling of earth.

   b. Do not allow cable to crossover in the trench.

3. Excavate trenches as follows:

   a. Cut trenches on a slight longitudinal grade (0.25% minimum) for drainage, unless otherwise specified. When the grade cannot be maintained all one way, grade the duct lines from the determined high point in both directions down to the ends. Avoid pockets or traps where moisture may accumulate.

   b. Cut the trench walls vertical.

   c. Tamp the trench bottom as necessary for a firm foundation.

   d. Sheet and brace the trenches when required.

   e. Adequately support conductor package and any other support material exposed in trenches if support is necessary to prevent damage. Include furnishing, installing, and removing sheeting, bracing, and supports in the Contract Prices for other items, as they pertain.

4. Before excavating, follow the instructions in Section 682.4 above.

5. If necessary due to obstructions, slightly change the locations of conductor package, as approved by the Engineer.

6. Obstructions to Excavation

   Make the following allowances around obstructions:

a. Where possible, provide at least 12 in. (300 mm) between the finished package runs and utility facilities, such as gas lines, water mains, and other underground facilities not related to the electrical system.

b. Where the package run is adjacent to concrete walls, piers, footings, etc., maintain at least 4 in. (100 mm) of undisturbed earth or firmly compacted soil between the package and the adjacent concrete.

M. Installing Cable in Conduit

1. Cable used shall be as described in Section 922.2.01

2. Use cable with conduit as specified within the Contract.

3. When cable is brought through the base of the lighting standard or junction box, leave enough slack to allow the connections to be made outside the standard or box. The cable shall extend a minimum of 12 in. into the standard from the base plate before the outer covering is removed to minimize moisture and contaminants.

4. Carefully pull cables into place in conduits using approved methods so that the cable is installed without electrical or mechanical damage. Install as follows:

a. Use powdered soapstone, talc, or other inert lubricants when placing conductors in conduit.

b. Handle and install conductors carefully to prevent kinks, bends, or other distortions that could damage the conductor or outer covering.

c. Pull all cables within a single conduit at the same time.

d. When pulling cables through hand holes in pole shafts, etc., place a pad of firm rubber or other suitable material between the cable and the opening edges to prevent cable damage.

N. Splicing Cable

1. Make splices only in above grade junction boxes and pole bases unless otherwise shown in the Contract. Underground splicing is not allowed without specific approval from the Engineer.

2. Splice conductors according to the National Electrical Code and the splice manufacturer's recommendations. Splices are subject to the Engineer's approval.

3. Make splices watertight.

4. When making straight or line splices in the same-sized conductors, use tin-plated copper compression tubular splices.

5. When making splices in different-sized conductors or conductors with different terminating directions:

a. Use tin-plated copper compression ring tongue terminals on each conductor.

b. Bolt the conductors/terminals together with stainless steel or high strength silicone bronze hardware.

6. Use locknuts, pal nuts, or lock washers to keep connections tight. Do not use split bolt connectors.

7. Use an oxidation inhibitor compound on aluminum conductor connections.

8. After making a conductor splice, insulate it with heat-shrinkable tubing, supplied by the manufacturer, with an adhesive coating on the inner wall.

a. Use shrink tubing with insulation thickness equal to or greater than the insulation thickness of the conductor.

b. Use UL listed heat-shrinkable tubing that meets ANSI C119.1 (latest edition) requirements for submersible and direct buried splices.

c. When connections are bolted together, wrap the bolted connection with cloth tape before applying the heat-shrinkable tubing.

d. Use proper diameter tubing for the conductor and connection and pad sharp points and edges on splices to prevent the heat-shrinkable tubing from splitting during shrinking.

e. Place the shrink tubing to have at least 3 in. (75 mm) of seal length on the conductor beyond the splice after the tube is fully recovered.

O. Electrical Service Point Installation

1. Electrical service point equipment shall be installed in accordance with the Contract and/or Standard Drawings. This would include any cabinets, disconnect switches, meter bases, service rack equipment and support hardware as well as additional conduit, service entrance heads, wood poles and grounding equipment.

2. Enclosures and cabinets shall be in accordance with Section 924.2.11

3. Disconnect switches shall be in accordance with Section 924.2.12

4. Circuit breakers shall be in accordance with Section 924.2.06

5. All equipment shall be grounded in accordance with Section 682.6.01 P

6. All equipment is to be sized and installed in accordance with NEC.

P. Grounding

1. Ground rods are to be sized as indicated in Section 924.2.01.

2. Connect neutral/grounding conductors to the ground rod at all control points and to the ground wire cast in pole foundations. Use the type and size of continuous neutral/grounding conductors shown in the Contract and all connections shall be done using an exothermic weld.

3. Meet the minimum requirements of the NEC.

4. Use the shortest possible ground lead that leads directly to a grounding source.

5. All components, including mounting hardware, shall be grounded and bonded per manufacturer's recommendations and NEC. Dress and route grounding conductor separately from all other controller cabinet assembly wiring.

6. Grounding to water or other pipes, such as metallic conduit, is not an acceptable grounding connection means.

7. Install ground rods at locations shown in the Contract. Install ground rods in one of the following ways:

a. Driven Ground Rods

1) Drive single ground rods vertically until the top of the rod is at least 12 in. (300 mm) below the finished v.

2) Attach a length of No. 6 AWG, bare solid, soft drawn, or medium-hard drawn copper ground wire to the ground rod. Use suitable ground rod clamps.

3) Connect the wire to the standard base grounding nut.

4) Cutting ground rod short to match grade is not acceptable.

b. Laid Ground Rods

When sufficient penetration cannot be obtained in the above manner, place the following ground rod system:

1) Place 3 parallel ground rods at least 6 ft. (1.8 m) center-to-center horizontally and at least 12 in. (300 mm) below the finished ground.

2) Join and fasten these rods to the grounding nut of the standard base with No. 6 AWG, bare solid, soft drawn or medium hard drawn copper ground wire and suitable clamps.

682.7 Quality Acceptance

682.7.01 Conduit and Conductor Testing

A. Testing Conduit

Test the installed conduit with a mandrel in the Engineer's presence as follows:

1. Test every conduit after the conduit is installed and before cable or pull tape is installed.
2. Perform testing on all conduit types in this Specification, including but not limited to each conduit in duct banks.
3. Thoroughly clean the conduits so they are free of any dirt, metal particles, water or other liquids or debris before performing the mandrel test.
4. Use a mandrel 2 in. long and 0.25 in. smaller in diameter than the conduit.
5. Ream the duct opening to remove burrs or foreign matter.
6. Thoroughly clean the duct in accordance to manufacturer's recommendations.
7. Provide and install a weatherproof cap at each open end after test is completed.
8. Repair conduits that the mandrel will not pass through. If repairs cannot be made to the Engineer's satisfaction, remove and replace the conduit at no additional cost to the Department.

B. Testing Conduit Detection (Tracer) Wire

1. Perform a continuity or tone test after installation to confirm that a continuous run of conduit detection wire was installed between pull boxes or vaults.
2. Prepare a test plan, supplying equipment, conducting the test and documenting the results.
3. Submit a test plan at least 15 working days prior to the desired testing date.

4. Testing shall not begin until the Engineer has approved the test plan, and all tests shall be conducted in the presence of the Engineer.

C. Testing Conductors

Caution: There is a risk of electrical shock when performing this test. This test should only be performed by qualified personnel that have electrical testing safety training compliant with or equivalent to ANSI/NETA ETT, Standard for Certification of Electrical Testing Technicians.

Even though insulation is a dielectric material there will be very small amounts of current that leak through it. The amount of current that leaks depends on the strength of the insulation, its moisture content, and its temperature. Measurements should be taken when the relative humidity is below 50% and the electrical system temperature is below 86°F (30°C), but above the dew point temperature. During each one (1) minute test, if the resistance value decreases it is likely that the conductor or cable is wet or contaminated. The conductors can be dried by passing compressed dry nitrogen through the cable or conduit. If this fails, the system should be evaluated for contamination.

Inspect all insulation for signs of contamination, degradation, and mechanical damage or abrasion. Any defective cable shall be replaced at no additional cost to the Department.

Prior to connecting service to the newly installed system test the insulation resistance per the following procedure: Before beginning the test, make sure that the following precautions are observed:

1. The cable or wiring assembly should be disconnected from the system and NOT energized.
2. Set or hang the meter. Do not hold the meter in hands in case of transient voltages.
3. Discharge any conductor capacitance before and after each test.
4. Wear insulating rubber gloves when connecting or disconnecting test leads.
5. Don’t use an insulation tester near explosive agents.
6. Follow all of the meter manufacturer’s safety precautions.

The test meter manufacturer will provide the meter connection instructions as well as instructions for operation of the meter.

The following tests must be conducted, and the listed data below recorded on the test form (or Engineer approved equivalent) which must be completed and submitted to the Engineer for approval. Use multiple copies as required.

Using the Step Voltage Test method to measure the insulation resistance, each branch circuit must be tested from the service cabinet through the end of the branch circuit to include all contractor installed conductors and splices within the circuit, all in accordance with the meter manufacturer’s instructions. Perform insulation resistance test on each conductor with respect to ground and adjacent conductors and measure insulation resistance of each bus way or conduit assembly, phase-to-phase and phase-to-ground.

Record all relevant data using the format in the table below. Be sure to discharge any line capacitance after each test.

1. Apply 250V DC, test duration shall be one (1) minute and measure resistance and record the required information.
2. Apply 500V DC, test duration shall be one (1) minute and measure resistance and record the required information.

Insulation resistance values shall be within 5 percent of manufacturer's published data. If the manufacturer's published data is not available, the measured insulation resistance shall be 100 meg-ohms or greater. Values of insulation resistance less than this or the manufacturer's recommendations shall be investigated. In the event of failure, individual conductor runs between poles and/or splice locations should be tested to determine the problem and resolve it. The system's minimum insulation resistance should be 25 meg-ohms.

Electrical Insulation Resistance Verification Tests

Project Number: _____ Location: _____

Tested By: _____ Date: _____

	Data
Type of Cable or Wire	
Coil Number	
Manufacture Date	
Cable Length	**ft**
Conductor Size	
Insulation Temperature	**°F**
Ambient Temperature	**°F**
Meg-Ohms at 250 VDC	
Test Duration	**Min.**
Meg-Ohms at 500 VDC	
Test Duration	**Min.**

1. Measure the service voltage between the phase conductors before turning the circuit breaker on at the service point. Also measure the service voltage between each phase conductor and the neutral or ground.
2. After observing the proper voltage as indicated in the Contract, turn the circuit breaker on and repeat the voltage measurements.
3. After the circuit has been energized for at least 10 minutes, measure the load current in each phase conductor and in the neutral at the service point.
4. Ensure that the current in the phase conductors is balanced and that there is no current in the neutral.

D. Grounding

1. Test electrode to verify that this grounding system produces a resistance of 25 ohms or less. If not, add more ground rods as necessary, connected with No. 6 AWG solid copper wire at 8 ft. (2.4 m) on center and re-test. Up to four (4) total ground rods can be installed if necessary.
2. For extended distances between ramp meter and VDS, additional grounding may be required by the manufacturer.
3. When testing for resistance verify the ground is dry.
4. Submit all ground test results.

E. Final Acceptance

1. After successful completion of the test procedure, each conduit and conductor shall go through a burn-in period for 30 consecutive days of normal operation.
2. During the burn-in period, the Contractor shall ensure that all Contractor-supplied equipment operates without failures of any type. If any equipment component malfunctions or fails to provide the specified functionality during the 30-day burn-in period, the Contractor shall replace or repair the defective equipment.
3. After the malfunctioning component(s) has been repaired or replaced to the satisfaction of the Engineer, the Contractor shall begin a new 30-day burn-in period. The new 30-day burn-in period shall apply only to equipment components supplied by the Contractor.
4. In the event of a failure or malfunctioning of equipment furnished by others that prevents the 30-day burn-in test from continuing, the Engineer will suspend the burn-in test and resume when the other equipment failures are corrected.

F. Contractor Warranty and Maintenance

1. Contractor shall provide a one-year manufacturer support (usual and customary warranties) period for all electrical wire, cable, and conduit materials furnished. This shall include all Contractor or manufacturer activities related to maintenance, removal, and replacement of electrical wire, cable, and conduit materials in warranty during the support period.
2. The manufacturer warranty support period shall begin upon successful completion of acceptance testing.
3. All manufacturer warranties shall be continuous throughout the period and state that they are subject to transfer to the Department.

682.8 Measurement

A. Conduit

Underground conduit, conduit duct banks, encased conduit, conduit on structures, directionally bored conduit, and jacked conduit will be measured for payment by the type and size installed per linear foot, tested and accepted. Unless otherwise specified in the Contract, all installation-related costs shall be included in the overall cost of the specified conduit.

B. Pull Boxes and Junction Boxes

Pull boxes and junction boxes will be measured for payment by the type and size installed per each and accepted. This shall include any excavation and backfill, bushing, couplers or any mounting hardware necessary to complete the installation.

C. Conduit Detection Wire

Conduit detection wire installed in existing conduit will be measured for payment by the linear foot amount installed and accepted. Payment for installing conduit detection wire in existing conduit will be paid for at the Contract unit price per linear foot. Such payment will be full compensation for furnishing, installing, and testing the wire.

D. Cable and Conductors

Cables and conductors will be measured for payment by the linear foot amount installed and accepted. Payment for installing cable and conductors will be paid for at the Contract unit price per linear foot. Such payment will be full compensation for furnishing, installing, and testing the cable and conductors.

E. Electrical Service Equipment

Electrical service equipment shall be measured and paid for at the Contract unit price per each installed service point installed and accepted. This will include all cabinets, enclosures, conduit and connectors, conductors, equipment racks including support beams and cross-bracing, ground rods and grounding conductors within the Contract or Standard Drawings to ensure proper operation.

F. Grounding

Unless specifically stated within the Contract, ground rods and related grounding conductors and equipment outlined within the Contract and Section 682.6.01 P will not be paid for separately.

682.8.1 Limits

Refer to General Provisions 101 through 150.

682.9 Payment

Payment will be made under:

Item No. 682 Remove and Replace Existing Induction Loop at Access Gate (including testing) per each

682.9.01 Adjustments

General Provisions 101 through 150.

END OF SECTION 682

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SUPPLEMENTAL SPECIFICATION

Section 828 Hot Mix Asphaltic Concrete Mixtures

Delete Section 828 and substitute the following:

828.1 General Description

This specification includes the requirements for hot mix asphaltic concrete mixtures, including:

- Open-graded surface mixtures (OGFC and PEM)
- Stone Matrix Asphalt mixtures (SMA)
- Superpave mixtures
- Fine-graded (4.75 mm) mixtures

828.1.01 Definitions

The Nominal Maximum Sieve Size is one standard sieve size larger than the first sieve to retain more than ten percent of the aggregate, per AASHTO R35. Mixture types in this section are identified according to Nominal Maximum Sieve Size.

828.1.02 Related References

B. Standard Specifications

Section 400-Hot Mix Asphaltic Concrete Construction

Section 402-Hot Mix Recycled Asphaltic Concrete

Section 800–Coarse Aggregate

Section 802–Aggregates for Asphaltic Concrete

Section 819–Fiber Stabilizing Additives

Section 820–Asphalt Cement

Section 831–Admixtures

Section 882–Lime

Section 883–Mineral Filler

C. Referenced Documents

AASHTO R30

AASHTO R35

AASHTO TP 108

AASHTO T 112

AASHTO T 209

AASHTO T 245

AASHTO T 305

AASHTO T 312

AASHTO T 321

AASHTO T 324

AASHTO T 331

AASHTO T 340

SOP-2

SOP-36

GDT 1

GDT 56

GDT 63

GDT 66

GDT 114

GDT 115

GDT 123

QPL 1

QPL 2

QPL 7

QPL 26

QPL 41

QPL 77

QPL 81

828.2 Materials

A. Requirements

Use approved hot mix asphalt concrete mixtures that meet the following requirements:

1. Produce each asphalt mixture according to a Department approved Job Mix Formula and Asphalt Mix Design, see Subsection 400.1 for submittal and approval of Job Mix Formulas.
2. Ensure individual acceptance test results meet the Mixture Control Tolerances specified in the appropriate table below, Subsections 828.2.01 through 828.2.04.
3. Ensure the Engineer approves all materials used to prepare and place the mixtures before incorporating them into the Work. Use only the ingredients listed in the

approved Asphalt Mix Design and Job Mix Formula. For virgin aggregates use sources meeting the requirements of Section 802 and are listed in QPL 1 or QPL 2; for mixes in which local sand is permitted, use the approved sand source identified in the mix design. For mixtures containing Reclaimed Asphalt Pavement (RAP), use only RAP from the approved stockpile identified in the mix design. Use asphalt cement meeting the requirements of Section 820, from a source listed in QPL 7.

4. Obtain approved Open-Graded Friction Course (OGFC), Porous European Mix (PEM), Stone Matrix Asphalt Mix (SMA), Superpave and 4.75 mm mix designs from a mix design laboratory certified by the Department. Ensure all SMA mix designs are designed in accordance with GDT-123 (“Determining the Design Proportions of Stone Matrix Asphalt Mixtures”). Ensure all OGFC and PEM mix designs are designed in accordance with GDT 114 “Determining Optimum Asphalt Content for Open-graded Bituminous Paving Mixtures and Sub- section 828.2.01.Ensure OGFC, PEM and SMA mix designs are verified and approved by the Department prior to use. Batched materials, and gyrated specimens where applicable, for required mix design verification are to be submitted with the initial mix design approval request. Ensure Superpave and 4.75 mm mix designs are designed in accordance with SOP-2 ("Control of Superpave Bituminous Mixture Designs") and are approved by the Department as provided therein. Ensure all mixes are designed by a laboratory and technician certified in accordance with SOP-36, ("Certification of Laboratories and Personnel for Design of SMA and Superpave Asphalt Mixtures"). Mix Design Technicians certified to design SMA mixtures are approved to design OGFC and PEM mixtures. The Department approves submitted mix designs for compliance with specified requirements and laboratory performance test data. The contractor is responsible for the placement in accordance with Sections 400 and 402 for the GDOT approved mix designs.

