PROJECT MANUAL

FOR

RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT

AIP No. 3-06-0119-06

MONO COUNTY, CALIFORNIA

5-13-09

5.12.2009

Invitation for Bids
Instructions to Bidders
Proposal Forms
Standard Agreement
Federal General Provisions
Special Provisions
Technical Specifications

CONTRACTING AGENCY:

COUNTY OF MONO

Department of Public Works
Post Office Box 457
74 North School Street
Bridgeport, California 93517
760.932.5440

PRE-BID CONFERENCE:

10:30 am, Friday May 29, 2009
Lee Vining Airport
Lee Vining, California

BID SUBMITTAL DEADLINE:

10:30 am, Tuesday, June 9, 2009
Clerk of the Board of Supervisors
74 North School Street / P.O. Box 715
Bridgeport, California 93517

TABLE OF CONTENTS

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT

continued, next page…

TABLE OF CONTENTS, continued…

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT

continued, next page…

TABLE OF CONTENTS, continued…

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT

continued, next page…

INVITATION FOR BIDS

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

Notice is hereby given that the Mono County Department of Public Works calls for bids from qualified General Engineering and Earthwork and Paving contractors to reconstruct the runway at the Lee Vining Airport. In general, this project consists of removal of the existing pavement, earthwork operations, constructing 3-inches of asphalt concrete on 6-inches of aggregate base course, pavement striping, installing medium intensity runway lighting, installing a lighted hold sign, construction of an electrical vault, and construction of a segmented circle with a lighted wind cone. There are seven additive alternatives for this project and they are: construction of a taxiway turnaround with a lighted hold sign, installation of an Automated Weather Observation System, installation of a beacon pole and a rotating beacon, installation of Precision Approach Path Indicators, installation of an apron light, installation of Runway End Identifier Lights, and the installation of Distance Remaining Signs.

The Project Manual and Project Plans provide in detail the County's requirements for the project. Project documents are available by contacting PBS&J at 555 Double Eagle Court, Reno, NV 89521 or by telephone at 775-828-1622. Or by email at monopw@mono.ca.gov, or in person at the Mono County Public Works Department located at 74 N. School Street in Bridgeport, California. Project documents may also be viewed and/or obtained on-line by following the links on the Mono County website at www.monocounty.ca.gov.

Up to two sets of the Project Manual and Project Plans will be provided to each bidder at no charge. Additional sets may be purchased for a non-refundable fee of $50 per set. Checks should be made payable to "PBS&J."

Each bid shall be made on the proposal forms contained in the Project Manual and must be accompanied by bid security in the amount of not less than 10 percent of the total bid.

Bids may be mailed to the Clerk of the Board of Supervisors, P.O. Box 715, Bridgeport, California, 93517, or delivered to the office of the Clerk of the Board of Supervisors, 74 North School Street, Bridgeport, California. In either event, to be considered, bids must be **received** by the Clerk of the Board of Supervisors no later than 10:30 am, Tuesday, June 9, 2009. As soon thereafter as is practicable, all bids received by the Clerk by the bid submission deadline will be taken to the Department of Public Works conference room, located on the second floor of Courthouse Annex 1, 74 North School Street, Bridgeport, and there publicly opened, read aloud, and recorded. All interested parties are invited to attend.

Evan Nikirk, Director
Mono County Department of Public Work

INSTRUCTIONS TO BIDDERS

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

1. SECURING BID DOCUMENTS

The Project Manual (Invitation for Bids, Instructions to Bidders, Proposal Forms, Standard Agreement, Federal General Provisions, Special Provisions, and Technical Specifications) and Project Plans, all of which comprise the Contract Documents, provide in detail the County's requirements for the project. Contract Documents are available by contacting PBS&J at 555 Double Eagle Court, Reno, NV 89521 or by telephone at 775-828-1622. Or by email at monopw@mono.ca.gov, or in person at the Mono County Public Works Department located at 74 N. School Street in Bridgeport, California. Project documents may also be viewed and/or obtained on-line by following the links on the Mono County website at www.monocounty.ca.gov. Up to two sets of the Project Manual and Project Plans will be provided to each bidder at no charge. Additional sets may be purchased for a non-refundable fee of $50 per set. Checks should be made payable to "County of Mono." Allow three to five business days for the printing of additional sets.

2. PRE-BID CONFERENCE

A **mandatory** pre-bid conference will be held at the Lee Vining Airport, located 1.4 miles east of Lee Vining. The meeting is scheduled for **10:30 am on Friday, May 29, 2009**. Should the Department of Public Works determine there is a need to reschedule the pre-bid conference based on severe weather and/or road conditions, all plan-holders will be notified in advance. Bids received from non-attendees will be considered as non-responsive.

3. INTERPRETATION OF PROJECT PLANS AND SPECIFICATIONS

A. For information not provided in the Project Manual or the Project Plans, the bidder shall refer to the Standard Plans or Standard Specifications.

B. Should a bidder find discrepancies in, or omissions from, the Project Manual and Project Plans, or should there be doubt as to their meaning, he shall at once notify the Public Works Director, and should it be found necessary, a written addendum or bulletin of instructions will be sent to all plan-holders.

C. No representative of the County or its agent, or anyone else, is authorized to give oral instructions, interpretations, or explanations of the Project Manual and Project Plans, and a submission of a bid constitutes agreement by the bidder that he has placed no reliance on any such oral explanation or interpretation. Oral instructions may, however, be given by the County or its agent upon inquiry by a bidder to direct the bidder's attention to the specific provisions of the Project Manual or Project Plans that cover the subject of the inquiry.

4. APPROXIMATE QUANTITIES

The quantities given in the Bid Schedule are approximate only, being given as a basis for the comparison of bids. The County does not, expressly or by implication, agree that the actual amount of work will correspond therewith, and reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary.

5. PROPOSALS

A. For bids to receive consideration, they shall be made in accordance with the Invitation for Bids, the Proposal Forms, and these Instructions to Bidders. All bids shall be submitted upon the unaltered Proposal Forms contained in the Project Manual with all items completely filled out with typewritten or legible handwritten responses, and be accompanied by the Bidder's Qualifications Statement (BD-28 through BD-35). Signatures of all persons signing shall be in longhand. The completed Bid Proposal forms shall be without interlineations, alterations, or erasures.

B. ALL BID SUBMITTALS SHALL REMAIN BOUND TOGETHER. Proposal Forms (contained herein on pages BD-1 through BD-37) may be separated from the Project Manual for purposes of bid submittal. For convenience, a separate additional copy of the Proposal Forms is furnished to all plan-holders.

C. Bids shall not contain any recapitulation of the work to be done. Alternative proposals will not be considered unless called for. No oral, telegraphic, or telephonic proposals or modifications will be considered. Unauthorized conditions, limitations, or provisions attached to a bid will render it informal and may cause its rejection.

