

**CONTRACT DOCUMENTS
FOR THE
CONSTRUCTION OF**

**TAXIWAY A EXTENSION
ROSEBURG REGIONAL AIRPORT**

AIP No.: 3-41-0054-030-2022

City No. : 22GR18



**CITY OF ROSEBURG
PUBLIC WORKS DEPARTMENT
DOUGLAS COUNTY, OREGON**

ISSUED FOR BID

PREPARED BY:

Mead & Hunt, Inc.

9600 NE Cascades Pkwy, Suite 100

Portland, OR 97220

503-548-1494

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CERTIFICATION PAGE

THE DOCUMENTS FOR THIS PROJECT WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION:



PAGES OR SHEETS COVERED BY THIS SEAL:

- | | |
|--|--|
| Advertisement for Bid | Standard Contract Provisions |
| Invitation to Bid | Public Works Bond Filing Certification |
| Information to Bidders | Standard Performance bond |
| Bidder’s Checklist | Payment bond |
| Bid Form | Lowest Bidder Responsibility Determination Form |
| Standard Bid Bond | Prevailing Wage Rates for Public Works Contracts |
| First Tier Subcontractor Disclosure Form | General Conditions |
| Instructions | Required Federal Contract Provisions |
| First Tier Subcontractor Disclosure Form | Federal General Contract Provisions |
| Employee Drug Testing Program | |
| Pay Equity Compliance Training | Technical Specifications: |
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| Buy American Certification | C-102 P-620 |
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| Certification Regarding Domestic Preferences for Procurements | P-101 F-162 |
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| Statement | P-154 T-905 |
| Certification of Offeror/Bidder Regarding Tax Delinquency and Felony Convictions | P-209 T-908 |
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| Disadvantage Business Enterprise (DBE) | P-603 NS-104 |
| Utilization Statement | |
| Appendix A to Part 26 | Construction Safety and Phasing Plan (CSPP) |
| DBE Letter of Intent | |
| Construction Contract | |

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CERTIFICATION PAGE

THE DOCUMENTS FOR THIS PROJECT WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION:

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Technical Specifications

NS-101

NS-102



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DRAWINGS

April 2024

CITY OF ROSEBURG
ADVERTISEMENT FOR BID

Project Name: Taxiway A Extension

Project Number: 22GR18

Bids Date: Thursday, May 16, 2024, 2:00 PM Local Time

Sealed bids, subject to the conditions contained herein, for the improvements to the Roseburg Regional Airport, Roseburg, Oregon, Project No. 22GR18, will be received by the City Recorder at City Hall, 900 SE Douglas, Roseburg, Oregon, 97470, until Thursday, May 16, 2024, at 2:00 PM, at which time they will be publicly opened and read in-person or virtually. **No bids shall be received after this date and time.** Additional forms disclosing first tier subcontractors are due by 4:00 PM on Thursday, May 16, 2024.

Project work consists of, but is not limited to, the following: Extension of Taxiway and Construction of Taxiway A1; Removal of Taxiway A2; Construction of Retaining Wall and Jet Blast Fence; Installation of Pavement Underdrain, Markings, and Taxiway Electrical Components.

Optional Prebid Meeting: Tuesday, April 30, 2024, at 10:00 AM

Microsoft Teams Meeting ID: 255 134 441 794

Passcode: WTqBaa

Dial-in by phone: +1 872-240-1286, 471953701#

Phone conference ID: 471 953 701#

Contact – Submit bids to:

City of Roseburg City Recorder

900 SE Douglas

Roseburg OR 97470

(541) 492-6866

bids@cityofroseburg.org

Address Technical Questions to:

Mark Forslund

9600 NE Cascades Pkwy, Ste 100

Portland, OR 97220

971-256-0888

mark.forslund@meadhunt.com

SOLICITATION DOCUMENTS: Solicitation documents, including contract terms, conditions, specifications, all attachments and/or addenda for the Invitation to Bid are available for review at the above contact address. Bid documents will not be mailed to prospective bidders, but may be downloaded from OregonBuys through the following internet address: <https://www.oregon.gov/das/Procurement/Pages/oregonbuys.aspx>. Bidders without access to OregonBuys may download the documents at a Plan Center or the City of Roseburg's website at www.cityofroseburg.org under "Bidding Opportunities."

Bidders must be pre-qualified in accordance with the laws of Oregon and the Information to Bidders at least ten days prior to the date of bid opening. Bidders must be licensed with the Oregon Construction Contractors Board and comply with City of Roseburg Municipal Code.

The resulting public works contract is subject to ORS 279C.800 to 279C.870 or the Davis-Bacon Act (40 U.S.C. 3141 to 3148). No bid will be considered unless the bid contains a statement that the bidder will comply with the provisions of ORS 279C.840 (Prevailing Wage Rates).

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INVITATION TO BID

The City of Roseburg will receive sealed bids or bids submitted via email marked " **Bid for Taxiway A Extension, Project Number 22GR18**" until the hour of 2:00 p.m. on **Thursday, May 16, 2024**, at which time they will be publicly opened and read in person or virtually. If opened virtually, a link will be posted on the City's website at <https://www.cityofroseburg.org/bidding> no later than 24 hours prior to the opening. When required by ORS 279C.370, bidders must submit a list of their first-tier subcontractors providing labor, or labor and materials, no later than 4:00 p.m. that same day. Bids shall be addressed and delivered to Amy Nytes, City Recorder, City Hall, 900 SE Douglas Avenue, Roseburg, Oregon 97470, or emailed to bids@cityofroseburg.org. Any and all bids received after the 2:00 p.m. deadline for submission, or for which the list of first-tier subcontractors has not been submitted by 4:00 p.m. that same day, shall be considered nonresponsive and returned to the bidder. All bidders must list their "Construction Contractors Board" or "State Landscape Contractors Board" license number as required by ORS 701.021 or 671.530 on the bid form.

The proposed work generally consists of furnishing all labor, equipment, materials and supervision for the Extension of Taxiway and Construction of Taxiway A1; Removal of Taxiway A2; Construction of Retaining Wall and Jet Blast Fence; Installation of Pavement Underdrain, Markings, and Taxiway Electrical Components. The bids will be evaluated as unit price pursuant to OAR 137-049-0380(2)(b). The proposed work will require the bidder to meet the highest standards prevalent in the industry or business related to the work to be performed. Failure to meet such standards may result in a reduction or withholding of payment; require bidder to provide, at bidder's own expense, additional work required to meet such standards; or termination of the contract, with damages being sought. Technical questions regarding the work to be performed shall be submitted by May 9, 2024, and should be addressed to: Mark Forslund, Mead & Hunt, Inc., 9600 NE Cascades Pkwy, Ste 100, Portland, OR 97220, 971-256-0888, mark.forslund@meadhunt.com.

Bids must be accompanied by a certified check, cashier's check, irrevocable letter of credit or Bid Bond in an amount equal to not less than ten percent (10%) of the total amount of the bid. Bidders shall state as part of the bid that the provisions of ORS 279C.800 to 279C.870 (Prevailing Wage Rates) and the Davis-Bacon Act (40 U.S.C. 3141 et seq.) shall be complied with. The project is subject to both the state and federal prevailing rates of wage and the bid must contain a statement by the bidder that contractor and every subcontractor shall pay the higher of the applicable state or federal prevailing rate of wage to all workers on the project. Bidders must also certify as part of the bid that the requirements of ORS 279C.505(2) (Employee Drug Testing Program) shall be complied with. Bidders must be pre-qualified in accordance with the laws of Oregon and the Information to Bidders.

Each bid must contain a statement as to whether the bidder is a resident bidder, as defined in ORS 279A.120. Bidders are not required to be licensed under ORS 468A.720 (Asbestos Abatement). However, the successful bidder shall at all times during the project provide qualified staff on site that is able to identify asbestos containing material. Bidders are hereby notified there are underground pipelines and structures containing asbestos within the City of Roseburg. If any such material is encountered during the project, the bidder shall thereupon be required to notify the City and comply with all requirements of applicable laws and regulations. Unless exempt under ORS 279C.800 to 279C.870, the successful bidder must file a \$30,000 Public Works Bond with the Construction Contractors Board prior to beginning work on the project, and certify that all sub-contractors have also filed such bond. Bidders must agree to use recyclable products to the maximum extent financially feasible. **Bidders with 50 or more employees and for contracts over \$500,000, are required to possess a certificate issued by the Department of Administrative Services for completion of pay equity training (NEW).**

The City of Roseburg may reject any bid not in compliance with all public bidding procedures and requirements, including the requirement to demonstrate the bidder's responsibility under ORS 279C.375(3)(b), may waive any irregularities, and may reject for good cause any or all bids upon a finding of the City it is the public interest to do so. The City may also cancel this invitation in accordance with OAR 137-049-0270.

Federal Requirements for Federally Funded Projects This Project is being partially funded under the Federal Aviation Administration (FAA) Airport Improvement Program (AIP). Bidders must comply with specific federally required provisions as listed herein and contained in the bidding documents. The Following federal provisions are incorporated in this solicitation by reference.

1. Affirmative Action (41 CFR part 60-4; Executive Order 11246)
2. Buy American Preference (49 USC § 50101)
3. Civil Rights – Title VI Assurance (49 USC § 47123; FAA Order 1400.11)
4. Davis-Bacon Act (2 CFR § 200, Appendix II(D); 29 CFR Part 5)
5. Debarment and Suspension (2 CFR part 180 (Subpart C), 2 CFR part 1200, DOT Order 4200.5)
6. Disadvantaged Business Enterprise (49 CFR part 26)
7. Federal Fair Labor Standards Act (29 USC § 201, et seq; 2 CFR § 200.430)
8. Trade Restriction (49 USC § 50104; 49 CFR part 30)
9. Lobbying and Influencing Federal Employees (31 USC § 1352 – Byrd Anti-Lobbying Amendment; 2 CFR part 200, Appendix II(J); 49 CFR part 20, Appendix A)
10. Procurement of Recovered Materials (2 CFR § 200.322; 40 CFR part 247; Solid Waste Disposal)

Disadvantaged Business Enterprise The requirements of 49 CFR part 26, Regulations of the U.S. Department of Transportation, apply to this contract. It is the policy of the City of Roseburg to practice nondiscrimination based on race, color, sex or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership. The City of Roseburg is an equal opportunity and affirmative action employer. Small, minority, veteran, and women-owned businesses are encouraged to submit bids.

A DBE contract goal of **5.43** percent has been established for this contract. The bidder/offeror shall make good faith efforts, as defined in Appendix A, 49 CFR Part 26 (Attachment 1), to meet the contract goal for DBE participation in the performance of this contract. The bidder/offeror will be required to submit the following information: (1) the names and addresses of DBE firms that will participate in the contract; (2) a description of the work that each DBE firm will perform; (3) the dollar amount of the participation of each DBE firm participating; (4) Written statement from bidder/offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal; (5) Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and; (6) If bidder/offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the bidder/offeror as described in appendix A to 49 CFR part 26. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity

1. The Offeror'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:

Timetables

Goals for minority participation for each trade: 2.4%

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 also is subject to the goals for both its federally involved and non-federally involved construction.

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 training must 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 of the 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 the 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" is Douglas County, Oregon.

Civil Rights - Title VI Solicitation Notice The City of Roseburg, 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, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

Federal Fair Labor Standards Act (Federal Minimum Wage) All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, et seq, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

April 2024

The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division

Dated this day of April 18, 2024.

CITY OF ROSEBURG, DOUGLAS COUNTY,

OREGON /s/ Amy Nytes, City Recorder

INFORMATION TO BIDDERS

1. **FORM OF BID**

All bids must be made upon the blank Bid Form attached hereto and must give a price for each item and an aggregate amount or a lump sum price as required in the Bid Form.

The City reserves the right to reject any or all bids or to accept the bid deemed in the best interest of the City. Without limiting the generality of the foregoing, the City may reject any bid which is incomplete, obscure or irregular; which omits any one or more items in the price sheet; in which unit prices are obviously unbalanced; or which is accompanied by an insufficient or irregular Bid Bond.

The bidder shall sign the Bid Form in the blank space provided. All bids must contain the bidder's tax identification number. Bids made by a corporation, general or limited partnership, or L.L.C., shall contain the name and address of such organization, together with names and addresses of officers, partners or managing members. If the bid is made by a corporation, it must be signed by one of the corporate officers with the authority to sign for the corporation; if made by a partnership, by one of the partners.

All bids must be submitted at the time and place, and in the manner prescribed in the Invitation to Bid.

2. **BID PROTEST: REQUEST FOR CHANGE OR CLARIFICATION**

A bidder may protest, or request a change in items in the bid documents, including contract terms and conditions or specifications, by filing a written protest with the City not less than ten (10) calendar days prior to the bid submission deadline. Such written protest or request for change must include a detailed statement of the grounds for the protest and a statement of the desired changes to the contract terms and conditions or specifications.

The City shall not consider a bidder's protest or request for change after the deadline for submitting such protest or request. The City shall provide notice to the bidder if it entirely rejects the bidder's protest or request for change. If the City agrees with the bidder's protest or request, in whole or in part, the City shall issue a written Addendum to the bid documents or specifications.

Prior to the deadline for submitting a written protest or request for change, a bidder may request that the City clarify any provision of the bid documents. The City's clarification to a bidder, whether orally or in writing, shall not change the bid documents and is not binding on the City unless the City amends the bid documents by issuing a written addendum.

If a written addendum is issued by the City, all bidders must provide written acknowledgement, with their bids, of receipt of all issued addenda.

3. CONTRACT DOCUMENTS

The Contract Documents for this Project consist of, but are not necessarily limited to, the Invitation to Bid, Information to Bidders, Bid Form, Construction Contract including Exhibit "A" Standard City Contract Provisions, First-Tier Subcontractor Disclosure Form, Drug Testing Program Certification Form, Bidder's Responsibility Form, Performance Bond, Payment Bond, Public Works Bond Filing Certification form (when required), Pay Equity Compliance Certification (when applicable), Buy American Certification, Certification Regarding Domestic Preferences for Procurements, Equal Employment Opportunity Statement, Certification of Offeror/Bidder Regarding Tax Delinquency and Felony Convictions, Bidder's List, DBE Utilization, DBE Letter of Intent, General Conditions, Required Federal Contract Provisions, Federal General Contract Provisions, Technical Provisions, CSPP, Special Conditions, Standard Drawings, Specifications and Plans and Supplemental Specifications, all as required for the full execution and satisfactory completion of the Project. Any person contemplating the submission of a bid and being in doubt as to the meaning or intent of said Contract Documents should request of the City, in writing, an interpretation thereof. Any interpretation of said Contract Documents shall be made only in writing by the City.

4. ESTIMATE OF QUANTITIES

The estimate of quantities of work to be done as stated in the Bid Form, although stated with as much accuracy as possible, is approximate only and is assumed solely for the purpose of comparing bids. The quantities on which payments will be made to the Contractor are to be determined by measurement of the work actually performed and paid at the unit price bid, regardless of the amount of increase or decrease in the estimated quantities as specified in the Contract Documents. The City reserves the right to increase or diminish the amount of any class of work as may be deemed necessary.

5. CONSTRUCTION CONTRACTORS' BOARD - STATE LANDSCAPE CONTRACTORS' BOARD

All contractors bidding on public contracts must be licensed with the Construction Contractors' Board or the State Landscape Contractors Board as required by ORS 701.021 or 671.530. Bids must be identified with the Contractors' Board license number. No bids will be considered without this information.

6. DISCLOSURE OF FIRST-TIER SUBCONTRACTORS

When a public improvement contract value is greater than \$100,000, all bidders are required to disclose information about first-tier subcontractors, providing labor or labor and materials, when the contract amount of such first-tier subcontractor is equal to or greater than:

- 1) 5% of the project bid, or \$15,000, whichever is greater; or
- 2) \$350,000 regardless of the percentage of the total bid.

Bidders must disclose the following information about such subcontracts, on the First-Tier Subcontractor Disclosure Form provided by the City and included herein, within two hours of the bid submission deadline:

- 1) The subcontractor's name;
- 2) The subcontract dollar value; and
- 3) The category of work to be performed by the subcontractor.

Any bidder not using subcontractors subject to the above disclosure form, must write "NONE" on the Disclosure Form and sign and submit the form. The City will reject a bid if the bidder fails to submit the Disclosure Form before the deadline.

7. DRUG TESTING PROGRAM

ORS 279C.505(2) requires public improvement contracts to include a provision requiring contractors to demonstrate that they have an employee drug and alcohol testing program in place. All bidders are required to certify, on the Drug Testing Program Certification Form provided by the City and included herein, that they have such program in place. This certification will become part of the Contract if awarded and contractor will be required to maintain such program throughout the performance of the Contract. Failure to maintain a program shall constitute a material breach of the Contract.

8. PROMPT PAY POLICY - TIMELY PROGRESS PAYMENTS

ORS 279C.570 and 279C.580 require prompt payment to contractors and subcontractors and provides for settlement of compensation disputes between the parties. The City is required to automatically calculate and pay interest on invoices from the contractor when payments become overdue. The interest commences thirty (30) calendar days after receipt of the invoice from the contractor, or fifteen (15) calendar days after the payment is approved by the City, whichever is earlier. The rate of interest charged to the City on the amount due shall equal three times the discount rate on 90-day commercial paper, but shall not exceed 30 percent.

The City is also required to ensure that the contractor includes a clause in each subcontract that obligates the contractor to pay first-tier subcontractors for satisfactory performance under its contract. Contractors must pay subcontractors within ten (10) calendar days of receiving payment from the City. Contracts between primary contractors and subcontractors must also contain an interest penalty clause that obligates the contractor, if payment is not made to the subcontractor within thirty (30) calendar days after receipt of payment from the City, to pay the first-tier subcontractor an interest penalty on amounts due in the case of each payment not made in accordance with the subcontract payment clause. The contractor is also required to ensure that first-tier subcontractors include these requirements in each of its subcontracts with lower-tier subcontractors or suppliers.

If requested in writing by a first-tier subcontractor, within ten (10) calendar days after receiving the request, the contractor must provide the first-tier subcontractor, a copy of that portion of any invoice or request for payment submitted to the City, or pay document provided by the City to the contractor, specifically related to any labor or materials supplied by the first-tier subcontractor.

9. PRE-QUALIFICATION OF BIDDERS

When required, bidders shall pre-qualify under ORS 279C.430 and 279C.435, by completing the Oregon Department of Transportation (ODOT) Prequalification Application online at:

https://www.oregon.gov/odot/business/procurement/pages/bid_award.aspx

Proof of prequalification shall be submitted to the City at least ten (10) calendar days prior to the date of bid opening.

10. BID BOND, PUBLIC WORKS BOND, PAYMENT BOND AND PERFORMANCE BOND

A Bid Bond, Public Works Bond Filing Certification, Payment Bond and Performance Bond shall be provided as specified in Subsection 5.4 of the General Conditions. No waivers, special requirements or emergency provisions have been established for this Contract.

11. PAY EQUITY COMPLIANCE CERTIFICATION (NEW)

ORS 279A.167 requires businesses with fifty (50) or more employees, and a contract valued at more than \$500,000, to provide proof they are properly trained on Oregon's pay equity laws. A certificate proving the contractor has completed the training shall be provided as specified in Subsection 26 of the "Bid Form".

12. HIGHEST STANDARDS OF WORK AND CONSEQUENCES FOR FAILURE

The work to be performed must meet the highest standards prevalent in the industry or business most closely related to the work to be performed. Failure to meet such standards may result in consequences including, but not limited to a reduction or withholding of payment; a requirement that bidder perform, at bidder's own expense, additional work required to meet such standards; or termination of the contract, with damages being sought.

13. CONDITIONS OF WORK

Bidders must make their own determination of the nature of the work proposed under this Contract, the local conditions which can be encountered in this area, and all other matters which can in any way affect the work proposed under this Contract. It shall also be the bidder's responsibility to be thoroughly familiar with the Contract Documents. Failure to make the examination necessary for this determination or to examine any form, instrument or document of the Contract shall not release the bidder from the obligations of this Contract.

14. REVIEW OF BIDS; BASIS FOR AWARD; NOTICE OF INTENT TO AWARD; AND RIGHT TO PROTEST AWARD

In reviewing all bids received and determining the lowest responsible bidder, the City reserves the right to take into account and give reasonable weight to the extent of the bidder's experience on work of the nature involved, on the bidder's record as to dependability in carrying out of contracts, and evidence of present ability to perform the Contract in a satisfactory manner.

The City may make such investigations as deemed necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the City all such information and data for this purpose as the City may request. The City reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the City that such bidder is properly qualified to carry out the obligations of the Contract, to complete the work contemplated therein, and to do so in a timely manner. The City specifically reserves the right to reject a bid from a bidder who, at the time bids are opened, has failed to complete work in a timely manner under a contract previously awarded to the bidder by the City. Conditional bids will not be accepted.

In accordance with ORS 279A.120(2)(b), in determining the lowest responsible bidder, the City shall, for the purpose of awarding the Contract, add a percentage increase on the bid of a non-resident bidder equal to the percent, if any, of the preference given to that bidder in the state in which the bidder resides.

Within one-hundred-twenty (120) calendar days after the bid opening, the City will accept one of the bids or reject all of the bids received. If the City intends to accept one of the bids, it shall issue a Notice of Intent to Award the Contract to all bidders. The City's award will not be final until seven (7) calendar days after the date of the notice if no protest is filed; or if a protest is filed, until the City provides a written response to all timely-filed protests that denies the protest and affirms the award.

A bidder may submit a formal written protest to the City's Notice of Intent to Award the Contract within seven (7) calendar days of the date of the City's Notice of Intent. The written protest must specify the grounds upon which the protest is based and must show that the protesting party is an adversely affected or aggrieved bidder. A bidder is adversely affected or aggrieved only if the bidder is eligible for award of the Contract as the responsible bidder submitting the lowest responsible bid, is next in line for award and claims that all lower bidders are ineligible for award in accordance with law.

Such protest must be submitted to the City Recorder, 900 SE Douglas, Roseburg, OR 97470 or by email at info@cityofroseburg.org. Any protest received after the 7-day deadline will not be considered. The City Recorder shall forward such protest to the City Manager who shall have the authority to settle or resolve the protest by written decision.

15. EXECUTION OF CONTRACT, BONDS AND DAMAGES FOR FAILURE TO EXECUTE

The bidder whose bid is accepted will be required to appear within ten (10) calendar days after notice that the Contract has been awarded to bidder and to execute the Contract with the City for the full and complete performance of all work specified, and as required by Subsection 5.4 of the General Conditions, deliver the Public Works Bond Filing Certification form, the Payment Bond to assure payment of the obligations incurred in the performance of the Contract and the Performance Bond and to ensure performance of the Contract.

Should the successful bidder fail or refuse to execute the Contract and furnish the Public Works Bond Filing Certification form, Payment Bond and/or Performance Bond when required, then the Bid Bond deposited by said bidder shall be retained by the City as liquidated damages.

16. COMMENCEMENT DATE AND EXPIRATION DATE OF CONTRACT

This Contract shall be in effect from the time the Contract is signed until the Project is completed. The Contractor must be capable of commencing construction on the work contemplated in the Contract Documents within ten (10) calendar days after the execution of the Contract and receipt of the City's notification to proceed and shall complete the same within the time specified in the bid.

Due to federal funding availability, the City anticipates contract award in Summer/Fall 2024. The Contractor will have the option to perform construction in 2024 or 2025, or a combination of both. A temporary suspension of work, in accordance with GP 80-06, will be issued if the contractor elects to perform work in both 2024 and 2025. See construction operations & phasing plans for additional information and work constraints.

If the Contractor elects to perform construction in 2025, it shall begin no later than April 1, 2025, unless otherwise approved by the City.

17. DURATION OF BIDS; RETURN OF BID BONDS

All bids will be binding until the later of:

- 1) the day the contract is executed; or
- 2) one-hundred-twenty (120) calendar days after the date of bid opening.

Bid bonds will be returned to unsuccessful bidders not later than the date on which the bids are no longer binding.

18. PUBLIC RECORDS

These Contract Documents and each bid received in response to it, together with copies of documents pertaining to the award of a contract shall be kept on file as a public record by the City Recorder; provided however, such records shall not be disclosed until after the notice of intent to award the contract has been issued.

19. RECORDS REVIEW; CONFIDENTIALITY

After notice of intent to award the resulting contract has been issued, all bids shall be available for public inspection except for those portions of a bid that the bidder designates in its bid as trade secrets or as confidential proprietary data in accordance with applicable state law. If the City determines such designation is not in accordance with applicable law, the City shall make those portions available for public inspection. The bidder shall separate information designated as confidential from other non-confidential information at the time of submitting its proposal. Prices, makes, models or catalog numbers of items offered, scheduled delivery dates and terms of payment are not confidential, and shall be publicly available regardless of a bidder's designation to the contrary.

20. MATERIALS CONTAINING ASBESTOS

Materials containing asbestos may be present in underground pipe systems. All appropriate Federal, State, County and Municipal rules, regulations and guidelines must be followed when working with asbestos containing material. Non friable material must be handled, transported and disposed of in a way that prevents it from becoming friable and releasing asbestos fibers. If AC pipe is shattered, damaged or badly weathered, it is considered to be friable and will likely release asbestos fibers. A DEQ licensed asbestos abatement contractor using DEQ certified workers must remove all friable asbestos material. Any and all permits and fees that are required by the DEQ, Douglas County and any other regulatory agency must be obtained and paid for by the Contractor prior to disposing of the asbestos containing material. For information about asbestos rules, contact the DEQ Western Region office in Medford, Oregon.

21. REQUIRED FEDERAL CONTRACT PROVISIONS

Contractor shall comply with the Required Federal Contract Provisions and include in all subcontracts.

22. DISADVANTAGED BUSINESS ENTERPRISE

The requirements of 49 CFR part 26, Regulations of the U.S. Department of Transportation, apply to this contract. It is the policy of the City of Roseburg to practice nondiscrimination based on race, color, sex or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership. The City of Roseburg is an equal opportunity and affirmative action employer. Small, minority, veteran, and women-owned businesses are encouraged to submit bids.

A DBE contract goal of **5.43** percent has been established for this contract. The bidder/offeror shall make good faith efforts, as defined in Appendix A, 49 CFR Part 26 (Attachment 1), to meet the contract goal for DBE participation in the performance of this contract. The bidder/offeror will be required to submit the following information: (1) the names and addresses of DBE firms that will participate in the contract; (2) a description of the work that each DBE firm will perform; (3) the dollar amount of the participation of each DBE firm participating; (4) Written statement from bidder/offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal; (5) Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and; (6) If bidder/offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the bidder/offeror as described in appendix A to 49 CFR part 26. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

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BIDDER'S CHECK LIST

Bidder's attention is called to the following forms, which must be executed in full as required with the bid:

- A. **BID FORM(S)**: Each bidder shall complete the bid form(s). Prices must be shown in the spaces provided and must be expressed in figures.
- B. **BID BOND**: This form is to be executed by bidder and bidder's Surety. The amount of cash, certified check, cashier's check, irrevocable letter of credit or Bid Bond shall not be less than 10% of the total Bid amount.
- C. **FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM**: When required by law, this form must be submitted by the bid submission deadline, at which time bids will be opened and read, or within two (2) working hours of such submission deadline. If no subcontractors for labor or for labor and materials will be used, the bidder must write "NONE" on the disclosure form, sign and submit the form as required. Failure to submit this form within two hours of the bid submission deadline will result in the bid becoming non-responsive and such bid will be returned to the bidder.
- D. **DRUG TESTING PROGRAM CERTIFICATION FORM**: This form must be submitted with the bid to demonstrate that bidder has an employee drug and alcohol testing program in place and will continue to keep the program in place throughout the duration of performing the Contract awarded.
- E. **PAY EQUITY COMPLIANCE CERTIFICATION FORM (NEW)**: If applicable pursuant to Section 11 of "Information for Bidders", this form must be submitted with the bid to demonstrate contractor has completed required training regarding pay equity and the prohibition against discrimination in compensation or wage benefits.
- F. **BIDDER'S LIST**: Each bidder shall complete the form in its entirety.
- G. **DBE UTILIZATION STATEMENT**: Each bidder shall complete the form in its entirety.
- H. **DBE LETTER OF INTENT**: This form shall be submitted for each DBE firm intended to perform work on the project.
- I. **DBE GOOD FAITH EFFORTS**: Each bidder shall provide evidence of good faith efforts when unable to meet the contract goal.
- J. **CERTIFICATION OF OFFERER/BIDDER REGARDING TAX DELIQUENCY AND FELONY CONVICTIONS**: Each bidder shall check the appropriate boxes, date, and sign.
- K. **CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS**: Each bidder shall complete the form in its entirety.
- L. **BUY AMERICAN CERTIFICATION**: Each bidder shall check the appropriate boxes and sign.
- M. **EQUAL OPPORTUNITY REPORT STATEMENT**: Each Bidder shall check the appropriate boxes, and sign, and date.
- N. **PUBLIC WORKS BOND PRE-BID NOTICE & CERTIFICATION FORM**: This form must be submitted with the bid to demonstrate contractor's awareness of and intended compliance with the requirement to file a Public Works Bond with the Construction Contractors Board prior to beginning work on the project if awarded the bid.

The following forms are to be executed after the Contract is awarded, prior to beginning work on the project:

- A. **CONSTRUCTION CONTRACT**: This agreement is to be executed by the successful bidder.
- B. **PERFORMANCE BOND AND PAYMENT BOND**: Both a Performance Bond and a Payment Bond are to be executed by the successful bidder and bidder's Surety Company and submitted at the time the Contract is executed.
- C. **PUBLIC WORKS WAGE CERTIFICATION FORM**: This form is to be completed in accordance with state law and submitted monthly during the duration of the contract, by the fifth business day of the following month, with request for payment.
- D. **CERTIFICATE OF INSURANCE**: This certificate is to be executed by the successful bidder and bidder's insurance company and submitted at the time the Contract is executed.
- E. **PUBLIC WORKS BOND FILING CERTIFICATION**: This form is to be executed by the successful bidder and submitted at the time the Contract is executed to certify if Contractor has filed the required Public Works Bond or elected not to file the Bond due to qualifying under ORS 200.055.

BID FORM

**City of Roseburg
900 SE Douglas Avenue
Roseburg, Oregon 97470**

The undersigned bidder has carefully examined the Contract Documents for the construction of the

**Taxiway A Extension
Project Number 22GR18**

referred to in the Invitation to Bid, dated April 18, 2024, inviting bids on such Project and also the site of the Project. Bidder will provide all necessary labor, equipment, tools, apparatus and other means of construction, do all the work and furnish all the materials called for by said Contract Documents in the manner prescribed therein to provide a complete Project.

The undersigned bidder understands that the quantities of work as shown herein are approximate only, unless noted otherwise, and are subject to increase or decrease. The bidder offers to perform the work, at the unit price stated in the following schedule, whether the quantities are increased or decreased.

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ROSEBURG REGIONAL AIRPORT TAXIWAY A EXTENSION CITY NO. 22GR18 BASE BID						
ITEM NO.	SECTION/ ITEM	ITEM DESCRIPTION	QTY	UNITS	UNIT PRICE (IN FIGURES)	TOTAL PRICE (IN FIGURES)
1	C-105-6.1	Mobilization (10% Maximum)	1	LS		
2	C-105-6.2	Engineer's Field Office	1	LS		
3	NS-103-4.1	Winter Suspension	1	LS		
4	NS-104-4.1	Airport Safety and Traffic Control	1	LS		
5	C-100	Contractor Quality Control Program (CQCP)	1	LS		
6	C-102-5.1	Temporary Air and Water Pollution, Soil Erosion, and Siltation Control	1	LS		
7	C-102-5.2	Stabilized Construction Entrance	1	EA		
8	C-102-5.3	Inlet Protection	8	EA		
9	C-102-5.4	Sediment Fence	1050	LF		
10	C-102-5.5	Straw Wattles	120	LF		
11	C-102-5.6	Compost Sock	390	LF		
12	C-102-5.7	Concrete Wash Out	1	EA		
13	GP 50-07	Construction Survey	1	LS		
14	P-101-5.1	Asphalt Pavement Removal	2,100	SY		
15	P-101-5.2	Shoulder Removal	610	SY		
16	P-101-5.3	Asphalt Cold Milling	25	SY		
17	P-101-5.4	Chain-Link Fence Removal	330	LF		

ROSEBURG REGIONAL AIRPORT TAXIWAY A EXTENSION CITY NO. 22GR18 BASE BID						
ITEM NO.	SECTION/ ITEM	ITEM DESCRIPTION	QTY	UNITS	UNIT PRICE (IN FIGURES)	TOTAL PRICE (IN FIGURES)
18	P-101-5.5	Storm Underdrain Removal	122	LF		
19	P-101-5.6	Cable Removal	90	LF		
20	P-101-5.7	Salvage Electrical Manhole	2	EA		
21	P-101-5.8	Taxiway Edge Light Removal	16	EA		
22	P-101-5.9	Cable and Conduit Removal	1000	LF		
23	P-101-5.10	Sidewalk Removal	200	LF		
24	P-101-5.11	Adjust Sanitary Sewer Manhole to Grade	1	EA		
25	P-101.5.12	Recycled Asphalt Millings	130	CY		
26	P-152-4.1	Unclassified Excavation	3,480	CY		
27	P-152-4.2	Embankment in place	2,000	CY		
29	P-152-4.3	Subgrade Preparation	2,400	SY		
30	P-154-5.1	Subbase Course	400	CY		
31	P-154-5.2	Separation Geotextile	2,400	SY		
32	P-209-5.1	Crushed Aggregate Base Course	550	CY		
31	P-401-8.1	Asphalt Surface Course	575	TN		
32	P-603-5.1	Emulsified Asphalt Tack Coat	180	GL		

ROSEBURG REGIONAL AIRPORT TAXIWAY A EXTENSION CITY NO. 22GR18 BASE BID						
ITEM NO.	SECTION/ ITEM	ITEM DESCRIPTION	QTY	UNITS	UNIT PRICE (IN FIGURES)	TOTAL PRICE (IN FIGURES)
33	P-620-5.1	Pavement Marking Removal	310	SF		
34	P-620-5.2	Temporary Markings	1	LS		
35	P-620-5.3	Initial Pavement Marking, Yellow	2,000	SF		
36	P-620-5.4	Final Pavement Marking, White	775	SF		
37	P-620-5.5	Final Pavement Marking, Yellow	2,000	SF		
38	P-620-5.6	Final Pavement Marking, Black	1,050	SF		
39	D-705-5.1	Underdrain, 6" Perforated PVC, Complete	1,190	LF		
40	D-705-5.2	Underdrain Cleanout, Type 1	2	EA		
41	D-705-5.3	Underdrain Cleanout, Type 2	3	EA		
42	F-162-5.1	Chain-Link Fence	75	LF		
43	F-162-5.2	Relocate Salvaged 33' Sliding Gate	1	EA		
44	NS-101	Retaining Wall	380	LF		
45	NS-102	Blast Deflecting Fence	190	LF		
46	L-108-5.1	#6 AWG, Solid, Bare Counterpoise Wire, Complete	1,770	LF		
47	L-108-5.2	#8 AWG, 5 kV, L-824, Type C Cable, Installed in Conduit	1,900	LF		
48	L-108-5.3	#8 AWG, 5 kV, L-824, Type C Cable, Temporary Jumper	50	LF		
49	L-110-5.1	1W-2" PVC Conduit, Schedule 40, Concrete Encased	65	LF		

ROSEBURG REGIONAL AIRPORT TAXIWAY A EXTENSION CITY NO. 22GR18 BASE BID						
ITEM NO.	SECTION/ ITEM	ITEM DESCRIPTION	QTY	UNITS	UNIT PRICE (IN FIGURES)	TOTAL PRICE (IN FIGURES)
50	L-110-5.2	1W-2" PVC Conduit, Schedule 40, Direct Bury	1,770	LF		
51	L-125-5.1	Install New Airfield Guidance Sign on New Base	2	EA		
52	L-125-5.2	Procure and Install Airfield Guidance Sign Panel on Existing Sign	15	EA		
53	L-125-5.3	Relocate Salvaged Sign Housing, Procure and Install New Panel	1	EA		
54	L-125-5.4	Remove and Salvage Airfield Guidance Sign	4	EA		
55	L-125-5.5	LED Medium Intensity Taxiway Edge Light, L-861T(L)	23	EA		
56	L-125-5.6	Temporary Threshold Lighting	1	LS		
57	T-901-5.1	Seeding with Hydromulch	1.09	AC		
58	T-905-5.1	Topsoiling, 9" Depth	1.09	AC		
59	P-610-6.1	Concrete Sidewalk (Including Driveway)	200	SY		
TOTAL BASE BID in Figures						
Total BASE BID in Writing:						

***Abbreviations (Add other abbreviations as required for the project):**

LS – Lump Sum CY – Cubic Yard EA – Each
 LBS – Pounds LF – Lineal Feet IN – Inches
 SY – Square Yard TONS – Tons

The undersigned also declares and agrees as follows:

1. That the only persons or parties interested in this bid are those named herein, that the bid is in all respects fair and without fraud, and that it is made without any connection or collusion with any person making another bid on this Contract.
2. That the bidder, and any subcontractor upon which the bidder is relying, have carefully examined and had an opportunity to comment on, the Contract Documents for the construction of the proposed improvements including a full set of the plans and specifications, including all addenda thereto; that bidder has personally inspected the contemplated construction area or areas; that bidder is satisfied as to the adequacy and completeness of the plans and specifications, the feasibility of the work described therein, quantities of materials, items of equipment and conditions of work involved, including the fact that the description of work and materials as included herein are approximate only; and that this bid is made according to the provisions and under the terms of the Specifications which are hereto attached and hereby made a part of this bid.
3. All of the Specifications and Plans which are listed herein have been examined by the undersigned bidder and the terms and conditions thereof are hereby accepted.
4. It is understood that the Plans may be supplemented by additional Drawings and Specifications in explanation and elaboration of the Plans and it is agreed that such Supplemental Drawings, when not in conflict with those referred to in Paragraph 3 above, will have the same force and effect as if completed and attached hereto, and that when received, will be considered a part of the Contract Documents.
5. It is understood that all work will be performed under the price schedule outlined herein and that all services, materials, labor and equipment and all work necessary to complete the Project in accordance with the Plans and Specifications shall be furnished for the prices named in the bid. If there is a change in the scope of work or work which cannot be properly classified under the price schedule then bidder agrees to do this work as "extra work". The undersigned bidder agrees to do any extra work and furnish materials, and to accept as full compensation therefore at such prices as may be agreed upon in writing by the City and the Contractor before extra work begins. Each party binds itself to agree to reasonable prices.
6. It is understood the work to be performed must meet the highest standards prevalent in the industry or business most closely related to the work to be performed. It is further understood that failure to meet such standards may result in consequences including, but not limited to, a reduction or withholding of payment; a requirement that bidder perform, at bidder's own expense, additional work required to meet such standards; or termination of the contract, with damages being sought.
7. The bidder agrees that if this bid is accepted, the bidder will, within ten (10) calendar days after the notification of acceptance, execute the Construction Contract with the City in the form of Contract specified, and will, at the time of execution of the Contract, deliver to the City the Performance Bond, Payment Bond and Public Works Bond Filing Certification form as required herein, and will furnish all the materials necessary to complete the Project in the manner, in the time and according to methods as specified in the Specifications and required by the City.
8. The cash, certified check, cashier's check, irrevocable letter of credit or Bid Bond shall be payable to the City to the extent of 10% of the amount of the bid in case this bid is accepted by the City and the undersigned shall fail or refuse to execute the Contract and furnish a Payment Bond, a Performance Bond or the Public Works Bond Filing Certification form as required by the Specifications within the time limit named therein after notification that said bid is accepted, all in accordance with the provisions of this bid and the Plans and Specifications which are a part hereof.

9. All items for the Contract for which forms are provided herein have been completed in full by the showing of prices for each and every item thereof, and for the showing of other information indicated by the Bid Form.
10. Bidder agrees to begin work within ten (10) calendar days after the execution of the Contract proposed herein and receipt of the City's notification to begin work and to complete work in all respects within one-hundred-twenty (120) calendar days after "Notice to Proceed" has been issued by the City.
11. In the event the bidder is awarded the Contract and fails to complete the Project within the time limit or extended time agreed upon, as more specifically set forth in the General Conditions, liquidated damages shall be paid to or withheld by the City pursuant to Paragraph 4 of the Construction Contract (Time of Performance - Liquidated Damages) at the rate identified in GP 80-08, until the Project has been completed as provided in the General Conditions.
12. The undersigned bidder hereby states, as part of this bid, that the applicable provisions of Oregon's Prevailing Wage Law (ORS 279C.800 to 279C.870) and the Federal Prevailing Wage Law (Davis-Bacon Act, 40 U.S.C. 3141-3148), shall be complied with. When the Project is subject to both the State and Federal Prevailing Wage Laws and rates, workers in each trade will be paid the higher of the two rates.
13. The undersigned bidder and bidder's subcontractors shall comply with ORS 656.017, which requires them to provide Workers' Compensation coverage for all their subject workers.
14. The undersigned bidder hereby states, as part of this bid, that bidder shall comply with ORS 279C.505(2) which requires bidder to have an employee drug testing program in place.
15. The undersigned bidder and bidders' subcontractors shall comply with ORS 279C.570 and 279C.580, which require timely progress payments for public improvement projects and provide interest penalties for late payment.
16. The undersigned bidder hereby states, as part of this bid, bidder and bidder's subcontractors shall comply with the provisions of Exhibit "A" - "Standard City Contract Provisions".
17. **If applicable** pursuant to Section 11 of "Information for Bidders", the undersigned bidder hereby states, as part of this bid, that bidder has completed pay equity compliance training and received a certificate of completion from the Oregon Department of Administrative Services.
18. If the bidder is awarded the Contract for this work, the name and address of the Surety who will provide the Payment Bond, Performance Bond and Public Works Bond (if required) will be:_____.
19. The name and address of the bidder who is submitting this bid is:_____,
which is the address to which all communications pertinent to this bid and the Contract shall be sent. The bidder's email address is:_____.
20. The names of the principal officers of the corporation submitting this bid or of the partnership, or of all parties interested in this bid as principals are as follows:

_____.
21. The undersigned bidder acknowledges that Addenda No. _____ through _____ have been delivered to bidder and have been examined as part of the Contract Documents.

- 22. In the prosecution of this work, the bidder proposes to use the subcontractors listed on the First-Tier Subcontractor Disclosure Form presented within two working hours of the bid submission deadline as set forth in the Invitation to Bid. Any bidder not using subcontractors subject to the above referenced Disclosure Form shall indicate "NONE" on the Disclosure Form and sign and submit the form as required.
- 23. Declaration of Residency: I "am" or "am not" (circle one) a "resident bidder"* as defined by ORS 279A.120, a contractor that has paid unemployment taxes or income taxes in Oregon during the 12 calendar months immediately preceding submission of the bid, has a business address in this state and has stated in the bid whether the bidder is a "resident bidder" pursuant to ORS 279A.120.
- 24. The bidder's Construction Contractors Board License Number or Landscape Contractors Board License Number is: _____.
- 25. Bidder's Tax Identification Number: _____. Email: _____.
- 26. Public Works Bond: If the bid is accepted, prior to beginning work on the project, the bidder will file with the Construction Contractors Board, a Public Works Bond in the amount of \$30,000 with a corporate surety authorized to do business in the State of Oregon; and before permitting a subcontractor to begin work on the project, the bidder will verify that the subcontractor has also filed the aforementioned bond. If the bidder, as a certified disadvantaged, minority, women or emerging small business enterprise, elects not to file the Public Works Bond, bidder will file written verification of such certification with the Construction Contractors Board and provide the Board and the City of Roseburg with notice of such election.
- 27. The undersigned acknowledges that the FAA does not permit escalation clauses for increase in fuel, asphalt, or other construction costs. Bids shall be adjusted accordingly to account for possible material and labor cost increases over the life of the project.

NON-COLLUSION DECLARATION

I, by signing the proposal, hereby declare, under penalty of perjury under the laws of the United States that the following statements are true and correct:

- 1. That the undersigned person(s), firm, association or corporation has (have) not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the project for which this proposal is submitted.
- 2. That by signing the signature page of this proposal, I am deemed to have signed and to have agreed to the provisions of this declaration.

CERTIFICATION OF OFFERER/BIDDER REGARDING DEBARMENT

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

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

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 disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

CERTIFICATION REGARDING LOBBYING

The bidder or offeror certifies by signing and submitting this bid or proposal, to the best of their 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 officer 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.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

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.

TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror -

1. 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 as published by the Office of the United States Trade Representative (U.S.T.R.);
2. 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 included on the list of countries that discriminate against U.S. firms as published by the U.S.T.R.; and
3. has not entered into any subcontract for any product to be used on the Federal on the project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.

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.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

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 an Offeror or subcontractor:

- (1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.; or
- (2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such U.S.T.R. list; or
- (3) who incorporates in the public works project any product of a foreign country on such U.S.T.R. list;

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.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by U.S.T.R, unless the Offeror has knowledge that the certification is erroneous.

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

If sole Proprietor or Partnership:

In witness hereto, the undersigned as set his/her hand this _____ day of _____, 2024.

Printed name of bidder: _____

Signature of bidder: _____

Title: _____

If Corporation:

In witness whereof, the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this ____ day of _____, 2024.

Name of Corporation: _____

Printed name of person signing: _____

Signature: _____

Title: _____

Attest: _____
Secretary

April 2024

STANDARD BID BOND

We, _____, "as Principal,"
(Name of Principal)

and _____, an _____ Corporation,
(Name of Surety)

authorized to transact Surety business in Oregon, as "Surety," hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns to pay unto the City of Roseburg ("Obligee") the sum of (\$ _____) _____ dollars.

WHEREAS the condition of the obligation of this bond is that Principal has submitted its proposal or bid to an agency of the Obligee in response to Obligee's procurement document (No. _____) for the project identified as:

_____ which proposal or bid is made a part of this bond by reference, and Principal is required to furnish bid security in an amount equal to ten percent (10%) of the total amount of the bid pursuant to the procurement document and ORS 279C.365(5) for competitive bidding or 279C.400(5) for competitive proposals.

NOW, THEREFORE, if the proposal or bid submitted by Principal is accepted, and if a contract pursuant to the proposal or bid is awarded to Principal, and if Principal enters into and executes such contract within the time specified in the procurement document and executes and delivers to Obligee its good and sufficient performance bond, payment bond and public works bond as required by Obligee within the time fixed by Obligee, then this obligation shall be void; otherwise, it shall remain in full force and effect.

IN WITNESS WHEREOF, we have caused this instrument to be executed and sealed by our duly authorized legal representatives this _____ day of _____, 2024.

PRINCIPAL: _____ SURETY: _____

By _____ Signature BY ATTORNEY-IN-FACT:

_____ Official Capacity Name

Attest: _____ Corporation Secretary Signature

_____ Address

_____ City State Zip

_____ Phone Email

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FIRST TIER SUBCONTRACTOR DISCLOSURE FORM INSTRUCTIONS

Instructions for First-Tier Subcontractor Disclosure:

Bidders are required to disclose information regarding certain first-tier subcontracts (ORS 279C.370). Specifically, when the contract amount of a first-tier subcontract furnishing labor or labor and materials would be great than or equal to: (1) 5% of the project bid, but at least \$15,000; or (2) \$350,000 regardless of the percentage, the bidder must disclose the following information about that subcontract either in its bids submission, or within two hours after bid closing:

- (A) The subcontractor's name;
- (B) The category of work that the subcontractor would be performing; and
- (C) The dollar value of the subcontract.

If the bidder will not be using any subcontractors that are subject to the above disclosure requirements, the bidder is required to indicate "NONE" on the accompanying form.

THE CONTRACTING AGENCY MUST REJECT A BID IF THE BIDDER FAILS TO SUBMIT THE DISCLOSURE FORM WITH THIS INFORMATION BY THE STATED DEADLINE (OAR 137-049-0360).

** The subject form is on the following page.*

FIRST TIER SUBCONTRACTOR DISCLOSURE FORM

PROJECT NAME: _____

BID#: _____

BID CLOSING: DATE: _____ **TIME:** _____

This form must be submitted at the location or email specified in the Invitation to Bid on the advertised bid closing date and within two working hours after the advertised bid closing time.

List below: the name of each subcontractor that will be furnishing labor or labor and materials and is required to be disclosed, the category of work that the subcontractor will be performing and the dollar value of the subcontract. Enter "NONE" if there are no subcontractors that need to be disclosed. (ATTACH ADDITIONAL SHEETS IF NEEDED)

NAME OF SUBCONTRACTOR	DOLLAR VALUE	CATEGORY OF WORK
_____	\$ _____	_____
_____	\$ _____	_____
_____	\$ _____	_____
_____	\$ _____	_____
_____	\$ _____	_____
_____	\$ _____	_____

Failure to submit this form by the disclosure deadline will result in a nonresponsive bid. A nonresponsive bid will not be considered for award.

Form submitted by (bidder name): _____

Contact name: _____ **Phone #:** _____

Form Received in the City Recorder's Office:

Time: _____ **Date:** _____ **By:** _____

**EMPLOYEE DRUG TESTING PROGRAM
CERTIFICATION FORM**

BIDDER'S NAME: _____

PROJECT NAME & NUMBER: _____

ORS 279C.505 (2) provides that every public improvement contract contain a condition that the Contractor shall demonstrate that an employee drug testing program is in place. The City's award of the Contract for which this certificate is required is conditioned, in part, upon the Bidder's demonstration of compliance with the provisions of ORS 279C.505(2). If the Bidder named above is awarded the Contract, this certificate shall become a part of, and shall constitute a continuing representation and warranty under, the Contract.

To induce the City to award the Contract to the Bidder, the undersigned, as the duly authorized representative of the Bidder, hereby represents and warrants, on behalf of the above named Bidder:

1. That Bidder has and enforces, and at all times during the term of the Contract will have and enforce, a written employee drug testing policy that at a minimum, requires compliance with the Oregon Department of Transportation Commercial Driver's License drug testing regulations;
2. A copy of the Bidder's current written employee drug testing policy will be available for inspection by the City at any time upon the City's request; and
3. The Bidder understands and agrees that its representations and warranties herein will become a continuing part of the Contract and that breach of any of the foregoing will be sufficient grounds for disqualification under 279C.440(2)(d).

The City shall not be liable, either directly or indirectly, in any dispute arising out of the substance or procedure of Bidder/Contractor's drug testing program. Nothing in this drug testing provision shall be construed as requiring Bidder/Contractor to violate any legal, including constitutional rights of any employee, including but not limited to, selection of which employees to test and the manner of such testing. The City shall not be liable for Bidder/Contractor's negligence in establishing or implementing, or failure to establish or implement, a drug testing policy, or for any damage or injury caused by Bidder/Contractor's employees acting under the influence of drugs while performing work covered by the Contract. These are Bidder/Contractor's sole responsibilities.

In Witness whereof, the Bidder has caused this document to be executed by its duly authorized representative on the date shown below.

Signature: _____

Printed Name, Title: _____

Date: _____

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**PAY EQUITY COMPLIANCE TRAINING
CERTIFICATION FORM
(NEW)**

BIDDER'S NAME: _____

PROJECT NAME & NUMBER: _____

ORS 279A.167(1) provides that the Oregon Department of Administrative Services shall establish a program to certify that a person that intends to submit a bid or proposal for a public contract understands the prohibition set forth in ORS 652.220 and in other laws or rules that prohibit discrimination in compensation or wage payments. Following completion of the course, a certificate of completion will be provided. This certification is recommended for ANY contractor in the state of Oregon, and **required for any contractor who employs fifty (50) or more people, and for a contract valued at more than \$500,000**. Information on how to receive this certification can be found by clicking [here](#).

To induce the City to award the Contract to the Bidder when the certification is required, the undersigned, as the duly authorized representative of the Bidder, hereby represents and warrants, on behalf of the above named Bidder:

1. That Bidder has completed the training on pay equity as outlined in ORS 652.220; and
2. A copy of the Certificate of Completion of the pay equity compliance training will be available for inspection by the City at any time upon the City's request.

In Witness whereof, the Bidder has caused this document to be executed by its duly authorized representative on the date shown below.

Signature: _____

Printed Name, Title: _____

Date: _____

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BIDDER'S LIST

The Bidder shall provide information on **ALL** subcontractors/material suppliers bidding or quoting on subcontracts for this project.

Name of Firm	Address	Type of Work to be Performed on Contract	Licensed in			Contractors License # Class	Certified DBE		Certification Number	Bid Amount	Date Firm Established	*GRS
			Yes	No	State		Yes	No				

Attach additional pages, as necessary.

***GRS - Annual Gross Receipts**

- Enter 1 for less than \$1 million
- Enter 2 for more than \$1 million but less than \$5 million
- Enter 3 for more than \$5 million but less than \$10 million
- Enter 4 for more than \$10 million but less than \$15 million
- Enter 5 for more than \$15 million

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DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION

The undersigned bidder/offeror has satisfied the requirements of the bid specification in the following manner (please check the appropriate space):

_____ The bidder/offeror is committed to a minimum of _____ % DBE utilization on this contract.

_____ The bidder/offeror (if unable to meet the DBE goal of 5.43%) is committed to a minimum of _____% DBE utilization on this contract a submits documentation demonstrating good faith efforts.

Name of bidder/offeror's firm: _____

State Registration No. _____

By _____

(Signature)

Title

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LETTER OF INTENT
Disadvantage Business Enterprise
(This page shall be submitted for each DBE firm)

Bidder/Offer Name: _____
Address: _____
City: _____ State: _____ Zip: _____

DBE Firm: DBE Firm: _____
Address: _____
City: _____ State: _____ Zip: _____

DBE Contact Person: Name: _____ Phone: (____) _____

DBE Certifying Agency: Expiration _____ Date: _____

Each DBE Firm shall submit evidence (such as a photocopy) of their certification status.

Classification: Prime Contractor Subcontractor Joint Venture
 Manufacturer Supplier

Work item(s) to be performed by DBE	Description of Work Item	Quantity	Total

The bidder/offeror is committed to utilizing the above-named DBE firm for the work described above. The estimated participation is as follows:

DBE contract amount: \$ _____ Percent of total contract: _____%

AFFIRMATION:

The above-named DBE firm affirms that it will perform the portion of the contract for the estimated dollar value as stated above.

By: _____
(Signature) *(Title)*

* In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.

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APPENDIX A TO PART 26—GUIDANCE CONCERNING GOOD FAITH EFFORTS

I. When, as a recipient, you establish a contract goal on a DOT-assisted contract for procuring construction, equipment, services, or any other purpose, a bidder must, in order to be responsible and/or responsive, make sufficient good faith efforts to meet the goal. The bidder can meet this requirement in either of two ways. First, the bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose. Second, even if it doesn't meet the goal, the bidder can document adequate good faith efforts. This means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.

II. In any situation in which you have established a contract goal, Part 26 requires you to use the good faith efforts mechanism of this part. As a recipient, you have the responsibility to make a fair and reasonable judgment whether a bidder that did not meet the goal made adequate good faith efforts. It is important for you to consider the quality, quantity, and intensity of the different kinds of efforts that the bidder has made, based on the regulations and the guidance in this Appendix. The efforts employed by the bidder should be those that one could reasonably expect a bidder to take if the bidder were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE contract goal. Mere pro forma efforts are not good faith efforts to meet the DBE contract requirements. We emphasize, however, that your determination concerning the sufficiency of the firm's good faith efforts is a judgment call. Determinations should not be made using quantitative formulas.

III. The Department also strongly cautions you against requiring that a bidder meet a contract goal (i.e., obtain a specified amount of DBE participation) in order to be awarded a contract, even though the bidder makes an adequate good faith efforts showing. This rule specifically prohibits you from ignoring bona fide good faith efforts.

IV. The following is a list of types of actions which you should consider as part of the bidder's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

A. (1) Conducting market research to identify small business contractors and suppliers and soliciting through all reasonable and available means the interest of all certified DBEs that have the capability to perform the work of the contract. This may include attendance at pre-bid and business matchmaking meetings and events, advertising and/or written notices, posting of Notices of Sources Sought and/or Requests for Proposals, written notices or emails to all DBEs listed in the State's directory of transportation firms that specialize in the areas of work desired (as noted in the DBE directory) and which are located in the area or surrounding areas of the project.

(2) The bidder should solicit this interest as early in the acquisition process as practicable to allow the DBEs to respond to the solicitation and submit a timely offer for the subcontract. The bidder should determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

- B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units (for example, smaller tasks or quantities) to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces. This may include, where possible, establishing flexible timeframes for performance and delivery schedules in a manner that encourages and facilitates DBE participation.
- C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation with their offer for the subcontract.
- D. (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional Agreements could not be reached for DBEs to perform the work.

(2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.
- E. (1) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal. Another practice considered an insufficient good faith effort is the rejection of the DBE because its quotation for the work was not the lowest received. However, nothing in this paragraph shall be construed to require the bidder or prime contractor to accept unreasonable quotes in order to satisfy contract goals.

(2) A prime contractor's inability to find a replacement DBE at the original price is not alone sufficient to support a finding that good faith efforts have been made to replace the original DBE. The fact that the contractor has the ability and/or desire to perform the contract work with its own forces does not relieve the contractor of the obligation to make good faith efforts to find a replacement DBE, and it is not a sound basis for rejecting a prospective replacement DBE's reasonable quote.

- F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

- G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

- H. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, State, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

V. In determining whether a bidder has made good faith efforts, it is essential to scrutinize its documented efforts. At a minimum, you must review the performance of other bidders in meeting the contract goal. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, you may reasonably raise the question of whether, with additional efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders, you may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts. As provided in §26.53(b)(2)(vi), you must also require the contractor to submit copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract to review whether DBE prices were substantially higher; and contact the DBEs listed on a contractor's solicitation to inquire as to whether they were contacted by the prime. Pro forma mailings to DBEs requesting bids are not alone sufficient to satisfy good faith efforts under the rule.

VI. A promise to use DBEs after contract award is not considered to be responsive to the contract solicitation or to constitute good faith efforts.

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CERTIFICATION OF OFFER/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

(Reference: Sections 415 and 416 of Title IV, Division L of the Consolidated Appropriations Act, 2014 (Pub. L. 113-76), and similar provisions in subsequent appropriations acts.)

(Reference: DOT Order 4200.6 - Requirements for Procurement and Non-Procurement Regarding Tax Delinquency and Felony Convictions)

The bidder must complete the following two certification statements. The bidder must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The bidder agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

- 1) The bidder represents that it is _____ is not _____ a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 2) The bidder represents that it is _____ is not _____ a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

If the bidder responds in the affirmative to either of the above representations, the bidder is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government’s interests. The bidder therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency’s SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559. **Tax Delinquency:** A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

Date

Signature of Authorized Agent

Company Name

Printed Name of Authorized Agent

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CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

(DOMESTIC PREFERENCES FOR PROCUREMENTS, A28.1 SOURCE, 2 CFR § 200.322, 2 CFR Part 200, Appendix II(L))

Must be included in all subawards, including all contracts and purchase orders for work or products under the grant.

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

Date

Signature and Title

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BUY AMERICAN CERTIFICATION

(Title 49 U.S.C. Section 50101)

Project name: Taxiway A Extension
Airport name: Roseburg Regional Airport
AIP number: 3-41-0054-030-2024

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws,¹ U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration 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.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

¹ Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.

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CERTIFICATE OF BUY AMERICAN COMPLIANCE WITH FAA BUY AMERICAN PREFERENCE

(Construction Projects)

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with its proposal. The bidder or offeror must indicate how it intends to comply with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e., not both) by inserting a checkmark (✓) or the letter "X".

Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:

- a) Only installing iron, steel and manufactured products produced in the United States;
- b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
- c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
- d) 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:

- a) To provide to the Airport Sponsor or the FAA evidence that documents the source and origin of the iron, steel, and/or manufactured product.
- b) To faithfully comply with providing U.S. domestic products.
- c) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- d) Certify that all construction materials used in the project are manufactured in the U.S.

The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for 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:

- a) To submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
- b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
- c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
- d) To furnish U.S. domestic product for any waiver request that the FAA rejects.
- e) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials or manufactured goods are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
- c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “facility/project.” The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
- b) Listing of all manufactured products that are not comprised of 100 percent U.S. 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).
- c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
- d) Percentage of non-domestic component and subcomponent cost as compared to total “facility” component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) A completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bids and/or offers;
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
- d) Completed waiver applications for each comparable bid and/or offer.

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

Printed Name and Title

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FAA Form 5100-136, Buy American Project/Product Content Percentage Calculation – Worksheet

Instructions for FAA Form 5100-136, Buy American Preference - Content Percentage Worksheet

General Instructions/Information

This form is intended for use by applicants (manufacturers, contractors, suppliers) for an FAA Buy American Preference waiver of the requirements of section 70914 of the Build America, Buy America (BABA) Act included in the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. No. 117-58). This form and the Final Assembly Questionnaire (FAA form 137) must be submitted together for all waiver requests. Complete the below sections.

Applicant Information Section

Enter applicant and point-of-contact information.

Project/Product Information Section (The Final Project)

Enter summary information about the specific FAA eligible project for which this waiver is requested, including the calculated costs and percentage information from the project material structure worksheet.

FAA Buy American Preference Compliance Section (“Construction Materials”)

Enter summary cost and percentage information about the presence of non-domestic portions of iron, steel, or other singular “construction materials” that consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall which are not combined with any of other materials through a manufacturing process.

Use of Non-Domestic Construction Materials Justification Section

Enter a description of your good faith efforts made to locate and secure domestic materials that are not 100% domestically produced in the United States, including the use of the Supplier Scouting by the Manufacturing Extension Partnership (MEP) or market research. This information is required for any non-U.S. portions of structural steel and or iron.

Project Material Structure Worksheet (Manufactured Goods)

Enter onto the worksheet the final project and manufactured component/subcomponent items, prices, and total costs, excluding labor and retail markup through level 2 only.

Eligible materials below level two should be included with its associated component or subcomponent. Price multiplied by quantity equals costs.

April 2024

For additional information on how to complete this form, contact the FAA regional or airport district office associated with the airport worksite, or for assistance for other waivers, contact FAA headquarters via the AIP Buy American Preference Requirements webpage.

Level. Enter material level 0, 1, or 2. Level 0 is the final product, Level 1 is a component, and Level 2 is a sub-component.

Part Number. Enter a reference number used to track the item.

Item Description. Enter a concise but clear description of the item.

Quantity. Enter the quantity of the item described in the product/project.

Unit of Measure. Enter the unit of measure used for the item. Examples: Each, Ton, or Sq. Ft.

Price/Unit of Measure. Enter the price for each unit of the item.

U.S. Origin Price/Unit of Measure. Enter the price for each unit of U.S. origin.

U.S. Origin Cost. Enter the total cost.

Non-U.S. Price/Unit of Measure. Enter the price for each unit not of U.S. origin.

Non-U.S. Cost. Enter the total cost of the item not of U.S. origin.

Country of Non-U.S. Materials. Enter the country or countries of origin for all non-U.S. materials. Enter “Not applicable” if only U.S. materials are used for the item.

EXAMPLE Completed Material Structure Worksheet

On the next page is an illustration of a Project Material Structure Worksheet. In this illustration, the final project, and each manufactured component/subcomponent costs, excluding labor and retail mark-up, are listed. The total cost of materials, excluding labor and retail mark-up is \$720,000 (\$565,000 of U.S. costs and \$155,000 Non-U.S. costs). Items [materials] combined through a manufacturing process may be indicated as a manufactured component/subcomponent.

Unit of measure prices are multiplied by the quantity to identify costs. The sum of each component/subcomponents is equal to the amounts in the final project. Eligible materials below level 2 may be included within a manufactured good in levels 1 or 2.

Ineligible or excluded materials should be omitted.

The country of origin of all non-U.S. material are listed by each component and the final product. Other variations of the project components/subcomponents are possible as each manufacturer may produce or apply components/subcomponents differently.

Level (0,1, 2)	Part Number	Item Description	Quantity	Unit of Measure	Price/Unit of Measure	U.S. Origin Price/Unit of Measure	U.S. Origin Cost	Non-U.S Price/Unit of Measure	Non-U.S. Cost	Country of Non U.S. Materials
0	Ref #	Final Project	1	Each	\$720,000	\$425,000	\$565,000	\$72,500	\$155,000	Country A, Country B, Country C
1	Ref #	Manufactured Component	4	Ton	\$320,000	\$70,000	\$210,000	\$27,500	\$110,000	Non-U.S. Country A
1	Ref #	Manufactured Component	1	Each	\$100,000	\$100,000	\$100,000	\$0	\$0	Not Applicable
1	Ref #	Manufactured Component	1	Each	\$25,000	\$25,000	\$25,000	\$0	\$0	Not Applicable
1	Ref #	Manufactured Component	1	Sq. Ft.	\$100,000	\$60,000	\$60,000	\$40,000	\$40,000	Non-U.S. Country B
2	Ref #	Manufactured Subcomponent	1	Each	\$25,000	\$20,000	\$20,000	\$5,000	\$5,000	Non-U.S. Country C
1	Ref #	Manufactured Component	1	Each	\$50,000	\$50,000	\$50,000	\$0	\$0	Not Applicable
1	Ref #	Structural Steel Material	1	Tons	\$100,000	\$100,000	\$100,000	\$0	\$0	Not Applicable

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April 2024



U.S. Department of Transportation
Federal Aviation Administration

OMB CONTROL NUMBER: 2120-0569

EXPIRATION DATE: 6/30/2023

Buy American Project/Product Content Percentage Calculation – Worksheet

Applicant Information

Date of Application:

Applicant Name:

Applicant Type (choose one):

Prime Contractor

Manufacturer

Supplier

Point of Contact (First and Last Name):

Applicant Business Address:

Email address:

Telephone:

Extension:

Project/Product Information

FAA Eligible Project:

Airport Sponsor: Airport LOCID:

FAA Award Number:

FAA Item Number (FAA Advisory Circular reference, if applicable): Total

Material Cost:

Total **U.S.** Material Content Cost:

Percentage:

%

Total **Non-U.S.** Material Content Cost:

Percentage:

%

FAA Buy American Preference (Including Buy American Build American) Compliance

Does this project include any iron, steel, or any of the following construction materials, not 100% produced in the United States?