   Use only mixtures composed of the aggregate groups and blends indicated in the Proposal and Plans by their pay item designations, defined as follows:

TABLE 1 – AGGREGATE GROUPS

Pay Item Designation	Allowable Aggregate Groups
Group I or II	Group I, Group II, or Blend I
Group II only	Group II only
Blend I	Either 100% Group II material or a blend of Group I and Group II. Do not use Group I material for more than 60%, by weight, of the total aggregate nor more than 50%, by weight, of the coarse aggregate fraction.

5. For patching or leveling use Group I, Group II, or Blend I. Mix types for patching and leveling are specified in Subsection 400.3.03.B.

6. Include lime (hydrated lime) from an approved source and meeting the requirements of Section 882 in all paving courses except as otherwise provided in the Contract. For a list of approved sources of lime, see QPL 41.

   a. Add lime to each mixture at the rate prescribed in the approved mix design.

b. Ensure mix designs using only virgin aggregate include lime at a minimum rate of 1.00% of the total dry aggregate weight. Ensure mix designs using RAP include lime at a minimum rate equal to 1.00% of the virgin aggregate fraction plus 0.50% of the aggregate in the RAP fraction.

c. Add more lime or add lime plus an approved Heat-Stable Anti-Stripping Additive meeting the requirements of Section 831, if necessary to meet requirements for mixture properties, and pursuant to an approved mix design. However, the Department will not make additional payment for these materials. For a list of sources of Heat-Stable Anti-Stripping Additives, see QPL 26.

d. Where specifically allowed in the contract and pay item on local assistance, airport, and parking lot projects, an approved Heat-Stable Anti-Stripping Additive meeting the requirements of Section 831 may be substituted for hydrated lime. Ensure the mix gradation is adjusted to replace the lime with an equivalent volume of fines passing the 0.075 mm sieve. Add Heat-Stable Anti-stripping Additive at a minimum rate of 0.5 percent of the asphalt cement portion.

7. Use performance grade PG 64-22 or PG 67-22 asphalt cement in all mix designs and mixtures except as follows:

a. The State Materials Engineer will determine the performance grade to be used, based on Table 2 – Binders Selection Guideline for Reclaimed Asphalt Pavement (RAP) Mixtures, AASHTO M323 and laboratory testing results as required in Section 828.2.B for mixtures containing ≥ 25% equivalent binder replacement for RAP/RAS mixtures.

b. Use only grade PG 76-22, excluding shoulder construction in the following mixes: all SMA, 12.5 mm PEM, 9.5 mm and 12.5 mm OGFC, 12.5 mm Superpave, on projects with two-way ADT greater than 25,000; and in all mixtures for which polymer-modified asphalt is specified in the pay item.

8. Use of local sand is restricted as follows:

a. Do not place mixtures containing local sand on the traveled way of the mainline or ramps of the Interstate System. Mixtures with local sand may be used for shoulder construction on these facilities.

b. Ensure local sand will not constitute more than 20 % of the total aggregate weight of any mix design or production mix.

c. Subject to the above limits, 19 mm, 12.5 mm, and 9.5 mm Superpave mix designs and 4.75 mm mix designs containing local sand may be used on projects with a current ADT not exceeding 4,000 VPD providing that all performance testing meets specified requirements.

d. 25 mm Superpave mix designs containing not more than 20 % local sand may be used on all facilities except the main line and ramps of the Interstate System.

e. Obtain local sand for use in asphalt mixtures from a source approved by the Department.

f. Approval of local sand sources: The Department will sample, test, and approve sources of local sand. Ensure local sand contains no more than 7.0% clay by weight and is free of foreign substances, roots, twigs, and other organic matter. Ensure sand is free of clay lumps, as determined by AASHTO T 112, and has a sand equivalent value exceeding 25%, as determined by GDT 63.

B. Fabrication

1. Design procedures: For all Superpave and 4.75 mm mixes, ensure conformance with the Superpave System for Volumetric Design (AASHTO T 312 and AASHTO R30), as adapted in SOP-2. Ensure Superpave mixes are designed at a design gyration number (N_{des}) of 65 gyrations and initial gyration number (N_{ini}) of 6 gyrations. Ensure 4.75 mm mixes, (N_{des}) are designed at 50 gyrations, and (N_{ini}) at 6 gyrations. Open-graded mix designs will be designed by the Department in accordance with GDT 114. In all cases, the procedure for measuring Maximum Specific Gravity (G_{mm}) is AASHTO T 209. In addition to gradation and volumetric analysis, ensure mix designs include the following performance tests, as applicable.

2. Performance Test:

a. Permeability test: Ensure Superpave and Stone Matrix mix designs include testing according to GDT -1 Measurement of Water Permeability of Compacted Asphalt Paving Mixtures. Ensure specimen air voids for this test are 6.0 ±1.0 %. The average permeability of three specimens may not exceed 3.60 ft per day (125 ×10−5cm per sec).

b. Moisture Susceptibility test: For all mixtures excluding OGFC and PEM mixtures, fabricate and test specimens in accordance with GDT 66, when required by the Office of Materials and Testing due to visible signs of stripping in laboratory fabricated or plant produced asphaltic concrete mixtures. GDT 66 may also be used to evaluate moisture damage susceptibility for virgin asphaltic concrete 4.75 mm and 9.5 mm Types I and II Superpave surface mixtures failing to meet GDOT specified Hamburg Stripping Inflection Point requirements. These mixtures must comply with Hamburg Wheel Tracking Test rutting requirements. Ensure specimen air voids for this test are 7.0 ±1.0% for all mixes excluding Stone Matrix mixes. Ensure specimen air voids for this test are 6.0 ± 1.0% for Stone Matrix mixes. For all mix types, the minimum tensile splitting ratio is 0.80, except a tensile splitting ratio of no less than 0.70 may be acceptable if all individual strength values exceed 100 psi (690 kPa). Ensure individual splitting strength of the three conditioned and three controlled samples are not less than 60 psi (415 kPa). Ensure retention of coating as determined by GDT 56 is not less than 95%.

c. Hamburg Wheel-Tracking Test for rutting and moisture susceptibility test: Ensure mix designs of all mix types except Open-graded Surface Mixes (OGFC and PEM), and Open-graded Crack Relief Interlayer (OGI) mix, include testing in accordance with AASHTO T 324. Ensure specimen air voids for this test are 7.0 ± 1.0% for all mix types, other than SMA mixes and at a testing temperature of 50°C (122°F). Ensure specimen air voids for this test are 6.0

±1.0 % for SMA mixtures and at a testing temperature of 50°C (122°F). Use the testing and acceptance criteria established in Table 2.

TABLE 2 – HAMBURG WHEEL TRACKING DEVICE TESTING AND ACCEPTANCE CRITERIA

Binder Performance Grade (PG)	Mix Type	Number of Passes	Maximum Rut Depth	Stripping Inflection Point
PG 64-22 and PG 67-22	4.75 mm, 9.5 mm SP Type I, and 9.5 mm SP Type II	15,000	≤ 12.5 mm	> 15,000
PG 64-22 and PG 67-22	12.5 mm SP, 19 mm SP and 25 mm SP	20,000	≤ 12.5 mm	> 20,000
PG 76-22	All Mix types	20,000	≤ 12.5 mm	> 20,000

Tested specimens shall be inspected for any visible signs of stripping and any mix design's tested specimens that fail to maintain 95% of asphalt cement coating, as described in GDT 56 section D.2.d, will be required to meet specified requirements for GDT 66 as detailed in 828.2.B.2.b.

d. Fatigue testing: The Department may verify dense-graded mix designs by fatigue testing according to AASHTO T 321 or other procedure approved by the Department.

e. Abrasion Loss of Asphaltic Mixture testing: The Department will evaluate Open-graded Friction Course, Porous European Mix and SMA Types in accordance with AASHTO TP 108. In accordance with AASHTO T 312, compact OGFC and PEM specimens using the Superpave Gyrator Compactor to a specimen height of 115 ± 5 mm and specimen air void content range specified in Sub-section 828.2.01.A. Specimen air voids for the SMA specimens shall be 6.0 % ± 1.0 % with a specimen height of 115 ± 5 mm. Bulk Specific Gravity of the compacted open-graded mixtures shall be determined using Corelok vacuum-sealing device in accordance with AASHTO T 331. Individual specimen and average of three specimens for OGFC and PEM and SMA shall be reported for mix design acceptance.

C. Acceptance

See Subsection 106.03 and Section 400. Ensure individual test results meet the Mixture Control Tolerances listed in Subsections 828.2, 828.2.01 ,828.2.02, 828.2.03, or 828.2.04, whichever applies with the following exception. Ensure field verification results for rutting susceptibility tests performed on laboratory fabricated and/or roadway cores obtained from asphalt plant produced mixtures meet specified requirements for AASHTO T 324 as detailed in Subsection 828.2.B.2.c. All GDOT approved mix designs are required to have full field mix design verifications, using plant produced mixture, sampled by the contractor and submitted to the applicable GDOT laboratory (Central or District) at a minimum of once per two years. Field mix design verification results that fail to comply with performance testing specified in Subsection 828.2.B will require a complete laboratory mix design verification, to be completed by the original mix designer, for continued use of that design. If a mix design

has not been produced within two years, a full field mix design verification will be sampled by the contractor and submitted to the applicable GDOT laboratory (Central or District) on the first Lot produced thereafter. Any mix design that fails to meet performance test requirements established in Subsection 828.2.B, using laboratory fabricated specimens due to failing field mix design results, may subject that mix design to invalidation after the field mix design verification results are confirmed with a second field mix design verification. Field mix design verifications as specified in Section 402, Section 400, SOP 2 and GSP 21, are not precluded by the requirements specified herein.

D. Materials Warranty

See General Provisions 101 through 150.

828.2.01 Open-Graded Surface Mixtures

A. Requirements

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Open-Graded Surface Mixtures meet the following mixture control tolerances and mix design criteria:

Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing		
		9.5 mm OGFC	12.5 mm OGFC	12.5 mm PEM
3/4 in. (19 mm) sieve	±0.0		100*	100*
1/2 in. (12.5 mm) sieve	±6.1	100*	85-100	80-100
3/8 in. (9.5 mm) sieve	±5.6	85-100	55-75	35-60
No. 4 (4.75 mm) sieve	±5.7	20-40	15-25	10-25
No. 8 (2.36 mm) sieve	±4.6	8-15	5-15	5-10
No. 200 (75 µm) sieve	±2.0	4 - 6	3-5	2-4
Range for % AC	±0.4	6.25-7.25	6.00-7.25	5.75-7.00
Range for Mix Design Air Voids %		15 - 18	15 - 20	18 - 22
Class of stone (Section 800)		"A" only	"A" only	"A" only
Drain-down (AASHTO T305), %		<0.3	<0.3	<0.3
Abrasion Loss % (AASHT0 TP 108)		Report	Report	Report

* Mixture control tolerance is not applicable to this sieve for this mix.

1. In 12.5 mm and 9.5 mm OGFC and 12.5 mm PEM mixes, use only PG 76-22 asphalt cement (specified in Section 820).
2. Ensure all OGFC and PEM mixes include a stabilizing fiber of the type (cellulose or mineral) specified in the mix design and meeting the requirements of Section 819. Ensure the dosage rate is as specified in the mix design and sufficient to prevent drain-down exceeding the above tolerance.

B. Fabrication

See Section 400.

828.2.02 Stone Matrix Asphalt Mixtures

A. Requirements

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Stone Matrix Asphalt mixtures meet the following mixture control tolerances and mix design criteria:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		9.5 mm SMA	12.5 mm SMA	19 mm SMA
1 in. (25 mm) sieve	±0.0			100*
3/4 in. (19 mm) sieve	±7.0	100*	100*	90-100
1/2 in. (12.5 mm) sieve	±6.1	98-100**	85-100	44-70
3/8 in. (9.5 mm) sieve	±5.6	70-100	50-75	25-60
No. 4 (4.75 mm) sieve	±5.7	28-50	20-28	20-28
No. 8 (2.36) mm sieve	±4.6	15-30	16-24	15-22
No. 50 (300 µm) sieve	±3.8	10-17	10-20	10-20
No. 200 (75 µm) sieve	±2.0	8-13	8-12	8-12
Range for % AC (Note 1)	±0.4 (Note 2)	6.0-7.5	5.8-7.5	5.5-7.5
Design optimum air voids (%)		3.5 ±0.5	3.5 ±0.5	3.5 ±0.5
% aggregate voids filled with AC (VFA)		70-90	70-90	70-90
Tensile splitting ratio after freeze-thaw cycle GDT-66		≥ 80%	≥ 80%	≥ 80%
Drain-down (AASHTO T305), %		<0.3	<0.3	<0.3
Abrasion Loss % (AASHT0 TP 108)		Report	Report	Report

*Mixture control tolerance is not applicable to this sieve for this mix.

**Mixture control tolerance is ⍰ 2.0% for this sieve for 9.5 mm SMA mixes placed at spread rates greater than 135 lb./yd2. For 9.5 mm SMA mixes placed at spread rates of 135 lb./yd2 or less, 100 % passing is required on this sieve.

Note 1: Range for % AC is Original Optimum AC (OOAC) at 35 gyrations (Gyratory compactor) or 50 blows (Marshall compactor) prior to Corrected Optimum AC (COAC) calculation detailed in GDT 123 (Appendix A)

Note 2: Quality Acceptance Test Results for AC content that deviate > ± 0.3% from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

1. Ensure SMA mixtures are compacted at 35 gyrations with the Superpave Gyratory compactor or 50 blows with the Marshall compactor.

2. Ensure SMA mixtures contain mineral filler and fiber stabilizing additives and meet the following requirements:

    a. Asphalt cement grade PG-76-22 (specified in Section 820) is required in all SMA mixtures.

    b. Aggregates for SMA meet the requirements of Subsection 802.2.02.A.3.

    c. Use the approved mineral filler specified in the mix design and meeting the requirements of Section 883 Approved sources of mineral filler are listed in QPL 81.

    Use the approved Fiber Stabilizing Additive of the type (cellulose or mineral) specified in the mix design and meeting the requirements of Section 819. Approved sources of Fiber Stabilizing Additive are listed in QPL 77. The dosage rate will be as specified in the mix design and sufficient to prevent drain-down exceeding the above tolerance.

B. Fabrication

See Section 400.

828.2.03 Superpave Asphalt Concrete Mixtures

A. Requirements for Superpave Mixtures (except Parking Lot Mixtures)

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Superpave Asphalt Concrete mixtures meet the following mixture control tolerances and mix design limits:

1. Gradation limits for Superpave mixtures are as follows:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing				
		9.5 mm Superpave Type I	9.5 mm Superpave Type II	12.5 mm Superpave (Note 1)	19 mm Superpave	25 mm Superpave
1½ in. (37.5 mm)						100*
1 in. (25.0 mm)	± 8.0			100*	100*	90-100
3/4 in. (19.0 mm)	±8.0**	100*	100*	98-100****	90-100	55-89**
1/2 in. (12.5 mm)	±6.0***	98-100****	98-100****	90-100	60-89***	50-70
3/8 in. (9.5 mm)	±5.6	90-100	90-100	70-89	55-75	
No. 4 (4.75 mm)	±5.6	65-85	55-75			
No. 8 (2.36 mm)	±4.6	48-55	42-47	38-46	32-36	30-36
No. 200 (75 µm)	±2.0	5.0-7.0	5.0-7.0	4.5-7.0	4.0-6.0	3.5-6.0
Range for % AC (Note 3)	± 0.4 (Note 2)	5.50-7.25	5.25-7.00	5.00-6.25	4.25-5.50	4.00-5.25

*Mixture control tolerance is not applicable to this sieve for this mix.

**Ensure mixture control tolerance is within ⍰ 10.0% for this sieve for 25 mm Superpave.

***Ensure mixture control tolerance is within ⍰ 8.0% for this sieve for 19 mm Superpave.

****Ensure mixture control tolerance is within ⍰ 2.0% for this sieve for 12.5 mm and 9.5 mm mixes.

Note 1: Use PG 76-22 in 12.5 mm Superpave, excluding shoulder construction, on all projects with ADT greater than 25,000 as detailed in the Contract Pay Item.

Note 2: Quality Acceptance Test Results for AC content deviating > ± 0.3 % from the approved Job Mix Formula (JMF) consistently over three Lots may subject the mix to a revised AC content on the project JMF at the discretion of the State Materials Engineer based on statistical trend.

Note 3: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

2. Volumetric limits are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity (Gmm) at design gyrations, (Ndes)	All	96%
% Gmm at the initial number of gyrations, Ni	All	91.5% maximum
	9.5 mm Type I	Min. 72; Max. 80
	9.5 Type II and 12.5 mm	Min. 72; Max. 76
% voids filled with asphalt (VFA) at Ndes	19 mm	Min. 71; Max 76
	25 mm	Min. 69; Max 76
Fines to effective asphalt binder ratio (F/Pbe)	9.5 mm Type I	0.6 to 1.4
	All other types	0.8 to 1.6
Minimum Film Thickness (microns)	All	> 7.00
Minimum % Voids in Mineral Aggregate (VMA) Note: VMA shall be calculated using the effective specific gravity of the aggregate (Gse). See SOP-2SP.	25 mm	13.0
	19 mm	14.0
	12.5 mm	15.0
	9.5 Type I	16.0
	9.5 Type II	16.0

B. Requirements for Superpave Parking Lot Mixes (NOT FOR STANDARD HIGHWAY/STREET PAVING)

1. Surface layers for parking facilities:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		4.75 mm Mix	9.5 mm Superpave Type I	9.5 mm Superpave Type II
1 in. (25.0 mm) sieve	±8.0			
3/4 in. (19.0 mm) sieve	±8.0**		100*	100*
1/2 in. (12.5 mm) sieve	±6.0	100*	98-100****	98-100****
3/8 in. (9.5 mm) sieve	±5.6	90-100	90-100	90-100

No. 4 (4.75 mm) sieve	±5.6	75-95	65-85	55-75
No. 8 (2.36 mm) sieve	±4.6	60-65	48-55	42-47
No. 50 (300 µm) sieve	+3.8	20-50		
No. 200 (75 µm) sieve	±2.0	4-12	5.0-7.0	5.0-7.0
Range for Total AC	+ 0.4	6.00 - 7.50	5.50 - 7.25	5.25 - 7.00

2. Subsurface layers for parking facilities:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		12.5 mm Superpave	19 mm Superpave	25 mm Superpave
				100*
1 in. (25.0 mm) sieve	⍰ 8.0	100*	100*	90-100
3/4 in. (19.0 mm) sieve	⍰8.0**	98-100****	90-100	55-89**
1/2 in. (12.5 mm) sieve	⍰6.0***	90-100	60-89***	50-70
3/8 in. (9.5 mm) sieve	⍰5.6	70-89	55-75	
No. 8 (2.36 mm) sieve	⍰4.6	38-46	32-36	30-36
No. 200 (75 µm) sieve	⍰2.0	4.5-7.0	4.0-6.0	3.5-6.0
Range for Total AC	+ 0.4	5.00 - 6.25	4.25 - 5.50	4.00 - 5.25

All * and notes apply to both 828.2.03.B.1 and 828.2.03.B.2.