D. There is limited funding available for this project and therefore, the Owner will award the Contract for the base bid plus the additive alternative(s) that fit within the available funding. The Owner reserves the right for which alternative will be chosen for construction.

E. Each bid is to be in accordance with the Contract Documents. Before submitting a bid, bidders shall carefully read this Project Manual, including the form of the Standard Agreement, and the Project Plans, and inform themselves fully as to all existing conditions and limitations, which may include a visit to the site of the work, and shall include in the bid a sum to cover the cost of all work contemplated in the Contract Documents. The submission of a bid shall be conclusive evidence that the Bidder has reviewed and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and the materials to be furnished, and as to the requirements of the Project Manual and Project Plans.

F. Bidder's attention is directed to the insurance and bond requirements described below and as provided in the Standard Agreement. It is highly recommended that the bidders confer with their respective insurance carriers or brokers to determine the availability of surety bonds, insurance certificates, and endorsements as prescribed and provided herein in advance of bid submission. If an apparent low bidder fails to comply strictly with the bonding and insurance requirements, that bidder may be disqualified from award of the contract and its bid security may be forfeited. The cost of such bonds and insurance shall be included in the Bidder's bid.

G. Each Bidder shall inform himself of, and the Bidder awarded the contract shall comply with, all federal, state, and local laws, statutes and ordinances relative to the execution of the work. This requirement includes, but is not limited to, applicable regulations concerning employment of labor, fair labor practices, equal opportunity, drug-free workplace, construction and building, Americans with Disabilities Act, protection of public and employee health and safety, environmental protection, the protection of natural resources, fire protection, burning and non-burning requirements, permits, fees, and similar subjects.

H. Bid Forms (pages BD-1 through BD-37) and Bidder's bid security must be received in a sealed, opaque envelope clearly labeled with RUNWAY RECONSTRUCTION printed on the outside of the envelope. Bids received unsealed or unlabeled will not be considered. Bids submitted by facsimile (fax) transmission will not be considered.

I. To be considered, bids must be received by the Clerk of the Board of Supervisors no later than 10:30 am, Tuesday, June 9, 2009. Bids may be mailed to the Clerk of the Board of Supervisors, P.O. Box 715, Bridgeport, California, 93517, or delivered to the office of the Clerk of the Board of Supervisors, 74 North School Street, Bridgeport, California, 93517.

J. Bidders are advised that due to the remote nature of central Mono County, "overnight" delivery by the US Postal Service, UPS, FedEx, and other carriers is actually scheduled as a two-day delivery. Bidders should also take potential holiday mail delays into consideration.

6. MODIFICATION OF BID

A Bidder may modify his bid by written communication provided such communication is received by the Board Clerk up to, but not later than, the bid-submission deadline described above. The written communication shall not reveal the bid price but shall state the amount of addition or subtraction or other modification so that the final prices or terms will not be known by the County until the sealed bid is opened.

7. WITHDRAWAL OF BID

Bids may be withdrawn without prejudice by the Bidder up to, but not later than, the time fixed for the opening of bid. Such withdrawal may be made by written letter or by email or facsimile (fax) request. Such request shall be signed by an authorized representative of the Bidder. Bids so withdrawn will be returned unopened to the Bidder by the County. Bids withdrawn following bid opening shall be permitted only as allowed by the Public Contract Code and may subject the accompanying bid security to forfeiture and retention by the County as in the case of failure to execute the awarded contract as provided below. Negligence on the part of the Bidder in preparing the bid shall not empower the Bidder to withdraw the bid subsequent to the opening of bids.

8. AGREEMENT AND BONDS

A. Bidders are required to submit, along with the Proposal Forms, a certified or cashier's check or bidder's bond in an amount of at least 10 percent of the bid made payable to the County of Mono. This security shall be given as a guarantee that the Bidder will enter into a contract if awarded the work, and may be forfeited by the Bidder and retained by the County if the Bidder refuses, neglects, or fails to enter into said contract (including a failure to provide required insurance certificates and bonds) within five calendar days after award of contract by the County.

B. The successful Bidder will be required to furnish a labor and materials bond in an amount equal to 100 percent of the contract price, and a faithful performance bond in an amount equal to 100 percent of the contract price. In addition, the successful Bidder, as Contractor, will be required to furnish a one-year warranty bond upon project completion, pursuant to the requirements in the Standard Agreement and the Special Provisions. Only surety bonds issued by an Admitted Surety Insurer, as defined in Paragraph 11 of the Standard Agreement (sample below), will be accepted. Bonds shall be in a form acceptable to the Mono County Counsel; a sample of an acceptable form of each type of bond required is included with this Project Manual.

C. The Contract Documents include a Standard Agreement, which the successful Bidder, as Contractor, will be required to execute, and the insurance and bonds, which he will be required to furnish.

D. All alterations, extensions of time, extra and additional work, and other changes authorized by the County consistent with applicable provisions of the Contract Documents, may be made without securing the consent of the surety or sureties on the contract bonds.

9. OPENING OF BIDS

A. As soon after the bid-submission deadline as is practicable to do so, all bids received before that deadline that comply with the specification of Section 5.H. above will be taken to the Public Works conference room, located on the second floor of Courthouse Annex 1, 74 North School Street, Bridgeport, and there publicly opened, read aloud, and recorded. All interested parties are

invited to attend. Any bids received after the bid-submission deadline will be returned to the bidder unopened.

10. AWARD OR REJECTION OF BIDS

A. If the County chooses to award a contract for the Project, it will be awarded to the lowest responsible bidder who has submitted the lowest bid that complies with and is responsive to these Instructions to Bidders and the advertised Invitation for Bids, provided the bid is reasonable and it is in the interest of the County to accept it. The amount the County will use to compare bids and determine the apparent low bidder will be the sum of the bidder's base bid plus the amounts bid for all alternate items, which sum shall appear as bidder's "Grand Total" on page BD-13.

B. All bids will be compared on the basis of the Engineer's estimate of the quantities of work to be performed. The bid proposal includes additive alternate items. There is limited funding available for this project and therefore, the Owner will award the Contract for the base bid plus the additive alternative(s) that fit within the available funding. The Owner reserves the right for which alternative will be chosen for construction. In the event of a discrepancy between the numeric total bid written and the numeric total bid calculated, the bid amount calculated by multiplying each item quantity by the unit price and then adding each item of the proposal shall prevail.

C. The County reserves the right to reject any and all bid proposals and to reject the bid of any bidder who has previously failed to perform properly or to complete, on time, contracts with the County of a nature similar to this project. The County further reserves the right to waive any informality or irregularity in any bid.

D. The County also reserves the right to deduct any or all alternate items and unit prices called for on the Bid Schedule from the contract. The order of listing of alternates on the Bid Schedule shall in no way indicate their importance or the order in which the items may be accepted.