Yes No

If "Yes," indicate the cost and percentage of the project below.

Steel (e.g., structural steel, rebar)	Cost:	Percentage:
Iron	Cost:	Percentage:
Non-ferrous metals	Cost:	Percentage:
Plastic and polymer-based products	Cost:	Percentage:
Glass (including optic glass)	Cost:	Percentage:
Lumber	Cost:	Percentage:
Drywall	Cost:	Percentage:

Use of Non-Domestic Construction Materials Justification

Provide a description of your efforts to locate and secure a domestic source for those "construction materials" or final manufactured goods that are not 100% produced in the U.S., including use of the Manufacturing Extension Partnership (MEP) and market research.

- CONFIDENTIAL -

NOT SUBJECT TO DISCLOSURE UNDER EXEMPTION # 4 OF THE FREEDOM OF INFORMATION ACT

Project Material Structure Worksheet

Level (0,1, 2)	Part Number	Item Description	Quantity	Unit of Measure	Price/Unit of Measure	U.S. Origin Price/Unit of Measure	U.S. Origin Cost (Each)	Non-U.S Price/Unit of Measure	Non-U.S. Cost (Each)	Country of Non U.S. Materials
0			1	Each						

– CONFIDENTIAL –

NOT SUBJECT TO DISCLOSURE UNDER EXEMPTION # 4 OF THE FREEDOM OF INFORMATION ACT

Level (0,1, 2)	Part Number	Item Description	Quantity	Unit of Measure	Price/Unit of Measure	U.S. Origin Price/Unit of Measure	U.S. Origin Cost (Each)	Non-U.S Price/Unit of Measure	Non-U.S. Cost (Each)	Country of Non U.S. Materials

- CONFIDENTIAL -

NOT SUBJECT TO DISCLOSURE UNDER EXEMPTION # 4 OF THE FREEDOM OF INFORMATION ACT

CERTIFICATION

The undersigned certifies that this information is true and accurate to the best of their knowledge. A false certification represents a violation of 18 U.S.C § 1001 and 49 U.S.C § 47126. Signatory has the burden of proof to establish compliance.

Signature: _____

Date: _____

Name: _____

Title: _____

Submit by Email

FOR FAA USE ONLY

(Mark the appropriate Waiver Type & Scope)

APPLICABLE FAA WAIVER TYPE

- Type I Public Interest (HQ Only) Type II Nonavailability (HQ Only)
- Type III More than 60% and Final Assembly within the U.S.
- Type IV Unreasonable Cost (Requires MEP/requires HQ coordination)
- BABA Iron, Steel, or Construction Material (requires justification) (Apply BABA Flag)

APPLICABLE FAA WAIVER SCOPE

- Project Specific
- Nationwide – (General Applicability) (For HQ Only)

JUSTIFICATIONS

- Manufacturing Extension Partnership (MEP) Coordinated

FAA OFFICIAL'S SIGNATURE:

End of FAA-Use Only Section

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EQUAL EMPLOYMENT OPPORTUNITY REPORT STATEMENT

Each bidder shall complete and sign the Equal Employment Opportunity Report Statement. A bid may be considered unresponsive and may be rejected, in the Owner’s sole discretion, if the bidder fails to provide the fully executed statement or fails to furnish the required data. The bidder shall also, prior to award, furnish such other pertinent information regarding its own employment policies and practices as well as those of its proposed subcontractors as the FAA, the Owner, or the Executive Vice Chairman of the President’s Committee may require.

The bidder shall furnish similar statements executed by each of its first-tier and second-tier subcontractors and shall obtain similar compliance by each subcontractor, before awarding subcontracts. No subcontract shall be awarded to any non-complying subcontractor.

Equal Employment Opportunity Report Statement

As Required in 41 CFR 60-1.7(b)

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

1. The Bidder has ___ has not ___ developed and has on file at each establishment affirmative action programs pursuant to 41 CFR 60-1.40 and 41 CFR 60-2.
2. The Bidder has ___ has not ___ participated in any previous contract or subcontract subject to the equal opportunity clause prescribed by Executive order 11246, as amended.
3. The Bidder has ___ has not ___ filed with the Joint Reporting Committee the annual compliance report on Standard Form 100 (EEO-1 Report).
4. The Bidder does ___ does not ___ employ fifty or more employees.

Date

Signature of Authorized Agent

Company Name

Printed Name of Authorized Agent

Intentionally left blank

CITY OF ROSEBURG

PUBLIC WORKS BOND - PRE-BID NOTICE AND CERTIFICATION

I, the undersigned contractor, hereby certify that if awarded the contract for which I am submitting this bid, prior to beginning work on such Project, unless exempt under ORS 279C.800 to 279C.870, I will file with the Construction Contractors Board, a Public Works Bond in the amount of \$30,000 with a corporate surety authorized to do business in the State of Oregon. I further certify that before permitting a subcontractor to start work on the Project upon which I am submitting this bid, I will verify that the subcontractor has also filed such Public Works Bond or has elected not to file such bond as allowed by state law. The Public Works Bond shall provide that the contractor or subcontractor will pay claims ordered by the Bureau of Labor and Industries to workers performing labor upon public works projects. The bond shall be a continuing obligation and remain continuously in effect.

If, as a contractor, I qualify as a disadvantaged, minority, women, disable veteran or emerging small business enterprise certified under ORS 200.055 and I have elected not to file the aforementioned Public Works Bond, I hereby certify that I will file written verification of such certification with the Construction Contractors Board. I also certify that before beginning any work on the Project, I will provide the City of Roseburg and the Construction Contractors Board written notice that I have elected not to file the Public Works Bond. If so certified under ORS 200.055, I understand that my election not to file the Public Works Bond will expire one year from the date it was filed and that a claim for unpaid wages may be filed against the payment bond I submitted on the Project.

I further certify that I understand the Public Works Bond described above is in addition to any other bond that I am required to provide, or that may be required of a subcontractor, for this Project.

Project Name: _____

Project Number: _____

Contractor's Printed Name: _____

Contractor's Signature: _____

Dated: _____

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April 2024

CITY OF ROSEBURG
CONSTRUCTION CONTRACT
PROJECT NO.: 22GR18

Dated: _____

Parties: City of Roseburg (‘‘CITY’’)

A municipal corporation in the State of Oregon
900 SE Douglas Avenue
Roseburg, OR 97470

and

_____ (‘‘CONTRACTOR’’)

Additional Independent Contractor Information:

- A. Type of Entity: Sole Proprietorship Partnership Limited Liability Company Corporation
- B. Address: _____
- C. Telephone: _____
- D. Fax No: _____
- E. Email: _____
- F. Construction Contractor Board No.: _____

This Contract is made and entered into this day of _____, 2024, by and between _____ hereinafter called the ‘‘Contractor’’, and the City of Roseburg, a municipal corporation of the State of Oregon, hereinafter called the ‘‘City’’.

WITNESSETH

That the Contractor and City, for the consideration hereinafter described agree as follows:

1. WORK TO BE PERFORMED. The Contractor agrees to do all the work and furnish all necessary labor, materials, tools and equipment for the completion of the Taxiway A Extension – Project Number 22GR18 in accordance with the bid made by the Contractor on the ____ day of _____, 2024, all in full compliance with the Contract Documents referred to herein, and guarantees all materials and workmanship for one year after acceptance of the project.

2. CONTRACT DOCUMENTS. The Contract Documents include the City's Invitation to Bid, Information to Bidders, Bid Form, Construction Contract including Exhibit "A" Standard City Contract Provisions, First-Tier Subcontractor Disclosure Form, Drug Testing Program Certification Form, Bidder's Responsibility Form, Performance Bond, Payment Bond, Public Works Bond Filing Certification form (when required), Pay Equity Compliance Certification (when applicable), Buy American Certification, Certification Regarding Domestic Preferences for Procurements, Equal Employment Opportunity Statement, Certification of Offeror/Bidder Regarding Tax Delinquency and Felony Convictions, Bidder's List, DBE Utilization, DBE Letter of Intent, General Conditions, Required Federal Contract Provisions, Federal General Contract Provisions, Technical Provisions, CSPP, Special Conditions, Standard Drawings, Specifications and Plans and Supplemental Specifications, all as required for the full execution and satisfactory completion of the work. All of the Contract Documents are incorporated herein by this reference and made a part of this Contract.

3. PAYMENT. In consideration of the faithful performance of the work herein described, the City agrees to pay the Contractor (**insert cost/bid amount**) as payment in full per the provisions of the Contract Documents. The Contractor may elect to receive payments directly to their bank account by completing the attached Vendor Automatic Payment Authorization form.

4. TIME OF PERFORMANCE - LIQUIDATED DAMAGES. The Contractor shall commence work under this Contract upon receiving notification to proceed from the City. The Contractor agrees that the work under this Contract shall be completed within the allowed construction time identified GP 80-08 after notification to begin work. If the Contractor fails to complete the Project within the time hereinbefore mentioned, or in the extended time agreed upon, liquidated damages shall be paid to or withheld by the City in accordance with GP 80-08 until the Project is completed. It has been agreed that the damages arising from a delay in completion would be difficult to ascertain with any degree of accuracy, even after the Project is completed. It has also been agreed that the amount of liquidated damages specified herein is a reasonable forecast of just compensation for the harm that will be caused by a delay in completion of the Project. Any such sum which the Contractor may be obligated to pay under the terms of this Paragraph is paid as liquidated damages, and not as a penalty.

5. COMPLIANCE WITH LAW. The Contractor shall comply with all local, state and federal laws, ordinances and regulations applicable to contracts covering municipal contracts, and shall make prompt payment of all amounts that may be due from said Contractor in the way of taxes, other governmental charges or lawful deductions, and shall make prompt payment of all labor and materials and shall save the City harmless from any damages or claims whatsoever in the performance of the Contract. Contractor and all subcontractors agree to comply with the City's Standard Contract Provisions, attached as Exhibit A and incorporated herein by this reference, and Roseburg Municipal Code Regulations relating to business registration.

6. NOTICE. Any notice required or permitted by this Contract must be delivered and served personally, or alternatively, deposited in the United States mail, postage prepaid, registered or certified, return receipt requested, addressed to the parties as shown below:

CITY:

City of Roseburg
ATTN: City Manager
900 SE Douglas Avenue
Roseburg OR 97470

CONTRACTOR:

Such notice, if mailed within the State of Oregon, shall be deemed delivered upon the second day following the date postmarked. If mailed outside the State of Oregon, notice shall be deemed delivered upon the fifth day following the date postmarked.

7. GOVERNING LAW; VENUE LOCATION. Oregon law shall be applied to all actions relating to the Contract, and the venue in any such action shall lie in the Circuit Court of Douglas County, Oregon.

April 2024

8. ELECTRONIC SIGNATURES. This Contract and any amendments may be signed by facsimile, PDF, or other electronic means, each of which will be deemed an original and all of which when taken together will constitute one contract. Facsimile and electronic signatures will be binding for all purposes.

IN WITNESS WHEREOF, the parties hereto have executed this Contract the day and year first above written.

CITY

CONTRACTOR

Nicole Messenger

(Authorized Signature)

City Manager

Title: _____

Date: _____

Date: _____

ATTEST:

Tax Identification Number

Email: _____

Amy Nytes, City Recorder

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EXHIBIT "A"

**STANDARD CONTRACT PROVISIONS
PREVAILING WAGE CONTRACT
(ORS 279C.800 - 279C.870)**

The following provisions, if applicable, are hereby included in and made a part of the attached public contract which is subject to Prevailing Wage Laws and rates, between the City of Roseburg and the Contractor named therein as provided for in the Roseburg Code, Oregon Revised Statutes, and Federal laws, rules, regulations, and guidelines. If a Contractor or Subcontractor violates the provisions below, the City may, at its option, terminate the contract or a subcontract and said Contractor or Subcontractor in such event shall forfeit all rights under the contract except to payment for actual labor and materials furnished to the City. The City may waive in whole or in part any forfeitures or sanctions provided in this Exhibit.

1. PREFERENCE FOR OREGON GOODS AND SERVICES; NONRESIDENT CONTRACTOR REPORT TO DEPARTMENT OF REVENUE - ORS 279A.120:

1.1 For purposes of awarding the contract the City will:

1.1.1 give preference to goods and services that have been manufactured or produced in Oregon if the price, fitness, availability and quality are otherwise equal; and

1.1.2 add a percentage increase to the bid of a non-resident bidder equal to the percentage, if any, of the preference given to the contractor in the same state in which the contractor lives.

1.2 As used in this Section:

1.2.1 "nonresident contractor" means a contractor that is not a resident contractor;

1.2.2 "resident contractor" means a contractor that has paid unemployment taxes or income taxes in the state of Oregon during the twelve (12) calendar months immediately preceding submission of the bid for the contract; has a business address in this state; and stated in the bid for the contract that it was not a "resident bidder" under ORS 279A.120.

1.3 If the Contractor is a nonresident contractor and the contract price exceeds \$10,000, the Contractor shall promptly report to the Department of Revenue on forms to be provided by the Department, the total contract price, terms of payment, length of contract and such other information as the Department may require before the Contractor may receive final payment on the public contract. The City shall satisfy itself that the requirement of this Subsection has been complied with before it issues a final payment on the contract.

2. PAYMENT OF LABORERS AND MATERIALMEN, CONTRIBUTIONS TO INDUSTRIAL ACCIDENT FUND, LIENS, AND WITHHOLDING TAXES - ORS 279C.505(1): The Contractor shall:

2.1 Make payment promptly, as due, to all persons supplying to such Contractor, labor or material for the performance of the work provided for in the contract.

2.2 Pay all contributions or amounts due the Industrial Accident Fund from such Contractor or Subcontractor incurred in the performance of the contract.

2.3 Not permit any lien or claim to be filed or prosecuted against the City of Roseburg or any subdivision thereof on account of any labor or material furnished.

2.4 Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

3. PAYMENT OF CLAIMS BY PUBLIC OFFICERS - ORS 279C.515:

- 3.1** If the Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a Subcontractor by any person in connection with the contract as such claim becomes due, the public officer or officers representing the City of Roseburg may pay such claims to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due the Contractor by reason of the contract. The payment of a claim in the manner authorized shall not relieve the Contractor or his/her surety from his or her obligations with respect to any unpaid claims.
- 3.2** If the Contractor or a first-tier Subcontractor fails, neglects or refuses to make payment to a person furnishing labor or materials in connection with the contract within thirty (30) days after receipt of payment from the City of Roseburg or the Contractor, the Contractor or first-tier Subcontractor shall owe the person the amount due plus interest charges commencing at the end of the 10-day period that payment is due under ORS 279C.580(4) and ending upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The rate of interest charged to the Contractor or first-tier Subcontractor on the amount due shall equal three times the discount rate on 90-day commercial paper in effect at the Federal Reserve Bank in the Federal Reserve District that includes Oregon on the date that is thirty (30) calendar days after the date when payment was received from the City of Roseburg or from the Contractor, but the rate of interest shall not exceed 30 percent. The amount of interest may not be waived.
- 3.3** If the Contractor or Subcontractor fails, neglects or refuses to make payment to a person furnishing labor or materials in connection with the contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580. The Contractor shall announce the foregoing in any Subcontract issued.

4. HOURS OF LABOR - ORS 279C.520: No person shall be employed for more than 10 hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or when the public policy absolutely requires it, and in such cases the employee shall be paid at time and a half pay:

- 4.1** For all overtime worked in excess of 8 hours a day or 40 hours in any one week, when the work week is five consecutive days, Monday through Friday; or
- 4.2** For all overtime in excess of 10 hours a day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday; and
- 4.3** For all work performed on Saturday and on any legal holiday specified in ORS 279C.540, or all holidays specified in a collective bargaining agreement.

The Contractor must give notice to employees who perform work on the contract, in writing, either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, the number of hours per day and days per week that the employees may be required to work.

5. PAYMENT FOR MEDICAL CARE AND ATTENTION TO EMPLOYEES - ORS 279C.530:

- 5.1** The Contractor shall promptly as due, make payment to any person, co-partnership or association or corporation furnishing medical, surgical, and hospital care or other needed care and attention, incident to sickness or injury, to the employees of such Contractor, of all sums which the Contractor agrees to pay for such services and all monies and sums which the Contractor collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing or paying for such service.

5.2 The Contractor, its subcontractors, if any, and all employers providing work, labor or materials under this Contract who are subject employers under the Oregon Workers' Compensation Law shall comply with ORS 656.017, which requires them to provide workers' compensation coverage that satisfies Oregon law for all their subject workers. Out-of-state employers must provide workers' compensation coverage that complies with ORS 656.126 for their workers. Employer's Liability Insurance with coverage of not less than \$500,000 each accident shall be included.

6. PAYMENT TO SUBCONTRACTORS - ORS 279C.580:

6.1 The Contractor shall include in each subcontract for property or services entered into by the Contractor and a first-tier Subcontractor, including a material supplier, for the purpose of performing the public contract:

6.1.1 A payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under its subcontract within ten (10) calendar days of payment by the City out of such amounts as are paid to the Contractor by the City of Roseburg under the contract; and

6.1.2 An interest penalty clause that obligates the Contractor, if payment is not made within thirty (30) calendar days after receipt of payment from the City of Roseburg, to pay to the first-tier Subcontractor an interest penalty on amounts due in the case of each payment not made in accordance with the payment clause included in the subcontract pursuant to Paragraph 6.1.1 of this Subsection. A Contractor or first-tier Subcontractor shall not be obligated to pay an interest penalty if the only reason that the Contractor or first-tier Subcontractor did not make payment when payment was due is that the Contractor or first-tier Subcontractor did not receive payment from the City of Roseburg or Contractor when payment was due. The interest penalty shall be:

6.1.2.1 For the period beginning on the day after the required payment date and ending on the date on which payment of the amount due is made; and

6.1.2.2 Computed at the rate specified in ORS 279C.515(2).

6.2 The Contractor shall include in each of its subcontracts, for the purpose of performance of such contract condition, a provision requiring the first-tier Subcontractor to include a payment clause and an interest penalty clause conforming to the standards set forth in Paragraphs 6.1.1 and 6.1.2 and requiring each of its Subcontractors to include such clauses in their subcontracts with each lower-tier Subcontractor or supplier.

6.3 None of the provisions of this Section 6 are intended to prevent the Contractor or any Subcontractor from including in its contracts the provisions described in ORS 279C.580(5) and (6).

7. PROHIBITION OF DISCRIMINATORY WAGE RATES BASED ON SEX – ORS 652.220: The Contractor shall not:

7.1 Discriminate between employees on the basis of a protected class in the payment of wages or other compensation for work of comparable character, the performance of which requires comparable skills;

7.2 Pay wages or other compensation to any employee at a rate greater than that at which the employer pays wages or other compensation to employees of a protected class for work of comparable character, the performance of which requires comparable skills. This section does not apply where:

(a) Payment is made pursuant to a seniority or merit system which does not discriminate on the basis of a protected class; or

(b) A system measures earnings by quantity or quality of production, including piece-rate work; or

- (c) Travel is necessary and regular for the employee; or
- (d) Education, training, experience, or any combination of factors account for the entire compensation differential.

7.3 Discriminate in the payment of wages or other compensation against any employee because the employee has filed a complaint in a proceeding, has testified or is about to testify, or because the employer believes that the employee may testify in any investigation, proceedings or criminal action pursuant to ORS 652.210 to 652.235.

8. DRUG TESTING - ORS 279C.505(2):

8.1 The Contractor shall demonstrate that an employee drug testing program is in place at the time of submitting its bid, and that such program will be maintained throughout the contract period, including any extensions. The failure of Contractor to have, or to maintain such a drug testing program is grounds for rejection of a bid or immediate termination of the contract.

8.2 The City of Roseburg shall not be liable, either directly or indirectly, in any dispute arising out of the substance or procedure of Contractor's drug testing program. Nothing in this drug testing provision shall be construed as requiring Contractor to violate any legal, including constitutional, rights or any employee, including but not limited to, selection of which employees to test and the manner of such testing. The City shall not be liable for Contractor's negligence in establishing or implementing, failure to establish or implement a drug testing policy, or for any damage or injury caused by Contractor's employees acting under the influence of drugs while performing work covered by the contract. These are Contractor's sole responsibilities and nothing in this provision is intended to create any third party beneficiary rights against the City.

9. PREVAILING WAGE PROVISIONS - ORS 279C.800 - 279C.870; 40 U.S.C. 3141 – 3148:

9.1 The hourly rate of wage to be paid by the Contractor and all Subcontractors to workers under the contract shall not be less than the prevailing rate of wage for an hour's work in the same trade or occupation in the locality where the labor is performed as set forth in the specifications for the public contract; provided however, if the public contract is also subject to the Federal Prevailing Wage Rate pursuant to the Davis-Bacon Act (40 U.S.C. 3141 - 3148), then the higher of the two rates shall be paid. The Contractor will comply with the provisions of ORS 279C.840 and all applicable provisions of ORS 279C.800 to 279C.870 and/or the Davis-Bacon Act, 40 U.S.C. 3141 - 3148.

9.2 The Contractor or the Contractor's surety and every Subcontractor or the Subcontractor's surety shall file certified statements with the City in writing using the form prescribed by the Commissioner of the Bureau of Labor and Industries certifying the hourly rate of wage paid each worker whom the Contractor or the Subcontractor has employed in the Work under the contract and further certifying that no worker employed under such public contract has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the contract. The certified statement shall be verified by the oath of the Contractor or the Contractor's surety or Subcontractor or the Subcontractor's surety that the Contractor or Subcontractor has read the certified statement and knows the contents thereof and that the same is true to the Contractor's or Subcontractor's knowledge. The certified statements shall set out accurately and completely the payroll records for the prior week including the name and address of each worker, the worker's correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid.

9.3 Each certified statement shall be delivered or mailed by the Contractor or Subcontractor to the City. A true copy of the certified statement shall also be filed at the same time with the Commissioner of the Bureau of Labor and Industries. Certified statements for each week during which the Contractor or Subcontractor employs a worker under the public contract shall be submitted once a month, by the fifth business day of the following month. Information submitted on certified statements may be used only to ensure compliance with the provisions of ORS 279C.800 to 279C 870. The City shall retain 25% of the amount earned by the Contractor if the certified statements are not submitted as required. The City shall pay the Contractor the amount retained within 14 days after the Contractor files the certified statements regardless of whether a Subcontractor has failed to file the required certified statements. The Contractor shall retain 25% of any amount earned by a first-tier Subcontractor until the Subcontractor has filed with the City, the required certified statements. The Contractor shall verify the first-tier Subcontractor has filed the certified statements before the Contractor may pay the Subcontractor any amount retained. The Contractor shall pay the first-tier Subcontractor the amount retained within 14 days after the Subcontractor files the required certified statements.

10. PUBLIC WORKS BOND REQUIREMENTS – ORS 279C.836:

10.1 If the public contract involves public works, unless exempt under ORS 279C.800 to 279C.870, prior to beginning work on the contract, the Contractor shall file with the Construction Contractors Board, a Public Works Bond in the amount of \$30,000 with a corporate surety authorized to do business in the State of Oregon.

10.2 Before allowing a Subcontractor to begin work under a public contract involving public works, for which the Contractor has been awarded the contract, the Contractor shall verify that the Subcontractor has also filed a Public Works Bond with the Construction Contractors Board or elected not to file such bond as allowed by state law.

10.3 The Public Works Bond shall provide that the Contractor or Subcontractor will pay claims ordered by the Bureau of Labor and Industries to workers performing labor under the public contract involving public works. The bond shall be a continuing obligation and remain continuously in effect.

10.4 If the Contractor or Subcontractor qualifies as a disadvantaged, minority, women, disabled veteran or emerging small business enterprise certified under ORS 200.055 and has elected not to file the Public Works Bond, the Contractor or Subcontractor will file written verification of such certification with the Construction Contractors Board. If the Contractor or Subcontractor elects not to file the Public Works Bond, before beginning any work on the public contract involving public works, the Contractor or Subcontractor shall provide the City and the Construction Contractors Board with written notification of such election.

11. DEMOLITION CONTRACTS; LAND AND LANDSCAPE MAINTENANCE - ORS 279C.510:

11.1 If the public contract includes demolition, the Contractor shall salvage or recycle construction and demolition debris, if feasible and cost effective.

11.2 If the public contract includes services for lawn and landscape maintenance, the Contractor shall compost or mulch yard waste material at an approved site.

12. DISCRIMINATION IN SUBCONTRACTING PROHIBITED; REMEDIES - ORS 279A.110:

12.1 The Contractor may not discriminate against a Subcontractor in the awarding of a subcontract because the Subcontractor is a minority, women, disabled veteran or emerging small business enterprise certified under ORS 200.055.

- 12.2** By entering into the contract, the Contractor certified it has not discriminated and will not discriminate, in violation of Subsection 12.1, against any minority, women, disabled veteran or emerging small business enterprise in obtaining any required subcontract.
- 12.3** If the Contractor violates the nondiscrimination certification made under Subsection 12.2, the City may regard the violation as a breach of contract that permits the City to terminate the contract or exercise any remedies for breach permitted under the contract.
- 13. HIGHEST STANDARDS; CONSEQUENCES FOR FAILURE – ORS 279B.060:**
- 13.1** By entering into the Contract, Contractor agrees to perform the work to the highest standards prevalent in the industry or business most closely related to the work to be provided;
- 13.2** Contractor understands that failure to meet the highest standards in the industry may result in consequences including, but not limited to:
- 13.2.1** reducing or withholding of payment;
- 13.2.2** requiring Contractor to perform, at Contractor's own expense, additional work required to meet such standards; or
- 13.2.3** declaring a default, terminating the Contract and seeking damages and other relief available under the terms of the Contract or other applicable law.
- 14. COMPLIANCE WITH LAWS:** The Contractor and Subcontractor shall comply with all federal, state and local laws, rules, ordinances and regulations at all times and in the performance of the contract.



Committed to Continuous Improvement and Quality Customer Service

Vendor Automatic Payment Authorization

As a City of Roseburg vendor you now have the option to receive payments directly to your bank account. No more waiting for the check to arrive through the mail or need to run to the bank to make the deposit.

Q. How do I sign up?

A. Simply complete and return the attached authorization form. You must include a voided check.

Q. How soon will the Automatic Payment Plan Start?

A. Once we have your authorization and have verified the banking information, we will begin making future payments to you through the Electronic Funds Transfer (EFT) method.

Q. How can I be sure that I have received payment from you?

A. You can request notification of the payment to be sent to you via e-mail or through the postal service at the time the electronic payment is made by selecting the appropriate box on the authorization form. Also, your monthly bank statement will clearly reflect the automatic payment.

Q. What if I have a question about my payment?

A. Simply call the City of Roseburg at (541) 492-6710 and ask to speak to the Accounts Payable Department.

Q. What if I try the Automatic Payment Plan and don't like it?

A. You can cancel your authorization for automatic payments at any time by notifying us in writing.

City of Roseburg, 900 SE Douglas Avenue, Roseburg, OR 97470, Finance@cityofroseburg.org

AUTHORIZATION STATEMENT FOR AUTOMATIC VENDOR PAYMENT

We hereby authorize the City of Roseburg to make credit entries to our bank account for payments owed to us by the City.

Remittance Name

Address

City, State, Zip

Phone Number

Contact

Email Address

Payment Notification Request:

- Notify via email once payment is made.
- Notify via postal service.
- No notification necessary.

Tax ID #

(Federal Tax ID if Business, SSN if Individual)

Bank Name

Bank Address

City, State, Zip

Bank Phone Number

Bank Account Number

Bank Routing Number

Authorized Signature



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CITY OF ROSEBURG

PUBLIC WORKS BOND FILING CERTIFICATION

Pursuant to ORS 279C.800 to 279C.870, I, undersigned contractor, do hereby certify that, prior to beginning work on the Project for which I have been awarded the bid by the City of Roseburg:

1. I have filed with the Construction Contractors Board (“Board”), a Public Works Bond in the amount of \$30,000 with a corporate surety authorized to do business in the State of Oregon. **Yes**
 No (Check one)

2. I have elected not to file a Public Works Bond with the Board because I am a disadvantaged, minority, women, disabled veteran or emerging small business enterprise certified under ORS 200.055. I have provided the Board written verification of such certification and written notification of my election not to file the Public Works Bond. I understand that my election not to file the Public Works Bond will expire one year from the date it was filed and that a claim for unpaid wages may be filed against the payment bond I submitted on the Project.
 Yes **No (Check one)**

3. I have verified any subcontractor involved in the Project has, prior to beginning any work on this Project, either filed the Public Works Bond with the Board or has elected not to file the Public Works Bond because the subcontractor is a disadvantaged, minority, women, disabled veteran or emerging small business enterprise certified under ORS 200.055. **Yes** **No (Check one)**

(a) I have verified that any subcontractor involved in this Project that has elected not to file the Public Works Bond has provided the Board written verification of its certification under ORS 200.055 and written notification of its election not to file the Public Works Bond. **Yes** **No (Check one)**

I understand the Public Works Bond described above is in addition to any other bond that I am required to provide, or that may be required by a subcontractor, for this Project.

Project Name: _____

Project Number: _____

Contractor’s Printed Name: _____

Contractor’s Signature: _____

Dated: _____

Intentionally left blank

April 2024

CITY OF ROSEBURG
STANDARD PERFORMANCE BOND

Bond No.: _____

Solicitation: _____

Project Name: _____

_____ (Surety #1) Bond Amount No. 1: \$ _____

_____ (Surety #2)* Bond Amount No. 2: \$ _____

**If using multiple sureties* Total Penal Sum of Bond \$ _____

We, _____ as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns, firmly by these presents to pay to the City of Roseburg the sum of (Total Penal Sum of Bond) _____
(Provided that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

WHEREAS, the Principal has entered into a contract with the City of Roseburg, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Performance Bond by reference, whether or not attached to the contract (all hereafter called "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety:

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal herein shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things undertaken by Contractor to be performed under the Contract, upon the terms set forth therein, and within the time prescribed therein, or as extended as provided in the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the City of Roseburg and members thereof, its officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Principal or its subcontractors, and shall in all respects perform said Contract according to law, then this obligation is to be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond nor shall the City of Roseburg be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapters 279A, 279B and 279C, the provisions of which hereby are incorporated into this bond and made a part hereof.

April 2024

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES.

Dated this _____ day of _____, 2024.

PRINCIPAL: _____

By _____
Signature

Official Capacity

Attest: _____
Corporation Secretary

SURETY: _____
[Add signatures for each surety if using multiple bonds]

BY ATTORNEY-IN-FACT:
[Power-of-Attorney must accompany each surety bond]

Name

Signature

Address

City State Zip

Phone Email

April 2024

CITY OF ROSEBURG

PAYMENT BOND

Bond No.: _____

Solicitation: _____

Project Name: _____

_____ (Surety #1) Bond Amount No. 1: \$ _____

_____ (Surety #2)* Bond Amount No. 2: \$ _____

**If using multiple sureties* Total Penal Sum of Bond \$ _____

We, _____ as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns, firmly by these presents to pay to the City of Roseburg the sum of (Total Penal Sum of Bond) _____

(Provided that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

WHEREAS, the Principal has entered into a contract with the City of Roseburg, the plans, specifications, terms and conditions of which are contained in the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Payment Bond by reference, whether or not attached to the contract (all hereafter called "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and schedule of Contract prices which are set forth in the Contract and any attachments, and all authorized modifications of the Contract which increase the amount of the work, or the cost of the Contract, or constitute authorized extensions of time for performance of the Contract, notice of any such modifications hereby being waived by the Surety:

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal shall faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided by the Contract, with or without notice to the Sureties, and shall indemnify and save harmless the City of Roseburg and members thereof, its officers, employees and agents, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Contractor or its subcontractors, and shall promptly pay all persons supplying labor, materials or both to the Principal or its subcontractors for prosecution of the work provided in the Contract; and shall promptly pay all contribution due according to workers compensation requirements and the State Unemployment compensation Fund from the Principal or its subcontractors in connection with the performance of the Contract; and shall pay over to the Oregon

April 2024

Department of Revenue all sums required to be deducted and retained from the wages of employees of the Principal and its subcontractors pursuant to ORS 316.167, and shall permit no lien nor claim to be filed or prosecuted against the City on account of any labor or materials furnished; and do all things required of the Principal by the laws of this State, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond nor shall the City of Roseburg be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapters 279A, 279B and 279C, the provisions of which hereby are incorporated into this bond and made a part hereof.

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES.

Dated this _____ day of _____, 2024.

PRINCIPAL: _____

By _____
Signature

Official Capacity

Attest: _____
Corporation Secretary

SURETY: _____
[Add signatures for each surety if using multiple bonds]

BY ATTORNEY-IN-FACT:
[Power-of-Attorney must accompany each surety bond]

Name

Signature

Address

City State Zip

Phone Email

LOWEST BIDDER RESPONSIBILITY DETERMINATION FORM
(TO BE COMPLETED BY THE CITY UPON NOTICE OF INTENT TO AWARD)

“**Lowest responsible bidder**” means the lowest bidder who is not on the list established by the Construction Contractors Board pursuant to ORS 701.227 and who has:

1. Substantially complied with all prescribed public contracting procedures and requirements of the State of Oregon and the City of Roseburg;
2. Met the standards of responsibility described in ORS 279B.110 and 279C.375, and Roseburg Municipal Code Chapter 3.06; and
3. Not been disbarred or disqualified from bidding or debarred by the State of Oregon under ORS 279B.130 or 279C.440, or by the City under the provisions of Roseburg Municipal Code Chapter 3.06.

Project Name: _____

Bid/Project Number: _____

Business Entity/ Bidder’s Name: _____

CCB License Number: _____

Form submitted by City of Roseburg.

Form submitted by:

Name: _____

Title: _____

Date: _____

April 2024

The City has (check all of the following):

- Checked the list created by the Construction Contractors Board under ORS 701.227 for bidders who are not qualified to hold a public improvement contract.
- Determined whether the bidder has met the standards of responsibility. In so doing, the City has found that the bidder demonstrated that the bidder:
 - Has available the appropriate financial, material, equipment, facility and personnel resources and expertise, or the ability to obtain the resources and expertise, necessary to meet all contractual responsibilities.
 - Holds current licenses that businesses or service professionals operating in this state must hold in order to undertake or perform the work specified in the Contract.
 - Is covered by liability insurance and other insurance in amounts required in the solicitation documents.
 - Qualifies as a carrier-insured employer or a self-insured employer under ORS 656.407, or has elected coverage under ORS 656.128.
 - Has disclosed the bidder's first-tier subcontractors in accordance with ORS 279C.370.
 - Has a satisfactory record of performance.
 - Has a satisfactory record of integrity.
 - Is legally qualified to contract with the City.
 - Possesses a certificate that the Oregon Department of Administrative Services issued under ORS 279A.167 – Pay Equity Compliance (if applicable). **(NEW)**
 - Has supplied all necessary information in connection with the inquiry concerning responsibility.
- Determined the bidder to be (check one of the following):
 - Responsible under ORS 279C.375(3)(a) and (b).
 - Not responsible under ORS 279C.375(3)(a) and (b).

If the City has found the bidder not to be responsible, please see attached document explaining the City's determination.

Note: This form is to be submitted by the City of Roseburg to the Construction Contractors Board immediately following issuance of the City's Notice of Intent to Award the subject contract. A copy must immediately be filed with the City Recorder.

BUREAU OF LABOR AND INDUSTRIES

PREVAILING WAGE RATES FOR PUBLIC WORKS CONTRACTS

Prevailing Wage Rates are the minimum wages that must be paid to all workers employed in the construction, reconstruction, major renovation or painting of all public works, unless specifically exempted by state or federal law. Rather than including the entire State and/or Federal Prevailing Wage Rate publications in the bid specifications and contract, public entities may make reference to the specific prevailing wage rate publication where the prevailing wage rates are found or provide a link to the specific prevailing wage rate publication where the prevailing wage rates are found.

Oregon Bureau of Labor and Industries Prevailing Wage Rates applicable to the subject project/contract are available on BOLI’s website at [BOLI : Prevailing Wage Rates : For Employers : State of Oregon](#). The prevailing wages to be applied throughout the duration of this project are those in effect for BOLI Prevailing Wage Rate District 6, (Douglas County Oregon), upon the date the project is first advertised.

Federal Prevailing Wages Rates under the Davis Bacon Act (40 U.S.C. 3141 et seq.) may be found at [SAM.gov | Home](#). The prevailing wages to be applied throughout the duration of this project are those in effect for Federal Prevailing Wage Rates under the Davis Bacon Act (40 U.S.C. 3141 et seq.) at the time the initial specifications were first advertised for bid solicitations.

This project is subject to both ORS 279C.800 to 279C.870 and to the Davis Bacon Act (40 U.S.C. 3414 et seq.), the contractor and every subcontractor shall pay the higher of the applicable state or federal prevailing rate of wage to all workers on the projects.

For specific information or questions regarding the Prevailing Wage Rate Law, you may log on to the above referenced websites or contact the nearest Oregon Bureau of Labor and Industries office listed below.

BOLI Office Locations

Eugene	1400 Executive Parkway, Eugene, OR 97401	541-686-7623
Medford	700 E. Main, Suite 105, Medford, OR 97504	541-776-6270
Portland	800 NE Oregon St., #32, Portland, OR 97232	503-731-4074
Salem	3865 Wolverine St. NE, Bldg. E-1, Salem, OR 97305	503-378-3292

THIS PROJECT INCLUDES FEDERAL FUNDS AND IS SUBJECT TO THE HIGHEST WAGE OF EITHER OREGON BOLI EFFECTIVE ON APRIL 5, 2024 OR DAVIS BACON UNDER FEDERAL LAWS EFFECTIVE ON MAY 16, 2024 (LOCK IN DATE)

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GENERAL CONDITIONS

1. **DEFINITIONS**

1.1 Whenever used in these General Conditions or in the other Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

“Acceptance” means that the work has been completed in accordance with the Contract Documents and approved in writing by the Owner.

“Act of God or Nature” means a natural phenomenon of such catastrophic proportions or intensity as would reasonably prevent performance.

“Addendum” means any written document, signed by all parties, pertaining to additions, deletions, revisions or other issues with the Contract Documents issued after the Contract Documents have been issued.

“Bid” means the offer of a bidder to perform the work described by the Contract Documents when made out and submitted on the prescribed Bid Form and properly signed.

“Bidder” means any person, firm, partnership, corporation, limited liability company, or other entity submitting a bid for the work described hereunder.

“Change Order” means a document recommended by the Project Manager which is signed by the Contractor and the City and authorizes an addition, deletion or revision in the work or an adjustment in the Contract price or Contract times, issued on or after the effective date of the Contract.

“City” means the City of Roseburg located in the State of Oregon, and owner of the Project and work related thereto.

“Contract Documents” means and includes the Invitation to Bid, Information for Bidders, Bid Form, Construction Contract with Exhibit “A” Standard Contract Provisions, First-Tier Subcontractor Disclosure Form, Drug Testing Program Certification Form, Bidder’s Responsibility Form, Performance Bond, Payment Bond, Public Works Bond Filing Certification form (when required), General Conditions, Technical Provisions, Special Conditions, Standard Drawings, Specifications & Plans, and Supplemental Specifications all as required for the full execution and satisfactory completion of the Project.

“Contractor” means the firm, partnership, corporation, limited liability company, or other entity executing the Contract with the City for the performance of the work herein described.

“Defective” means, when modifying the work, refers to work that is unsatisfactory, faulty or deficient in that it:

- a. does not conform to the Contract Documents; or
- b. does not meet the requirements of any applicable inspection, reference standard, test or approval referred to in the Contract Documents; or
- c. has been damaged prior to the Project Manager’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by the City at Substantial Completion in accordance with the Contract Documents).

“Design Consultant” means the firm who prepared the Plans and Specifications and shall not mean the Project Manager.

"Engineer" means the City's authorized Engineer, as designated by the City Manager or Public Works Director for the Contract, either acting directly or through the inspector, within the scope of assigned duties.

"Final Completion" means that all work has been completed in conformance with the Contract Documents and the Contract has been fully performed.

"Holidays" means any Oregon legal holiday.

"Liquidated Damages" means that which is set forth in Subsection 6.9 herein.

"Milestone" means a principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all of the work.

"Pay Equity Compliance Certificate" means a certificate issued by the Department of Administrative Services pursuant to ORS 279A.167 following completion of pay equity training.

"Payment Bond" means the approved form of security furnished by the Contractor and Contractor's Surety as a guarantee of good faith on the part of the Contractor to make all payments that are the Contractor's obligations, in accordance with the terms of the Contract.

"Performance Bond" means the approved form of security furnished by the Contractor and Contractor's Surety as a guarantee of good faith on the part of the Contractor to execute the work that is the Contractor's obligation, in accordance with the terms of the Contract.

"Plans" means and includes the City approved maps, standard drawings, work order drawings and supplemental drawings and sketches which will show the locations, character, dimensions and details of the work to be done.

"Project" means all work described and specified herein and as indicated on the Plans.

"Project Manager" means the City's authorized Project Manager for the Contract, as designated by the City Manager or Public Works Director, either acting directly or through a designated representative, within the scope of assigned tasks.

"Proposal Request" means a written statement issued by the Project Manager to the Contractor on or after the effective date of the Contract and signed by the City and the Contractor identifying additions, deletions or revisions in the work, or responding to differing or unforeseen subsurface or physical conditions under which the work is to be performed or to emergencies. A Proposal Request will not change the Contract price or the Contract times but is evidence that the parties expect that the change ordered or documented by a Proposal Request will be incorporated in a subsequently issued Change Order.

"Public Works Bond" means a \$30,000 form of security furnished by the Contractor and/or Subcontractor and Contractor's and/or Subcontractor's Surety to the Construction Contractors Board to pay claims ordered by the Bureau of Labor and Industries to workers performing labor under a public works project.

"Punch List" means a list developed by the Project Manager after Substantial Completion that identifies defects or deficient workmanship or work not completed in conformance with the Contract Documents.

"Request for Information" means a formal request from the Contractor to the Project Manager requesting clarification and/or direction necessary to complete the work.

"Signature" means either a hand written or electronic signature.

"Specifications" means and includes the directions, provisions and requirements contained herein and referred to herein pertaining to the Project.

"Submittals" means all drawings, diagrams, material data, schedules and other information which are specifically prepared or assembled by or for the Contractor and submitted by the Contractor to illustrate some portion of the work.

"Substantial Completion" means that the degree of completion of the Project, or portion of the Project as evidenced by the Project Manager's written notice of Substantial Completion, sufficient to provide the City, the full-time use of the Project, or portion of the Project, for the purpose for which it was intended. Determination of Substantial Completion is solely at the discretion of the Project Manager. Substantial Completion does not mean complete in accordance with the Contract nor shall Substantial Completion of all or any part of the Project entitle the Contractor to final acceptance under the Contract. The criteria the Project Manager may use in exercising his/her discretion in determining Substantial Completion includes, but is not limited to, the completion of all equipment contained in the Project, or portion of the Project, all other components necessary to enable the City to operate the facility in the manner that was intended.

"Superintendent" means the executive representative of Contractor, authorized to receive and fulfill instructions from the Project Manager or Project Manager's representatives.

"Supplemental Specifications" means specific instructions setting forth conditions or requirements peculiar to the Project under consideration when said Project is not completely covered by the Specifications contained herein.

"Surety" means the person, firm, partnership, corporation, limited liability company or other entity that has the requisite authority to execute the bonds required from the Contractor.

2. CONTRACT DOCUMENTS

2.1 Award, Execution of Documents, Delivery of Bonds.

2.1.1 If awarded, the Contract will be awarded to the lowest responsible bidder whose qualifications indicate the award will be in the best interest of the City and whose bid complies with all the prescribed requirements. No award will be made until the City has concluded such investigations as the City deems necessary to establish the responsibility, qualifications and financial ability of the Bidders to do the work in accordance with the Contract Documents.

2.1.2 In determining the lowest responsible bidder for the purpose of awarding the Contract, the City, pursuant to ORS 279A.120 shall:

2.1.2.1 give preference to goods and services that have been manufactured or produced in Oregon if the price, fitness, availability and quality are otherwise equal; and

2.1.2.2 add a percentage increase on the bid of a nonresident bidder equal to the percent, if any, of the preference given to that bidder in the state in which the bidder resides.

2.1.3 The City reserves the right to reject any and all bids not in compliance with all public bidding procedures and requirements or when such rejection is in the interest of the City; to reject the bid of a bidder who has previously failed to perform properly or complete contracts of a similar nature on time; and to reject the bid of a bidder who is not, in the opinion of the City, in a position to perform the Contract. If the Contract is awarded, the City will give the successful bidder written notice of award within forty-five (45) calendar days after bid opening.

2.1.4 At least three (3) counterparts of the Construction Contract and such other Contract Documents as practicable will be signed by the City and Contractor. The Contractor shall receive one (1) executed counterpart of the Contract Documents.

2.1.5 When required by the specifications, the Contractor shall deliver simultaneously with the execution of the Contract Documents a good and sufficient Payment Bond to ensure payment of the obligations incurred in the performance of this Contract, a Performance Bond to assure performance of the Contract and the Public Works Bond Filing Certification form executed by the Contractor. No exceptions will be made to this provision.

2.1.6 Failure of the successful bidder to execute the Contract Documents and deliver the required Payment Bond, Performance Bond and Public Works Bond Filing Certification form within ten (10) calendar days of the notification of the award of the Contract shall be just cause for the City to annul the award.

2.2 Correlation, Interpretation, and Intent of Contract Documents.

2.2.1 The intent of the Plans and Specifications as contained herein is to describe the complete Project which the Contractor shall undertake to do in full compliance with the Construction Contract with Exhibit "A", Plans and Specifications. The Contract Documents comprise the entire agreement between the City and the Contractor. The Contract Documents may only be altered as provided in the General Conditions of the Contract.

2.2.2 The Plans and Specifications are intended to be explanatory and complimentary of each other. Contractor shall execute any work indicated in the Plans and not in the Specifications, or vice versa, as if indicated in both. Should any work or materials be reasonably required or intended for carrying the Project to satisfactory completion, which is inadvertently omitted on the Plans and Specifications, Contractor shall furnish the same as fully as if particularly delineated or described. Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall apply to the Project Manager for further explanations as may be necessary and shall conform thereto so far as may be consistent with the terms of the Contract. In the event any doubt or question arising respecting the true meaning of the Plans or Specifications, Contractor may seek a determination by the Project Manager according to Subsection 3.2 and Paragraph 3.3.3. Should the Contractor disagree with the Project Manager's decision, the Contractor may appeal to the City Manager in accordance with Paragraph 3.4.2. In resolving such conflicts, errors and/or discrepancies, the Contract Documents shall be given precedence in the following order: Construction Contract with Exhibit "A," the Plans and the Specifications. Within the Specifications, the order of precedence shall be as follows: General Conditions, Information for Bidders, Special Conditions and Technical Provisions.

2.2.3 Figure dimensions on Plans shall govern over scale dimensions, and detailed drawings shall govern over general drawings. Any work that may reasonably be inferred from the Plans and/or Specifications as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to reference such recognized standards. The Contractor assumes full responsibility for having familiarized himself with the nature and extent of the Contract Documents, work locality and local conditions that may in any manner affect the work to be done.

- 2.3 Verification and Warranty.** The Contractor shall make the determination of the nature of the work proposed under the Contract, local conditions which can be encountered within the Project area and all other matters which can in any way affect the work proposed under the Contract. It shall also be the responsibility of the Contractor to be thoroughly familiar with the Contract Documents. Failure to make the examination necessary for this determination or to examine any form, instrument or document of the Contract with Exhibit "A" shall not release the Contractor from the obligations of the Contract with Exhibit "A." The Contractor warrants that no oral or written agreement or conversation with any officer, agent or employee of the City, either before or after the execution of the Contract, has affected or modified any of the terms or obligations herein contained.
- 2.4 Documents to be Kept on the Jobsite.** The Contractor shall keep at least one (1) copy of the Contract Documents at the jobsite, in good order, available to the Project Manager.
- 2.5 Additional Contract Documents.** The City will furnish to the Contractor, on request and free of charge, up to three (3) copies of the Contract Documents. Additional copies of Contract Documents may be obtained upon request by paying the actual cost of reproduction.
- 2.6 Surveys.** When required for the Project, surveying and staking of the component parts of the work shall be as detailed in the Specifications and on the Plans. The Contractor shall construct the work in accordance with the construction stakes and shall be charged with full responsibility for conformity and agreement of the work with said construction stakes.

3. PROJECT MANAGER-CITY CONTRACTOR RELATIONS

- 3.1 General.** The City has the authority to act as the sole judge of the work with respect to both quantity and quality as set forth in the Contract. It is expressly stipulated that the Plans, Specifications and other Contract Documents set forth the requirements as to the nature of the completed work and do not purport to control the method of performing work except in those instances where the nature of the completed work is dependent on the method of performance.
- 3.2 Project Manager.** The Project Manager is the representative of the City and is employed to act as advisor and consultant to the City in project managing matters related to the Contract. The City has delegated its authority to the Project Manager to make initial decisions regarding all claims and questions, which may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the work under the Contract. The Project Manager determines the intent and meaning of the Contract and makes initial decisions with respect to the Contractor's fulfillment of the Contract and the Contractor's entitlement to compensation. Should the Contractor disagree with a decision of the Project Manager with respect to the Contract, the Contractor may request that the City Manager review the Project Manager's decision and make a determination in the manner provided under Paragraph 3.4.2.

The Project Manager may designate a field representative as an alternate in his/her capacity on the job site. All notifications required under the Contract shall be made directly to the Project Manager or the designated representative.

3.3 Duties and Responsibilities of the Project Manager

3.3.1 The Project Manager will make periodic visits to the site of the Project to observe the progress and quality of the work and to determine, in general, if the work is proceeding in accordance with the intent of the Contract Documents. The Project Manager shall not be required to make comprehensive or continuous inspections to check the quality or quantity of the work, and shall not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Project. Visits and

observations made by the Project Manager shall not relieve the Contractor of obligations to conduct comprehensive inspections of the work, to perform acceptable work and to provide adequate safety precautions.

3.3.2 The Project Manager or the field representative thereof will be assigned to periodically observe the work and to act in matters of construction under the Contract. It is understood the Project Manager or field representative shall have the power to issue instructions and make decisions within the limitations of the authority granted by the City. Such inspection shall not relieve the Contractor of obligations to conduct comprehensive inspections of the work, perform acceptable work and provide adequate safety precautions.

3.3.3 All claims of the Contractor shall be presented to the Project Manager or designated representative, for a decision which shall be made in writing within a reasonable time. All decisions of the Project Manager shall be final subject only to the Contractor's right to appeal the Project Manager's decision to the City Manager in the manner provided in Subsection 3.4.

3.4 Appeal to the City Manager by the Contractor.

3.4.1 Determination by the Project Manager. As provided in Subsections 3.1, 3.2, and 3.3, the Contractor shall refer questions regarding meaning and intent of the Contract Documents in writing to the Project Manager for his/her decision. The Project Manager shall, within a reasonable time, respond to the Contractor in writing with his/her decision. If the Contractor disagrees with the Project Manager's decision or considers the decision requires extra work, Contractor may appeal the decision to the City Manager. Any related work performed by the Contractor prior to the Project Manager's decision is done at Contractor's risk unless otherwise authorized by the Project Manager.

3.4.2 City Manager Appeal Process. In the event the Contractor disagrees with any decision of the Project Manager, the Contractor may, within ten (10) calendar days of the date of such decision, appeal the decision to the City Manager for review. The appeal must be in writing and must set forth the questions referred to the Project Manager, the Project Manager's decision and the Contractor's basis for disagreement. The Contractor shall deliver a copy of the appeal to the Project Manager at the time it is filed with the City Manager. The City Manager shall make all reasonable efforts to review the appeal and deliver his/her decision in writing to the Contractor within thirty (30) calendar days from the date of receipt of the appeal. Failure of the Contractor to appeal the decision of the Project Manager within the said ten (10) calendar day period constitutes a knowing and voluntary waiver of the Contractor's right to thereafter assert any claim resulting from such decision. This procedure is not meant to preclude or discourage informal resolution of disagreements between the Project Manager and the Contractor.

In the event the City Manager elects to do so, the City Manager may establish a "Claims Review Board" either to assist in reviewing an appeal hereunder or to consider Contractor appeals directly. Once established, the Claims Review Board will hear all future appeals of claims for this Contract.

During the pendency of any appeal, any related work performed by the Contractor shall be done at the Contractor's risk unless otherwise authorized by the Project Manager.

The filing of an appeal does not automatically extend the milestones and/or deadlines set forth in the Contract Documents and the Contractor continues to be subject to liquidated damages for failure to complete the Project within the time allotted.

In the event the City Manager or the Contractor commences arbitration or other legal action against the other for damages or for equitable relief, the prevailing party in such arbitration or other legal action is entitled to recover its reasonable attorney's fees therein and, in any appeal, therefrom.

The parties hereby stipulate and consent that venue for all arbitration or other legal actions arising under the Contract is in Douglas County, Oregon and that jurisdiction for all legal actions that are brought in or transferred to court is in the Douglas County Circuit Court of the State of Oregon; except, if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively in the United States District Court for the District of Oregon located in Eugene, Oregon.

3.5 Suspension of Work. The Project Manager shall, in addition to its other authority, have the authority to suspend the work, wholly or in part, for such period or periods as may be deemed necessary due to unsuitable weather or such other conditions as are considered unfavorable for prosecution of the work, or failure on the part of the Contractor to carry out the provisions of the Contract. The Contractor shall not suspend operation without the permission of the Project Manager or Project Manager's authorized representative.

3.6 Notice of Potential Claim for Additional Compensation and/or Time.

3.6.1 The Contractor shall not be entitled to any additional compensation or extension of time for any act or failure to act by the Project Manager or the City, the happening of any event or occurrence or any other cause, unless the Contractor shall have given the Project Manager a written notice of potential claim.

3.6.2 The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation or time will or may be due, the nature of the costs involved and insofar as possible, the amount of the potential claim. If based on an act or failure to act by the Project Manager or the City, except in case of emergency, such notice shall be given to the Project Manager prior to the time that the Contractor starts performance of the work giving rise to the potential claim for additional compensation. In all other cases, notice shall be given within ten (10) calendar days after the happening of the event or occurrence giving rise to the potential claim.

3.6.3 It is the intention of this section that differences between the parties arising under and by virtue of the Contract shall be brought to the attention of the Project Manager at the earliest possible time in order that such matters may be settled if possible or other appropriate action may be taken promptly.

3.7 Examination of Completed Work. If the Project Manager requests it, the Contractor at any time before acceptance of the Project by the City, 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 standards required by the Contract Documents. Should the work thus exposed or examined prove to be in accordance with the Contract Documents, the uncovering or removing, the replacing of the covering or making good of the parts removed, shall be paid for by the City; but should the work so exposed or examined prove to be not in accordance with the Contract Documents, the uncovering or removing and the replacing of the covering or the making good of the parts removed, shall be at Contractor's expense. Should any work be performed without giving notice of plan of work, thereby eliminating an opportunity of inspection by the Project Manager, the Project Manager may require the Contractor to uncover such work at Contractor's own expense for examination by the Project Manager. Cost of uncovering such work shall be borne by the Contractor, whether or not the work is found acceptable. The work shall also be subject to inspection by appropriate governmental inspectors at all times.

3.8 Contractor's Superintendent. A qualified superintendent, who is acceptable to the Project Manager, shall be maintained by the Contractor on the Project to give efficient supervision over the Project until its completion. The superintendent shall have full authority to act on behalf of the Contractor, and all directions given to the superintendent shall be considered given to the Contractor. In general, the Project Manager's instructions shall be confirmed in writing and always upon written request from the Contractor.

3.9 Information Regarding Existing Facilities and Utilities.

3.9.1 Facilities. Any information relative to the location of other structures as might be shown on the Contract Documents will be obtained from the best information available and field observations; however, the City cannot guarantee the accuracy or completeness of this information.

3.9.2 Utilities. The Design Consultant has endeavored to determine the existence of utilities at the job site from the records of positions of these utilities as derived from such records as are shown on the Drawings. No excavations were made to verify the location shown for underground utilities. The service connections to these utilities are not shown on the Drawings. It is the responsibility of the Contractor to determine the exact location of all utilities and service connections hereto. The Contractor shall make its own investigations, including contacting the owners of appropriate utilities and making exploratory excavations to determine the locations and type of existing utilities, including service connections, prior to commencing work that could result in damage to such utilities and/or surrounding structures. The Contractor shall immediately notify the Project Manager as to any utility discovered by the Contractor that is not shown on the Drawings or that is in a different position than shown on the Drawings.

In the event it is necessary to remove, relocate or temporarily maintain a utility because of interference with the work, the Contractor shall perform the work on the utility and the City shall pay Contractor as follows:

3.9.2.1 When it is necessary to remove, relocate or temporarily maintain a service connection, the cost of which is not required to be borne by the owner thereof, the Contractor bears all expenses incidental to the work on the service connection. The Contractor shall perform the work on the service connection in a manner satisfactory to the owner thereof; if being understood that the owner of the service connection has the option of doing such work with its own forces, or permitting the work to be done by the Contractor.

3.9.2.2 When it is necessary to remove, relocate or temporarily maintain a utility or underground obstruction that is in the position shown on the Drawings, the cost of which is not required to be borne by the owner thereof, the Contractor bears all expenses incidental to the work on the utility. The Contractor shall perform the work on the utility in a manner satisfactory to the owner thereof; it being understood that the owner of the utility has the option of doing such work with its own forces, or permitting the work to be done by the Contractor.

3.9.2.3 When it is necessary to remove, relocate or temporarily maintain a utility or underground obstruction that is not shown on the Drawings or is in a position different from that shown on the Drawings and were it in the position shown on the Drawings would not need to be removed, relocated or temporarily maintained, the cost of which is not required to be borne by the owner thereof, the City will make arrangements with the owner of the utility for such work to be done at no cost to the Contractor.

No representations are made that the obligations to move or temporarily maintain any utility and to pay the cost thereof, is or is not required to be borne by the owner of such utility, and it is the responsibility of the Contractor to investigate to determine whether or not said cost is required to be borne by the owner of the utility.

Governmental agencies and owners of utilities reserve the right to enter at any time upon any street, alley, right-of-way or easement for the purpose of making changes in their property made necessary by the work and for the purpose of maintaining and making repairs to their property.

3.10 Use of Premises

3.10.1 All work included under the Contract is to be constructed on land belonging to the City, on public right-of-way administered and regulated by state and/or local government or on easements to the benefit of the City or the public. The Contractor shall abide by special conditions or requirements of the property owner or governing authority. The Contractor shall confine equipment, the storage of materials and the operation of Contractor's workers to the limits as shown on the Plans or as indicated by law, ordinances, permits or directions of the Project Manager and shall not unreasonably encumber the premises with materials.

3.10.2 Any additional land and access thereto which the Contractor might desire for temporary construction facilities or for storage of materials shall be provided by the Contractor with no liability to the City. The Contractor shall pay all costs involved in acquiring such rights and all clean up shall be made as required by these Specifications.

3.11 Private Property. The Contractor shall not enter upon private property for any purpose without obtaining permission and shall be responsible for the preservation of all public property, trees, monuments, etc. along and adjacent to the street and/or right-of-way, and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall use suitable precautions to prevent damage to pipes, conduits and other underground structures, including but not limited to, verifying with all appropriate utilities where underground structures are located, and shall protect carefully from disturbance or damage all monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

3.12 Assignment of Contract. Contractor shall not sublet, sell or assign the Contract or sublet any of the work to be performed hereunder without the written consent of the City. Any such assignment or subletting of any such work without City's consent shall be null and void and without force or effect.

3.13 City's Right to do Work. If, in the sole opinion of the Project Manager, the Contractor neglects to prosecute the work properly or neglects or refuses at Contractor's own cost, to take up and replace work that has been rejected by the Project Manager, the Project Manager shall notify the City who shall notify the Surety of the condition. After at least ten (10) calendar days written notice to the Contractor and the Contractor's Surety, or without notice if an emergency or danger to the Project or public exists, and without prejudice to any other right which the City may have under the Contract, the City may take over that portion of the Project which has been improperly executed, make good the deficiencies and deduct the actual costs thereof from the payments then or thereafter due the Contractor. If no amount is owed to the Contractor, then the City may still pursue all of its other legal and/or equitable remedies.

3.14 City's Right to Terminate Contract.

3.14.1 Upon occurrence of any one or more of the following, the City may terminate the Contract at any time, immediately or upon such notice as the City in its sole discretion deems appropriate, by providing written notice to the Contractor which describes the reason for termination:

- 3.14.1.1** Contractor persistently fails to perform the work in accordance with the Contract Documents, including but not limited to, failure to supply sufficient skilled workers, suitable materials or equipment and failure to adhere to the progress schedule as the schedule may be revised from time to time;
- 3.14.1.2** Contractor fails to comply with applicable laws or the provisions of any of the Contract Documents, including, but not limited to the Construction Contract with Exhibit "A" Standard City Contract Provisions;
- 3.14.1.3** Contractor disregards the authority of the Project Manager;
- 3.14.1.4** Contractor violates any provision of the Contract and, after receiving notice of the violation, fails to remedy the breach immediately; or
- 3.14.1.5** Contractor files for bankruptcy under any chapter of the Bankruptcy Code (Title 11, United States Code); or a petition in bankruptcy is filed against Contractor under the Bankruptcy Code or any other provision of law seeking substantial relief; or Contractor makes a general assignment for the benefit of creditors; or a trustee, receiver or similar agent is appointed to take charge of Contractor's property for the benefit of creditors; or Contractor otherwise admits in writing to being unable to pay its debts as they become due.

3.14.2 Upon the City's issuance of written notice of termination, the Contractor shall immediately cease all work under this Contract, unless, as shall be specified in the notice, the City, in its sole discretion, would be harmed by any uncompleted work, in which case, Contractor shall complete those items specified by the City in its notice.

3.14.3 The City may terminate the Contract upon seven (7) calendar days' notice if the City determines for any reason that the completion of the Contract is no longer in the best interests of the City.

3.14.4 If the City terminates the Contract pursuant to Paragraph 3.14.1, the City may choose any remedy available to it under the Contract, applicable statutes, City Code or common law, including but not limited to, completing the Project itself or through another contractor. The Contractor shall pay the City for all additional costs incurred by the City to obtain substitute performance. The Contractor shall be entitled to payment for that portion of the work that the Contractor completed according to the Contract, less the City's costs to obtain substitute performance for the balance of the work.

3.14.5 If the City terminates the Contract pursuant to Section 3.14.3, the City shall pay Contractor for that portion of the work the Contractor has completed according to the Contract, plus Contractor's cost for materials ordered and delivered to the site before Contractor receives the City's notice of termination; provided that such materials shall then belong to the City.

3.15 Contractor's Right to Stop Work or Terminate Contract. The Contractor may suspend work or terminate the Contract upon ten (10) calendar days written notice to the City, for any of the following reasons:

3.15.1 If an order of any court or other public authority caused the work to be stopped or suspended for a period of ninety (90) calendar days through no act or fault of the Contractor or his employees;

3.15.2 If the City should fail to act upon any request for payment within thirty (30) calendar days after its approval by the Project Manager; or

3.15.3 If the City should fail to pay the Contractor any sum within thirty (30) calendar days after its award by arbitrators.

3.16 Rights of Various Interests. Wherever work being done by the City's forces is contiguous to work covered by the Contract, the respective rights of the various interests involved shall be established by the Project Manager to secure the completion of the various portions of the work in general harmony.

3.17 Subcontracts.

3.17.1 The Contractor shall not be permitted to subcontract any of the work to be performed under the Contract without the written consent of the City, submission of the First-Tier Subcontractor Disclosure Form as required prior to the Bid opening deadline and verification that the Subcontractor has filed a Public Works Bond, when required, with the Construction Contractors Board prior to beginning any work on the Project. The Contractor shall not employ any subcontractor that the Project Manager may object to due to subcontractor lacking the capability of performing work of the type and scope anticipated. No changes will be allowed from the approved subcontractor list without approval of the Project Manager.

3.17.2 The Contractor agrees to be as fully responsible to the City for the acts and omissions of the Contractor's subcontractors or of any persons either directly or indirectly, employed by Contractor's subcontractors as Contractor is for the acts and omissions of persons directly employed by Contractor.

3.17.3 Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the City.

3.18 Unforeseen Difficulties. The Contractor shall protect the work and materials from damage due to the nature of the work, the elements, carelessness of other contractors or from any cause whatever until completion and acceptance of the Project. All loss or damages arising out of the nature of the work to be done under the Contract Documents, from any unseen obstruction or defects which may be encountered in the prosecution of the work, or from the action of the elements, shall be sustained by the Contractor.

3.19 Work During an Emergency. The Contractor shall be responsible for and must have resources available for all emergency work which might occur on the Project under construction for which the Contractor is responsible. The Contractor shall perform any work and furnish and install any materials and equipment necessary during an emergency endangering life or property. In all cases the Contractor shall notify the Project Manager of the emergency as soon as practicable, but the Contractor shall not wait for instructions before proceeding to properly protect both life and property.

3.20 Oral Agreements. No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents. No provision of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing. No evidence shall be introduced in any proceeding of any other waiver or modification.