*Mixture control tolerance is not applicable to this sieve for this mix.

**Ensure mixture control tolerance is within ±10.0% for this sieve for 25 mm Superpave mixes.

*** Ensure mixture control tolerance is within ±8.0% for this sieve for 19 mm Superpave mixes.

****Ensure mixture control tolerance is within ±2.0% for this sieve for 12.5 mm and 9.5 mm Superpave mixes.

Note 1: Quality Acceptance Test Results for AC content deviating > ± 0.3 % from the approved Job Mix Formula (JMF) consistently over three Lots may subject the mix to a revised AC content on the project JMF at the discretion of the State Materials Engineer based on statistical trend.

Note 2: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

3. Volumetric limits for parking facilities are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity (Gmm) at design gyrations, Ndes)	All	96%
% Gmm at the initial number of gyrations, Ni	All	91.5 % maximum

% voids filled with asphalt (VFA) at Ndes	9.5 mm Type I	Min. 72; Max. 80
	9.5 Type II and 12.5 mm	Min. 72; Max. 78
	19 and 25 mm	Min. 71; Max 76
Fines to effective asphalt binder ration (F/Pbe)	9.5 mm Type I	0.6 to 1.4
	All other types	0.8 to 1.6
Minimum Film Thickness (microns)	4.75 mm	> 6.00
	All other types	> 7.00
Minimum % Voids in Mineral Aggregate (VMA) Note: VMA shall be calculated using the effective specific gravity of the aggregate (Gse). See SOP-2	25 mm	13.0
	19 mm	14.0
	12.5 mm	15.0
	9.5 mm Types I, II	16.0

C. Fabrication

See Section 400.828.2.04 Fine-Graded Mixtures

A. Requirements

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure that fine-graded mixtures meet the following mixture control tolerances and design limits:

ASPHALTIC CONCRETE - 4.75 mm Mix		
Sieve Size	**Mixture Control Tolerance**	**Design Gradation Limits, % passing**
1/2 in. (12.5 mm) sieve*	±0.0	100*
3/8 in. (9.5 mm) sieve	±5.6	90-100
No. 4 (4.75 mm) sieve	±5.7	75-95
No. 8 (2.36 mm) sieve	±4.6	60-65
No. 50 (300 □m) sieve	±3.8	20-50
No. 200 (75 □m) sieve	±2.0	4-12
Range for % AC	±0.4	6.00 – 7.50
Design optimum air voids (%)		4.0 – 7.0
% Aggregate voids filled with AC		60 - 80
Minimum Film Thickness (microns)		> 6.00

* Mixture control tolerance is not applicable to this sieve for this mix.

Note 1: Quality Acceptance Test Results for AC content deviating > ± 0.3 % from the approved Job Mix Formula (JMF) consistently over three Lots may subject the mix to a revised AC content on the project JMF at the discretion of the State Materials Engineer based on statistical trend.

Note 2: Range for % AC is Original Optimum AC (OOAC) at 50 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

B. Fabrication

See Section 400.

C. Acceptance

See Subsection 106.3 and Section 400. Ensure individual test results meet the Mixture Control Tolerances listed in Subsections 828.2, 828.2.01, 828.2.02, 828.2.03, 828.2.04, whichever applies.

D. Materials Warranty

See General Provisions 101 through 150.

END OF SECTION 828

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Section 815 Graded Aggregate

815.1 General Description

This section includes the requirements for material to be used for base, subbase, or shoulder course material, and includes graded aggregate, unconsolidated limerock base, and crushed concrete base.

815.1.01 Related References

A. Standard Specifications

Section 800—Coarse Aggregate

B. Referenced Documents

AASHTO T 27
ASTM C 295
ASTM D 3042
FL DOT Method FM5-515
SOP–1
GDT 63

815.2 Materials

815.2.01 Graded Aggregate

A. Requirements

1. Type

   Use graded aggregate base, subbase, or shoulder course material of uniform quality.

   a. Obtain the graded aggregate from an approved source or deposit that will yield a satisfactory mixture meeting all requirements of this Specification.
   b. Use material that is crushed or processed as a part of the mining operations, or, mix two grades of material so that when combined in the central mix plant, the mixture meets the specifications.

2. Retained on the No. 10 (2 mm) sieve

   Ensure that the material retained on the No. 10 (2mm) sieve is Class A or B aggregate that meets the requirements of Section 800.
3. Passing the No. 10 (2 mm) sieve

Ensure that any material passing the No. 10 (2 mm) sieve is relatively free of detrimental substances, such as soil overburden, decomposed rock, and/or swelling silts.

4. Stabilized Mixtures

Ensure that mixtures to be stabilized react satisfactorily when mixed with Portland cement. The Engineer will specify the percentage of Portland cement to use.

5. Gradation

Grade the graded aggregate base, subbase, or shoulder material as follows:

Sieve Size	Percent Passing By Weight
Group I Aggregates	
2 in (50 mm)	100
1-1/2 in (37.5 mm)	97-100
3/4 in (19.0 mm)	60-95
No. 10 (2 mm)	25-50 (Note 1, 2 and 3)
No. 60 (250 µm)	10-35
No. 200 (75 µm)	7-15
Group II Aggregates	
2 in (50 mm)	100
1-1/2 in (37.5 mm)	97-100
3/4 in (19.0 mm)	60-90
No. 10 (2 mm)	25-45 (Note 2 and 4)
No. 60 (250 µm)	5-30
No. 200 (75 µm)	4-11
NOTE 1: Group I aggregates having less than 37% passing the No. 10 (2 mm) sieve, shall have at least 9% passing the No. 200 (75µm) sieve.	
NOTE 2: For graded aggregate stabilized with Portland Cement, 30-50 percent by weight shall pass the No. 10 (2 mm) sieve. All other requirements remain the same.	
NOTE 3: Material passing the No.10 (2mm) sieve shall have a sand equivalent of at least 20 for Group I aggregates.	
NOTE 4: Material passing the No. 10 (2 mm) sieve shall have a sand equivalent of at least 28 for Group II aggregates. Sand Equivalent values as low as 20 will be acceptable provided they are attributed exclusively to rock flour and the percent passing the No. 10 (2 mm) sieve does not exceed 40.	

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Gradation	AASHTO T 27
Sand Equivalent	GDT 63

D. Materials Warranty

General Provisions 101 through 150.

815.2.02 Unconsolidated Limerock Base

A. Requirements

1. Type

Use limerock base, subbase, or shoulder course material of uniform quality.

a. To ensure uniform quality, the Department may restrict approved sources to specific mining areas, mining processes at a specific mining site, or both.
b. Use a limerock base that yields a mixture to meet these Specifications.
c. Use material that is crushed or processed as a part of the mining operations, or mix two grades of material so that when combined in the central mix plant the mixture meets the specifications.
d. Use limerock base, subbase, or shoulder material that has the following characteristics:

Limerock Bearing Ratio	At least 100
Deleterious Substances	Do not allow chert or other extremely hard pieces that will not pass the 2 in (50 mm) sieve. Do not allow clay, sand, organics, or other materials in quantities that may damage bonding, finishing, or strength. All material passing the No. 40 (425 µm) sieve shall be non-plastic.
Carbonate content (magnesium or calcium)	At least 90%

2. Gradation

Grade the limerock base so at least 97 percent by weight passes the 3-1/2 in (90 mm) sieve.

a. Grade the material uniformly to dust. The fine portion passing the No.10 (2mm) sieve shall all be dust of fracture.
b. Crush or break the limerock base, if necessary tomeet size requirements before placing the material on the road.
c. Ensure that materials having soundness losses of 20% or less, comply with the following gradation requirements:

Gradation Requirements

Sieve Size	Percent Passing By Weight
2 in (50 mm)	100
1-1/2 in (37.5 mm)	97-100
3/4 in (19.0 mm)	60-95
No. 10 (2 mm)	25-45
No. 60 (250 µm)	10-30
No. 200 (75 µm)	7-20

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Gradation	AASHTO T 27
Limerock Bearing Ratio	FL DOT Method FM5-515
Petrographic Analysis	ASTM C 295
Total Carbonates (Insoluble Residue)	ASTM D 3042

D. Materials Warranty

General Provisions 101 through 150.

815.2.03 Crushed Concrete Base

A. Requirements

1. Sources

   Obtain sources of crushed concrete materials approved by the Office of Materials and Research. The criteria for approval will be as outlined in Standard Operating Procedure No. 1, "Monitoring the Quality of Coarse and Fine Aggregates" except that the raw material will be recyclable concrete as specified herein rather than a geological deposit of aggregate.

2. Type

Use crushed concrete derived exclusively from Portland cement concrete pavement or structural concrete as a base, subbase, or shoulder course.

Ensure that the material does not contain delivery unit washout material.

3. Gradation

Ensure that the finished product meets the quality and gradation requirements of Subsection 815.2.01for Group II aggregates, except that the aggregate will be recycled concrete.

Ensure that the finished product is free of foreign materials such as asphaltic concrete, steel reinforcement, clay balls, soils, epoxy expansion material, and miscellaneous paving materials.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Gradation	AASHTO T 27
Sand Equivalent	GDT 63

D. Materials Warranty

General Provisions 101 through 150.

815.2.04 Inorganic Mineral Ash

A. Requirements

Inorganic mineral ash base, subbase, or shoulder course material is restricted to use on local roads only and shall not be used on Interstates or State Highway System routes.

1. Sources

Obtain inorganic mineral ash from an approved source or deposit that will yield a satisfactory mixture meeting all requirements of this Specification after it has been processed or crushed as a part of the mining operations.

The inorganic mineral ash shall be of uniform quality throughout. To ensure uniformity in quality, approved sources may be restricted to specific mining areas and/or mining processes at a specific mining site.

2. Type

Ensure inorganic mineral ash base, subbase, or shoulder course material conforms to the following types:

a. Class C Fly Ash: Class C fly ash is the finely divided residue that results from the combustion of ground or powdered coal and is transported from the boiler by flue gases.
b. Circulating Fluidized Bed Combustor Ash (CFBC Ash): CFBC ash is the residue that results from the combustion of petroleum coke with the injection of lime or crushed limestone directly into the boiler for sulfur removal and is transported from the boiler by flue gases.

   The CFBC ash shall have a minimum Available Lime Index of 5 percent.

3. Gradation

Use inorganic mineral ash that has at least 97 percent (by weight) of the material passing a 3 ½-inch (90 mm) sieve and is graded uniformly down to dust.

Perform all crushing or breaking up necessary to meet the size requirements before the material is placed on the road.

A grading range on material being shipped to Department Projects may be established as a guide to verify consistency of the product.

Do not use inorganic mineral ash that contains extremely hard pieces of material retained on the 2-inch (50 mm) sieve when they are considered deleterious to the clipping and finishing of the base material when placed on the roadway.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Sieve Analysis	AASHTO T 27
Class C Fly Ash	AASHTO M 295
Available Lime Index	ASTM C 25

D. Materials Warranty

General Provisions 101 through 150.

END OF SECTION 815

DIVISION 9 - FAA – General Construction Items

Item C-100 Contractor Quality Control Program (CQCP)

100-1 General. Quality is more than test results. Quality is the combination of proper materials, testing, workmanship, equipment, inspection, and documentation of the project. Establishing and maintaining a culture of quality is key to achieving a quality project. The Contractor shall establish, provide, and maintain an effective Contractor Quality Control Program (CQCP) that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified here and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The Contractor shall establish a CQCP that will:

a. Provide qualified personnel to develop and implement the CQCP.

b. Provide for the production of acceptable quality materials.

c. Provide sufficient information to assure that the specification requirements can be met.

d. Document the CQCP process.

The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the CQCP has been reviewed and approved by the Resident Project Representative (RPR). No partial payment will be made for materials subject to specific quality control (QC) requirements until the CQCP has been reviewed and approved.

The QC requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the quality assurance (QA) testing requirements. QA testing requirements are the responsibility of the RPR or Contractor as specified in the specifications.

A Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Resident Project Representative (RPR), Contractor, subcontractors, testing laboratories, and Owner's representative must be held prior to start of construction. The QC/QA workshop will be facilitated by the Contractor. The Contractor shall coordinate with the Airport and the RPR on time and location of the QC/QA workshop. Items to be addressed, at a minimum, will include:

a. Review of the CQCP including submittals, QC Testing, Action & Suspension Limits for Production, Corrective Action Plans, Distribution of QC reports, and Control Charts.

b. Discussion of the QA program.

c. Discussion of the QC and QA Organization and authority including coordination and information exchange between QC and QA.

d. Establish regular meetings to discuss control of materials, methods and testing.

e. Establishment of the overall QC culture.

100-2 Description of program.

a. General description. The Contractor shall establish a CQCP to perform QC inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. The CQCP shall ensure conformance to applicable specifications and plans with respect to materials, off-site fabrication, workmanship, construction, finish, and functional performance. The CQCP shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of QC.

b. Contractor Quality Control Program (CQCP). The Contractor shall describe the CQCP in a written document that shall be reviewed and approved by the RPR prior to the start of any production, construction, or off-site fabrication. The written CQCP shall be submitted to the RPR for review and approval at least 10 calendar days before the CQCP Workshop. The Contractor's CQCP and QC testing laboratory must be approved in writing by the RPR prior to the Notice to Proceed (NTP).

The CQCP shall be organized to address, as a minimum, the following:

1. QC organization and resumes of key staff
2. Project progress schedule
3. Submittals schedule
4. Inspection requirements
5. QC testing plan
6. Documentation of QC activities and distribution of QC reports
7. Requirements for corrective action when QC and/or QA acceptance criteria are not met
8. Material quality and construction means and methods. Address all elements applicable to the project that affect the quality of the pavement structure including subgrade, subbase, base, and surface course. Some elements that must be addressed include, but is not limited to mix design, aggregate grading, stockpile management, mixing and transporting, placing and finishing, quality control testing and inspection, smoothness, laydown plan, equipment, and temperature management plan.

The Contractor must add any additional elements to the CQCP that is necessary to adequately control all production and/or construction processes required by this contract.

100-3 CQCP organization. The CQCP shall be implemented by the establishment of a QC organization. An organizational chart shall be developed to show all QC personnel, their authority, and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all QC staff by name and function, and shall indicate the total staff required to implement all elements of the CQCP, including inspection and testing for each item of work. If necessary, different technicians can be used for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the CQCP, the personnel assigned shall be subject to the qualification requirements of paragraphs 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The QC organization shall, as a minimum, consist of the following personnel:

a. Program Administrator. The Contractor Quality Control Program Administrator (CQCPA) must be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The CQCPA must have a minimum of five (5) years of experience in QC pavement construction with prior QC experience on a project of comparable size and scope as the contract.

Included in the five (5) years of paving/QC experience, the CQCPA must meet at least one of the following requirements:

(1) Professional Engineer with one (1) year of airport paving experience.

(2) Engineer-in-training with two (2) years of airport paving experience.

(3) National Institute for Certification in Engineering Technologies (NICET) Civil Engineering Technology Level IV with three (3) years of airport paving experience.

(4) An individual with four (4) years of airport paving experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

The CQCPA must have full authority to institute any and all actions necessary for the successful implementation of the CQCP to ensure compliance with the contract plans and technical specifications. The CQCPA authority must include the ability to immediately stop production until materials and/or processes are in compliance with contract specifications. The CQCPA must report directly to a principal officer of the construction firm. The CQCPA may supervise the Quality Control Program on more than one project provided that person can be at the job site within two (2) hours after being notified of a problem.

b. QC technicians. A sufficient number of QC technicians necessary to adequately implement the CQCP must be provided. These personnel must be either Engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II in Civil Engineering Technology or higher, and shall have a minimum of two (2) years of experience in their area of expertise.

The QC technicians must report directly to the CQCPA and shall perform the following functions:

(1) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by paragraph 100-6.

(2) Performance of all QC tests as required by the technical specifications and paragraph100-8.

(3) Performance of tests for the RPR when required by the technical specifications.

Certification at an equivalent level of qualification and experience by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

c. Staffing levels. The Contractor shall provide sufficient qualified QC personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The CQCP shall state where different technicians will be required for different work elements.

100-4 Project progress schedule. Critical QC activities must be shown on the project schedule as required by Section 80, paragraph 80-03, *Execution and Progress*.

100-5 Submittals schedule. The Contractor shall submit a detailed listing of all submittals (for example, mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include as a minimum:

a. Specification item number

b. Item description

c. Description of submittal

d. Specification paragraph requiring submittal

e. Scheduled date of submittal

100-6 Inspection requirements. QC inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by paragraph 100-9.