E. Contract award, if made, is anticipated to occur within two weeks after the date of bid opening but could, however, occur up to 60 days after said date. In such an event, all bidders will be notified in writing that additional time will be required. No bid can be withdrawn during that period unless such withdrawal is authorized under the Public Contract Code and without subjecting the bid security to retention by the County. Mono County assumes no responsibility for any costs the Bidder may incur, regardless of whether or not a contract is awarded.

11. IDENTIFICATION OF APPARENT LOW BID / BID PROTESTS

After all bids are opened and publicly announced, Public Works personnel will review the bids and then produce a tabulation of bids which will identify the apparent low bid. This tabulation will be distributed to all bidders. A bid protest period shall commence immediately upon distribution of the bid tabulation, during which time any interested person or entity may file a protest in accordance with the directions below with respect to that apparent low bid, or to any other bid submitted, and/or with respect to the qualifications or responsibility of the apparent low bidder, or of any other bidder. This bid protest period shall expire at **5:00 pm, Friday, June 12, 2009**.

After expiration of the bid protest period, the County may, in its discretion: 1) award a contract notwithstanding the filing of a bid protest; 2) refrain from awarding a contract pending resolution of any or all bid protests; or, 3) otherwise proceed as it deems appropriate, including without limit rejecting all bids received. To be considered, a bid protest must: 1) be in writing, identify the person or entity making the protest, and specify the nature of the protest; 2) be ***received*** by Public Works before the bid protest deadline by mail to Post Office Box 457, Bridgeport, California, 93517, or by hand-delivery to 74 North School Street, Bridgeport, or by facsimile (fax) to 760.932.5441, or by email to monopw@mono.ca.gov. The protest procedure described herein must be pursued and exhausted before any person or entity may commence litigation against the County of Mono, or any of its

officers, agents, or employees related to or arising out of the award of a contract for the Project to a bidder whose winning bid could have been the subject of a protest as outlined above.

During the bid protest period, Public Works personnel will also investigate whether the apparent low bidder, and such other bidders as it feels is appropriate, appears to be a "responsible bidder." This determination will be based on the "Bidder's Qualifications Statement" that must accompany each bid, and on such other relevant information as is available. Public Works will make a recommendation to the Board of Supervisors based on its investigation. The Board of Supervisors will make a final determination as to the apparent low bidder's responsibility before awarding a contract for the project.

12. DETERMINATION OF BIDDER'S RESPONSIBILITY

In order to determine whether a bidder is "responsible," as defined in Section 1103 of the Public Contract Code, each bidder shall complete and submit with its bid a "Bidder's Qualifications Statement" (BD-28 through BD-35) which is included herein as a part of the Proposal Documents. The County expressly reserves the right to reject the bid of any bidder whom the County determines is "non-responsible" due to the bidder's lack of experience, financial resources, technical ability, organizational structure, personnel, equipment/tools, and/or such other factors as the County takes into account; to waive as immaterial the bidder's failure to submit a complete Bidder's Qualifications Statement; and, in its sole discretion, to permit the bidder to submit additional information pertaining to bidder's responsibility after the bid-submission deadline.

13. CONTRACT EXECUTION

A. Accompanying the County's Notice of Award will be the Agreement, which the successful Bidder will be required to execute and return, together with the required bonds and certificates of insurance, to the County within seven calendar days following receipt of such Agreement and Notice of Award. Failure to do so shall be just cause for annulment of the contract award and forfeiture of the bid security, which shall be retained by the County as liquidated damages, and it is agreed by both parties that the bid security sum is a fair estimate of such failure. Signature by both parties constitutes execution of the Agreement.

B. In the event the successful Bidder is unable to physically deliver the required bonds and insurance certificates, the Bidder shall, prior to the commencement of the work, submit evidence satisfactory to the County that such bonds and certificates will be furnished in a timely manner.

C. In the event of failure of the lowest responsible Bidder to sign and return the Agreement with acceptable evidence of bonds and insurance certificates as prescribed herein, the County may award the contract to the next lowest responsible Bidder, and so forth, until a fully executed Agreement and acceptable bonding and insurance certificates are received by the County.

D. The bid security of all Bidders will be retained by the County until an Agreement is executed by the successful Bidder and evidence of bonds and insurance acceptable to the County is received, after which those bid securities, except any that may have been forfeited, will be returned to the respective Bidders whose proposals they accompanied.

14. LISTING OF AND SUBSTITUTIONS OF SUBCONTRACTORS

A. If awarded a contract, the Bidder shall perform with his own organization contract work amounting to not less than 25 percent of the original total contract price. The Bidder shall give his/her personal attention to the fulfillment of the contract and shall keep the work under his/her control. All persons engaged in the project work will be held responsible for their work, which shall be subject to the provisions of these Contract Documents.

B. Any person making a bid or offer to perform the work, shall in his/her bid or offer, set forth the name and location of the office, shop, or mill of each subcontractor who will perform work or labor

or render service to the Bidder in or about the construction of the work or improvement and the portion of the work which will be done by each subcontractor if the amount of the subcontractor's work will be in excess of one-half of one percent (0.5%) of the Bidder's bid.

C. If the Bidder fails to specify a subcontractor for any portion of the work to be performed under the contract as specified above, he shall be deemed to have agreed to perform such portion himself, and he shall not be permitted to subcontract that portion of the work except under conditions hereinafter set forth.

D. No Contractor whose bid is accepted shall, without consent of the Public Works Director, either:

(1) Substitute any person as subcontractor in place of the subcontractor designated in the original bid; or,

(2) Permit any subcontractor to be assigned or transferred or allow the work to be performed by anyone other than the original subcontractor listed in the bid; or,

(3) Sublet or subcontract any portion of the work in excess of one-half of one percent (0.5%) of the Bidder's bid as to which his original bid did not designate a subcontractor.

E. Subletting or subcontracting any portion of the work as to which no subcontractor was designated in the original bid shall be permitted only in case of public emergency, necessity, or otherwise in accordance with the Public Contract Code, and then only after a finding has been made in writing as public record of Public Works setting forth the facts constituting such emergency, necessity, or statutory basis for the substitution.

F. It is the County's opinion that if haulers are used merely to convey materials and will not excavate or load the material and if they will not apply judgment as to the suitability of the material to meet project specifications, they do not need to be identified on the "List of Subcontractors" in the bid forms.

15. BIDDERS INTERESTED IN MORE THAN ONE BID

No person, firm, or corporation shall be allowed to make or file or be interested in more than one bid for the same work unless alternative bids are called for. A person, firm, or corporation who has submitted a sub-proposal to a bidder or who has quoted prices on materials to a bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other bidders.

16. COORDINATION WITH OTHER CONTRACTORS

Bidders are required to inform themselves fully of the conditions relating to construction and labor under which the work will be performed, and the Bidder must employ, as far as possible, such methods and means in the carrying out of his work as will not cause any interruptions or interference with any other contractor or the operations of the facility at which the work is being performed.