3.21 Liens and Claims Against Contractor. The Contractor shall not permit any lien or claim to be filed or prosecuted against the City on account of any labor or material furnished under this Contract whether the same be furnished by the Contractor or any Subcontractor. If the Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a Subcontractor by any person in connection with the Contract as such claim becomes due, the City may pay such claim to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due to the Contractor under this Contract. The payment of a claim in this manner does not relieve the Contractor or its surety from obligation with respect to any unpaid claims.

Any claim, by a person claiming to have supplied labor or materials for the performance of the work, for payment asserted against the Contractor's payment bond must be asserted in conformity with ORS 279C.600 et. Seq.

4. MATERIALS AND WORKMANSHIP

4.1 Materials to be Reviewed Before Use.

4.1.1 Only materials conforming with the specified requirements and conditionally accepted by the Project Manager shall be used in the Project.

4.1.2 Before any material to be used in the Project is delivered, the Contractor shall advise the Project Manager of the source from which the material is to be obtained, furnish such samples as may be required for testing purposes, and receive the Project Manager's conditional acceptance for the use of that particular material. The conditional acceptance of any source of supply by the Project Manager does not imply that all material from that source will be accepted. Should material from any conditionally accepted source fail to maintain a quality meeting the requirements of the Specifications, use of material from that source shall be discontinued and the Contractor shall furnish acceptable material from other sources. Regardless of the source, any material delivered for the Project which fails to meet the requirements will be rejected. Only material meeting all requirements will be allowed to be incorporated in the Project. Any material or item incorporated in the Project which does not meet requirements of the Contract Documents, even if it was used with the consent and/or the presence of an inspector, shall be removed and acceptable material shall be used in its place, with all costs related to such removal and installation being borne by the Contractor.

4.1.3 Any material which, after conditional acceptance, has for any reason become unsuitable for use shall be rejected and not used.

4.2 Tests of Materials.

4.2.1 All tests of materials shall be made in accordance with acceptable methods as described and designated in the Specifications. When tests of materials are required, such tests shall be made by a testing laboratory accepted by the Project Manager and at the expense of the Contractor. The Contractor shall afford such facilities as may be required for collecting and forwarding samples and shall hold the materials represented by the samples until tests have been made and the materials found equal to the requirements of the Specifications or to approved samples. The Contractor in all cases shall furnish the required samples without charge.

4.2.2 In the absence of any definite Specification or reference to a Specification in the Technical Specifications or in the Special Provisions for the particular Project involved, it shall be understood that such materials shall meet the Specifications and requirements of the American Society for Testing Materials. Unless otherwise specified, all tests of materials shall be made in accordance with the methods prescribed by the American Society for Testing Materials.

4.2.3 In cases where compliance of materials or equipment with Contract requirements is not readily determinable through inspection and tests, the Project Manager shall request the Contractor provide properly authenticated documents, certificates or other satisfactory proof of compliance. These documents, certifications and proofs must cover performance characteristics, materials or construction and the physical or chemical characteristics of materials.

4.2.4 If the Specifications require, or the Contractor's request is approved by the Project Manager, inspection or testing may take place away from the job site. The additional cost to the City for such remote inspection or testing includes travel and subsistence expenses and will be paid by the Contractor through a reduction in payment to the Contractor equal to the travel and subsistence expenses. In the event the remote inspection or testing is not specified and is required by the City, the required travel and subsistence expense will be paid for by the City.

4.3 Storage of Materials. Materials shall be so stored as to insure the preservation of their quality and fitness for the Project. When considered necessary, they shall be placed on wooden platforms or other hard, clean surfaces, and not on the ground, and/or they shall be placed under cover. Stored materials shall be located so as to facilitate prompt inspection. Private property shall not be used for storage purposes without the written permission of the City and the private property owner.

4.4 Character of Workers. The Contractor shall at all times be responsible for the conduct and discipline of Contractor's employees and/or any subcontractor or persons employed by subcontractors. All workers must have sufficient knowledge, skill and experience to properly perform the work assigned to them. Any foreman or worker employed by the Contractor or Subcontractor who, in the opinion of the Project Manager, does not perform the work in a skillful manner, appears to be incompetent or acts in a disorderly or intemperate manner shall, at the written request of the Project Manager, be removed from work on any portion of the Project except as allowed by the Project Manager.

4.5 Construction Means, Methods, Techniques, and Procedures. The Contractor shall have the full power and authority to select the means, methods, techniques and procedures for performing the work covered under the Contract, provided said means, methods, techniques and procedures are in strict compliance with the requirements of all local, state and federal authorities and with these Specifications, and are not in conflict with the recommended installation practices of the manufacturers who are the suppliers of the materials to be utilized on the contemplated Project. The construction means, methods, techniques and procedures utilized shall produce a satisfactory quality of workmanship and shall be adequate to maintain the schedule of progress as required under the provisions of these Specifications.

4.6 Contractor's Tools and Equipment. The Contractor's tools and equipment used on the work covered under the Contract shall be furnished in sufficient quantity and of a capacity and type that will safely perform the work specified, and shall be maintained and used in a manner that will not create a hazard to persons or property, or cause a delay in the progress of the work.

4.7 Rejected Materials and Work. Any material supplied by the Contractor which is condemned or rejected by the Project Manager or the Project Manager's authorized representative because of non-conformity with the Contract Documents shall be removed at once from the vicinity of the Project by the Contractor at his own expense, and the same shall not be used on the Project. Any defective work whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause shall be removed within ten (10) calendar days after written notice is given by the Project Manager, and the work shall be re-executed by the Contractor at his own expense.

- 4.8 Unnoticed Defects.** Any defective work or materials furnished by the Contractor and discovered by the Project Manager before the Project has been given final acceptance or final payment has been made, or during the guarantee period, shall be removed and replaced by work and materials which shall conform to the provisions of the Contract Documents. Failure on the part of the Project Manager or his representative to condemn or reject bad or inferior work or materials shall not be construed to imply acceptance of such work or materials.
- 4.9 Right to Retain Imperfect Work.** If any part or portion of the work done or material furnished by the Contractor under the Contract proves to be defective and not in accordance with the Plans and Specifications, and if the imperfection in the same is not of sufficient magnitude or importance as to make the work dangerous or unsuitable, or if the removal of such work will create conditions which are dangerous or undesirable, the City shall have the right and authority to retain such work but shall make such deductions in the payment therefore as may be just and reasonable.
- 4.10 Correction of Defective Work.** When, and as often as the Project Manager determines through its inspection procedures, material, equipment or workmanship incorporated in the Project do not meet the requirements of the Contract, the Project Manager may give notice of the noncompliance to the Contractor in writing. Within five (5) calendar days of receipt of such notice, the Contractor shall undertake all work necessary to correct the deficiency and to comply with the Contract. The Contractor agrees to pay all costs of correcting the defective work, including wages and overhead charges for inspection. If the Contractor disagrees with the Project Manager's determination and believes the corrective work should be covered by a Change Order, the Contractor shall immediately notify the City, in writing, setting forth the basis for its position. The City will review the matter and notify the Contractor, in writing, of its determination within thirty (30) calendar days after receipt of the Contractor's notification. If the City determines the corrective work is required to comply with the Contract, the Contractor shall proceed with such work.
- As a condition precedent to the Contractor's claim for either additional compensation or time extension or both resulting from the performance of such corrective work, the Contractor shall, within fifteen (15) calendar days after receipt of the City's determination, notify the City in writing of its intent to claim additional compensation, time or both. The Contractor shall document all cost information associated with the corrective work and shall submit such information to the Project Manager on a monthly basis. Receipt of the cost data by the Project Manager does not constitute an Acceptance of the corrective work or an authorization for a Change Order to cover the corrective work.
- 4.11 Cutting and Patching.** The Contractor shall do, or be responsible for, all cutting, fitting or patching that may be required by, shown on or reasonably implied by the Plans and Specifications. Any defective work performed or material furnished by the Contractor, which is discovered by the Project Manager before final acceptance of the Project or before final payment has been made, shall be removed and replaced or patched at the Contractor's expense in a manner approved by the Project Manager or his representative.
- 4.12 Cleanup.**
- 4.12.1** As the Project progresses and immediately after completion of the Project, the Contractor shall clean up and remove all refuse and unused materials of any kind resulting from the Project. If the Contractor fails to commence the cleanup within 24 hours after being directed to do so by the Project Manager, the Project Manager may have the cleanup performed by others. The cost shall be borne by the Contractor and may be deducted from payments due or to become due the Contractor.
- 4.12.2** After the Project is completed and before final acceptance of the Project, all areas affected by the Project shall be neatly finished and all equipment, temporary structures, rubbish and waste shall be removed from the Project area.

4.13 Guarantee.

4.13.1 The Contractor shall fully warrant all work for at least one (1) full calendar year from the City's Final Acceptance of the Project, regardless of the length of manufacturers' or installers' warranties.

4.13.2 In addition to any other warranties that are required, the Contractor shall make all necessary repairs and replacements to remedy any and all defects, breaks or failures of the work occurring within one (1) calendar year following the date of the City's Final Acceptance due to faulty or inadequate materials or workmanship. Such repairs and replacements must conform to the Contract Specifications under which the Contractor originally performed the work.

4.13.3 In the event of a dispute regarding any portion of the work, the Contractor shall nonetheless provide any warranty service, repairs or replacements as described in Paragraphs 4.13.1 and 4.13.2 above, for that portion of the work that is not in dispute. In the event a dispute delays the City's Final Acceptance of the work, the warranty for portions of the work not in dispute runs from the date of the City's Final Acceptance of the remaining portions of the work.

4.13.4 The Contractor shall also repair any damage or remedy any disturbance to other publicly owned property or improvements thereon if caused by the Contractor's work and if the damage or remedy occurs during the warranty period.

4.13.5 If the Contractor performs warranty work, then the warranty work for repetitive defects in materials, workmanship or equipment also shall have a one (1) calendar year warranty period from the date of its completion and the City's Final Acceptance of that work. The Contractor shall continue to provide warranty work pursuant to the terms of the Contract until the defects are completed and the City provides notice of its Final Acceptance of the work.

4.13.6 The City shall provide the Contractor with written notice of the need to perform warranty work unless it is determined that an emergency exists, that delay would cause serious additional loss or damage, or if any delay in performing the work might cause injury to any member of the public. If the Contractor, after written Notice, fails within ten (10) calendar days to comply with the City's request, the City has the right to perform the warranty work either by hiring another Contractor or by using its own forces. In either event, the Contractor and its Surety remain liable to the City for the cost of the work performed and any additional damage suffered by the City.

4.13.7 The Contractor shall provide a bond during the one (1) calendar year warranty period to guarantee the Contractor's performance of warranty work. The Contractor shall provide to the City a bond in the amount of 20% of the final Contract Amount in one of the following ways:

- 4.13.7.1** Continuation of the Contract performance and payment bond.
- 4.13.7.2** Any new performance and payment bond, acceptable to the City, which covers the Contractor's warranty obligations imposed by the Contract Documents.
- 4.13.7.3** Cash deposit to the City Finance Department. A receipt from the City Finance Director constitutes proof of the deposit.
- 4.13.7.4** Other arrangements proposed by the Contractor that the City finds acceptable in the City's sole discretion.

5. INSURANCE, LEGAL AND FINANCIAL RESPONSIBILITY, AND PUBLIC SAFETY

5.1 Insurance.

5.1.1 Policy Requirements. The insurance policies specified herein shall be approved as to form by the City. Contractor shall deliver a certificate of all required policies to City upon execution of the Contract Documents and prior to commencement of any work under the Contract. If requested by the City, Contractor shall furnish the City with executed copies of such policies of insurance. Coverage provided by the Contractor must be underwritten by an insurance company deemed acceptable to the City. Insurance coverage shall be provided by companies admitted to do business in Oregon and rated A- or better by AM Best. A thirty (30) day notice of cancellation, termination or non-renewal in coverage clause shall be included in all insurance policies. Failure to maintain any required insurance coverage in the minimum required amount shall constitute a material breach of the Contract and shall be grounds for immediate termination of the Contract. If the insurer is unwilling or unable to provide such commitment, the Contractor shall provide the City with the relevant sections of its policies describing how the insurer may reduce, modify or cancel the insurance. Furthermore, the Contractor has an affirmative duty to provide the City with any notice the Contractor receives regarding the reduction, modification or cancellation of its insurance within 24 hours of Contractor's receipt of such notice. All policies required by these provisions shall:

- 5.1.1.1** also name the City as an additional insured, protecting City from any and all claims, losses, actions or omissions of Contractor or as a result of the joint concurring or contributory act, omission or negligence of Contractor and City arising with or related to activities specified under the Contract;
- 5.1.1.2** be written as primary policies, not contributing with, or in excess of, any coverage City may have; and
- 5.1.1.3** have loss payable clauses in favor of and reasonably satisfactory to City.

5.1.2 Commercial General Liability Insurance. During the performance of the Contract, Contractor shall obtain and maintain continuously in effect a commercial general liability insurance policy, including personal and advertising injury liability and products, completed operations and construction site coverage, with a combined single limit per occurrence of not less than \$2,000,000. The aggregate limit shall not be less than \$4,000,000. The policy shall be endorsed to state that the aggregate limit of liability shall apply separately to the Contract. Coverage may be written in combination with Commercial Automobile Liability Insurance with separate limits for Commercial General Liability and Commercial Automobile Liability. If available, such policy shall contain a contractual liability endorsement to cover Contractor's indemnification obligations under the Contract. Claims Made policies will not be accepted.

5.1.3 Commercial Automobile Liability Insurance. At all times during the term of the Contract, and at the sole expense of Contractor, Contractor shall maintain continuously in effect, "Symbol 1" commercial automobile liability coverage covering all owned, non-owned and hired vehicles. This coverage may be written in combination with the Commercial General Liability Insurance with separate limits for Commercial Automobile Liability and Commercial General Liability. Combined single limit per occurrence shall not be less than \$2,000,000. If this coverage is written in combination with the Commercial General Liability, the aggregate limit for Commercial General Liability shall not be less than \$4,000,000 and the policy shall be endorsed to state that the aggregate limit of Commercial General Liability shall apply separately to the Contract.

5.1.4 Workers Compensation. At all times during the term of the Contract, and at the sole expense of the Contractor and Subcontractors, the Contractor and all Subcontractors shall comply with ORS 656.017, which requires them to provide Workers Compensation coverage for all their subject workers.

5.1.5 Pollution Liability. Contractor or appropriate Subcontractor shall obtain, at their expense, and keep in effect during the term of the Contract, Pollution Liability Insurance covering their liability for bodily injury, property damage and environmental damage resulting from sudden accidental or gradual pollution and related cleanup costs incurred by the Contractor or appropriate Subcontractor, all arising out of the work or services (including the transportation risk, when applicable) to be performed under the Contract. Combined single limit per occurrence shall not be less than \$2,000,000, with an annual aggregate limit of not less than \$4,000,000. If available, such policy shall contain a contractual liability endorsement to cover Contractor's indemnification obligations under the Contract. Claims Made policies will not be accepted.

5.2 Indemnification. The Contractor shall hold the City harmless from, and indemnify it for, all loss, costs, claims, demands, damages, suits, actions and judgments for property damage and/or personal injury, including death, arising out of the Project or performance under the Contract by the Contractor's agents or employees, or any of them. In any event any such action or claim is brought against City, Contractor shall, if City so elects, upon tender by City, defend the same at Contractor's sole cost and expense, promptly satisfy any judgment adverse to City or to City and Contractor jointly and reimburse City for any loss, costs, damage or expense (including legal fees) suffered or incurred by City.

5.3 Taxes and Charges. The Contractor shall pay state and local sales and use taxes on all items as required by the laws and statutes of the state and its political subdivisions. The Contractor shall withhold and pay any and all withholding taxes, whether state or federal; pay all social security charges and state unemployment compensation charges; and pay or cause to be withheld, as the case may be, any and all taxes, charges, fees or sums whatsoever which are now or may hereafter be required to be paid or withheld under the laws.

5.4 Bid Bond, Payment Bond, Performance Bond and Public Works Bond.

5.4.1 Contracts for Under \$25,000.00. Except when required by the Purchasing Agent, and except for public improvement contracts, bids on all public contracts under twenty-five thousand dollars (\$25,000.00) are exempt from the requirements for a Bid Bond, a Performance Bond to assure performance of the Contract and a Payment Bond to assure payment of the obligations incurred in the performance of the Contract. The Information for Bidders shall state when Bonds are required for contracts under \$25,000.00.

5.4.2 Contracts for \$25,000.00 or More. Except for public improvement contracts, or except when waived by the Council, bids on all public contracts of twenty-five thousand dollars (\$25,000.00) or more, shall be accompanied by a Bid Bond, and the Contractor shall post a Performance Bond to assure performance of the Contract and a Payment Bond to assure payment of the obligations incurred in the performance of the Contract. The Information for Bidders shall state when the requirement for Bonds have been waived for contracts of \$25,000.00 or more.

5.4.2.1 Bid Bonds with Paper Bids. For bids submitted in paper format, the bidder must include a certified check, cashier's check, irrevocable letter of credit or Bid Bond in an amount equal to not less than ten percent (10%) of the total amount of the bid.

5.4.2.1 Bid Bonds with Electronic Bids. For bids submitted electronically, the bidder has the following options:

- Submit an electronic Bid Bond as part of the digitally signed bid document prior to the time of the Bid Closing; or
- Submit a paper Bid guaranty in the form of an irrevocable letter of credit issued by an insured institution as defined in ORS 706.008, or a cashier's check or certified check made payable to the City of Roseburg prior to the time of Bid Closing.

5.4.3 Public Improvement Contracts & Contracts for Highways, Bridges and Other Transportation Projects:

5.4.3.1 Bids on Public Improvement contracts for one hundred thousand dollars (\$100,000.00) or less, and contracts for highways, bridges and other transportation projects for fifty thousand dollars (\$50,000.00) or less, are exempt from the requirement of a Bid Bond, a Performance Bond and a Payment Bond.

5.4.3.2 Bids on Public Improvement contracts for more than one hundred thousand dollars (\$100,000), and contracts for highways, bridges and other transportation projects for more than fifty thousand dollars (\$50,000), must be accompanied by a Bid Bond, Performance Bond and Payment Bond.

5.4.4 Emergency Contracts. For all contracts awarded under Roseburg Municipal Code Subsection 3.06.025(F), the City Council or the Purchasing Agent may waive the requirements for Bid Bond, the Payment Bond and the Performance Bond. Upon receiving the Purchasing Agent's report regarding the emergency conditions necessitating waiver, as required by Roseburg Municipal Code Subsection 3.06.025(F), the Council may modify or reject the Purchasing Agent's decision to waive Bond requirements.

5.4.5 Public Works Bond. Before beginning work on a public works contract, a contractor or subcontractor, unless exempt under ORS 279C.800 to 279C.870, shall submit a \$30,000 Public Works Bond to the Construction Contractors Board and certify to the City that such Bond has been submitted. In case of an emergency, or when the City's interest or property would probably suffer material injury by delay or other cause, the requirement to file a Public Works Bond may be excused if the Purchasing Agent has declared an emergency under Roseburg Municipal Code Section 3.06.025.

5.4.6 Submittal and Return of Bid Bonds. When required by the above Subparagraphs, the Bid Bond shall accompany the bid in the form of cash, certified check, cashier's check, irrevocable letter of credit or Bid Bond in a form approved by City, and in an amount equal to ten percent (10%) of the total amount of the bid. There shall be no exceptions to this provision. All required Bid Bonds, excepting that of the Contractor submitting the successful bid, will be returned by mail for paper Bid Bonds, and by email for electronic Bid Bonds, within thirty (30) calendar days after the Contract has been awarded. The Bid Bond from the successful Contractor will be retained until bidder has entered into a satisfactory Contract with the City, and when required, furnished a Performance Bond to assure performance of the Contract, a Payment Bond to assure payment of the obligations incurred in the performance of the Contract and the Public Works Bond Confirmation form executed by the Contractor. Should the successful bidder fail or refuse to execute the Contract and/or furnish the Payment Bond, Performance Bond or Public Works Bond Confirmation form as required, the Bid Bond deposited by said bidder shall be retained as liquidated damages by the City.

5.4.7 Bond Form. The form of all bonds required by the City shall be as the City may prescribe, and shall be with a Surety company satisfactory to the City and authorized to do business in the State of Oregon. Bonds shall be in force for one year after acceptance of the completed Project to cover all guarantees against defective materials and workmanship and all claims by subcontractors or third parties for services or materials provided to Contractor or Contractor's Subcontractors.

5.5 Royalties and Patents. The Contractor shall pay all royalty and license fees, unless otherwise specified. The Contractor shall defend all suits or claims for infringement of any patent rights and shall save the City and the Project Manager harmless from loss on account thereof.

5.6 Permits and Licenses.

5.6.1 The Contractor shall apply for and obtain, but the City shall cover the cost of, all rights-of-way permits, easements, franchises, highway crossing permits and railroad crossing permits as required. The Contractor shall comply with all specifications or requirements stipulated in the permits granted to the City.

5.6.2 The Contractor shall obtain at Contractor's expense, all other permits (such as building permits, burning permits, blasting permits and safety permits), licenses and inspection fees necessary for construction purposes as required by appropriate local, county, state or federal laws and/or ordinances. The Contractor shall also be registered to do business with the City of Roseburg prior to beginning work on the Contract.

5.7 Laws to be Observed. The Contractor shall keep fully informed of all local and county ordinances, state and federal laws in any manner affecting the Project herein specified. Contractor shall at all times comply with said ordinances, laws and regulations, and the City's Standard Contract Provisions in Exhibit "A" of the Construction Contract; and protect and indemnify the City and City's officers and agents against any claim or liability arising from or based on the violation of any such laws, ordinances, provisions or regulations.

5.8 Safety.

5.8.1 The Contractor will be solely and completely responsible for conditions of the jobsites, including safety of all persons and property during work on the Project. This requirement will apply continuously and not be limited to normal working hours. Safety provisions shall conform to all applicable federal, state, county and local laws, ordinances and codes. The Contractor shall comply with ORS 279C.505(2) drug testing program requirements at all times throughout the completion of the Project.

5.8.2 The Contractor shall also comply with the "U.S. Department of Labor Occupational Safety and Health Act", the "Construction Safety Act" administered by the U.S. Department of Labor, and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, except where these are in conflict with state laws, in which case the more stringent requirement must be followed.

5.8.3 Contractor shall comply with all federal, state and local safety requirements, including but not limited to regulations pertaining to health hazard notification, control of hazardous energy, use of hazardous substances, handling and disposal of hazardous waste, removal and disposal of asbestos, entry into and work in confined spaces and handling of materials containing lead. City will notify Contractor of any hazardous conditions of which City is aware and will provide Contractor with information about City's safety and hazard notification programs. Such notification

from the City does not relieve Contractor of any responsibility under the Contract or under federal or state statute, regulation or common law to inform itself of existing and potential hazards, to communicate those hazards to its employees, and to use all reasonable steps to minimize the risk of harm to its employees, other workers and the public.

5.8.4 The Contractor shall maintain at the jobsite all articles necessary for giving first aid to the injured and shall establish the procedure for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured on the jobsite.

5.8.5 The duty of the Project Manager to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures in, on or near the construction sites.

5.8.6 If death, serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Project Manager and the City. In addition, the Contractor must promptly report in writing to the Project Manager all accidents whatsoever arising out of, or in connection with, work on the Project or adjacent to the sites, giving full details and statements of witnesses.

5.8.7 If any claim is made by anyone against the Contractor or any Subcontractor because of any accident, the Contractor shall promptly report the facts in writing to the Project Manager, giving full details of the claim.

5.9 Equal Opportunity Clause. The provisions of Executive Order 11246 of September 24, 1965, and the Rules and Regulations issued therein are hereby incorporated by reference, and the Contractor agrees, by acceptance of the Contract, to comply with such Executive Order, rules, regulations and amendments thereto, to the extent the same are applicable to the contracting and/or subcontracting of services or work hereunder.

5.10 Warning Signs and Barricades. The Contractor shall provide adequate signs, barricades and lights and take all necessary precautions for the protection of the work under the Project and the safety of the public. All barricades and obstructions shall be protected at night by signal lights which shall be kept burning from sunset to sunrise. Barricades shall be of substantial construction and shall be painted white or whitewashed to increase their visibility at night. Suitable warning signs shall be so placed and illuminated at night as to show in advance where construction, barricades or detours exist.

5.11 Flaggers. In addition to furnishing and maintaining adequate signs, barricades and lights, the Contractor is required to furnish any and all flaggers that are required to control traffic. The City is hereby specifically exempted from furnishing any flaggers for the Project. If flaggers are required on any jobsite, they shall be supplied by the Contractor at no additional cost to the City.

5.12 Public Safety and Convenience. The Contractor shall at all times conduct work on the Project so as to insure the least possible obstruction to traffic and inconvenience to the general public and residents in the vicinity of the Project, and to insure the protection of persons and property in a manner satisfactory to the Project Manager. No road or street shall be closed to the public except with the permission of the Project Manager and proper governmental authority. Temporary provisions shall be made by the Contractor to insure the use of sidewalks and the proper functioning of all gutters, sewer inlets, drainage ditches and irrigation ditches, which shall not be obstructed except as approved by the Project Manager.

5.13 Protection of Work and City's Property. The Contractor shall at all times safely guard the City's property and equipment from injury or loss in connection with Contractor's work under the Contract. The Contractor shall at all times safely guard and protect the Project and adjacent property (as provided by law and the Contract Documents) from damage. Contractor shall be responsible for any damage to the City's property and equipment which is a result of the Contractor's negligence.

5.14 Sanitary Provisions. The Contractor shall provide and maintain such sanitary accommodations for the use of its employees and those of its subcontractors as may be necessary to comply with the requirements and regulations of the local and state departments of health and as directed by the Project Manager.

5.15 Payment of Prevailing Wages on Public Works in Oregon.

5.15.1 The Contractor and all Subcontractors on the Project shall pay not less than the "prevailing rate of wage" as that term is defined in ORS 279C.800 to 279C.870, and if applicable, the Federal Prevailing Wage required under the Davis-Bacon Act (40 U.S.C. 3141 - 3148), whichever is higher. The determination and application of such prevailing rate of wage is provided for in ORS 279C.800 through 279C.870, and if applicable, the Davis-Bacon Act (40 U.S.C. 3141 - 3148).

5.15.2 If the Bureau of Labor has made no determination of the prevailing rate of wage, it shall be the obligation of the Contractor to determine the same by making application to the Bureau of Labor or otherwise.

5.15.3 The Contractor or the Contractor's surety and every Subcontractor or the Subcontractor's surety shall file certified statements with the City in writing using the form prescribed by the Commissioner of the Bureau of Labor and Industries certifying the hourly rate of wage paid each worker whom the Contractor or the Subcontractor has employed in the work under this Contract and further certifying that no worker employed upon such public work has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in this Contract. The certified statement shall be verified by the oath of the Contractor or the Contractor's surety or Subcontractor or the Subcontractor's surety that the Contractor or Subcontractor has read the certified statement and knows the contents thereof and that the same is true to the Contractor's or Subcontractor's knowledge. The certified statements shall set out accurately and completely the payroll records for the prior week including the name and address of each worker, the worker's correct classification, rate of pay, daily and weekly number of hours worked, deductions made, and actual wages paid.

5.15.4 Each certified statement shall be delivered or mailed by the Contractor or Subcontractor to the City. A true copy of the certified statement shall also be filed at the same time with the Commissioner of the Bureau of Labor and Industries. Certified statements for each week during which the Contractor or Subcontractor employs a worker upon the public work shall be submitted once a month, by the fifth business day of the following month. Information submitted on certified statements may be used only to ensure compliance with the provisions of ORS 279C.800 to 279C.870 or the Davis-Bacon Act (40 U.S.C. 3141 - 3148), whichever applies.

5.15.5 As provided by ORS 279C.810, the contract amount threshold for application of the state prevailing wage rate law is \$50,000.00.

5.16 Subcontractor and Supplier Agreements. The Contractor shall include in its subcontracts for property or services entered into by the Contractor and a first-tier subcontractor, including a material supplier, for the purpose of performing the Contract:

5.16.1 A payment clause that obligates the Contractor to pay the first-tier subcontractor for satisfactory performance under its subcontract within ten (10) calendar days of payment by the City out of such amounts as are paid to the Contractor by the City under the Contract; and

5.16.2 An interest penalty clause that obligates the Contractor, if payment is not made within thirty (30) calendar days after receipt of payment from the City, to pay to the first-tier subcontractor, an interest penalty on amounts due in the case of each payment not made in accordance with the payment clause included in the subcontract pursuant to this requirement. The Contractor or first-tier subcontractor shall not be obligated to pay an interest penalty if the only reason that the Contractor or first-tier subcontractor did not make payment when payment was due, is that the Contractor or first-tier subcontractor did not receive payment from the City or Contractor when payment was due. The interest penalty shall be:

5.16.2.1 For the period beginning on the day after the required payment date and ending on the date on which payment of the amount is made; and

5.16.2.2 Computed at the rate specified in ORS 279C.515(2).

5.16.3 The Contractor shall include in each of its subcontracts, for the purpose of performance of the Contract condition, a provision requiring the first-tier subcontractor to include a payment clause and an interest penalty clause conforming to the standards set forth in this section and requiring each of its subcontractors to include such clauses in their subcontracts with lower-tier subcontractors or suppliers.

5.16.4 None of the provisions of this section are intended to prevent the Contractor or any subcontractor from including in its contracts, the provision described in ORS 279C.580 (5) and (6).

5.17 Application for and Processing of Subcontractor and Supplier Payments. The Contractor shall provide each first-tier Subcontractor, including a material supplier, with a standard form that the first-tier Subcontractor may use as an application for payment or as another method by which the Subcontractor may claim a payment due from the Contractor. The Contractor, except as otherwise provided in this Subsection, shall use the same form and regular administrative procedures for processing payments during the entire term of the subcontract. The Contractor may change the form or the regular administrative procedures the Contractor uses for processing payment if the Contractor:

5.17.1 Notifies the Subcontractor in writing at least forty-five (45) calendar days before the date on which the Contractor makes the change; and

5.17.2 Includes with the written notice a copy of the new or changed form or a description of the new or changed procedure.

6. PROGRESS AND COMPLETION OF PROJECT

6.1 Contract Time and Commencement of Construction. The Contractor shall be capable of commencing construction on the Project covered under the Contract within ten (10) calendar days after signing of the Construction Contract. The Contract shall be in effect from the time it is signed until the Project is complete and accepted by the City. During periods when weather or other conditions are unfavorable for construction, the Contractor shall pursue only such portions of the work that will not be damaged thereby. Contractor shall not construct any portion of the work during the time unfavorable conditions exist that are likely to adversely affect the quality or efficiency of the work. It is expressly understood and agreed by and between the Contractor and the City that the Contract time specified for completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

6.2 Preconstruction Conference. A preconstruction conference will be scheduled by the City prior to commencement of construction. The Contractor will be notified of the time and place of this conference and shall be required to attend. Ten (10) calendar days prior to the preconstruction conference, the Contractor shall provide to the Project Manager four (4) copies of a project work schedule for review and approval. The Contractor has an affirmative duty to update the construction schedule each time changes occur.

6.3 Prosecution of the Project.

6.3.1 It is expressly understood and agreed that the time of beginning, rate of progress and time of completion of the Project are of the essence of the Contract. The Contractor shall perform the construction of said Project with due diligence and at such a rate and in such a manner as, in the opinion of the Project Manager, is necessary for completion within the time set forth in Paragraph 4 of the Contract.

6.3.2 After commencement of construction on the Project by the Contractor, if the Contractor is delayed by reason of the failure of the City to provide sufficient materials for construction thereof or to provide continuous open right-of-way, then the completion date of said Project shall be extended to the extent that the Contractor is delayed in carrying on said Project by reason of such failure on the part of the City.

6.3.3 The Contractor shall arrange its work and dispose of materials so as to insure the least possible interference and inconvenience to the landowners on or beside whose property the construction is taking place, or to the public where the construction lies in or near a public thoroughfare. Contractor shall employ only such number of construction crews as are reasonably necessary to construct said Project within the allotted time. The City may require the employment of an additional crew or crews, if in its judgment it is necessary in order to complete said Project with the time required.

6.3.4 If the Contractor desires to carry on work at night or outside the regular hours, timely notice shall be given to the Project Manager to allow satisfactory arrangements to be made for inspecting the Project in progress.

6.4 Provisions for Delays:

6.4.1 Notice of Delays. Whenever the Contractor foresees any delay in the prosecution of the work, and in any event, immediately upon the occurrence of any delay which the Contractor regards as unavoidable, Contractor shall notify the Project Manager in writing on the probability of the occurrence of such delays, the probable duration and cause. The Contractor shall take immediate steps to prevent the occurrence or continuance of the delay. If this cannot be done, the Project Manager shall determine how long the delay will probably continue and to what extent the prosecution and completion of the work are being delayed thereby. The Project Manager shall also determine whether the delay is to be considered avoidable or unavoidable and shall notify the Contractor of his/her determination. The Contractor shall not make a claim for delays that are not called to the attention of the Project Manager at the time of their occurrence.

6.4.2 Avoidable Delays Defined. Avoidable delays in the prosecution or completion of the work include, but are not limited to:

6.4.2.1 All delays that could have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or its Subcontractor;

- 6.4.2.2 Delays that do not necessarily prevent or delay the prosecution of other parts of the work or the completion of the whole work within the time specified;
- 6.4.2.3 Reasonable delays resulting from time required by the City and Project Manager for approval of plans submitted by the Contractor and for the making of surveys, measurements, testing and inspections; and
- 6.4.2.4 Delays arising from interruptions occurring in the prosecution of the work on account of the reasonable interference from other contractors employed by the City which do not necessarily prevent the completion of the whole work within the time specified.

6.4.3 Unavoidable Delays Defined. Unavoidable delays in the prosecution or completion of the work include, but are not limited to, all delays (other than avoidable delays as defined above) that result from causes beyond the control of the Contractor and that could not have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or its Subcontractors. Delays caused by other contractors employed by the City will be considered unavoidable delays only insofar as they interfere with the Contractor's completion of the work. Delays due to normal weather condition are not regarded as unavoidable delays insofar as they interfere with the Contractor's completion of the work. If the Project Manager determines the Contractor has experienced an unavoidable delay, and further that such delay has affected the controlling operations of the work, the City shall grant to the Contractor an extension of time for Contract performance, not to exceed the number of calendar days of unavoidable delay experienced by the Contractor. The Contractor has no remedy for unavoidable delay except as provided by this paragraph. Delays due to normal weather conditions are not regarded as unavoidable as the Contractor agrees to plan its work with prudent allowances for interference by normal weather conditions. Delays caused by acts of God, fire, unusual storms, flood, earthquakes, epidemics, quarantine restrictions, strikes, labor disputes and freight embargoes are considered unavoidable delays insofar as they interfere with the Contractor's completion of the work. Delays caused by shortages of materials are considered unavoidable providing the Contractor can prove to the City that the Contractor has made reasonable and timely attempts to secure the material(s).

A rainstorm, windstorm, high water or other natural phenomenon for the specific locality of the work, which might reasonably have been anticipated from historical records of the general locality of the work, do not constitute unusually severe weather. For the purposes of this Contract, rainfall data is assumed to be the same as that measured at the Roseburg Regional Airport by the Environmental Data Service of the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

6.4.4 Time Extension for Delays.

- 6.4.4.1 **Extensions for Avoidable Delays.** In case the work is not completed in the time specified, including extensions of time as may have been granted for unavoidable delays, the Contractor will be assessed damages for those costs incurred by the City that are attributable to the fact the work was not completed on schedule. The City may grant an extension of time for avoidable delay if the City deems it in its best interest. The Contractor shall compensate the City, in exchange for granting an extension of time for avoidable delay, for the actual costs to

the City of Project management, inspection, general supervision and overhead expenses which are directly chargeable to the work and that accrue during the period of such extension. The actual costs do not include charges for final inspection and preparation of the final estimate by the City.

6.4.4.2 Extensions for Unavoidable Delays. For delays the Contractor considers unavoidable, the Contractor shall submit to the Project Manager, complete information demonstrating the effect of the delay on the controlling operation in its construction schedule. The submission must be made within ten (10) calendar days of the beginning of the occurrence which is claimed to be responsible for the unavoidable delay. The Project Manager shall review the Contractor's submittal and determine the number of calendar days of unavoidable delay, if any, and the effect of such delay on the controlling operations of the work. If the Project Manager determines the Contractor has experienced an unavoidable delay, and further that such delay has affected the controlling operations of the work, the City shall grant to the Contractor an extension of time for Contract performance, not to exceed the number of calendar days of unavoidable delay experienced by the Contractor. The Contractor has no remedy for the unavoidable delay except as provided in this Section. During such extension of time, neither charges for the inspection nor administration nor damages for delay will be assessed against the Contractor. It is understood and agreed by the Contractor and the City that time extensions due to unavoidable delays involve controlling operations that would prevent completion of the whole work within the specified time.

If the Contractor disagrees with the Project Manager's determination, the Contractor may appeal such determination to the City Manager in accordance with Paragraph 3.4.2.

- 6.5 Changes in the Project.** The City may, as the need arises, order changes in the Project through additions, deletions or modifications without invalidating the Contract. Compensation and time of completion affected by the change shall be adjusted at the time of ordering such change.
- 6.6 Extra Work.** New and unforeseen items of work found to be necessary but which cannot be covered by any item or combination of items for which there is an established Contract price, shall be classified as extra work. Upon written order from the City and approval from the Project Manager, the Contractor shall do such extra work as may be required for the proper completion or construction of the whole Project contemplated. In the absence of such written order, no claim for extra work shall be considered. Extra work shall be performed in accordance with these Specifications where applicable and work not covered by the Specifications or special provisions shall be done in accordance with the best practice as approved by the Project Manager. Extra work required in an emergency to protect life and property shall be performed by the Contractor as required. Contractor shall notify the Project Manager of the emergency as soon as possible, but shall begin work prior to providing notice if immediate work is necessary to protect life or property.
- 6.7 Unforeseen Difficulties.** A delay beyond the Contractor's control occasioned by an act of God, or by strikes, lockouts, fire, etc., may entitle the Contractor to an extension of time to complete the Project as determined by the Project Manager, provided however, that the Contractor shall immediately give written notice to the Project Manager of the cause of such delay. In no event shall the Contractor be entitled under the Contract to collect or recover any damages, loss or expense incurred by any delay other than as caused by the City as stipulated hereinabove in Subsection 6.3 "Prosecution of the Project".

6.8 Use of Completed Portions. The City shall have the right to take possession of and use any completed or partially completed portions of the Project. Such use shall not be considered as final acceptance of any portion of the Project, nor shall such use be considered as cause for an extension of Contract completion time unless authorized by a change order issued by the City.

6.9 Liquidated Damages. If the Contractor fails to complete the work, or any part thereof, in the time agreed upon in the Contract or within such extra time as may have been allowed for delays by extensions granted as provided in the Contract, the Contractor shall reimburse the City for the additional expense and damage for each calendar day that the Contract remains uncompleted after the Contract completion date. It is agreed that the amount of such additional expense and damage incurred by reason of failure to complete the Contract is the per diem rate as stipulated in the Bid. The amounts are hereby agreed upon as liquidated damages for the loss to the City.

It is expressly understood and agreed that this amount is not to be considered in the nature of a penalty but as damages for delay which have accrued against the Contractor. The exact amount of damage that would be sustained by the City due to delay is difficult, if not impossible, to accurately ascertain, but the parties believe the specified amount of liquidated damages to be a reasonable forecast of the damage for delay that the City would likely sustain. Such liquidated damages are in addition to any other ascertainable damage, other than for delays that the City sustains for Contractor's breach of the Contract. The City may deduct such damages from any amount due, or that may become due the Contractor or the amount of such damages becomes due and may be collected from the Contractor or its Surety.

6.10 Substantial Completion. Substantial Completion shall have the meaning set forth in Subsection 1.1 "Definitions" of these General Conditions.

Upon consideration by the Contractor that a determination of Substantial Completion of the Project, or a designated portion thereof, is completed, the Contractor shall so notify the Project Manager in writing. This notice shall include the Contractor's list of any minor incomplete contract work items to finish the Project. Upon receipt of the written notification, the Project Manager will promptly, by personal inspection, determine the actual status of the work in accordance with the terms of the Contract. If the Project Manager finds that the terms of Substantial Completion of the Contract have not yet been met, the Project Manager will so inform the Contractor. If, instead, the Project Manager determines from the inspection that the work, or the designated portion thereof, has met the terms of Substantial Completion, the Project Manager will issue to the Contractor a "Written Notice of Substantial Completion" along with a Punch List of any deficient work items needing repair or correction. The Contractor agrees to complete all such corrective work within thirty (30) calendar days after submission of the Punch List to the Contractor by the Project Manager. If the Contractor fails to complete the corrective work within the thirty (30) calendar days, the Contractor is liable to the City in the amount stated in the liquidated damages section of the Contract for each day thereafter until all corrective work is completed. The City shall be entitled to deduct liquidated damages from final payment.

6.11 Final Completion. The Contractor shall notify the Project Manager in writing requesting a designation of Final Completion at the completion of the punch list items related to the Substantial Completion designation, and at the completion of any other items necessary to the completion of the Project. The Project Manager will inspect these remaining items, and upon satisfactory completion, will issue a written "Notice of Final Completion" which shall be subject to the City's Final Acceptance. In the event some items are not ready for the City's Final Acceptance the City may, without waiving any of the City's right to the portion(s) of the Project not yet receiving Final Acceptance, nonetheless provide Final Acceptance for those portion(s) of the items of the Project the City deems appropriate. As stated in Subsection 4.13, the terms of the guarantee commence on the date of the City's Written Notice of Final Acceptance for that portion of the work.

7. MEASUREMENT AND PAYMENT

7.1 General.

7.1.1 All work acceptably completed under the Contract shall be measured by the Project Manager according to United States Standard Measures, and the quantities of work performed or materials furnished shall be computed on the basis of such measurements.

7.1.2 The Contractor shall accept the compensation as herein provided in full payment for furnishing all materials not provided by the City and all labor, tools and equipment; for performing all work under the Contract; for all loss or damage arising from the nature of the Project other than unforeseeable environmental conditions as described in ORS 279C.525, the action of the elements or any unforeseen difficulties which may be encountered during the prosecution of the Project, until its final acceptance by the City.

7.2 Payments. The City shall make monthly progress payments within thirty (30) calendar days from the date of the pay request for work which has been completed and accepted by the City per ORS 279C.570.

7.3 Final Payment. The City shall retain five percent (5%) of all payments until the entire Project has been given Final Acceptance by the City. The entire Project must be accepted by the City prior to releasing retainage. Upon the City's acceptance of the entire Project, the retainage will be released and the Contractor shall be responsible for the workmanship and materials for one year thereafter as provided in Subsection 4.13.

If the contract price exceeds \$500,000, the City will place amounts deducted as retainage into an interest-bearing escrow account. Interest on the retainage amount accrues from the date the payment request is approved until the date the retainage is paid to the Contractor.

7.4 City's Right to Withhold Payment. The City may withhold payment in whole or in part on an approved invoice to the extent necessary to protect City from loss due to any of the following causes discovered subsequent to approval of the invoice by the Project Manager or the Project Manager's representative:

7.4.1 Defective work;

7.4.2 Evidence indicating the probable filing of claims by other parties against the Contractor;

7.4.3 Failure of the Contractor to make payments to Subcontractors, material suppliers or workers; or

7.4.4 Damage to another contractor.

7.5 Payment for Uncorrected Work. Should the Project Manager direct the Contractor not to correct work that has been damaged or that was not performed in accordance with the Contract Documents, the City may make an equitable deduction from the amount due to the Contractor on the Project in order to compensate the City for the uncorrected work.

7.6 Payment for Extra Work. In any case where the Contractor deems additional compensation is due Contractor for work or materials not clearly covered in the Contract Documents or not ordered by the Project Manager according to provisions of the Contract Documents, the Contractor shall notify the Project Manager, in writing, of his intention to make a claim in order that such matters may be settled, if possible, or other appropriate action promptly taken. If such notification is not given, or the Project Manager is not afforded proper facilities by the Contractor for keeping strict account of actual cost, then the Contractor

hereby waives the claim for such extra compensation. Such notice by the Contractor, and the fact that the Project Manager has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim. Claims for additional compensation shall be made in itemized detail and submitted, in writing, to the City and Project Manager within ten (10) calendar days following completion of that portion of the Project for which the Contractor makes his claim. In case the claim is found to be just, it shall be allowed and paid under a supplemental agreement to be entered into between the parties to the Contract.

7.7 Release of Liens.

7.7.1 Before the City pays the Contractor for the work included under the Contract, the Contractor shall sign and deliver to the City a release of liens or claims sworn to under oath and duly notarized. The release shall state that the Contractor has satisfied all claims and indebtedness of every nature in any way connected with the Project, including but not limiting the generality of the foregoing, all payrolls, amounts due to subcontractors, accounts for labor performed and materials furnished, incidental services, liens and judgments.

7.7.2 If any lien or claim remains unsatisfied after payment to the Contractor is made, the Contractor shall refund to the City all monies that the City may be compelled to pay in discharging such a lien or claim, including all costs and reasonable attorneys' fees.

7.8 Acceptance of Payment Constitutes Release. The acceptance by the Contractor of a payment for the invoice shall release the City from all claims and liability to the Contractor for all things done or furnished in connection with the work specified on said invoice, and every act of the City and others relating to or arising out of the Project. No payment, however, final or otherwise, shall operate to release the Contractor or his Sureties from obligations under the Contract, the Performance Bond or the Payment Bond as herein provided.

7.9 Correction of Defective Work. The Project Manager's approval of the invoice for work completed and the City's payment to the Contractor on such invoice, shall not relieve the Contractor of the responsibility for faulty materials or workmanship on said work during the one-year guarantee period as stipulated in Subsection 4.13. The one-year guarantee period for each portion of the Project begins when each portion of the Project receives written notice of Final Acceptance from the City. The City shall promptly give notice of faulty materials or workmanship which are discovered within the one-year guarantee period and the Contractor shall promptly replace any such defects. If the Contractor fails to make the repairs and replacements promptly, the City may do the work, and the Contractor and Contractor's Surety shall be liable for the cost thereof.

8. ENVIRONMENTAL MATTERS

8.1 Contractor Compliance. Contractor shall comply with, and require its Subcontractors to comply with, all applicable federal, state and local statutes, ordinances, orders, rules and regulations relating to the protection of human health and environment, including but not limited to, the use, storage, release, spill, disposal or other handling of petroleum products and other hazardous substances.

8.2. Unanticipated Regulatory Compliance and Site Conditions.

8.2.1 If Contractor is delayed or additional work is required due to the enactment of new or an amendment to existing statutes, ordinances or regulations relating to the prevention of environmental pollution and the preservation of natural resources occurring after submission of the successful bid, City may, at its sole discretion:

- 8.2.1.1** terminate the Contract;
- 8.2.1.2** complete the Project itself;
- 8.2.1.3** use non-City forces already under contract with the City;
- 8.2.1.4** require that the underlying property owner be responsible for the additional work;
- 8.2.1.5** call for bids for a new contractor to provide the necessary services; or
- 8.2.1.6** issue Contractor a change order setting forth the additional work that must be undertaken.

8.2.2 If Contractor encounters a condition not referred to in the Contract Documents, not caused by Contractor and not discoverable by a reasonable pre-bid visual site inspection, and such condition requires compliance with the regulations referred to in Paragraph 8.2.1 above, Contractor shall immediately provide City notice of the condition. Except as required by any environmental or natural resource regulation, or, in case of an emergency, Contractor shall not commence work or incur any additional job site costs with regard to the condition encountered without written direction from the City. Upon request, Contractor shall estimate emergency or regulatory compliance costs as well as the anticipated delay and costs resulting from the encountered condition, and promptly deliver such estimate to City for resolution.

8.2.3 In the event of an occurrence of an unanticipated site condition as described in Paragraph 8.2.2 above, City, within a reasonable period of time, may do any of the following at its sole discretion:

- 8.2.3.1** terminate the Contract;
- 8.2.3.2** complete the Project itself;
- 8.2.3.3** use non-City forces already under contract with the City;
- 8.2.3.4** require that the underlying property owner be responsible for the additional work;
- 8.2.3.5** call for bids for a new contractor to provide the necessary services; or
- 8.2.3.6** issue Contractor a change order setting for the additional work that must be undertaken.

8.2.4 In the event City terminates the Contract under Subparagraph 8.2.1.1 or 8.2.3.1, Contractor shall be entitled to all costs and expenses incurred to the date of the termination, including overhead and reasonable profits, on the percentage of the Project completed. Contractor shall not be entitled to profits or consequential damages on the uncompleted portion of the Contract. If the City chooses to issue a change order or terminate the Contract for either of the reasons set forth in Paragraph 8.2.1 or 8.2.3, Contractor agrees to provide the City access to Contractor's documentation used to prepare Contractor's bid in order to assist City in making the City's determination of the additional compensation to be paid.

9. CHANGE ORDERS.

9.1 Authorized Changes in the Work. Changes to the drawings, specifications, quantities or details of the Project are inherent in the nature of construction and may be necessary or desirable during the course of Project construction. Without impairing or invalidating the Contract, the City may at any time, without notice to any surety, by written order designed or indicated to be a Change Order or a Proposal Request, make any change in the work within the general scope of the Contract, including, but not limited to changes:

9.1.1 In the Plans and Specifications (including drawings and designs);

9.1.2 In the time, method, or manner of performance of the work;

9.1.3 In the City-furnished facilities, equipment, materials, services or site; or

9.1.4 Directing acceleration in the performance of the work.

9.2 Unauthorized Changes in the Work. The Contractor shall not be entitled to an increase in the Contract price or an extension of the Contract times with respect to any work performed that is not required by the Contract Documents as amended, modified or supplemented except in the case of an emergency. In the event of an emergency, the Contractor has seven (7) calendar days to notify the Project Manager of the nature and extent of the emergency. If notification is not provided within seven (7) calendar days, no time adjustment or cost compensation will be allowed.

9.3 Execution of Change Orders. The City and the Contractor shall execute appropriate Change Orders and Proposal Requests and upon receipt of an approved Change Order or Proposal Request, the Contractor shall perform the work as modified. If the Change Order increases the Contract amount, the Contractor shall notify Contractor's Surety of the increase and shall provide the City with a copy of any resulting modification to the Bond documents. Change Order and Proposal Requests shall clearly state all costs and schedule adjustments.

9.4 No Oral Change Orders. No oral order, statement or conduct of the City constitutes a Change Order or entitles the Contractor to an equitable adjustment.

9.5 Change of Contract Price.

9.5.1 The Contract price may only be changed by a Change Order.

9.5.2 The value of any work covered by a Change Order or of any claim for an adjustment in the Contract price will be determined as follows:

9.5.2.1 Where the work involved is covered by the unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved; or

9.5.2.2 Where the work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum; or

9.5.2.3 Where the work involved is not covered by the unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Subparagraph 9.5.2.2, time and materials basis plus the Contractor's fee for overhead and profit as defined in Paragraph 9.5.3.

9.5.3 Percentage Allowances. For work negotiated and completed on a time and materials basis the Contractor's maximum allowable percentage markup of such costs shall be as follows:

Materials	15%
Equipment	15%
Labor	20%
Special Services	15%

9.5.3.1 When a subcontractor performs work under a time and materials Change Order, the Contractor will be allowed a supplemental markup of 5% on the subcontractor's charges.

9.6 Lump Sum Change Orders. Whenever practicable, changes in Contract price resulting from extra work will be determined by a mutually agreed-upon lump sum price. The Contractor's proposal for such changes must include a detailed breakdown of all labor and materials to be performed by its forces and by the forces of its Subcontractors and material suppliers.

Costs for labor, material, rentals, approved services, and for overhead and profit for the Contractor, Subcontractor and material suppliers must be calculated as specified under the Subsection 9.7.

When the City desires a price quotation from the Contractor for a proposed change to the Contract, the Project Manager will issue a Proposal Request describing the proposed changes. The Contractor shall respond with a price quote within ten (10) calendar days of the issuance of the Proposal Request.

Contractor's quotations for Change Orders and Proposal Requests must be in writing and firm for a period of thirty (30) calendar days. Any compensation paid in conjunction with the terms of a Change Order compromises the total compensation due the Contractor for the modification defined in the Change Order. By signing the Change Order or Proposal Request, the Contractor acknowledges that the stipulated compensation includes payment for the modification plus all payment for the interruption of schedules, extended overhead, delay or any other impact claim or ripple effect, and by such signing specifically waives any reservation or claim for additional compensation or claim for Contract time extension in respect to the subject Change Order or Proposal Request.

The City's request for quotations on modifications to the work is not considered authorization to proceed with the work prior to the approval of a formal Proposal Request or Change Order, and such request does not justify any delay in existing work.

9.7 Time and Material Change Orders. Whenever the Contractor is directed by written notice from the Project Manager as the City's representative, to perform extra work on a time and material basis, the Contractor shall furnish labor, equipment and materials necessary to complete the work in a satisfactory manner and within a reasonable period of time. For the work performed, payment will be made for the documented actual necessary expense of the following:

9.7.1 Field and office labor, including estimating and procurement personnel and foremen, who are directly assigned to the time and materials work (actual payroll cost, including wages, fringe benefits as established by law). The cost of labor includes any employer payment to or on behalf of the worker for health and welfare, pension, vacation and similar purposes. Where subsistence and travel allowances are required for performance of extra work, the charges consist of the actual amount paid to each worker. No other fixed labor burdens will be considered unless approved in writing by the City.

9.7.2 Material delivered and used on the designated work, including sales tax, if paid by the Contractor or its Subcontractor.

9.7.3 Rental or equivalent rental cost of equipment, including necessary transportation, for items having a value in excess of \$100. When equipment is not rented, the equivalent rental cost of equipment is based on the standard rental rates for Contractor-owned equipment, but in no event exceeds the rental rates set forth in the most current edition of the "Equipment Watch Rental Rate Blue Book," published by Penton Media. For equipment not listed in the Blue Book, the rental rate is as listed by the local section of the Associated General Contractors. If the equipment is not listed by the Associated General Contractors, the rental rate will be mutually agreed upon in writing between the Contractor and City prior to the use of the unlisted equipment. The reasonable cost of moving equipment onto and off the job site may be included, but equipment rental will not be paid when the equipment is inoperative due to breakdowns. Individual pieces of equipment or small tools having a replacement value of \$100 or less are considered as included in the overhead allowances and no additional payment therefore will be made.

When equipment is used on the extra work for less than five (5) business days, hourly rates will be used. Less than thirty (30) minutes of operation are considered ½ hour of operation. When equipment is used on the extra work for more than five (5) business days, weekly rates apply. In this case, less than four (4) hours of operation is considered to be ½ calendar day of operation.

Rental or equivalent rental cost will be allowed for only those days or hours during which the equipment is in actual use. Rental and transportation allowances must not exceed the current rental rates prevailing in the locality. The rentals allowed for equipment are understood to cover all fuel, supplies, repairs, and renewals.

The City reserves the right to furnish such materials and equipment as it deems expedient, and the Contractor has no claim for profit or added fees on the cost of such materials and equipment.

9.7.4 The added fixed fees defined in Paragraph 9.5.3 constitute full compensation for the cost of general supervision, overhead, profit and any other general expense.

9.7.5 If a dispute occurs over payment for work provided on a time and material basis, the dispute is not cause for stopping work.

9.7.6 The Contractor shall maintain accurate and detailed records for all work performed on a time and materials basis. These records must reflect all the actual necessary expenses pertaining to the extra work and must at all times be available for audit by the City.

9.7.7 The Contractor shall make clear distinction in its records between the direct costs of work paid for on a time and materials basis and the costs of other work. The Contractor shall furnish the Project Manager report sheets in duplicate of each day's work that itemize the labor, materials and equipment used, and shall make the report sheets available for the City's review. The daily report sheet must provide names or identifications and classifications of workers, the hours worked, the sizes, types and identification numbers of equipment, and hours operated. Daily report sheets must be signed by the Contractor or its authorized agent and verified by the Project Manager.

9.7.8 To receive partial payments and final payment for time and materials work, the Contractor shall submit to the Project Manager, in a manner approved by the Project Manager, detailed and complete documented verification of the Contractor's and any of its Subcontractor's actual cost incurred. Material and rental charges must be substantiated by copies of vendors' invoices. Such costs must be submitted within thirty (30) calendar days after said work has been satisfactorily completed.

GENERAL CONTRACT PROVISIONS

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Part 1 – 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).
10-09	Award	The Owner's notice to the successful bidder of the acceptance of the submitted bid.

Paragraph Number	Term	Definition
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	<p>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.</p> <p>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.</p>
10-17	Contract Item (Pay Item)	A specific unit of work for which a price is provided in the contract.
10-18	Contract Time	The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.

Paragraph Number	Term	Definition
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.
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.

Paragraph Number	Term	Definition
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	<p>a. Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.</p> <p>b. Owner Force Account - Work performed for the project by the Owner's employees.</p>
10-31	Intention of Terms	<p>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.</p> <p>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.</p>
10-32	Lighting	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
10-33	Major and Minor Contract Items	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	Materials	Any substance specified for use in the construction of the contract work.

Paragraph Number	Term	Definition
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 the City of Roseburg.
10-38	Passenger Facility Charge (PFC)	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	Pavement Structure	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	Payment bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	Performance bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	Plans	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'
10-43	Project	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	Proposal	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

Paragraph Number	Term	Definition
10-45	Proposal guaranty	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	Quality Assurance (QA)	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	Quality Control (QC)	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	Quality Assurance (QA) Inspector	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
10-49	Quality Assurance (QA) Laboratory	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	Resident Project Representative (RPR)	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	Runway	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	Runway Safety Area (RSA)	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	Safety Plan Compliance Document (SPCD)	Details how the Contractor will comply with the CSPP.
10-54	Specifications	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.

Paragraph Number	Term	Definition
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 the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	Surety	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	Taxilane	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	Taxiway	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	Taxiway/Taxilane Safety Area (TSA)	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.

Paragraph Number	Term	Definition
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	See Section 1 of the City of Roseburg General Conditions.

END OF SECTION 10

Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). See Advertisement for Bid and Invitation to Bid.

20-02 Qualification of bidders. See Information to Bidders, Section 9.

20-03 Contents of proposal forms. See Information to Bidders, Section 1.

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.

An optional prebid conference will be held to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield paving construction requirements. Information for the prebid conference is in the Advertisement to Bid.

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. See Information to Bidders, Section 4. 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. See Information to Bidders, Section 13.

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

20-07 Preparation of proposal. See Information to Bidders, Section 1.

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. See Invitation to Bid.

20-11 Delivery of proposal. See Invitation to Bid.

20-12 Withdrawal or revision of proposals. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing 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 Calendar 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. See Information to Bidders, Section 14.

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. See Information to Bidders, Section 17.

30-05 Requirements of contract bonds. See Information to Bidders, Section 15.

30-06 Execution of contract. See Information to Bidders, Section 15.

30-07 Approval of contract. See Information to Bidders, Section 15.

30-08 Failure to execute contract. See Information to Bidders, Section 15.

END OF SECTION 30

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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. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

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

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

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

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines,

grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

- a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,
- b. Remove such material from the site, upon written approval of the RPR; or
- c. Use such material for the Contractor's own temporary construction on site; or,
- d. Use such material as intended by the terms of the contract.

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

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

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

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

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

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

END OF SECTION 40

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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.

ORDER OF PRECEDENCE

1. Permits issued by jurisdictional regulatory agencies
2. Change Orders
3. Addenda;
4. Contract;
5. Notice to Proceed;
6. Notice of Award;
7. Construction Safety and Phasing Plan
8. Technical Specifications
9. FAA General Contract Provisions; **(In the event of a discrepancy between the FAA General Contract Provisions and the City of Roseburg General Conditions, the most advantageous provision / condition to the City of Roseburg shall govern)**
10. Required Federal Contract provisions for FAA AIP Projects
11. City's General Conditions; **(In the event of a discrepancy between the FAA General Contract Provisions and the City of Roseburg General Conditions, the most advantageous provision / condition to the City of Roseburg shall govern)**
12. Drawings/Plans;
13. Contractor's Bid Proposal and Attachments;
14. Notice Inviting Bids;
15. Instructions to Bidders;
16. Any documents prepared by and on behalf of a third party that were not prepared specifically for this Project, including the Greenbook Standard Specifications, the ODOT Standard Specifications, and the ODOT Special Provisions.

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): Electronically in a comma-separated values (.csv) file with headers and hard copy (stamped by an Oregon Licensed Land Surveyor).

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.

Contractor Survey will be measured and paid on the same schedule of partial payments as identified in Item C-100 Contractor Quality Control Program (CQCP).

Payment will be made under;

Contractor Survey – lump sum

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.

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. See Item C-105.

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.

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

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows:

Pacific Power / City of Roseburg – Street Lights

Avista - Gas

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-080 to G-084 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.

Work Area or Description	Required Date or Sequence of Owners Beneficial Occupancy	Work Shown on Plan Sheet
Work Area 1	14 Calendar Days after Start	G-081
Partially Closed Runway Conversion	1 Calendar Day	G-081 / G-082
Work Area 2	75 Calendar Days after Start	G-082

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.

Utility service or Facility Owner’s Emergency Contact
Avista – (541) 613-0888
Pacific Power (425) 392-6412
Sprint (800) 521-0579
Roseburg Urban Sanitary Authority (541) 672-1551
CenturyLink (800) 778-9140

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.

70-15.1 FAA facilities and cable runs. Not used.

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

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

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

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

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

70-20 Archaeological and historical findings. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

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

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

70-21 Insurance Requirements. See City of Roseburg General conditions, Section 5.

END OF SECTION 70

Section 80 Execution and Progress

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

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

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

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

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

80-02 Notice to proceed (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within 10 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 project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall

show all work items identified in the project proposal for each work area and shall include the project start date and end date.

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

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

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

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

Air Operations Area (AOA)	Duration of closure
Runway 16-34	14 Calendar Days during Work Area 1, 8am-4pm only.
Taxiway A2	Permanently Upon Work Area 1 Start.

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.

Schedule	Liquidated Damages Cost	Allowed Construction Time
Work Area 1	Up to \$2000 per Calendar Day	14 Calendar Days
Partially Closed Runway Conversion	Up to \$2000 per Calendar Day	1 Calendar Day
Work Area 2 / Substantial Completion	Up to \$2000 Per Calendar Day	75 Calendar Days
Final Completion	Up to \$2000 per Calendar Day	30 Days after Substantial Completion

The maximum construction time allowed for Work Areas 1 and 2 will be not more than 75 days. 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 waiver 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 kg) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.
Measurement by Volume	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

Term	Description
Asphalt Material	Asphalt materials will be measured by the gallon (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	<p>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.</p> <p>Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted.</p> <p>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%.</p>

Term	Description
	<p>In the event inspection reveals the scales have been under-weighting (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.</p> <p>Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.</p> <p>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.</p> <p>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.</p>
Rental Equipment	<p>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 <i>Payment for Extra Work</i>.</p>
Pay Quantities	<p>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.</p>

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

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

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

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

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

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

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

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

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

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

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

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

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

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

work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

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

- a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.
- b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.
- d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.
- e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

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

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

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

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

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

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

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

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

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

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

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

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

90-10 Construction warranty.

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

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

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REQUIRED FEDERAL CONTRACT PROVISIONS

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FAA Airports

Federal Contract Provisions for Airport Improvement Program Projects (Last Issued on May 2023)

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CONTRACT GUIDANCE

This project is funded by the Federal Aviation Administration. Federal laws and regulations require that projects funded by federal assistance programs must include specific contract provisions. Contractor(s) including subcontractors are required to:

- Include certain provisions in their subcontracts and sub-tier agreements.
 - Mandatory Language – Whenever a clause or provision has mandatory text, Contractors and subcontractors must incorporate the text of the provision without change, except where specific adaptive input is necessary.
- Incorporate the applicable requirements of these contract provisions by reference for work done under any purchase orders, rental agreements and other agreements for supplies or services.

The prime contractor shall be responsible for compliance with these contract provisions by any subcontractor, lower-tier subcontractor or service provider.

Failure to Comply with Provisions:

Contractors' 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 for cause;
- 3) Seek suspension/debarment; or
- 4) Take other actions determined to be appropriate by the Sponsor or the FAA.

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A1 ACCESS TO RECORDS AND REPORTS

(Source: 2 CFR § 200.334, 2 CFR § 200.337, FAA Order 5100.38)

ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, the Federal Aviation Administration and the Comptroller General of the United States or any of their 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 and all pending matters are closed.

A2 AFFIRMATIVE ACTION REQUIREMENT

(Source: 41 CFR Part 60-4, Executive Order 11246)

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY

1. The Offeror'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:

Timetables

Goals for minority participation for each trade:	2.4%
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 also is subject to the goals for both its federally involved and nonfederally involved construction.

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 training must 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 of the 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 the 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” is Douglas County, Oregon.

A3 BREACH OF CONTRACT TERMS

(Source: 2 CFR Part 200, Appendix II(A))

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.

Owner will provide *Contractor* written notice that describes the nature of the breach and corrective actions the *Contractor* must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner’s notice will identify a specific date by which the *Contractor* must correct the breach. Owner may proceed with termination of the contract if the *Contractor* fails to correct the breach by the deadline indicated in the Owner’s notice.

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.

A4 BUY AMERICAN PREFERENCE

(Source: Title 49 USC § 50101; Executive Order 14005, *Ensuring the Future is Made in All of America by All of America’s Workers*; Bipartisan Infrastructure Law (Pub. L. No. 117-58), Build America, Buy America (BABA)

FAA BUY AMERICAN PREFERENCE

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws,¹ U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration 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.

The bidder or offeror must complete and submit the certification of compliance with FAA’s Buy American Preference, BABA and Made in America laws included herein with their bid or offer. (See Proposal Forms). The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA’s Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

¹ Per Executive Order 14005 “Made in America Laws” means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to “Buy America” or “Buy American,” that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.