Inspections shall be performed as needed to ensure continuing compliance with contract requirements until completion of the particular feature of work. Inspections shall include the following minimum requirements:

a. During plant operation for material production, QC test results and periodic inspections shall be used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The CQCP shall detail how these and other QC functions will be accomplished and used.

b. During field operations, QC test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The CQCP shall document how these and other QC functions will be accomplished and used.

100-7 Contractor QC testing facility.

a. For projects that include Item P-401, Item P-403, and Item P-404, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM D3666, *Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials*:

- 8.1.3 Equipment Calibration and Checks;
- 8.1.9 Equipment Calibration, Standardization, and Check Records;
- 8.1.12 Test Methods and Procedures

b. For projects that include P-501, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM C1077, Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation:

- 7 Test Methods and Procedures
- 8 Facilities, Equipment, and Supplemental Procedures

100-8 QC testing plan. As a part of the overall CQCP, the Contractor shall implement a QC testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification Item, as well as any additional QC tests that the Contractor deems necessary to adequately control production and/or construction processes.

The QC testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

a. Specification item number (e.g., P-401)

b. Item description (e.g., Hot Mix Asphalt Pavements)

c. Test type (e.g., gradation, grade, asphalt content)

d. Test standard (e.g., ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)

e. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated)

f. Responsibility (e.g., plant technician)

g. Control requirements (e.g., target, permissible deviations)

The QC testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. The RPR shall be provided the opportunity to witness QC sampling and testing.

All QC test results shall be documented by the Contractor as required by paragraph 100-9.

100-9 Documentation. The Contractor shall maintain current QC records of all inspections and tests performed. These records shall include factual evidence that the required QC inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the RPR daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCPA.

Contractor QC records required for the contract shall include, but are not necessarily limited to, the following records:

a. Daily inspection reports. Each Contractor QC technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These technician's daily reports shall provide factual evidence that continuous QC inspections have been performed and shall, as a minimum, include the following:

(1) Technical specification item number and description

(2) Compliance with approved submittals

(3) Proper storage of materials and equipment

(4) Proper operation of all equipment

(5) Adherence to plans and technical specifications

(6) Summary of any necessary corrective actions

(7) Safety inspection.

(8) Photographs and/or video

The daily inspection reports shall identify all QC inspections and QC tests conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible QC technician and the CQCPA. The RPR shall be provided at least one copy of each daily inspection report on the work day following the day of record. When QC inspection and test results are recorded and transmitted electronically, the results must be archived.

b. Daily test reports. The Contractor shall be responsible for establishing a system that will record all QC test results. Daily test reports shall document the following information:

(1) Technical specification item number and description
(2) Test designation
(3) Location
(4) Date of test
(5) Control requirements
(6) Test results
(7) Causes for rejection
(8) Recommended remedial actions
(9) Retests

Test results from each day's work period shall be submitted to the RPR prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical QC charts. When QC daily test results are recorded and transmitted electronically, the results must be archived.

100-10 Corrective action requirements. The CQCP shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the CQCP as a whole, and for individual items of work contained in the technical specifications.

The CQCP shall detail how the results of QC inspections and tests will be used for determining the need for corrective action and shall contain clear rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and use statistical QC charts for individual QC tests. The requirements for corrective action shall be linked to the control charts.

100-11 Inspection and/or observations by the RPR. All items of material and equipment are subject to inspection and/or observation by the RPR at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate QC system in conformance with the requirements detailed here and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to inspection and/or observation by the RPR at the site for the same purpose.

Inspection and/or observations by the RPR does not relieve the Contractor of performing QC inspections of either on-site or off-site Contractor's or subcontractor's work.

100-12 Noncompliance.

a. The Resident Project Representative (RPR) will provide written notice to the Contractor of any noncompliance with their CQCP. After receipt of such notice, the Contractor must take corrective action.

b. When QC activities do not comply with either the CQCP or the contract provisions or when the Contractor fails to properly operate and maintain an effective CQCP, and no effective corrective actions have been taken after notification of non-compliance, the RPR will recommend the Owner take the following actions:

(1) Order the Contractor to replace ineffective or unqualified QC personnel or subcontractors and/or

(2) Order the Contractor to stop operations until appropriate corrective actions are taken.

METHOD OF MEASUREMENT

100-13 Basis of measurement and payment. Contractor Quality Control Program (CQCP) is for the personnel, tests, facilities and documentation required to implement the CQCP. The CQCP shall be considered incidental and no separate payment shall be made.

BASIS OF PAYMENT

100-14 Payment will be made under:

Item C-100	Contractor Quality Control Program (CQCP), incidental to other work items

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.

National Institute for Certification in Engineering Technologies (NICET)

ASTM International (ASTM)

ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

END OF ITEM C-100

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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-901shall 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 (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) 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 (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) 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:

a. Installation, maintenance, and removal of construction entrance/exit will be measured per each.

b. Installation, maintenance, and removal of silt fence, Type C, will be measured by the linear foot.

c. Installation, maintenance, and removal of inlet sediment trap will be measured per each.

d. Installation, maintenance, and removal of Haybale Check Dam

e. Installation, maintenance, and removal of Outlet Protection, Type 3 Rip Rap (12”) will be measured by the cubic yard.

g. Installation, maintenance, and removal of filter ring, stone, will be measured by the cubic yard.

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 paid for under:

Item C-102-5.1a	Construction Entrance/Exit, including installation, maintenance and removal per each
Item C-102-5.1b	Silt Fence, Non-sensitive, including installation, maintenance and removal per linear feet
Item C-102-5.1c	Inlet Sediment Trap, including installation, maintenance, and removal per each

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

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.

Any mobilization costs over 10% of the project total must be documented and will be paid on an as-incurred basis. Any non-incurred costs will not be paid.

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. An Engineer/RPR field office is not required.

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 (Including Staging area preparation and repair to pre-construction conditions) 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

DIVISION 10 - FAA – Sitework

Item P-101 Preparation/Removal of Existing Pavements

DESCRIPTION

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

EQUIPMENT AND MATERIALS

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

CONSTRUCTION

101-3.1 Removal of existing pavement.

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

a. Concrete pavement removal. Full depth saw cuts shall be made perpendicular to the slab surface. The Contractor shall saw through the full depth of the slab including any dowels at the joint, removing the pavement and installing new dowels as shown on the plans and per the specifications. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods which will not cause distress in the pavement which is to remain in place. If the material is to be wasted on the airport site, it shall be reduced to a maximum size designated by the Engineer. Concrete slabs that are damaged by under breaking shall be repaired or removed and replaced as directed by the RPR.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Spall and underbreak repair shall be in accordance with the plans. Any underlaying material that is to remain in place, shall be recompacted and/or replaced as shown on the plans. Adjacent areas damaged during repair shall be repaired or replaced at the Contractor's expense.

b. Asphalt pavement removal. Asphalt pavement to be removed shall be cut to the full depth of the asphalt pavement around the perimeter of the area to be removed. If the material is to be wasted on the airport site, it shall be broken to a maximum size designated by the Engineer.

c. Repair or removal of Base, Subbase, and/or Subgrade. All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the RPR. Materials and methods of construction shall comply with the applicable sections of

these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense.

101-3.2 Preparation of joints and cracks prior to overlay/surface treatment. Remove all vegetation and debris from cracks to a minimum depth of 1 inch (25 mm). If extensive vegetation exists, treat the specific area with a concentrated solution of a water-based herbicide approved by the RPR. Fill all cracks greater than 1/4 inch (6 mm) wide) with a crack sealant per ASTM D6690. The crack sealant, preparation, and application shall be compatible with the surface treatment/overlay to be used. To minimize contamination of the asphalt with the crack sealant, underfill the crack sealant a minimum of 1/8 inch (3 mm), not to exceed ¼ inch (6 mm). Any excess joint or crack sealer shall be removed from the pavement surface.

Wider cracks (over 1-1/2 inch wide (38 mm)), along with soft or sunken spots, indicate that the pavement or the pavement base should be repaired or replaced as stated below.

Cracks and joints may be filled with a mixture of emulsified asphalt and aggregate. The aggregate shall consist of limestone, volcanic ash, sand, or other material that will cure to form a hard substance. The combined gradation shall be as shown in the following table.

Gradation

Sieve Size	Percent Passing
No. 4 (4.75 mm)	100
No. 8 (2.36 mm)	90-100
No. 16 (1.18 mm)	65-90
No. 30 (600 µm)	40-60
No. 50 (300 µm)	25-42
No. 100 (150 µm)	15-30
No. 200 (75 µm)	10-20

Up to 3% cement can be added to accelerate the set time. The mixture shall not contain more than 20% natural sand without approval in writing from the RPR.

The proportions of asphalt emulsion and aggregate shall be determined in the field and may be varied to facilitate construction requirements. Normally, these proportions will be approximately one part asphalt emulsion to five parts aggregate by volume. The material shall be poured or placed into the joints or cracks and compacted to form a voidless mass. The joint or crack shall be filled to within +0 to -1/8 inches (+0 to -3 mm) of the surface. Any material spilled outside the width of the joint shall be removed from the pavement surface prior to constructing the overlay. Where concrete overlays are to be constructed, only the excess joint material on the pavement surface and vegetation in the joints need to be removed.

101-3.3 Removal of Foreign Substances/contaminates prior to re-marking. Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the RPR in the field during construction.

Chemicals, high-pressure water, heater scarifier (asphaltic concrete only), or sandblasting may be used. If chemicals are used, they shall comply with the state's environmental protection regulations. Removal methods used shall not cause major damage to the pavement, or to any structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch (3 mm) deep. If it is deemed by the RPR that damage to the existing pavement is caused by operational error, such as permitting the application method to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the RPR.

Removal of foreign substances shall not proceed until approved by the RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement shoulders. All wastes shall be disposed of in areas indicated in this specification or shown on the plans.

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

a. Repair of concrete spalls in areas to be overlaid with asphalt. The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. The perimeter of the repair shall be saw cut a minimum of 2 inches (50 mm) outside the affected area and 2 inches (50 mm) deep. The deteriorated material shall be removed to a depth where the existing material is firm or cannot be easily removed with a geologist pick. The removed area shall be filled with asphalt mixture with aggregate sized appropriately for the depth of the patch. The material shall be compacted with equipment approved by the RPR until the material is dense and no movement or marks are visible. The material shall not be placed in lifts over 4 inches (100 mm) in depth. This method of repair applies only to pavement to be overlaid.

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

101-3.5 Cold milling. Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface. The milling machine or grinder shall operate without tearing or gouging the underlaying surface. The milling machine or grinder shall be equipped with grade and slope controls, and a positive means of dust control. All millings shall be removed and disposed in areas designated by the Engineer. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense.

a. Patching. The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cut. The RPR shall layout the area to be milled with a straightedge in increments of 1-foot (30 cm) widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall be repaired by the Contractor at the Contractor's Expense.

b. Profiling, grade correction, or surface correction. The milling machine shall have a minimum width of 7 feet and it shall be equipped with electronic grade control devices that will cut the surface to the grade specified. The tolerances shall be maintained within +0 inch and -1/4 inch (+0 mm and -6mm) of the specified grade. The machine must cut vertical edges and have a positive method of dust control. The machine must have the ability to remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed and disposed of in areas designated by the Engineer.

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

101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment. Existing asphalt pavements to be treated with a surface treatment shall be prepared as follows:

a. Patch asphalt pavement surfaces that have been softened by petroleum derivatives or have failed due to any other cause. Remove damaged pavement to the full depth of the damage and replace with new asphalt pavement similar to that of the existing pavement in accordance with paragraph 101-3.4b.

b. Repair joints and cracks in accordance with paragraph 101-3.2.

c. Remove oil or grease that has not penetrated the asphalt pavement by scrubbing with a detergent and washing thoroughly with clean water. After cleaning, treat these areas with an oil spot primer.

d. Clean pavement surface immediately prior to placing the surface treatment so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film.

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

101-3.8 Preparation of Joints in Rigid Pavement prior to resealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the joint and does not damage the joint.

101-3.8.1 Removal of Existing Joint Sealant. All existing joint sealants will be removed by plowing or use of hand tools. Any remaining sealant and or debris will be removed by use of wire brushes or other tools as necessary. Resaw joints removing no more than 1/16 inch (2 mm) from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry.

101-3.8.2 Cleaning prior to sealing. Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Allow sufficient time to dry out joints prior to sealing. Joint surfaces will be surface-dry prior to installation of sealant.

101-3.8.3 Joint sealant. Joint material and installation will be in accordance with **Item P-605.**

101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the cracks and does not damage the pavement.

101-3.9.1 Preparation of Crack. Widen crack with router **or** crack saw by removing a minimum of 1/16 inch (2 mm) from each side of crack. Immediately before sealing, cracks will be blown out with a hot air lance combined with oil and water-free compressed air.

101-3.9.2 Removal of Existing Crack Sealant. Existing sealants will be removed by routing. Following routing any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

101-3.9.3 Crack Sealant. Crack sealant material and installation will be in accordance with **Item P-605**.

101-3.9.4 Removal of Pipe and other Buried Structures.

a. Removal of Existing Pipe Material. Remove the types of pipe as indicated on the plans. The pipe material shall be legally disposed of off-site in a timely manner following removal. Trenches shall be backfilled with material equal to or better in quality than adjacent embankment. Trenches under paved areas must be compacted to 95% of ASTM D698**.**

b. Removal of Inlets/Manholes. Where indicated on the plans or as directed by the RPR, inlets and/or manholes shall be removed and legally disposed of off-site in a timely fashion after removal. Excavations after removal shall be backfilled with material equal or better in quality than adjacent embankment. When under paved areas must be compacted to 95% of ASTM D698, when outside of paved areas must be compacted to 95% of ASTM D698.

METHOD OF MEASUREMENT

101-4.1 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards (square meters) removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal. Dowel bar installation shall be incidental to pavement removal.

101-4.2 Joint and crack repair. The unit of measurement for joint and crack repair shall be the linear foot of joint, and shall include the material and installation of the joint and crack sealant.

101-4.3 Removal of Foreign Substances/contaminates. The unit of measurement for foreign Substances/contaminates removal shall be the square foot.

101-4.4 Spalled and failed asphalt pavement repair. The unit of measure for failed asphalt pavement repair shall be square foot.

101-4.5 Concrete Spall Repair. The unit of measure for concrete spall repair shall be the number of square feet. The location and average depth of the patch shall be determined and agreed upon by the RPR and the Contractor.

101-4.6 Cold milling. The unit of measure for cold milling shall be per square yard. The location and average depth of the cold milling shall be as shown on the plans. If the initial cut does not correct the condition, the Contractor shall re-mill the area and will be paid for the total depth of milling.

101-4.7 Removal of Pipe and other Buried Structures. The unit of measurement for removal of pipe and other buried structures will be made at the contract unit price for each completed and accepted item. This price shall be full compensation for all labor, equipment, tools, and incidentals necessary to complete this item in accordance with paragraph 101-3.9.4.

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P 101-5.1	Pavement Removal (including aggregate base) per square yard
Item P 101-5.2	Removal of Existing 30” CMP (including disposal) per linear foot
Item P 101-5.3	Spalled and Failed Asphalt Pavement Repair per square yard
Item P-101-5.4	Surface Preparation and Cleaning, including herbicide and soil sterilant per square yard
Item P-101-5.5	Sawed Joints in Existing Asphalt Pavement per linear foot
Item P-101-5.6	Transitional Milling, 0-2” 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.

Advisory Circulars (AC)

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

ASTM International (ASTM)

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

END OF ITEM P-101

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 (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) 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, unless excessive rock is encountered during site excavation. In such an event, the Engineer shall make a determination on the allowance of blasting.

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.

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 (300 mm) 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 as designated by the Engineer. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard. 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 directed 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 **as designated by the Airport Sponsor or Engineer**. All existing foundations shall be excavated at least 2 feet (60 cm) 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.

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 shall 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. 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 (150 mm) 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 (300 mm) 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 (300 mm) 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 (150 mm) nor more than 12 inches (300 mm) 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 and 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 **3,000** square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) 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 **100%** 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 D1556. 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 (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) 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 (60 cm) 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 (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price 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. Before start of embankment, 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 coverage 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 (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements 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 12 inches and to a density of not less than **100%** 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 **95%** 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 (19.0 mm) sieve, follow the methods in ASTM. Tests for moisture content and compaction will be taken at a minimum of **500** S.Y. 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 (75 mm), 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 (12 mm) when tested with a 12-foot (3.7-m) 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 (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.
- **b. Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) 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 (30 mm) 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.

METHOD OF MEASUREMENT

152-3.1 Measurement for payment specified by the cubic yard shall be computed by AutoCAD TIN Volume Surface Comparisons.

152-3.1 The quantity of unclassified excavation to be paid for shall be the number of cubic yards measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

152-3.2 The quantity of embankment in place shall be the number of cubic yards measured in its final position.

BASIS OF PAYMENT

152-4.1 Unclassified excavation payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.2 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.

Payment will be made under:

Item P-152-4.1	Unclassified Excavation per cubic yard
Item P-152-4.2	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 (600 kN-m/m^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 (2700 kN-m/m^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

Item P-153 Controlled Low-Strength Material (CLSM)

DESCRIPTION

153-1.1 This item shall consist of furnishing, transporting, and placing a controlled low-strength material (CLSM) as flowable backfill in trenches or at other locations shown on the plans or as directed by the Resident Project Representative (RPR).

MATERIALS

153-2.1 Materials.

a. Cement. Cement shall conform to the requirements of ASTM **C150** Type **I**.

b. Fly ash. Fly ash shall conform to ASTM C618, Class C or F.

c. Fine aggregate (sand). Fine aggregate shall conform to the requirements of ASTM C33 except for aggregate gradation. Any aggregate gradation which produces the specified performance characteristics of the CLSM and meets the following requirements, will be accepted.

Sieve Size	Percent Passing by weight
3/4 inch (19.0 mm)	100
No. 200 (75 µm)	0 - 12

d. 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.