17. SUBSTITUTIONS

Throughout the Project Plans and specifications, materials may be specified that are in short supply or that are restricted by government limitation orders. For the purpose of submitting proposals, the Bidder shall assume that the County will require all materials to be furnished as specified. No substitutions will be permitted until all sources or supply have been exhausted and written notice is given to the Public Works Director stating such fact. Substituted materials shall have the written approval of the Public Works Director, or his authorized agent, before installation in the project.

18. CONTRACTOR'S LICENSING LAWS

A. The successful bidder, as Contractor, will be required to furnish a valid Mono County Business License issued by the Mono County Treasurer prior to commencing the work.

B. In order to be eligible for award of a contract for the project, a bidder must possess either of the following classification(s) of contractor's license: **Class A – General Engineering** and/or **C12 – Earthwork and Paving**.

C. Attention is directed to the provisions of Chapter 9, Division 3, of the California Business & Professions Code concerning the licensing of contractors. All bidders, contractors, and subcontractors shall be licensed in accordance with the laws of the State of California and any bidder, contractor, or subcontractor not so licensed is subject to the penalties imposed by such laws. The contractor shall possess the appropriate licenses to cover the above advertised work.

19. LABOR REQUIREMENTS

The services and work to be provided by Contractor for this project constitute a public work within the meaning of California Labor Code Sections 1720 and 1720.3. Accordingly, and as required by Section 1771 of the California Labor Code, the successful bidder, as Contractor, and any subcontractor under him, shall pay not less than the general prevailing rate of per diem wages ("prevailing wage") specified for each craft and classification to all workers employed in the execution of the project. Copies of prevailing wages, as determined by the Director of the California Department of Industrial Relations, are on file at the office of the Mono County Department of Public Works, located at 74 North School Street in Bridgeport, California, and are available to any interested party upon request. These wages are not included in the Contract Documents for the project. Changes, if any, to prevailing wage rates will be available at the same location.

20. PROJECT SCHEDULE

The work shall be completed within one-hundred twenty (120) calendar days, with liquidated damages of $1,000 per calendar day should the Contractor fail to complete the work within the time allowed.

PROPOSAL

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

Proposal of _____ (hereinafter, "Bidder"), organized and existing under the laws of the State of California, doing business as _____ (i.e., "a partnership;" "a corporation;" "an individual"), as applicable to the County of Mono, (hereinafter, "the County"). This bid proposal consists of the attached pages BD-1 through BD-37.

In compliance with your Invitation for Bids and Instructions to Bidders, Bidder hereby proposes to perform all work for RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT in strict accordance with the Instructions to Bidders, Project Plans, Federal General Provision, Special Provisions, Technical Specifications, agreement, any applicable addenda, and other Contract Documents within the time set forth therein and below and at prices stated on the attached Bid Schedule. Prices quoted in this proposal include, but are not limited to, the cost for all labor, materials, tools, equipment, supplies, transportation, permits, services, and applicable local, state, and/or federal taxes, fees, patent rights, and/or royalties necessary to complete the work contemplated under the Agreement.

By submission of this Bid Proposal, Bidder certifies (and in the case of a joint bid, each party thereto certifies as to his own organization) that this bid has been arrived at independently without consultation, communication, or agreement as to any matter relating to this bid with any other bidder or with any competitor.

Bidder hereby agrees to commence work under the Agreement on or before 14 calendar days following the award of contract by the County, unless a later date is specified by the County in the Notice to Proceed, and to **fully complete the project prior to October 28, 2009**, pursuant to the provisions specified in the Special Provisions.

It is understood that, except for lump sum items, the quantities set forth in the Bid Schedule are approximate only and are solely for the purpose of facilitating the comparison of bids, and that the Bidder's compensation will be computed on the basis of documented final quantities in completed work, measured as specified, whether they be more or less than those shown.

Bidder's Company Name: _____

Company Address: _____

_____

Office Telephone No.: _____ Fax No.: _____

Contractor's Calif. License No.: _____ Class: _____

Mono County Business Lic. No.: _____

Name of Company Officer: _____ Title: _____

_____
Bidder's Signature Date

(Add seal if by a corporation)

BID SCHEDULE

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
BASE BID – RECONSTRUCT RUNWAY 15/33, INSTALL MIRL WITH LIGHTED HOLD SIGN, CONSTRUCT ELECTRICAL VAULT, AND CONSTRUCT SEGMENTED CIRCLE WITH A LIGHTED WIND CONE					
P-100-1	Mobilization/Demobilization _____ dollars _____ cents	1	L.S.		
P-104-1	Pavement Removal _____ dollars _____ cents	22,590	S.Y.		
P-104-2	4-Strand Barbed Wire Fence Removal _____ dollars _____ cents	308	L.F.		
P-104-3	Tire Segmented Circle Removal _____ dollars _____ cents	1	L.S.		
P-104-4	Lighted Wind Cone Removal _____ dollars _____ cents	1	L.S.		
P-151-1	Clearing and Grubbing (runway and segmented circle area) _____ dollars _____ cents	30.40	Acres		
P-152-1	Unclassified Excavation and Embankment _____ dollars _____ cents	1	L.S.		

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
P-152-2	Overexcavation of Unsuitable Soils and Backfill w/ Suitable _____ dollars _____ cents	2,000	C.Y.		
P-156-1	Temporary Air and Water Pollution, Soil, Erosion and Siltation Control _____ dollars _____ cents	1	L.S.		
P-209S-1	6-inch Aggregate Base Course (runway and segmented circle area) _____ dollars _____ cents	35,845	S.Y.		
P-401S-1	3-inch Plant Mix Bituminous Pavement w/ Fog Seal _____ dollars _____ cents	29,600	S.Y.		
P-620-1	6-inch Solid Yellow Stripe _____ dollars _____ cents	93	L.F.		
P-620-2	12-inch Solid White Stripe _____ dollars _____ cents	2,220	L.F.		
P-620-3	36-inch Yellow Chevron Stripe _____ dollars _____ cents	576	L.F.		
P-620-4	White Runway Numerals _____ dollars _____ cents	4	Each		
P-620-5	White Striated Threshold Markings _____ dollars _____ cents	2	Each		

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
P-620-6	Yellow Holding Position Markings _____ dollars _____ cents	1	Each		
D-703-1	24-inch Thick Rock Rip-Rap _____ dollars _____ cents	800	S.F.		
F-161-1	4-Strand Barbed Wire Fence _____ dollars _____ cents	945	L.F.		
T-901-1	Hydroseed _____ dollars _____ cents	27.27	Acres		
L-130-1	Segmented Circle _____ dollars _____ cents	1	L.S.		
L-893-1	Lighted “X” Runway Closure Marking with Power Supply _____ dollars _____ cents	2	Each		
L-100-6.1	Airfield Electrical Demolition _____ dollars _____ cents	1	L.S.		
L-100-6.2	Temporary Airfield Electrical _____ dollars _____ cents	1	L.S.		
L-100-6.3	Meter and Electrical Service _____ dollars _____ cents	1	L.S.		
L-100-6.4	Regulator Testing _____ dollars _____ cents	1	L.S.		