A5 CIVIL RIGHTS - GENERAL

(Source: 49 USC § 47123)

GENERAL CIVIL RIGHTS PROVISIONS

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

A6 CIVIL RIGHTS – TITLE VI ASSURANCE

(Source: 49 USC § 47123; FAA Order 1400.11)

TITLE VI LIST OF PERTINENT NONDISCRIMINATION ACTS AND AUTHORITIES

During the performance of this contract, the Contractor, for itself, its 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 USC § 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 USC § 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 USC § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq.*) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-259) (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 (42 USC § 12101, et seq) (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) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration’s Nondiscrimination statute (49 USC § 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 (ensures nondiscrimination 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. 74087 (2005)];
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, et seq).

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 Acts 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, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability 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 Nondiscrimination Acts and Authorities, 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 Nondiscrimination Acts and Authorities 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 Nondiscrimination Acts and Authorities 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 the litigation to protect the interests of the United States.

A7 CLEAN AIR AND WATER POLLUTION CONTROL

(Source: 2 CFR Part 200, Appendix II(G); 42 USC § 7401, et seq 33; USC § 1251, et seq)

CLEAN AIR AND WATER POLLUTION CONTROL

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 USC §§ 7401-7671q) and the Federal Water Pollution Control Act as amended (33 USC §§ 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceed \$150,000.

A8 CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

(Source: 2 CFR Part 200, Appendix II(E); 2 CFR § 5.5(b); 40 USC § 3702; 40 USC § 3704)

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 basic 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) of this clause, 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) of this clause, in the sum of \$29 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) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner 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 moneys 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) of this clause.

4. Subcontractors.

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 clause.

A9 COPELAND “ANTI-KICKBACK” ACT

(Source: 2 CFR Part 200, Appendix II(D); 29 CFR Parts 3 and 5)

COPELAND “ANTI-KICKBACK” ACT

Contractor must comply with the requirements of the Copeland “Anti-Kickback” Act (18 USC 874 and 40 USC 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

A10 DAVIS-BACON REQUIREMENTS

(Source: 2 CFR Part 200, Appendix II(D); 29 CFR Part 5; 49 USC § 47112(b); 40 USC §§ 3141-3144, 3146, and 3147)

DAVIS-BACON REQUIREMENTS**1. Minimum Wages.**

(i) 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 § 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.

(ii)(A) 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:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(2) The classification is utilized in the area by the construction industry; and

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

(B) 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, U.S. Department of Labor, Washington, DC 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.

(C) 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.

(D) 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.

(iii) 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.

(iv) 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.

2. 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 the 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.

3. Payrolls and Basic Records.

(i) 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 that 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.

(ii)(A) 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 website at <https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> 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).

(B) 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:

(1) 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;

(2) 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;

(3) 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.

(C) 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.

(D) 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.

(iii) 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.

4. Apprentices and Trainees.

(i) 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, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, 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 Office of Apprenticeship Training, Employer and Labor Services 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 Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, 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.

(ii) 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 that 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.

(iii) 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.

5. 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.

6. Subcontracts. The Contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR §§ 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 § 5.5.

7. 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.

8. 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.

9. 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.

10. Certification of Eligibility.

(i) 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).

(ii) 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).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 USC § 1001.

A11 DEBARMENT AND SUSPENSION

(Source: 2 CFR Part 180 (Subpart B); 2 CFR Part 200, Appendix II(H); 2 CFR Part 1200; DOT Order 4200.5; Executive Orders 12549 and 12689)

CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT

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

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a "covered transaction", must confirm 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>
Collecting a certification statement similar to the Certification of Offeror /Bidder Regarding Debarment, above.
2. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

A12 DISADVANTAGED BUSINESS ENTERPRISE

(Source: 49 CFR Part 26)

REQUIRED PROVISIONS***Solicitations With Contract Goal*****Bid Information Submitted as a matter of responsiveness:**

The Owner's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR § 26.53.

As a condition of responsiveness, the Bidder or Offeror must submit the following information with its proposal on the forms provided herein:

- 1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
- 2) A description of the work that each DBE firm will perform;
- 3) The dollar amount of the participation of each DBE firm listed under (1);
- 4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal
- 5) Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and
- 6) If Bidder or Offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR part 26. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

Prime Contracts (Contracts Covered by a DBE Program)**Contract Assurance (49 CFR § 26.13)**

The Contractor, subrecipient 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, which may include, but is not limited to:

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the Contractor from future bidding as non-responsible.

Prompt Payment (49 CFR § 26.29)

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 14 days from the receipt of each payment the prime contractor receives from the City of Roseburg Falls. The prime contractor agrees further to return retainage payments to each subcontractor within 14 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 City of Roseburg Falls. This clause applies to both DBE and non-DBE subcontractors.

Termination of DBE Subcontracts (49 CFR § 26.53(f))

The prime contractor must not terminate a DBE subcontractor listed in response to this project's Notice to Bidders / Bid Advertisement (or an approved substitute DBE firm) without prior written consent of the City of Roseburg Falls. This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent the City of Roseburg Falls Unless the City of Roseburg Falls' consent is provided, the prime contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

the City of Roseburg Falls may provide such written consent only if the City of Roseburg Falls agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to the City of Roseburg Falls its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to the City of Roseburg Falls, of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise the City of Roseburg Falls and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the City of Roseburg Falls should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), the City of Roseburg Falls may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to pre-award deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

A13 DISTRACTED DRIVING

(Source: Executive Order 13513, DOT Order 3902.10)

TEXTING WHEN DRIVING

In accordance with Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving", (10/1/2009) and DOT Order 3902.10, "Text Messaging While Driving", (12/30/2009), the Federal Aviation Administration encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or subgrant.

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 \$10,000 that involve driving a motor vehicle in performance of work activities associated with the project.

A14 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

(Source: 2 CFR § 200, Appendix II(K); 2 CFR § 200.216)

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

A15 DRUG FREE WORKPLACE REQUIREMENTS

(Source: 49 CFR Part 32; Drug-Free Workplace Act of 1988 (41 USC § 8101-8106, as amended))

The Drug-Free Workplace Act of 1988 requires some Federal contractors and *all* Federal grantees to agree that they will provide drug-free workplaces as a condition of receiving a contract or grant from a Federal agency. This provision applies to all AIP funded projects, but not to the contracts between the grantee (the Sponsor) and a contractor, subcontractors, suppliers, or subgrantees.

A16 EQUAL EMPLOYMENT OPPORTUNITY (EEO)

(Source: 2 CFR Part 200, Appendix II(C); 41 CFR § 60-1.4; 41 CFR § 60-4.3; Executive Order 11246)

EQUAL OPPORTUNITY CONTRACT 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, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, 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 consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the Contractor's commitments under this section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) 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.

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

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government 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.

(8) The Contractor will include the provisions of paragraphs (1) through (8) 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 may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: *Provided*, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS

1. As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;

- c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. "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 America 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 part 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 must 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 7a through 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 nonworking 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 must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must 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, or 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 therefore, 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 woman 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 compiled 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 job site. 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 work force.
- 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 nonsegregated 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 supervisor's 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 (7a through 7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7a through 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 workforce 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, the Contractor may be in violation of the Executive Order if a particular group is 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, sexual orientation, gender identity, 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 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 part 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 numbers, 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).

A17 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

(Source: 29 USC § 201, et seq, 2 CFR § 200.430)

FEDERAL FAIR LABOR STANDARDS ACT CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, et seq, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The *Contractor* has full responsibility to monitor compliance to the referenced statute or regulation. The *Contractor* must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

A18 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

(Source: 31 USC § 1352 – Byrd Anti-Lobbying Amendment; 2 CFR Part 200, Appendix II(I); 49 CFR Part 20, Appendix A)

CERTIFICATION REGARDING LOBBYING

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 officer 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.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

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.

A19 PROHIBITION OF SEGREGATED FACILITIES

(Source: 2 CFR Part 200, Appendix II(C); 41 CFR Part 60-1)

PROHIBITION OF SEGREGATED FACILITIES

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Employment Opportunity clause in this contract.

(b) “Segregated facilities,” as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, 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 that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Employment Opportunity clause of this contract.

A20 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

(Source: 29 CFR Part 1910)

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The employer must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The employer retains full responsibility to monitor its compliance and their subcontractor’s compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (29 CFR Part 1910). The employer must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

A21 PROCUREMENT OF RECOVERED MATERIALS

(Source: 2 CFR § 200.323, 2 CFR Part 200, Appendix II(J), 40 CFR Part 247, 42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA))

PROCUREMENT OF RECOVERED MATERIALS

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- 1) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or
- 2) The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b) Fails to meet reasonable contract performance requirements; or
- c) Is only available at an unreasonable price.

A22 RIGHT TO INVENTIONS

(Source: 2 CFR Part 200, Appendix II(F); 37 CFR Part 401)

Not Applicable.

A23 SEISMIC SAFETY

(Source: 49 CFR Part 41)

Not applicable.

A24 TAX DELINQUENCY AND FELONY CONVICTIONS

(Source: Section 8113 of the Consolidated Appropriations Act, 2022 (Public Law 117-103) and similar provisions in subsequent appropriations acts; DOT Order 4200.6 – Appropriations Act Requirements for Procurement and Non-Procurement Regarding Tax Delinquency and Felony Convictions)

CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications.

- 1) The applicant represents that it is () is not () a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 2) The applicant represents that it is () is not () a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note.

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the Sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide

information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions.

Felony conviction: Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. Code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 USC § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

A25 TERMINATION OF CONTRACT

(Source: 2 CFR Part 200, Appendix II(B); FAA Advisory Circular 150/5370-10, Section 80-09)

TERMINATION FOR CONVENIENCE (CONSTRUCTION & EQUIPMENT CONTRACTS)

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.
4. Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work, and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the Owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

1. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
2. Documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
3. Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
4. Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provide are in addition to any other rights and remedies provided by law or under this contract.

TERMINATION FOR CAUSE (CONSTRUCTION)

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes standard language for conditions, rights, and remedies associated with Owner termination of this contract for cause due to default of the Contractor.

A26 TRADE RESTRICTION CERTIFICATION

(Source: 49 USC § 50104, 49 CFR Part 30)

TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

- 1) 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 as published by the Office of the United States Trade Representative (USTR);
- 2) 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 included on the list of countries that discriminate against U.S. firms as published by the USTR; and
- 3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

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 USC § 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

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 an Offeror or subcontractor:

- 1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR; or
- 2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list; or
- 3) who incorporates in the public works project any product of a foreign country on such USTR list.

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.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The Contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by USTR, unless the Offeror has knowledge that the certification is erroneous.

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

A27 VETERAN'S PREFERENCE

(Source: 49 USC § 47112(c))

VETERAN'S PREFERENCE

In the employment of labor (excluding executive, administrative, and supervisory positions), **the Contractor and all sub-tier contractors** must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 USC § 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

A28 DOMESTIC PREFERENCES FOR PROCUREMENTS

(Source: 2 CFR § 200.322; 2 CFR Part 200, Appendix II(L))

CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

END OF FEDERAL CONTRACT PROVISIONS

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CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)

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CONSTRUCTION SAFETY AND PHASING PLAN
TAXIWAY A EXTENSION

Roseburg Regional Airport

900 SE Douglas Avenue, Roseburg, Oregon

AIP No. 3-41-0054-030-2022



April 2024

Issued for Bid

Mead&Hunt

Mead & Hunt Project No.: 1821200-221217.01

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ROSEBURG REGIONAL AIRPORT, TAXIWAY A EXTENSION
CONSTRUCTION SAFETY AND PHASING PLAN

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1. OVERVIEW

This document presents the Construction Safety and Phasing Plan (CSPP) for the Taxiway A Extension project being performed at Roseburg Regional Airport (RBG or Airport) under the Federal Aviation Administration (FAA) Airport Improvement Program (AIP). The City of Roseburg (City) anticipates authorizing onsite work to commence in the Fall of 2024, pending award of contract and approval of the AIP grant by the FAA. The project is anticipated to be substantially completed within seventy-five (75) calendar days after the Construction Notice-to-Proceed has been issued, and ready for final payment in one hundred five (105) calendar days. A winter suspension is allowed for this project if the contractor elects to begin work in 2024 and complete the work in 2025.

The objective of this CSPP is to provide a general outline of the construction safety and phasing provisions for working in or near the Air Operations Area (AOA) contained in the bid documents (Project Plans and Specifications), and to explain how those provisions will be implemented during construction.

2. PURPOSE

The CSPP provides single source procedural information for all key project personnel to use during construction. The CSPP defines the specific responsibilities of the Airport Operator, the Contractor, Airport tenants, and the Resident Project Representative (RPR). This CSPP includes the FAA's Safety/Phasing Plan checklist referenced in **Appendix C**; provisions for airport safety and security; operational limitations on construction activities; identification of potential hazards and impacts those hazards may have on airfield and construction activities; and construction phasing requirements to minimize impact on airfield operations.

Requirements for maintaining operational safety during construction are in conformance with FAA Advisory Circular 150/5370-2G, "*Operational Safety on Airports during Construction.*" The Project specific safety and phasing provisions for the project elements are shown on Plan Sheets G-080 thru G-084.

3. CONSTRUCTION SAFETY AND PHASING RESPONSIBILITIES

A. Airport Operator

The Airport Operator is responsible for operational safety on the Airport at all times. The City of Roseburg is the Airport Operator. The City will issue Notice to Airmen (NOTAMS) whenever construction activities occur in the AOA. The City will provide oversight of all construction activities and coordinate those activities with the Airport users (pilots) and Airport tenants. The City will hold weekly construction progress and safety meetings. During those meetings, operational safety will be reviewed and an action plan will be developed as needed to address any discrepancies in safety that need to be corrected. The City will require and approve a Safety Plan Compliance Document (SPCD) from the Contractor prior to the Notice to Proceed. The SPCD outline is attached to this report as **Appendix B**.

B. Construction Contractor

The Contractor will be determined by a competitive bidding process. The Contractor's responsibilities for safety and phasing are detailed and defined in the Contract Documents. The Contractor will be required to attend weekly progress and safety meetings and to correct any discrepancies found in safety. The Contractor is required to submit a completed SPCD to the City for approval by both the FAA and the City prior to the issuance Construction Notice-to-Proceed.

C. Airport Tenants

The City will notify Airport tenants of all pending construction activities that impact them and advise the tenants of planned pavement closures and other activities in the AOA that will affect aircraft operations. Tenants will be required to attend weekly construction progress and safety meetings when appropriate.

D. Resident Project Representative (RPR)

As part of the Project Construction Management, Inspection, and Quality Assurance process, the RPR will monitor construction safety on a daily basis, utilizing the "Construction Project Daily Safety Inspection Checklist" (refer to **Appendix C**) to ensure an appropriate level of priority is given to safety. Any discrepancies in safety will be immediately brought to the Contractor's and City's attention for corrective action implementation.

4. CONSTRUCTION SAFETY AND PHASING

A. Coordination

Prebid Conference. A prebid conference will be held for this project on April 30, 2024.

Preconstruction Conference. A preconstruction conference will be held as soon as is practical after the Contract has been awarded and before issuance of the notice to proceed. The preconstruction conference participants should include, but not be limited to, the sponsor's project engineer, RPR, Airport management, testing laboratory representative, Contractor and subcontractor(s), Contractor's project superintendent, Contractor's project clerk, Airport users, utility companies, federal, state, or local agencies affected by the proposed construction, and any necessary FAA representatives.

Contractor Progress Meetings. Contractor progress meetings will be held weekly for the duration of construction. Operational safety will be a standing agenda item for discussion during progress meetings throughout the project. Date, time, and location of the progress meetings will be determined at the preconstruction meeting.

Scope or Schedule Changes. Scope or schedule changes for the project may necessitate revisions to the CSPP and may require review and approval by the Airport and the FAA.

FAA Air Traffic Organization (ATO) Coordination. The project will require a 14 calendar day daytime shutdown of Runway 16-34 for construction of Work Area 1.

On-site Construction Operations. At all times when construction activities are being performed on the project, the prime Contractor must have a designated on-site foreman who is immediately available and authorized to make decisions regarding the operations and safety of all personnel employed by the Contractor and subcontractors. At the beginning of each working day/night the designated foreman must meet with the on-site engineer to coordinate anticipated activities for the day's work.

B. Project Schedule

Due to federal funding availability, the City anticipates contract award in Summer/Fall 2024. The Contractor will have the option to perform construction in 2024 or 2025, or a combination of both. A temporary suspension of work, in accordance with GP 80-06, will be issued if the contractor elects to perform work in both 2024 and 2025. See construction operations & phasing plans for additional information and work constraints.

If the Contractor elects to perform construction in 2025, it shall begin no later than April 1, 2025, unless otherwise approved by the City.

1) Work Area 1 (Taxiway A2 Demolition)

- **Scope of Work** – Work includes removal of Asphalt (AC) pavement and aggregate base; removal of underdrains, removal of electrical structures, topsoil placement, and Runway shoulder construction.
- **Area closed to aircraft operations** – Runway 16-34 and Taxiway A2.
- **Duration** – 14 calendar days
- **Taxi route** – Aircraft can taxi via Taxiway Alpha, but Taxiway A2 will be permanently closed. Outside of working hours, aircraft will access the runway via Taxiway A3, and backtaxi to access the Runway 16 Threshold.
- **ARFF access routes** – See above (Taxi route).
- **Construction staging area** – Contractor staging near the North manual access gate.
- **Construction access and haul route** – Construction access via the North manual access gate.
- **Impacts to NAVAIDS** – City-owned NAVAIDS will be temporarily turned off during work within the Runway 16/34 Safety Area. Affected facilities include Runway 16 PAPI and Runway 16/34 REIL.
- **Marking changes** – Runway closure crosses will be provided by the Airport and installed by the contractor.
- **Lighting changes** – A temporary jumper cable in conduit will be used across Taxiway A during construction.

- **Required hazard marking and lighting** – Low profile barricades to be installed on Taxiway A2 at the RSA. Lighted low profile barricades to be installed at each connector taxiway to Runway 16-34 during the runway closure. NOTAMs will be issued identifying closed airfield pavements in accordance with **Section I – Notification of Construction Activities**.
- **Lead times required for notification** – 14 calendar days.

2) Work Area 2 (Taxiway A Extension)

- **Scope of Work** – General scope includes the extension of Taxiway Alpha and Installation of taxiway A1. Work items include installation of bituminous asphalt pavement and aggregate base; construction of bituminous asphalt pavement; pavement marking; underdrain installation; electrical light and sign installation; construction of a retaining wall; jet blast fence; installation of chain-link fence and gate; site grading; and topsoil placement.
- **Area closed to aircraft operations** – Runway 16-34 beyond Declared Distances. Taxiway A2 permanently closed.

MODIFIED DECLARED DISTANCES		
	Runway 16	Runway 34
Takeoff Run Available (TORA)	4339'	4339'
Takeoff Distance Available (TODA)	4339'	4339'
Accelerate-Stop Distance Available (ASDA)	4339'	4339'
Landing Distance Available (LDA)	3902'	3968'

- **Duration** – 75 calendar days
- **Taxi route** – Aircraft can access runway 16-34 via Taxiway A3. Access to Runway 16 threshold will require backtaxi.
- **ARFF access routes** – See taxi route described above.
- **Construction Staging Area:** Contractor staging near the North manual access gate.
- **Construction access and haul route** – Construction access via the North manual access gate. Access to select borrow site through separate gate.
- **Impacts to NAVAIDS** – City-owned NAVAIDS will be temporarily turned off during work within the Runway 16/34 Safety Area. Affected facilities include Runway 16 PAPI and Runway 16/34 REIL.
- **Marking changes** – Install temporary chevrons on Runway 16 threshold. Blackout markings and repaint original configuration upon completion of project.
- **Lighting changes** – Install temporary threshold lights on Runway 16-34. Black out or disconnect displaced threshold runway edge lights.

- **Required hazard marking and lighting** – Low profile barricades NOTAMs will be issued identifying closed airfield pavements in accordance with **Section I – Notification of Construction Activities**.
 - **Lead times required for notification** – 14 calendar days
- 3) **Construction Safety and Phasing Plan Drawings.** Drawings specifically indicating operational safety procedures and methods in affected areas have been developed for each construction phase and work area. These drawings can be found in the contract drawing bid package (Plan Sheets G-080 through G-084).
 - 4) **Interruption of Water Supplies.** Water lines are not expected to be impacted by construction.
 - 5) **Approach/Departure Surfaces.** The dimension, location, and slope criteria for the approach/departure surfaces for Runway 16-34 are described in **Section Q – Protection of Runway and Taxiway Safety Areas**. Workers and equipment will be present in both the approach and departure surfaces of Runway 16-34. This will be mitigated by temporarily reducing the distance of Runway 16-34 using declared distances. See **Section R – Other Limitations on Construction**.

C. Areas and Operations Affected by Construction

- 1) **Runways.**
Runway 16/34 will be temporarily closed during activities within the RSA. **Section B – Construction Plan/Work Areas** for specific closures.
- 2) **Taxiways**
Taxiway A2 will be permanently closed at the start of construction. Refer to **Section B – Construction Plan/Work Areas** for specific taxiway closures and alternate taxi routes.
- 3) **Aprons and Taxilanes**
Aprons and taxilanes will not be affected by construction operations. See **Section B – Construction Plan/Work Areas** for specific apron and taxilane closures and alternate taxi routes.

D. NAVAID Protection

- 1) **VOR/DME**
The VOR is located off airport property and will not be affected by construction traffic. The VOR shall remain operational for the entire duration of the project.
- 2) **ASOS**
The ASOS is located outside the project limits, is not affected by this project, and shall remain operational for the entire duration of the project.
- 3) **Runway 16 PAPI**
Runway 16 PAPI will be deactivated during the construction activities within Runway 16/34 RSA.

4) Runway 16-34 REILs

Runway 16/34 REILs will be deactivated during the construction activities within Runway 16/34 RSA.

E. Contractor Access

1) Location of Stockpiled Construction Materials. Location of stockpiled materials and equipment storage shall be in the staging areas or as approved by the City. Stockpiling materials and equipment outside the staging areas shall receive prior approval from the City and will be subject to the restrictions described in this paragraph. Stockpiled materials and equipment storage are not permitted within an active RSA, ROFA, OFZ, TOFA, or TSA. See **Section Q – Protection of Runway and Taxiway Safety Areas** for additional requirements. Stockpiles shall be restricted to a maximum height of 15 feet. Stockpiled material shall meet the requirements of **Section F – Wildlife Management** to prevent the stockpile location(s) from becoming wildlife attractants.

2) Vehicle and Pedestrian Operations

- a) Construction Site Parking.** Employees' vehicles shall be parked in the parking lot north of the terminal building. No employee vehicles will be allowed on airfield pavements (aprons, taxiways, runways, etc.). In areas where the staging area is adjacent to the perimeter security fence, all vehicles shall be positioned a minimum 10 feet away from either side of the fence.
- b) Construction equipment parking.** All non-rubber-tired service and construction vehicles and/or equipment shall be parked in the staged area when not in use and shall be positioned a minimum of 10 feet away from either side of a perimeter security fence. Tracked or overloaded equipment will not be allowed to park on a closed taxiway or runway. If it is necessary to leave specialized equipment at night, the Airport must approve the request and the equipment shall be lighted in accordance with **Section R – Other Limitations on Construction**.
- c) Access and haul roads.** The Contractor will be restricted to use the project security gates and haul routes shown on the drawings. Work area specific haul routes are shown on the work area plans. Right-of-way shall be given to all ARFF vehicles and aircraft sharing the haul routes with the Contractor. The speed limit of off-ramp (perimeter road) is 25 MPH or as posted, and the speed limit on-ramp is 10 MPH. See paragraphs (e.) and (f.) in this section for requirements operating within the airfield environment.

- d) **Marking and lighting of vehicles.** Marking and lighting of vehicles on airports shall be in accordance with AC 150/5210-5D, which has been outlined in this section. Only marked Contractor-owned or operated vehicles required for the proper execution of the work will be allowed in the work area. All vehicles and equipment shall have a 3-foot by 3-foot flag having a checkered pattern of international orange and white squares at least one foot on each side. All vehicles and equipment must be equipped with an omni-directional amber flashing light for all airfield activities between sunset and sunrise or when visibility is low. Vehicles within the airfield environment shall display company identification markings on both sides of the vehicle. Non-motorized equipment shall have reflective devices displayed on the front, back and sides. All supervisory and survey personnel vehicles which operate unescorted within the airfield environment but outside the work area shall have a company vehicle with an amber flashing light mounted on the roof of the cab and identifying markings, visible from 300 feet, mounted on both sides of the vehicle.
- e) **Description of proper vehicle operations.** All Contractor vehicles shall operate along the haul routes and within the project areas as shown on the phasing plans. Contractor vehicles require a City-provided escort or flagger control to operate within the airfield movement areas.
- f) **Required escorts.** Personnel and vehicles operating within the airfield movement areas will require a City-provided escort. During the placement and removal of Temporary Traffic Control items adjacent to the work area, the City will provide an escort for the Contractor. Escorting performed by the Contractor is not permitted.
- g) **Situational awareness.** Yield to the right-of-way to moving aircraft, whether under tow or their own power, and pedestrians. While driving or working on the airfield environment, there shall be no devices in or on ears other than those used to protect hearing or communicate company business. Yield right-of-way to emergency vehicles displaying rotating beacons (other than amber) and/or using sirens and other audible emergency signals. In the event of an emergency, be prepared to move workers, vehicles, and equipment immediately at the direction of the City.
- h) **Maintenance of the secured area of the Airport.** In areas of work activities, the Contractor shall maintain security against unauthorized access to the airfield area through the security gate(s). Gate guard shall be required at all times when the gate is in use. The gate shall be closed and locked when not in use. Where the Contractor's lock is used for access through Airport gates, mark the lock to identify the Contractor. Place the lock in series with existing locks. Failure to adhere to these requirements will result in the Contractor's lock being removed by the City. All access gates shall be kept clear of equipment and materials.

F. Wildlife Management

- 1) **Trash.** Receptacles shall be provided by the Contractor and equipped with metal, canvas, or plastic covers. Food scraps or other trash may not be disposed on the ground, and must be collected and placed in the covered receptacles as to not attract wildlife.

- 2) **Standing water.** Staging areas, stockpile areas, and the work area shall be graded to drain to avoid attracting wildlife.
- 3) **Tall grass and seeds.** The use of low quality seed mixtures that contain seeds of plants (such as clover) will attract wildlife and shall not be used. Grass and weeds shall be managed, or cut, if necessary, within work areas to avoid attracting wildlife.
- 4) **Poorly maintained fencing and gates.** Fences and/or gates left open and unattended can allow undesired wildlife inside the airport perimeter fence. Refer to Section E – Contractor Access for requirements of maintaining the secured area of the Airport. Contractor personnel shall immediately notify the Airport of unwanted wildlife inside the airport perimeter fence.
- 5) **Disruption of existing wildlife habitat.** If construction is scheduled for streaked horned lark breeding season, the City will conduct field observations of the areas in each work area prior to the commencement of construction activities up to five (5) business days in advance of work in each area. The field observations will include walking the project area to identify any evidence of streaked horned lark nesting activities. Should a nest be located, the City will contact U.S. Fish and Wildlife Service for direction. Contractor is advised that proposed areas of construction activity and routing may be slightly modified from the original plans to avoid disturbance of the streaked horned lark nesting activities.

G. Foreign Object Debris (FOD) Management

The Contractor will be required to ensure the airfield environment is kept continuously free of construction debris, equipment and/or materials that might endanger or be ingested by an aircraft. Take extreme care to ensure no work-related debris or other loose items are allowed to be blown by wind or aircraft engine blast. The Contractor shall be responsible for any resulting damage to aircraft engines and/or other property arising from failure to secure and/or protect debris, tools, supplies, or other loose items. Following the requirements in **Section F – Wildlife Management** will help eliminate the potential for FOD.

In areas that may result in the tracking of soil, sediments, or hazardous materials on the wheels of hauling equipment outside the area that are enclosed by erosion and silt/sediment control devices, the Contractor shall provide the means and methods to remove these materials prior to the vehicle exiting the controlled area. If water wash stations are used, the Contractor shall provide systems for the collection, treatment, and disposal of wheel wash water and accumulated sediment. Equipment operated on haul routes over existing pavements shall be kept free of material spillage and foreign matter at all times.

Haul routes that are shared with aircraft operations shall be cleaned continuously with regenerative air vacuum sweepers or other Airport-approved methods. Standby equipment is required to be onsite and operational at all times throughout the project and shall include, at a minimum, a self-propelled regenerative air sweeper and a water truck kept loaded at all times. Backup equipment will not be required to remain in an unproductive standby status and may be used for normal productive work.

H. Hazardous Materials (HAZMAT) Management

- 1) If shipments of hazardous material (including hazardous debris, contaminated soil or water, and hazardous waste) will be unloaded onto or loaded from Airport property, the Contractor shall have a qualified person available onsite when shipments are received or made who is current with U.S. Department of Transportation (DOT) approved training for the transportation of hazardous materials. Contractor shall properly characterize and manifest waste material leaving Airport property for disposal. When the waste reaches its final destination, the owner or operator of the designated and permitted treatment, storage, and disposal (TSD) facility shall sign the manifest and return a copy to the City within 35 days to confirm receipt.
- 2) Minor spills can be controlled by the first responder at the discovery of the spill. Use absorbent materials on small spills rather than hosing down or burying the spill. First responder should contain the spread of the spill, recover spilled materials, clean the contaminated area, and properly dispose of contaminated materials. For minor spills, consult the products MSDS for recommended actions for spills or container leaks. Additionally, MSDS's provided emergency phone numbers and occupational health hazard information.
- 3) Semi-significant spills can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. Notify the City of semi-significant spills. Spills should be cleaned up immediately. Contain the spread of the spill and notify the project foreman immediately. If the spill occurs on paved or impermeable surfaces, clean up by using dry methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.
- 4) Significant/Hazardous spills that cannot be controlled by personnel in the immediate vicinity must be reported to the local emergency response by dialing 911. In addition to 911, the Contractor will notify the Airport and proper county officials, and notify the state Emergency Services Warning Center. The services of a spills contractor or a HAZMAT team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staff have arrived at the job site. Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Highway Patrol, the City/County Police Department, and the Department of Toxic Substance.
- 5) Ensure that hazardous goods and material delivered to or from the construction site meet applicable DOT labeling and placarding requirements. Upon request from the Airport, supply material safety data sheets (MSDS) for all hazardous material being delivered to the site.
- 6) The storage and shipment of hazardous waste shall also comply with the requirements of this section. It is emphasized, however, that although spills resulting from incidents or accidents should be responded to, securing the well-being of people comes first.

- 7) Good housekeeping practices should be utilized during equipment fueling and maintenance operations. Inspect fueling equipment for leaks prior to dispensing. Fueling operations shall be continuously attended while dispensing fuel. Fueling and maintenance operations shall not be performed within 100 feet of a storm drain, inlet, ditch, surface water, wetland, etc. to allow adequate time for containment in the event of a spill.

I. Notification of Construction Activities

If conditions at the Airport are such that the operational safety of the Airport is adversely affected, the Airport must be notified immediately.

1) Responsible representatives/points of contact

Name	Representing	Phone
Ryan Herinckx	City of Roseburg	541.643.0682
Mark Forslund	Mead & Hunt, Inc.	971.256.0888
Ryan Zulauf	FAA	206.231.4063

Additional points of contact will be provided at the Preconstruction Meeting.

- 2) **Notices to Air Missions (NOTAM).** Only the City may initiate or cancel a NOTAM on airport conditions, and is the only entity that can close or open a runway. Points of contact for issuing NOTAMS are as follows: Main Contact is Rob Levin 541.430.8339 (cell), Alternate Contact – Ryan Herinckx 541.643.0682.

3) Emergency contact information.

- Emergency – DIAL 911
- City of Roseburg – 541.643.0682 (Ryan Herinckx)
- CTAF radio emergency – 122.80 MHz (Ryan Herinckx)
- Roseburg Police Department – 541.440.4471
- Roseburg Fire Department – 541.492.6770
- Hospital – Mercy Medical Center -541.673.0611
- Oregon Poison Center – 800.222.1222

- 4) **Coordination with ARFF personnel.** There is no Aircraft Rescue and Firefighting (ARFF) located on the airfield. The airport is served by the Roseburg Fire Department. The proposed project does not deactivate waterlines or hydrants and is not anticipated to include the use of hazardous materials. Therefore, coordination efforts with Aircraft Rescue and Firefighting (ARFF) personnel is not anticipated for this project.

5) Notification of the FAA.

- a) **Part 77.** The project will affect navigable airspace. Therefore, the Airport will file a FAA 7460-1, Notice of Proposed Construction or Alteration, for the project. Any equipment, (cranes, graders, other equipment) used by the Contractor that exceed the height limitation in **Section R – Other Limitations on Construction** must also have a 7460-1 airspace evaluation and determination prior to use.
- b) **NAVAIDS.** For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866.432.2622. All NAVAIDS are airport owned and will be disabled in the electrical building during periods of runway closure.
 - **Airport-owned/FAA maintained facilities**
There are no Airport owned/FAA maintained facilities located on the Airport.
 - **FAA-owned facilities**
There are no FAA owned facilities located on the Airport.
- c) **Strategic Interruptions Service Level Agreement.** The City will notify FAA-ATO, Planning and Requirements, Western Service Area, preferably 45 days in advance for runway closures and temporary shutdown of NAVAIDs. A shutdown of NAS equipment must be reported for consecutive days in excess of 4 hours daily or for time periods greater than 24 hours, or for runway/taxiway closures greater than 24 hours.

J. Inspection Requirements

- 1) **Daily Inspections.** Inspections should be conducted by the Contractor at least daily, but more frequently if necessary to ensure conformance with the CSPP. These areas shall be maintained in accordance with **Section G – Foreign Object Debris Management**. The City will have the final authority in determining if the area is suitable for aircraft use. *Supplement 2* contains a safety inspection checklist that may be used by the Contractor or City.

Prior to reopening Runway 16-34, a final inspection of the entire runway and runway safety area will be made to ensure that all requirements have been met and that the runway is in safe operating condition prior to reopening. The Contractor shall coordinate with the City to ensure that all runway edge lights and NAVAIDs are operating correctly and that closed runway markers have been removed.

- 2) **Final Inspections.** A final inspection shall be conducted by the City prior to the commissioning of any newly constructed areas open to air traffic. The City will have the final authority in determining if the area is suitable for aircraft use. *Supplement 2* contains a safety inspection checklist that may be used by the Contractor or City.

K. Underground Utilities

Notify the Oregon Utility Notification Center (OUNC), and owners of underground utilities within the construction area or within affected public rights-of-way or easements, via the “one-call” notification system (1-800-332-2344) in advance of the commencement of excavation activities. Notify the City when the “one-call” request is being initiated. Contractor shall not cross electrical or communication cables unless protected by approved means. In the event of interruption to field-located utility services as a result of the work, promptly notify the City first, and then the proper authority. Cooperate with said authority in restoring service as promptly as possible. If required, the Contractor shall install suitable temporary service until permanent repair is completed.

L. Penalties

Liquidated Damages are defined in Section 80-08 of the General Contract Provisions. Additionally, the Contractor is responsible for maintaining security during construction as detailed herein. The City is subject to fines up to \$20,000 for security violations. The Contractor shall be responsible for any fines caused by his failure to observe the security requirements contained herein or required by the SPCD. Violations will be cause for the project to be stopped and project safety procedures evaluated. Contractor calendar days will continue to be charged, even if the City ceases construction operations. The City will decide if and when work will continue. Enforcement of these regulations will be by the City and/or Police.

Violations of the driving regulations may be cause for the project to be stopped and project safety procedures evaluated. The City will decide if and when work will continue. Enforcement of these regulations will be by the City and/or Police.

M. Special Conditions

- 1) Low visibility conditions will trigger specific safety mitigation actions outlined in this CSPP. For the purposes of this project, low visibility conditions will exist when the prevailing visibility is less than 1 statute mile and/or the runway visual range (RVR) is less than 6,000-feet. The City will notify the Contractor when these conditions exist so adequate safety measures can be taken by the Contractor.
- 2) An aircraft in distress may require the Contractor to immediately move equipment away from an aircraft movement area. The City will notify the Contractor in the unlikely event of an aircraft in distress. The Contractor will be required to comply with all City instructions.
- 3) Various circumstances, such as an aircraft accident, security breach, or other unforeseen event may require suspension of the construction. The City will notify the Contractor when suspension of the work will be required. **See Section I – Notification of Construction Activities** for emergency contact information.

- 4) A VPD (vehicle / pedestrian deviation) is any entry or movement on the movement area by a vehicle or pedestrian that has not been authorized by the City. In the event of a VPD, the City reserves the right to suspend the work or any portion thereof and continue suspension until the completion of any investigation or evaluation by the City and full compliance with any corrective measures which the City may reasonably require. In addition, the City may require the Contractor to provide to the City a written plan, satisfactory to the City, to demonstrate the Contractor's ability to prevent future violations. See **Section E – Contractor Access** for vehicle and pedestrian operations and two-way radio communication requirements.

N. Runway and Taxiway Visual Aids

Due to the runway closures associated with this project, temporary runway and taxiway lighting, marking, signs, or visual NAVAIDs are not required.

O. Marking and Signs for Access Routes

The Contractor shall place traffic control signs and/or devices along NW Stewart Parkway, as appropriate, to advise vehicular traffic of construction operations and hauling. Signs and/or devices shall conform with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD), 2009 edition.

P. Hazard Marking and Lighting

- 1) Before starting work, provide and have available all signs, barricades, and lights necessary for protection of the work. Install and maintain adequate warning signs and lighted barricades to protect property and personnel in the work area. Barricades shall be weighted or anchored to prevent overturning from wind or aircraft engine blast.
- 2) Barricades are not permitted in any active safety area. Barricades located within a runway or taxiway object free area and/or on aprons must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights. The Contractor shall place low-level barricades, marked with diagonal, alternating orange and white stripes, to separate all construction/maintenance areas from the movement areas listed above. The low-level barricades shall be provided with two (2) red omni-directional flashers per barricade meeting the luminance requirements of ODOT. Low-level barricades shall be spaced a maximum of 5-feet apart.
- 3) The Contractor shall have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the City. Lighting shall be checked for proper operation at least once per day, preferably at dusk.
- 4) Open trenches, excavations, or obstructions not being actively worked shall be marked with lighted and weighted barricades which can be seen from a reasonable distance.

Q. Protection of Runway and Taxiway Safety Areas

- 1) **Runway Safety Area (RSA).** No construction may occur within the existing RSA while the runway is open for aircraft operations. Open trenches or excavations are not permitted within the RSA while the runway is open. If possible, backfill trenches before opening the runway. If the runway must be opened before excavations are backfilled, cover the excavations appropriately with steel trench plates or other methods approved by the City. Covering for open trenches and excavations must be designed to allow the safe operations of the heaviest aircraft (90,000-pound dual wheel load) operating on the runway across the trench or excavation without damage to the aircraft. Contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the City, and light them with red lights during hours of restricted visibility or darkness. Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting the occasional passage of aircraft without causing structural damage to the aircraft. The dimension for the Runway 16-34 RSA is 75-FT each side of centerline and 300-FT beyond each runway end. The RSA is depicted on Sheet G-081 contained in Supplement 1. Work inside the limits of the RSA is required for the project work area as identified plans and identified in **Section B – Construction Work Plan / Work Areas**.

- 2) **Runway Object Free Area (ROFA).** Construction, including excavations, may be permitted within the ROFA. However, equipment must be removed from the ROFA when not in use and material should not be stockpiled in the ROFA. Stockpiling material in the ROFA requires submittal of a 7460-1 form and City approval. The dimension for the Runway 16-34 ROFA is 250-FT each side of centerline and 300-FT beyond each runway 16 end. Work inside the limits of the ROFA is required for the project as identified in the work area plans and identified in **Section B – Construction Work Plan / Work Areas**.

- 3) **Taxiway Safety Area (TSA).** No construction may occur in the TSA while the taxiway is open to aircraft operations. Open trenches or excavations are not permitted within the TSA while the taxiway is open. If possible, backfill trenches before the taxiway are opened. If the taxiway must be opened before excavations are backfilled, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operations of the heaviest aircraft (90,000-pound dual wheel load) operating on the taxiway across the trench without damage to the aircraft. Contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the City, and light them with red lights during hours of restricted visibility or darkness.

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting the occasional passage of aircraft without causing structural damage to the aircraft. For this project, the TSA is 39.5-FT each side of taxiway centerline. No impacts to the TSA are anticipated for this project

- 4) **Taxiway Object Free Area (TOFA).** No construction will be allowed within the taxiway object free area while the taxiway is open to aircraft operations. For this project, the TOFA is 65.5-FT each side of centerline. No impacts to the TOFA are anticipated for this project.

- 5) **Obstacle Free Zone (OFZ).** Personnel, material, and/or equipment may not penetrate the OFZ while the runway is open to aircraft operations. The dimension for Runway 16-34 OFZ is 200-FT wide each side of centerline and 200-FT beyond each runway end. Work inside the limits of the OFZ is required for the project as identified in the work area plans and identified in **Section B – Construction Work Plan / Work Areas.**
- 6) **Runway approach/departure surfaces.** All personnel, material, and/or equipment must remain clear of the threshold siting surfaces (approach and departure surfaces). Due to the required runway closure(s), no impacts to the Runway 16-34 approach/departure surfaces are anticipated for this project.
- a) **Runway 16-34 Approach Surface.** Runway 16-34 is a visual approach. Using Table 3-2 and Figure 3-3 from AC150/5300-13A for Runway Type 3, the resulting approach surface begins 200-feet behind the displaced runway threshold and consists of a trapezoid with the following dimensions:
- Width at inner approach (runway threshold) – 400-feet
 - Width at outer approach – 1,000-feet
 - Length of approach – 10,000-feet
 - Approach slope – 20:1
- b) **Runway 16-34 Departure Surface**
- Runway 16-34 is a visual departure. Using Table 3-2 and Figure 3-4 from AC150/5300-13A for Runway Type 10, the resulting departure surface begins at the runway pavement end and consists of a trapezoid with the following dimensions:
- Width at inner departure (runway threshold) – 1000-feet
 - Width at outer departure – 6,466-feet
 - Length of departure – 10,200-feet
 - Departure slope – 40:1

R. Other Limitations on Construction

1) Prohibitions

- a) Open flame welding or torches are prohibited unless fire safety precautions are provided and the City has approved their use.
- b) Electrical blasting caps are prohibited on or within 1,000-feet of the airport property.
- c) The use of flare pots is prohibited within the Airport Operations Area (AOA).
- d) No smoking will be allowed within the airfield environment except as designated by the City.

2) Restrictions

a) **Equipment.**

- 1) Construction equipment that extends 25-feet or more above ground level shall be cleared through the City prior to moving onto site. When cranes are used, an FAA-approved, 3-foot orange and white checkered flag and a solid red light shall be mounted at the highest point on the crane. Equipment that may be lowered readily shall be lowered at night, during reduced daytime visibility, and during other periods of storage to comply with the 18-foot height limitation.
- 2) If directed by the City, construction equipment that cannot be lowered below the 25-foot height limitation shall be lighted at night and during periods of reduced daytime visibility. Light shall be mounted on the highest point of equipment; shall be omni-directional; and shall consist of, as a minimum, one 100-watt bulb enclosed within an aviation red lens. Also, for daytime operations, mount an FAA-approved three-foot square orange and white checkered flag at the highest point.
- 3) During daylight hours with severe visibility problems or heavy fog, cranes shall not operate. The City will determine when visibility problems exist and will coordinate and designate requirements for position and location of flag and light.
- 4) Construction sequence, duration, and time limitations can be found in Section B – Construction Work Plan/Work Areas and the work area plans.

Appendix A: Safety Plan Compliance Document (SPCD)

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**CONTRACTOR'S
SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)
(AC 150/5370-2G)**

Project Information

Airport and Sponsor: Roseburg Regional Airport, City of Roseburg

Project ID: FAA AIP NO. 3-41-0054-030-2022

Description of Project: Taxiway A Extension

Type of Work: Taxiway Extension

FAA Project Manager: Ryan Zulauff Phone: 206-231-4063

Airport Operator Contact: Nikki Messenger Phone: 541-492-6887

Contractor's Information

Prime Contractor: _____

Address: _____

Contractor Contact: _____ Phone: _____

Contractor's Responsibility

In accordance with Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5370-2G, "Operational Safety during Airport Construction", a SPCD for a project must be submitted to the FAA and to the Airport Operator for review and approval prior to the issuance of a Notice-to-Proceed for Construction. The SPCD shall be prepared in a detailed written and graphical format that identifies the timing and methodology for the Contractor's compliance with the project's Construction Safety and Phasing Plan (CSPP).

The Contractor shall comply with all provisions contained herein and provide the following project-specific complementary and supplemental information to the FAA-approved Construction Safety and Phasing Plan:

1. Contractor shall have copies of the CSPP and SPCD available at all times for reference by the Airport Operator and its representatives, and by Contractor's and subcontractor's employees.

Location(s) of CSPP and SPCD: _____

2. Provide contact information for the person responsible for initiating and coordinating an immediate response to correct any construction-related activity that may adversely affect the operational safety of the Airport. Project will require 24-hour coverage.

Point of Contact: _____
_____ Phone: _____

3. Provide list of Contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD whenever active construction is ongoing.

Contact Person: _____

_____ Phone: _____

Contact Person: _____

_____ Phone: _____

Contact Person: _____

_____ Phone: _____

Contact Person: _____

_____ Phone: _____

4. Contractor shall conduct inspections at least once daily, and more frequently if necessary to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards. A Construction Project Daily Safety Inspection Checklist is attached.

5. Describe details of Contractor's plan to restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate and as specified in the CSPP. Include the appropriate plan sheets to identify timing and/or location of control measures: [**Contractor to insert detailed description.**]

6. Describe details of Contractor's plan to ensure that no employees of Contractor, subcontractors, suppliers, or other persons enter any part of the Air Operations Area (AOA) unless authorized. [**Contractor to insert detailed description.**]

7. Provide a description and schedule of anticipated operation for all Contractor equipment over 18 feet in height (e.g. cranes, concrete pumps, other similarly tall equipment) and heights of stockpiles and haul routes when different from what is shown on previously filed CSPP. [**Contractor to insert detailed equipment list/stockpile heights as applicable.**]

(As necessary, the Contractor must coordinate with the Airport Operator for the purpose of filing a supplemental submittal of FAA Form 7460-1 to the FAA for determination of whether or not an aeronautical study must be conducted prior to allowing tall equipment operations to begin.)

8. Provide a description of Contractor's plan to ensure that construction personnel are familiar with the safety procedures and regulations on the Airport, the CSPP, and the SPCD. [**Contractor to insert detailed description.**]

SPCD Amendment

The SPCD shall be amended when there is a construction practice proposed by the Contractor that does not conform to the CSPP and SPCD and may impact the Airport's operational safety. This will require a revision to the CSPP and SPCD and re-coordination with the Airport Operator and the FAA in advance.

Statement of Certification

I certify that we understand the operational safety requirements of the CSPP and assert that we will not deviate from the approved CSPP and SPCD unless written approval is granted by the Airport Operator and FAA.

Signature: _____
_____ Date: _____

Print Name: _____
_____ Title: _____

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Appendix B: Daily Safety Inspection Checklist

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CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project.

POTENTIALLY HAZARDOUS CONDITIONS

Item	Action Required	or	None
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.			<input type="checkbox"/>
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.			<input type="checkbox"/>
Runway resurfacing projects resulting in lips exceeding 3 in (7.6 cm) from pavement edges and ends.			<input type="checkbox"/>
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.			<input type="checkbox"/>
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.			<input type="checkbox"/>
Tall and especially relatively low visibility units (that is, equipment with slim profiles) – cranes, drills, and similar objects – located in critical areas, such as OFZ and approach zones.			<input type="checkbox"/>
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.			<input type="checkbox"/>
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.			<input type="checkbox"/>

Item	Action Required	or	None
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.			<input type="checkbox"/>
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.			<input type="checkbox"/>
Wildlife attractants – such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water – on or near airports.			<input type="checkbox"/>
Obliterated or faded temporary markings on active operational areas.			<input type="checkbox"/>
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.			<input type="checkbox"/>
Failure to issue, update, or cancel NOT AMs about airport or runway closures or other construction related airport conditions.			<input type="checkbox"/>
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.			<input type="checkbox"/>
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport building.			<input type="checkbox"/>
Lack of radio communications with construction vehicles in airport movement areas.			<input type="checkbox"/>
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.			<input type="checkbox"/>
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.			<input type="checkbox"/>
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.			<input type="checkbox"/>

Item	Action Required	or	None
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).			<input type="checkbox"/>
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.			<input type="checkbox"/>
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.			<input type="checkbox"/>
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring and place it in conduit or bury it.			<input type="checkbox"/>
Site burning, which can cause possible obscuration.			<input type="checkbox"/>
Construction work taking place outside designated work areas and out of phase.			<input type="checkbox"/>

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Appendix C - Definitions Of Terms

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APPENDIX C. TERMS AND ACRONYMS**Table B-1. Terms and Acronyms**

Term	Definition
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, <i>Safe, Efficient Use, and Preservation of the Navigable Airspace</i> . (See guidance available on the FAA web site at https://oeaaa.faa.gov .) The form may be downloaded at http://www.faa.gov/airports/resources/forms/ , or filed electronically at: https://oeaaa.faa.gov .
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at http://www.faa.gov/airports/resources/forms/ .
Form 6000-26	Airport Sponsor Strategic Event Submission Form
AC	Advisory Circular
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
AT	Air Traffic
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under

Term	Definition
	the authority of 14 CFR Part 139, <i>Certification of Airports</i> .
CFR	Code of Federal Regulations
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety and Phasing Plan. 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.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FOD	Foreign Object Debris/Damage
FSS	Flight Service Station
GA	General Aviation
HAZMAT	Hazardous Materials
HMA	Hot Mix Asphalt
IAP	Instrument Approach Procedures
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See AC 150/5300-13 for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to AC 150/5300-13 for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with AC 150/5300-13 .
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

Term	Definition
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
SSC	System Support Center
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with AC 150/5300-13 .
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See AC 150/5300-13 for guidance on declared distances.
TSA	Taxiway Safety Area, or Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicator
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI).
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

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PREPARED BY



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TECHNICAL SPECIFICATONS

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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 paragraph 100-8.

(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

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 will be paid as a lump sum with the following schedule of partial payments:

a. With first pay request, 25% with approval of CQCP and completion of the Quality Control (QC)/Quality Assurance (QA) workshop.

- 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 20%.
- d. When 75% or more of the original contract is earned, an additional 20%
- e. After final inspection and acceptance of project, the final 10%.

BASIS OF PAYMENT

100-14 Payment will be made under:

Item C-100-14.1 Contractor Quality Control Program (CQCP) – 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.

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

102-1.1 This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901 shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

102-2.2 Mulches. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

102-2.3 Fertilizer. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

102-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 Silt fence. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

102-2.6 Other. All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

102-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

102-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

102-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

102-3.4 Installation, maintenance and removal of silt fence. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 6 feet on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch overlap and securely sealed. A trench shall be excavated approximately 6 inches deep by 4 inches wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted

over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

102-3.5 Dust Control Requirements. Contractor shall limit the emission of particulate matter into the ambient air by preventing, controlling, and mitigating fugitive dust from any and all construction activities. Contractor shall comply with all requirements of the State of Oregon Department of Ecology and any local dust control ordinances. Means and methods of dust control are at the Contractor's discretion and may include water sprinkling, dust palliative, reduce speed, limiting size and type of vehicles, etc.

Prior to engaging in any construction activities related to construction that disturb or have the potential to disturb soils and cause fugitive dust, Contractor shall obtain approval of their Dust Mitigation Plan from the Airport and the RPR.

Dust Mitigation Plan Stipulations: Contractor shall provide complete copies of the Dust Mitigation Plan to all subcontractors under its control and assure that all such subcontractors abide by the conditions contained therein.

Contractor shall supply a complete copy of the Dust Mitigation Plan to the RPR. Dust can be very detrimental to the safe operation of aircraft. If, in the opinion of Airport staff, fugitive dust is in any way affecting safety of aircraft operations (to include restricting visibility or ingestion by engines), ALL work on the site will immediately cease until a satisfactory remedy is developed and implemented. After such a suspension of work, only a member of the Airport staff may authorize work to recommence. All cost associated with delays in connection with any remedial or corrective action, will not be reimbursed by the Airport.

METHOD OF MEASUREMENT

102-4.1 Measurement for Temporary Air and Water Pollution, Soil Erosion, and Siltation Control work shall be made at the contract unit price per lump sum. This shall be full compensation for all labor,

materials, equipment, tools, and incidentals necessary to control air and water quality, as well as soil and siltation control, in accordance with this specification.

102-4.2 Erosion and pollution control work required for the initial and final erosion control along with maintenance of erosion control will be performed as directed by the RPR. Payment will be made at the contract unit price for completed and accepted work:

- a. Measurement for stabilized construction entrance shall be made at the contract unit price per each, which price and payment shall be full compensation for furnishing, placing, and installing all materials and for all labor, equipment, tools, and incidentals necessary to install, maintain and remove the work as shown or prescribed on the plans or in this item.
- b. Measurement for inlet protection shall be made at the contract unit price per each. The per each contract price shall be full payment for all labor, materials, equipment, tools, and incidentals necessary to install, maintain and remove the work as shown or prescribed on the plans or in this item.
- c. Measurement for sediment fence, straw wattles, and compost sock shall be made at the contract unit price per linear foot, which price and payment shall be full compensation for furnishing and installing all materials and for all labor, equipment, tools, and incidentals necessary to install, maintain and remove the work as shown or prescribed on the plans or in this item.
- d. Measurement for concrete washout shall be made at the contract unit price per lump sum, which price and payment shall be full compensation for furnishing, placing, and installing all materials and for all labor, equipment, tools, and incidentals necessary to install, maintain and remove the work as shown or prescribed on the plans or in this item.

102-4.3 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 Payment for Temporary Air and Water Pollution, Soil Erosion, and Siltation Control, as provided in paragraph C-102-4.1, will be made at the contract unit price per lump sum. 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 C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control – lump sum

102-5.2 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the RPR and measured as provided in paragraph 102-4.2 will be paid for under:

Item C-102-5.2 Stabilized Construction Entrance – per Each
 Item C-102-5.3 Inlet Protection – per Each
 Item C-102-5.4 Sediment Fence – per linear foot
 Item C-102-5.5 Straw Wattles – per linear foot
 Item C-102-5.6 Compost Sock – per linear foot
 Item C-102-5.7 Concrete Wash Out – 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

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Item C-105 Mobilization

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to 10 percent of the total project cost.

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. The Contractor shall provide dedicated space for the use of the field RPR and inspectors, as a field office for the duration of the project. It shall be delivered and ready for occupancy at least 3 working days before the start of construction activities and remain for a minimum of 3 working days after final acceptance. This space shall be located conveniently near the construction and shall be separate from any space used by the Contractor. The Contractor shall furnish the facility in accordance with local building codes, equipped with the following:

- Minimum dimensions of 8 feet in width and 16 feet in length, excluding hitch
- Electrical service
- Suitable artificial lighting
- Adequate heating/cooling equipment that will maintain a temperature range of 68-74°F
- At least two windows with provision of cross-ventilation and equipped with adequate locks and screens
- Outside door(s) with lock and screen
- One suitable office desk with drawers
- One office desk chair with pneumatic seat height adjustment and dual wheel casters
- One network-capable All-in-One (copy/scan/print) unit able to scan and print in color up to 11”x17” and consumables for operation
- Business-grade high-speed broadband Internet service with 2 interior drops and a wi-fi router
- One suitable exterior lavatory facility and hand washing station, with regular maintenance service
- 4.5 cubic foot refrigerator with freezer
- Countertop microwave (min 1.0 cubic foot)
- One 13-gallon wastebasket including plastic waste bags
- Hot and cold-water dispensing unit, drinking water, and disposable cups for the duration of the project.
- Fire extinguishers sufficient in size and number to meet applicable State and local codes.
- First Aid Kit

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project. All maintenance and repair of listed equipment is the responsibility of the Contractor.

METHOD OF MEASUREMENT

105-5 Basis of measurement and payment. Based upon the contract lump sum price for “Mobilization” and “Engineer’s Field Office”, 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-105-6.1 Mobilization (10% Maximum) – lump sum
- Item C-105-6.2 Engineer’s Field Office – lump sum

REFERENCES

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

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

Item C-110 Method of Estimating Percentage of Material within Specification Limits (PWL)

DESCRIPTION

110-1 General. When the specifications provide for acceptance of material based on the method of estimating percentage of material within specification limits (PWL), the PWL will be determined in accordance with this section. All test results for a lot will be analyzed statistically to determine the total estimated percent of the lot that is within specification limits. The PWL is computed using the sample average (X) and sample standard deviation (S_n) of the specified number (n) of sublots for the lot and the specification tolerance limits, L for lower and U for upper, for the particular acceptance parameter. From these values, the respective Quality index, Q_L for Lower Quality Index and/or Q_U for Upper Quality Index, is computed and the PWL for the lot for the specified n is determined from Table 1. All specification limits specified in the technical sections shall be absolute values. Test results used in the calculations shall be to the significant figure given in the test procedure.

There is some degree of uncertainty (risk) in the measurement for acceptance because only a small fraction of production material (the population) is sampled and tested. This uncertainty exists because all portions of the production material have the same probability to be randomly sampled. The Contractor's risk is the probability that material produced at the acceptable quality level is rejected or subjected to a pay adjustment. The Owner's risk is the probability that material produced at the rejectable quality level is accepted.

It is the intent of this section to inform the Contractor that, in order to consistently offset the Contractor's risk for material evaluated, production quality (using population average and population standard deviation) must be maintained at the acceptable quality specified or higher. In all cases, it is the responsibility of the Contractor to produce at quality levels that will meet the specified acceptance criteria when sampled and tested at the frequencies specified.

110-2 Method for computing PWL. The computational sequence for computing PWL is as follows:

- a. Divide the lot into n sublots in accordance with the acceptance requirements of the specification.
- b. Locate the random sampling position within the subplot in accordance with the requirements of the specification.
- c. Make a measurement at each location, or take a test portion and make the measurement on the test portion in accordance with the testing requirements of the specification.
- d. Find the sample average (X) for all subplot test values within the lot by using the following formula:

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

Where: X = Sample average of all subplot test values within a lot

x_1, x_2, \dots, x_n = Individual subplot test values

n = Number of subplot test values

- e. Find the sample standard deviation (S_n) by use of the following formula:

$$S_n = [(d_1^2 + d_2^2 + d_3^2 + \dots + d_n^2)/(n-1)]^{1/2}$$

Where: S_n = Sample standard deviation of the number of subplot test values in the set

d_1, d_2, \dots, d_n = Deviations of the individual subplot test values x_1, x_2, \dots from the average value X

that is: $d_1 = (x_1 - X), d_2 = (x_2 - X) \dots d_n = (x_n - X)$

n = Number of subplot test values

f. For single sided specification limits (i.e., L only), compute the Lower Quality Index Q_L by use of the following formula:

$$Q_L = (X - L) / S_n$$

Where: L = specification lower tolerance limit

Estimate the percentage of material within limits (PWL) by entering Table 1 with Q_L , using the column appropriate to the total number (n) of measurements. If the value of Q_L falls between values shown on the table, use the next higher value of PWL.

g. For double-sided specification limits (i.e., L and U), compute the Quality Indexes Q_L and Q_U by use of the following formulas:

$$Q_L = (X - L) / S_n$$

and

$$Q_U = (U - X) / S_n$$

Where: L and U = specification lower and upper tolerance limits

Estimate the percentage of material between the lower (L) and upper (U) tolerance limits (PWL) by entering Table 1 separately with Q_L and Q_U , using the column appropriate to the total number (n) of measurements, and determining the percent of material above P_L and percent of material below P_U for each tolerance limit. If the values of Q_L fall between values shown on the table, use the next higher value of P_L or P_U . Determine the PWL by use of the following formula:

$$PWL = (P_U + P_L) - 100$$

Where: P_L = percent within lower specification limit

P_U = percent within upper specification limit

EXAMPLE OF PWL CALCULATION

Project: Example Project

Test Item: Item P-401, Lot A.

A. PWL Determination for Mat Density.

1. Density of four random cores taken from Lot A.

A-1 = 96.60

A-2 = 97.55

A-3 = 99.30

A-4 = 98.35

$n = 4$

2. Calculate average density for the lot.

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

$$X = (96.60 + 97.55 + 99.30 + 98.35) / 4$$

$$X = 97.95\% \text{ density}$$

3. Calculate the standard deviation for the lot.

$$S_n = [((96.60 - 97.95)^2 + (97.55 - 97.95)^2 + (99.30 - 97.95)^2 + (98.35 - 97.95)^2) / (4 - 1)]^{1/2}$$

$$S_n = [(1.82 + 0.16 + 1.82 + 0.16) / 3]^{1/2}$$

$$S_n = 1.15$$

4. Calculate the Lower Quality Index Q_L for the lot. ($L=96.3$)

$$Q_L = (X - L) / S_n$$

$$Q_L = (97.95 - 96.30) / 1.15$$

$$Q_L = 1.4348$$

5. Determine PWL by entering Table 1 with $Q_L = 1.44$ and $n = 4$.

$$PWL = 98$$

B. PWL Determination for Air Voids.

1. Air Voids of four random samples taken from Lot A.

$$A-1 = 5.00$$

$$A-2 = 3.74$$

$$A-3 = 2.30$$

$$A-4 = 3.25$$

2. Calculate the average air voids for the lot.

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

$$X = (5.00 + 3.74 + 2.30 + 3.25) / 4$$

$$X = 3.57\%$$

3. Calculate the standard deviation S_n for the lot.

$$S_n = [((3.57 - 5.00)^2 + (3.57 - 3.74)^2 + (3.57 - 2.30)^2 + (3.57 - 3.25)^2) / (4 - 1)]^{1/2}$$

$$S_n = [(2.04 + 0.03 + 1.62 + 0.10) / 3]^{1/2}$$

$$S_n = 1.12$$

4. Calculate the Lower Quality Index Q_L for the lot. ($L = 2.0$)

$$Q_L = (X - L) / S_n$$

$$Q_L = (3.57 - 2.00) / 1.12$$

$$Q_L = 1.3992$$

5. Determine P_L by entering Table 1 with $Q_L = 1.41$ and $n = 4$.

$$P_L = 97$$

6. Calculate the Upper Quality Index Q_U for the lot. ($U = 5.0$)

$$Q_U = (U - X) / S_n$$

$$Q_U = (5.00 - 3.57) / 1.12$$

$$Q_U = 1.2702$$

7. Determine P_U by entering Table 1 with $Q_U = 1.29$ and $n = 4$.

$$P_U = 93$$

8. Calculate Air Voids PWL

$$PWL = (P_L + P_U) - 100$$

$$PWL = (97 + 93) - 100 = 90$$

EXAMPLE OF OUTLIER CALCULATION (REFERENCE ASTM E178)

Project: Example Project

Test Item: Item P-401, Lot A.

A. Outlier Determination for Mat Density.

1. Density of four random cores taken from Lot A arranged in descending order.

$$A-3 = 99.30$$

$$A-4 = 98.35$$

$$A-2 = 97.55$$

$$A-1 = 96.60$$

2. From ASTM E178, Table 1, for $n=4$ an upper 5% significance level, the critical value for test criterion = 1.463.

3. Use average density, standard deviation, and test criterion value to evaluate density measurements.

a. For measurements greater than the average:

If $(\text{measurement} - \text{average})/(\text{standard deviation})$ is less than test criterion, then the measurement is not considered an outlier.

For A-3, check if $(99.30 - 97.95) / 1.15$ is greater than 1.463.

Since 1.174 is less than 1.463, the value is not an outlier.

b. For measurements less than the average:

If $(\text{average} - \text{measurement})/(\text{standard deviation})$ is less than test criterion, then the measurement is not considered an outlier.

For A-1, check if $(97.95 - 96.60) / 1.15$ is greater than 1.463.

Since 1.135 is less than 1.463, the value is not an outlier.