MIX DESIGN

153-3.1 Proportions. The Contractor shall submit, to the RPR, a mix design including the proportions and source of aggregate, fly ash, cement, water, and approved admixtures. No CLSM mixture shall be produced for payment until the RPR has given written approval of the proportions. The proportions shall be prepared by a laboratory and shall remain in effect for the duration of the project. The proportions shall establish a single percentage or weight for aggregate, fly ash, cement, water, and any admixtures proposed. Laboratory costs are incidental to this item.

a. Compressive strength. CLSM shall be designed to achieve a 28-day compressive strength of 100 to 200 psi (690 to 1379 kPa) when tested in accordance with ASTM D4832, with no significant strength gain after 28 days.

b. Consistency. Design CLSM to achieve a consistency that will produce an approximate 8-inch (200 mm) diameter circular-type spread without segregation. CLSM consistency shall be determined per ASTM D6103.

CONSTRUCTION METHODS

153-4.1 Placement.

a. Placement. CLSM may be placed by any reasonable means from the mixing unit into the space to be filled. Agitation is required during transportation and waiting time. Placement shall be performed so structures or pipes are not displaced from their final position and intrusion of CLSM into unwanted areas is avoided. The material shall be brought up uniformly to the fill line shown on the plans or as directed by the RPR. Each placement of CLSM shall be as continuous an operation as possible. If CLSM is placed in more than one lift, the base lift shall be free of surface water and loose foreign material prior to placement of the next lift.

b. Contractor Quality Control. The Contractor shall collect all batch tickets to verify the CLSM delivered to the project conforms to the mix design. The Contractor shall verify daily that the CLSM is consistent with 153-3.1a and 153-3.1b. Adjustments shall be made as necessary to the proportions and materials as needed. The Contractor shall provide all batch tickets to the RPR.

c. Limitations of placement. CLSM shall not be placed on frozen ground. Mixing and placing may begin when the air or ground temperature is at least 35°F (2°C) and rising. Mixing and placement shall stop when the air temperature is 40°F (4°C) and falling or when the anticipated air or ground temperature will be 35°F (2°C) or less in the 24-hour period following proposed placement. At the time of placement, CLSM shall have a temperature of at least 40°F (4°C).

153-4.2 Curing and protection

a. Curing. The air in contact with the CLSM shall be maintained at temperatures above freezing for a minimum of 72 hours. If the CLSM is subjected to temperatures below 32°F (0°C), the material may be rejected by the RPR if damage to the material is observed.

b. Protection. The CLSM shall not be subject to loads and shall remain undisturbed by construction activities for a period of 48 hours or until a compressive strength of 15 psi (105 kPa) is obtained. The Contractor shall be responsible for providing evidence to the RPR that the material has reached the desired strength. Acceptable evidence shall be based upon compressive tests made in accordance with paragraph 153-3.1a.

153-4.3 Quality Assurance (QA) Acceptance. CLSM QA acceptance shall be based upon batch tickets provided by the Contractor to the RPR to confirm that the delivered material conforms to the mix design.

METHOD OF MEASUREMENT

153-5.1 Measurement.

No separate measurement for payment shall be made for controlled low strength material (CLSM). CLSM shall be considered necessary and incidental to the work of this Contract.

BASIS OF PAYMENT

153-6.1 Payment.

No payment will be made separately or directly for controlled low strength material (CLSM). CLSM shall be considered necessary and incidental to the work of this Contract.

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 C33	Standard Specification for Concrete Aggregates
ASTM C150	Standard Specification for Portland Cement
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D4832	Standard Test Method for Preparation and Testing of Controlled Low-Strength Material (CLSM) Test Cylinders
ASTM D6103	Flow Consistency of Controlled Low Strength Material (CLSM)

END OF ITEM P-153

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Item P-156 Cement Treated Subgrade

DESCRIPTION

156-1.1 This item shall consist of constructing one or more courses of a mixture of soil, stabilizer, and water in accordance with this specification, and in conformity with the lines, grades, thickness, and typical cross-sections shown on the plans.

MATERIALS

156-2.1 Cement. Cement shall conform to the requirements of ASTM C150, Type I, IA, II, or IIA or ASTM C595, Type IS, IL, IP, or IS(A).

156-2.2 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.

156-2.3 Soil. The soil for this work shall consist of on-site materials free of roots, sod, weeds, and stones larger than 2-1/2 inches (60 mm) and have a sulfate content of less than 0.3%.

COMPOSITION

156-3.1 Soil-cement mixture. Cement shall be added at an application rate of 3 percent of dry unit weight of soil.

156-3.2 Tolerances. At final compaction, the cement and water content for each course of subgrade treatment shall conform to the following tolerances:

Tolerances

Material/Properties	Target	Tolerance	Specifications
Cement	3 %	0 to +1%	% Total Dry Materials
Moisture Content	Optimum +2%	0 to +1%	ASTM D1557

WEATHER LIMITATIONS

156-4.1 Weather limitation. Do not construct subgrade when weather conditions detrimentally affect the quality of the materials. Do not apply cement unless the air temperature is at least 40°F (4°C) and rising. Do not apply cement to soils that are frozen or contain frost. Do not apply cement when conditions are too windy to allow even distribution of the cement to the subgrade. If the air temperature falls below 35°F (2°C), protect completed treated areas against freezing. Remove and replace any damaged portion of the completed treated area with new material in accordance with this specification.

EQUIPMENT

156-5.1 Equipment. All equipment necessary to grade, scarify, spread, mix and compact the material shall be provided. The Resident Project Representative (RPR) must approve the Contractor's proposed equipment prior to the start of the treatment.

CONSTRUCTION METHODS

156-6.1 General. This specification is to construct a subgrade consisting of a uniform cement mixture which shall be free from loose or segregated areas. The subgrade shall be of uniform density and moisture content, well mixed for its full depth and have a smooth surface suitable for placing subsequent courses. The Contractor shall be responsible for meeting the above requirements.

Prior to any treatment, the subgrade shall be constructed as specified in Item P-152, Excavation, Subgrade and Embankment, and shaped to conform to the typical sections, lines, and grades as shown on the plans.

The mixing machine must give visible indication at all times that it is cutting, pulverizing and mixing the material uniformly to the proper depth over the full width of the cut.

156-6.2 Application. Cement shall be uniformly spread only over an area where the initial mixing operations and compaction can be completed during the same workday. The cement shall not be applied when wind conditions are detrimental to proper application. A motor grader shall not be used to spread the lime. Adequate moisture shall be added to the cement/soil mixture to maintain the proper moisture content. Materials shall be handled, stored, and applied in accordance with all federal, state, and local requirements.

156-6.3 Mixing Procedure. The full depth of the treated subgrade shall be mixed with equipment as approved by the RPR. Cement shall not be left exposed for more than one (1) hour after distribution. Mixing and pulverization shall continue until the soil cement mixture contains no clods greater than 1-1/2 inches (38 mm) in size. Final moisture content of the mix shall be determined by the Contractor immediately prior to compaction in accordance with ASTM D2216 or ASTM D4959.

156-6.4 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. 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. Upon acceptance of the control strip 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.

156-6.5 Treatment Application and Depth Checks. The amount of cement applied shall be monitored by the Contractor to assure that no less than the amount of cement required by the mix design is applied. The depth of stabilization shall be measured by the Contractor no less than 2 tests per day of material placed; test shall be witnessed by the RPR. Measurements shall be made in test holes excavated to show the full depth of mixing.

156-6.6 Compaction. The moisture content shall be within the tolerance as specified in paragraph 156-3.2. The field density of the compacted mixture shall be at least 95% of the maximum density as specified in paragraph 156-6.10. Compaction of the soil/cement mixture shall begin within 30 minutes

after mixing the cement into the subgrade. All compaction operations shall be completed within 2 hours from the start of mixing.

Perform in-place density test immediately after completion of compaction to determine degree of compaction. If the material fails to meet the density requirements, compaction shall continue or the material shall be removed and replaced. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

156-6.7 Finishing and curing. After the final lift or course of treated subgrade has been compacted, it shall be brought to the required lines and grades in accordance with the typical sections. Finished portions of treated subgrade shall be protected to prevent equipment from marring, permanently deforming, or damaging completed work.

Not later than 24 hours after completion of final finishing, the surface shall be cured by application of a curing compound or other moisture retention methods as approved by the RPR.

Sufficient protection from freezing shall be provided for at least 7 days after its construction or as approved by the RPR.

156-6.8 Maintenance. The Contractor shall maintain the entire treated subgrade in good condition from the start of work until all the work has been completed, cured, and accepted by the RPR. 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 meets all specification requirements. The cost shall be incidental to this item.

156-6.9 Surface tolerance. 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 (75 mm), 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 (12 mm) when tested with a 12-foot (3.7-m) 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 (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Grade. The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

156-6.10 Acceptance sampling and testing. Aggregate base course shall be accepted for density and thickness on an area basis. Testing frequency shall be a minimum of one (1) compaction and thickness test per 1000 square yards of stabilized subgrade, but not less than four (4) tests per day of production. Sampling locations will be determined on a random basis per ASTM D3665.

a. Density. All 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 field density of the compacted mixture shall be at least 95% of the maximum density as determined by ASTM D558. The in-place field density shall be determined in accordance with ASTM D1556. The in-place moisture content shall be determined in accordance with ASTM D2216. If the material fails to meet the density requirements, compaction shall continue or the material shall be

removed and replaced. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

b. Thickness. 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 sublot. Where the thickness is deficient by more than 1/2-inch (12 mm), the material shall be removed to full depth and replaced, at Contractor's expense.

METHOD OF MEASUREMENT

156-7.1 The amount of cement treated subgrade shall be based on the number of square yards complete and accepted.

BASIS OF PAYMENT

156-8.1 [Payment for placement shall be made at the contract unit price per square yard (m) for the cement treated subgrade for the thickness specified. The price shall be full compensation for all preparation, delivering, placing and mixing these materials, and all labor, equipment, tools and incidentals necessary to complete this item.

Payment will be made under:

Item P 156-8.1	Cement treated subgrade 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 C150	Standard Specification for Portland Cement
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D558	Standard Test Methods for Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures
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 (2,700 kN-m/m^3))
ASTM D1663	Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders
ASTM D2216	Test Methods for Laboratory Determination of Water (Moisture) Soil and Rock by Mass

ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils
ASTM D4959	Standard Test Method for Determination of Water Content of Soil by Direct Heating
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

END OF ITEM P-156

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DIVISION 11 - FAA – Base Courses

Item P-220 Cement Treated Soil Base Course

DESCRIPTION

220-1.1 This item shall consist of constructing a base course by uniformly mixing soil, cement, and water. The mixed material shall be spread, shaped, and compacted in accordance with these specifications and in conformity to the dimensions and typical cross-section shown on the plans. Tests shall be required for each approved soil included within the treated layer.

Runway, taxiway, or apron pavements shall be built in a series of parallel lanes using a plan that reduces the number of longitudinal and transverse joints to a minimum.

MATERIALS

220-2.1 Cement. Cement shall conform to the requirements of ASTM C150, Type I, IA, II, or IIA or ASTM C595, Type IS, IS(A), IP or IL.

220-2.2 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.

220-2.3 Soil. The soil for this work shall consist of on-site materials and shall be free of roots, sod, weeds, and stones larger than 2-1/2 inches (60 mm) with a sulfate content of less than 0.3%.

220-2.4 Asphalt material. The types, grades, controlling specifications, and application temperatures for the asphalt materials used for curing the soil-cement shall be as detailed in the plans.

MIX DESIGN

220-3.1 Proportions. Before the start of base course construction, tests shall be made on the soil or soil-aggregate material to be stabilized to determine the quantity of cement required for the mix design.

Test specimens containing various amounts of cement shall be compacted per ASTM D558, and the optimum moisture determined for each test specimen. Samples at the optimum moisture shall be subjected to the wet-dry and the freeze-thaw test in accordance with ASTM D559 and ASTM D560, respectively.

Cement shall be added at an application rate as determined by the Engineer.

Add cement until a minimum California Bearing Ration (CBR) of 100 or a 7-day compressive strength of 300 to 800 psi (2068 to 5516 kPa) per ASTM C1633 is achieved.

CONSTRUCTION METHODS

220-4.1 Control Strip. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the Resident Project Representative (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 (300 mm) 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.

220-4.2 Weather limitations. The material shall not be mixed or placed while the atmospheric temperature is below 40°F (4°C) or when conditions indicate that the temperature may fall below 40°F (4°C) within 24 hours, or when the weather is foggy or rainy, or to soils that are frozen or contain frost, or when the underlying material is frozen.

220-4.3 Maintenance. The material 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.

220-4.4 Equipment. The course may be constructed with any equipment that will meet the requirements for soil pulverization, cement application, mixing, water application, incorporation of materials, compaction, finishing, and curing specified here.

220-4.5 Preparation. The area to be stabilized shall be graded and shaped to conform to the lines, grades and cross-section shown on the plans. Any soft or yielding areas in the subgrade shall be removed and replaced with acceptable soil and compacted to the specified density.

220-4.6 Pulverization. After completion of moist-mixing, the soil for the base course shall be pulverized so that 100% by dry weight passes a 1-inch (25.0 mm) sieve and a minimum of 80% passes a No. 4 (4.75 mm) sieve.

220-4.7 Cement application, mixing, and finishing. Mixing of the soil, cement, and water shall be accomplished by the mixed-in-place method. Shape pulverized material to the cross-section indicated. Cement shall be applied so that when uniformly mixed with the soil, the specified cement content is obtained, and a sufficient quantity of cement-treated soil is produced to construct a compacted cement-treated course conforming to the lines, grades, and cross-section indicated. Immediately after the cement has been distributed, it shall be mixed with the soil. The cement shall not be mixed below the required depth. Continue mixing until the cement has been sufficiently blended with the soil to prevent the formation of cement balls when water is applied. Determine moisture content of the mixture immediately after completion of mixing of the soil and cement. Provide water supply and pressure distributing equipment that will permit the application within three (3) hours of all mixing water on the section being processed. Incorporate water in the mix so that concentration of water near the surface does not occur. After all mixing water has been applied, continue mixing until the water is uniformly distributed throughout the full depth of the mixture. Do not apply cement if the soil moisture content

exceeds the optimum moisture content specified for the cement-treated mixture. After mixing is complete, the proportions of the mixture shall be in accordance with the approved mix design.

220-4.8 Compaction. Compaction of the course shall begin within 30 minutes after mixing the cement into the subgrade. All compaction operations shall be completed within 2 hours from the start of mixing.

The field density of the compacted mixture shall be at least 98% of the maximum density as determined by ASTM D558. The in-place moisture content shall be determined in accordance with ASTM D2216. The moisture content of the mixture at the start of compaction shall be within ±2 percentage points of the optimum moisture content. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

220-4.9 Finishing and curing. After the final lift or course of treated subgrade has been compacted, it shall be brought to the required lines and grades in accordance with the typical sections.

Finished portions of treated subgrade shall be protected to prevent equipment from marring, permanently deforming, or damaging completed work.

Not later than 24 hours after completion of final finishing, the surface shall be cured by application of an emulsified asphalt uniformly applied to the surface of the completed base course at the rate of approximately 0.2 gallons per square yard (0.91 l/m^2) or being kept continuously moist for a period of 7 days with a fog-type water spray. The curing material shall be maintained and applied as needed by the Contractor during the 7-day protection period.

Sufficient protection from freezing shall be provided for at least 7 days after its construction or as approved by the RPR.

220-4.10 Construction limitations. At the end of each day's construction and/or when operations after application of the cement are interrupted for more than 30 minutes, a straight transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face.

Completed portions may be opened to light traffic, if approved by the RPR, and provided the curing is not impaired.

220-4.11 Surface tolerance. 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 (75 mm), 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 +/- 3/8 inch (9 mm) when tested with a 12-foot (3.7-m) 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 (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Grade. The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

220-4.12 Acceptance sampling and testing. Cement Treated Solid Base course shall be accepted for density and thickness on an area basis. Two test will be made for density and thickness for each 1200

square yards (1000 square meters), but not less than four (4) tests per day of production. 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 D1556 or 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. The in-place moisture content shall be determined in accordance with ASTM D2216. Perform in-place density test immediately after completion of compaction to determine degree of compaction. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted at the Contractor's expense 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 or cores at least 3 inches (75 mm) in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each sublot. Where the thickness is deficient by more than 1/2-inch (12 mm), the material shall be removed to full depth and replaced, at Contractor's expense.

METHOD OF MEASUREMENT

220-5.1 The quantity of cement treated soil base course shall be the number of square yards (square meter) of completed and accepted base course.

220-5.2 Cement shall be measured by the ton (kg).

BASIS OF PAYMENT

220-6.1 Payment shall be made at the contract unit price per square yard (m^2) for cement treated soil base course, including concrete. This price shall be full compensation for furnishing all materials, except cement, and for all preparation, delivering, placing, and mixing of these materials; and for all labor, equipment, tools and incidentals necessary to complete the item.

220-6.2 Payment for cement shall be considered incidental to the placement of cement treated soil base course. This price shall be full compensation for furnishing this material and for all delivery, placing, and incorporation of this material, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-220-6.1 Cement treated soil Base Course, 8", including material - per square yard (square meter)

Item P-220-6.2 Cement (incidental to Cement treated soil Base Course)

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 C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C150	Standard Specification for Portland Cement
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM C1632	Standard Practice for Making and Curing Soil-Cement Compression and Flexure Test Specimens in the Laboratory1
ASTM C1633	Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders
ASTM D558	Standard Test Methods for Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures
ASTM D559	Standard Test Methods for Wetting and Drying Compacted Soil-Cement Mixtures
ASTM D560	Standard Test Methods for Freezing and Thawing Compacted Soil-Cement Mixtures
ASTM D977	Standard Specification for Emulsified Asphalt
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil In-Place by the Sand Cone Method
ASTM D2027	Standard Specification for Cutback Asphalt (Medium-Curing Type)
ASTM D2028	Standard Specification for Cutback Asphalt (Rapid-Curing Type)
ASTM D2397	Standard Specification for Cationic Emulsified Asphalt
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

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DIVISION 12 - FAA – Miscellaneous

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 (10°C) or above, and the temperature has not been below 35°F (2°C) 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 (4.5 kg/sq cm) 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 (0.23 to 4.5 L/square meter), with a pressure range of 25 to 75 psi (172.4 to 517.1 kPa) 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 (0.68 to 1.36 liters per square meter) 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 (30 m) 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 (16°C) 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-602-5.1	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 (10°C) or above; the temperature has not been below 35°F (2°C) 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.