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
L-100-6.5	Cable Meggar Testing _____ dollars _____ cents	1	L.S.		
L-108-5.1	#8 5 KV L-824 C Cable _____ dollars _____ cents	17,910	L.F.		
L-109-5.1	4 KW Constant Current Regulator _____ dollars _____ cents	1	Each		
L-109-5.2	10 KW Constant Current Regulator _____ dollars _____ cents	2	Each		
L-109-5.3	Miscellaneous Vault Work _____ dollars _____ cents	1	L.S.		
L-109-5.4	Vault Building _____ dollars _____ cents	1	L.S.		
L-110-5.1	Five 2-Inch Conduit, Concrete Encased (C.E.) _____ dollars _____ cents	82	L.F.		
L-110-5.2	Four 2-Inch Conduit, Concrete Encased _____ dollars _____ cents	174	L.F.		
L-110-5.3	Three 2-Inch Conduit, Concrete Encased _____ dollars _____ cents	135	L.F.		
L-110-5.4	Five 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	381	L.F.		

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
L-110-5.5	Three 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	4,115	L.F.		
L-110-5.6	One 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	9,100	L.F.		
L-127-5.1	Hand Hole, Type 1, furnished and installed _____ dollars _____ cents	5	Each		
L-807-5.1	Size 2 Wind Cone with New Concrete Foundation, Installed Complete _____ dollars _____ cents	1	Each		
L-858-5.4	Size 2, 1-Module Sign, with New Concrete Base, Base Can, Isolation Transformer and Connections _____ dollars _____ cents	1	Each		
L-861-4.1	MIRL Runway Edge Light, Installed Complete _____ dollars _____ cents	38	Each		
L-861-4.2	Runway Threshold Light, Installed Complete _____ dollars _____ cents	12	Each		
L-861T-4.1	New Elevated Taxiway LED Edge Light, Installed Complete _____ dollars _____ cents	20	Each		
L-867/868-6.1	Size “D” L867 Base Can and Cover for Three Base Can Assembly _____ dollars _____ cents	12	Each		

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
L-867/868-6.2	Size “D” L867 Base Can and Cover for Four Base Can Assembly _____ dollars _____ cents	1	Each		
L-867/868-6.3	Size “D” L867 Base Can and Cover for Ground Rod _____ dollars _____ cents	25	Each		
	BASE BID TOTAL: _____ dollars _____ cents				
	ADDITIVE ALTERNATE 1 – TAXIWAY TURNAROUND				
P-151-1-A1	Clearing and Grubbing _____ dollars _____ cents	0.59	Acres		
P-152-1-A1	Unclassified Excavation and Embankment _____ dollars _____ cents	1	L.S.		
P-152-2-A1	Overexcavation of Unsuitable Soils and Backfill w/ Suitable _____ dollars _____ cents	50	C.Y.		
P-156-1-A1	Temporary Air and Water Pollution, Soil, Erosion and Siltation Control _____ dollars _____ cents	1	L.S.		
P-209S-1-A1	6-inch Aggregate Base Course _____ dollars _____ cents	555	S.Y.		

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
P-401S-1-A1	3-inch Plant Mix Bituminous Pavement w/ Fog Seal _____ dollars _____ cents	515	S.Y.		
P-620-1-A1	6-inch Solid Yellow Stripe _____ dollars _____ cents	89	L.F.		
P-620-6-A1	Yellow Holding Position Marking _____ dollars _____ cents	1	Each		
D-701-1-A1	24-inch RCP Class III _____ dollars _____ cents	108	L.F.		
D-701-2-A1	24-inch RCP End Sections _____ dollars _____ cents	2	Each		
D-703-1-A1	24-inch Thick Rock Rip-Rap _____ dollars _____ cents	200	S.F.		
L-131-1-A1	Retroreflective Markers _____ dollars _____ cents	12	Each		
T-902-1-A1	Hydroseed _____ dollars _____ cents	0.40	Acres		
L-108-5.1-A1	#8 5 KV L-824 C Cable _____ dollars _____ cents	165	L.F.		

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
L-110-5.6-A1	One 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	75	L.F.		
L-858-5.4-A1	Size 2, 1-Module Sign, with New Concrete Base, Base Can, Isolation Transformer and Connections _____ dollars _____ cents	1	Each		
	ADDITIVE ALTERNATIVE 1 TOTAL: _____ dollars _____ cents				
	ADDITIVE ALTERNATE 2 – AWOS				
L-100-5.6-A2	A-V Automated Weather Observation System (AWOS) _____ dollars _____ cents	1	L.S.		
L-109-5.3-A2	Miscellaneous Vault Work _____ dollars _____ cents	1	L.S.		
L-110-5.6-A2	One 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	100	L.F.		
	ADDITIVE ALTERNATIVE 2 TOTAL: _____ dollars _____ cents				

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
ADDITIVE ALTERNATE 3 – BEACON POLE AND ROTATING BEACON					
P-151-1-A3	Clearing and Grubbing _____ dollars _____ cents	0.12	Acres		
P-209S-1-A3	6-inch Aggregate Base Course _____ dollars _____ cents	520	S.Y.		
T-902-1-A3	Hydroseed _____ dollars _____ cents	0.02	Acres		
L-103-1-A3	55' Tipdown Beacon Pole _____ dollars _____ cents	1	Each		
L-100-5.1-A3	Airfield Electrical Demolition _____ dollars _____ cents	1	L.S.		
L-108-5.1-A3	#8 5 KV L-824 C Cable _____ dollars _____ cents	1,000	L.F.		
L-109-5.3-A3	Miscellaneous Vault Work _____ dollars _____ cents	1	L.S.		
L-110-5.6-A3	One 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	500	L.F.		
L-801-4.1-A3	L-801A Rotating Beacon, Installed _____ dollars _____ cents	1	Each		
	ADDITIVE ALTERNATIVE 3 TOTAL: _____ dollars _____ cents				

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
	ADDITIVE ALTERNATE 4 – PAPI's				
L-108-5.1-A4	#8 5 KV L-824 C Cable _____ dollars _____ cents	9,200	L.F.		
L-109-5.1-A4	4 KW Constant Current Regulator _____ dollars _____ cents	1	Each		
L-109-5.3-A4	Miscellaneous Vault Work _____ dollars _____ cents	1	L.S.		
L-110-5.6-A4	One 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	100	L.F.		
L-881-6.1-A4	Type L-881, Style B PAPI, Complete _____ dollars _____ cents	2	Each		
	ADDITIVE ALTERNATIVE 4 TOTAL: _____ dollars _____ cents				
	ADDITIVE ALTERNATE 5 – APRON LIGHT				
L-109-5.3-A5	Miscellaneous Vault Work _____ dollars _____ cents	1	L.S.		
L-110-5.6-A5	One 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	100	L.F.		
E-16502-8.1-A5	Type A Exterior Apron Light Fixture (2 lights) _____ dollars _____ cents	1	Each		
	ADDITIVE ALTERNATIVE 5 TOTAL: _____ dollars _____ cents				