Note: In this example, a measurement would be considered an outlier if the density were:

$$\text{Greater than } (97.95 + 1.463 \times 1.15) = 99.63\%$$

OR

$$\text{less than } (97.95 - 1.463 \times 1.15) = 96.27\%.$$

Table 1. Table for Estimating Percent of Lot Within Limits (PWL)

Percent Within Limits (P _L and P _U)	Positive Values of Q (Q _L and Q _U)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520	1.9994	2.0362
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053	1.8379	1.8630
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993	1.7235	1.7420
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127	1.6313	1.6454
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381	1.5525	1.5635
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4717	1.4829	1.4914
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112	1.4199	1.4265
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554	1.3620	1.3670
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032	1.3081	1.3118
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541	1.2576	1.2602
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075	1.2098	1.2115
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630	1.1643	1.1653
87	1.0597	1.1100	1.1173	1.1192	1.1199	1.1204	1.1208	1.1212
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794	1.0791	1.0789
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399	1.0389	1.0382
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015	1.0000	0.9990
83	0.9939	0.9900	0.9785	0.9715	0.9671	0.9643	0.9624	0.9610
82	0.9749	0.9600	0.9452	0.9367	0.9315	0.9281	0.9258	0.9241
81	0.9550	0.9300	0.9123	0.9025	0.8966	0.8928	0.8901	0.8882
80	0.9342	0.9000	0.8799	0.8690	0.8625	0.8583	0.8554	0.8533
79	0.9124	0.8700	0.8478	0.8360	0.8291	0.8245	0.8214	0.8192
78	0.8897	0.8400	0.8160	0.8036	0.7962	0.7915	0.7882	0.7858
77	0.8662	0.8100	0.7846	0.7716	0.7640	0.7590	0.7556	0.7531
76	0.8417	0.7800	0.7535	0.7401	0.7322	0.7271	0.7236	0.7211
75	0.8165	0.7500	0.7226	0.7089	0.7009	0.6958	0.6922	0.6896
74	0.7904	0.7200	0.6921	0.6781	0.6701	0.6649	0.6613	0.6587
73	0.7636	0.6900	0.6617	0.6477	0.6396	0.6344	0.6308	0.6282
72	0.7360	0.6600	0.6316	0.6176	0.6095	0.6044	0.6008	0.5982
71	0.7077	0.6300	0.6016	0.5878	0.5798	0.5747	0.5712	0.5686
70	0.6787	0.6000	0.5719	0.5582	0.5504	0.5454	0.5419	0.5394
69	0.6490	0.5700	0.5423	0.5290	0.5213	0.5164	0.5130	0.5105
68	0.6187	0.5400	0.5129	0.4999	0.4924	0.4877	0.4844	0.4820
67	0.5878	0.5100	0.4836	0.4710	0.4638	0.4592	0.4560	0.4537
66	0.5563	0.4800	0.4545	0.4424	0.4355	0.4310	0.4280	0.4257
65	0.5242	0.4500	0.4255	0.4139	0.4073	0.4030	0.4001	0.3980
64	0.4916	0.4200	0.3967	0.3856	0.3793	0.3753	0.3725	0.3705
63	0.4586	0.3900	0.3679	0.3575	0.3515	0.3477	0.3451	0.3432
62	0.4251	0.3600	0.3392	0.3295	0.3239	0.3203	0.3179	0.3161
61	0.3911	0.3300	0.3107	0.3016	0.2964	0.2931	0.2908	0.2892
60	0.3568	0.3000	0.2822	0.2738	0.2691	0.2660	0.2639	0.2624
59	0.3222	0.2700	0.2537	0.2461	0.2418	0.2391	0.2372	0.2358
58	0.2872	0.2400	0.2254	0.2186	0.2147	0.2122	0.2105	0.2093
57	0.2519	0.2100	0.1971	0.1911	0.1877	0.1855	0.1840	0.1829
56	0.2164	0.1800	0.1688	0.1636	0.1607	0.1588	0.1575	0.1566
55	0.1806	0.1500	0.1406	0.1363	0.1338	0.1322	0.1312	0.1304
54	0.1447	0.1200	0.1125	0.1090	0.1070	0.1057	0.1049	0.1042
53	0.1087	0.0900	0.0843	0.0817	0.0802	0.0793	0.0786	0.0781
52	0.0725	0.0600	0.0562	0.0544	0.0534	0.0528	0.0524	0.0521
51	0.0363	0.0300	0.0281	0.0272	0.0267	0.0264	0.0262	0.0260
50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Percent Within Limits (PL and PU)	Negative Values of Q (QL and QU)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
49	-0.0363	-0.0300	-0.0281	-0.0272	-0.0267	-0.0264	-0.0262	-0.0260
48	-0.0725	-0.0600	-0.0562	-0.0544	-0.0534	-0.0528	-0.0524	-0.0521
47	-0.1087	-0.0900	-0.0843	-0.0817	-0.0802	-0.0793	-0.0786	-0.0781
46	-0.1447	-0.1200	-0.1125	-0.1090	-0.1070	-0.1057	-0.1049	-0.1042
45	-0.1806	-0.1500	-0.1406	-0.1363	-0.1338	-0.1322	-0.1312	-0.1304
44	-0.2164	-0.1800	-0.1688	-0.1636	-0.1607	-0.1588	-0.1575	-0.1566
43	-0.2519	-0.2100	-0.1971	-0.1911	-0.1877	-0.1855	-0.1840	-0.1829
42	-0.2872	-0.2400	-0.2254	-0.2186	-0.2147	-0.2122	-0.2105	-0.2093
41	-0.3222	-0.2700	-0.2537	-0.2461	-0.2418	-0.2391	-0.2372	-0.2358
40	-0.3568	-0.3000	-0.2822	-0.2738	-0.2691	-0.2660	-0.2639	-0.2624
39	-0.3911	-0.3300	-0.3107	-0.3016	-0.2964	-0.2931	-0.2908	-0.2892
38	-0.4251	-0.3600	-0.3392	-0.3295	-0.3239	-0.3203	-0.3179	-0.3161
37	-0.4586	-0.3900	-0.3679	-0.3575	-0.3515	-0.3477	-0.3451	-0.3432
36	-0.4916	-0.4200	-0.3967	-0.3856	-0.3793	-0.3753	-0.3725	-0.3705
35	-0.5242	-0.4500	-0.4255	-0.4139	-0.4073	-0.4030	-0.4001	-0.3980
34	-0.5563	-0.4800	-0.4545	-0.4424	-0.4355	-0.4310	-0.4280	-0.4257
33	-0.5878	-0.5100	-0.4836	-0.4710	-0.4638	-0.4592	-0.4560	-0.4537
32	-0.6187	-0.5400	-0.5129	-0.4999	-0.4924	-0.4877	-0.4844	-0.4820
31	-0.6490	-0.5700	-0.5423	-0.5290	-0.5213	-0.5164	-0.5130	-0.5105
30	-0.6787	-0.6000	-0.5719	-0.5582	-0.5504	-0.5454	-0.5419	-0.5394
29	-0.7077	-0.6300	-0.6016	-0.5878	-0.5798	-0.5747	-0.5712	-0.5686
28	-0.7360	-0.6600	-0.6316	-0.6176	-0.6095	-0.6044	-0.6008	-0.5982
27	-0.7636	-0.6900	-0.6617	-0.6477	-0.6396	-0.6344	-0.6308	-0.6282
26	-0.7904	-0.7200	-0.6921	-0.6781	-0.6701	-0.6649	-0.6613	-0.6587
25	-0.8165	-0.7500	-0.7226	-0.7089	-0.7009	-0.6958	-0.6922	-0.6896
24	-0.8417	-0.7800	-0.7535	-0.7401	-0.7322	-0.7271	-0.7236	-0.7211
23	-0.8662	-0.8100	-0.7846	-0.7716	-0.7640	-0.7590	-0.7556	-0.7531
22	-0.8897	-0.8400	-0.8160	-0.8036	-0.7962	-0.7915	-0.7882	-0.7858
21	-0.9124	-0.8700	-0.8478	-0.8360	-0.8291	-0.8245	-0.8214	-0.8192
20	-0.9342	-0.9000	-0.8799	-0.8690	-0.8625	-0.8583	-0.8554	-0.8533
19	-0.9550	-0.9300	-0.9123	-0.9025	-0.8966	-0.8928	-0.8901	-0.8882
18	-0.9749	-0.9600	-0.9452	-0.9367	-0.9315	-0.9281	-0.9258	-0.9241
17	-0.9939	-0.9900	-0.9785	-0.9715	-0.9671	-0.9643	-0.9624	-0.9610
16	-1.0119	-1.0200	-1.0124	-1.0071	-1.0037	-1.0015	-1.0000	-0.9990
15	-1.0288	-1.0500	-1.0467	-1.0435	-1.0413	-1.0399	-1.0389	-1.0382
14	-1.0448	-1.0800	-1.0817	-1.0808	-1.0800	-1.0794	-1.0791	-1.0789
13	-1.0597	-1.1100	-1.1173	-1.1192	-1.1199	-1.1204	-1.1208	-1.1212
12	-1.0736	-1.1400	-1.1537	-1.1587	-1.1613	-1.1630	-1.1643	-1.1653
11	-1.0864	-1.1700	-1.1909	-1.1995	-1.2043	-1.2075	-1.2098	-1.2115
10	-1.0982	-1.2000	-1.2290	-1.2419	-1.2492	-1.2541	-1.2576	-1.2602
9	-1.1089	-1.2300	-1.2683	-1.2860	-1.2964	-1.3032	-1.3081	-1.3118
8	-1.1184	-1.2600	-1.3088	-1.3323	-1.3461	-1.3554	-1.3620	-1.3670
7	-1.1269	-1.2900	-1.3508	-1.3810	-1.3991	-1.4112	-1.4199	-1.4265
6	-1.1342	-1.3200	-1.3946	-1.4329	-1.4561	-1.4717	-1.4829	-1.4914
5	-1.1405	-1.3500	-1.4407	-1.4887	-1.5181	-1.5381	-1.5525	-1.5635
4	-1.1456	-1.3800	-1.4897	-1.5497	-1.5871	-1.6127	-1.6313	-1.6454
3	-1.1496	-1.4100	-1.5427	-1.6181	-1.6661	-1.6993	-1.7235	-1.7420
2	-1.1524	-1.4400	-1.6016	-1.6982	-1.7612	-1.8053	-1.8379	-1.8630
1	-1.1541	-1.4700	-1.6714	-1.8008	-1.8888	-1.9520	-1.9994	-2.0362

Item P-101 Preparation/Removal of Existing Pavements

DESCRIPTION

101-1.1 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

101-2.1 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. 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 underlying 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. The pavement shall be removed so the longitudinal joint for each lift of pavement replacement is offset 1 foot from the joint in the preceding layer. This does not apply if the removed pavement is to be replaced with concrete or soil.

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. Not Used.

101-3.3 Removal of Foreign Substances/contaminates prior to overlay, seal-coat, and remarking. Not used.

101-3.4 Concrete spall or failed asphaltic concrete pavement repair. Not used.

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 underlying 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 off Airport property. 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. Not Used.

b. Profiling, grade correction, or surface correction. Not Used.

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 off Airport property.

101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment. Not Used.

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. Not Used.

101-3.8.1 Removal of Existing Joint Sealant. Not Used.

101-3.8.2 Cleaning prior to sealing. Not Used.

101-3.8.3 Joint sealant. Not Used.

101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing. Not Used.

101-3.9.1 Preparation of Crack. Not Used.

101-3.9.2 Removal of Existing Crack Sealant. Not Used.

101-3.9.3 Crack Sealant. Not Used.

162-3.10 Remove chain-link fence. Chain-link fence identified for removal shall be disassembled and posts removed entirely from the ground by methods chosen by the Contractor, become the property of the Contractor, and shall be legally disposed of off-site. Chain-link fence includes, but is not limited to, fence fabric, posts and post footings, extension arms, barbed wire; etc. All holes remaining after post removal shall be refilled with suitable soil, gravel, or other suitable material and compacted with tampers. See Item 162-3.1 for optional usage of removed chain-link fence materials.

101-3.11 Removal of Pipe and other Buried Structures.

a. Removal of Existing Pipe Material. Remove the types of pipe, including culverts and grates, fittings, and connections 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 D1557.

b. Removal of Storm Structures. Where indicated on the plans or as directed by the RPR, storm structures, including headwalls, outfalls, water samplers, 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 D1557, when outside of paved areas must be compacted to 95% of ASTM D698.

101-3.12 Manhole elevation adjustments. The Contractor shall adjust the tops of existing manholes in areas designated in the Contract Documents to the new elevations shown. The Contractor shall be responsible for determining the exact height adjustment required to raise or lower the top of each manhole to the new elevations. The existing top elevation of each manhole to be adjusted shall be determined in the field and subtracted/added from the proposed top elevation.

The Contractor shall remove/extend the existing top section or ring and cover on the manhole structure or manhole access. The Contractor shall install precast concrete sections or grade rings of the required dimensions to adjust the manhole top to the new proposed elevation as required by final grades. The Contractor shall reinstall the manhole top section or ring and cover on top and check the new top elevation.

Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another engineer approved third party certification program. Provide precast concrete structures where shown on the plans.

Precast concrete structures shall be an approved standard design of the manufacturer. Precast units shall have mortar or bitumastic sealer placed between all joints to make them watertight. The structure shall be designed to withstand H-20 loading, unless otherwise shown on the plans.

101-3.13 Recycled Asphalt Millings. Recycled asphalt millings used for shoulders as shown on the plans shall have a maximum aggregate size of 1" diameter. Millings shall be constructed, surface prepared, watered, and compacted with rollers until there is no reaction or yielding observed under the compactor, and accepted by the RPR as complying with the plans and specifications.

METHOD OF MEASUREMENT

101-4.1 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards 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 Shoulder removal. The unit of measurement for pavement removal shall be the number of square yards removed by the Contractor.

101-4.3 Asphalt 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.

101-4.4 Chain-Link Fence Removal. The unit of measurement to remove chain link fence shall be per linear foot.

101-4.5 Storm Underdrain Removal. The unit of measurement for storm underdrain removal will be made per linear foot . This includes all types and sizes of pipe, including fittings and connections, unless otherwise noted for the completed and accepted item. This price shall be full compensation for all labor, equipment, tools, and incidentals necessary to complete this item.

101-4.6 Cable Removal. The unit of measurement for cable removal will be made per linear foot for the completed and accepted items. This price shall be full compensation for all labor, equipment, tools, and incidentals necessary to complete this item.

101-4.7 Electrical Structure Removal. The unit of measurement for electrical structure removal will be made per each for the completed and accepted items. This price shall be full compensation for all labor, equipment, tools, and incidentals necessary to complete this item.

101-4.8 Taxiway Edge Light Removal. The unit of measurement for taxiway edge light removal will be made per each for the completed and accepted items. This includes the removal of all base cans, concrete base, fixture, transformer, wiring, exposed conduit, and any other items necessary for the complete removal of the item. This price shall be full compensation for all labor, equipment, tools, and incidentals necessary to complete this item.

101-4.9 Cable and Conduit Removal. The unit of measurement for cable and conduit removal will be made per linear foot for the completed and accepted items. This price shall be full compensation for all labor, equipment, tools, and incidentals necessary to complete this item.

101-4.10 Sidewalk Removal. The unit of measurement to remove sidewalk shall be per linear foot.

101-4.11 Manhole elevation adjustments shall be measured by the completed unit installed, in place, completed, and accepted. Separate measurement shall not be made for the various types and sizes.

101-4.12 Recycled Asphalt Millings. The unit of measurement for recycled asphalt millings shall be number of cubic yards of material placed and accepted by the Engineer as complying with the plans and specifications. The quantity of asphalt millings shall be measured in final position based upon comparison of contractor’s survey data prior to placement of material and final grade survey data and surface models performed by the contractor, submitted to the Engineer, computed from elevations to the nearest 0.01 foot. Asphalt millings shall not be included in any other excavation quantities.

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	Asphalt Pavement Removal – per square yard
Item P-101-5.2	Shoulder Removal – per square yard
Item P-101-5.3	Asphalt Cold Milling – per square yard
Item P-101-5.4	Chain-Link Fence Removal – per linear foot
Item P-101-5.5	Storm Underdrain Removal – per linear foot
Item P-101-5.6	Cable Removal – per linear foot
Item P-101-5.7	Salvage Electrical Manhole– per each
Item P-101-5.8	Taxiway Edge Light Removal – per each
Item P-101-5.9	Cable and Conduit Removal – per linear foot
Item P-101-5.10	Sidewalk Removal – per linear foot
Item P-101-5.11	Adjust Sanitary Sewer Manhole to Grade – per each

Item P-101-5.12 Recycled Asphalt Millings – 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.

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

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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 which is not otherwise classified and paid for under one of the following items.

b. Borrow excavation. Borrow excavation shall consist of approved material required for the construction of embankments or for other portions of the work in excess of the quantity of usable material available from required excavations. Borrow material shall be obtained from areas designated by the Resident Project Representative (RPR) within the limits of the airport property but outside the normal limits of necessary grading, or from areas outside the airport boundaries.

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 stripped of vegetation and topsoil as stated in 152-2.2.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches, to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in the top 6 inches of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their

own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces, finished surfaces, and other various surfaces were used to develop the design plans.

Volumetric quantities were calculated by comparing DTM files of the applicable design surfaces and generating Triangle Volume Reports.

Existing grades on the design, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot of the stated elevations for ground surfaces, or within 0.04 foot for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

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 on-site outside of the pavement prism.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective grading. When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of

12 inches below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed on-site outside the pavement prism. The excavated material shall be paid for at the contract unit price per cubic yard for unclassified excavation. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified excavation.

c. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as 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 by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 Borrow excavation. Borrow areas within the airport property are indicated on the plans. Borrow excavation shall be made only at these designated locations and within the horizontal and vertical limits as staked or as directed by the RPR. All 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.

The optional on-site select borrow site consists of material generated by removal of the sedimentary rock outcrop located on the northeast side of Runway 16/34. This material consists primarily of pebble to cobble-sized conglomerate. Fine to coarse sandstone and mudstone was also observed in the stockpiles. The rock ranges from highly weathered and very weak (R1) to slightly weathered to fresh and medium hard (R3). This material is highly susceptible to air and moisture slaking. The material shall be processed, if necessary, so that the maximum particle size does not exceed 2-inches. This processing, if necessary, may involve crushing, screening, compacting in-place, or other approved methods to ensure the maximum particle size does not exceed 2-inches after final placement.

If borrow excavation is obtained off-site, **it shall meet a minimum CBR 5.** The Contractor shall locate and obtain borrow sources, subject to the approval of the RPR. The Contractor shall notify the RPR at least 15 days prior to beginning the excavation so review of material and test results can be made by the RPR. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product.

152-2.4 Drainage excavation. Not Used.

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 6 inches of subgrade shall be compacted to not less than 95 % of maximum density for non-cohesive soils, and 90% of maximum density for cohesive soils as determined by ASTM D1557. 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 and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

152-2.8 Formation of embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches nor more than 12 inches of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within $\pm 2\%$ 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 D 1557. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the Contractor for every 1,200 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 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 95% of maximum density for non-cohesive soils, and 90% of maximum density for cohesive soils as determined by ASTM D1557. Under all areas to be paved, the embankments shall be compacted to a depth of 12 inches and to a density of not less than 95% of the maximum density as determined by ASTM D1557. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches in their greatest dimensions will not be allowed in the top 12 inches of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet below the finished subgrade.

There will be no separate measurement of payment for compacted embankment when using material from within the grading limits. 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 unclassified excavation. Payment for compacted embankment will be made under the embankment in place bid item only.

152-2.9 Proof rolling. Not Used. The top 6 inches of subgrade shall be compacted to not less than 9

152-2.10 Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of 6 inches and to a density of not less than 95% of maximum density as determined by ASTM D1557. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 6 inches and to a density of not less than 90 percent of the maximum density as determined by ASTM D1557.

The material to be compacted shall be within $\pm 2\%$ 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 $\frac{3}{4}$ inch sieve, follow the procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles. Tests for moisture content and compaction will be taken at a minimum of 1,200 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, 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 $\pm \frac{1}{2}$ inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be

moved continuously forward at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.

- b. Grade.** The grade and crown shall be measured on a 50-foot grid and shall be within +/-0.05 feet of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to be placed, grade shall not vary more than 0.10 feet from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoiling shall be paid for as provided in Item T-905. No direct payment will be made for topsoiling under Item P-152.

METHOD OF MEASUREMENT

152-3.1 Measurement for payment specified by the cubic yard shall be computed by the comparison of digital terrain model (DTM) surfaces for computation of neat line design quantities. The end area is that bound by the original ground line established by field cross-sections and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR.

The quantity of unclassified excavation to be paid for shall be the number of cubic yards measured in its original position. This quantity shall include unclassified excavation material hauled, placed, compacted, and accepted. 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 for embankment in place shall be the number of cubic yards measured in its final position.

152-3.3 The quantity of Subgrade Preparation shall be the number of square yards measured by the number of square yards of subgrade material located under proposed pavement, prepared per section 152-2.11.

BASIS OF PAYMENT

152-4.1 Unclassified excavation 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.

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.

152-4.3 Subgrade Preparation 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
Item P-152-4.3	Subgrade Preparation – 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.

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
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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
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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
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END OF ITEM P-152

Item P-154 Subbase Course

DESCRIPTION

154-1.1 This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course in accordance with these specifications, and in conformity with the dimensions and typical cross-section shown on the plans.

MATERIALS

154-2.1 Materials. The subbase material shall consist of hard durable particles or fragments of granular aggregates. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The material shall be free from vegetative matter, excessive amounts of clay, and other objectionable substances; uniformly blended; and be capable of being compacted into a dense, stable subbase.

The subbase material shall exhibit a California Bearing Ratio (CBR) value of at least 20 when tested in accordance with ASTM D1883. The subbase material shall meet the gradation specified in the table below.

Subbase Gradation Requirements

Sieve designation	Percentage by weight passing sieves	Contractor's Final Gradation	Job Control Grading Band Tolerances ¹ (Percent)
	Subbase Aggregate		
3 inch (75 mm)	100		0
3/4 inch (19.0 mm)	70-100		±10
No. 10 (2.00 mm)	20-100		±10
No. 40 (425 µm)	5-60		±5
No. 200 (75 µm)	0-10		±5

¹The "Job Control Grading Band Tolerances" shall be applied to "Contractor's Final Gradation" to establish the job control grading band.

The portion of the material passing the No. 40 (425 µm) sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than six (6) when tested in accordance with ASTM D4318.

154-2.2 Sampling and testing.

a. Aggregate base materials. Samples shall be taken by the Contractor per ASTM D75 for initial aggregate subbase requirements and gradation. Material shall meet the requirements in paragraphs 154-2.1. The Contractor shall submit to the Resident Project Representative (RPR) certified test results showing that the aggregate meets the Material requirements of this section. Tests shall be representative of the material to be used for the project.

b. Gradation requirements. The Contractor shall take at least one aggregate subbase sample per day in the presence of the RPR to check the final gradation. Samples shall be taken from the in-place, un-compacted material at sampling locations determined by the RPR on a random basis per ASTM D3665. Sampling shall be per ASTM D75 and tested per ASTM C136 and ASTM C117. Results shall be furnished to the RPR by the Contractor each day during construction. Material shall meet the requirements in paragraph 154-2.1.

154-2.3 Separation Geotextile. Separation geotextile shall be Class 2; 0.02 sec^{-1} permittivity per ASTM D4491; Apparent opening size per ASTM D4751 with 0.60 mm maximum average roll value.

154-2.4 Geogrid. Not used.

CONSTRUCTION METHODS

154-3.1 General. The subbase course shall be placed where designated on the plans or as directed by the RPR. The material shall be shaped and thoroughly compacted within the tolerances specified.

Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the construction equipment without movement, shall be mechanically modified to the depth necessary to provide stability as directed by the RPR. The mechanical modification shall include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so the course will not deform under construction equipment traffic.

154-3.2 Preparing underlying course. Prior to constructing the subbase course, clean the underlying course or subgrade of all foreign substances. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances in accordance with Item P-152. Correct ruts, soft yielding spots in the underlying courses, and subgrade areas having inadequate compaction and/or deviations of the surface from the specified requirements, by loosening and removing soft or unsatisfactory material, adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses or subgrades containing sands or gravels, as defined in ASTM D2487, the surface shall be stabilized prior to placement of the overlying course by mixing the overlying course material into the underlying course, and compacting by approved methods. The stabilized material shall be considered as part of the underlying course and shall meet all requirements for the underlying course. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until the overlying course is placed. The underlying course shall be checked and accepted by the RPR before placing and spreading operations are started.

To protect the subgrade and to ensure proper drainage, spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

154-3.3 Control Strip. The first half-day of subbase construction shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

154-3.4 Placement. The material shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall

have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted. The material shall not be placed when the underlying course is soft or yielding.

The material shall meet gradation and moisture requirements prior to compaction. Material may be free-draining and the minimum moisture content shall be established for placement and compaction of the material.

The material shall be constructed in lifts as established in the control strip, but not less than 4 inches nor more than 12 inches of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

154-3.5 Compaction. The subbase material shall be compacted, adjusting moisture as necessary, to be within $\pm 2\%$ of optimum moisture. The field density of the compacted material shall be at least 100% of the maximum density as specified in paragraph 154-3.9a. If the specified density is not attained, the area of the lift represented by the test shall be reworked and/or re-compact and 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.

154-3.6 Weather limitation. Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on subbase course shall not be conducted when the subgrade is wet or frozen or the subbase material contains frozen material.

154-3.7 Maintenance. No base or surface course shall be placed on the subbase until the subbase has been accepted by the RPR. The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, the Contractor shall verify that materials still meet all specification requirements before placement of additional material. Equipment may be routed over completed sections of subbase course, provided the equipment does not damage the subbase course and the equipment is routed over the full width of the completed subbase course. Any damage to the subbase course from routing equipment over the subbase course shall be repaired by the Contractor at their expense.

154-3.8 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, reshaped and re-compact 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 $\pm \frac{1}{2}$ inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.

b. Grade. The grade and crown shall be measured on a 50-foot grid and shall be within ± 0.05 feet of the specified grade.

154-3.9 Acceptance sampling and testing. The aggregate base course shall be accepted for density and thickness on an area basis. Two test shall be made for density and thickness for each 1200 square yards. Sampling locations will be determined on a random basis per ASTM D3665.

a. Density. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D1557. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test shall be reworked and/or recompact 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.

When the material has greater than 30 percent retained on the $\frac{3}{4}$ inch sieve, use methods in ASTM D1557 and the procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles.

b. Thickness. The thickness of the subbase course shall be within +0 and -1/2 inch of the specified thickness as determined by Contractor survey on a 50-foot by 50-foot (maximum) grid. Survey will be required before and after placement of the subbase course on the same survey grid. Where the thickness is deficient by more than 1/2-inch, the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches, adding new material of proper gradation, and the material shall be blended and recompact to grade.

METHOD OF MEASUREMENT

154-4.1 Subbase course shall be measured by the number of cubic yards of subbase course material placed and compacted to specified density and plan thickness requirements in the completed course. The quantity of subbase course material shall be measured in final position based upon survey of the completed work computed from elevations to the nearest 0.01 foot. On individual depth measurements, thicknesses more than 1/2 inch in excess of that shown on the plans shall be considered as the specified thickness plus 1/2 inch in computing the yardage for payment. Subbase materials shall not be included in any other excavation quantities.

154-4.2 Separation geotextile shall be measured by the number of square yards of materials placed and accepted by the RPR as complying with the plans and specifications excluding seam overlaps and edge anchoring.

BASIS OF PAYMENT

154-5.1 Payment shall be made at the contract unit price per cubic yard for subbase course. This price shall be full compensation for furnishing all materials; for all preparation, hauling, and placing of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

154-5.2 Payment shall be made at the contract unit price per square yard for separation geotextile. The price shall be full compensation for furnishing all labor, equipment, material, anchors, and necessary incidentals.

Payment will be made under:

Item P-154-5.1	Subbase Course - per cubic yard
Item P-154-5.2	Separation Geotextile - 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 C117	Standard Test Method for Materials Finer than 75- μm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³ (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 (2,700 kN-m/m ³))
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4759	Practice for Determining the Specification Conformance of Geosynthetics
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

American Association of State Highway and Transportation Officials (AASHTO)

M 288	Geotextile Specification for Highway Applications
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Item P-209 Crushed Aggregate Base Course

DESCRIPTION

209-1.1 This item consists of a base course composed of crushed aggregate base constructed on a prepared course in accordance with these specifications and in conformity to the dimensions and typical cross-sections shown on the plans.

MATERIALS

209-2.1 Crushed aggregate base. Crushed aggregate shall consist of clean, sound, durable particles of crushed stone, crushed gravel, and shall be free from coatings of clay, silt, organic material, clay lumps or balls or other deleterious materials or coatings. The method used to produce the crushed gravel shall result in the fractured particles in the finished product as consistent and uniform as practicable. Fine aggregate portion, defined as the portion passing the No. 4 (4.75 mm) sieve shall consist of fines from the coarse aggregate crushing operation. The fine aggregate shall be produced by crushing stone, or gravel that meet the coarse aggregate requirements for wear and soundness. Aggregate base material requirements are listed in the following table.

Crushed Aggregate Base Material Requirements

Material Test	Requirement	Standard
Coarse Aggregate		
Resistance to Degradation	Loss: 45% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Percentage of Fractured Particles	Minimum 90% by weight of particles with at least two fractured faces and 98% with at least one fractured face ¹	ASTM D5821
Flat Particles, Elongated Particles, or Flat and Elongated Particles	10% maximum, by weight, of flat, elongated, or flat and elongated particles ²	ASTM D4791
Clay lumps and friable particles	Less than or equal to 3 percent	ASTM C142
Fine Aggregate		
Liquid limit	Less than or equal to 25	ASTM D4318
Plasticity Index	Not more than five (5)	ASTM D4318

¹ The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

² A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

209-2.2 Gradation requirements. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation

shall be well graded from coarse to fine and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa.

Gradation of Aggregate Base

Sieve Size	Design Range Percentage by Weight passing	Contractor's Final Gradation	Job Control Grading Band Tolerances ¹ (Percent)
2 inch	100		0
1-1/2 inch	95-100		±5
1 inch	70-95		±8
3/4 inch	55-85		±8
No. 4	30-60		±8
No. 40 ² (425 µm)	10-30		±5
No. 200 ² (75 µm)	0-5		±3

¹ The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.

² The fraction of material passing the No 200 (75 µm) sieve shall not exceed two-thirds the fraction passing the No 40 (425 µm) sieve.

209-2.3 Sampling and Testing.

a. Aggregate base materials. The Contractor shall take samples of the aggregate base in accordance with ASTM D75 to verify initial aggregate base requirements and gradation. Material shall meet the requirements in paragraph 209-2.1. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

b. Gradation requirements. The Contractor shall take at least two aggregate base samples per day in the presence of the Resident Project Representative (RPR) to check the final gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 209-2.2. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the RPR.

CONSTRUCTION METHODS

209-3.1 Control strip. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (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.

209-3.2 Preparing underlying subgrade and/or subbase. The underlying subgrade and/or subbase shall be checked and accepted by the RPR before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase in accordance with Item P-152, at the Contractor's expense, may be required by the RPR if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

209-3.3 Production. The aggregate shall be uniformly blended and, when at a satisfactory moisture content per paragraph 209-3.5, the approved material may be transported directly to the placement.

209-3.4 Placement. The aggregate shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

The aggregate shall meet gradation and moisture requirements prior to compaction. The base course shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 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 at the Contractor's expense.

209-3.5 Compaction. Immediately after completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade.

The field density of each compacted lift of material shall be at least 100% of the maximum density of laboratory specimens prepared from samples of the subbase material delivered to the jobsite. The laboratory specimens shall be compacted and tested in accordance with ASTM D1557. The moisture content of the material during placing operations shall be within ± 2 percentage points of the optimum moisture content as determined by ASTM 1557. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified. If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, ASTM D1557 or D698 has suggested procedures for dealing with oversize material.

209-3.6 Weather limitations. Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

209-3.7 Maintenance. The base course shall be maintained in a condition that will meet all specification requirements. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, prior to placement of additional material, the Contractor shall verify that materials still meet all specification requirements. Equipment may be routed over completed sections of base course, provided that no damage results and the equipment is routed over the full width of the completed base course. Any damage resulting

to the base course from routing equipment over the base course shall be repaired by the Contractor at the Contractor's expense.

209-3.8 Surface tolerances. After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches, reshaped and recompact to grade until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

a. 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 and -1/2 inch (12 mm) of the specified grade.

209-3.9 Acceptance sampling and testing. Crushed aggregate base course shall be accepted for density and thickness on an area basis. Two tests shall be made for density and thickness for each 1,200 square yds. 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 1557. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompact 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. The thickness of the base course shall be within +0 and -1/2 inch of the specified thickness as determined by Contractor survey on a 50-foot by 50-foot (maximum) grid. Survey will be required before and after placement of the base course on the same survey grid. Where the thickness is deficient by more than 1/2-inch, the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches, adding new material of proper gradation, and the material shall be blended and recompact to grade.

METHOD OF MEASUREMENT

209-4.1 The quantity of crushed aggregate base course will be determined by measurement of the number of cubic yards of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

209-5.1 Payment shall be made at the contract unit price per cubic yard for crushed aggregate base course. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-209-5.1 Crushed Aggregate Base Course - 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.

ASTM International (ASTM)

ASTM C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75- μm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³ (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 D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4643	Standard Test Method for Determination of Water Content of Soil and Rock by Microwave Oven Heating

ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D7928	Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis
American Association of State Highway and Transportation Officials (AASHTO)	
M288	Standard Specification for Geosynthetic Specification for Highway Applications

END OF ITEM P-209

Item P-401 Asphalt Mix Pavement

DESCRIPTION

401-1.1 This item shall consist of pavement courses composed of mineral aggregate and asphalt binder mixed in a central mixing plant and placed on a prepared base or stabilized course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross-sections shown on the plans. Each course shall be constructed to the depth, typical section, and elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course.

MATERIALS

401-2.1 Aggregate. Aggregates shall consist of crushed stone, crushed gravel, screenings, natural sand, and mineral filler, as required. The aggregates should have no known history of detrimental pavement staining due to ferrous sulfides, such as pyrite. Coarse aggregate is the material retained on the No. 4 (4.75 mm) sieve. Fine aggregate is the material passing the No. 4 sieve.

a. Coarse aggregate. Coarse aggregate shall consist of sound, tough, durable particles, free from films of matter that would prevent thorough coating and bonding with the asphalt material and free from organic matter and other deleterious substances. Coarse aggregate material requirements are given in the table below.

Coarse Aggregate Material Requirements

Material Test	Requirement	Standard
Resistance to Degradation	Loss: 40% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium Sulfate - or - 18% maximum using Magnesium Sulfate	ASTM C88
Clay lumps and friable particles	1.0% maximum	ASTM C142
Percentage of Fractured Particles	Minimum 75% by weight of particles with at least two fractured faces and 85% with at least one fractured face ¹	ASTM D5821
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, of flat, elongated, or flat and elongated particles at 5:1 ²	ASTM D4791

¹ The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

² A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

³ Only required if slag is specified.

b. Fine aggregate. Fine aggregate shall consist of clean, sound, tough, durable, angular shaped particles produced by crushing stone, slag, or gravel and shall be free from coatings of clay, silt, or other objectionable matter. Natural (non-manufactured) sand may be used to obtain the gradation of the fine aggregate blend or to improve the workability of the mix. Fine aggregate material requirements are listed in the table below.

Fine Aggregate Material Requirements

Material Test	Requirement	Standard
Liquid limit	25 maximum	ASTM D4318
Plasticity Index	4 maximum	ASTM D4318
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium Sulfate - or - 15% maximum using Magnesium Sulfate	ASTM C88
Clay lumps and friable particles	1.0% maximum by weight	ASTM C142
Sand equivalent	45 minimum	ASTM D2419
Natural Sand	0% to 15% maximum by weight of total aggregate	ASTM D1073

c. Sampling. ASTM D75 shall be used in sampling coarse and fine aggregate.

401-2.2 Mineral filler. Mineral filler (baghouse fines) may be added in addition to material naturally present in the aggregate. Mineral filler shall meet the requirements of ASTM D242.

Mineral Filler Requirements

Material Test	Requirement	Standard
Plasticity Index	4 maximum	ASTM D4318

401-2.3 Asphalt binder. Asphalt binder shall conform to ASTM D6373 Performance Grade (PG) 64-22.

401-2.4 Anti-stripping agent. Any anti-stripping agent or additive (anti-strip) shall be heat stable and shall not change the asphalt binder grade beyond specifications. Anti-strip shall be an approved material of the Department of Transportation of the State in which the project is located.

COMPOSITION

401-3.1 Composition of mixture(s). The asphalt mix shall be composed of a mixture of aggregates, filler and anti-strip agent if required, and asphalt binder. The aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF).

401-3.2 Job mix formula (JMF) laboratory. The laboratory used to develop the JMF shall possess a current certificate of accreditation, listing D3666 from a national accrediting authority and all test methods required for developing the JMF; and be listed on the accrediting authority’s website. A copy of the laboratory’s current accreditation and accredited test methods shall be submitted to the Resident Project Representative (RPR) prior to start of construction.

401-3.3 Job mix formula (JMF). No asphalt mixture shall be placed until an acceptable mix design has been submitted to the RPR for review and accepted in writing. The RPR’s review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

When the project requires asphalt mixtures of differing aggregate gradations and/or binders, a separate JMF shall be submitted for each mix. Add anti-stripping agent to meet tensile strength requirements.

The JMF shall be prepared by an accredited laboratory that meets the requirements of paragraph 401-3.2. The asphalt mixture shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design Manual, 7th Edition. Samples shall be prepared and compacted using the gyratory compactor in accordance with ASTM D6925.

Should a change in sources of materials be made, a new JMF must be submitted to the RPR for review and accepted in writing before the new material is used. After the initial production JMF has been approved by the RPR and a new or modified JMF is required for whatever reason, the subsequent cost of the new or modified JMF, including a new control strip when required by the RPR, will be borne by the Contractor.

The RPR may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

The JMF shall be submitted in writing by the Contractor at least 30 days prior to the start of paving operations. The JMF shall be developed within the same construction season using aggregates proposed for project use.

The JMF shall be dated, and stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

- Manufacturer's Certificate of Analysis (COA) for the asphalt binder used in the JMF in accordance with paragraph 401-2.3. Certificate of asphalt performance grade is with modifier already added, if used and must indicate compliance with ASTM D6373. For plant modified asphalt binder, certified test report indicating grade certification of modified asphalt binder.
- Manufacturer's Certificate of Analysis (COA) for the anti-stripping agent if used in the JMF in accordance with paragraph 401-2.4.
- Certified material test reports for the course and fine aggregate and mineral filler in accordance with paragraphs 401-2.1.
- Percent passing each sieve size for individual gradation of each aggregate cold feed and/or hot bin; percent by weight of each cold feed and/or hot bin used; and the total combined gradation in the JMF.
- Specific Gravity and absorption of each coarse and fine aggregate.
- Percent natural sand.
- Percent fractured faces.
- Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).
- Percent of asphalt.
- Number of blows or gyrations
- Laboratory mixing and compaction temperatures.
- Supplier-recommended field mixing and compaction temperatures.
- Plot of the combined gradation on a 0.45 power gradation curve.
- Graphical plots of air voids, voids in the mineral aggregate (VMA), and unit weight versus asphalt content. To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.

- Tensile Strength Ratio (TSR).
- Type and amount of Anti-strip agent when used.
- Asphalt Pavement Analyzer (APA) results.
- Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.

Table 1. Asphalt Design Criteria

Test Property	Value	Test Method
Number of blows or gyrations	75	
Air voids (%)	3.5	ASTM D3203
Percent voids in mineral aggregate (VMA), minimum	See Table 2	ASTM D6995
Tensile Strength Ratio (TSR) ¹	not less than 80 at a saturation of 70-80%	ASTM D4867
Asphalt Pavement Analyzer (APA) ^{2,3}	Less than 10 mm @ 4000 passes	AASHTO T340 at 250 psi hose pressure at 64°C test temperature

¹ Test specimens for TSR shall be compacted at 7 ± 1.0 % air voids. In areas subject to freeze-thaw, use freeze-thaw conditioning in lieu of moisture conditioning per ASTM D4867.

² AASHTO T340 at 100 psi hose pressure at 64°C test temperature may be used in the interim. If this method is used the required Value shall be less than 5 mm @ 8000 passes.

³ Where APA not available, use Hamburg Wheel test (AASHTO T-324) 10mm @ 20,000 passes at 50°C.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation or gradations specified in Table 2 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 2 represent the limits that shall determine the suitability of aggregate for use from the sources of supply; be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa.

Table 2. Aggregate - Asphalt Pavements

Sieve Size	Percentage by Weight Passing Sieve
1 inch (25.0 mm)	--
3/4 inch (19.0 mm)	100
1/2 inch (12.5 mm)	90-100
3/8 inch (9.5 mm)	72-88
No. 4 (4.75 mm)	53-73
No. 8 (2.36 mm)	38-60
No. 16 (1.18 mm)	26-48
No. 30 (600 µm)	18-38
No. 50 (300 µm)	11-27
No. 100 (150 µm)	6-18
No. 200 (75 µm)	3-6
Minimum Voids in Mineral Aggregate (VMA)¹	15.0
Asphalt Percent:	
Stone or gravel	5.0-7.5
Recommended Minimum Construction Lift Thickness	2 inches

¹ To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute MS-2 Mix Design Manual, 7th Edition.

401-3.4 Reclaimed asphalt pavement (RAP). RAP shall not be used.

401-3.5 Control Strip. A control strip is not required.

CONSTRUCTION METHODS

401-4.1 Weather limitations. The asphalt shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 4. The temperature requirements may be waived by the RPR, if requested; however, all other requirements including compaction shall be met.

Table 4. Surface Temperature Limitations of Underlying Course

Mat Thickness	Base Temperature (Minimum)	
	°F	°C
3 inches (7.5 cm) or greater	40 ¹	4
Greater than 2 inches (50 mm) but less than 3 inches (7.5 cm)	45	7

401-4.2 Asphalt plant. Plants used for the preparation of asphalt shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M156 including the following items.

a. Inspection of plant. The RPR, or RPR’s authorized representative, shall have access, at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant: verifying weights, proportions, and material properties; and checking the temperatures maintained in the preparation of the mixtures.

b. Storage bins and surge bins. The asphalt mixture stored in storage and/or surge bins shall meet the same requirements as asphalt mixture loaded directly into trucks. Asphalt mixture shall not be stored in storage and/or surge bins for a period greater than twelve (12) hours. If the RPR determines there is an excessive heat loss, segregation, or oxidation of the asphalt mixture due to temporary storage, temporary storage shall not be allowed.

401-4.3 Aggregate stockpile management. Aggregate stockpiles shall be constructed in a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the asphalt batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used.

A continuous supply of materials shall be provided to the work to ensure continuous placement.

401-4.4 Hauling equipment. Trucks used for hauling asphalt shall have tight, clean, and smooth metal beds. To prevent the asphalt from sticking to the truck beds, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other material approved by the RPR. Petroleum products shall not be used for coating truck beds. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened.

401-4.4-1 Material transfer vehicle (MTV). Material transfer vehicles are not required.

401-4.5 Asphalt pavers. Asphalt pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of asphalt that will meet the specified thickness, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface. The asphalt paver shall be equipped with a control system capable of automatically maintaining the specified screed grade and elevation.

If the spreading and finishing equipment in use leaves tracks or indented areas, or produces other blemishes in the pavement that are not satisfactorily corrected by the scheduled operations, the use of such equipment shall be discontinued.

The paver shall be capable of paving to a minimum width specified in paragraph 401-4.12.

401-4.6 Rollers. The number, type, and weight of rollers shall be sufficient to compact the asphalt to the required density while it is still in a workable condition without crushing of the aggregate, depressions or other damage to the pavement surface. Rollers shall be in good condition, clean, and capable of operating

at slow speeds to avoid displacement of the asphalt. All rollers shall be specifically designed and suitable for compacting asphalt concrete and shall be properly used. Rollers that impair the stability of any layer of a pavement structure or underlying soils shall not be used.

401-4.7 Density device. The Contractor shall have on site a density gauge during all paving operations in order to assist in the determination of the optimum rolling pattern, type of roller and frequencies, as well as to monitor the effect of the rolling operations during production paving. The Contractor shall supply a qualified technician during all paving operations to calibrate the gauge and obtain accurate density readings for all new asphalt. These densities shall be supplied to the RPR upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

401-4.8 Preparation of asphalt binder. The asphalt binder shall be heated in a manner that will avoid local overheating and provide a continuous supply of the asphalt binder to the mixer at a uniform temperature. The temperature of unmodified asphalt binder delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed 325°F (160°C) when added to the aggregate. The temperature of modified asphalt binder shall be no more than 350°F (175°C) when added to the aggregate.

401-4.9 Preparation of mineral aggregate. The aggregate for the asphalt shall be heated and dried. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler shall not exceed 350°F (175°C) when the asphalt binder is added. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

401-4.10 Preparation of Asphalt mixture. The aggregates and the asphalt binder shall be weighed or metered and mixed in the amount specified by the JMF. The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D2489, for each individual plant and for each type of aggregate used. The wet mixing time will be set to achieve 95% of coated particles. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the mixer. The moisture content of all asphalt upon discharge shall not exceed 0.5%.

401-4.11 Application of Prime and Tack Coat. Immediately before placing the asphalt mixture, the underlying course shall be cleaned of all dust and debris.

A tack coat shall be applied in accordance with Item P-603 to all vertical and horizontal asphalt and concrete surfaces prior to placement of the first and each subsequent lift of asphalt mixture.

401-4.12 Laydown plan, transporting, placing, and finishing. Prior to the placement of the asphalt, the Contractor shall prepare a laydown plan with the sequence of paving lanes and width to minimize the number of cold joints; the location of any temporary ramps; laydown temperature; and estimated time of completion for each portion of the work (milling, paving, rolling, cooling, etc.). The laydown plan and any modifications shall be approved by the RPR.

Deliveries shall be scheduled so that placing and compacting of asphalt is uniform with minimum stopping and starting of the paver. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to approximately ambient temperature. The Contractor, at their expense, shall be responsible for repair of any damage to the pavement caused by hauling operations.

Contractor shall survey each lift of asphalt surface course and certify to RPR that every lot of each lift meets the grade tolerances of paragraph 401-6.2d before the next lift can be placed.

Edges of existing asphalt pavement abutting the new work shall be saw cut and the cut off material and laitance removed. Apply a tack coat in accordance with P-603 before new asphalt material is placed against it.

The speed of the paver shall be regulated to eliminate pulling and tearing of the asphalt mat. Placement of the asphalt mix shall begin along the centerline of a crowned section or on the high side of areas with a one way slope unless shown otherwise on the laydown plan as accepted by the RPR. The asphalt mix shall be placed in consecutive adjacent lanes having a minimum width of 15 feet except where edge lanes require less width to complete the area. Additional screed sections attached to widen the paver to meet the minimum lane width requirements must include additional auger sections to move the asphalt mixture uniformly along the screed extension.

The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least one foot; however, the joint in the surface top course shall be at the centerline of crowned pavements. Transverse joints in one course shall be offset by at least 10 feet from transverse joints in the previous course. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the asphalt may be spread and luted by hand tools.

The RPR may at any time, reject any batch of asphalt, on the truck or placed in the mat, which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or overheated asphalt mixture. Such rejection may be based on only visual inspection or temperature measurements. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

Areas of segregation in the surface course, as determined by the RPR, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of the construction lift thickness as specified in paragraph 401-3.3, Table 2 for the approved mix design. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet long.

401-4.13 Compaction of asphalt mixture. After placing, the asphalt mixture shall be thoroughly and uniformly compacted by self-propelled rollers. The surface shall be compacted as soon as possible when the asphalt has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any surface defects and/or displacement occurring as a result of the roller, or from any other cause, shall be corrected at the Contractor's expense.

Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross-section, and the required field density is obtained. To prevent adhesion of the asphalt to the roller, the wheels shall be equipped with a scraper and kept moistened with water as necessary.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with approved power tampers.

Any asphalt that becomes loose and broken, mixed with dirt, contains check-cracking, or in any way defective shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

401-4.14 Joints. The formation of all joints shall be made to ensure a continuous bond between the courses and obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade.

The roller shall not pass over the unprotected end of the freshly laid asphalt except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. In both methods, all contact surfaces shall be coated with an asphalt tack coat before placing any fresh asphalt against the joint.

Longitudinal joints which have been left exposed for more than four (4) hours; the surface temperature has cooled to less than 175°F; or are irregular, damaged, uncompacted or otherwise defective shall be cut back with a cutting wheel or pavement saw a maximum of 3 inches to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material and any laitance produced from cutting joints shall be removed from the project. Asphalt tack coat in accordance with P-603 shall be applied to the clean, dry joint prior to placing any additional fresh asphalt against the joint. The cost of this work shall be considered incidental to the cost of the asphalt.

Cut back of all cold joints is required as specified above.

The Contractor may provide additional joint density QC by use of joint heaters at the Contractor's expense. Electrically powered infrared heating equipment should consist of one or more low-level radiant energy heaters to uniformly heat and soften the pavement joints. The heaters should be configured to uniformly heat an area up to 18 inches (0.5 m) in width and 3 inches (75 mm) in depth. Infrared equipment shall be thermostatically controlled to provide a uniform, consistent temperature increase throughout the layer being heated up to a maximum temperature range of 200 to 300°F (93 to 150°C).

Propane powered infrared heating equipment shall be attached to the paving machine and the output of infrared energy shall be in the one to six-micron range. Converters shall be arranged end to end directly over the joint to be heated in sufficient numbers to continuously produce, when in operation, a minimum of 240,000 BTU per hour. The joint heater shall be positioned not more than one inch (25 mm) above the pavement to be heated and in front of the paver screed and shall be fully adjustable. Heaters will be required to be in operation at all times.

The heaters shall be operated so they do not produce excessive heat when the units pass over new or previously paved material.

401-4.15 Saw-cut grooving. Saw-cut grooving is not required.

401-4.16 Diamond grinding. Diamond grinding shall be completed prior to pavement grooving. Diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive.

Diamond grinding shall be performed with a machine designed specifically for diamond grinding capable of cutting a path at least 3 feet wide. The saw blades shall be 1/8-inch wide with a sufficient number of blades to create grooves between 0.090 and 0.130 inches wide; and peaks and ridges approximately 1/32 inch higher than the bottom of the grinding cut. The actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Equipment or grinding procedures that cause ravels, aggregate fractures, spalls or disturbance to the pavement will not be permitted. Contractor shall demonstrate to the RPR that the grinding equipment will produce satisfactory results prior to making corrections to surfaces. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the grinding operation shall be continuously removed and the pavement left in a clean condition. The Contractor shall apply a surface treatment per P-608 to all areas that have been subject to grinding.

401-4.17 Nighttime paving requirements. The Contractor shall provide adequate lighting during any nighttime construction. A lighting plan shall be submitted by the Contractor and approved by the RPR prior to the start of any nighttime work. All work shall be in accordance with the approved CSPP and lighting plan.

CONTRACTOR QUALITY CONTROL (CQC)

401-5.1 General. The Contractor shall develop a Contractor Quality Control Program (CQCP) in accordance with Item C-100. No partial payment will be made for materials without an approved CQCP.

401-5.2 Contractor quality control (QC) facilities. The Contractor shall provide or contract for testing facilities in accordance with Item C-100. The RPR shall be permitted unrestricted access to inspect the Contractor's QC facilities and witness QC activities. The RPR will advise the Contractor in writing of any noted deficiencies concerning the QC facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting the test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

401-5.3 Contractor QC testing. The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to these specifications and as set forth in the approved CQCP. The testing program shall include, but not necessarily be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, field compaction, and surface smoothness. A QC Testing Plan shall be developed as part of the CQCP.

a. Asphalt content. A minimum of two tests shall be performed per day in accordance with ASTM D6307 or ASTM D2172 for determination of asphalt content. When using ASTM D6307, the correction factor shall be determined as part of the first test performed at the beginning of plant production; and as part of every tenth test performed thereafter. The asphalt content for the day will be determined by averaging the test results.

b. Gradation. Aggregate gradations shall be determined a minimum of twice per day from mechanical analysis of extracted aggregate in accordance with ASTM D5444, ASTM C136, and ASTM C117.

c. Moisture content of aggregate. The moisture content of aggregate used for production shall be determined a minimum of once per day in accordance with ASTM C566.

d. Moisture content of asphalt. The moisture content shall be determined once per day in accordance with AASHTO T329 or ASTM D1461.

e. Temperatures. Temperatures shall be checked, at least four times per day, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the asphalt at the plant, and the asphalt at the job site.

f. In-place density monitoring. The Contractor shall conduct any necessary testing to ensure that the specified density is being achieved. A nuclear gauge may be used to monitor the pavement density in accordance with ASTM D2950.

g. Smoothness for Contractor Quality Control. The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than ¼ inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria is not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues.

The Contractor may use a 12-foot straightedge, a rolling inclinometer meeting the requirements of ASTM E2133 or rolling external reference device that can simulate a 12-foot straightedge approved by the RPR. Straight-edge testing shall start with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. Testing shall be continuous across all joints. The surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between the two high points. If the rolling inclinometer or external

reference device is used, the data may be evaluated using the FAA profile program, ProFAA, or FHWA ProVal, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement shall be evaluated separately for conformance with the plans.

(1) Transverse measurements. Transverse measurements shall be taken for each day's production placed. Transverse measurements shall be taken perpendicular to the pavement centerline each 50 feet or more often as determined by the RPR. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

(2) Longitudinal measurements. Longitudinal measurements shall be taken for each day's production placed. Longitudinal tests shall be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet; and at the third points of paving lanes when widths of paving lanes are 20 ft or greater. When placement abuts previously placed material the first measurement shall start with one half the length of the straight edge on the previously placed material.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch shall be corrected with diamond grinding per paragraph 401-4.16 or by removing and replacing the surface course to full depth. Grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 401-6.1d(3). Areas that have been ground shall be sealed with a surface treatment in accordance with Item P-608. To avoid the surface treatment creating any conflict with runway or taxiway markings, it may be necessary to seal a larger area.

Control charts shall be kept to show area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

h. Grade. Grade shall be evaluated daily to allow adjustments to paving operations when grade measurements do not meet specifications. As a minimum, grade shall be evaluated prior to and after the placement of the first lift and after placement of the surface lift.

Measurements will be taken at appropriate gradelines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch vertically and 0.1 feet laterally. The documentation will be provided by the Contractor to the RPR by the end of the following working day.

Areas with humps or depressions that exceed grade or smoothness criteria and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch less than the thickness specified on the plans. Grinding shall be in accordance with paragraph 401-4.16.

The Contractor shall repair low areas or areas that cannot be corrected by grinding by removal of deficient areas to the depth of the final course plus 1/2 inch and replacing with new material. Skin patching is not allowed.

401-5.4 Sampling. When directed by the RPR, the Contractor shall sample and test any material that appears inconsistent with similar material being sampled, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

401-5.5 Control charts. The Contractor shall maintain linear control charts for both individual measurements and range (i.e. difference between highest and lowest measurements) for aggregate

gradation, asphalt content, and VMA. The VMA for each day will be calculated and monitored by the QC laboratory.

Control charts shall be posted in a location satisfactory to the RPR and kept current. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and Suspension Limits applicable to each test parameter, and the Contractor’s test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor’s projected data during production indicates a problem and the Contractor is not taking satisfactory corrective action, the RPR may suspend production or acceptance of the material.

a. Individual measurements. Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation, asphalt content, and VMA. The control charts shall use the job mix formula target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

Control Chart Limits for Individual Measurements

Sieve	Action Limit	Suspension Limit
3/4 inch (19.0 mm)	±6%	±9%
1/2 inch (12.5 mm)	±6%	±9%
3/8 inch (9.5 mm)	±6%	±9%
No. 4 (4.75 mm)	±6%	±9%
No. 16 (1.18 mm)	±5%	±7.5%
No. 50 (300 µm)	±3%	±4.5%
No. 200 (75 µm)	±2%	±3%
Asphalt Content	±0.45%	±0.70%
Minimum VMA	-0.5%	-1.0%

b. Range. Control charts shall be established to control gradation process variability. The range shall be plotted as the difference between the two test results for each control parameter. The Suspension Limits specified below are based on a sample size of n = 2. Should the Contractor elect to perform more than two tests per lot, the Suspension Limits shall be adjusted by multiplying the Suspension Limit by 1.18 for n = 3 and by 1.27 for n = 4.

Control Chart Limits Based on Range

Sieve	Suspension Limit
1/2 inch (12.5 mm)	11%
3/8 inch (9.5 mm)	11%
No. 4 (4.75 mm)	11%
No. 16 (1.18 mm)	9%
No. 50 (300 µm)	6%
No. 200 (75 µm)	3.5%
Asphalt Content	0.8%

c. Corrective Action. The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain rules to gauge when a process is out of control and

detail what action will be taken to bring the process into control. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

- (1) One point falls outside the Suspension Limit line for individual measurements or range; or
- (2) Two points in a row fall outside the Action Limit line for individual measurements.

401-5.6 QC reports. The Contractor shall maintain records and shall submit reports of QC activities daily, in accordance with Item C-100.

MATERIAL ACCEPTANCE

401-6.1 Acceptance sampling and testing. Unless otherwise specified, all acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be performed by the RPR at no cost to the Contractor except that coring as required in this section shall be completed and paid for by the Contractor.

a. Quality assurance (QA) testing laboratory. The QA testing laboratory performing these acceptance tests will be accredited in accordance with ASTM D3666. The QA laboratory accreditation will be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing will be listed on the lab accreditation.

b. Lot size. Acceptable material will be paid for by the ton placed per day.

c. Asphalt air voids. Plant-produced asphalt will be tested for air voids on a subplot basis.

(1) Sampling. Material from each subplot shall be sampled in accordance with ASTM D3665. Samples shall be taken from material deposited into trucks at the plant or at the job site in accordance with ASTM D979. The sample of asphalt may be put in a covered metal tin and placed in an oven for not less than 30 minutes nor more than 60 minutes to maintain the material at or above the compaction temperature as specified in the JMF.

(2) Testing. Air voids will be determined for each subplot in accordance with ASTM D3203 for a set of three compacted specimens prepared in accordance with ASTM D6925.

d. In-place asphalt mat and joint density. Each subplot will be tested for in-place mat and joint density as a percentage of the theoretical maximum density (TMD).

(1) Sampling. The Contractor will cut minimum 5 inch diameter samples in accordance with ASTM D5361. The Contractor shall furnish all tools, labor, and materials for cleaning, and filling the cored pavement. Laitance produced by the coring operation shall be removed immediately after coring, and core holes shall be filled within one day after sampling in a manner acceptable to the RPR.

(2) Bond. Each lift of asphalt shall be bonded to the underlying layer. If cores reveal that the surface is not bonded, additional cores shall be taken as directed by the RPR to determine the extent of unbonded areas. Unbonded areas shall be removed by milling and replaced at no additional cost as directed by the RPR.

(3) Thickness. Thickness of each lift of surface course will be evaluated by the RPR for compliance to the requirements shown on the plans after any necessary corrections for grade. Measurements of thickness will be made using the cores extracted for each subplot for density measurement. The maximum allowable deficiency at any point will not be more than 1/4 inch (6 mm) less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, will not be less than the indicated thickness. Where the thickness tolerances are not met, the lot or subplot shall be corrected by the Contractor at his expense by removing the deficient area and replacing with new pavement. The Contractor, at his expense, may take additional cores as approved by the RPR to circumscribe the deficient area.

(4) Mat density. One core shall be taken from each subplot. Core locations will be determined by the RPR in accordance with ASTM D3665. Cores for mat density shall not be taken closer than one foot (30 cm) from a transverse or longitudinal joint. The bulk specific gravity of each cored sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each subplot sample by the TMD for that subplot.

(5) Joint density. One core centered over the longitudinal joint shall be taken for each subplot that has a longitudinal joint. Core locations will be determined by the RPR in accordance with ASTM D3665. The bulk specific gravity of each core sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each joint density sample by the average TMD for the lot. The TMD used to determine the joint density at joints formed between lots will be the lower of the average TMD values from the adjacent lots.

401-6.2 Acceptance criteria.

a. General. Acceptance will be based on the implementation of the Contractor Quality Control Program (CQCP) and the following characteristics of the asphalt and completed pavements: air voids, mat density, joint density, and grade.

b. Air Voids and Mat density. Acceptance of each lot of plant produced material for mat density and air voids will be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot will be acceptable. Acceptance and payment will be determined in accordance with paragraph 401-8.1.

c. Joint density. Acceptance of each lot of plant produced asphalt for joint density will be based on the PWL. If the PWL of the lot is equal to or exceeds 90%, the lot will be considered acceptable. If the PWL is less than 90%, the Contractor shall evaluate the reason and act accordingly. If the PWL is less than 80%, the Contractor shall cease operations and until the reason for poor compaction has been determined. If the PWL is less than 71%, the pay factor for the lot used to complete the joint will be reduced by five (5) percentage points. This lot pay factor reduction will be incorporated and evaluated in accordance with paragraph 401-8.1.

d. Grade. The final finished surface of the pavement shall be surveyed to verify that the grade elevations and cross-sections shown on the plans do not deviate more than 1/2 inch vertically or 0.1 feet laterally.

Cross-sections of the pavement shall be taken at a minimum 50-foot longitudinal spacing and at all longitudinal grade breaks. Minimum cross-section grade points shall include grade at centerline, ± 10 feet of centerline, and edge of taxiway pavement.

The survey and documentation shall be stamped and signed by a licensed surveyor. Payment for sublots that do not meet grade for over 25% of the subplot shall not be more than 95%.

e. Profilograph roughness for QA Acceptance. Not Used.

401-6.3 Percentage of material within specification limits (PWL). The PWL will be determined in accordance with procedures specified in Item C-110. The specification tolerance limits (L) for lower and (U) for upper are contained in Table 5.

Table 5. Acceptance Limits for Air Voids and Density

Test Property	Pavements Specification Tolerance Limits	
	L	U
Air Voids Total Mix (%)	2.0	5.0
Surface Course Mat Density (%)	92.8	-
Base Course Mat Density (%)	92.0	-
Joint density (%)	90.5	--

a. Outliers. All individual tests for mat density and air voids will be checked for outliers (test criterion) in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded, and the PWL will be determined using the remaining test values. The criteria in Table 5 is based on production processes which have a variability with the following standard deviations: Surface Course Mat Density (%), 1.30; Base Course Mat Density (%), 1.55; Joint Density (%), 1.55.

The Contractor should note that (1) 90 PWL is achieved when consistently producing a surface course with an average mat density of at least 94.5% with 1.30% or less variability, (2) 90 PWL is achieved when consistently producing a base course with an average mat density of at least 94.0% with 1.55% or less variability, and (3) 90 PWL is achieved when consistently producing joints with an average joint density of at least 92.5% with 1.55% or less variability.

401-6.4 Resampling pavement for mat density.

a. General. Resampling of a lot of pavement will only be allowed for mat density, and then, only if the Contractor requests same, in writing, within 48 hours after receiving the written test results from the RPR. A retest will consist of all the sampling and testing procedures contained in paragraphs 401-6.1d and 401-6.2b. Only one resampling per lot will be permitted.

(1) A redefined PWL will be calculated for the resampled lot. The number of tests used to calculate the redefined PWL will include the initial tests made for that lot plus the retests.

(2) The cost for resampling and retesting shall be borne by the Contractor.

b. Payment for resampled lots. The redefined PWL for a resampled lot will be used to calculate the payment for that lot in accordance with Table 6.

c. Outliers. Check for outliers in accordance with ASTM E178, at a significance level of 5%.

METHOD OF MEASUREMENT

401-7.1 Measurement. Asphalt shall be measured by the number of tons of asphalt used in the accepted work. Batch weights or truck scale weights will be used to determine the basis for the tonnage.

BASIS OF PAYMENT

401-8.1 Payment. Payment for a lot of asphalt meeting all acceptance criteria as specified in paragraph 401-6.2 shall be made based on results of tests for mat density and air voids. Payment for acceptable lots shall be adjusted according to paragraph 401-8.1c for mat density and air voids; and paragraph 401-6.2c for joint density, subject to the limitation that:

a. The total project payment for plant mix asphalt pavement shall not exceed 100 percent of the product of the contract unit price and the total number of tons (kg) of asphalt used in the accepted work.

b. The price shall be compensation for furnishing all materials, for all preparation, mixing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

c. Basis of adjusted payment. The pay factor for each individual lot shall be calculated in accordance with Table 6. A pay factor shall be calculated for both mat density and air voids. The lot pay factor shall be the higher of the two values when calculations for both mat density and air voids are 100% or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either mat density or air voids is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both mat density and air voids are less than 100%. If PWL for joint density is less than 71% then the lot pay factor shall be reduced by 5% but be no higher than 95%.

For each lot accepted, the adjusted contract unit price shall be the product of the lot pay factor for the lot and the contract unit price. Payment shall be subject to the total project payment limitation specified in paragraph 401-8.1a. Payment in excess of 100% for accepted lots of asphalt shall be used to offset payment for accepted lots of asphalt pavement that achieve a lot pay factor less than 100%.

Table 6. Price adjustment schedule¹

Percentage of material within specification limits (PWL)	Lot pay factor (percent of contract unit price)
96 – 100	106
90 – 95	PWL + 10
75 – 89	0.5 PWL + 55
55 – 74	1.4 PWL – 12
Below 55	Reject ²

¹ Although it is theoretically possible to achieve a pay factor of 106% for each lot, actual payment above 100% shall be subject to the total project payment limitation specified in paragraph 401-8.1a.

² The lot shall be removed and replaced. However, the RPR may decide to allow the rejected lot to remain. In that case, if the RPR and Contractor agree in writing that the lot shall not be removed, it shall be paid for at 50% of the contract unit price and the total project payment shall be reduced by the amount withheld for the rejected lot.

d. Profilograph Roughness. Not Used.

401-8.1 Payment.