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 (13 km per hour) or seven (700) feet per minute (213 m 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 (3.7-m) 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 (L/square meter)	Emulsion Application Bar Rate, gal/SY (L/square meter)
New asphalt	0.02-0.05 (0.09-0.23)	0.03-0.07 (0.13-0.32)
Existing asphalt	0.04-0.07 (0.18-0.32)	0.06-0.11 (0.27-0.50)
Milled Surface	0.04-0.08 (0.18-0.36)	.0.06-0.12 (0.27-0.54)
Concrete	0.03-0.05 (0.13-0.23)	0.05-0.08 (0.23-0.36)

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 emulsified asphalt material for tack coat shall be measured by the **gallon**. Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D1250. 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

603.5-1 Payment shall be made at the contract unit price per **gallon** of emulsified asphalt material. This price shall be full compensation 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.

Payment will be made under:

Item P-603-5.1	Emulsified Asphalt Tack 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 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-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 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 1/2 inch (37.5 mm)	467 or 4 and 67
1 inch (25 mm)	57
¾ inch (19 mm)	67
½ inch (12.5 mm)	7

610-2.2.1 Coarse Aggregate susceptibility to durability (D) cracking. Not used.

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 be required as shown on the plans.

Steel Reinforcement

Reinforcing Steel	**ASTM A615, ASTM A706, ASTM A775, ASTM A934**
Welded Steel Wire Fabric	**ASTM A1064, ASTM A884**
Welded Deformed Steel Fabric	**ASTM A1064**
Bar Mats	**ASTM A184 or ASTM A704**

610-2.11 Materials for curing concrete. Curing materials shall conform to **ASTM C171**.

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 **4000** 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 (280 kg per cubic meter). 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 (100 mm) as determined by ASTM C143.

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 (4°C) 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 (10°C) nor more than 100°F (38°C). 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 (1.5 m). 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 (4°C), 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 (30 ºC), 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 Concrete shall be considered incidental and no separate measurement shall be made.

BASIS OF PAYMENT

610-6.1 Concrete shall be considered incidental and no separate payment shall be made.

Payment will be made under:

Item P-610-6.1	Concrete, **incidental to other work items**

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

END OF ITEM P-610

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Item P-620 Runway and Taxiway Marking

SPECIAL PROVISION

ADD THE FOLLOWING IN ITS ENTIRETY:

MICROBICIDE

620-2.4 All Waterborne paint shall contain a microbicide that provides microbial efficacy for a period of no less than 3 years. The microbicide shall be blended homogeneously with the paint under high speed dispersion during production by the supplier/manufacturer. The final homogenous blend of microbicide treated paint shall conform to the same viscosity stability standards as specified in TT- P-1952 F.

A. Dow (Formerly Rohm and Hass) Rocima 63 microbicide (or other approved equivalent) shall be added at a rate of 10 pounds per 100 gallons of paint.
B. Other products may be available that meet or exceed these specifications.

APPLICATION

620-3.5 Permanent markings shall be applied in two coats at the application rate of 115 square feet per gallon for each application, the first coat without beads and the second coat with beads. The Contractor shall wait 24 hours between coats.

The temporary marking shall be applied three days after the surface course is complete.

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**
Temporary Marking	II	White	37925	230 ft^2/gal	N/A	N/A
Temporary Marking	II	Green	34108	230 ft^2/gal	N/A	N/A
Temporary Marking	II	Yellow	33538 or 33655	230 ft^2/gal	N/A	N/A
Permanent Marking	II	Black	37038	115 ft^2/gal	N/A	N/A
Permanent Marking	II	White	37925	115 ft^2/gal	N/A	N/A
Permanent Marking	II	Green	34108	115 ft^2/gal	N/A	N/A
Permanent Marking	II	Yellow	33538 or 33655	115 ft^2/gal	III	10 lb/gal

[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. **Yellow (33538 or 33655)**, **White (37925), Green (34108)**

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. The acrylic resin used for Type II shall be 100% cross linking acrylic as evidenced by infrared peaks at wavelengths 1568, 1624, and 1672 cm-l with intensities equal to those produced by an acrylic resin known to be 100% cross linking.

b. Reflective media. Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D **Type III**.

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 does 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 **30** days shall elapse between placement of surface course or seal coat and application of the 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 (12 mm) in 50 feet (15 m), and marking dimensions and spacing shall be within the following tolerances:

Marking Dimensions and Spacing Tolerance

Dimension and Spacing	Tolerance
36 inch (910 mm) or less	±1/2 inch (12 mm)
greater than 36 inch to 6 feet (910 mm to 1.85 m)	±1 inch (25 mm)
greater than 6 feet to 60 feet (1.85 m to 18.3 m)	±2 inch (50 mm)
greater than 60 feet (18.3 m)	±3 inch (76 mm)

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.

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 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/m²/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 existing markings to be removed, by method of water blasting, shall be measured by the number of square feet of the existing markings.

620-4.1b The quantity of markings shall be measured by the number of square feet for each type of surface preparation specified in paragraph 620-3.3. **The reflective media and microbicide required for the marking shall be incidental to this line item, and shall not be a separate pay item.**

620-4.1c The quantity of temporary markings to be paid for shall be the number of square feet of painting performed in accordance with the specifications and accepted by the RPR. Temporary marking includes surface preparation, application and complete removal of the temporary marking.

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 existing markings to be removed, by method of water blasting, shall be made at the contract price for the number of square feet of the existing marking.

620-5.1b Payment for markings shall be made at the contract price for the number of square feet of painting**. The reflective media and microbicide required for the marking shall be incidental to this line item, and shall not be a separate pay item.**

620-5.1c Payment for temporary markings shall be made at the contract price for the number of square feet of painting**.** This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-620-5.1a	Removal of Existing Striping by Water Blasting per square foot
Item P-620-5.1b	Taxiway Marking, Type II, Yellow, including Reflective Media (Type III, Gradation A) and Microbicide per square foot
Item P-620-5.1c	Temporary Taxiway Marking per square foot
Item P-620-5.1d	Taxiway Marking, Type II, Green, including Microbicide per square 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.

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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DIVISION 13 - FAA – Drainage

Item D-701 Pipe for Storm Drains and Culverts

DESCRIPTION

701-1.1 This item shall consist of the construction of pipe culverts and storm drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

MATERIALS

701-2.1 Materials shall meet the requirements shown on the plans and specified below. Underground piping and components used in drainage systems for terminal and aircraft fueling ramp drainage shall be noncombustible and inert to fuel in accordance with National Fire Protection Association (NFPA) 415.

701-2.2 Pipe. The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements:

AASHTO R73	Standard Practice for Evaluation of Precast Concrete Drainage Productions
ASTM C14	Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C1479	Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations
ASTM C1840	Standard Practice for Inspection and Acceptance of Installed Reinforced Concrete Culvert, Storm Drain, and Storm Sewer Pipe

701-2.3 Concrete. Concrete for pipe cradles shall have a minimum compressive strength of 2000 psi (13.8 MPa) at 28 days and conform to the requirements of ASTM C94.

701-2.4 Rubber gaskets. Not used.

701-2.5 Joint mortar. Pipe joint mortar shall consist of one part Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

701-2.6 Joint fillers. Poured filler for joints shall conform to the requirements of ASTM D6690.

701-2.7 Plastic gaskets. Not used.

701-2.8. Controlled low-strength material (CLSM). Controlled low-strength material shall conform to the requirements of Item P-153. When CLSM is used, all joints shall have gaskets.

701-2.9 Precast box culverts. Manufactured in accordance with and conforming to ASTM C1433.

701-2.10 Precast concrete pipe. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or American Concrete Pipe Association QCast Plant Certification program.

CONSTRUCTION METHODS

701-3.1 Excavation. The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but it shall not be less than the external diameter of the pipe plus 12 inches (300 mm) on each side. The trench walls shall be approximately vertical.

The Contractor shall comply with all current federal, state and local rules and regulations governing the safety of men and materials during the excavation, installation and backfilling operations. Specifically, the Contractor shall observe that all requirements of the Occupational Safety and Health Administration (OSHA) relating to excavations, trenching and shoring are strictly adhered to. The width of the trench shall be sufficient to permit satisfactorily jointing of the pipe and thorough compaction of the bedding material under the pipe and backfill material around the pipe, but it shall not be greater than the widths shown on the plans trench detail.

Where rock, hardpan, or other unyielding material is encountered, the Contractor shall remove it from below the foundation grade for a depth of at least 8 inch (200 mm) or 1/2 inch (12 mm) for each foot of fill over the top of the pipe (whichever is greater) but for no more than three-quarters of the nominal diameter of the pipe. The excavation below grade should be filled with granular material to form a uniform foundation.

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

The excavation for pipes placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the pipe as shown on the plans.

701-3.2 Bedding. The bedding surface for the pipe shall provide a foundation of uniform density to support the pipe throughout its entire length.

a. Rigid pipe. The pipe bedding shall be constructed uniformly for the full length of the pipe barrel, as required on the plans. The maximum aggregate size shall be 1 in when the bedding thickness is less than 6 inches, and 1-1/2 in when the bedding thickness is greater than 6 inches. Bedding shall be loosely placed uncompacted material under the middle third of the pipe prior to placement of the pipe.

b. Flexible pipe. For flexible pipe, the bed shall be roughly shaped to fit the pipe, and a bedding blanket of sand or fine granular material shall be provided as follows:

Flexible Pipe Bedding

Pipe Corrugation Depth		Minimum Bedding Depth	
inch	**mm**	**inch**	**mm**
1/2	12	1	25
1	25	2	50
2	50	3	75
2-1/2	60	3-1/2	90

c. Other pipe materials. For PVC, polyethylene, polypropylene, or fiberglass pipe, the bedding material shall consist of coarse sands and gravels with a maximum particle size of 3/4 inches (19 mm). For pipes installed under paved areas, no more than 12% of the material shall pass the No. 200 (0.075 mm) sieve. For all other areas, no more than 50% of the material shall pass the No. 200 (0.075 mm) sieve. The bedding shall have a thickness of at least 6 inches (150 mm) below the bottom of the pipe and extend up around the pipe for a depth of not less than 50% of the pipe's vertical outside diameter.

701-3.3 Laying pipe. The pipe laying shall begin at the lowest point of the trench and proceed upgrade. The lower segment of the pipe shall be in contact with the bedding throughout its full length. Bell or groove ends of rigid pipes and outside circumferential laps of flexible pipes shall be placed facing upgrade.

Paved or partially lined pipe shall be placed so that the longitudinal center line of the paved segment coincides with the flow line.

Elliptical and elliptically reinforced concrete pipes shall be placed with the manufacturer's reference lines designating the top of the pipe within five degrees of a vertical plane through the longitudinal axis of the pipe.

701-3.4 Joining pipe. Joints shall be made with (1) cement mortar, (2) cement grout, (3) rubber gaskets, (4) plastic gaskets, or (5) coupling bands.

Mortar joints shall be made with an excess of mortar to form a continuous bead around the outside of the pipe and shall be finished smooth on the inside. Molds or runners shall be used for grouted joints to retain the poured grout. Rubber ring gaskets shall be installed to form a flexible watertight seal.

a. Concrete pipe. Concrete pipe may be either bell and spigot or tongue and groove. Pipe sections at joints shall be fully seated and the inner surfaces flush and even. Concrete pipe joints shall be sealed with butyl mastic meeting ASTM C990 or mortar when soil tight joints are required. Joints shall be thoroughly wetted before applying mortar or grout.

b. Metal pipe. Metal pipe shall be firmly joined by form-fitting bands conforming to the requirements of ASTM A760 for steel pipe and AASHTO M196 for aluminum pipe.

c. PVC, Polyethylene, or Polypropylene pipe. Joints for PVC, Polyethylene, or Polypropylene pipe shall conform to the requirements of ASTM D3212 when leak resistant joints are required. Joints for PVC and Polyethylene pipe shall conform to the requirements of AASHTO M304 when soil tight joints are required. Fittings for polyethylene pipe shall conform to the requirements of AASHTO M252 or ASTM M294. Fittings for polypropylene pipe shall conform to ASTM F2881, ASTM F2736, or ASTM F2764.

d. Fiberglass pipe. Joints and fittings shall be as detailed on the plans and in accordance with the manufacturers recommendations. Joints shall meet the requirements of ASTM D4161 for flexible elastomeric seals.

701-3.5 Embedment and Overfill. Pipes shall be inspected before any fill material is placed; any pipes found to be out of alignment, unduly settled, or damaged shall be removed and re-laid or replaced at the Contractor's expense.

701-3.5-1 Embedment Material Requirements

a. Concrete Pipe. Embedment material and compaction requirements shall be in accordance with the applicable Type of Standard Installation (Types 1, 2, 3, or 4) per ASTM C1479. If a concrete cradle or CLSM embedment material is used, it shall conform to the plan details.

b. Plastic and fiberglass Pipe. Embedment material shall meet the requirements of ASTM D3282, A-1, A-2-4, A-2-5, or A-3. Embedment material shall be free of organic material, stones larger than 1.5 inches in the greatest dimension, or frozen lumps. Embedment material shall extend to 12 inches above the top of the pipe.

c. Metal Pipe. Embedment material shall be granular as specified in the contract document and specifications, and shall be free of organic material, rock fragments larger than 1.5 inches in the greatest dimension and frozen lumps. As a minimum, backfill materials shall meet the requirements of ASTM D3282, A-1, A-2, or A-3. Embedment material shall extend to 12 inches above the top of the pipe.

701-3.5-2 Placement of Embedment Material

The embedment material shall be compacted in layers not exceeding 6 inches (150 mm) on each side of the pipe and shall be brought up one foot (30 cm) above the top of the pipe or to natural ground level, whichever is greater. Thoroughly compact the embedment material under the haunches of the pipe without displacing the pipe. Material shall be brought up evenly on each side of the pipe for the full length of the pipe.

When the top of the pipe is above the top of the trench, the embedment material shall be compacted in layers not exceeding 6 inches (150 mm) and shall be brought up evenly on each side of the pipe to one foot (30 cm) above the top of the pipe. All embedment material shall be compacted to a density required under Item P-152.

Concrete cradles and flowable fills, such as controlled low strength material (CLSM) or controlled density fill (CDF), may be used for embedment provided adequate flotation resistance can be achieved by restraints, weighing, or placement technique.

It shall be the Contractor's responsibility to protect installed pipes and culverts from damage due to construction equipment operations. The Contractor shall be responsible for installation of any extra strutting or backfill required to protect pipes from the construction equipment.

701-3.6 Overfill

Pipes shall be inspected before any overfill is in place. Any pipes found to be out of alignment, unduly settled, or damaged shall be removed and relaid or replaced at the Contractor's expense. Evaluation of any damage to RCP shall be evaluated based on AASHTO R73.

Overfill material shall be place and compacted in layers as required to achieve compaction to at least 95 percent standard proctor per ASTM D1557. The soil shall contain no debris, organic matter, frozen material, or stones with a diameter greater than one half the thickness of the compacted layers being placed.

701-3.7 Inspection Requirements

An initial post installation inspection shall be performed by the RPR no sooner than 30 days after completion of installation and final backfill. Clean or flush all lines prior to inspection.

Incorporate specific inspection requirements for the various types of pipes beneath the general inspection requirements.

Reinforced concrete pipe shall be inspected, evaluated, and reported on in accordance with ASTM C1840, "Standard Practice for Inspection and Acceptance of Installed Reinforced Concrete Culvert, Storm Drain, and Storm Sewer Pipe." Any issues reported shall include still photo and video documentation. The zoom ratio shall be provided for all still or video images that document any issues of concern by the inspection firm.

METHOD OF MEASUREMENT

701-4.1 The length of pipe shall be measured in linear feet (m) of pipe in place, completed, and accepted. It shall be measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. 18" RCP, Class III shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipe being measured.

701-4.2. Not used.

701-4.3 Not used.

701-4.4 Not used.

BASIS OF PAYMENT

701-5.0 These prices shall fully compensate the Contractor for furnishing all materials and for all preparation, excavation, and installation of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

701-5.1 Payment will be made at the contract unit price per linear foot (meter) for 30" RCP, Class III.

701-5.2 Not used.

701-5.3 Not used.

701-5.4 Not used.

Payment will be made under:

Item 701-5.1	Reinforced Concrete Pipe, **30** inch, Class III per linear foot (meter)
Item 701-5.2	Not used.
Item 701-5.3	Not used.
Item 701-5.4	Not used.