ITEM	DESCRIPTION with UNIT PRICES IN WORDS	QUANTITY	UNIT	UNIT PRICE	BID AMOUNT ($)
	ADDITIVE ALTERNATE 6 – REIL's				
L-108-5.1-A6	#8 5 KV L-824 C Cable _____ dollars _____ cents	11,000	L.F.		
L-109-5.1-A6	4 KW Constant Current Regulator _____ dollars _____ cents	1	Each		
L-849-5.1-A6	REIL and Controller, Installed Complete and Tested _____ dollars _____ cents	2	Each		
	ADDITIVE ALTERNATIVE 6 TOTAL: _____ dollars _____ cents				
	ADDITIVE ALTERNATE 7 – DISTANCE REMAINING SIGNS				
L-108-5.1-A7	#8 5 KV L-824-C Cable _____ dollars _____ cents	880	L.F.		
L-110-5.6-A7	One 2-Inch Conduit, Direct Buried (D.B.) _____ dollars _____ cents	400	L.F.		
L-858-5.5-A7	Size 4, RDR Sign, with New Concrete Base, Base Can, Isolation and Connections _____ dollars _____ cents	4	Each		
	ADDITIVE ALTERNATIVE 7 TOTAL: _____ dollars _____ cents				

BASE BID TOTAL:	**$**
ADDITIVE ALTERNATIVE 1 TOTAL:	**$**
ADDITIVE ALTERNATIVE 2 TOTAL:	**$**
ADDITIVE ALTERNATIVE 3 TOTAL:	**$**
ADDITIVE ALTERNATIVE 4 TOTAL:	**$**
ADDITIVE ALTERNATIVE 5 TOTAL:	**$**
ADDITIVE ALTERNATIVE 6 TOTAL:	**$**
ADDITIVE ALTERNATIVE 7 TOTAL:	**$**
GRAND TOTAL* (BASE BID + ADDITIVE ALTERNATIVES 1-7):	**$**

* County will use this total to compare bids and determine apparent low bidder.

LIST OF SUBCONTRACTORS

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

Listed hereinafter are the names and addresses of all subcontractors who will be employed in the completion of project work and the type of work that each will perform if the contract is awarded to the undersigned Bidder. I understand that under California Public Contract Code Section 4104, contained in the Subletting and Subcontracting Fair Practices Act (Public Contract Code §4100 et seq.) I must clearly set forth the name and address of each subcontractor who will perform work or labor or render service to me in or about the construction of the work in an amount in excess of one-half of one percent (0.5%) of my total bid, and that as to any work in which I fail to do so, I agree to perform that portion myself or be subject to penalty under the Act.

Notes:
A. In the event that more than one subcontractor is named for the same type of work, state the portion of which each will perform; provide Contractor's license number of each subcontractor.
B. Vendors or suppliers that will be providing materials only need not be listed.
C. If further space is required, copies of this sheet or additional sheets showing the required information, as indicated below, shall be attached hereto and made a part of the proposal.
D. The above statement constitutes a part of the proposal and signature on the signature portion of the bid proposal constitutes signature on this statement.

SUBCONTRACTOR #1

Company Name & Address: _____

_____

_____

Office Phone & Fax No.: _____

Work to be Performed: _____

Calif. Contractor's Lic. No.: _____

SUBCONTRACTOR #2

Company Name & Address: _____

_____

_____

Office Phone & Fax No.: _____

Work to be Performed: _____

Calif. Contractor's Lic. No.: _____

SUBCONTRACTOR #3

Company Name & Address: _____

_____

_____

Office Phone & Fax No.: _____

Work to be Performed: _____

Calif. Contractor's Lic. No.: _____

DBE INFORMATION

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

GOOD FAITH EFFORTS

Bidders shall submit the following information to demonstrate that a good faith effort to meet the DBE goal has been made if their BIDDER - DBE INFORMATION form indicates that the bidder has met the DBE goal. This will protect the bidder's eligibility for award of the contract if the County's analysis of the submittal determines that the bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid opening, or the bidder made a mathematical error.

Submittal of only the BIDDER - DBE INFORMATION form may not provide sufficient documentation to demonstrate that a good faith effort was made. Documentation such as copies of advertisements, letters of solicitation, telephone logs, rejected DBE quotes and selected non-DBE quotes, etc. should accompany this form.

1. The names and dates of advertisement of each newspaper, trade paper, and minority-focus paper in which a request for DBE participation for this project was placed by the bidder:

Papers	Dates of Advertisement

2. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBE's were interested:

Names of DBE's Solicited	Dates of Solicitations	Follow Up Methods and Dates

3. The items of work which the bidder made available for DBE firms, including, where appropriate, any breaking down of the contracts into economically feasible units to facilitate DBE participation, and the information furnished to DBEs such as plans, specifications, and requirements for the work. It is the bidder's responsibility to demonstrate that sufficient work to meet the DBE goal was made available to DBE firms:

Items of work:

Breakdown of items:

Information Furnished:

4. The names of DBEs who submitted bid which were not accepted, a summary of the bidder's discussions and/or negotiations with them, the name of the firm selected for that portion of the work, and the reasons for the bidder's choice.

Name of rejected DBEs:

_____
_____
_____

Summary of discussions and/or negotiations:

_____
_____
_____

Names of firms selected over the rejected DBEs listed above and the reasons for that choice:

_____
_____
_____

5. Efforts made to assist DBEs in obtaining bonding, lines of credit or insurance, and any technical assistance related to the plans, specifications, and requirements for the work, which was provided, to DBEs:

_____
_____
_____

6. Any additional data to support a demonstration of good faith effort, such as contacts with DBE assistance agencies:

_____
_____
_____

**Note: Use additional sheets of paper if necessary

LOCAL AGENCY BIDDER – DBE INFORMATION

CO/RTE/PM Lee Vining Airport

CONTRACT NO. _____

BID AMOUNT $_____

BID OPENING DATE:_____

This information must be submitted with your bid proposal
If it is not, and you are the apparent low bidder or the second or Third low bidder, it must be submitted and received by the Administering agency no later than the time specified in the special provisions.