Payment will be made under:

Item P-401-8.1 Asphalt Surface Course – per ton

REFERENCES

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

ASTM International (ASTM)

- ASTM C29 Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
- ASTM C88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM C117	Standard Test Method for Materials Finer than 75- μm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C127	Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D242	Standard Specification for Mineral Filler for Bituminous Paving Mixtures
ASTM D946	Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction
ASTM D979	Standard Practice for Sampling Asphalt Paving Mixtures
ASTM D1073	Standard Specification for Fine Aggregate for Asphalt Paving Mixtures
ASTM D1188	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
ASTM D2172	Standard Test Method for Quantitative Extraction of Bitumen from Asphalt Paving Mixtures
ASTM D1461	Standard Test Method for Moisture or Volatile Distillates in Asphalt Paving Mixtures
ASTM D2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2489	Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures
ASTM D2726	Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
ASTM D2950	Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
ASTM D3203	Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D3381	Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction
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

ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4552	Standard Practice for Classifying Hot-Mix Recycling Agents
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D4867	Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D5361	Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing
ASTM D5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6084	Standard Test Method for Elastic Recovery of Bituminous Materials by Ductilometer
ASTM D6307	Standard Test Method for Asphalt Content of Hot Mix Asphalt by Ignition Method
ASTM D6373	Standard Specification for Performance Graded Asphalt Binder
ASTM D6752	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method
ASTM D6925	Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the SuperPave Gyrotory Compactor.
ASTM D6926	Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus
ASTM D6927	Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures
ASTM D6995	Standard Test Method for Determining Field VMA based on the Maximum Specific Gravity of the Mix (Gmm)
ASTM E11	Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
ASTM E178	Standard Practice for Dealing with Outlying Observations
ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph
ASTM E950	Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference
ASTM E2133	Standard Test Method for Using a Rolling Inclinometer to Measure Longitudinal and Transverse Profiles of a Traveled Surface

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M156	Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
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AASHTO T329	Standard Method of Test for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method
AASHTO T324	Standard Method of Test for Hamburg Wheel-Track Testing of Compacted Asphalt Mixtures
AASHTO T 340	Standard Method of Test for Determining the Rutting Susceptibility of Hot Mix Asphalt (APA) Using the Asphalt Pavement Analyzer (APA)

Asphalt Institute (AI)

Asphalt Institute Handbook MS-26, Asphalt Binder
Asphalt Institute MS-2 Mix Design Manual, 7th Edition
AI State Binder Specification Database

Federal Highway Administration (FHWA)

Long Term Pavement Performance Binder Program

Advisory Circulars (AC)

AC 150/5320-6 Airport Pavement Design and Evaluation

FAA Orders

5300.1 Modifications to Agency Airport Design, Construction, and Equipment Standards

Software

FAARFIELD

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Item P-603 Emulsified Asphalt Tack Coat

DESCRIPTION

603-1.1 This item shall consist of preparing and treating an asphalt or concrete surface with asphalt material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

603-2.1 Asphalt materials. The asphalt material shall be an emulsified asphalt as specified in ASTM D3628 as an asphalt application for tack coat appropriate to local conditions. The emulsified asphalt shall not be diluted. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the asphalt material to the Resident Project Representative (RPR) before the asphalt material is applied for review and acceptance. The furnishing of COA for the asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

CONSTRUCTION METHODS

603-3.1 Weather limitations. The tack coat shall be applied only when the existing surface is dry and the atmospheric temperature is 50°F or above; the temperature has not been below 35°F for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when 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 or seven (700) feet per minute.

The equipment will be tested under pressure for leaks and to ensure proper set-up before use to verify truck set-up (via a test-shot area), including but not limited to, nozzle tip size appropriate for application, spray-bar height and pressure and pump speed, evidence of triple-overlap spray pattern, lack of leaks, and any other factors relevant to ensure the truck is in good working order before use.

The distributor truck shall be equipped with a minimum 12-foot spreader spray bar with individual nozzle control with computer-controlled application rates. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion, and have an operable mechanical tank gauge that can be used to cross-check the computer accuracy. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

The distributor truck shall be equipped to effectively heat and mix the material to the required temperature prior to application as required. Heating and mixing shall be done in accordance with the manufacturer's recommendations. Do not overheat or over mix the material.

The distributor shall be equipped with a hand sprayer.

Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

A power broom and/or power blower suitable for cleaning the surfaces to which the asphalt tack coat is to be applied shall be provided.

603-3.3 Application of emulsified asphalt material. The emulsified asphalt shall not be diluted. Immediately before applying the emulsified asphalt tack coat, the full width of surface to be treated shall be swept with a power broom and/or power blower to remove all loose dirt and other objectionable material.

The emulsified asphalt material shall be uniformly applied with an asphalt distributor at the rates appropriate for the conditions and surface specified in the table below. The type of asphalt material and application rate shall be approved by the RPR prior to application.

Emulsified Asphalt

Surface Type	Residual Rate, gal/SY	Emulsion Application Bar Rate, gal/SY
New asphalt	0.02-0.05	0.03-0.07
Existing asphalt	0.04-0.07	0.06-0.11
Milled Surface	0.04-0.08	0.06-0.12

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 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 OF 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
3/4 inch (19 mm)	67
1/2 inch (12.5 mm)	7

610-2.2-1 Coarse Aggregate susceptibility to durability (D) cracking. Coarse aggregate may only be accepted from sources that have a 20-year service history for the same gradation to be supplied with no history of D-Cracking. Aggregates that do not have a 20-year record of service free from major repairs (less than 5% of slabs replaced) in similar conditions without D-cracking shall not be used unless the material currently being produced has a durability factor greater than or equal to 95 per ASTM C666. The Contractor shall submit a current certification and test results to verify the aggregate acceptability. Test results will only be accepted from a State Department of Transportation (DOT) materials laboratory or an accredited laboratory. Certification and test results which are not dated or which are over one year old or which are for different gradations will not be accepted.

Crushed granite, calcite cemented sandstone, quartzite, basalt, diabase, rhyolite or trap rock are considered to meet the D-cracking test requirements.

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 C595 Type IP, IS, or IL.

610-2.5 Cementitious materials.

a. Fly ash. Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash shall have a Calcium Oxide (CaO) content of less than 15% and a total available alkali content less than 3% per ASTM C311. Fly ash produced in furnace operations using liming materials or soda ash (sodium carbonate) as an additive shall not be acceptable. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the concrete mix, and shall furnish each additional report as they become available during the project. The reports can be used for acceptance or the material may be tested independently by the RPR.

b. Slag cement (ground granulated blast furnace (GGBF)). Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

610-2.6 Water. Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

610-2.7 Admixtures. The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the RPR may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the RPR from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

a. Air-entraining admixtures. Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entrainment agent and any water reducer admixture shall be compatible.

b. Water-reducing admixtures. Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

c. Other chemical admixtures. The use of set retarding, and set-accelerating admixtures shall be approved by the RPR. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and set-accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

610-2.8 Premolded joint material. Premolded joint material for expansion joints shall meet the requirements of ASTM D1751.

610-2.9 Joint filler. The filler for joints shall meet the requirements of Item P-605, unless otherwise specified.

610-2.10 Steel reinforcement. Reinforcing shall consist of reinforcing steel conforming to the requirements of ASTM A615, ASTM A706, ASTM A775, ASTM A934, or as otherwise indicated on the plans.

610-2.11 Materials for curing concrete. Curing materials shall conform to ASTM C171, Clear or White Polyethylene Sheeting; or ASTM C309 White-pigmented Liquid Membrane-Forming compound, Type 2, Class B.

CONSTRUCTION METHODS

610-3.1 General. The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified here. All machinery and equipment used by the Contractor on the work, shall be of sufficient size to meet the requirements of the work. All work shall be subject to the inspection and approval of the RPR.

610-3.2 Concrete Mixture. The concrete shall develop a compressive strength of 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. The water cementitious ratio shall not exceed 0.45 by weight. The air content of the concrete shall be 5% +/- 1.2% as determined by ASTM C231 and shall have a slump of not more than 4 inches as determined by ASTM C143.

610-3.3 Mixing. Concrete may be mixed at the construction site, at a central point, or wholly or in part in truck mixers. The concrete shall be mixed and delivered in accordance with the requirements of ASTM C94 or ASTM C685.

The concrete shall be mixed only in quantities required for immediate use. Concrete shall not be mixed while the air temperature is below 40°F without the RPRs approval. If approval is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50°F nor more than 100°F. The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at his expense.

Retempering of concrete by adding water or any other material is not permitted.

The rate of delivery of concrete to the job shall be sufficient to allow uninterrupted placement of the concrete.

610-3.4 Forms. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the RPR. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy.

The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a

non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms shall be constructed so they can be removed without injuring the concrete or concrete surface.

610-3.5 Placing reinforcement. All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concrete placement. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

610-3.6 Embedded items. Before placing concrete, all embedded items shall be firmly and securely fastened in place as indicated. All embedded items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The concrete shall be spaded and consolidated around and against embedded items. The embedding of wood shall not be allowed.

610-3.7 Concrete Consistency. The Contractor shall monitor the consistency of the concrete delivered to the project site; collect each batch ticket; check temperature; and perform slump tests on each truck at the project site in accordance with ASTM C143.

610-3.8 Placing concrete. All concrete shall be placed during daylight hours, unless otherwise approved. The concrete shall not be placed until the depth and condition of foundations, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved by the RPR. Concrete shall be placed as soon as practical after mixing, but in no case later than one (1) hour after water has been added to the mix. The method and manner of placing shall avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. The concrete shall not be dropped from a height of more than 5 feet. Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to procedures which cause segregation. Concrete shall be placed on clean, damp surfaces, free from running water, or on a properly consolidated soil foundation.

610-3.9 Vibration. Vibration shall follow the guidelines in American Concrete Institute (ACI) Committee 309R, Guide for Consolidation of Concrete.

610-3.10 Joints. Joints shall be constructed as indicated on the plans.

610-3.11 Finishing. All exposed concrete surfaces shall be true, smooth, and free from open or rough areas, depressions, or projections. All concrete horizontal plane surfaces shall be brought flush to the proper elevation with the finished top surface struck-off with a straightedge and floated.

610-3.12 Curing and protection. All concrete shall be properly cured in accordance with the recommendations in American Concrete Institute (ACI) 308R, Guide to External Curing of Concrete. The concrete shall be protected from damage until project acceptance.

610-3.13 Cold weather placing. When concrete is placed at temperatures below 40°F, follow the cold weather concreting recommendations found in ACI 306R, Cold Weather Concreting.

610-3.14 Hot weather placing. When concrete is placed in hot weather greater than 85°F, 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 Sidewalk (Including Driveway) shall be measured by the number of square yards based on the dimensions shown on the plans, including the gutter, complete in place and accepted.

BASIS OF PAYMENT

610-6.1 Payment shall be made at the contract price per square yard of concrete. This price shall be full compensation for furnishing all materials including reinforcement and embedded items and for all preparation, delivery, installation, and curing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-610-6.1	Concrete Sidewalk (Including Driveway) – per square yard
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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

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 1a. Initial Coat Marking Materials

Paint				Glass Beads	
Type	Color	Fed Std. 595 Number	Application Rate Maximum	Type	Application Rate Minimum
Waterborne	Yellow	33538 or 33655	230 ft ² /gl	None	None

Table 1b. Final Coat Marking Materials

Paint				Glass Beads	
Type	Color	Fed Std. 595 Number	Application Rate Maximum	Type	Application Rate Minimum
Waterborne	White	37925	115 ft ² /gl	Type I, Gradation A	7 lb/gl
Waterborne	Yellow	33538 or 33655	115 ft ² /gl	Type I, Gradation A	7 lb/gl
Waterborne	Black	37038	115 ft ² /gl	None	None

a. Paint. Paint shall be waterborne in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595.

Waterborne. Paint shall meet the requirements of Federal Specification TT-P-1952F, Type II. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

b. Reflective media. Glass beads for white, red, yellow, green paint shall meet the requirements for Federal Specification TT-B-1325D Type I, Gradation A.

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black paint.

CONSTRUCTION METHODS

620-3.1 Weather limitations. Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures 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 contaminants 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 24 calendar 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 in 50 feet, and marking dimensions and spacing shall be within the following tolerances:

Marking Dimensions and Spacing Tolerance

Dimension and Spacing	Tolerance
36 inch or less	±1/2 inch
greater than 36 inch to 6 feet	±1 inch
greater than 6 feet to 60 feet	±2 inch
greater than 60 feet	±3 inch

The paint shall be mixed in accordance with the manufacturer’s instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted.

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. 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. Not Used.

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

620-4.1 The quantity of pavement marking removal in accordance with P-620-3.3.b shall be measured by the number of square feet of markings removed in accordance with the specifications and accepted by the RPR.

620-4.2 The quantity of temporary markings will be measured by lump sum performed in accordance with the specifications and accepted by the RPR. Temporary markings include surface preparation, application and complete removal of the temporary marking.

620-4.3 The quantity of initial pavement markings shall be measured by the number of square feet of painting, for the color specified, performed in accordance with the specifications and accepted by the RPR. Initial marking includes surface preparation in accordance with P-620-3.3.

620-4.4 The quantity of final pavement markings and pavement remarking shall be measured by the number of square feet of painting, for the color specified, performed in accordance with the specifications and accepted by the RPR. Initial marking includes surface preparation in accordance with P-620-3.3.

BASIS OF PAYMENT

620-5.1 Payment for pavement marking removal shall be made at the contract price per square foot. 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-620-5.1 Pavement Marking Removal – per square foot

620-5.2 Payment for temporary markings shall be made at the contract lump sum price. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item, including surface preparation, application and complete removal of the temporary marking.

Payment will be made under:

Item P-620-5.2 Temporary Markings – lump sum

620-5.3 Payment for pavement markings shall be made at the contract price for by 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 complete in place and accepted by the RPR in accordance with these specifications.

Payment will be made under:

Item P-620-5.3 Initial Pavement Marking, Yellow – per square foot
 Item P-620-5.4 Final Pavement Marking, White – per square foot
 Item P-620-5.5 Final Pavement Marking, Yellow – per square foot
 Item P-620-5.6 Final Pavement Marking, Black – 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

Item D-705 Pipe Underdrains for Airports

DESCRIPTION

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

MATERIALS

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

PVC SDR 35 (ASTM F758) – Pavement Underdrains

Polyethylene (ASTM F810) – Pavement Underdrains

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

ASTM D3034 Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings

ASTM F758 Standard Specification for Smooth-Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage

705-2.3 Joint mortar. Not used.

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

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

Table 1. Gradation of Porous Backfill

Sieve Designation (square openings)	Percentage by Weight Passing Sieves
3/8 inch	100
No. 4	95-100
No. 8	
No. 16	45-80
No. 50	10-30
No. 100	0-10

705-2.6 Granular material. Granular material used for backfilling shall conform to the requirements of ASTM D2321 for Class IA, IB, or II materials.

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

Table 2. Fabric Properties

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

705-2.8 Controlled low-strength material (CLSM). Not used.

CONSTRUCTION METHODS

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

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

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

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

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

The pipe bedding shall be constructed uniformly over the full length of the pipe barrel, as required on the plans. The maximum aggregate size shall be 1 inch when the bedding thickness is less than 6 inches, and 1-1/2 inch 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.

The Contractor shall do trench bracing, sheathing, or shoring necessary to perform and protect the excavation as required for safety and conformance to federal, state and local laws. Unless otherwise provided, the bracing, sheathing, or shoring shall be removed by the Contractor after the backfill has

reached at least 12 inches over the top of the pipe. The sheathing or shoring shall be pulled as the granular backfill is placed and compacted to avoid any unfilled spaces between the trench wall and the backfill material. The cost of bracing, sheathing, or shoring, and the removal of same, shall be included in the unit price bid per foot for the pipe.

705-3.3 Laying and installing pipe.

a. Concrete pipe. Not used.

b. Metal pipe. Not used.

c. PVC, fiberglass, or polyethylene pipe. PVC or polyethylene pipe shall be installed in accordance with the requirements of ASTM D2321. Perforations shall meet the requirements of AASHTO M252 or AASHTO M294 Class 2, unless otherwise indicated on the plans. The pipe shall be laid accurately to line and grade.

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

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

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

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

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

705-3.5 Joints in concrete pipe. Not used.

705-3.6 Embedment and Backfill

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

The embedment material shall be placed in loose layers not exceeding 6 inches in depth under and around the pipe. Backfill material over the pipe shall be placed in lifts not exceeding 8 inches. Successive layers shall be added and thoroughly compacted by hand and pneumatic tampers, approved by the RPR, until the trench is completely filled and brought to the planned elevation. Embedment and backfilling shall be done to avoid damaging top or side of the pipe.

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

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

When perforated pipe is specified, granular backfill material shall be placed along the full length of the pipe. The position of the granular material shall be as shown on the plans. If the original material excavated from the trench is pervious and suitable, it shall be used in lieu of porous backfill No. 1.

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

If a granular subbase blanket course is used which extends several feet beyond the edge of paving to the outside edge of the underdrain trench, the granular backfill material over the underdrains shall be placed in the trench up to an elevation of 2 inches (50 mm) above the bottom surface of the granular subbase blanket course. Immediately prior to the placing of the granular subbase blanket course, the Contractor shall blade this excess trench backfill from the top of the trench onto the adjacent subgrade where it can be incorporated into the granular subbase blanket course. Any unsuitable material that remains over the underdrain trench shall be removed and replaced. The subbase material shall be placed to provide clean contact between the subbase material and the underdrain granular backfill material for the full width of the underdrain trench.

c. Controlled low-strength material (CLSM). Not used.

705-3.7 Flexible Pipe Ring Deflection. Not Used.

705-3.8 Connections. When the plans call for connections to existing or proposed pipe or structures, these connections shall be watertight and made to obtain a smooth uniform flow line throughout the drainage system.

705-3.9 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, soil, and rubbish from the site. Surplus soil may be deposited in embankments, shoulders, or as directed by the RPR. Except for paved areas of the airport, the Contractor shall restore all disturbed areas to their original condition.

METHOD OF MEASUREMENT

705-4.1 The length of pipe shall be the number of linear feet of pipe underdrains in place, completed, and approved; measured along the centerline of the pipe from end or inside face of structure to the end or inside

face of structure, whichever is applicable. The several classes, types, and sizes shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipeline being measured. Filter fabric and porous backfill shall not be measured separately and shall be considered incidental to the underdrain.

705-4.2 Underdrain Cleanouts shall be measured by each unit installed and accepted. The types shall be measured separately. All fittings, excavation, concrete, backfill, castings and other incidental items required to complete the item shall not be measured separately.

BASIS OF PAYMENT

705-5.1 Pipe underdrains, Complete. Pipe underdrains, complete (including porous backfill and filter fabric) shall be made at the contract unit price per linear foot.

Payment will be made under:

Item D-705-5.1 Underdrain, 6” Perforated PVC, Complete - per linear foot

705-5.2 Underdrain cleanouts, Complete. Underdrain cleanouts, complete (including fittings, excavation, concrete, backfill castings and other incidental items) shall be made at the contract unit price per each.

This price shall be full compensation 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.

Payment will be made under:

Item D-705-5.2 Underdrain Cleanout, Type 1 – per each

Item D-705-5.3 Underdrain Cleanout, Type 2 – 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 C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F758	Standard Specification for Smooth Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage
ASTM F794	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M288	Standard Specification for Geotextile Specification for Highway Applications
AASHTO M304	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter

END OF ITEM D-705

Item F-162 Chain-Link Fence

DESCRIPTION

162-1.1 This item shall consist of furnishing and erecting a chain-link fence in accordance with these specifications, the details shown on the plans, and in conformity with the lines and grades shown on the plans or established by the RPR.

Chain-link fence materials removed under other bid items may be salvaged and reused under this specification. See 162-3.1 for further information.

MATERIALS

162-2.1 Fabric. The fabric shall be woven with a 9-gauge galvanized steel wire in a 2-inch mesh and shall meet the requirements of ASTM A392, Class 2.

162-2.2 Barbed wire. Barbed wire shall be 2-strand 12-1/2 gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of ASTM A121, Class 3, Chain-Link Fence Grade.

162-2.3 Posts, rails, and braces. Line posts, rails, and braces shall conform to the requirements of ASTM F1043 or ASTM F1083 as follows:

Galvanized tubular steel pipe shall conform to the requirements of Group IA, (Schedule 40) coatings conforming to Type A, or Group IC (High Strength Pipe), External coating Type B, and internal coating Type B or D.

The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Federal Specification RR-F-191/3.

162-2.4 Gates. Gate frames shall consist of galvanized steel pipe and shall conform to the specifications for the same material under paragraph 162-2.3. The fabric shall be of the same type material as used in the fence.

162-2.5 Wire ties and tension wires. Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. Tension wire shall be 7-gauge marcelled steel wire with the same coating as the fabric type and shall conform to ASTM A824.

All material shall conform to Federal Specification RR-F-191/4.

162-2.6 Miscellaneous fittings and hardware. Miscellaneous steel fittings and hardware for use with zinc-coated steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the article, and sufficient in strength to provide a balanced design when used in conjunction with fabric posts, and wires of the quality specified herein. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A153. Barbed wire support arms shall withstand a load of 250 pounds applied vertically to the outermost end of the arm.

162-2.7 Concrete. Concrete shall have a minimum 28-day compressive strength of 3000 psi.

162-2.8 Marking. Each roll of fabric shall carry a tag showing the kind of base metal (steel, aluminum, or aluminum alloy number), kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel, aluminum, or aluminum alloy number), and kind of coating.

CONSTRUCTION METHODS

162-3.1 General. The fence shall be constructed in accordance with the details on the plans and as specified here using new materials, **unless the Contractor elects to salvage and reuse existing fencing materials as described below.** All work shall be performed in a workmanlike manner satisfactory to the RPR. The Contractor shall layout the fence line based on the plans. The Contractor shall span the opening below the fence with barbed wire at all locations where it is not practical to conform the fence to the general contour of the ground surface because of natural or manmade features such as drainage ditches. The new fence shall be permanently tied to the terminals of existing fences as shown on the plans. The Contractor shall stake down the woven wire fence at several points between posts as shown on the plans.

The Contractor shall arrange the work so that construction of the new fence will immediately follow the removal of existing fences. The length of unfenced section at any time shall not exceed 300 feet. The work shall progress in this manner and at the close of the working day the newly constructed fence shall be tied to the existing fence.

At the Contractor's option, 6-foot chain-link fence materials removed under this project may be salvaged and reused to construct the new 6-foot chain-link fence shown on the plans. Salvageable is considered fabric without holes, tears, snags, etc.; extension arms without kinks or broken brackets; posts and rails without kinks or bends; and functioning rods and turnbuckles. The Contractor is responsible for ensuring all salvaged components are compatible with any new materials provided under this specification.

162-3.2 Clearing fence line. Clearing shall consist of the removal of all stumps, brush, rocks, trees, or other obstructions that will interfere with proper construction of the fence. Stumps within the cleared area of the fence shall be grubbed or excavated. The bottom of the fence shall be placed a uniform distance above ground, as specified in the plans. When shown on the plans or as directed by the RPR, the existing fences which interfere with the new fence location shall be removed by the Contractor as a part of the construction work unless such removal is listed as a separate item in the bid schedule. All holes remaining after post and stump removal shall be refilled with suitable soil, gravel, or other suitable material and compacted with tampers.

The cost of removing and disposing of the material shall not constitute a pay item and shall be considered incidental to fence construction.

162-3.3 Installing posts. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans.

The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within seven (7) days after the individual post footing is completed.

Should rock be encountered at a depth less than the planned footing depth, a hole 2 inches larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches. After the posts are set, the remainder of the drilled hole shall be filled with grout, composed of one part Portland cement and two parts mortar sand. Any remaining space above the rock shall be filled with concrete in the manner described above.

In lieu of drilling, the rock may be excavated to the required footing depth. No extra compensation shall be made for rock excavation.

162-3.4 Installing top rails. The top rail shall be continuous and shall pass through the post tops. The coupling used to join the top rail lengths shall allow for expansion.

162-3.5 Installing braces. Horizontal brace rails, with diagonal truss rods and turnbuckles, shall be installed at all terminal posts.

162-3.6 Installing fabric. The wire fabric shall be firmly attached to the posts and braced as shown on the plans. All wire shall be stretched taut and shall be installed to the required elevations. The fence shall generally follow the contour of the ground, with the bottom of the fence fabric no less than one inch or more than 4 inches from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

At locations of small natural swales or drainage ditches and where it is not practical to have the fence conform to the general contour of the ground surface, longer posts may be used and multiple strands of barbed wire stretched to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches or less.

162-3.7 Electrical grounds. Electrical grounds shall be constructed at each point where new fence ties into existing fence. The ground shall be accomplished with a copper clad rod 8 feet long and a minimum of 5/8 inches in diameter driven vertically until the top is 6 inches below the ground surface. A No. 6 solid copper conductor shall be clamped to the rod and to the fence in such a manner that each element of the fence is grounded. Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction. The Contractor shall comply with FAA-STD-019, Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment, paragraph 4.2.3.8, Lightning Protection for Fences and Gates, when fencing is adjacent to FAA facilities.

162-3.8 Cleaning up. The Contractor shall remove from the vicinity of the completed work all tools, buildings, equipment, etc., used during construction. All disturbed areas shall be seeded per T-901.

METHOD OF MEASUREMENT

162-4.1 Chain-link fence will be measured for payment by the linear foot. Measurement will be along the top of the fence from center to center of end posts, excluding the length occupied by gate openings.

162-4.2 Relocate Salvaged Sliding Gate will be measured per each.

BASIS OF PAYMENT

162-5.1 Payment for chain-link fence will be made at the contract unit price per linear foot. The price shall be full compensation for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor equipment, tools, and incidentals necessary to complete the item. If the Contractor elects to salvage and utilize chain-link fence materials as specified herein, those costs to salvage and reuse shall be included under this item.

Payment will be made under:

Item F-162-5.1 Chain-Link Fence - per linear foot

162-5.2 Payment for Relocate Salvaged Sliding Gate will be made at the contract unit price per each. The price shall be full compensation for salvaging the existing sliding gate panel(s), gate rollers, and rolling braces; for furnishing any new materials, including gate posts and incidentals to provide a fully functional gate as shown on the plans; and for all preparation, erection, and installation of these materials; and for all labor equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item F-162-5.2 Relocate Salvaged 33' Sliding Gate – 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 A121	Standard Specification for Metallic-Coated Carbon Steel Barbed Wire
ASTM A153	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A392	Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A491	Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric
ASTM A824	Standard Specification for Metallic-Coated Steel Marcellled Tension Wire for Use with Chain Link Fence
ASTM B117	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM F668	Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and other Organic Polymer Coated Steel Chain-Link Fence Fabric
ASTM F1043	Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework
ASTM F1083	Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F1183	Standard Specification for Aluminum Alloy Chain Link Fence Fabric
ASTM F1345	Standard Specification for Zinc 5% Aluminum-Mischmetal Alloy Coated Steel Chain-Link Fence Fabric
ASTM G152	Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G153	Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials
ASTM G155	Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials

Federal Specifications (FED SPEC)

FED SPEC RR-F-191/3 Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)

FED SPEC RR-F-191/4 Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)

April 2024

Mead & Hunt, Inc.

FAA Standard

FAA-STD-019

Lightning and Surge Protection, Grounding, Bonding and Shielding
Requirements for Facilities and Electronic Equipment

FAA Orders

5300.38

AIP Handbook

END OF ITEM F-162

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Item T-901 Seeding

DESCRIPTION

901-1.1 This item shall consist of soil preparation, seeding, and fertilizing 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

Seed	PLS LBS/AC
Falcon IV Turf Type Tall Fescue	174
Shenandoah III Turf Type Tall Fescue	87
Inferno Turf Type Tall Fescue	87
Palmer IV Turf Type Perennial Ryegrass	43.5
Prelude IV Turf Type Perennial Ryegrass	43.5

Seed shall be applied at a rate of 435 pounds per acre.

Seeding shall be performed during the period between March 1 through May 15 and September 1 through October 31, unless otherwise approved by the RPR.

901-2.2 Lime. Not required.

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 contain the following minimum percentages: 7-2-1. A minimum of 70% of the Nitrogen shall be organic water insoluble slow release. A maximum of 30% shall be water soluble Nitrogen. The available phosphate shall be P_2O_5 . The soluble potash shall be K_2O . Fertilizer shall be spread at the rate of 1,500 pounds per acre.

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 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 as a result of grading operations and, if immediately prior to seeding, the top 3 inches 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. Clods shall be broken and the top 3 inches 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. Not required.

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 of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot 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 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 per minute at a pressure of 100 lb / sq inches. 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 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. 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 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 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 of these combined solids shall be added to and mixed with each 100 gallons 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, 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, 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 with hydromulch to be paid for shall be the number of acres, to the nearest tenth, measured on the ground surface, completed and accepted.

BASIS OF PAYMENT

901-5.1 Payment for seeding with hydromulch shall be made at the contract unit price per acre or fraction thereof, 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 T-901-5.1	Seeding with Hydromulch - per acre
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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
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Federal Specifications (FED SPEC)

FED SPEC	JJJ-S-181, Federal Specification, Seeds, Agricultural
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Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports
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FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel
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END OF ITEM T-901

Item T-905 Topsoil

DESCRIPTION

905-1.1 This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the RPR.

MATERIALS

905-2.1 Topsoil. Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches (50 mm) or more in diameter), and clay lumps or similar objects. Brush and other vegetation that will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sod and herbaceous growth such as grass and weeds are not to be removed, but shall be thoroughly broken up and intermixed with the soil during handling operations. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means, shall be removed. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh (75 μ m) sieve as determined by the wash test in accordance with ASTM C117.

Natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

905-2.2 Inspection and tests. Within 10 days following acceptance of the bid, the RPR shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements specified and to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths, for testing purposes as specified in paragraph 905-2.1.

CONSTRUCTION METHODS

905-3.1 General. Areas to be topsoiled shall be shown on the plans. If topsoil is available on the site, the location of the stockpiles or areas to be stripped of topsoil and the stripping depths shall be shown on the plans.

Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the RPR before the various operations are started.

905-3.2 Preparing the ground surface. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other means approved by the RPR, to a minimum depth of 2 inches (50 mm) to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area to be topsoiled shall be cleared of all stones larger than 2 inches (50 mm) in any diameter and all litter or other material which may be detrimental to proper bonding, the rise of capillary

moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive special scarification.

Grades on the area to be topsoiled, which have been established by others as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and compacted condition to prevent the formation of low places or pockets where water will stand.

905-3.3 Obtaining topsoil. Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, shall be removed using methods approved by the RPR. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the RPR. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the RPR. Any topsoil stockpiled by the Contractor shall be rehandled and placed without additional compensation. Any topsoil that has been stockpiled on the site by others, and is required for topsoil purposes, shall be removed and placed by the Contractor. The sites of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required and put into a condition acceptable for seeding.

When suitable topsoil is secured off the airport site, the Contractor shall locate and obtain the supply, subject to the approval of the RPR. The Contractor shall notify the RPR sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading, or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

905-3.4 Placing topsoil. The topsoil shall be evenly spread on the prepared areas to a uniform depth of 2 inches (50 mm) after compaction, unless otherwise shown on the plans or stated in the special provisions. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.

After spreading, any large, stiff clods and hard lumps shall be broken with a pulverizer or by other effective means, and all stones or rocks (2 inches (50 mm) or more in diameter), roots, litter, or any foreign matter shall be raked up and disposed of by the Contractor. After spreading is completed, the topsoil shall be satisfactorily compacted by rolling with a cultipacker or by other means approved by the RPR. The compacted topsoil surface shall conform to the required lines, grades, and cross-sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

METHOD OF MEASUREMENT

905-4.1 Topsoiling shall be measured by the number of acres, to the nearest tenth, measured on the ground surface, completed and accepted.

BASIS OF PAYMENT

905-5.1 Payment will be made at the contract unit price per acre for topsoiling. This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-905-5.1 Topsoiling, 9” Depth - 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 C117 Materials Finer than 75 μ m (No. 200) Sieve in Mineral Aggregates by Washing

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-905

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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. Not Used.

b. Straw. Not Used.

c. Hay mulch containing seed. Not Used.

d. Manufactured hydromulch. Cellulose-fiber or wood-pulp mulch shall be products commercially available for use in spray applications. Hydromulch shall include a tackifier applied at the manufacturer's recommended rate for the slope being protected. Products shall be on the current ODOT qualified products list.

e. Asphalt binder. Not Used.

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 shall be applied at a minimum rate of 2,500 lbs per acre.

Mulch material shall be furnished, hauled, and evenly applied on the area shown on the plans or designated by the RPR.

908-3.2 Securing mulch. The mulch shall be held in place by tackifier as identified in section 908-2.1.

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.

METHOD OF MEASUREMENT

908-4.1 Mulching will not be measured separately and shall be considered incidental to Item T-901, Seeding.

BASIS OF PAYMENT

908-5.1 Mulching will not be paid for separately and shall be considered incidental to Item T-901, Seeding.

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

Item L-108 Underground Power Cable for Airports

DESCRIPTION

108-1.1 This item shall consist of furnishing and installing power cables that are direct buried and furnishing and/or installing power cables within conduit or duct banks per these specifications at the locations shown on the plans. It includes excavation and backfill of trench for direct-buried cables only. Also included are the installation of counterpoise wires, ground wires, ground rods and connections, cable splicing, cable marking, cable testing, and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the RPR. This item shall not include the installation of duct banks or conduit, trenching and backfilling for duct banks or conduit, or furnishing or installation of cable for FAA owned/operated facilities.

EQUIPMENT AND MATERIALS

108-2.1 General.

a. Airport lighting equipment and materials covered by advisory circulars (AC) shall be approved under the Airport Lighting Equipment Certification Program per AC 150/5345-53, current version.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification, when requested by the RPR.

c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

d. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise, and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

e. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be, tabbed by specification section and electronically submitted in pdf format. The RPR reserves the right to reject any and all equipment, materials, or procedures that do not meet the system design and the standards and codes, specified in this document.

f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall maintain a minimum insulation resistance in accordance with paragraph 108-3.10e with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period when tested in

accordance with AC 150/5340-26, *Maintenance Airport Visual Aid Facilities*, paragraph 5.1.3.1, Insulation Resistance Test.

108-2.2 Cable. Underground cable for airfield lighting facilities (runway and taxiway lights and signs) shall conform to the requirements of AC 150/5345-7, Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits latest edition. Conductors for use on 6.6 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #8 American wire gauge (AWG), L-824 Type C, 5,000 volts, non-shielded, with cross-linked polyethylene insulation. Conductors for use on 20 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #6 AWG, L-824 Type C, 5,000 volts, non-shielded, with cross-linked polyethylene insulation. L-824 conductors for use on the L-830 secondary of airfield lighting series circuits shall be sized in accordance with the manufacturer's recommendations. All other conductors shall comply with FAA and National Electric Code (NEC) requirements. Conductor sizes noted above shall not apply to leads furnished by manufacturers on airfield lighting transformers and fixtures.

Wire for electrical circuits up to 600 volts shall comply with Specification L-824 and/or Commercial Item Description A-A-59544A and shall be type THWN-2, 75°C for installation in conduit and RHW-2, 75°C for direct burial installations. Conductors for parallel (voltage) circuits shall be type and size and installed in accordance with NFPA-70, National Electrical Code.

Unless noted otherwise, all 600-volt and less non-airfield lighting conductor sizes are based on a 75°C, THWN-2, 600-volt insulation, copper conductors, not more than three single insulated conductors, in raceway, in free air. The conduit/duct sizes are based on the use of THWN-2, 600-volt insulated conductors. The Contractor shall make the necessary increase in conduit/duct sizes for other types of wire insulation. In no case shall the conduit/duct size be reduced. The minimum power circuit wire size shall be #10 AWG.

Conductor sizes may have been adjusted due to voltage drop or other engineering considerations. Equipment provided by the Contractor shall be capable of accepting the quantity and sizes of conductors shown in the Contract Documents. All conductors, pigtails, cable step-down adapters, cable step-up adapters, terminal blocks, and splicing materials necessary to complete the cable termination/splice shall be considered incidental to the respective pay items provided.

Cable type, size, number of conductors, strand and service voltage shall be as specified in the Contract Document.

108-2.3 Bare copper wire (counterpoise, bare copper wire ground and ground rods). Wire for counterpoise or ground installations for airfield lighting systems shall be No. 6 AWG bare solid copper wire for counterpoise and/or No. 6 AWG insulated stranded for grounding bond wire per ASTM B3 and ASTM B8, and shall be bare copper wire. For voltage powered circuits, the equipment grounding conductor shall comply with NEC Article 250.

Ground rods shall be copper-clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case be less than 10 feet long and 3/4 inch in diameter.

108-2.4 Cable connections. In-line connections or splices of underground primary cables shall be of the type called for on the plans and shall be one of the types listed below. No separate payment will be made for cable connections.

a. The cast splice. Not used this project.

b. The field-attached plug-in splice. Field attached plug-in splices shall be installed as shown on the plans. The Contractor shall determine the outside diameter of the cable to be spliced and furnish appropriately sized connector kits and/or adapters. Tape or heat shrink tubing with integral sealant shall be in accordance with the manufacturer's requirements. Primary Connector Kits manufactured by Amerace, "Super Kit", Integro "Complete Kit", or approved equal is acceptable.

c. The factory-molded plug-in splice. Specification for L-823 Connectors, Factory-Molded to Individual Conductors, is acceptable.

d. The taped or heat-shrink splice. Not used this project.

In all the above cases, connections of cable conductors shall be made using crimp connectors using a crimping tool designed to make a complete crimp before the tool can be removed. All L-823/L-824 splices and terminations shall be made per the manufacturer's recommendations and listings.

All connections of counterpoise, grounding conductors and ground rods shall be made by the exothermic process or approved equivalent, except that a light base ground clamp connector shall be used for attachment to the light base. All exothermic connections shall be made per the manufacturer's recommendations and listings.

108-2.5 Splicer qualifications. Every airfield lighting cable splicer shall be qualified in making airport cable splices and terminations on cables rated at or above 5,000 volts AC. The Contractor shall submit to the RPR proof of the qualifications of each proposed cable splicer for the airport cable type and voltage level to be worked on. Cable splicing/terminating personnel shall have a minimum of three (3) years continuous experience in terminating/splicing medium voltage cable.

108-2.6 Concrete. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

108-2.7 Flowable backfill. Flowable material used to backfill trenches for power cable trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

108-2.8 Cable identification tags. Cable identification tags shall be made from a non-corrosive material with the circuit identification stamped or etched onto the tag. The tags shall be of the type as detailed on the plans.

108-2.9 Tape. Electrical tapes shall be Scotch™ Electrical Tapes –Scotch™ 88 (1-1/2 inch wide) and Scotch™ 130C® linerless rubber splicing tape (2-inch wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M™), or an approved equivalent.

108-2.10 Electrical coating. Electrical coating shall be Scotchkote™ as manufactured by 3M™, or an approved equivalent.

108-2.11 Existing circuits. Whenever the scope of work requires connection to an existing circuit, the existing circuit's insulation resistance shall be tested, in the presence of the RPR. The test shall be performed per this item and prior to any activity that will affect the respective circuit. The Contractor shall record the results on forms acceptable to the RPR. When the work affecting the circuit is complete, the circuit's insulation resistance shall be checked again, in the presence of the RPR. The Contractor shall record the results on forms acceptable to the RPR. The second reading shall be equal to or greater than the first reading or the Contractor shall make the necessary repairs to the existing circuit to bring the second reading above the first reading. All repair costs including a complete replacement of the L-823 connectors, L-830 transformers and L-824 cable, if necessary, shall be borne by the Contractor. All test results shall be submitted in the Operation and Maintenance (O&M) Manual.

108-2.12 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend tape shall be polyethylene film with a metalized foil core and shall be 3-6 inches wide. Detectable tape is incidental to the respective bid item. Detectable warning tape for communication cables shall be orange. Detectable warning tape color code shall comply with the APWA Uniform Color Code.

CONSTRUCTION METHODS

108-3.1 General. The Contractor shall install the specified cable at the approximate locations indicated on the plans. Unless otherwise shown on the plans, all cable required to cross under pavements expected to carry aircraft loads shall be installed in concrete encased duct banks. Cable shall be run without splices, from fixture to fixture.

Cable connections between lights will be permitted only at the light locations for connecting the underground cable to the primary leads of the individual isolation transformers. The Contractor shall be responsible for providing cable in continuous lengths for home runs or other long cable runs without connections unless otherwise authorized in writing by the RPR or shown on the plans.

In addition to connectors being installed at individual isolation transformers, L-823 cable connectors for maintenance and test points shall be installed at locations shown on the plans. Cable circuit identification markers shall be installed on both sides of the L-823 connectors installed and on both sides of slack loops where a future connector would be installed.

Provide not less than 3 feet of cable slack on each side of all connections, isolation transformers, light units, and at points where cable is connected to field equipment. Where provisions must be made for testing or for future above grade connections, provide enough slack to allow the cable to be extended at least one foot vertically above the top of the access structure. This requirement also applies where primary cable passes through empty light bases, junction boxes, and access structures to allow for future connections, or as designated by the RPR.

Primary airfield lighting cables installed shall have cable circuit identification markers attached on both sides of each L-823 connector and on each airport lighting cable entering or leaving cable access points, such as manholes, hand holes, pull boxes, junction boxes, etc. Markers shall be of sufficient length for imprinting the cable circuit identification legend on one line, using letters not less than 1/4 inch in size. The cable circuit identification shall match the circuits noted on the construction plans.

108-3.2 Installation in duct banks or conduits. This item includes the installation of the cable in duct banks or conduit per the following paragraphs. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected, and that any potential interference is avoided.

Duct banks or conduits shall be installed as a separate item per Item L-110, Airport Underground Electrical Duct Banks and Conduit. The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean light bases, manholes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed, the light bases and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, light bases, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or alternately, heat shrinkable

tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cable shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

The Contractor shall submit the recommended pulling tension values to the RPR prior to any cable installation. If required by the RPR, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the RPR. Cable pull tensions shall be recorded by the Contractor and reviewed by the RPR. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the RPR, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

108-3.3 Installation of direct-buried cable in trenches. Unless otherwise specified, the Contractor shall not use a cable plow for installing the cable. Cable shall be unreeled uniformly in place alongside or in the trench and shall be carefully placed along the bottom of the trench. The cable shall not be unreeled and pulled into the trench from one end. Slack cable sufficient to provide strain relief shall be placed in the trench in a series of S curves. Sharp bends or kinks in the cable shall not be permitted.

Where cables must cross over each other, a minimum of 3 inches vertical displacement shall be provided with the topmost cable depth at or below the minimum required depth below finished grade.

a. Trenching. Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored. Trenches for cables may be excavated manually or with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of surface is disturbed. Graders shall not be used to excavate the trench with their blades. The bottom surface of trenches shall be essentially smooth and free from coarse aggregate. Unless otherwise specified, cable trenches shall be excavated to a minimum depth of 18 inches below finished grade per NEC Table 300.5, except as follows:

- When off the airport or crossing under a roadway or driveway, the minimum depth shall be 36 inches unless otherwise specified.
- Minimum cable depth when crossing under a railroad track, shall be 42 inches unless otherwise specified.

The Contractor shall excavate all cable trenches to a width not less than 6 inches. Unless otherwise specified on the plans, all cables in the same location and running in the same general direction shall be installed in the same trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches below the required cable depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch sieve. Flowable backfill material may alternatively be used.

Duct bank or conduit markers temporarily removed for trench excavations shall be replaced as required.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

(1) Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred.

(2) Trenching, etc., in cable areas shall then proceed, with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair or replacement.

b. Backfilling. After the cable has been installed, the trench shall be backfilled. The first layer of backfill in the trench shall encompass all cables; be 3 inches deep, loose measurement; and shall be either earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch sieve. This layer shall not be compacted. The second layer shall be 5 inches deep, loose measurement, and shall contain no particles that would be retained on a one inch sieve. The remaining third and subsequent layers of backfill shall not exceed 8 inches of loose measurement and be excavated or imported material and shall not contain stone or aggregate larger than 4 inches maximum diameter.

The second and subsequent layers shall be thoroughly tamped and compacted to at least the density of the adjacent material. If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the backfill compaction shall be to a minimum of 100 percent of ASTM D1557 or backfill with controlled low strength material (CLSM) in accordance with P-153.

Trenches shall not contain pools of water during backfilling operations. The trench shall be completely backfilled and tamped level with the adjacent surface, except that when turf is to be established over the trench, the backfilling shall be stopped at an appropriate depth consistent with the type of turfing operation to be accommodated. A proper allowance for settlement shall also be provided. Any excess excavated material shall be removed and disposed of per the plans and specifications.

Underground electrical warning (caution) tape shall be installed in the trench above all direct-buried cable. Contractor shall submit a sample of the proposed warning tape for acceptance by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the direct-buried cable or the counterpoise wire if present. A 3-6 inch wide polyethylene film detectable tape, with a metalized foil core, shall be installed above all direct buried cable or counterpoise. The tape shall be of the color and have a continuous legend as indicated on the plans. The tape shall be installed 8 inches minimum below finished grade.

c. Restoration. Following restoration of all trenching near airport movement surfaces, the Contractor shall visually inspect the area for foreign object debris (FOD) and remove any that is found. Where soil and sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by work shall be restored to its original condition. The restoration shall include the sodding, topsoiling, fertilizing, seeding and mulching as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. When trenching is through paved areas, restoration shall be equal to existing conditions. If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the backfill compaction shall be to a minimum of 100 percent of ASTM D1557 or backfilled with controlled low strength material (CLSM) in accordance with P-153. Restoration shall be considered incidental to the pay item of which it is a component part.

108-3.4 Cable markers for direct-buried cable. Not used this project.

108-3.5 Splicing. Connections of the type shown on the plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

a. Cast splices. Not used this project.

b. Field-attached plug-in splices. These shall be assembled per the manufacturer's instructions. These splices shall be made by plugging directly into mating connectors. The joint where the connectors come together shall be finished by the following method: On connector kits equipped with water seal flap; roll-over water seal flap to sealing position on mating connector. Wrapped with at least two layers of rubber or synthetic rubber tape and two layers of plastic tape, one-half lapped, extending at least 2 inches on each side of the joint.

c. Factory-molded plug-in splices. These shall be made by plugging directly into mating connectors. The joint where the connectors come together shall be finished by the following method: On connector kits equipped with water seal flap; roll-over water seal flap to sealing position on mating connector. Wrapped with at least two layers of rubber or synthetic rubber tape and two layers of plastic tape, one-half lapped, extending at least 2 inches on each side of the joint.

d. Taped or heat-shrink splices. Not used this project.

e. Assembly. Surfaces of equipment or conductors being terminated or connected shall be prepared in accordance with industry standard practice and manufacturer's recommendations. All surfaces to be connected shall be thoroughly cleaned to remove all dirt, grease, oxides, nonconductive films, or other foreign material. Paints and other nonconductive coatings shall be removed to expose base metal. Clean all surfaces at least 1/4 inch (6.4 mm) beyond all sides of the larger bonded area on all mating surfaces. Use a joint compound suitable for the materials used in the connection. Repair painted/coated surface to original condition after completing the connection.

108-3.6 Bare counterpoise wire installation for lightning protection and grounding. If shown on the plans or included in the job specifications, bare solid #6 AWG copper counterpoise wire shall be installed for lightning protection of the underground cables. The RPR shall select one of two methods of lightning protection for the airfield lighting circuit based upon sound engineering practice and lightning strike density.

a. Equipotential. The counterpoise size is as shown on the plans determined by the RPR. The equipotential method is applicable to all airfield lighting systems; i.e. runway, taxiway, apron – touchdown zone, centerline, edge, threshold and approach lighting systems. The equipotential method is also successfully applied to provide lightning protection for power, signal and communication systems. The light bases, counterpoise, etc. – all components – are bonded together and bonded to the vault power system ground loop/electrode.

Counterpoise wire shall be installed in the same trench for the entire length of buried cable, conduits and duct banks that are installed to contain airfield cables. The counterpoise is centered over the cable/conduit/duct to be protected.

The counterpoise conductor shall be installed no less than 8 inches minimum or 12 inches maximum above the raceway or cable to be protected, except as permitted below:

(1) The minimum counterpoise conductor height above the raceway or cable to be protected shall be permitted to be adjusted subject to coordination with the airfield lighting and pavement designs.

(2) The counterpoise conductor height above the protected raceway(s) or cable(s) shall be calculated to ensure that the raceway or cable is within a 45-degree area of protection, (45 degrees on each side of vertical creating a 90-degree angle).

The counterpoise conductor shall be bonded to each metallic light base, mounting stake, and metallic airfield lighting component.

All metallic airfield lighting components in the field circuit on the output side of the constant current regulator (CCR) or other power source shall be bonded to the airfield lighting counterpoise system.

All components rise and fall at the same potential, with no potential difference, no damaging arcing and no damaging current flow.

See AC 150/5340-30, Design and Installation Details for Airport Visual Aids and NFPA 780, Standard for the Installation of Lightning Protection Systems, Chapter 11, for a detailed description of the Equipotential Method of lightning protection.

b. Isolation. Not used this project.

c. Common Installation requirements. When a metallic light base is used, the grounding electrode shall be bonded to the metallic light base or mounting stake with a No. 6 AWG bare, annealed or soft drawn, solid copper conductor.

Nonmetallic light bases are not allowed.

Grounding electrodes may be rods, ground dissipation plates, radials, or other electrodes listed in the NFPA 70 (NEC) or NFPA 780.

Where raceway is installed by the directional bore, jack and bore, or other drilling method, the counterpoise conductor shall be permitted to be installed concurrently with the directional bore, jack and bore, or other drilling method raceway, external to the raceway or sleeve.

The counterpoise wire shall also be exothermically welded to ground rods installed as shown on the plans but not more than 500 feet apart around the entire circuit. The counterpoise system shall be continuous and terminate at the transformer vault or at the power source. It shall be securely attached to the vault or equipment external ground ring or other made electrode-grounding system. The connections shall be made as shown on the plans and in the specifications.

Where an existing airfield lighting system is being extended or modified, the new counterpoise conductors shall be interconnected to existing counterpoise conductors at each intersection of the new and existing airfield lighting counterpoise systems.

d. Parallel Voltage Systems. Provide grounding and bonding in accordance with NFPA 70, National Electrical Code.

108-3.7 Counterpoise installation above multiple conduits and duct banks. Counterpoise wires shall be installed above multiple conduits/duct banks for airfield lighting cables, with the intent being to provide a complete area of protection over the airfield lighting cables. When multiple conduits and/or duct banks for airfield cable are installed in the same trench, the number and location of counterpoise wires above the conduits shall be adequate to provide a complete area of protection measured 45 degrees each side of vertical.

Where duct banks pass under pavement to be constructed in the project, the counterpoise shall be placed above the duct bank. Reference details on the construction plans.

108-3.8 Counterpoise installation at existing duct banks. When airfield lighting cables are indicated on the plans to be routed through existing duct banks, the new counterpoise wiring shall be terminated at ground rods at each end of the existing duct bank where the cables being protected enter and exit the duct bank. The new counterpoise conductor shall be bonded to the existing counterpoise system.

108-3.9 Exothermic bonding. Bonding of counterpoise wire shall be by the exothermic welding process or equivalent method accepted by the RPR. Only personnel experienced in and regularly engaged in this type of work shall make these connections.

Contractor shall demonstrate to the satisfaction of the RPR, the welding kits, materials and procedures to be used for welded connections prior to any installations in the field. The installations shall comply with the manufacturer's recommendations and the following:

a. All slag shall be removed from welds.

b. Using an exothermic weld to bond the counterpoise to a lug on a galvanized light base is not recommended unless the base has been specially modified. Consult the manufacturer's installation directions for proper methods of bonding copper wire to the light base. See AC 150/5340-30 for galvanized light base exception.

c. If called for in the plans, all buried copper and weld material at weld connections shall be thoroughly coated with 6 mm of 3M™ Scotchkote™, or approved equivalent, or coated with coal tar Bitumastic® material to prevent surface exposure to corrosive soil or moisture.

108-3.10 Remove cable. The Contractor shall remove existing cable from conduit in areas as shown on the plans. The remaining cable to remain or isolation transformer ends, shall be weatherproofed until connected to new cable. Removed cable shall be incidental to the installation cable bid item. Removed cable becomes property of the Contractor to be disposed of offsite.

108-3.11 Testing. The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the RPR. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the RPR. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor must maintain the test results throughout the entire project as well as during the warranty period that meet the following:

a. Earth resistance testing methods shall be submitted to the RPR for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the RPR. All such testing shall be at the sole expense of the Contractor.

b. Should the counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The RPR shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

After installation, the Contractor shall test and demonstrate to the satisfaction of the RPR the following:

c. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.

d. That all affected circuits (existing and new) are free from unspecified grounds.

e. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than 500 megohms. Verify continuity of all series airfield lighting circuits prior to energization.

f. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.

g. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.

h. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.

i. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers

(ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance test meters may be used to satisfy the impedance testing requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the RPR prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the RPR. Where connecting new cable to existing cable, insulation resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved “repair” procedures for items that have failed testing other than complete replacement.

METHOD OF MEASUREMENT

108-4.1 The cost of all excavation, backfill, dewatering and restoration regardless of the type of material encountered shall be included in the unit price bid for the work.

108-4.2 Cable or counterpoise wire installed in trench, duct bank or conduit shall be measured by the number of linear feet installed and grounding connectors, and trench marking tape ready for operation, and accepted as satisfactory. Separate measurement shall be made for each cable or counterpoise wire installed in trench, duct bank or conduit. The measurement for this item shall not include additional quantities required for slack. Slack shall be incidental to the bid item.

108-4.3 Removed cable shall be incidental to the cable installation bid item.

108-4.4 No separate payment will be made for ground rods. Ground rods shall be incidental to the bid item.

BASIS OF PAYMENT

108-5.1 Payment will be made at the contract unit price for trenching, cable and bare counterpoise wire installed in trench (direct-buried), or cable and equipment ground installed in duct bank or conduit, in place by the Contractor and accepted by the RPR. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals, including ground rods and ground connectors and trench marking tape, necessary to complete this item.

108-5.2 Payment will be made at the contract unit price for removed cable, by the Contractor and accepted by the RPR. This price shall be full compensation for labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item L-108-5.1	No. 6 AWG, Solid, Bare Copper Counterpoise, installed in Trench or Above Conduit, Including Connections/Terminations - per linear foot
Item L-108-5.2	No. 8 AWG, 5 kV, L-824, Type C Cable, Installed in Conduit - per liner foot
Item L-108 5.3	No. 8 AWG, 5 kV, L-824, Type C Cable, Temporary Jumper – per linear foot

REFERENCES

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

Advisory Circulars (AC)

AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-53	Airport Lighting Equipment Certification Program

Commercial Item Description

A-A-59544A	Cable and Wire, Electrical (Power, Fixed Installation)
A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic

ASTM International (ASTM)

ASTM B3	Standard Specification for Soft or Annealed Copper Wire
ASTM B8	Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM D4388	Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes

Mil Spec

MIL-PRF-23586F	Performance Specification: Sealing Compound (with Accelerator), Silicone Rubber, Electrical
MIL-I-24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive

National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
NFPA-780	Standard for the Installation of Lightning Protection Systems

American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)

ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
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Federal Aviation Administration Standard

FAA STD-019E	Lightning and Surge Protection, Grounding Bonding and Shielding Requirements for Facilities and Electronic Equipment
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Item L-110 Airport Underground Electrical Duct Banks and Conduits

DESCRIPTION

110-1.1 This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing of all underground electrical duct banks and individual and multiple underground conduits. It shall also include all turfing trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

EQUIPMENT AND MATERIALS

110-2.1 General.

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

b. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, that comply with these specifications, at the Contractor's cost.

c. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise, and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in project that accrue directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be electronically submitted in pdf format, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes specified in this document.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

110-2.2 Steel conduit. Rigid galvanized steel (RGS) conduit and fittings shall be hot dipped galvanized inside and out and conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242. All RGS conduits or RGS elbows installed below grade, in concrete, permanently wet locations or other similar environments shall be painted with a 10-mil thick coat of asphaltum sealer or shall have a factory-bonded polyvinyl chloride (PVC) cover. Any exposed galvanizing or steel shall be coated with 10 mils of

asphaltum sealer. When using PVC coated RGS conduit, care shall be exercised not to damage the factory PVC coating. Damaged PVC coating shall be repaired per the manufacturer's written instructions. In lieu of PVC coated RGS, corrosion wrap tape shall be permitted to be used where RGS is in contact with direct earth.”

110-2.3 Plastic conduit. Plastic conduit and fittings shall conform to the following requirements:

- UL 514B covers W-C-1094-Conduit fittings all types, classes 1 thru 3 and 6 thru 10.
- UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).
- UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.
- UL 651A covers W-C-1094-Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

- a. Type I–Schedule 40 and Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.
- b. Type II–Schedule 40 PVC suitable for either above ground or underground use.
- c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.
- d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

110-2.4 Split conduit. Split conduit shall be pre-manufactured for the intended purpose and shall be made of steel or plastic.

110-2.5 Conduit spacers. Conduit spacers shall be prefabricated interlocking units manufactured for the intended purpose. They shall be of double wall construction made of high grade, high density polyethylene complete with interlocking cap and base pads. They shall be designed to accept No. 4 reinforcing bars installed vertically.

110-2.6 Concrete. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

110-2.7 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program. Precast concrete structures shall conform to ASTM C478.

110-2.8 Flowable backfill. Flowable material used to back fill conduit and duct bank trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

110-2.9 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) red (electrical power lines, cables, conduit, and lighting cable), orange (telephone/fiber optic cabling) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches wide. Detectable tape is incidental to the respective bid item.

CONSTRUCTION METHODS

110-3.1 General. The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The RPR shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2 inches inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3 inches per 100 feet. On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points or conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. Under pavement, the top of the duct bank shall not be less than 18 inches below the subgrade; in other locations, the top of the duct bank or underground conduit shall be not less than 18 inches below finished grade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than 1/4 inch smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed the light bases, manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor's expense. All accessible points shall be kept closed when not installing cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 200-pound test polypropylene pull rope. The ends shall be secured, and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet.

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches below the required conduit or duct bank depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch sieve. Flowable backfill may alternatively be used

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. Contractor shall submit a sample of the proposed warning tape for approval by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet.

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the RPR, the unsuitable material shall be removed per Item P-152 and replaced with suitable material. Additional duct bank supports shall be installed, as approved by the RPR.

All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion per federal, state, and local requirements is incidental to Item L-110.

Unless otherwise specified, excavated materials that are deemed by the RPR to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the RPR and compacted per Item P-152.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

a. Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred

b. Trenching, etc., in cable areas shall then proceed with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair.

110-3.2 Duct banks. Unless otherwise shown in the plans, duct banks shall be installed so that the top of the concrete envelope is not less than 18 inches below the bottom of the base or stabilized base course layers where installed under runways, taxiways, aprons, or other paved areas, and not less than 18 inches below finished grade where installed in unpaved areas.

Unless otherwise shown on the plans, duct banks under paved areas shall extend at least 3 feet beyond the edges of the pavement or 3 feet beyond any under drains that may be installed alongside the paved area. Trenches for duct banks shall be opened the complete length before concrete is placed so that if any obstructions are encountered, provisions can be made to avoid them. Unless otherwise shown on the plans, all duct banks shall be placed on a layer of concrete not less than 3 inches thick prior to its initial set. The

Contractor shall space the conduits not less than 3 inches apart (measured from outside wall to outside wall). All such multiple conduits shall be placed using conduit spacers applicable to the type of conduit. As the conduit laying progresses, concrete shall be placed around and on top of the conduits not less than 3 inches thick unless otherwise shown on the plans. All conduits shall terminate with female ends for ease of access in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Conduits forming the duct bank shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches to anchor the assembly into the earth prior to placing the concrete encasement. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where shown on the plans. Under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot intervals.

All pavement surfaces that are to have ducts installed therein shall be neatly saw cut to form a vertical face. All excavation shall be included in the contract with price for the duct.

Install a plastic, detectable, color as noted, 3 to 6 inches wide tape, 8 inches minimum below grade above all underground conduit or duct lines not installed under pavement. Utilize the 3-inch wide tape only for single conduit runs. Utilize the 6-inch wide tape for multiple conduits and duct banks. For duct banks equal to or greater than 24 inches in width, utilize more than one tape for sufficient coverage and identification of the duct bank as required.

When existing cables are to be placed in split duct, encased in concrete, the cable shall be carefully located and exposed by hand tools. Prior to being placed in duct, the RPR shall be notified so that he may inspect the cable and determine that it is in good condition. Where required, split duct shall be installed as shown on the drawings or as required by the RPR.

110-3.3 Conduits without concrete encasement. Trenches for single-conduit lines shall be not less than 6 inches nor more than 12 inches wide. The trench for 2 or more conduits installed at the same level shall be proportionately wider. Trench bottoms for conduits without concrete encasement shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 4 inches thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand, or other fine fill, and it shall contain no particles that would be retained on a 1/4-inch sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24 inches below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed

not less than 3 inches apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

110-3.4 Markers. Not used this project.

110-3.5 Backfilling for conduits. For conduits, 8 inches of sand, soft earth, or other fine fill (loose measurement) shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted per Item P-152 except that material used for back fill shall be select material not larger than 4 inches in diameter.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.6 Backfilling for duct banks. After the concrete has cured, the remaining trench shall be backfilled and compacted per Item P-152 "Excavation and Embankment" except that the material used for backfill shall be select material not larger than 4 inches in diameter. In addition to the requirements of Item P-152, where duct banks are installed under pavement, one moisture/density test per lift shall be made for each 250 linear feet of duct bank or one work period's construction, whichever is less.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.7 Restoration. Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to its original condition. The restoration shall include sodding, topsoiling, fertilizing, seeding, sprigging, and or mulching as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

110-3.8 Ownership of removed cable. Cable removed during this project become property of the contractor to be disposed of off-site.

METHOD OF MEASUREMENT

110-4.1 Underground conduits and duct banks shall be measured by the linear feet of conduits and duct banks installed, including encasement, locator tape, trenching and backfill with designated material, and restoration, and for drain lines, the termination at the drainage structure, all measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes.

BASIS OF PAYMENT

110-5.1 Payment will be made at the contract unit price per linear foot for each type and size of conduit and duct bank completed and accepted, including trench and backfill with the designated material, and, for drain lines, the termination at the drainage structure. This price shall be full compensation for removal and disposal of existing duct banks and conduits as shown on the plans, furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications.

Payment will be made under:

Item L-110-5.1	1W-2" Sch 40 PVC, Concrete Encased - per linear foot
Item L-110-5.2	1W-2" Sch 40 PVC, Direct Bury - per linear foot

REFERENCES

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

Advisory Circular (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program

ASTM International (ASTM)

ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
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National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
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Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit - Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 1242	Electrical Intermediate Metal Conduit Steel
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit

END OF ITEM L-110

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Item L-115 Electrical Manholes and Junction Structures

DESCRIPTION

115-1.1 This item shall consist of electrical manholes and junction structures (hand holes, pull boxes, junction cans, etc.) installed per this specification, at the indicated locations and conforming to the lines, grades and dimensions shown on the plans or as required by the RPR. This item shall include the installation of each electrical manhole and/or junction structures with all associated excavation, backfilling, sheeting, and bracing, concrete, reinforcing steel, ladders, appurtenances, testing, dewatering, and restoration of surfaces to the satisfaction of the RPR including removal of existing manholes and junction structures as shown on the plans.

EQUIPMENT AND MATERIALS

115-2.1 General.

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when so requested by the RPR.

b. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

c. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise, and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be electronically submitted in pdf format, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes, specified in this document.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

115-2.2 Concrete structures. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures. Cast-in-place concrete structures shall be as shown on the plans.

115-2.3 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another engineer approved third party certification program. Provide precast concrete structures where shown on the plans.

Precast concrete structures shall be an approved standard design of the manufacturer. Precast units shall have mortar or bitumastic sealer placed between all joints to make them watertight. The structure shall be designed to withstand 100,000 lb aircraft loads, unless otherwise shown on the plans. Openings or knockouts shall be provided in the structure as detailed on the plans.

Threaded inserts and pulling eyes shall be cast in as shown on the plans.

If the Contractor chooses to propose a different structural design, signed and sealed shop drawings, design calculations, and other information requested by the RPR shall be submitted by the Contractor to allow for a full evaluation by the RPR. The RPR shall review per the process defined in the General Provisions.

115-2.4 Junction boxes. Junction boxes shall be L-867 Class 1 (non-load bearing) or L-868 Class 1 (load bearing) airport light bases that are encased in concrete. The light bases shall have a L-894 blank cover, gasket, and stainless steel hardware. All bolts, studs, nuts, lock washers, and other similar fasteners used for the light fixture assemblies must be fabricated from 316L (equivalent to EN 1.4404), 18-8, 410, or 416 stainless steel. If 18-8, 410, or 416 stainless steel is utilized it shall be passivated and be free from any discoloration. Covers shall be 3/8-inch thickness for L-867 and 3/4-inch thickness for L-868. All junction boxes shall be provided with both internal and external ground lugs.

115-2.5 Mortar. The mortar shall be composed of one part of cement and two parts of mortar sand, by volume. The cement shall be per the requirements in ASTM C150, Type I. The sand shall be per the requirements in ASTM C144. Hydrated lime may be added to the mixture of sand and cement in an amount not to exceed 15% of the weight of cement used. The hydrated lime shall meet the requirements of ASTM C206. Water shall be potable, reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable, or other substances injurious to the finished product.

115-2.6 Concrete. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

115-2.7 Frames and covers. The frames shall conform to one of the following requirements:

- a. ASTM A48 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 Ductile iron castings
- f. ASTM A897 Austempered ductile iron castings

All castings specified shall withstand a maximum tire pressure of 250 psi and maximum load of 100,000 lbs.

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings specified.

Each frame and cover 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.

Each cover shall have the word "ELECTRIC" or other approved designation cast on it. Each frame and cover shall be as shown on the plans or approved equivalent. No cable notches are required.

Each manhole shall be provided with a “DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER” safety warning sign as detailed in the Contract Documents and in accordance with OSHA 1910.146 (c)(2).

115-2.8 Ladders. Not used this project.

115-2.9 Reinforcing steel. All reinforcing steel shall be deformed bars of new billet steel meeting the requirements of ASTM A615, Grade 60.

115-2.10 Bedding/special backfill. Bedding or special backfill shall be as shown on the plans.

115-2.11 Flowable backfill. Flowable material used to backfill shall conform to the requirements of Item P-153, Controlled Low Strength Material.

115-2.12 Cable trays. Cable trays shall be of non-metallic. Cable trays shall be located as shown on the plans.

115-2.13 Plastic conduit. Plastic conduit shall comply with Item L-110, Airport Underground Electrical Duct Banks and Conduits.