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 M167	Standard Specification for Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M190	Standard Specification for Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches
AASHTO M196	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
AASHTO M219	Standard Specification for Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M243	Standard Specification for Field Applied Coating of Corrugated Metal Structural Plate for Pipe, Pipe-Arches, and Arches
AASHTO M252	Standard Specification for Corrugated Polyethylene Drainage Pipe
AASHTO M294	Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
AASHTO M304	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter
AASHTO MP20	Standard Specification for Steel Reinforced Polyethylene (PE) Ribbed Pipe, 300- to 900-mm (12- to 36-in.) Diameter

ASTM International (ASTM)

ASTM A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A761	Standard Specification for Corrugated Steel Structural Plate, Zinc Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
ASTM A762	Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains
ASTM A849	Standard Specification for Post-Applied Coatings, Pavings, and Linings for Corrugated Steel Sewer and Drainage Pipe
ASTM B745	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
ASTM C14	Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C94	Standard Specification for Ready Mixed Concrete
ASTM C144	Standard Specification for Aggregate for Masonry Mortar

ASTM C150	Standard Specification for Portland Cement
ASTM C443	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
ASTM C506	Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
ASTM C507	Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe
ASTM C655	Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe
ASTM C990	Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
ASTM C1433	Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
ASTM D1056	Standard Specification for Flexible Cellular Materials Sponge or Expanded Rubber
ASTM D3034	Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D3212	Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM D3262	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Sewer Pipe
ASTM D3282	Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
ASTM D4161	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Pipe Joints Using Flexible Elastomeric Seals
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F667	Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings
ASTM F714	Standard Specification for Polyethylene (PE) Plastic Pipe (DR PR) Based on Outside Diameter
ASTM F794	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter
ASTM F894	Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe
ASTM F949	Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings

ASTM F2435	Standard Specification for Steel Reinforced Polyethylene (PE) Corrugated Pipe
ASTM F2562	Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage
ASTM F2736	Standard Specification for 6 to 30 in. (152 to 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe
ASTM F2764	Standard Specification for 30 to 60 in. (750 to 1500 mm) Polypropylene (PP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications
ASTM F2881	Standard Specification for 12 to 60 in. (300 to 1500 mm) Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications

National Fire Protection Association (NFPA)

NFPA 415	Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways

END ITEM D-701

Item D-751 Manholes, Catch Basins, Inlets and Inspection Holes

DESCRIPTION

751-1.1 This item shall consist of construction of manholes, catch basins, inlets, and inspection holes, in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

MATERIALS

751-2.1 Brick. The brick shall conform to the requirements of ASTM C32, Grade MS.

751-2.2 Mortar. Mortar shall consist of one part Portland cement and two parts sand. The cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

751-2.3 Concrete. Plain and reinforced concrete used in structures, connections of pipes with structures, and the support of structures or frames shall conform to the requirements of Item P-610.

751-2.4 Precast concrete pipe manhole rings. Precast concrete pipe manhole rings shall conform to the requirements of ASTM C478. Unless otherwise specified, the risers and offset cone sections shall have an inside diameter of not less than 36 inches (90 cm) nor more than 48 inches (120 cm). There shall be a gasket between individual sections and sections cemented together with mortar on the inside of the manhole. Gaskets shall conform to the requirements of ASTM C443.

751-2.5 Corrugated metal. Corrugated metal shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M36.

751-2.6 Frames, covers, and grates. The castings shall conform to one of the following requirements:

a. ASTM A48, Class 35B: Gray iron castings

b. ASTM A47: Malleable iron castings

c. ASTM A27: Steel castings

d. ASTM A283, Grade D: Structural steel for grates and frames

e. ASTM A536, Grade 65-45-12: Ductile iron castings

f. ASTM A897: Austempered ductile iron castings

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings, aircraft gear configuration and/or direct loading, specified.

Each frame and cover or grate unit shall be provided with fastening members to prevent it from being dislodged by traffic but which will allow easy removal for access to the structure.

All castings shall be thoroughly cleaned. After fabrication, structural steel units shall be galvanized to meet the requirements of ASTM A123.

751-2.7 Steps. The steps or ladder bars shall be gray or malleable cast iron or galvanized steel. The steps shall be the size, length, and shape shown on the plans and those steps that are not galvanized shall be given a coat of asphalt paint, when directed.

751-2.8 Precast inlet structures. Manufactured in accordance with and conforming to ASTM C913.

CONSTRUCTION METHODS

751-3.1 Unclassified excavation.

a. The Contractor shall excavate for structures and footings to the lines and grades or elevations, shown on the plans, or as staked by the RPR. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximately only; and the RPR may direct, in writing, changes in dimensions or elevations of footings necessary for a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. Where concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing is placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for the structure.

d. All bracing, sheathing, or shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage finished masonry. The cost of removal shall be included in the unit price bid for the structure.

e. After excavation is completed for each structure, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

751-3.2 Brick structures.

a. Foundations. A prepared foundation shall be placed for all brick structures after the foundation excavation is completed and accepted. Unless otherwise specified, the base shall consist of reinforced concrete mixed, prepared, and placed in accordance with the requirements of Item P-610.

b. Laying brick. All brick shall be clean and thoroughly wet before laying so that they will not absorb any appreciable amount of additional water at the time they are laid. All brick shall be laid in freshly made mortar. Mortar not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted. An ample layer of mortar shall be spread on the beds and a shallow furrow shall be made in it that can be readily closed by the laying of the brick. All bed and head joints shall be filled solid with mortar. End joints of stretchers and side or cross joints of headers shall be fully buttered with mortar and a shoved joint made to squeeze out mortar at the top of the joint. Any bricks that may be loosened after the mortar has taken its set, shall be removed, cleaned, and re-laid with fresh mortar. No broken or chipped brick shall be used in the face, and no spalls or bats shall be used except where necessary to shape around irregular openings or edges; in which case, full bricks shall be placed at ends or corners where possible, and the bats shall be used in the interior of the

course. In making closures, no piece of brick shorter than the width of a whole brick shall be used; and wherever practicable, whole brick shall be used and laid as headers.

c. Joints. All joints shall be filled with mortar at every course Exterior faces shall be laid up in advance of backing. Exterior faces shall be plastered or parged with a coat of mortar not less than 3/8 inch (9 mm) thick before the backing is laid up. Prior to parging, all joints on the back of face courses shall be cut flush. Unless otherwise noted, joints shall be not less than 1/4 inch (6 mm) nor more than 1/2 inch (12 mm) wide and the selected joint width shall be maintained uniform throughout the work.

d. Pointing. Face joints shall be neatly struck, using the weather-struck joint. All joints shall be finished properly as the laying of the brick progresses. When nails or line pins are used, the holes shall be immediately plugged with mortar and pointed when the nail or pin is removed.

e. Cleaning. Upon completion of the work all exterior surfaces shall be thoroughly cleaned by scrubbing and washing with water. If necessary to produce satisfactory results, cleaning shall be done with a 5% solution of muriatic acid which shall then be rinsed off with liberal quantities of water.

f. Curing and cold weather protection. The brick masonry shall be protected and kept moist for at least 48 hours after laying the brick. Brick masonry work or pointing shall not be done when there is frost on the brick or when the air temperature is below 50°F (10°C) unless the Contractor has, on the project ready to use, suitable covering and artificial heating devices necessary to keep the atmosphere surrounding the masonry at a temperature of not less than 60°F (16°C) for the duration of the curing period.

751-3.3 Concrete structures. Concrete structures which are to be cast-in-place within the project boundaries shall be built on prepared foundations, conforming to the dimensions and shape indicated on the plans. The construction shall conform to the requirements specified in Item P-610. Any reinforcement required shall be placed as indicated on the plans and shall be approved by the RPR before the concrete is placed.

All invert channels shall be constructed and shaped accurately to be smooth, uniform, and cause minimum resistance to flowing water. The interior bottom shall be sloped to the outlet.

751-3.4 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. Precast concrete structures shall be constructed on prepared or previously placed slab foundations conforming to the dimensions and locations shown on the plans. All precast concrete sections necessary to build a completed structure shall be furnished. The different sections shall fit together readily. Joints between precast concrete risers and tops shall be full-bedded in cement mortar and shall: (1) be smoothed to a uniform surface on both interior and exterior of the structure or (2) utilize a rubber gasket per ASTM C443. The top of the upper precast concrete section shall be suitably formed and dimensioned to receive the metal frame and cover or grate, or other cap, as required. Provision shall be made for any connections for lateral pipe, including drops and leads that may be installed in the structure. The flow lines shall be smooth, uniform, and cause minimum resistance to flow. The metal or metal encapsulated steps that are embedded or built into the side walls shall be aligned and placed in accordance to ASTM C478. When a metal ladder replaces the steps, it shall be securely fastened into position.

751-3.5 Corrugated metal structures. Corrugated metal structures shall be prefabricated. All standard or special fittings shall be furnished to provide pipe connections or branches with the correct dimensions and of sufficient length to accommodate connecting bands. The fittings shall be welded in

place to the metal structures. The top of the metal structure shall be designed so that either a concrete slab or metal collar may be attached to allow the fastening of a standard metal frame and grate or cover. Steps or ladders shall be furnished as shown on the plans. Corrugated metal structures shall be constructed on prepared foundations, conforming to the dimensions and locations as shown on the plans. When indicated, the structures shall be placed on a reinforced concrete base.

751-3.6 Inlet and outlet pipes. Inlet and outlet pipes shall extend through the walls of the structures a sufficient distance beyond the outside surface to allow for connections. They shall be cut off flush with the wall on the inside surface of the structure, unless otherwise directed. For concrete or brick structures, mortar shall be placed around these pipes to form a tight, neat connection.

751-3.7 Placement and treatment of castings, frames, and fittings. All castings, frames, and fittings shall be placed in the positions indicated on the plans or as directed by the RPR, and shall be set true to line and elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

When frames or fittings are placed on previously constructed masonry, the bearing surface of the masonry shall be brought true to line and grade and shall present an even bearing surface so the entire face or back of the unit will come in contact with the masonry. The unit shall be set in mortar beds and anchored to the masonry as indicated on the plans or as directed by the RPR. All units shall set firm and secure.

After the frames or fittings have been set in final position, the concrete or mortar shall be allowed to harden for seven (7) days before the grates or covers are placed and fastened down.

751-3.8 Installation of steps. The steps shall be installed as indicated on the plans or as directed by the RPR. When the steps are to be set in concrete, they shall be placed and secured in position before the concrete is placed. When the steps are installed in brick masonry, they shall be placed as the masonry is being built. The steps shall not be disturbed or used until the concrete or mortar has hardened for at least seven (7) days. After seven (7) days, the steps shall be cleaned and painted, unless they have been galvanized.

When steps are required with precast concrete structures they shall meet the requirements of ASTM C478. The steps shall be cast into the side of the sections at the time the sections are manufactured or set in place after the structure is erected by drilling holes in the concrete and cementing the steps in place.

When steps are required with corrugated metal structures, they shall be welded into aligned position at a vertical spacing of 12 inches (300 mm).

Instead of steps, prefabricated ladders may be installed. For brick or concrete structures, the ladder shall be held in place by grouting the supports in drilled holes. For metal structures, the ladder shall be secured by welding the top support to the structure and grouting the bottom support into drilled holes in the foundation or as directed by the RPR.

751-3.9 Backfilling.

a. After a structure has been completed, the area around it shall be backfilled with approved material, in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted to the density required in Item P-152. Each layer shall be deposited evenly around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the RPR.

b. Backfill shall not be placed against any structure until approved by the RPR. For concrete structures, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill and placing methods.

c. Backfill shall not be measured for direct payment. Performance of this work shall be considered an obligation of the Contractor covered under the contract unit price for the structure involved.

751-3.10 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankments, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

751-4.1 Manholes, catch basins, inlets, and inspection holes shall be measured by the unit.

BASIS OF PAYMENT

751-5.1 The accepted quantities of manholes, catch basins, inlets, and inspection holes will be paid for at the contract unit price per each in place when completed. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling and placing of the materials; furnishing and installation of such specials and connections to pipes and other structures as may be required to complete the item as shown on the plans; and for all labor equipment, tools and incidentals necessary to complete the structure.

Payment will be made under:

Item D-751-5.1	GDOT standard 1019A Concrete Drop Inlet, 72” dia., per each
Item D-751-5.2	Raised Weir Inlet, 72” dia., per each
Item D-751-5.3	GDOT standard 1011A Junction Box, 72” dia., 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 A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A48	Standard Specification for Gray Iron Castings
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates

ASTM A536	Standard Specification for Ductile Iron Castings
ASTM A897	Standard Specification for Austempered Ductile Iron Castings
ASTM C32	Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C443	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
ASTM C478	Standard Specification for Precast Reinforced Concrete Manhole Sections
ASTM C913	Standard Specification for Precast Concrete Water and Wastewater Structures.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M36	Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

END OF ITEM D-751

Item D-752 Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures

DESCRIPTION

752-1.1 This item shall consist of reinforced concrete culverts, headwalls, and miscellaneous drainage structures constructed in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

MATERIALS

752-2.1 Concrete. Reinforced concrete shall meet the requirements of Item P-610.

CONSTRUCTION METHODS

752-3.1 Unclassified excavation.

a. Trenches and foundation pits for structures or structure footings shall be excavated to the lines and grades and elevations shown on the plans. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only; and the RPR may approve, in writing, changes in dimensions or elevations of footings necessary to secure a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing steel is placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to perform and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for excavation.

d. All bracing, sheathing, or shoring shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage the finished concrete. The cost of removal shall be included in the unit price bid for excavation.

e. After each excavation is completed, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

752-3.2 Backfilling.

a. After a structure has been completed, backfilling with approved material shall be accomplished by applying the fill in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted. The field density of the compacted material shall be at least 90% of the maximum density for cohesive soils

and 95% of the maximum density for noncohesive soils. The maximum density shall be determined in accordance with ASTM D698. The field density shall be determined in accordance with ASTM D1556.

b. No backfilling shall be placed against any structure until approved by the RPR. For concrete, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill or the placement methods.

c. Fill placed around concrete culverts shall be deposited on each side at the same time and to approximately the same elevation. All slopes bounding or within the areas to be backfilled shall be stepped or serrated to prevent wedge action against the structure.

d. Backfill will not be measured for direct payment. Performance of this work shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for "unclassified excavation for structures."

752-3.3 Weep holes. Weep holes shall be constructed as shown on the plans.

752-3.4 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankment, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

752-4.1 The quantity of Pre-Cast Reinforced Concrete Headwall shall be the number of GDOT Std 1001-B Pre-Cast Reinforced Concrete Headwalls for 18" RCP, complete in place and accepted.

BASIS OF PAYMENT

752-5.1 Payment will be made at the contract unit price per each for pre-cast reinforced concrete headwall.

These prices shall be full compensation for furnishing all materials and for all preparation, excavation, and placing the materials, and for all labor, equipment, tools, and incidentals necessary to complete the structure.

Payment will be made under:

Item D-752-5.1	Pre-cast Reinforced Concrete Headwall for 18" RCP (GDOT Std. 1001-B) - per cubic 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 D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft^3 (600 kN-m/m^3))

ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

END OF ITEM D-752

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DIVISION 14 - FAA – Turfing

Item T-901 Seeding

NON-NATIVE GRASS SEEDING TABLE 1

(Temporary and Permanent Seed Types for Shoulders, Medians and Slopes 3:1 or Flatter)

Common Name	Botanical Name	Class/Type	Rate/Acre	Planting Zone	Planting Dates
Common Bermuda Grass (Hulled)	*Cynodon dactylon*	Required Permanent Grass	10 (11)	1	April 16 – August 31
Common Bermuda Grass (Unhulled)			10 (11)		
Common Bermuda Grass (Hulled)	*Cynodon dactylon*	Required Permanent Grass	10 (11)	2,3,4	April 1 – October 15
Common Bermuda Grass (Unhulled)			10 (11)		
Bahaia Grass	*Paspalum motatum*		10 (11)		
Rye Grass, Millet, Cereal Grass (Oats)	*Lolium penne spsp. Multiflorum, Echinochloa cursgalli, Avena sativa*	Temporary Grass	50 (56)	1	September 1- April 15
Rye Grass, Millet, Cereal Grass (Oats)	*Lolium penne spsp. Multiflorum, Echinochloa cursgalli, Avena sativa*	Temporary Grass	50 (56)	2,3,4	October 16- March 31

NON-NATIVE GRASS SEEDING TABLE 2

(Temporary and Permanent Seed Types for back slopes, fill slopes and areas which will not be subject to frequent mowing, slopes steeper than 3:1)

Common Name	Botanical Name	Class/Type	Rate/Acre	Planting Zone	Planting Dates
Interstate Lespedeza	*Lespedeza sericea*	Permanent Grass	50(56)	1,2	March 1 – August 31
Weeping Lovegrass	*Eragrostis curvula*	Temporary Grass	10(11)		
Interstate Lespedeza	*Lespedeza sericea*	Permanent Grass	75(84)	1,2	September 1- February 28
Tall Fescue	*Festuca arundinacea*	Temporary Grass	50(56)		
Interstate Lespedeza	*Lespedeza sericea*	Permanent Grass	50(56)	3,4	April 1 – October 31
Weeping Love Grass	*Eragrostis curvula*	Temporary Grass	10(11)		
Interstate Lespedeza	*Lespedeza sericea*	Permanent Grass	50(56)	3,4	November 1 – March 31
Weeping Love Grass	*Eragrostis curvula*	Temporary Grass	10(11)		

NATIVE GRASS SEEDING TABLE 3

For Non-Mowable Slopes or Areas Designated as Permanent Native Grass Plots

(Plant native seed mixes on back slopes, fill slopes and areas which will not be subject to frequent mowing – slopes steeper than 3:1)

Common Name	Botanical Name	Class/Type	Rate/Acre	Planting Zone	Planting Dates
Canada Wild Rye	*Elymus canadensis*	Cool Season	Minimum 2 (2)	1,2,3,4	October 31 - March 31
Virginia Wild Rye	*Elymus virginicus*	Cool Season	Minimum 2 (2)	1,2,3,4	October 31 - March 31
Bottle-brush Grass	*Hystrix patula*	Cool Season	Minimum 2 (2)	1,2,3,4	October 31 - March 31
Little Bluestem	*Schizachyrium scoparium* (*Andropogon scoparius*)	Warm Season	Minimum 2 (2)	1,2,3,4	March31- August 31
Indiangrass	*Sorghastrum nutans*	Warm Season	Minimum 2 (2)	1,2,3,4	March 31- August 31
Eastern Gama Grass	*Tripsacum dactyloides*	Warm Season	Minimum 2 (2)	1,2,3,41,2,3,4	March 31- August 31
Rice Cut Grass	*Leersia oryzoides*	Warm Season	Minimum 2 (2)	1,2,3,4	March 31- August 31
Deertongue	*Panicum clandestinum*	Warm Season	Minimum 2 (2)	1,2,3,4	March 31- August 31
Switchgrass	*Panicum virgatum*	Warm Season	Minimum 2 (2)	1,2,3,4	March 31- August 31
Woolgrass	*Scirpus cyperinus*	Cool Season	Minimum 2 (2)	1,2,3,4	October 31 - March 31
River Oats	*Chasmanthium latifolium*	Cool Season	Minimum 2 (2)	1,2,3,4	October 31 - March 31
Purple Top	Tridens flavus	Warm Season	Minimum 2 (2)	1,2,3,4	March 31- August 31

TEMPORARY GRASS SEEDING TABLE 4

Species	Rates per 1000 sq. ft.	Rates per Acre	Planting Date By Zone		
			1 & 2	2	3 & 4
Rye (Grain)	3.9 lbs	168 lbs	8/1 - 11/30	8/15 - 12/1	9/1 - 2/28
Ryegrass	0.9 lbs	40 lbs	8/1 - 11/30	9/1 - 12/15	9/15 - 1/1
Rye & Annual Lespedeza	0.6 lbs 0.6 lbs	28 lbs 24 lbs	3/1 - 4/1	2/1 - 3/1	2/1 - 3/1
Weeping Lovegrass	0.1 lbs	4 lbs	3/15 - 6/15	3/15 - 7/15	3/15 - 7/15
Sudangrass	1.0 lbs	60 lbs	4/1 - 8/31	4/1 - 8/31	3/15 - 8/1
Browntop Millet	1.1 lbs	50 lbs	4/1 - 6/30	4/1 - 7/15	4/1 - 7/15
Wheat	3.9 lbs	168 lbs	9/1 - 12/31	9/1 - 12/31	9/15 - 1/31

DESCRIPTION

901-1.1 This item shall consist of soil preparation, seeding the areas shown on the plans or as directed by the RPR in accordance with these specifications.