BIDDERS NAME: _____

ADDRESS: _____

_____

DBE GOAL FROM CONTRACT: _____ %

CONTRACT ITEM NO.	ITEMS OF WORK AND DESCRIPTION OF WORK OR SERVICES TO BE SUBCONTRACTED OR MATERIAL TO BE PROVIDED	FOR COUNTY USE ONLY	NAME OF DBE** (Name of DBEs, Certification Number, and Telephone No.) (Identify Second and Lower Tier Subs.)	FOR COUNTY USE ONLY	DOLLAR AMOUNT *** DBE	PERCENT *** DBE
				Total Claimed Participation	$_____ _____%	$_____ _____%

* If 100% of item is not to be performed or furnished by DBE, describe exact portion, including planned location of work to be performed, of item to be performed or furnished by DBE.
** DBEs must be certified by CalTrans on the date bids are opened. Subcontractors and suppliers certified State funded only, cannot be used to meet goals on Federally Funded contracts.
*** Credit for a DBE supplier, who is not a manufacturer, is limited to 60% of the amount paid to the supplier. (See section entitle "Disadvantaged Business" (DBE) of the Special Provisions.)

IMPORTANT: Names of DBE subcontractors and their respective item(s) of work listed above shall be consistent with the names and items of work in the "List of Subcontractors" submitted with your bid pursuant to the Subcontractors Listing Law.

_____
Signature of Bidder

_____
Date (Area Code) Telephone Number

_____
Person to Contact (Please type or print)

Distribution for NHS Projects: (1) Original-Caltrans DLAE for NHS Projects, (2) Copy – Local Agency Project File
Distribution for Non-NHS Projects: (1) Original Local Agency project file

ACKNOWLEDGEMENTS

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

RECEIPT OF ADDENDA

The County of Mono is advised that Bidder has received the following addenda for the Contract Documents, including plans, specifications, and special provisions for the above-referenced project:

Addendum Number: _____ Issuance Date: _____

Subject Matter: _____

Addendum Number: _____ Issuance Date: _____

Subject Matter: _____

Addendum Number: _____ Issuance Date: _____

Subject Matter: _____

Addendum Number: _____ Issuance Date: _____

Subject Matter: _____

If you did not receive any addenda for the above-referenced project, please initial here: _____

ACKNOWLEDGEMENT OF SITE VISIT(S)

The County of Mono is advised that I have visited the project site as acknowledged by my initials below. In doing so, I have made myself aware of the conditions that exist and have prepared the attached bid proposal accordingly.

Lee Vining Airport: Yes _____ No _____

Note: This questionnaire constitutes a part of the proposal, and signature on the signature portion of the proposal constitutes signature on this questionnaire.

DISCLOSURES AND CERTIFICATIONS

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

QUESTIONNAIRE A

In accordance with Government Code Section 14310.5, the Bidder shall complete the following questionnaire:

Has the Bidder, or any officer or employee of the Bidder who has a proprietary interest in the Bidder, ever been disqualified, removed, or otherwise prevented from bidding on or completing a federal, state, or local government project because of a violation of law or safety regulation?

Yes: _____ No: _____

If the answer is yes, please explain the circumstances in the space provided below and/or attach separate sheet(s) as necessary, with signature affixed.

QUESTIONNAIRE B

Under penalty of perjury, the Bidder shall complete the following questionnaire:

Within the past three years, has the Bidder, or any officer or employee of the Bidder who has a proprietary interest in the Bidder, ever been convicted by a court of competent jurisdiction of any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any federal or state antitrust law in connection with the bidding upon, award of, or performance of, any Public Works Contract, as defined in Section 1101, with any public entity as defined in Section 1100 of the California Public Contract Code, the Regents of the University of California or the Trustees of the California State University?

Yes: _____ No: _____

If the answer is yes, please explain the circumstances in the space provided below and/or attach separate sheet(s) as necessary, with signature affixed.

Note: This questionnaire constitutes a part of the proposal, and signature on the signature portion of the proposal constitutes signature on this questionnaire.

WORKERS' COMPENSATION CERTIFICATION

I do hereby certify that I am aware of the provisions of the California Labor Code which requires every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of work in this contract.

NON-COLLUSION AFFIDAVIT

In accordance with Section 112, Title 23 of the United States Code, and with Section 7106 of the California Public Contract Code, the Bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: This questionnaire constitutes a part of the proposal, and signature on the signature portion of the proposal constitutes signature on this questionnaire.

EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

The bidder hereby certifies the he has_____, has not_____, participated in a previous Contract subject to the equal opportunity clause prescribed by Executive Order 110925, or Executive Order 1114, or Executive Order 11246, as amended, of September 24, 1965.

The bidder hereby certifies the he has_____, has not_____, submitted all compliance reports in connection with any such Contract due under this applicable filing requirements; and that representations indicating submission of required compliance reports signed by proposed Subcontractors will be obtained prior to award of all subcontracts.

NOTE: If the Bidder has participated in a previous Contract subject to the equal opportunity clause and has not submitted compliance reports due under applicable filing requirements, the Bidder shall submit a compliance report on Statdard Form 100, “Employee Information Report EEO-1” prior to the award of the Contract.

The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt form the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7 (b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

Note: This questionnaire constitutes a part of the proposal, and signature on the signature portion of the proposal constitutes signature on this questionnaire.

CERTIFICATION OF NONSEGREGATED FACILITIES

The federally-assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies further that they will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term “segregated facilities” means any waiting room, work areas, rest rooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex or national origin, because of habit, local custom, or any other reason. The federally-assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the equal opportunity clause, and that he will retain such certifications in his files.

_____ _____

Date Signature and Title

_____

IRS Employer Identification Number

Note: This questionnaire constitutes a part of the proposal, and signature on the signature portion of the proposal constitutes signature on this questionnaire.

DEBARMENT AND SUSPENSION CERTIFICATION

TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29

The bidder, under penalty of perjury, certifies that, except as noted below, she/he or any other person associated therewith in the capacity of owner, partner, director, officer manager:

Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;

Has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past 3 years;

Does not have a proposed debarment pending; and

Has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exception in the following space:

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of actions.

NOTES: Providing false information may result in criminal prosecution or administrative sanction. The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this certification.

Note: This questionnaire constitutes a part of the proposal, and signature on the signature portion of the proposal constitutes signature on this questionnaire.

NONLOBBYING CERTIFICATION OF FEDERAL AID CONTRACTS

The prospective participant 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 undersigned, to any person for influencing or attempting to influence an office or employee of any Federal 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 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 Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL*, “Disclosure of Lobbying Activities,” in accordance with its instructions.

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

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such subrecipiants shall certify and disclosure accordingly.

Note: This questionnaire constitutes a part of the proposal, and signature on the signature portion of the proposal constitutes signature on this questionnaire.