115-2.14 Conduit terminators. Conduit terminators shall be pre-manufactured for the specific purpose and sized as required or as shown on the plans.

115-2.15 Pulling-in irons. Pulling-in irons shall be manufactured with 7/8-inch diameter hot-dipped galvanized steel or stress-relieved carbon steel roping designed for concrete applications (7 strand, 1/2-inch diameter with an ultimate strength of 270,000 psi). Where stress-relieved carbon steel roping is used, a rustproof sleeve shall be installed at the hooking point and all exposed surfaces shall be encapsulated with a polyester coating to prevent corrosion.

115-2.16 Ground rods. Ground rods shall be one piece, copper clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case shall they be less than 10 feet long nor less than 3/4 inch in diameter.

CONSTRUCTION METHODS

115-3.1 Unclassified excavation. It is the Contractor’s responsibility to locate existing utilities within the work area prior to excavation. Damage to utility lines, through lack of care in excavating, shall be repaired or replaced to the satisfaction of the RPR without additional expense to the Owner.

The Contractor shall perform excavation for structures and structure 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.

All excavation shall be unclassified and shall be considered incidental to Item L-115. Dewatering necessary for structure installation and erosion per federal, state, and local requirements is incidental to Item L-115.

Boulders, logs, and all other objectionable material encountered in excavation shall be removed. All rock and 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, crevices, disintegrated rock and thin strata shall be removed. When concrete is to rest on a surface other than rock, special care shall be taken not to disturb the bottom of the excavation. Excavation to final grade shall not be made until just before the concrete or reinforcing is to be placed.

The Contractor shall provide all bracing, sheeting, and shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheeting, and shoring shall be included in the unit price bid for the structure.

Unless otherwise provided, bracing, sheeting, and shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall be effected in a manner that will not disturb or mar finished masonry. The cost of removal shall be included in the unit price bid for the structure.

After each excavation is completed, the Contractor shall notify the RPR. Structures shall be placed after the RPR has approved the depth of the excavation and the suitability of the foundation material.

Prior to installation the Contractor shall provide a minimum of 6 inches of sand or a material approved by the RPR as a suitable base to receive the structure. The base material shall be compacted and graded level and at proper elevation to receive the structure in proper relation to the conduit grade or ground cover requirements, as indicated on the plans.

115-3.2 Concrete structures. Concrete structures shall be built on prepared foundations conforming to the dimensions and form indicated on the plans. The concrete and construction methods 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.

115-3.3 Precast unit installations. Precast units shall be installed plumb and true. Joints shall be made watertight by use of sealant at each tongue-and-groove joint and at roof of manhole. Excess sealant shall be removed and severe surface projections on exterior of neck shall be removed.

115-3.4 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 to correct elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place and position before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

Field connections shall be made with bolts, unless indicated otherwise. Welding will not be permitted unless shown otherwise on the approved shop drawings and written approval is granted by the casting manufacturer. Erection equipment shall be suitable and safe for the workman. Errors in shop fabrication or deformation resulting from handling and transportation that prevent the proper assembly and fitting of parts shall be reported immediately to the RPR and approval of the method of correction shall be obtained. Approved corrections shall be made at Contractor's expense.

Anchor bolts and anchors shall be properly located and built into connection work. Bolts and anchors shall be preset by the use of templates or such other methods as may be required to locate the anchors and anchor bolts accurately.

Pulling-in irons shall be located opposite all conduit entrances into structures to provide a strong, convenient attachment for pulling-in blocks when installing cables. Pulling-in irons shall be set directly into the concrete walls of the structure.

115-3.5 Installation of ladders. Ladders shall be installed such that they may be removed if necessary. Mounting brackets shall be supplied top and bottom and shall be cast in place during fabrication of the structure or drilled and grouted in place after erection of the structure.

115-3.6 Removal of sheeting and bracing. In general, all sheeting and bracing used to support the sides of trenches or other open excavations shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a structure shall be withdrawn, unless otherwise directed, before more than 6 inches of material is placed above the top of the structure and before any bracing is removed. Voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose or otherwise as may be approved.

The RPR may direct the Contractor to delay the removal of sheeting and bracing if, in his judgment, the installed work has not attained the necessary strength to permit placing of backfill.

115-3.7 Backfilling. After a structure has been completed, the area around it shall be backfilled in horizontal layers not to exceed 6 inches in thickness measured after compaction to the density requirements in Item P-152. Each layer shall be deposited all 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.

Backfill shall not be placed against any structure until approval is given by the RPR. In the case of concrete, such approval shall not be given until tests made by the laboratory under supervision of the RPR establish that the concrete has attained sufficient strength to provide a factor of safety against damage or strain in withstanding any pressure created by the backfill or the methods used in placing it.

Where required, the RPR may direct the Contractor to add, at his own expense, sufficient water during compaction to assure a complete consolidation of the backfill. The Contractor shall be responsible for all damage or injury done to conduits, duct banks, structures, property or persons due to improper placing or compacting of backfill.

115-3.8 Connection of duct banks. To relieve stress of joint between concrete-encased duct banks and structure walls, reinforcement rods shall be placed in the structure wall and shall be formed and tied into duct bank reinforcement at the time the duct bank is installed.

115-3.9 Grounding. A ground rod shall be installed in the floor of all concrete structures so that the top of rod extends 6 inches above the floor. The ground rod shall be installed within one foot of a corner of the concrete structure. Ground rods shall be installed prior to casting the bottom slab. Where the soil condition does not permit driving the ground rod into the earth without damage to the ground rod, the Contractor shall drill a 4-inch diameter hole into the earth to receive the ground rod. The hole around the ground rod shall be filled throughout its length, below slab, with Portland cement grout. Ground rods shall be installed in precast bottom slab of structures by drilling a hole through bottom slab and installing the ground rod. Bottom slab penetration shall be sealed watertight with Portland cement grout around the ground rod.

A grounding bus of 4/0 bare stranded copper shall be exothermically bonded to the ground rod and loop the concrete structure walls. The ground bus shall be a minimum of one foot above the floor of the structure and separate from other cables. No. 2 American wire gauge (AWG) bare copper pigtailed shall bond the grounding bus to all cable trays and other metal hardware within the concrete structure. Connections to the grounding bus shall be exothermic. If an exothermic weld is not possible, connections to the grounding bus shall be made by using connectors approved for direct burial in soil or concrete per UL 467. Hardware connections may be mechanical, using a lug designed for that purpose.

115-3.10 Cleanup and repair. After erection of all galvanized items, damaged areas shall be repaired by applying a liquid cold-galvanizing compound per MIL-P-21035. Surfaces shall be prepared and compound applied per the manufacturer's recommendations.

Prior to acceptance, the entire structure shall be cleaned of all dirt and debris.

115-3.11 Restoration. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. The Contractor shall restore all disturbed areas equivalent to or better than their original condition. All sodding, grading and restoration shall be considered incidental to the respective Item L-115 pay item.

The Contractor shall grade around structures as required to provide positive drainage away from the structure.

Areas with special surface treatment, such as roads, sidewalks, or other paved areas shall have backfill compacted to match surrounding areas, and surfaces shall be repaired using materials comparable to original materials.

Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This

FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

After all work is completed, the Contractor shall remove all tools and other equipment, leaving the entire site free, clear and in good condition.

115-3.12 Inspection. Prior to final approval, the electrical structures shall be thoroughly inspected for conformance with the plans and this specification. Any indication of defects in materials or workmanship shall be further investigated and corrected. The earth resistance to ground of each ground rod shall not exceed 25 ohms. Each ground rod shall be tested using the fall-of-potential ground impedance test per American National Standards Institute / Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81. This test shall be performed prior to establishing connections to other ground electrodes.

115-3.13 Manhole elevation adjustments. Not used this project.

115-3.14 Duct extension to existing ducts. Where existing concrete encased ducts are to be extended, the duct extension shall be concrete encased plastic conduit. The fittings to connect the ducts together shall be standard manufactured connectors designed and approved for the purpose. The duct extensions shall be installed according to the concrete encased duct detail and as shown on the plans.

METHOD OF MEASUREMENT

No separate measurement shall be made for relocation of Electrical manholes and junction structures. Measurement of these items is described in P-101.

BASIS OF PAYMENT

No separate payment shall be made for relocation of Electrical manholes and junction structures. Payment of these items is described in P-101.

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 National Standards Institute / Insulated Cable Engineers Association (ANSI/ICEA)

ANSI/IEEE STD 81 IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System

Advisory Circular (AC)

AC 150/5345-7 Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits

AC 150/5345-26 Specification for L-823 Plug and Receptacle, Cable Connectors

AC 150/5345-42 Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories

AC 150/5340-30 Design and Installation Details for Airport Visual Aids

AC 150/5345-53 Airport Lighting Equipment Certification Program

Commercial Item Description (CID)

A-A 59544 Cable and Wire, Electrical (Power, Fixed Installation)

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 A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A897	Standard Specification for Austempered Ductile Iron Castings
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C206	Standard Specification for Finishing Hydrated Lime

FAA Engineering Brief (EB)

EB #83	In Pavement Light Fixture Bolts
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Mil Spec

MIL-P-21035	Paint High Zinc Dust Content, Galvanizing Repair
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National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
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END OF ITEM L-115

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Item L-125 Installation of Airport Lighting Systems

DESCRIPTION

125-1.1 This item shall consist of airport lighting systems furnished and installed in accordance with this specification, the referenced specifications, and the applicable advisory circulars (ACs). The systems shall be installed at the locations and in accordance with the dimensions, design, and details shown in the plans. This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the RPR.

EQUIPMENT AND MATERIALS

125-2.1 General.

a. Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified under the Airport Lighting Equipment Certification Program in accordance with AC 150/5345-53, current version. FAA certified airfield lighting shall be compatible with each other to perform in compliance with FAA criteria and the intended operation. If the Contractor provides equipment that does not perform as intended because of incompatibility with the system, the Contractor assumes all costs to correct the system for to operate properly.

b. Manufacturer's certifications shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

c. All materials and equipment used shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be clearly made with arrows or circles (highlighting is not acceptable). The Contractor shall be responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be submitted in electronic PDF format, tabbed by specification section. The RPR reserves the right to reject any or all equipment, materials or procedures, which, in the RPR's opinion, does not meet the system design and the standards and codes, specified herein.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

All LED light fixtures, with the exception of obstruction lighting (AC 150/5345-43) must be warranted by the manufacturer for a minimum of 4 years after date of installation inclusive of all electronics. Obstruction lighting warranty is set by the individual manufacturer.

125-2.2 Conduit/Duct. Conduit shall conform to Specification Item L-110 Airport Underground Electrical Duct Banks and Conduits.

125-2.3 Cable and Counterpoise. Cable and Counterpoise shall conform to Item L-108 Underground Power Cable for Airports.

125-2.4 Tape. Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88 respectively, as manufactured by 3M Company or an approved equal.

125-2.5 Cable Connections. Cable Connections shall conform to Item L-108 Installation of Underground Cable for Airports.

125-2.6 Flowable backfill. Flowable material used to backfill trenches for trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

125-2.7 Runway and Taxiway Lights. Runway and taxiway lights shall conform to the requirements of AC 150/5345-46. Lamps shall be of size and type indicated, or as required by fixture manufacturer for each lighting fixture required under this contract. Filters shall be of colors conforming to the specification for the light concerned or to the standard referenced. Taxiway lights to be relocated shall be reused.

Lights

Type	Class	Mode	Style	Option	Base	Filter	Transformer	Notes
L-861T(L)	2	1	NA	4	L-867	NA	L-830	24", LED, No Heater

125-2.8 Runway and Taxiway Signs. Runway and Taxiway Guidance Signs should conform to the requirements of AC 150/5345-44.

Signs

Type	Size	Style	Class	Mode	Notes
L-858(L)	2	2	2	2	LED

125-2.9 Runway and Taxiway Sign Panel Replacement. Runway and Taxiway Guidance Signs panels to be replaced, shall conform to the requirements of AC 150/5345-44. Contractor to field verify sign manufacturer to order proper sign panel for replacement.

125-2.10 LED Precision Approach Path Indicator (PAPI). Not used this project.

125-2.11 Light Base and Transformer Housings. Light Base and Transformer Housings should conform to the requirements of AC 150/5345-42. Light bases shall be Type L-867 or L-868, Class 1A, Size B (or as shown on the plans), and shall be provided as indicated or as required to accommodate the fixture or device installed thereon. Base plates, cover plates, and adapter plates shall be provided to accommodate various sizes of fixtures.

125-2.12 Isolation Transformers. Isolation Transformers shall be Type L-830, size as required for each installation. Transformer shall conform to AC 150/5345-47.

125-2.13 Miscellaneous Lighting Equipment. In addition to the fixture requirements, the Contractor shall provide the following miscellaneous lighting equipment:

Elevated LED Medium Intensity Taxiway Light (MITL)

10 Spare MITL, L-861T(L) complete light fixtures (include stem, base plate, and isolation transformer)

5 Spare MITL, L-861T(L) light engines (fixture only)

20 Spare Frangible Couplings

2 Spare Isolation Transformers

LED Signs

10 Spare Frangible Couplings

2 Spare Isolation Transformers (1 for 1 mod, 1 for 2 mod)

2 Spare Light Engines, or Light Source (enough to fully relight a 2 mod sign)

INSTALLATION

125-3.1 Installation. Cable installation shall be in conformance with Item L-108 of these Specifications. Duct installation shall be in conformance with Item L-110 of these Specifications. The maximum number of voltage of cables installed in each conduit or duct, and the current carrying capacity of each cable, shall be in accordance with the N.E.C., or the code of the local agency having jurisdiction, whichever is more restrictive.

The Contractor shall make sure that the duct is open, continuous, and clear of debris before installing cable. The cable shall be installed in a manner to prevent harmful stretching of the conductor, injury to the insulation. Or damage to the outer protective jacket. The ends of all cables shall be sealed with moisture-seal tape before pulling into the conduit and it shall be left sealed until final connections are made. Where more than one cable is to be installed in a duct under the same project, all cables shall be pulled in the duct at the same time. The pulling of a cable through ducts or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes or bends. A lubricant recommended for the type of cable being installed shall be used where pulling lubricant is required.

Contractor shall replace and sheared bolts with new, including re-threading the bolt holes on existing base cans, incidental to the bid item.

The Contractor shall furnish, install, connect, and test all equipment, accessories, conduit, cables, wires, buses, grounds, and support items necessary to ensure a complete and operable airport lighting system as specified here and shown in the plans.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and state and local code agencies having jurisdiction.

The Contractor shall install the specified equipment in accordance with the applicable advisory circulars and the details shown on the plans.

125-3.2 Restoration. All area disturbed by the trenching, storing of dirt/soil/material, cable laying, pad construction, fixture installation, and other work shall be restored to an acceptable condition as approved by the Engineer and shall be incidental to the respective bid item.

125-3.3 Removal of existing fixtures, signs, electrical handhole and junction cans. The Contractor shall carefully remove fixtures, signs, electrical handholes and junction cans as shown on the Plans. This shall include removing the corresponding base cans, handholes, sign pads or foundations.

This bid item shall include restoration of the affected area to match the existing surrounding area, including acceptable fill and seeding, along with other incidentals, as necessary. The Contractor shall coordinate with the Airport for a salvage area where removed fixtures and signs (including isolation transformers) shall be stored. When the last removed item is placed in the salvage area, the Airport shall have 5 business days to go through and salvage any item(s) for spare parts. Anything left in the salvage area after the 5 business days become property of the Contractor and shall be disposed of off-site. The Contractor shall restore the salvage area to previous conditions after removing the removed items off-site.

125-3.4 Relocation of Existing Fixtures. The relocated taxiway fixtures shall be removed and stored until reinstalled. The existing fixtures, stems, isolation transformers and base plates on a new base can, shall be

used at the locations shown on the Plans. New base cans shall be installed as shown on the details. Any damage to relocated fixtures shall be repaired and will be incidental to the bid item.

125-3.5 Relocate Guidance Signs. Signs shown to be relocated shall be removed carefully to protect the sign panels, frame, and isolation transformer. The signs shall be reinstalled at the new location as shown on the plans, reusing the sign frame, panels, and isolation transformer. The rest of the sign installation shall be using new materials and built as shown on the details. Contractors shall restore the impacted areas to match surrounding grade. Restoration is incidental to this bid item. Any damage to relocated signs shall be repaired and will be incidental to the bid item.

125-3.6 Install Elevated Fixtures, and Signs. Water, debris, and other foreign substances shall be removed prior to installing fixture base and light. Where called for on the Plans to install new fixtures or signs, this work shall include the installation of new light bases and sign foundation pads, isolation transformers, connectors, grounding wire, ground rods and all miscellaneous equipment and incidental necessary to provide a new fully functional sign or light of the type indicated on the Plans. All components used in this item shall be new and shall be installed as shown on the Plans.

125-3.7 Guidance Sign Panel Replacement. Where called for on the Plans to replace sign legend panels, this work shall include removing the existing panel and the installation of the new sign panel, and incidentals necessary to provide a fully functional sign as shown on the Plans.

Signs shown for panel replacement shall have the Contractor to field verify the sign to verify sign manufacturer. The sign panel shall be replaced per manufacturer's recommendations.

125-3.8 Miscellaneous Lighting Equipment. The Contractor shall deliver the miscellaneous lighting equipment to the Airport as specified above.

125-3.9 Testing. The Contractor shall furnish all necessary equipment and appliances for testing the underground cable circuits after installation. The Contractor shall test and demonstrate to the satisfaction of the Engineer the following:

- A. That all lighting power and control circuits are continuous and free from shorts.
- B. That all circuits are free from unspecified grounds and that the initial insulation resistance to ground of all non-grounded series circuits is not less than 500 megohms. The circuits shall maintain a minimum 50 megohms for the duration of the 12 month warranty period.
- C. That the insulation resistance to ground of all non-grounded conductors of multiple circuits is not less than 50 megohms.
- D. That all circuits are properly connected in accordance with applicable wiring diagrams.
- E. That all circuits are operable. Tests shall be conducted that include operating each control not less than ten (10) times and the continuous operation of each lighting and power circuit for not less than ½ hour.
- F. The insulation to resistance to ground test shall be conducted using a digital megohm meter that has the ability to use test voltage of 1,000V.

125-3.10 Shipping and Storage. Equipment shall be shipped in suitable packing material to prevent damage during shipping. Store and maintain equipment and materials in areas protected from weather and physical damage. Any equipment and materials, in the opinion of the RPR, damaged during construction or storage shall be replaced by the Contractor at no additional cost to the owner. Painted or galvanized surfaces that are damaged shall be repaired in accordance with the manufacturer's recommendations.

METHOD OF MEASUREMENT

125-4.2 Relocated Elevated LED MITL on new base can will be measured per each installed, completed, and accepted by the RPR.

125-4.1 Install New Airfield Guidance Sign with new sign pad will be measured per each installed, completed, and accepted by the RPR.

125-4.2 Procure and Install Airfield Guidance Sign Panel on Existing Sign will be measured per each sign panel replaced and accepted by the RPR.

125-4.3 Relocate Salvaged Sign Housing, Procure and Install New Panel will be measured per each, installed panel, completed and accepted by the RPR.

125-4.4 Remove and Salvage guidance sign will be measured per each, removed sign, restoration and accepted by the RPR.

125-4.5 New Elevated LED MITL on new base can will be measured per each installed, completed, and accepted by the RPR.

125-4.6 Temporary Threshold Lighting will be measured per lump sum, completed, and accepted by the RPR upon restoration of the original threshold lighting configuration.

BASIS OF PAYMENT

125-5.1 New LED L-858(L) Airfield Guidance Sign with new pad will be paid at the Contract unit price per each item installed and accepted by the RPR. This price shall include full compensation to furnish all materials, labor, equipment, excavation, preparation, assembly, associated light base, concrete, cover, hardware, fixture, light engine, isolation transformer, wiring, grounding, testing, incidentals, and associated items as are applicable for a complete and operational installation.

125-5.2 Procure and Install Airfield Guidance Sign Panel on Existing Sign will be paid at the Contract unit price per each panel replaced and accepted by the RPR. This price shall include full compensation to furnish new sign panels, remove old panels, preparation, hardware, labor, equipment, incidentals, and associated items as applicable for a replaced panel and an operational sign.

125-5.3 Relocate Salvaged Sign Housing, Procure and Install New Panel will be paid at the Contract unit price per each sign removed, relocated, and area restored and accepted by the RPR. This price shall include full compensation to furnish labor, preparation, equipment, hardware, removal, restoration, installation at the new location, furnish new sign panels, remove old panels, incidentals and associated items as applicable to relocate the existing sign to the new location with a complete and operational sign with replaced panels.

125-5.4 Removal and Salvage Airfield Guidance Sign will be paid at the Contract unit price per each, removed, restored, and accepted by the RPR. This price shall include full compensation to furnish all materials, labor, equipment, preparation, disassembly, removal of associated foundations, incidentals, and associated items as are applicable for a complete removal and restoration of the area, accepted by the Engineer.

125-5.5 LED Medium Intensity Taxiway Edge Light, L-861T(L) will be paid at the Contract unit price per each item installed and accepted by the RPR. This price shall include full compensation to furnish all materials, labor, equipment, excavation, preparation, assembly, associated light base, concrete, cover, hardware, fixture, light source, isolation transformer, wiring grounding, testing, incidentals, and associated items as are applicable for a complete and operational installation.

125-5.6 Temporary Threshold Lighting will be paid at the Contract unit price per lump sum, furnished and delivered by the Contractor. This price shall include full compensation to furnish all materials, labor, incidentals, and associated items as are applicable to complete this item.

Payment will be made under:

Item 125-5.1	Install New Airfield Guidance Sign on New Base, per each.
Item 125-5.2	Procure and Install Airfield Guidance Sign Panel on Existing Sign, per each
Item 125-5.3	Relocate Salvaged Sign Housing, Procure and Install New Panel per each
Item 125-5.4	Remove and Salvage Airfield Guidance Sign, per each
Item 125-5.5	LED Medium Intensity Taxiway Edge Light, L-861T(L), per each
Item 125-5.6	Temporary Threshold Lighting, 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.

Advisory Circulars (AC)

AC 150/5340-18	Standards for Airport Sign Systems
AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-5	Circuit Selector Switch
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-28	Precision Approach Path Indicator (PAPI) Systems
AC 150/5345-39	Specification for L-853, Runway and Taxiway Retroreflective Markers
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5345-44	Specification for Runway and Taxiway Signs
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Specification for Series to Series Isolation Transformers for Airport Lighting Systems
AC 150/5345-51	Specification for Discharge-Type Flashing Light Equipment
AC 150/5345-53	Airport Lighting Equipment Certification Program

Engineering Brief (EB)

EB No. 67	Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures
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END OF ITEM L-125

Item NS-101 Retaining Wall

DESCRIPTION

101-1.1 This item consists of cast-in-place concrete composed of Portland cement concrete with reinforcement constructed on a prepared underlying surface in accordance with these specifications and in conformity to the dimensions and typical cross-sections shown on the plans.

MATERIALS

101-2.1 Concrete Mixture. Concrete used for the retaining wall shall meet the requirements of P-610, Concrete for Miscellaneous Structures.

101-2.2 Water. ASTM C94. Provide water that is clean, fresh, and free from deleterious substance.

101-2.3 Reinforcing Steel. Contractor is required to submit product data for reinforcing steel and supports for review and approval. Additionally, Contractor is required to submit shop drawings for reinforcing steel.

a. Shop Drawing Submittal. Comply with ACI SP-066. Include placing drawings with detail fabrication, bending, and placement. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.

b. Bars. ASTM A615, Grade 60, deformed.

c. Bar Supports. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars in place. Manufacture bar supports in accordance with CRSI Class 1, plastic protected or CRSI Class 2, stainless steel protected.

101-2.4 Curing Materials. Contractor is required to submit product data for the following curing materials for review and approval.

a. Moisture-Retaining Cover. ASTM C171, polyethylene film burlap-polyethylene sheet.

b. Membrane Curing Compound. ASTM C1315, Type 1, Class A. Clear, solvent-borne, membrane-forming, curing and sealing compound, VOC compliant.

101-2.5 Form-facing Materials. Provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints. Contractor is required to submit product data for form-facing material, form lines, form ties, and form-release agent for review and approval. Additionally, Contractor is required to submit shop drawings for formwork.

a. Plywood, metal, or other approved panel materials.

b. Formwork Shop Drawing Submittal. Submit shop drawings prepared by, and signed and sealed by, a qualified professional engineer responsible for their preparation, detailing fabrication, assembly, and support of forms. For exposed vertical concrete walls, indicate dimensions and form tie locations. Indicate dimension and locations of construction and movement joints required to construct the structure in accordance with ACI 301. Indicate form liner layout and form liner termination details. Indicate proposed schedule and sequence of stripping forms, shoring removal, and reshoring installation and removal.

101-2.6 Expansion Joint and Joint Sealants. Contractor is required to submit product data for the following joint materials for review and approval. Additionally, Contractor is required to submit shop drawings for construction joint layout for review and approval.

a. **Filler.** ASTM D1751, Type I. Preformed sponge rubber.

b. **Sealant.** ASTM C920, Type S, Grade NS, Class 35. Polyurethane-based, non-sag elastomeric sealant.

CONSTRUCTION METHODS

101-3.1 Examination. Before placing concrete verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed. Do not proceed until unsatisfactory conditions have been corrected. Notify Engineer and testing and inspection agencies 24 hours prior to commencement of concrete placement.

101-3.2 Preparation. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to the testing agency, including: daily access to the Work; incidental labor and facilities necessary to facilitate tests and inspections; secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples; and security of test samples and for testing and inspection equipment at Project site.

101-3.3 Form Construction. Comply with ACI 347 and ACI 303R as applicable to the sizes, shapes, lines, and dimensions shown, and to accurate alignment, locations, grades, levels, and plumbness. Coat form contact surfaces with form-coating compound before reinforcement is placed. Set and build into the work anchorage devices and other embedded items required for other work that is attached to, or supported by, concrete. Moisten wood forms immediately before placing concrete where wood forms are used. Contractor is required to submit shop drawings of formwork for review and approval as noted in Paragraph 101-2.7b.

101-3.4 Installation of Embedded Items.

a. **Anchorage devices.** Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.

- 1) **Embedded items:** Use setting drawings, templates, diagrams, instructions, and direction furnished with items to be embedded.
- 2) **Anchor rods:** Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303. Contractor is responsible for coordination with blast fence manufacturer for anchorage locations. Submit anchor locations and loads to Engineer for review and approval prior to pouring concrete.

101-3.5 Reinforcement. Reinforcement shall be accurately positioned on supports, spacers, hangers, or other reinforcement, and shall be secured in place with wire ties or suitable clips. Tolerances shall be as stipulated in ACI 117 and ACI 318 unless otherwise indicated. Contractor is required to submit shop drawings of reinforcement layout for review and approval as noted in Paragraph 101-2.5a.

101-3.6 Joints. Joints shall be constructed as shown on the plans and in accordance with these requirements. All joints shall be constructed with their faces perpendicular to the surface plane of concrete. Contractor is required to submit shop drawings of joint layout for review and approval as noted in Paragraph 101-2.8.

a. **Control joints.** Control joints shall be installed at the locations and spacing as shown on the plans. Install control joints to the dimensions required by forming a groove in the wall while the concrete is still plastic or by sawing a groove into the concrete surface after concrete has hardened. When the groove is formed in plastic concrete the sides of the grooves shall be finished even and smooth with an edging tool. If an insert material is used, the installation and edge finish shall be according to the manufacturer's

instructions. The groove shall be finished or cut clean so that spalling will be avoided at intersections with other joints. Place joints perpendicular to main reinforcement.

b. Expansion joints. Expansion joints shall be installed as shown on the plans. The premolded filler of the thickness as shown on plans shall extend for the full depth and width of the wall at the joint, except for space for sealant as shown on details. The filler shall be securely staked or fastened into position perpendicular to the proposed finished surface. A cap shall be provided to protect the top edge of the filler and to permit the concrete to be placed and finished. After the concrete has been placed and struck off, the cap shall be carefully withdrawn leaving the space over the premolded filler. The edges of the joint shall be finished and tooled while the concrete is still plastic. Any concrete bridging the joint space shall be removed for the full width and depth of the joint.

101-3.7 Placement. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. Deposit concrete to avoid segregation. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints. Contractor is required to submit placement sequence for structures with multiple placements for review and approval. Measure, batch, mix, and deliver ready-mixed concrete in accordance with ASTM C94 and furnish batch ticket information.

a. Consolidation. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

b. Limitations on placement. After placing concrete in forms, concrete shall not be moved laterally more than 5 feet. At any point in concrete conveyance, the free vertical drop of the concrete from one point to another or to the underlying surface shall not exceed 3 feet.

- 1) **Vertical members.** Placement of vertical members shall be planned such that each layer shall be placed while the previous layer is still soft, but the rate of placing concrete in forms shall not exceed 5 feet of vertical rise per hour unless calculations are submitted for approval demonstrating a greater rate is possible.

c. Cold and Hot Weather Placement.

- 1) **Cold Weather Placement.** Cold weather concreting shall comply with ACI 301 and ACI 306. Protect concrete work from physical damage or reduced strength that should be caused by frost, freezing actions, or low temperatures. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301. Do not use frozen materials or materials containing ice or snow. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- 2) **Hot Weather Placement.** Hot weather concreting shall comply with ACI 301 and ACI 305. Maintain concrete temperature at time of discharge not to exceed 95 deg F. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas. Plastic shrinkage cracking due to rapid evaporation of moisture shall be prevented. If necessary, wind screens shall be provided to protect concrete from an evaporation rate in excess of 0.2 psf per hour as determined in accordance with Figure 2.1.5 in ACI 305R.

101-3.8 Finishing Formed Surfaces. Concrete surface projections shall be removed from all formed surfaces. A power grinder shall be used, if necessary. Tie holes in formed surfaces shall be cleaned, wetted, and filled with patching mortar. The patches shall be finished flush and cured and shall match the texture and color of the adjacent concrete. After removing formwork, all exposed wall faces shall be sacked or rubbed with a rubber trowel or burlap cloth using cement mortar to achieve a homogenous appearance.

101-3.9 Curing. Comply with ACI 308.1. Immediately after finishing operations are completed, the entire surface of the newly placed concrete shall be cured for a 7-day cure period in accordance with one of the methods below. The concrete shall not be left exposed for more than 1/2 hour during the curing period.

a. Polyethylene Films. The entire concrete surface shall be covered with polyethylene sheeting. The units shall be lapped at least 18 inches and joints between sheets shall be sealed. The sheeting shall be placed and weighted to cause it to remain in contact with the surface and sides. The sheeting shall have dimensions that will extend at least twice the thickness of the foundation beyond the edge of the foundation. All tears, holes, and other damage shall be promptly repaired. Unless otherwise specified, the sheeting shall be maintained in place for 7 days after the concrete has been placed.

b. Membrane Curing. Membrane curing compound shall be sprayed at a coverage rate not exceeding that recommended by the manufacturer. Unformed surfaces shall be covered with curing compound within 30 minutes after final finishing. A second coat of curing compound shall be applied with the first coat has become tacky to the touch and shall be applied at right angles to the first coat. If forms are removed before the end of the specified curing period, curing compound shall be immediately applied to formed surfaces.

c. Curing in Cold Weather. The concrete shall be maintained at a temperature of at least 50 degrees F for a period of 72 hours after placing and a temperature above freezing for the remainder of the curing time.

101-3.10 Removing Forms. Unless otherwise specified, do not remove forms from freshly placed concrete until it has hardened sufficiently to permit removal without chipping, spalling, or tearing. After the forms have been removed, the concrete shall be cured as outlined in one of the methods indicated in paragraph 209-4.9. Major honeycombed work shall be considered as defective and shall be removed and replaced in accordance with Paragraph 101-4.11.

101-3.11 Concrete Surface Repairs. Repair and patch defective areas when approved by the Engineer. Patching mortar shall consist of 1 part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve. Mix the patching mortar using only enough water for handling and placing.

a. Formed Surfaces. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dries.

b. Unformed Surfaces. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions. After concrete has cured at least 14 days, correct high areas by grinding. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.

- 1) Defective areas.** Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and applying bonding

agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

- 2) **Other defective areas.** Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

c. **Structural repairs.** Perform structural repairs of concrete, subject to the Engineer's approval, using epoxy adhesive and patching mortar.

CONTRACTOR QUALITY CONTROL

101-4.1 Qualifications. Contractor shall submit qualification data for the following:

a. **Ready-mixed Concrete Manufacturer.** A firm experienced in manufacturing ready-mixed concrete products that complies with ASTM C94 requirements for production facilities and equipment.

b. **Laboratory Testing Agency.** A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.

c. **Field Quality-Control Testing Agency.** An independent agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

101-4.2 Material Certificates. Contractor shall submit material certificates for each of the following, signed by manufacturer: Cementitious materials, admixtures, curing compounds, bonding agents, adhesives, vapor retarders, semirigid joint filler, joint-filler strips, and repair materials.

101-4.3 Material Test Reports. Contractor shall submit material test reports for each of the following from a qualified testing agency: Portland cement, fly ash, slag cement, blended hydraulic cement, and aggregates.

101-4.4 Field Quality Control. Field quality control includes special inspections and testing.

a. **Special inspections.** Contractor will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports. Special inspections are per Oregon Structural Specialty Code (OSSC) Chapter 17. Special inspections include but are not limited to:

- 1) Inspection of subgrade below foundations per OSSC Table 1705.6.
- 2) Inspection of reinforcing steel prior to concrete placement per OSSC Table 1705.3.
- 3) Verification of use of required design mixture and concrete placement, including conveying and depositing per OSSC Table 1705.3.

b. **Testing Agency.** Contractor will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports. The testing agency is required to immediately report to the Engineer, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents. The testing agency is to report the results of tests and inspection, in writing, to Owner, Engineer, Contractor, and concrete manufacturer within 48 hours of inspections and tests.

- 1) **Test reports.** Test reports to include reporting requirements of ASTM C31, ASTM C39, and ACI 301 including the following as applicable:

- i. Project name.

- ii. Name of testing agency.
- iii. Names and certification numbers of field and laboratory technicians performing inspections and testing.
- iv. Name of concrete manufacturer.
- v. Date and time of inspection, sampling, and field testing.
- vi. Date and time of concrete placement.
- vii. Location in Work of concrete represented by samples.
- viii. Date and time sample was obtained.
- ix. Truck and batch ticket numbers.
- x. Design compressive strength at 28 days.
- xi. Concrete mixture designation, proportions, and materials.
- xii. Field test results.
- xiii. Type of fracture and compressive break strengths at 7 days and 28 days.

2) Concrete tests. Testing of composite samples of fresh concrete obtained in accordance with ASTM C172 to be performed in accordance with the following requirements:

- i. Testing frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
- ii. Slump: Per ASTM C143. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
- iii. Air content: Per ASTM C231 pressure method of normal-weight concrete. One test of each composite sample, but not less than one test for each day's pour of each concrete mixture.
- iv. Concrete temperature: Per ASTM C1064. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
- v. Compression test specimens: Per ASTM C31. Cast and laboratory cure two sets of three 6-inch by 12-inch or 4-inch by 8-inch cylinder specimens for each composite sample. Cast, initial cure, and field cure two sets of three standard cylinder species for each composite sample.
- vi. Compressive strength tests: Per ASTM C39. Test one set of three laboratory-cured specimens at 7 days and one set of two specimens at 28 days. A compressive strength test to be the average compressive strength from a set of two specimens obtained from the same composite sample and tested at age indicated.
- vii. Acceptance: The strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive strength test value falls below specified compressive strength by more than 500 psi.
- viii. Additional tests: Testing and inspecting agency to make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met. Additional testing and inspecting, at

Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

- ix. Corrections: Correct deficiencies in the Work that test reports and inspections indicated do not comply with the Contract Documents.

METHOD OF MEASUREMENT

101-5.1 The quantity retaining wall will be determined by measurement of the number of **linear feet of wall** actually constructed and accepted by the RPR as complying with the plans and specifications.

BASIS OF PAYMENT

101-6.1 Payment shall be made at the contract unit price per linear foot for the retaining wall. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

Payment will be made under:

Item NS 101-7.1	Retaining Wall - per linear foot
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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 A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
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 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 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 C920	Standard Specification for Elastomeric Joint Sealants
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1064	Standard Test method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1077	Standard Practices for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1315	Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM E329	Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

American Concrete Institute (ACI)

ACI 301	Specifications for Structural Concrete
ACI 303R	Guide to Cast-in-Place Architectural Concrete Practice
ACI 305R	Guide to Hot Weather Concreting
ACI 306R	Guide to Cold Weather Concreting
ACI 308R	Guide to External Curing of Concrete
ACI 318	Building Code Requirements for Structural Concrete and Commentary
ACI 347R	Guide to Formwork for Concrete
ACI 117	Specification for Tolerances for Concrete Construction and Materials

END OF ITEM NS-101

NS-102 JET BLAST FENCE FOR TAXI/BREAKAWAY VELOCITIES**PART 1 – GENERAL**1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the design, fabrication, erection, and certification for a complete Jet Blast Deflector/Fence (hereafter referred to as JBD).
- B. The JBD manufacturer shall furnish the final design, material, labor, and equipment to fabricate and erect the JBD.
- C. At project closeout, the JBD manufacturer shall furnish As-Built Drawings of the installation, Operation and Maintenance Guidelines, and a Performance Guarantee/Warranty Certificate approving the materials and installation.

1.3 SUBMITTALS

- A. General: Submit each item in this article according to the conditions of the Contract and Division 01 Specification Sections.
- B. Quality Assurance Documents: The JBD manufacturer shall submit all quality assurance requirements listed in Sections 1.4-B and 1.4-C (Quality Assurance) for approval.
- C. Upon execution of contract, the approved JBD manufacturer shall submit the following:
 - 1. Shop Drawings: Provide assembly and installation drawings detailing location and overall dimensional information, materials, and finish details of the JBD. Drawings shall include details of the structural frame members and major assembly/subassembly details for the JBD structure, including plans, elevations, and sections. Show anchorage and accessory items. Drawings shall be stamped by a qualified Professional Engineer licensed in the State of Oregon.
 - 2. Foundation Design Criteria: JBD manufacturer shall furnish the anchor loads and locations, as well as all miscellaneous requirements for foundation design.
 - 3. Structural Calculations: Provide structural design calculations for the JBD structure, including structural connections, deflecting surfaces, and anchors, prepared and stamped by a qualified Professional Engineer licensed in the State of Oregon or certified by the Structural Engineering Certification Board. Calculations shall be submitted for each major frame system and shall comply with current IBC standards.
 - 4. Professional Engineer Qualifications: Documentation of past experience in accordance with Section 1.4-B (Quality Assurance) shall be provided with the submittal package.
- D. At project closeout, the approved JBD manufacturer shall submit the following:

1. Mill Certificates: Provide mill certificates for all steel used in the manufacturing of the JBD.
2. Performance Guarantee/Warranty Certificate: Provide a written copy of the manufacturer's guarantee or warranty certifying the workmanship, materials, installation, and performance of the JBD for a period of one (1) year. See Section 3.3 (Erection) for JBD manufacturer supervision requirements.
3. As-Built Drawings: Submit as-built drawings of completed work in accordance with the requirements of the specification as indicated in Division 01.
4. Operation and Maintenance Manual: Provide an operation and maintenance manual for the JBD and associated components, including inspection intervals and guidelines.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: The JBD structural members, fasteners, deflecting surfaces, and anchorage shall be procured from a single source responsible for design, manufacture, supply, and issuance of performance guarantee/warranty certificate in accordance with Section 1.3-D (Submittals) of this specification.
- B. Professional Engineer Qualifications: Drawings and calculations shall be stamped by a Professional Engineer with experience of at least five (5) past jet blast deflector projects rated for taxi/breakaway operations.
- C. To be approved as a manufacturer, the following information shall be submitted-to and approved-by the Owner prior to submitting a bid (see Section 1.3-B).
 1. Results of full-scale field proof tests in which the proposed JBD was subjected to the specified aircraft operating at taxi/breakaway power settings. Computer simulations are not an acceptable alternative to full-scale field tests.
 2. Results of full-scale smoke dispersion tests demonstrating that smoke and gases are deflected in an upward direction, with evidence of no smoke dispersal behind the deflector. Video footage and test report shall be provided.
 3. Evidence of satisfactory operation of at least five (5) installations of the proposed model, each with at least five (5) years of actual field service of continued use with similar aircraft, power settings, and engines.
 4. Detailed structural design analysis of the proposed JBD showing loads and stresses in structural members, bolted connections, deflecting surfaces, and anchorage, using the worst-case aircraft velocity profiles as the calculated pressure for load calculations. Structural calculations shall comply with current IBC standards.
 5. Design drawings of the proposed JBD demonstrating that the deflector meets all design and material specifications listed in Parts 1 and 2 of this specification.
 6. Evidence that the JBD designer/manufacturer is ISO 9001:2015 registered.

7. Evidence that the JBD designer/manufacturer has a combined commercial general liability and excess coverage of \$10 Million (minimum) with products/completed operations coverage. The JBD designer/manufacturer shall also provide evidence of professional liability coverage of \$1 Million (minimum).

1.5 DESIGN CRITERIA

A. Aircraft

1. This JBD shall be designed for governing aircraft Cessna Citation XLS operating at taxi/breakaway power settings. Design exhaust velocity is 140 mph and shall be converted to pressure using standard day conditions. The JBD shall be designed to allow the operation of aircraft, with no aircraft tail closer than 35 feet from the JBD leading edge and no engine nozzle closer than 60 feet from the JBD leading edge.

B. JBD Description

1. The JBD deflecting surface shall be vertical, cantilevered, corrugated type with corrugations running in the horizontal direction (see Note 1). Deflecting surfaces may not use concrete or perforated (or expanded) metal (see Notes 2 and 3). Deflecting surfaces shall be rigidly supported by bolted structural steel post assemblies spaced at 6 LF (maximum) centers. Deflecting surface panels shall be supported by single-piece, steel post assemblies. The JBD shall be LYNNCO Type V12-6 or an approved equal. Any alternatives shall strictly comply with all of Section 1.4 (Quality Assurance) conditions in order to qualify as an approved equal.

2. Notes:

- a. Deflecting surfaces composed of flat metal or corrugations of lower section modulus than specified (see Section 2.2-B) shall not be used due to potential 'oil-canning' effects, which may lead to early fatigue failure.
- b. Blast deflectors/fences composed of concrete shall not be used due to the potential for surface spalling, which may lead to Foreign Object Debris/Damage (FOD) hazards.
- c. Perforated or expanded metal (a.k.a. mesh) deflectors/fences shall not be used since passage of high velocity engine exhaust through the deflector is not conducive to full protection immediately behind the mesh, especially at lower elevations. In the case of expanded metal, there is potential for entrained particulate (sand, stone, etc.) to pass through the deflector near ground level and become airborne.

- C. JBD Performance: The JBD shall reduce jet blast velocities at ground level behind the JBD to a maximum of 35 mph. The jet blast envelope shall be deflected upward at a minimum angle of 60° under no wind conditions.

- D. Layout: As shown on Drawing M102.

- E. Height: Nominal 12' 5" plus retaining concrete wall.

- F. Foundation: The JBD shall be incorporated into the reinforced retaining wall system at the airport property boundary. Thus, JBD anchorage shall be verified for strength/stability, taking into account the retaining wall design and reinforcing steel configuration. Retaining wall designer and JBD designer/supplier shall sign off on coordinated design details prior to construction.
- G. Connections: For ease of assembly and to minimize construction time on the active airfield, all field connections shall be bolted. Field-welding is not permitted. The design of the structure shall maintain a reasonable degree of modularity should components require future repair or replacement.
- H. FOD Considerations: Fastener assemblies used in the construction of the JBD shall include adequate locking mechanism(s) to prevent from working loose during continued, normal use of the structure (subject to JBD manufacturer maintenance guidelines).
- I. Loading: The JBD shall be designed to withstand taxi/breakaway exhaust velocities from all aircraft specified in Section 1.5-A. Engine exhaust velocity shall be converted into pressure using standard day conditions and shall be applied normal to all deflecting surfaces. Code-level wind conditions shall also be assessed to identify governing design criteria for all JBD structural components.

PART 2 – PRODUCTS

2.1 STRUCTURE

- A. Vertical Post Assemblies: Structural steel shapes shall consist of ASTM A992 (minimum strength) steel and shall be cut and punched, as required. All field connections shall be bolted (no field-welding permitted). After shop fabrication, all individual structural steel assemblies shall be hot-dip galvanized to a minimum of 2 oz/ft² per ASTM A123.
- B. Deflecting Surface Sheets: Corrugated steel sheets shall be formed from 16-gauge (minimum) ASTM A924 sheet steel with 2 oz/ft² hot-dip galvanized coating per ASTM A653. Section modulus of formed sheets shall be a minimum of 0.196 in³/ft and shall be attached to frames with 3/8”-diameter bolts using half oval washers.
- C. Fastener assemblies shall include adequate locking properties and shall be designed to withstand direct jet blast. Where applicable, the following shall be used as a minimum for strength, locking, and anti-corrosion characteristics:

Fastener Component	Bolt Nom. Diameter ≥ ½”	Bolt Nom. Diameter < ½”
Bolts:	ASTM A449 or SAE J429 Grade 5	ASTM F593G
Flat Washers:	ASTM F436 (Where Applicable)	316 Stainless
Lock Washers:	ASME B18.21.1 (Where Applicable)*	N/A
Nuts:	ASTM A563*	ASTM F594G (Nylon-Insert Locking)
Finish:	ASTM A153 or ASTM F2329	ASTM A380 (Stainless Steel)

Fastener Component	Bolt Nom. Diameter $\geq \frac{1}{2}$ "	Bolt Nom. Diameter $< \frac{1}{2}$ "
Half Oval Washers:	ASTM A36 steel, hot-dip galvanized per ASTM A123 to 2 oz/ft ²	
*Nuts and/or washers shall incorporate locking component to withstand vibrations induced by direct jet blast, thus preventing FOD; configuration shall be determined by the supplier using proven methods. Technical details of locking component shall be submitted within item 1.3-C.3 of these specifications.		

- D. Anchor Bolts: Cast-in-place anchors shall be designed per ACI 318-14. Where applicable, load capacities for post-installed anchors in concrete shall be based on testing in accordance with ACI 355.2, ACI 355.4, or ASTM E488. Anchors shall be supplied by the JBD manufacturer. Any post-installed anchors shall not be installed in concrete that has cured for less than 7 days.
- E. Galvanizing Repair Paint: Re-galvanize damaged areas on hot-dip galvanized steel using high-zinc-content paint—greater than 93 percent pure zinc by weight—complying with Mil-P-21035 and Mil-P-26915.

2.2 FABRICATION, GENERAL

- A. Produce metal fabrications from materials of approved size, thickness, and shapes as required. Work to dimensions indicated on approved shop drawings using proven details of fabrication and support.
- B. All fabrications shall be produced with precise angles and straight, sharp edges.
- C. Material shall be cut, sheared, drilled, and/or punched cleanly and accurately. Remove all burrs from edges and holes.
- D. Remove any remaining sharp or rough areas on exposed surfaces prior to galvanizing.

2.3 PRODUCT MARKING

- A. JBD manufacturer shall provide signage indicating manufacturer name, model number, power rating, usage restrictions, and project information/identifier. Sign(s) shall be securely-bolted to the back of the completed structure.

PART 3– EXECUTION

3.1 SITE CONDITION

- A. The JBD manufacturer shall inspect the site prior to beginning work and notify the Owner of any deficiencies. Installation may not proceed until unsatisfactory conditions have been corrected.

3.2 MATERIAL STORAGE AND HANDLING

- A. Store all JBD materials in approved areas, protected from the elements, and in a manner that prevents any damage, distortion, or deterioration. Keep deflecting surface sheets and steel members off ground using pallets, dunnage, platforms, or similar supports. Do not expose nested or stacked materials to water or moisture.

- B. Surfaces showing iron stain or red rust shall be retouched or re-galvanized to the satisfaction of the contracting officer. See Section 2.2-E (Structure) for details for the galvanizing repair paint.

3.3 ERECTION

- A. The JBD manufacturer shall observe and supervise the construction of the JBD and, upon satisfactory completion, the JBD manufacturer shall issue the performance guarantee/warranty (see Section 1.3-D).
- B. Set all cast-in-place anchors at the locations provided on approved shop drawings using templates and/or formwork to ensure precision and accuracy. Where applicable, install all post-installed concrete anchors in accordance with anchor manufacturer's written instructions. Use steel templates during drilling/setting of post-installed anchors to ensure accurate positions.
- C. Set steel post assemblies accurately at the locations provided on approved shop drawings, and in accordance with applicable American Institute of Steel Construction (AISC) standards.
- D. Provide temporary guys and/or braces, as required, to support structural elements during erection.
- E. Tighten all fasteners to the torques specified by the JBD manufacturer.
- F. Field-executed thermal cutting or welding is not permitted.
- G. Touch up any damaged galvanized surfaces with galvanizing repair paint (see Section 2.2-E for galvanizing repair paint product requirements). Follow paint manufacturer's written instructions for surface preparation and application.

3.4 PERMITS

- A. The general contractor shall be responsible for obtaining approval for the design of the JBD structure and associated foundation, and any required building permits.

3.5 INSPECTION

- A. The JBD manufacturer and the Owner, or designated representatives thereof, shall visually inspect the completed installation to ensure that all work has been completed in an acceptable manner. Special care shall be given to the inspection of the JBD for loose material and missing fasteners.
- B. Once any noted issues are corrected to the satisfaction of both parties, an acceptance letter or certificate of completion shall be signed by the representatives of the JBD manufacturer and the Owner who participate in the inspection. Final acceptance/certification by the JBD manufacturer and Owner shall be obtained in order to validate the performance guarantee/warranty for the JBD structure.

3.6 CLEANUP

- A. Following completion of construction and related inspections, and prior to any aircraft operation, the general/main contractor shall remove all associated construction materials, equipment, and debris from the jobsite.

- B. Prior to aircraft operation, the Owner is responsible for thoroughly sweeping the surrounding areas and inspecting for FOD.

3.7 TESTING

- A. Proof testing of taxi/breakaway blast deflector/fences is not required.

3.8 PAYMENT

- A. Payment shall be made under:

 NS-102 Blast Deflecting Fence – Per Linear Foot

END OF ITEM NS-102

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Item NS-103 Winter Suspension

DESCRIPTION

103-1.1 This item identifies the responsibilities of the Contractor when a project carries over from one construction season to another. The Contractor is responsible to ensure the project site is publicly safe and environmentally compliant during the period of winter suspension.

PROCEDURES

103-2.1 The procedure outlined in this specification does not relieve the Contractor of any responsibilities as defined under the terms of the Contract. The Contractor is responsible for means, methods, techniques, sequences, or procedures of construction and safety. It is the sole responsibility of the Contractor to sequence the work and to properly prepare the project site for a winter suspension.

Prior to a winter suspension, the Contractor must schedule an on-site review of the project with the Owner and RPR for the specific purpose of identifying appropriate airport safety & traffic control measures needed, if any, during the winter suspension period; as well as temporary drainage and erosion prevention measures that can be taken, such as constructing temporary ditches, sumps, pipes, ditch lining, slope cover, etc., which will reduce and minimize the potential for erosion during the winter months. The Contractor shall develop a winter suspension plan that summarizes the measures discussed during the on-site review. This plan must also outline the Contractor's methods and procedures for monitoring and maintaining the project during the winter suspension period. If the Contractor wishes to perform work on contract items, the Contractor shall submit a formal request, in writing, identifying the contract items along with a proposed schedule, for review by the Owner and Engineer.

Once the winter suspension plan has been finalized and implemented, the Engineer will issue a temporary suspension of work. Issuance of a temporary suspension of work does not alleviate the Contractor's responsibility to protect and maintain the project site for the duration of the winter suspension period. If any concerns or issues with respect to the project are identified during the winter suspension period, the Contractor will be notified by the Owner or Engineer of the concern. The Contractor will be responsible for addressing these concerns or issues to the satisfaction of the Owner and Engineer.

Temporary drainage and erosion prevention measures performed by the Contractor for winter suspension are a separate component from the erosion control items identified in the plans and considered incidental to Erosion Control as specified under Item C-102 of the specifications. Projects in winter suspension must be temporarily stabilized and all requirements in the 1200-C Stormwater Permit apply, including discharge sampling, until construction is complete and the project is permanently stabilized and the permit has been terminated. The only exception is the weekly site inspection reports done by the contractor, which may be reduced to monthly on winter suspension projects.

The Contractor shall submit an updated construction schedule to the Owner and Engineer for review by April 1, 2025. This schedule must identify all remaining contract items and how the Contractor will complete them within the remaining contract time. A pre-construction conference will be held prior to commencement of work.

METHOD OF MEASUREMENT

103-3.1 Winter suspension will be measured on a lump sum basis.

BASIS OF PAYMENT

103-4.1 Winter suspension shall be paid at the contract unit price per lump sum. Payment shall be full compensation for all preparation of the project site for winter suspension, incorporation and implementation of the winter suspension plan; and for furnishing all labor, equipment, materials, tools and incidentals necessary to complete the item.

Payment will be made under:

Item NS-103-4.1 Winter Suspension – lump sum

END OF ITEM NS-104

Item NS-104 - Airport Safety & Traffic Control

DESCRIPTION

104-1.1 General. This Section provides for construction safety in an Airport environment; limitations on construction operations; minimum requirements for construction management and scheduling; and site specific information pertaining to potential impacts on construction activities. Unless otherwise noted, all costs associated with related work shall be included in the contract pay item for Airfield Safety and Traffic Control.

AIRPORT SAFETY & TRAFFIC CONTROL

104-2.1 The Contractor shall comply with the project-specific Construction Safety and Phasing Plan (CSPP) included as an Appendix of the specifications. As part of the requirements of the CSPP, the contractor is required to provide a Safety Plan Compliance Document (SPCD).

The SPCD shall detail how the Contractor will comply with the CSPP. This shall include all Project-specific construction safety plan details not included in the CSPP, including construction equipment heights, any applicable hazard management requirements, and contact information for the Contractor's safety management staff responsible for monitoring the CSPP and SPCD during construction. The SPCD shall be a supplement to and enhancement of the Project CSPP. See *Supplement 2 of the CSPP* for example of SPCD outline.

The SPCD must include a statement that the Contractor understands the operational safety requirements of the CSPP and an assertion that the Contractor will not deviate from the approved CSPP and SPCD without written approval from the Engineer. Any construction operation, activity, or practice proposed by the Contractor that does not conform to the CSPP and SPCD will require a revision to those documents. The revised CSPP and SPCD must be submitted to FAA for review and approval prior to performing any activities that are not in compliance with a previously approved CSPP.

Copies of the approved CSPP and SPCD must be available on-site at all times. The Contractor shall ensure all construction personnel are familiar with safety procedures and regulations applicable to construction on the Airport. At least one of the Contractor's safety management staff must be on-site whenever active construction is ongoing to act as point of contact and immediate response coordinator to correct any construction-related activity that may adversely affect operational safety of the Airport.

104-2.2 For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights, temporary fencing, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices or as otherwise identified on the plans. Contractor shall provide gate guard(s) as required to prevent unauthorized access into the airfield. Owner-provided fabric closure crosses shall be deployed, anchored, maintained, and removed by the Contractor as described on the plans.

104-2.3 Contractor may use "covers" to "turn off" light fixtures in lieu of jumpering a portion of the circuit out. Contractor shall verify no light is seen from the "covered" fixtures or signs. Contractor shall maintain fixture and sign "covers" until the temporary conditions are removed or ended. Covers shall not damage the fixtures or signs.

METHOD OF MEASUREMENT

104-3.1 Airport Safety & Traffic Control as required in the CSPP, Plans, or Project Specifications will be measured as a lump sum item. This item shall consist of all other airport safety & traffic control not specifically measured and paid for separately as described herein.

BASIS OF PAYMENT

104-4.1 Airport Safety & Traffic Control.

a. When the monthly partial payment estimate of the amount earned, not including the amount earned for Airport Safety & Traffic Control, is 5 percent or more of the original Contract amount, 50 percent of the Contract item price for Airport Safety & Traffic Control will be included in the estimate for payment.

b. When the monthly partial payment estimate of the amount earned, not including the amount earned for Airport Safety & Traffic Control, is 10 percent or more of the original Contract amount, the total amount earned for Airport Safety & Traffic Control shall be 75 percent of the Contract item price for Airport Safety & Traffic Control and said amount will be included in the estimate for payment.

c. When the monthly partial payment estimate of the amount earned, not including the amount earned for Airport Safety & Traffic Control, is 20 percent or more of the original Contract amount, the total amount earned for Airport Safety & Traffic Control shall be 95 percent of the Contract item price for Airport Safety & Traffic Control and said amount will be included in the estimate for payment.

d. When the monthly partial payment estimate of the amount earned, not including the amount earned for Airport Safety & Traffic Control, is 50 percent or more of the original Contract amount, the total amount earned for Airport Safety & Traffic Control shall be 100 percent of the Contract item price for Airport Safety & Traffic Control and said amount will be included in the estimate for payment.

Airport Safety & Traffic Control will be paid for at the Contract price per lump sum and shall include full compensation for all labor, materials, tools, equipment, CSPP compliance, SPCD preparation and compliance, and incidentals necessary to complete the work as specified herein and as required on the plans.

Payments made for Airport Safety & Traffic Control will be excluded from consideration in determining compensation under changed quantities.

Payment will be made under:

Item NS-104-4.1 Airport Safety & Traffic Control – per lump sum

END OF ITEM NS-104

GEOTECHNICAL REPORT

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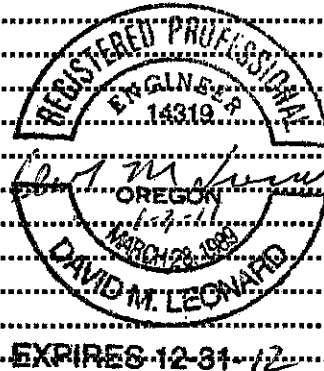
**GEOTECHNICAL STUDY AND REPORT
ROSEBURG REGIONAL AIRPORT
RUNWAY EXTENSION
FOR
MEAD & HUNT, INC.
201 NE PARK PLAZA DR. SUITE 167
VANCOUVER, WA 98684**



EXPIRES 12-31-12

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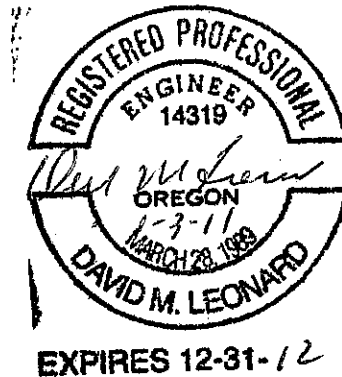


FIGURES

Figure 1..... Vicinity Map
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Figure 4..... Geologic Map
Figure 5..... Subsurface Drainage Interceptor

APPENDICES

Appendix A..... Summary of Laboratory Tests
Appendix B..... Test Boring TB1 Log and Tests
Appendix C..... Test Boring TB2 Log and Tests
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Appendix E..... Test Boring TB4 Log and Tests
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GEOTECHNICAL STUDY AND REPORT ROSEBURG REGIONAL AIRPORT RUNWAY EXTENSION ROSEBURG, OREGON

A. EXECUTIVE SUMMARY

It is our opinion, supported by field investigations, laboratory tests and geotechnical analysis, that the existing and proposed soils, surface, subsurface, and geotechnical conditions at the project site are suitable for the proposed runway extension project.

- Localized deposits of saturated, poorly consolidated, unsuitable soils may be encountered and will require excavation and disposal.
- Construction Materials Engineering and Testing (CoMET) services are recommended.
- We should be contacted to review construction plans prior to bidding.
- An underdrain system for the runway extension is recommended.

The following sections of this report provide geotechnical recommendations for design and construction of the planned project.

B. INTRODUCTION

The *ConnectOregon* III Program has awarded Roseburg Regional Airport with funds to extend runway 16/34 northerly. This extension will improve accelerate/stop criteria.

B.1. Purpose and Scope

As part of the design of the Runway 16/34 extension, Pinnacle Western, Inc. (PWI) was engaged to conduct the geotechnical study presented herein. The project area is located at the northern end of the runway and extends approximately 550 feet to the north.

Field studies were conducted during late November, early December, 2010 and included a geotechnical reconnaissance of the site and subsurface exploration by advancement of four continuous flight test borings and one test pit. The exploration effort included observation, logging and *in situ* testing of the underlying soils. Cores of asphaltic concrete were also extracted to determine the depth of the existing runway wearing surface.

Soil samples were retrieved during field exploration for laboratory testing and other studies necessary to develop recommendations for design and construction of the site, for pavement design, to evaluate potential complications that may occur during their construction and for use during CoMET services during construction.

B.2. Site and Project Description

The Roseburg Regional Airport is located in Douglas County within the city limits of Roseburg, Oregon. Runway 16/34 is planned to be extended 400 feet northerly along with addition of a new runway blast pad. The location of the site is shown in Figure 1. A site plan depicting general project limits and test boring locations is attached as Figure 2.

C. SITE CHARACTERIZATION

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C.1. Regional Geology

Roseburg is located within the southeastern extent of the Coast Range which transitions into the various tectonic terranes of the Klamath Mountains. The Siletz Terrane includes Roseburg and the surrounding area¹.

C.2. Project Area Geology

The Roseburg area has been extensively folded and faulted, reflecting a tectonically and structurally complex geologic history. Local geologic mapping concludes that the site is mantled by Quaternary fluvial deposits consisting of clay, silt, sand, gravel with possible boulders¹. The fluvial deposits are underlain predominantly by mudstone of the Siletz River Volcanics. However, north of the airport, the existing quarry/outcrop consists of conglomerate, sandstone and minor concentrations of mudstone. A concealed fault, trending to the northwest, crosses the southern end of the airport¹. It is possible that the fault created this dramatic variability in subsurface conditions.

Many faults and folds have been mapped within 20 miles of the site¹; however, none of these faults are considered active in the Quaternary period, within the last approximately 1.8 million years². The closest potentially active fault zone is approximately 25 miles north of the project. This zone, the Sutherlin-Drain Area Faults are assigned a low probability of activity. Other studies indicate that the surface expression of this feature may be the result of fluvial erosion rather than active faulting².

D. FIELD STUDIES

D.1. Surface Reconnaissance

The terrain is generally flat within the runway extension project limits, with a gentle westerly slope. Beyond the north eastern limit is a rock knob that extends nearly to Edenbower Boulevard, to the north, and to the west is a shallow bioswale, that originates on the west side of the existing taxiway, and slopes slightly to the north along Aviation Drive.

The surface soil and shallow, soft sedimentary rock materials are relatively impermeable and, therefore, retard percolation of surface water. Although retarded, the surface water typically penetrates through fractures in the rock, which results in retention of much of the seepage close to the surface. The fractured, underlying sedimentary rock appears to transmit a small to moderate amount of water year round, increasing during wet months.

Vegetation in the project limits consists of short grass and small blackberry bushes.

D.2. Surface Hydrology

1 Wells, R.E., Jayko, A.S., Niem, A.R., Black, G., Wiley, T., Baldwin, E., Molenaar, K.M., Wheeler, K.L., DuRoss, C.B., and Givler, R.W., 2000, Geologic map and database of the Roseburg 30' by 60' quadrangle, Douglas and Coos Counties, Oregon: U.S. Geological Survey, Open-File Report 00-376, p. 55.

2 Geomatrix Consultants, 1995, Final report: Seismic design mapping, State of Oregon: Prepared for Oregon Department of Transportation, Salem, Oregon, Personal Services Contract 11688, January 1995, Project No. 2442.

Surface drainage from the mini storage facility north east of the project area flows into a swale routed through the project limits. The swale, located immediately north of the end of existing paved surface discharges to the existing bioswale located along the east side of Aviation Drive.

Storm runoff from the project area currently flows westerly to the shallow bioswale located along the east side of Aviation Drive where it flows to a stormwater inlet, then Newton Creek and, ultimately, the South Umpqua River.

D.3. Geotechnical Characterization

The surface soil layer averaged 6 inches thick and contains a significant component of organic material. The surface soil is characterized as being poorly consolidated natural fill, medium brown, medium to high plasticity silty CLAY, typically of medium density varying with location and depth. The overburden soils are relatively impermeable when compacted.

Beneath the surface layer, an increasing content of fragments of the underlying sedimentary rock and imported fill were encountered to a thickness of 30 to 48 inches.

The silty soils can be excavated with light effort by moderate energy excavation equipment. It is possible that non-intact bedrock will be encountered during excavation for the taxiway extension and blast pad. Where rock is encountered, it is likely to be highly weathered and can be ripped with a high energy backhoe. Competent bedrock is not likely to be encountered.

D.4. Field Observations

Field observations included qualitative soil classification and density determination, measurement of thickness of the various soil horizons; and measurement of depth to or presence of groundwater.

D.5. Site Exploration and Field Testing

Please note that soil descriptions and layer interfaces are interpreted from observations of the test borings. While the layers are shown as having distinct boundaries in field logs, in reality, the change is gradual.

Four test borings, one test pit, and two asphaltic surface core locations are depicted on Figure 2.

D.5.a. Borings – Four test bores were advanced in the proposed runway and taxiway by use of a light truck mounted Back County Badger drill rig, which advanced 4 inch diameter continuous flight hollow stem auger. Samples were obtained in two and a half foot intervals until practical auger refusal. Disturbed soil samples were obtained every five feet by Modified California Barrel advanced by the Standard Penetration Test (SPT) ASTM 1586 which gives an indication of the relative stiffness or density of the subsurface soils. Static Cone Penetrometer and field CBR tests were conducted at the surface and at five foot intervals. Torvane tests were conducted at selected locations.