MATERIALS

901-2.1 Seed. The species and application rates of grass, legume, and cover-crop seed furnished shall be those stipulated herein. Seed shall conform to the requirements of Federal Specification JJJ-S-181, Federal Specification, Seeds, Agricultural.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the RPR duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six (6) months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed. Wet, moldy, or otherwise damaged seed will be rejected.

Seeds shall be applied as follows:

Seed Properties and Rate of Application

Minimum Seed Purity (Percent)	Minimum Germination (Percent)	Rate of Application lb/acre (or lb/1,000 S.F.)
98%	85%	10 lbs/ac hulled and/or unhulled

Seeding shall be performed during the period, for **Zone 2**, between the dates shown in the tables above, unless otherwise approved the Engineer.

901-2.2 Lime. Lime shall be ground limestone containing not less than 85% of total carbonates, and shall be ground to such fineness that 90% will pass through a No. 20 (850 µm) mesh sieve and 50% will pass through a No. 100 (150 µm) mesh sieve. Coarser material will be acceptable, providing the rates of application are increased to provide not less than the minimum quantities and depth specified in the special provisions on the basis of the two sieve requirements above. Dolomitic lime or a high magnesium lime shall contain at least 10% of magnesium oxide. Lime shall be applied at the rate of **1000 lbs/ac**. All liming materials shall conform to the requirements of ASTM C602.

901-2.3 Fertilizer. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified, and shall meet the requirements of applicable state laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;

b. A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or

c. A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be **6-12-12** commercial fertilizer and shall be spread at the rate of **1200 lbs/ac. A second application of 10-10-10 fertilizer at 500 lbs/ac to be applied 90 days after grass is up, or as directed by the Engineer.**

901-2.4 Soil for repairs. The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the RPR before being placed.

CONSTRUCTION METHODS

901-3.1 Advance preparation and cleanup. After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

When the area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, any grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

901-3.2 Dry application method.

a. Liming. Lime shall be applied separately and prior to the application of any fertilizer or seed and only on seedbeds that have previously been prepared as described above. The lime shall then be worked into the top 3 inches (75 mm) of soil after which the seedbed shall again be properly graded and dressed to a smooth finish.

b. Fertilizing. Following advance preparations and cleanup fertilizer shall be uniformly spread at the rate that will provide not less than the minimum quantity stated in paragraph 901-2.3.

c. Seeding. Grass seed shall be sown at the rate specified in paragraph 901-2.1 immediately after fertilizing. The fertilizer and seed shall be raked within the depth range stated in the special provisions. Seeds of legumes, either alone or in mixtures, shall be inoculated before mixing or sowing, in accordance with the instructions of the manufacturer of the inoculant. When seeding is required at other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

d. Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted by means of an approved lawn roller, weighing 40 to 65 pounds per foot (60 to 97 kg per meter) of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot (223 to 298 kg per meter) of width for sandy or light soils.

901-3.3 Wet application method.

a. General. The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

b. Spraying equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 lb / sq inches (690 kPa). The pump shall be mounted in a line that will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8 inch (16 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. The Contractor shall identify to the RPR all sources of water at least two (2) weeks prior to use. The RPR may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the RPR following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within two (2) hours from the time they were mixed or they shall be wasted and disposed of at approved locations.

d. Spraying. Lime, if required, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (75 mm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.

Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the RPR, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

901-3.4 Maintenance of seeded areas. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the RPR. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the RPR. A grass stand shall be considered adequate when bare spots are one square foot (0.01 sq m) or less, randomly dispersed, and do not exceed 3% of the area seeded.

METHOD OF MEASUREMENT

901-4.1 The quantity of seeding to be paid for shall be the number of units acre measured on the ground surface, completed and accepted.

BASIS OF PAYMENT

901-5.1 Payment shall be made at the contract unit price per acre, unless otherwise specified, which price and payment shall be full compensation for furnishing and placing all material and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Item 901-5.1	Temporary Seeding per acre
Item 901-5.2	Permanent Seeding per acre
Item 901-5.3	Agricultural Lime, **incidental to other work items**
Item 901-5.4	Fertilizer, **incidental to other work items**

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 C602	Standard Specification for Agricultural Liming Materials

Federal Specifications (FED SPEC)

FED SPEC	JJJ-S-181, Federal Specification, Seeds, Agricultural

Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-901

Item T-908 Mulching

DESCRIPTION

908-1.1 This item shall consist of furnishing, hauling, placing, and securing mulch on surfaces indicated on the plans or designated by the RPR.

MATERIALS

908-2.1 Mulch material. Acceptable mulch shall be the materials listed below or any approved locally available material that is similar to those specified. Mulch shall be free from noxious weeds, mold, and other deleterious materials. Mulch materials, which contain matured seed of species that would volunteer and be detrimental to the proposed overseeding, or to surrounding farm land, will not be acceptable. Straw or other mulch material which is fresh and/or excessively brittle, or which is in such an advanced stage of decomposition as to smother or retard the planted grass, will not be acceptable.

a. Hay. Hay shall be native hay in an air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Hay shall be sterile, containing no fertile seed.

b. Straw. Straw shall be the stalks from threshed plant residue of oats, wheat, barley, rye, or rice from which grain has been removed. Furnish in air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Straw shall contain no fertile seed.

c. Hay mulch containing seed. Hay mulch shall be mature hay containing viable seed of native grasses or other desirable species stated in the special provisions or as approved by the RPR. The hay shall be cut and handled so as to preserve the maximum quantity of viable seed. Hay mulch that cannot be hauled and spread immediately after cutting shall be placed in weather-resistant stacks or baled and stored in a dry location until used.

d. Manufactured mulch. Cellulose-fiber or wood-pulp mulch shall be products commercially available for use in spray applications.

e. Asphalt binder. Asphalt binder material shall conform to the requirements of ASTM D977, Type SS-1 or RS-1.

908-2.2 Inspection. The RPR shall be notified of sources and quantities of mulch materials available and the Contractor shall furnish him with representative samples of the materials to be used 30 days before delivery to the project. These samples may be used as standards with the approval of the RPR and any materials brought on the site that do not meet these standards shall be rejected.

CONSTRUCTION METHODS

908-3.1 Mulching. Before spreading mulch, all large clods, stumps, stones, brush, roots, and other foreign material shall be removed from the area to be mulched. Mulch shall be applied immediately after seeding. The spreading of the mulch may be by hand methods, blower, or other mechanical methods, provided a uniform covering is obtained.

Mulch material shall be furnished, hauled, and evenly applied on the area shown on the plans or designated by the RPR. Straw or hay shall be spread over the surface to a uniform thickness at the rate of 2 to 3 tons per acre (1800 - 2700 kg per acre) to provide a loose depth of not less than 1-1/2 inches (38 cm) nor more than 3 inches (75 mm). Other organic material shall be spread at the rate directed by the RPR. Mulch may be blown on the slopes and the use of cutters in the equipment for this purpose will be permitted to the extent that at least 95% of the mulch in place on the slope shall be 6 inches (150 mm) or more in length. When mulches applied by the blowing method are cut, the loose depth in place shall be not less than one inch (25 mm) nor more than 2 inches (50 mm).

908-3.2 Securing mulch. The mulch shall be held in place by light discing, a very thin covering of topsoil, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the RPR. Where mulches have been secured by either of the asphalt binder methods, it will not be permissible to walk on the slopes after the binder has been applied. When an application of asphalt binder material is used to secure the mulch, the Contractor must take every precaution to guard against damaging or disfiguring structures or property on or adjacent to the areas worked and will be held responsible for any such damage resulting from the operation.

If the “peg and string” method is used, the mulch shall be secured by the use of stakes or wire pins driven into the ground on 5-foot (1.5-m) centers or less. Binder twine shall be strung between adjacent stakes in straight lines and crisscrossed diagonally over the mulch, after which the stakes shall be firmly driven nearly flush to the ground to draw the twine down tight onto the mulch.

908-3.3 Care and repair.

a. The Contractor shall care for the mulched areas until final acceptance of the project. Care shall consist of providing protection against traffic or other use by placing warning signs, as approved by the RPR, and erecting any barricades that may be shown on the plans before or immediately after mulching has been completed on the designated areas.

b. The Contractor shall be required to repair or replace any mulch that is defective or becomes damaged until the project is finally accepted. When, in the judgment of the RPR, such defects or damages are the result of poor workmanship or failure to meet the requirements of the specifications, the cost of the necessary repairs or replacement shall be borne by the Contractor.

c. If the “asphalt spray” method is used, all mulched surfaces shall be sprayed with asphalt binder material so that the surface has a uniform appearance. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m), or as directed by the RPR, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it. Asphalt binder material may be sprayed on the mulched slope areas from either the top or the bottom of the slope. An approved spray nozzle shall be used. The nozzle shall be operated at a distance of not less than 4 feet (1.2 m) from the surface of the mulch and uniform distribution of the asphalt material shall be required. A pump or an air compressor of adequate capacity shall be used to ensure uniform distribution of the asphalt material.

d. If the “asphalt mix” method is used, the mulch shall be applied by blowing, and the asphalt binder material shall be sprayed into the mulch as it leaves the blower. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m) or as directed by the RPR, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it.

METHOD OF MEASUREMENT

908-4.1 Mulching shall be measured in acres on the basis of the actual surface area acceptably mulched.

BASIS OF PAYMENT

908-5.1 Payment will be made at the contract unit price per acre for mulching. The price shall be full compensation for furnishing all materials and for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-908-5.1	Mulching per acre

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 D977	Standard Specification for Emulsified Asphalt

Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-908

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APPENDIX A: Erosion and Sediment Control Forms

Daily Rainfall Log

Project Name: _____

Project Location: _____

Month: _____ **Year:** _____

Type of Device Used to Measure Rainfall: _____

Device Location: _____

Daily Rainfall Monitoring Data

Date	Rainfall Amount, Inches	Time	Reported By

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B.M.P Inspection Report

Project: _____ Inspection Date: _____ Time: _____

Type of Inspection: Routine _____ Re-Inspection _____

Stage of Construction: BMP Installation/Clearing Grading Curb/Gutter Building Other _____

Weather/Soil Condition: Raining/Wet Light Rain/Medium Clear/Dry

Erosion Device Inspected	Status
Bf: Buffer Zone	Passed Failed Comment
Ds1: Soil Stabilization: mulch only 6" to 10"	Passed Failed Comment
Ds2: Soil Stabilization: (temp. seeding)	Passed Failed Comment
Ds3: Soil Stabilization: (permanent vegetation)	Passed Failed Comment
Ds4: Soil Stabilization: (soding)	Passed Failed Comment
Ga: Gablon	Passed Failed Comment
Du: Dust Control	Passed Failed Comment
Cd: Check Dams: rock/other	Passed Failed Comment
Cb: Channel Stabilization: (rip rap or vegetation)	Passed Failed Comment
Co: Construction Exit Pad	Passed Failed Comment
Mb: Geotextiles (matting Blanket)	Passed Failed Comment
Rd: Rock Filter Dam	Passed Failed Comment
Rt: Retrofit: Detention/Sediment Pond	Passed Failed Comment
Sd1: Sediment Barrier	Passed Failed Comment
Sd2: Inlet Sediment Trap	Passed Failed Comment
Sd3: Temporary Sediment Basin	Passed Failed Comment
Sr: Temporary Stream Crossing	Passed Failed Comment
St: Storm Drain Outlet Protection	Passed Failed Comment
Dn1: Temporary Down Drain Structure	Passed Failed Comment
Sb: Stream Bank Stabilization	Passed Failed Comment
Sd1-C: Silt Fence	Passed Failed Comment
Wt: Veg. Waterway or St/Water Conv. Channel	Passed Failed Comment
Tree Preservation Fencing	Passed Failed Comment
Trash	Passed Failed Comment

1. What action(s) was taken for any failed activities listed above? Verbal Notification:_____

Written Notification:_____ Stop Work Order:_____ Citation #:_____

2. What time frame was given to comply with the above violation: Days:____
Other:_____

3. Have any complaints or violations been issued on this project previously? Yes:_____
No:_____

4. If yes, explain
violations/fines:_____
_____

5. Are there state waters present? Yes:_____ No:_____

6. Were all permits posted? Yes:_____ No:_____

7. Is an approved E&S plan on site? Yes:_____ No:_____

Comments:

Inspected By:_____

Site Inspection Report

Erosion and Sedimentation Inspection Report

Maintain Reports on-site

Site:	**Date:**	**Time:**
Inspector:	**Accompanied By:**	
Stage of Construction:		
Site:		
Observation:		
Recommendations:		
Contractors's Corrective Action (and Date):		
Site:		
Observation:		
Recommendations:		
Contractors's Corrective Action (and Date):		

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Inspection Summary

Site:_____ LDA No._____

Map Site	Violation	First Date	Date Corrected

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Daily Inspection Report

Inspection performed by certified personnel each day construction activity occurs on-site

Project Information	
Date:	Project Name:
Project Location:	
Inspection Observations	
Rainfall within past 24 hours (inches):	Is rainfall greater than 0.5"? Inspection Required ☐
Inspection Observations	
Petroleum Product Storage Areas: Are all of the temporary and permanent controls contained in Plan in place? ☐ Yes ☐ No If no, describe the location(s) of deficiencies and corrective actions that must be taken.	
Vehicle Entrances and Exits: Is there tracking of sediment from locations where vehicles enter and leave the project? ☐ Yes ☐ No If yes, describe the location(s) and the corrective actions that must be taken.	
Other Observations	
Is an Erosion, Sedimentation and Pollution Control Plan revision required? ☐ Yes ☐ No Date of revision:	
Corrective Actions and Date:	

Signature of Certified Personnel

Printed Name of Certified Personnel

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Weekly Inspection Report

Inspection performed by certified personnel at least once every seven calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater

Project Information	
Date:	Project Name:
Project Location:	
Name of Inspector:	
Inspection Event	
Regular weekly inspection: ☐	Inspection within 24 hours of 0.5" storm event ☐

Inspection Observations

Disturbed areas that have not undergone final stabilization:

Are all of the temporary and permanent controls contained in Plan in place and properly maintained? ☐ Yes ☐ No

If no, describe the location(s) of deficiencies and corrective actions that must be taken.

Corrective Action Taken and Date:

Material storage areas exposed to precipitation:

Are all of the temporary and permanent controls contained in Plan in place and properly maintained? ☐ Yes ☐ No

If no, describe the location(s) of deficiencies and corrective actions that must be taken.

Corrective Action Taken and Date:

Discharge locations or points.

Are erosion control measures preventing impacts to receiving waters? ☐ Yes ☐ No

If no, describe observations:

Structural control measures:

Are all of the temporary and permanent controls contained in Plan in place and properly maintained? ☐ Yes ☐ No

If no, describe the location(s) of deficiencies and corrective actions that must be taken.

Control Measures	Location	Deficiency	Date Corrected

Other Observations:

Is an Erosion, Sedimentation and Pollution Control Plan revision required? ☐ Yes ☐ No Date of revision:

Signature of Certified Personnel

Printed Name of Certified Personnel

Monthly Inspection Report

Inspection performed by certified personnel at least once per month

Project Information	
Date:	Project Name:
Project Location:	
Inspection Observations	
Rainfall within past 24 hours (inches):	Is rainfall greater than 0.5"? Inspection Required ☐
Inspection Observations	
Areas that have undergone final stabilization: Are all permanent stabilization controls contained in Plan in place? ☐ Yes ☐ No If no, describe the location(s) of deficiencies and corrective actions that must be taken.	
Other observations: Are pollutants entering the drainage system or receiving waters? ☐ Yes ☐ No If yes, describe the location(s) and the corrective actions that must be taken. Are all erosion and sediment control measures operating properly? ☐ Yes ☐ No If no, describe the location(s) and the corrective actions that must be taken.	
Other Observations	
Is an Erosion, Sedimentation and Pollution Control Plan revision required? ☐ Yes ☐ No Date of revision:	
Corrective Actions and Date:	

Signature of Certified Personnel

Printed Name of Certified Personnel

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Stormwater Monitoring Records

Month:_____ Year: _____ **Sheet ___ of___**

Submit to EPD by 15th of Following Month

Project Name: _____ Project Location: _____

Date Sampled	Rainfall Amount, Inches	Exact Location of Samples	Time Sampled	Sampling Technique Manual or Automatic Grab	Sampled By	Date of Analysis	Time of Analysis	Analyzed By	Analytical Method	Results (NTU)

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Storm Water Discharge Data

Site:_____ LDA No._____

Date	Rainfall (in.)	Location	Reading (NTU)	Comments