The test borings extended to depths ranging from \pm 10 to 15 feet. The soil profiles were logged and levels of ground water, if encountered, were noted. The soil profiles, sampling depths, and strength measurements are summarized on

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the Test Boring logs, Appendix B through E. The borings were observed, logged and sampled by a certified technician.

D.5.b. Test Pits – One test pit was excavated near the proposed blast pad. It was advanced by track mounted Case 9020B hydraulic excavator to the extent of its reach; approximately 15 feet. Bag and Modified California Tube samples were retrieved at five foot intervals. Field compressive and shear strength tests, Penetrometer and *Torvane* respectively, were also conducted at five foot intervals. The summary of testing and sampling is contained in Appendix F.

D.5.c. Coring – Asphalt cores were extracted near the northern end of both the existing runway and taxiway to determine thickness of asphaltic concrete. A sample of the base rock beneath the cores was also retrieved for laboratory analysis. The core holes were filled by a cold patch pavement repair and compacted. Additional information and core reports are contained in Appendix G.

Please note that shear strengths and bearing capacities noted on the field logs are estimates of ultimate values, recorded for correlation of laboratory results and are only provided for comparative purposes. They should not be used for design. We should be contacted before utilization of values other than those recommended in Section G to confirm applicability and that the designer's interpretation is consistent with our understanding of design properties.

D.6. Groundwater

Groundwater was encountered in all bore holes. Depths of groundwater varied from six inches (TB3) to nearly ten feet (TB2). Considering the time of the year it is not out of the ordinary to have such high water levels. Typically, the phreatic surface will vary seasonally by about five feet and by about ten to fifteen feet between hydrologic extremes, an average ten year period. Seepage, occasionally in considerable amounts, should be expected at the transitional zone between the residual soils and the underlying highly weathered bedrock.

Although permeability tests were not performed for this study, flow velocities within the natural shallow soils can be expected to range between 10^{-4} and 10^{-5} cm/sec and as high as 10^{-2} cm/sec at the bedrock interface where fine grained soils transition to weathered formational material. After compaction of the fills, permeability will likely decrease to range between 10^{-5} and 10^{-6} cm/sec. Where granular layers are encountered, permeability will be on the order of 10^{-3} cm/sec.

D.7. Subsurface Soil Conditions

Typical of the site soils and geologic conditions, water will frequently perch above the soft rock layers in the winter months. The upper silt and clay units are likely to become soft and unstable during these periods of high moisture. Earthwork should not be attempted during the winter months unless effective dewatering can be assured.

Soil conditions vary slightly within the construction limits. Borings north of the runway (TB1 and TB2) encountered approximately 2 feet of natural soil fill consisting of medium stiff, medium-brown silty CLAY with a component of rounded and fractured COBBLE. The fill is underlain by natural stiff, medium to dark brown, CLAY to the maximum depth of the test boring.

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Borings located north of the taxiway (TB3 and TB4) encountered approximately 3.5 feet of natural fill consisting of medium stiff, medium brown silty CLAY with a minor component of fractured COBBLE. In TB3 this layer was underlain by a two foot layer of fractured rounded rock. This layer transitioned to natural medium stiff, dark brown silty CLAY that extended to the maximum depth of the Test Boring. TB4 had a similar composition but without the fractured rounded rock layer.

Soil conditions in TP1 varied from the conditions of the test borings. Beneath the surface layer a stratum of medium stiff, medium brown silty CLAY extended to a depth of approximately eight feet. This layer was underlain by a 6 foot layer of the same material but with a component of white, weakly cemented SANDSTONE. This layer transitions into gray, flaky SHALE that continued to the maximum reach of the track hoe.

The runway test core (Core 1) consisted of five inches of asphalt concrete which was underlain by three inches of 3/8"-0" subrounded rock. Core 2, extracted from the taxiway, indicated six and a half inches of asphalt concrete which was underlain by nine and a half inches of crushed base rock.

E. LABORATORY TESTING

Laboratory testing conducted on the soil samples obtained from boreholes and test pit included natural moisture, Atterberg limits, grain size distribution, CBR, and compaction tests to classify the soils and estimate their engineering and design properties.

E.1. Soil Classification

All of the samples recovered were reexamined at our Roseburg laboratory to confirm field descriptions. To assist in soil classification and assessing long term stability of the site soils, physical characteristics, including natural moisture/density relationships, and plasticity indices (Atterberg limits) were conducted for the fine grained portion of all samples. Samples were then classified in conformance with the Unified Soil Classification System. The results of these tests are summarized in the corresponding appendices.

The Unified Soil Classification System identifies soil type by single letter prefix and subgroup by single letter suffix as follows;

<u>Soil Type</u>	<u>Prefix</u>	<u>Subgroup</u>	<u>Suffix</u>
Gravel	G	Well Graded	W
Sand	S	Poorly Graded	P
Silt	M	Silty	M
Clay	C	Clayey	C
Organic	O	w _L < 50 per cent	L
Peat	Pt	w _H >50 per cent	H

E.3. Test Summary

Atterberg limits tests conducted on samples obtained from the indicate liquid limits ranging from 27 to 93 and plastic limits ranging from 23 to 39. A USCS classification of CL – CH and an FAA classification of E-7 are appropriate for the near surface soils beneath proposed paved areas.

Moisture-density tests per ASTM D 1557 and CBR tests per ASTM D 1883 were conducted on samples retrieved from TP1 and TB2. These tests conclude that the

sample from TP1 has maximum dry density of 118.1 #/ft³ and a soaked CBR value of 2.0 at 95% maximum density. The sample from TB2 has a maximum dry density of 117.5 #/ft³ and a CBR value of 1.2 at 90% maximum density.

During prior projects, moisture-density and CBR tests were conducted on a bulk sample of the bedrock taken from the outcrop north of the runway. These tests indicate a maximum dry density of 124.0 #/ft³ per ASTM D 698 and a CBR of ± 5.0 at 95% relative compaction. This CBR value is lower than typical for rock, primarily due to the variable strength and weathering of the bedrock. During other engagements, we have observed that the structure of much of the rock component reduced to the consistency of soil during compaction in the laboratory. We anticipate that the softer rock will behave similarly during compaction in the field.

F. ENGINEERING STUDIES AND RECOMMENDATIONS

The following recommendations should be considered general guidelines for earthwork design and are not intended to provide comprehensive specifications for the earthwork for the project. We would be happy to assist with preparation of comprehensive specifications, if desired.

Ability to process the fill soil will be weather dependent. Compaction of the subgrade and placement of the fine-grained fill materials will not be practical during periods when the soils are wet of optimum.

F.1. General

The engineering studies and recommendations presented in this section provide design parameters for the earthwork required for extension of the runway. All density recommendations presented herein are relative to the Modified Proctor (ASTM D-1557) at plus or minus 1% from optimum moisture content, unless specifically noted otherwise.

F.2. Site Preparation and Grading

F.2.a. Clearing, Grubbing, Stripping and Removal of Unsuitable Soil

All areas proposed for construction of permanent improvements should be cleared and grubbed of all trees, stumps, brush and other debris and/or deleterious materials. The site should then be stripped and cleared of all vegetation, sod and organic topsoil. The depth for stripping is likely to vary between 4 and 6 inches, occasionally deeper, to accomplish removal of the organic topsoil and root zone. The stripped material is suitable only for use in landscape areas.

A thin layer of poorly consolidated natural soil fill was encountered and is considered as unsuitable subgrade. This soil should be removed to the limits determined in the field by the geotechnical engineer, moisture conditioned and recompacted. Preliminarily, we estimate the excavation depths to range from approximately 3 feet in the vicinity of TB1 to 4 feet in the vicinity of TB4.

F.2.b. Proof-rolling and Subgrade Compaction

After stripping and removal of unsuitable soils, the exposed subgrade should be moisture conditioned and recompacted to a depth of at least 12 inches or rock is encountered and tested per Test Method 158 as prescribed by the Oregon Department of Transportation (ODOT TM 158) under the observation of the

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geotechnical engineer's representative. Such testing should not be attempted in wet weather and should be discontinued if it appears the subgrade is pumping, deflecting under load or otherwise deforming.

Where soils are disturbed or if they pump when tested, they should be excavated, the excavation lined with subgrade geotextile and filled with compacted, durable base rock (or granular fill). The recompaction should achieve 90% of maximum density. The presence and extent of any soft or pumping areas will require field identification during construction. We recommend frequent field density tests to be conducted on the pavement subgrade to confirm adequate compaction.

In locations where the subgrade consists of fine grained soils that are firm and generally unyielding, moisture conditioning and recompaction is not indicated. We should be contacted to perform *in situ* strength tests of subgrade soils and to advise about need for moisture conditioning and compaction.

F.3. Structural Fill Placement and Compaction

Structural fill is defined as any fill placed and compacted to specified densities and located under permanent structures or pavement.

F.3.a. Materials

Structural fill should consist of a free-draining granular material with a maximum particle size of eight inches or 2/3 the lift thickness, whichever is lesser. The material should be well graded with less than five percent fines. During dry weather, any organic-free, non-expansive, compactable granular material meeting the maximum size criteria is typically acceptable for this use. Locally available crushed rock and jaw run crushed shale have performed adequately for most applications of structural fill.

The natural, organic site surface soil is not suitable for use as fill. These soils should be disposed off site.

The shallow layer of unconsolidated fill is suitable for use as structural fill when moisture conditioned and recompacted.

Borrow material is also available on the airport property. This source is identified as the sedimentary rock outcrop northwest of the runway.

F.3.b. Structural Fill Placement

Structural fill should be placed in horizontal lifts not exceeding nine inches loose thickness, or thinner if necessary to obtain specified density. Each lift should be compacted to 90% of the maximum density.

F.3.c. Compaction

Fill soil should be placed and compacted at 0 to 2% above the optimum moisture content. If fill source soils are too wet to compact, they may be dried by continuous windrowing and aeration. If soils become dry during the summer months, moisture should be added to maintain the moisture content at or near optimum during compaction operations.

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F.3.c.1. Fill Observation and Testing Methods

Field density testing by nuclear methods is appropriate for compaction of 2½- inch to ¾-inch minus crushed base rock, fine grained soils, decomposed granite and other materials 2½ inches or smaller in size. Due to the effect of oversize particles, other methods of compaction testing may be favored. Testing of only the upper lifts is not adequate to verify compaction.

F.4. Site and Subsurface Drainage

Surface and subsurface drainage flows onto and through the project site. Surface flows should be intercepted and routed around the runway extension.

Subsurface water flowing through the project limits should be captured by a pavement underdrain system and conveyed to acceptable discharge locations clear of the project limits.

F.5. Asphaltic Pavement

In situ CBR tests are presented on the drill logs and vary from 0.8 at the base of poorly consolidated natural fill to 1.2 below the root zone.

Laboratory CBR tests are presented in the appendices of this report.

For pavement assemblies supported on the drained, moisture conditioned and recompacted natural fine-grained soils as described herein, we recommend use of a CBR value of 2.0.

A CBR value of 5.0 is recommended for pavement placed on granular fill borrowed from the rock outcrop source northeast of the runway and placed as recommended herein.

G. ADDITIONAL SERVICES AND LIMITATIONS OF REPORT

G.1. Additional Services

Additional services by the geotechnical engineer are recommended to help insure that design recommendations are correctly interpreted during final project design and to help verify compliance with project specifications during construction. Additional services could include, but not be limited to:

- Review of final construction plans and specifications for compliance with geotechnical recommendations.
- Attend project team meetings to clarify issues raised during the construction process.
- Site observation and/or CoMET services, i.e., observation of subgrade, subgrade density testing, placement and compaction testing of aggregate subbase and aggregate base courses, density testing of asphaltic pavement, observation of surface drainage, etc.
- Periodic construction field reports, as requested by the client and required by the agency.

G.2. Limitations

The analyses, conclusions and recommendations contained in this report are based on site conditions and development plans as they existed at the time of the study, and assume that soils and groundwater conditions encountered, observed or inferred during our exploration are representative of soils and groundwater conditions throughout the site. If, during construction, subsurface conditions are found to be different or design parameters change, we should be advised at once so that we can review this report and reconsider our recommendations, as appropriate. If there is a significant lapse of time between submission of this report and the start of work at the site, if the project is changed, or if site conditions have changed, we recommend that this report be reviewed to verify continued applicability.

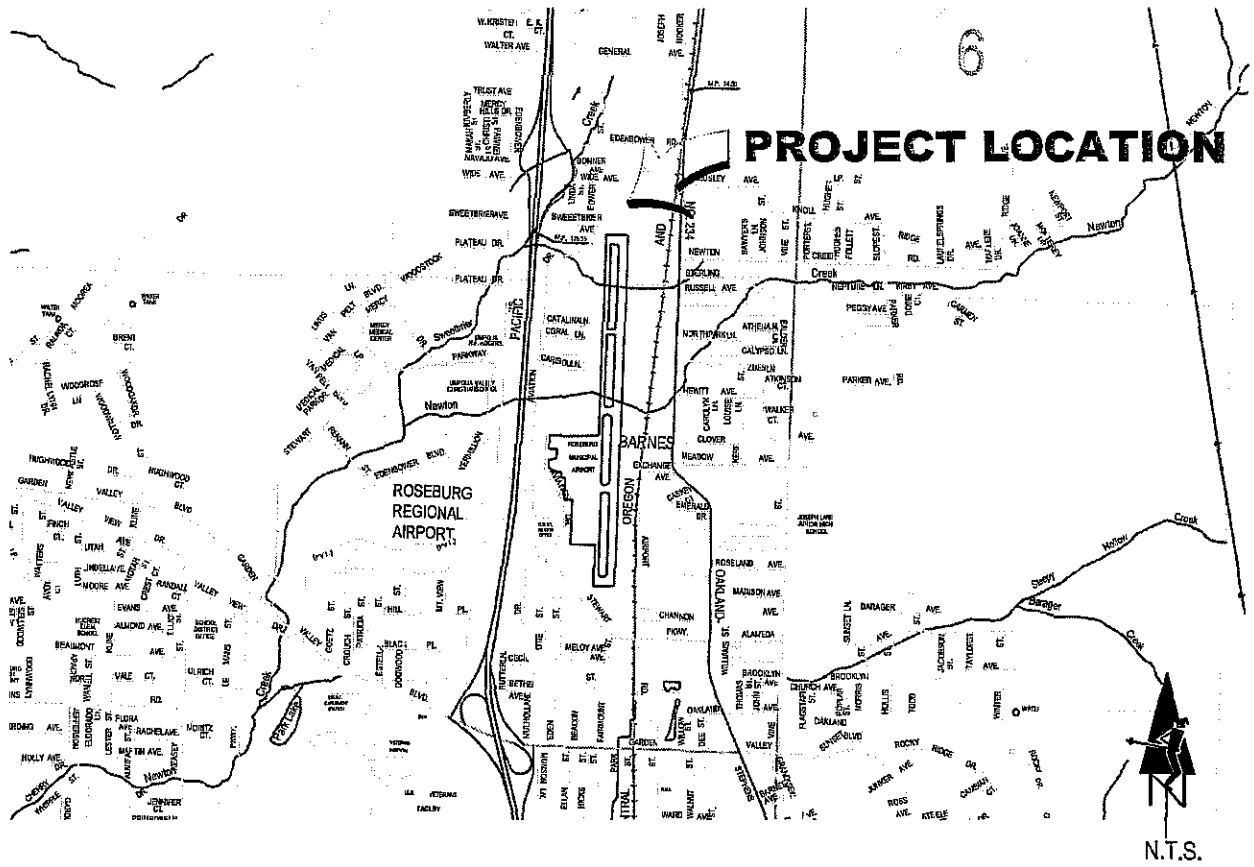
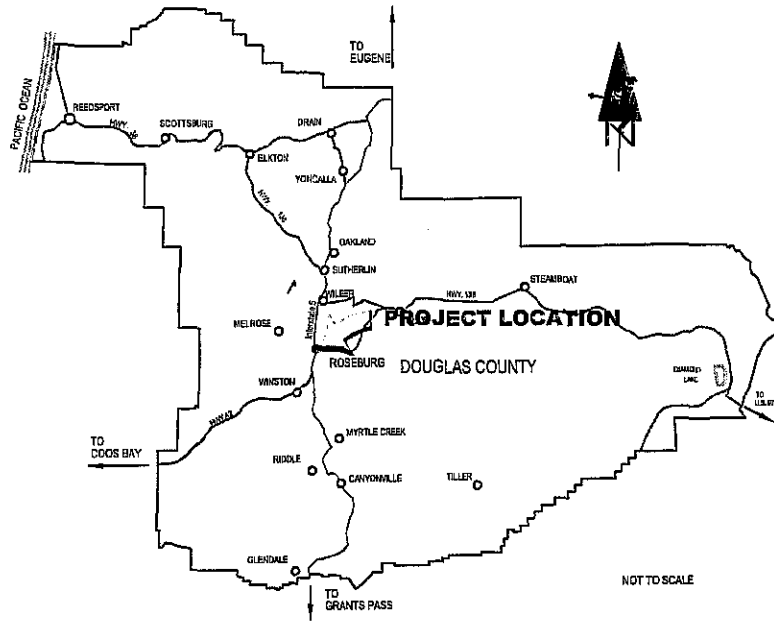
This report was prepared for the use of the owner and design team for the subject project. It is only for this site and construction project. No third party beneficiaries are intended. It should be made available to contractors for information and factual data only, such as test boring logs, measured water levels, samples, sample classifications and laboratory test results. The report is interpretive in nature and shall not be used for contractual purposes, such as warranting that subsurface conditions will be consistent with, or as indicated by the formal boring logs and subsurface profiles contained or inferred herein and/or discussions of subsurface conditions. It is not to be used for extensions of this project or for other projects without our express written consent. We should be contacted to review both plans and specifications for compatibility with this report before finalization. **CoMET services, compaction testing and periodic observation during construction are recommended.**

We have performed these services in conformance with generally accepted engineering and geotechnical engineering practices in southern Oregon at the time the study was accomplished. No other warranty is either expressed or implied.

Since Test Borings and borings represent only the conditions at those discrete locations, unanticipated soil conditions may be and, in fact, are commonly encountered on projects of similar size and complexity. Unanticipated conditions cannot be precluded by practical field studies. Since such unexpected conditions frequently result in budget increases to attain a properly constructed project, we recommend that a reasonable contingency account be established sufficient to fund possible extra costs.

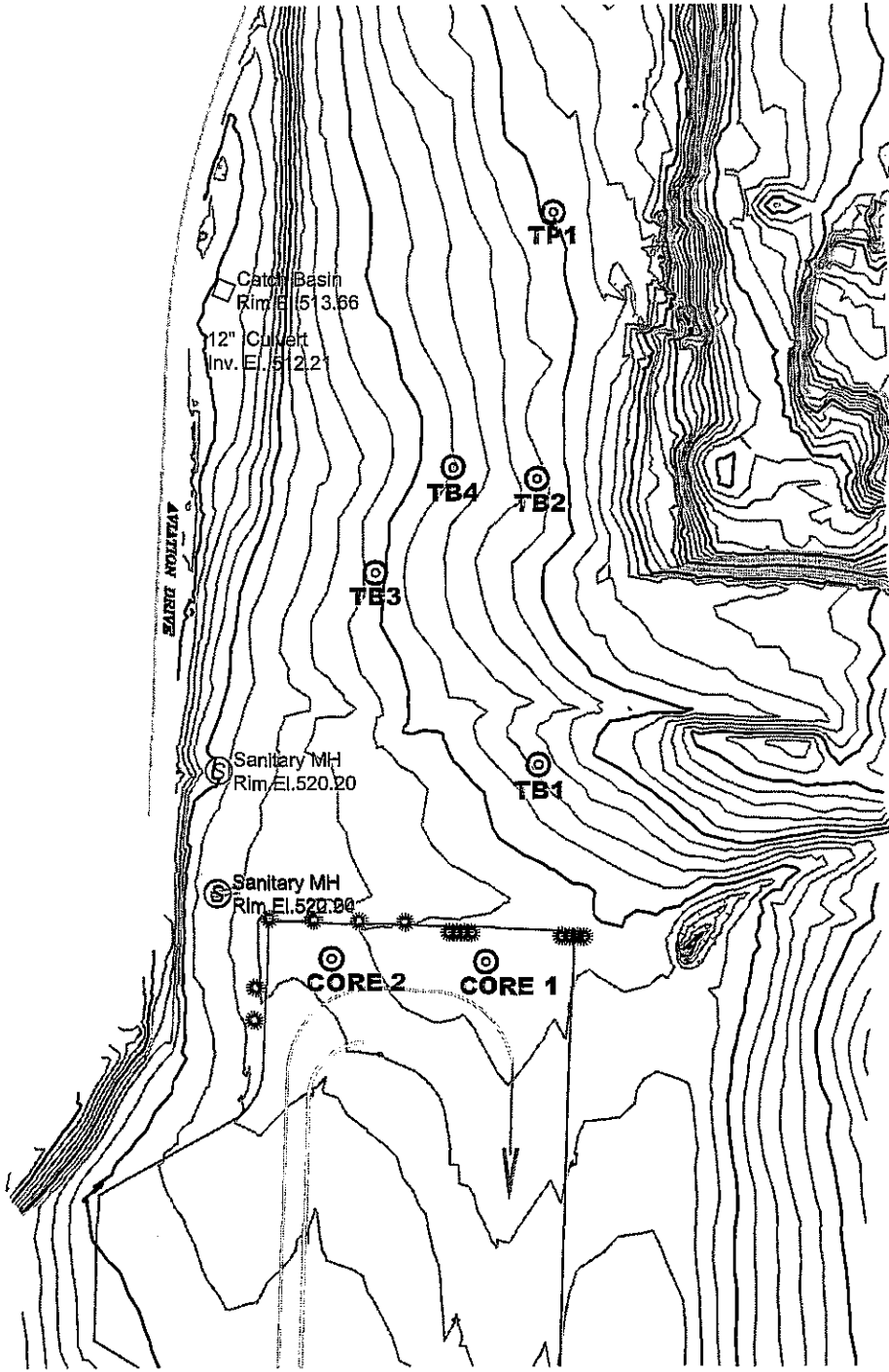
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FIGURES



**SITE LOCATION
VICINITY MAP**
PROJECT: 21623.03
CLIENT: MEAD & HUNT

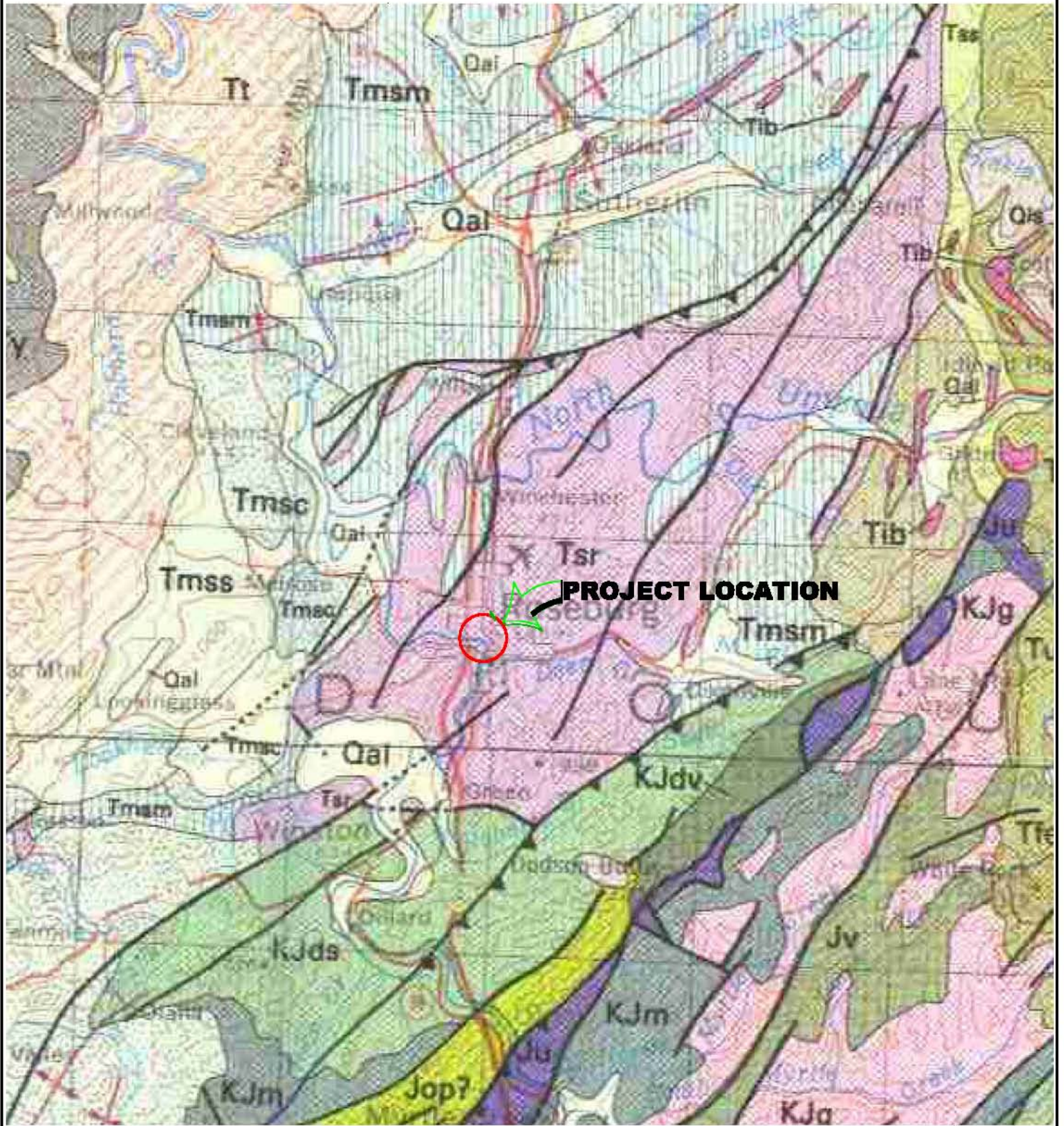
FIG. 1



**SUBSURFACE SOILS STUDY
SITE MAP**

**PROJECT: 21623.03
CLIENT: MEAD & HUNT**

FIG. 2

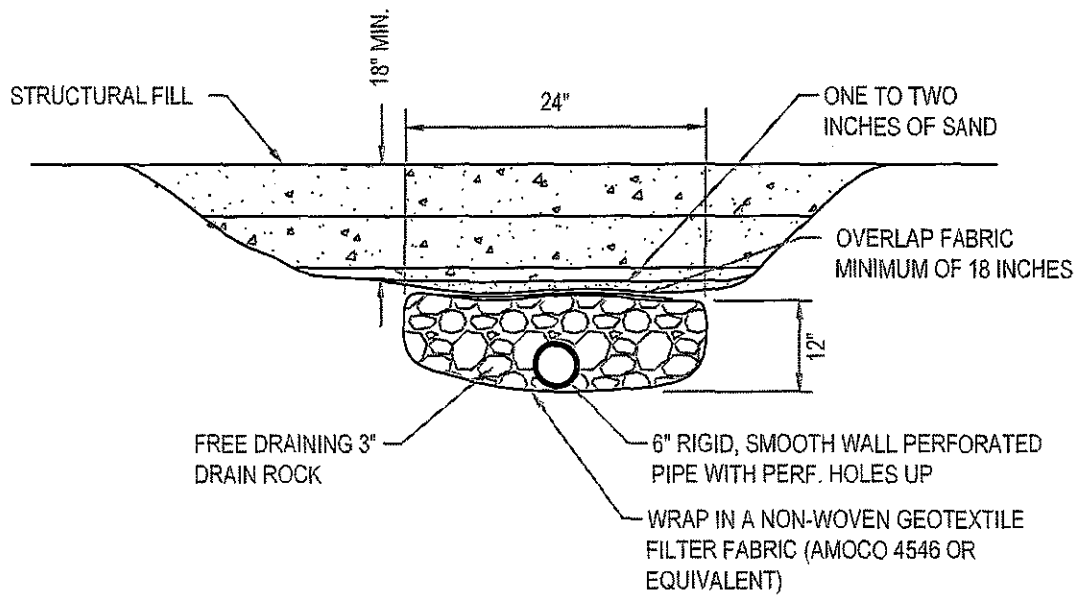


N.T.S.



SUBSURFACE SOILS STUDY
SURFACE GEOLOGICAL MAP
PROJECT: 21623.03
CLIENT: MEAD & HUNT

FIG. 4



* PROVIDE ADEQUATE COVER TO SUSTAIN EQUIPMENT LOADS.

APPENDIX A LABORATORY TESTS

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 Roseburg, OR 97470
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 Fax: (541) 672-0677

Coast Office
 Ph: (541) 266-9875

NATURAL MOISTURE DENSITY REPORT

PROJECT: ROSEBURG AIRPORT EXTENSION

PROJECT NO: 21623.03

CONTRACTOR: MEAD AND HUNT, INC.

DATE: 12/6/10

SUBJECT: MOISTURE TESTS

Sun Mon Tues Wed Thurs Fri Sat

Tested By: SEH

Testing Date: 12/06/10

BORE HOLE	TB1-1	TB2-3	TB3-2					
SAMPLE NO	33485	33495	33503					
LENGTH 1 (in.)								
LENGTH 2 (in.)								
LENGTH 3 (in.)								
AVG LENGTH (in.)								
DIAMETER 1 (in.)								
DIAMETER 2 (in.)								
AVG DIAMETER (in.)								
VOLUME (ft ³)		3.28E-03						
TARE (gram)	33.5	99.7	94					
WET + TARE (gram)	209	266.2	314.1					
DRY + TARE (gram)	170.9	233.9	265.9					
DRY WEIGHT (gram)	137.4	134.8	231.9	0	0	0	0	0
WATER (gram)	38.1	32.3	48.2	0	0	0	0	0
% MOISTURE	27.7%	24.0%	20.8%					

DENSITY (PCF) 90.8

BORE HOLE								
SAMPLE NO								
LENGTH 1 (in.)								
LENGTH 2 (in.)								
LENGTH 3 (in.)								
AVG LENGTH (in.)								
DIAMETER 1 (in.)								
DIAMETER 2 (in.)								
AVG DIAMETER (in.)								
VOLUME (ft ³)								
TARE (gram)								
WET + TARE (gram)								
DRY + TARE (gram)								
DRY WEIGHT (gram)	0	0	0	0	0	0	0	0
WATER (gram)	0	0	0	0	0	0	0	0
% MOISTURE								

DENSITY (PCF)

REMARKS: _____

Reviewed By: _____

Date: _____

* "Special Inspection", "Inspection" and "Inspector" are terms as defined by the International Building Code

APPENDIX B

TEST BORING 1 LOG AND TESTS

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TEST LOG

TB1

PROJECT: Roseburg Airport Runway Extension PROJECT NO.: 21623.03
 CLIENT: Mead & Hunt Inc. DATE: 11/30/10
 LOCATION: 43°14'43.29"N 123°21'20.99"W ELEVATION: 529
 DRILLER: Pinnacle Western Inc. LOGGED BY: Steve H.
 DRILLING METHOD: 4" Continuous Flight Hollow Stem Auger
 DEPTH TO - WATER> INITIAL: 2 AFTER DRILLING>: 8.5 SEEPAGE>: 0 2

File: 21623

Date Printed: 1/3/2011

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (feet)	Description	Recov (in)	Driven (in)	Cca	Sample#	Soil Type	Qu (TSF)	pH	Sampler	Symbol	TEST RESULTS	
											Plastic Limit	Liquid Limit
0	ROOT ZONE Qc=3 Field CBR=1.2						0.6					
	CL-silty CLAY fill w/ rounded fractured rock, med brown, med stiff, moist				33484				BAG			
2.5	CL-CLAY, dark gray, stiff, moist											
5	Qc=0	5	18		33486 33485 33487				CAL BAG BAG			0-1-2 (N=3)
7.5					33488				BAG			
10		17	18		33490 33489				CAL BAG			4-7-12 (N=19)
12.5					33491				BAG			
15	END OF TEST BORE @15'	18	18		33492				CAL			4-7-9 (N=16)
17.5												

APPENDIX C

TEST BORING 2 LOG AND TESTS

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TEST LOG

TB2

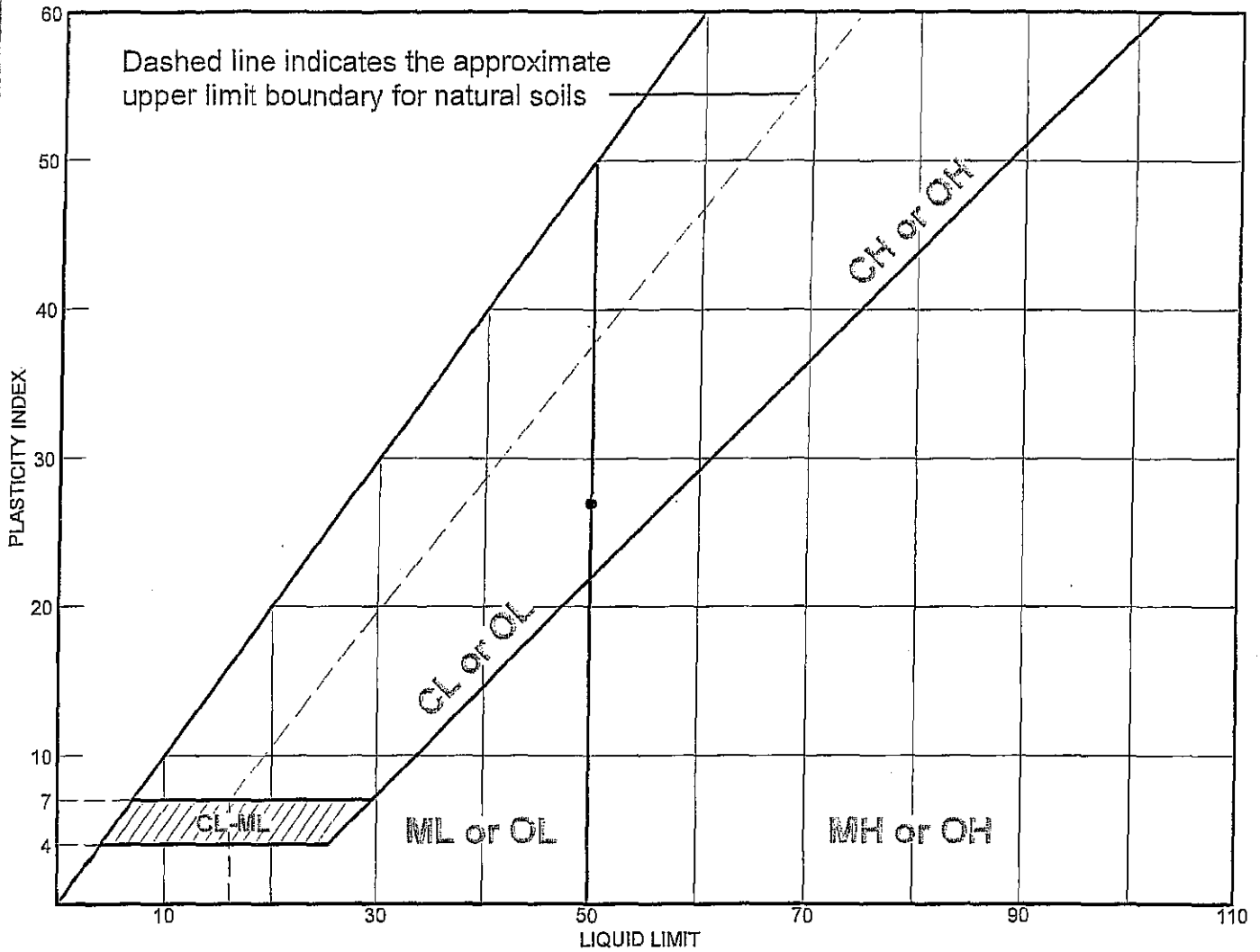
PROJECT: Roseburg Airport Runway Extension PROJECT NO.: 21623.03
 CLIENT: Mead & Hunt Inc. DATE: 11/30/10
 LOCATION: 43°14'44.54"N 123°21'21.07"W ELEVATION: 529
 DRILLER: Pinnacle Western Inc. LOGGED BY: Steve H.
 DRILLING METHOD: 4" Continuous Flight Hollow Stem Auger
 DEPTH TO - WATER> INITIAL: ∅ AFTER DRILLING>: 9.5 SEEPAGE>: ∅ 2.5

File: 21623 Date Printed: 1/3/2011

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (feet)	Description	Recov (in)	Driven (in)	Cca	Sample#	Soil Type	Qc (TSF)	pH	Sampler	Symbol	TEST RESULTS				
											Plastic Limit	Water Content -			Liquid Limit
											10	20	30	40	50
0	ROOT ZONE Qc=3 Field CBR=1.2						0.6								
	CL-silty CLAY fill w/ rock fragments, med brown, medium stiff, moist														
2.5	CL-silty CLAY, med brown, medium stiff, wet				33493				BAG						
5	CL-silty CLAY, med brown, medium stiff, wet Qc=2 Field CBR=0.8	18	18		33494 33521 33495		0.4		BAG BKTS CAL				2-4-4 (N=8)		
7.5					33496				BAG						
10		16	18		33497 33498				BAG CAL				3-5-9 (N=14)		
12.5	CL-silty CLAY, med brown, med stiff moist				33499				BAG						
15	CL-silty CLAY w/ rock fragments, med brown, stiff, moist END OF TEST BORE @ 15'	16	18		33501 33500				CAL BAG				6-15-20 (N=35)		
17.5															

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
• MEDIUM BRN SILTY CLAY; HIGH PLASTICITY.	50	23	27			CL

Project No. 21623.03 Client: MEAD & HUNT, INC.
 Project: ROSEBURG AIRPORT EXTENSION

• Source: TB2 Sample No.: 33494 Elev./Depth: 5

Pinnacle Western, Inc.
 Roseburg, Oregon

Remarks:
 • TEST RAN BY SEH ON 12/7/10
 PER ASTM D4318.
 pH=6.4 *[Signature]*

Figure

COMPACTION TEST REPORT



Test specification: ASTM D 1557-00 Method B Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
5	CL-ML						1.0	

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 117.5 pcf Optimum moisture = 11.6 %	CL-silty CLAY, med brown, medium stiff, wet

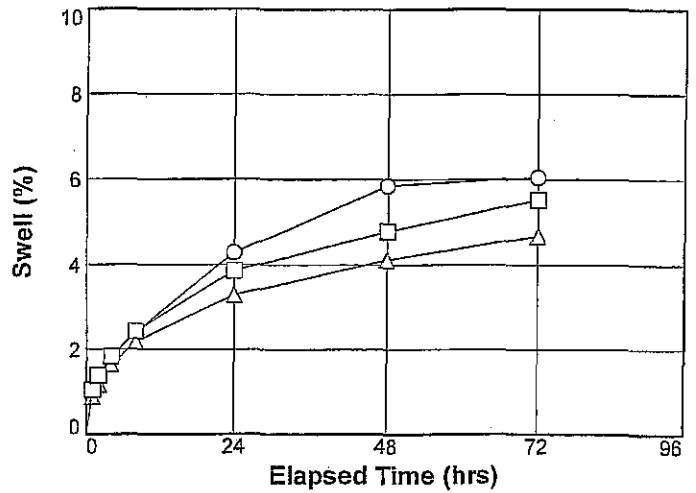
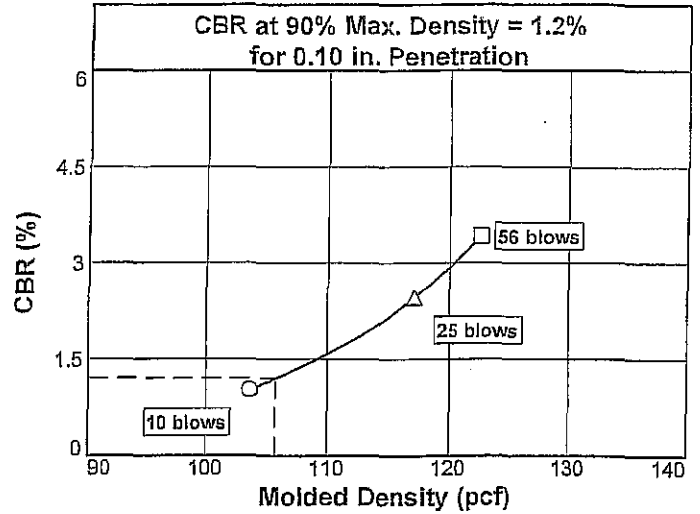
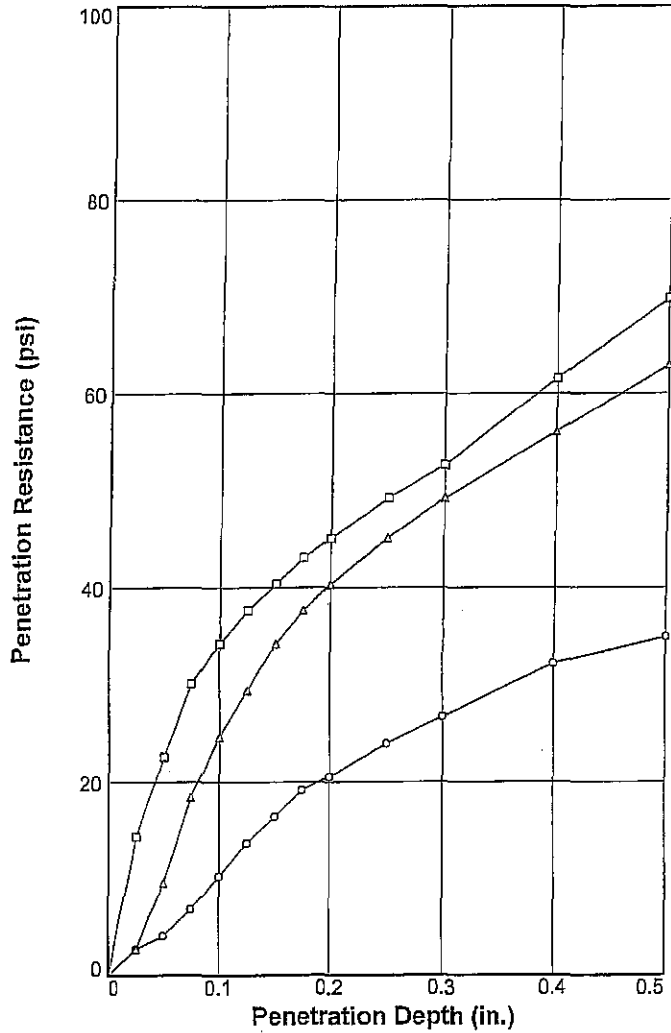
Project No. 21623.03 **Client:** Mead & Hunt Inc.
Project: Roseburg Airport Runway Extension
Source: TB2 **Sample No.:** 33521 **Elev./Depth:** 5
Pinnacle Western, Inc.
Roseburg, Oregon

Remarks:
 TEST RAN BY SEH ON 12/17/10 PER
 ASTM D1557. *SEH*

Figure

BEARING RATIO TEST REPORT

ASTM D 1883-99



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	103.5	88.1	13.9	98.0	83.2	24.5	1.0	1.4	0.000	35	6
2 △	117.0	99.6	15.4	112.0	95.3	18.9	2.5	2.7	0.000	35	4.7
3 □	122.5	104.3	15.6	116.5	99	18.9	3.4	3.0	0.000	35	5.5
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
CL-silty CLAY, med brown, medium stiff, wet							CL-ML	117.5	11.6		

Project No: 21623.03
 Project: Roseburg Airport Runway Extension
 Source of Sample: TB2 Depth: 5
 Sample Number: 33521
 Date: 12/1/2010

Test Description/Remarks:
 3 POINT SOAKED CBR WITH D1557 PROCTOR
 10 BLOWS: QC=2, PP=0tsf, TV=1.6tsf
 25 BLOWS: QC=3, PP=0.5tsf, TV=1.0tsf
 56 BLOWS: QC=3, PP=0.5tsf, TV=1.0tsf
 Figure _____

BEARING RATIO TEST REPORT
Pinnacle Western, Inc.

APPENDIX D

TEST BORING 3 LOG AND TESTS

TEST LOG

TB3

PROJECT: Roseburg Airport Runway Extension PROJECT NO.: 21623.03
 CLIENT: Mead & Hunt Inc. DATE: 12/1/10
 LOCATION: 43°14'43.84"N 123°23'23.2"W ELEVATION: 525
 DRILLER: Pinnacle Western Inc. LOGGED BY: Steve H.
 DRILLING METHOD: 4" Continuous Flight Hollow Stem Auger
 DEPTH TO - WATER> INITIAL: ∅ 2.5 AFTER DRILLING>: .5 SEEPAGE>: ∅ 2.5

File: 21623

Date Printed: 1/3/2011

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (feet)	Description	Recov (in)	Driven (in)	Cca	Sample#	Soil Type	Qu (TSF)	pH	Sampler	Symbol	TEST RESULTS				
											Plastic Limit	Liquid Limit			
											Water Content - ●				
											10	20	30	40	50
0	ROOT ZONE Qc=4 Field CBR=1.6						0.8								
0 - 2.5	CL-silty CLAY fill w/ rock fragments, med brown, med stiff, moist				33502				BAG						
2.5 - 5	Rock Fragments and River Rock														
5	Qc=0	2	18		33502				CAL					2-5-4 (N=9)	
5 - 7.5	CL-CLAY, dark gray, med stiff, moist														
7.5 - 10					33504				BAG						
10	END OF TEST BORE @10'	12	18		33505 33506				BAG CAL					3-4-8 (N=12)	
12.5															
15															
17.5															

APPENDIX E

TEST BORING 4 LOG AND TESTS

TEST LOG

TB4

PROJECT: Roseburg Airport Runway Extension PROJECT NO.: 21623.03
 CLIENT: Mead & Hunt Inc. DATE: 12/1/10
 LOCATION: 43°14'44.8"N 123°21'23.05"W ELEVATION: 524
 DRILLER: Pinnacle Western Inc. LOGGED BY: Steve H.
 DRILLING METHOD: 4" Continuous Flight Hollow Stem Auger
 DEPTH TO - WATER> INITIAL: 4 AFTER DRILLING>: 8 SEEPAGE>: 4

File: 21623 Date Printed: 1/3/2011

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (feet)	Description	Recov (in)	Driven (in)	Cca	Sample#	Soil Type	Qu (TSF)	pH	Sampler	Symbol	TEST RESULTS				
											Plastic Limit	Water Content -			Liquid Limit
											10	20	30	40	50
0	ROOT ZONE Qc=5 Field CBR=2						1.0								
0 - 2.5	CL-silty CLAY fill w/ rock fragments, med brown, med stiff, moist				33507				BAG						
2.5 - 5	CL-silty CLAY, dark brown, med stiff, moist				33508 33509				BAG CAL						2-4-5 (N=9)
5 - 7.5	Qc=0 CL-silty CLAY, med brown, stiff, moist	2	18		33510				BAG						
7.5 - 10	END OF TEST BORE @10'	16	18		33511				CAL						2-7-9 (N=16)
10 - 12.5															
12.5 - 15															
15 - 17.5															
17.5 - 20															

APPENDIX F

TEST PIT 1 LOG AND TESTS

TEST LOG

TP1

PROJECT: Roseburg Airport Runway Extension PROJECT NO.: 21623.03
 CLIENT: Mead & Hunt Inc. DATE: 12/2/10
 LOCATION: 43°14'47.67"N 123°21'21.10"W ELEVATION: 533
 DRILLER: Cradar Excavation LOGGED BY: Trevor K.
 DRILLING METHOD: Track Mounted Case 9020B
 DEPTH TO - WATER> INITIAL: ☐ AFTER DRILLING>: ☐ SEEPAGE>: ☐

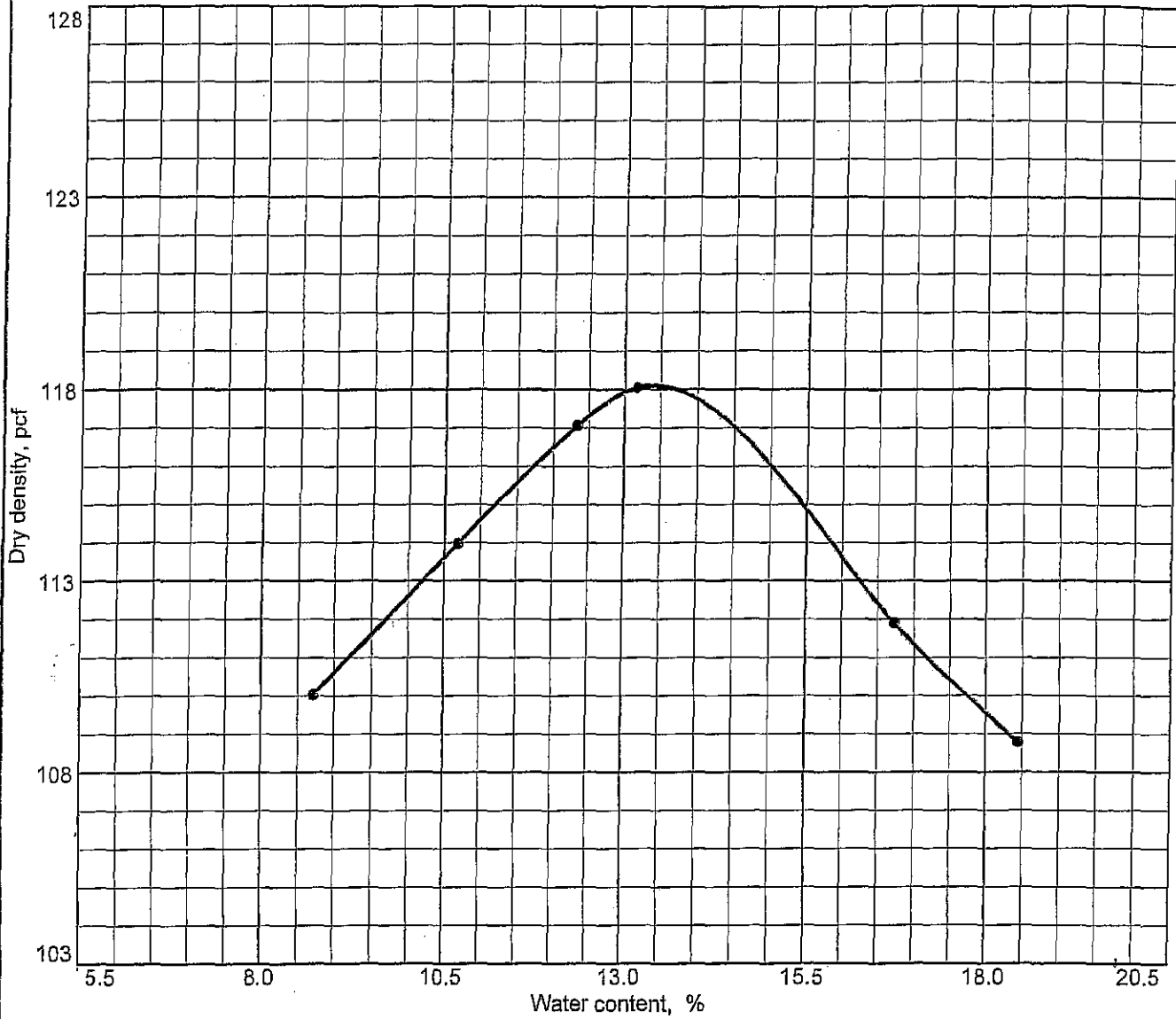
File: 21623

Date Printed: 1/3/2011

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (feet)	Description	Recov (in)	Driven (in)	Cca	Sample#	Soil Type	Qt (TSF)	pH	Sampler	Symbol	TEST RESULTS				
											Plastic Limit	Water Content - ●			Liquid Limit
											10	20	30	40	50
0	ROOT ZONE														
	CL-silty CLAY fill, med brown, med stiff, moist														
-2.5															
-5	Qc=3 Field CBR=1.2 PP=2.5 tsf TV=4 tsf (m) CL-silty CLAY, med brown, med stiff, moist NMD=29cm(cubic)				33512 33513 33520 33514		0.6			BAG CAL BKTS CAL					
-7.5	CL-silty CLAY w/ weakly cemented sandstone fragments, med brown, med stiff, moist														
-10	Qc=8 Field CBR=3.2 PP=2.5 tsf TV=5 tsf (m) NMD=17cm(cubic)				33516 33517 33515		1.6			CAL NMD BAG					
-12.5															
-15	Flaky gray clay stone and fractured shale														
	PP= >4 tsf				33518 33519					BAG CAL					
	END OF TEST PIT @15'														
-17.5															

COMPACTION TEST REPORT



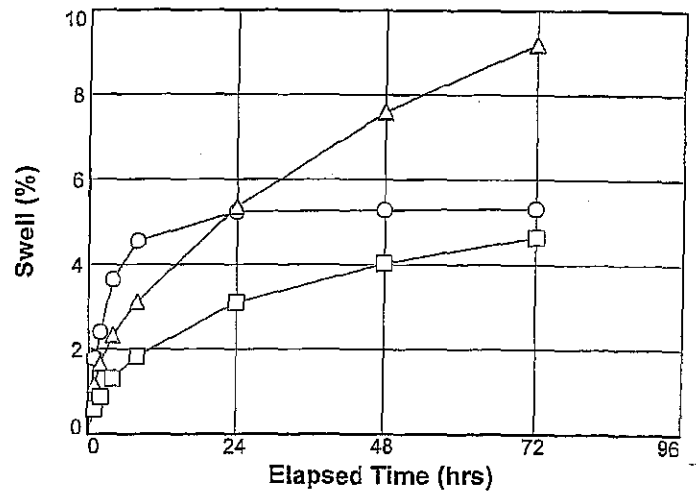
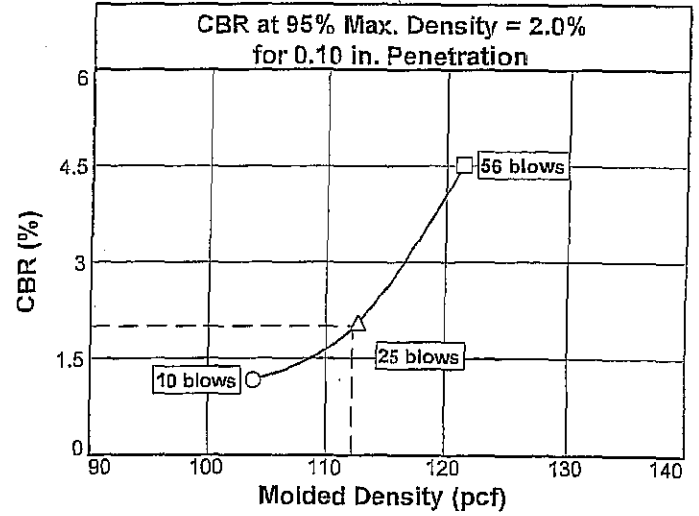
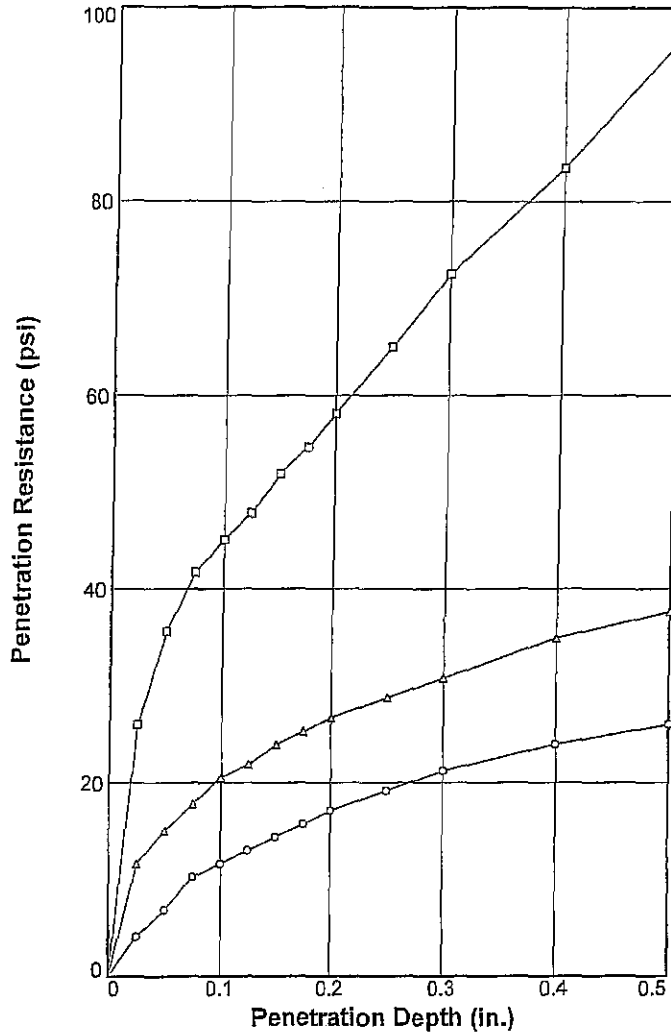
Test specification: ASTM D 1557-00 Method B Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
5							3.9	

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 118.1 pcf Optimum moisture = 13.4 %	CL-silty CLAY, med brown, med stiff, moist
Project No. 21623.03 Client: Mead & Hunt Inc. Project: Roseburg Airport Runway Extension ● Source: TP1 Sample No.: 33520 Elev./Depth: 5	Remarks: TEST RAN BY SEH ON 12/10/10 PER ASTM D1557 <i>SEH</i>
Pinnacle Western, Inc. Roseburg, Oregon	Figure

BEARING RATIO TEST REPORT

ASTM D 1883-99



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	104.0	88.1	13.3	98.5	83.5	27.4	1.2	1.1	0.000	35	5.3
2 △	112.5	95.3	12.1	103.0	87.4	23.2	2.1	1.8	0.000	35	9.2
3 □	121.5	102.9	12.1	116.0	98.2	17.2	4.5	3.9	0.000	35	4.6

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
	CL-silty CLAY, med brown, med stiff, moist		118.1	13.4	

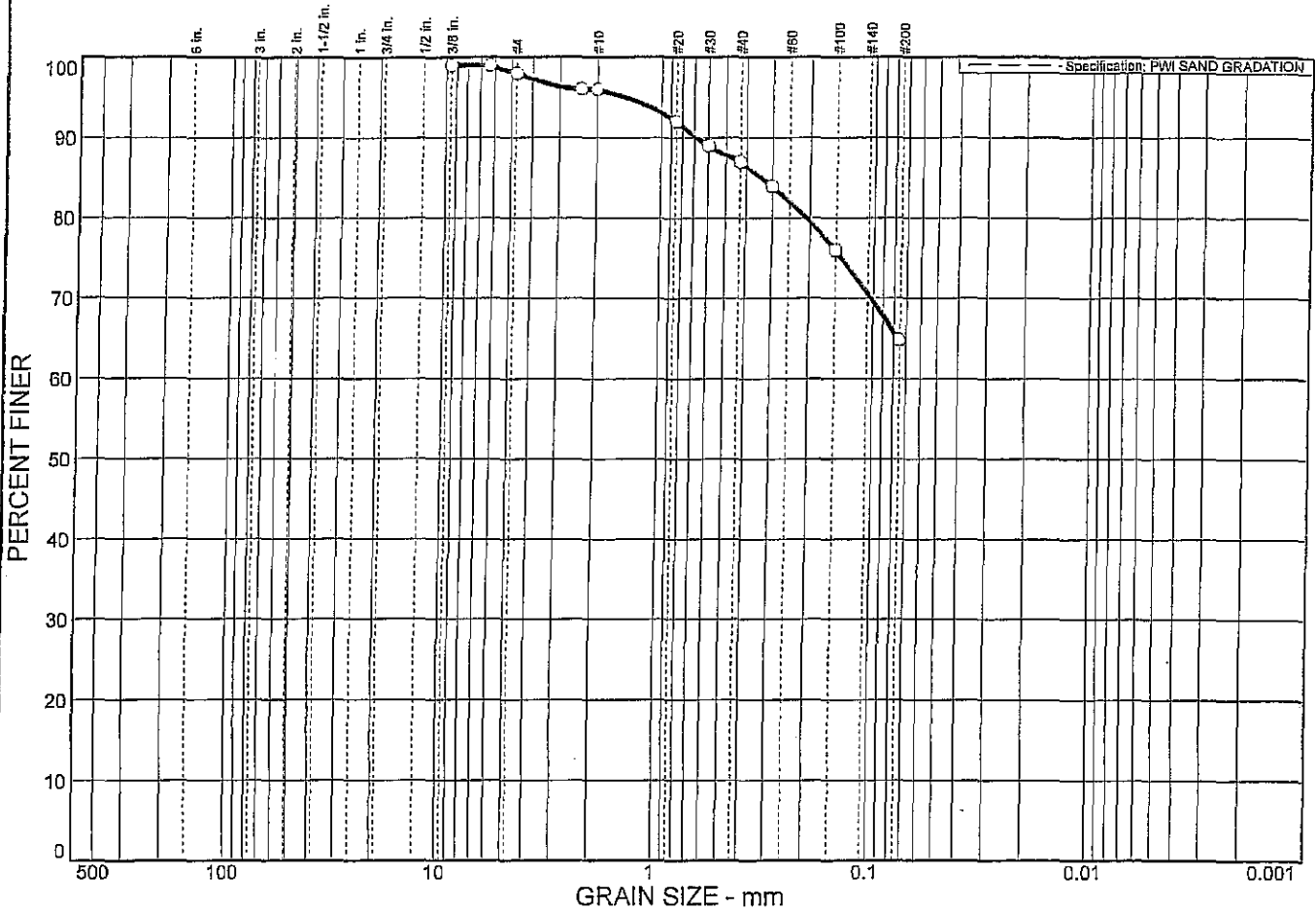
Project No: 21623.03
Project: Roseburg Airport Runway Extension
Source of Sample: TP1 **Depth:** 5
Sample Number: 33520
Date: 12/2/2010

Test Description/Remarks:
 3 POINT SOAKED CBR WITH D1557 PROCTOR

 10 BLOWS: QC=1, PP=0tsf TV=0.9 TSF
 25 BLOWS: QC=1, PP=0.25tsf TV=1.0 TSF
 56 BLOWS: QC=4, PP=0.25tsf TV=5.5 TSF

BEARING RATIO TEST REPORT
Pinnacle Western, Inc.

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
		33.2		64.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375 in.	99.0		
.250 in.	99.0		
#4	98.0	0-	X
#8	96.0	0-	X
#10	96.0	-	X
#20	92.0	-	X
#30	89.0	-	X
#40	87.0	-	X
#50	84.0	-	X
#100	76.0	-	X
#200	64.8	-	X

Material Description

Qc=3 Field CBR=1.2

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 0.333 D₆₀= D₅₀=

D₃₀= D₁₅= D₁₀=

C_u= C_c=

Classification

USCS= AASHTO=

Remarks

TEST RAN BY SEH ON 12/8/10 PER ASTM D422.

* PWI SAND GRADATION

Sample No.: 33512
Location:

Source of Sample: TP1

Date: 12/8/10
Elev./Depth: 5

Pinnacle Western, Inc.
Roseburg, Oregon

Client: MEAD & HUNT, INC.
Project: ROSEBURG AIRPORT EXTENSION

Project No: 21623.03

Figure

APPENDIX G

TEST CORE 1 & 2 LOGS

Pinnacle Western, Inc. www.pinnaclewestern.com Email: davel@pinnaclewestern.com	3329 NE Stephens St. Roseburg, OR 97470	Phone (541) 440-4871 Fax (541) 672-0677	Page 17 of 20 Project # 21623.03
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TEST LOG

CORE 1

PROJECT: Roseburg Airport Runway Extension **PROJECT NO.:** 21623.03
CLIENT: Mead & Hunt Inc. **DATE:** 12/1/10
LOCATION: 43°14'42.16"N 123°21'21.19"W **ELEVATION:** 530
DRILLER: Pinnacle Western Inc. **LOGGED BY:** David D.
DRILLING METHOD: Milwaukee DymoDrill
DEPTH TO - WATER > INITIAL: ∞ **AFTER DRILLING >:** .5 **SEEPAGE >:** ∅

File: 21623 Date Printed: 1/3/2011

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (feet)	Description	Recov (in)	Driven (in)	Cca	Sample#	Soil Type	Q _u (TSF)	pH	Sampler	Symbol	TEST RESULTS				
											Plastic Limit	Water Content - ●			Liquid Limit
											10	20	30	40	50
0	ASPHALT PAVEMENT														
	3/8"-0" Subrounded Base Rock				33484	CL-silty CLAY, med brown, wet			BAG						
	END OF CORE @15"														
2.5															
5															
7.5															
10															
12.5															
15															
17.5															

TEST LOG

CORE 2

PROJECT: Roseburg Airport Runway Extension PROJECT NO.: 21623.03
 CLIENT: Mead & Hunt Inc. DATE: 12/1/10
 LOCATION: 43°14'42.23"N 123°21'23.6"W ELEVATION: 530
 DRILLER: Pinnacle Western Inc. LOGGED BY: David D.
 DRILLING METHOD: Milwaukee DymoDrill
 DEPTH TO - WATER> INITIAL: ∞ AFTER DRILLING>: .542 SEEPAGE>: ∅

File: 21623 Date Printed: 1/3/2011

This information pertains only to this boring and should not be interpreted as being indicative of the site.

DEPTH (feet)	Description	Recov (in)	Driven (in)	Cca	Sample#	Soil Type	Qu (TSF)	pH	Sampler	Symbol	TEST RESULTS	
											Plastic Limit	Liquid Limit
0	ASPHALT PAVEMENT											
	1"-0" Crushed Base Rock											
	CL-silty CLAY, med brown, wet											
	END OF CORE @18"											
2.5												
5												
7.5												
10												
12.5												
15												
17.5												

Intentionally left blank

PREPARED BY



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