DISCLOSURE OF LOBBYING ACTIVITIES

COMPLETE THIS FORM TO DISCLOSE LOBBYING ACTIVITIES PURSUANT TO 31 U.S.C. 1352

1. Type of Federal Action:

☐

a. contract
b. grant
c. cooperative agreement
d. loan
e. loan guarantee
f. loan insurance

2. Status of Federal Action:

☐

a. bid/offer/application
b. initial award
c. post-award

3. Report Type:

☐

a. initial
b. material change

For Material Change Only:
year_____ quarter ____
date of last report _____

4. Name and Address of Reporting Entity

☐ Prime ☐ Subawardee
Tier _____, if known

Congressional District, if known

5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:

Congressional District, if known

6. Federal Department/Agency:

7. Federal Program Name/Description:

8. Federal Action Number, if known:

9. Award Amount, if known:

10. a. Name and Address of Lobby Entity
(If individual, last name, first name, MI)

b. Individuals Performing Services (including address if different from No. 10A)
(last name, first name, MI)

(attach Continuation Sheet(s) if necessary)

11. Amount of Payment (check all that apply)
$ _____ ☐ actual planned

12. Form of Payment (check all that apply):

☐ a. cash
☐ b. in-kind; specify nature _____
value _____

13. Type of Payment (check all that apply)

☐ a. retainer
☐ b. one-time fee
☐ c. commission
☐ d. contingent fee
☐ e. deferred
☐ f. other, specify _____

14. Brief Description of Services Performed or to be performed and Date(s) of Service, including officer(s), employee(s), or member(s) contacted, for Payment Indicated in Item 11:

(attach Continuation Sheet(s) if necessary)

15. Continuation Sheet(s) attached: **Yes** ☐ **No** ☐

16.

Information requested through this form is authorized by Title 31 U.S.C. Section 1352. This disclosure of lobbying reliance Was placed by the tier above when his transaction was made Or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress Semiannually and will be available for puclis inspection. Any Person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature: _____

Print Name: _____

Title: _____

Telephone No.: _____ **Date:** _____

Authorized for Local Reproduction
Standard Form – LLL
Federal Use Only:

INSTRUCTION FOR COMPLETION OF SF-LLL
DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of covered Federal action or a material change to previous filing pursuant to Title 31 U.S.C. Section 1352. The filing of a form is required for such payment or agreement to make payment to lobbying entity 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 a covered Federal action. Attach a continuation sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and or has been secured to influence, the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which change occurred. Enter the date of the last, previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state, and zip code for the reporting entity. Include Congressional district if known. Check the appropriate classification of the reporting entity that designates if it is or expects to a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, subgrants, and contract awards under grants.
5. If the organization filing the report in item 4 checks “Subawardee” then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal Agency making the award or loan commitment. Include at least one organization level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identification in item 1 (e.g., Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract grant, or loan award number, the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., “RFP-DE-90-001”.
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitments for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.
11. Enter the full name of individual(s) performing services and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).
    Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or plan to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an inkind contribution, specify the nature and value of the in-kind payment.

13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed or will be expected to perform and the date(s) of any services rendered. Include all preparatory and related activity not just time spent in actual contact with Federal officials. Identify the Federal officer(s) or employee(s) contacted or the officer(s) employee(s) or Member(s) of Congress that were contacted.
15. Check whether or not a continuation sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name title and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instruction, searching existing data sources, gathering and maintaining the date needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget Paperwork Reduction Project (0348-0046). Washington D.C. 20503.

SF-LLL instructions
Rev. 06-04-9

BIDDER'S QUALIFICATION STATEMENT

RUNWAY RECONSTRUCTION AT THE
LEE VINING AIRPORT
AIP No. 3-06-0119-06

This Qualifications Statement will be used by Mono County to determine if a Bidder is qualified to do the work to be performed and therefore to find if the Bidder is a "responsible" bidder. The Qualifications Statement should be completed on behalf of the Bidder by an officer or other individual who is knowledgeable about the Bidder's past and current operations, policies, and practices. A response must be provided to each question. If a particular question does not apply, the response should state "not applicable" or "N/A". **Qualifications statements that contain missing or incomplete answers may render the proposal non-responsive.** The County reserves the right, however, to allow the bidder to submit additional information pertaining to its qualifications after the bid-submission deadline if circumstances warrant.

Answers may be expanded upon by attaching additional pages. Use 8½" x 11" paper and mark each additional page with the Bidder's name and identification of the particular question to which an answer is being given. For the purposes of this Statement, the terms "company," "firm," "bidder," "proposer," and "contractor" are used interchangeably and have the same meaning.

The following documents or information must be included with your Qualifications Statement for this Bid Proposal:

Insurance: Contractor must provide proof that the firm is insured at least to the limits identified in the Draft Agreement.

Licenses: Copies of all applicable and current trade licenses issued to the Contractor which legally allow the Contractor to perform the work identified for this Project.

Previous Work History: This Statement includes a form titled "Experience on Completed or Ongoing Projects." Please use this form to detail the work that the firm has performed within the last three years. A minimum of three successfully-completed highway and/or airport construction projects are required. Use one page per project and reproduce copies of the form as necessary. In each project description, identify your firm as a prime contractor, subcontractor, or joint venture partner.

OSHA Violations: If at any time within the past five years the Contractor has received an OSHA serious violation, you must provide copies of the *Citation and Notification of Penalty,* signed *Settlement Agreement,* and narrative which details the specific issue(s) cited, remedial action required and taken by the Contractor, amount of fine initially imposed, and ultimate resolution.

Resumes and Organizational Chart: The Contractor must include current resumes for each Principal and key individual identified in Question 2B below. The statement must also include a copy of the firm's current Organizational Chart.

Equipment: The Contractor must provide a list of equipment that would be available for the work.

Note: This Statement constitutes a part of the proposal, and signature on the signature portion of the proposal constitutes signature on this Statement.

1. GENERAL INFORMATION:

A. Type of organization: _____

If Corporation, include year and state incorporated
If Partnership, state whether general or limited
If Sole Proprietorship, include name of owner
If Joint Venture*, include name all partnering firms

(*Bidder's submitting a bid as joint venture must obtain a joint venture contractor's license before they may be awarded a contract, per Business and Professions Code §7029.1).

B. Is the firm certified as a Minority Business Enterprise (MBE) or Women Business Enterprise (WBE)?

_____ Yes (attach certification letter) _____ No

2. PERSONNEL:

A. Identify the current number of employees below:

Employee Type	Full-Time	Part-Time
Office		
Field		

B. Principals and Key Personnel: On the chart below, supply the required information. Principals and Key Personnel include proprietors, partners, directors or officers of the firm; any manager or individual who participates in overall policy-making or financial decisions of the firm; any person who makes significant financial contributions to the firm's operations; any person in a position to control and direct the firm's overall operations or any significant part of its operation (including site foremen and superintendents). Resumes for Principals and Key Personnel must be provided herewith. Use additional sheets if necessary to identify all Principals and Key Personnel.

Description	Person 1	Person 2	Person 3
Name			
Title			
% Ownership			

(Use additional sheets if necessary to identify all Principals and Key Personnel)

3. FINANCIAL INFORMATION:

A. Are there any liens outstanding against the Contractor? ☐ Yes ☐ No
(if yes, provide a detailed explanation on an attached sheet)

B. Has the Contractor, Principals or Key Personnel been party to a bankruptcy or reorganization proceeding with the last five years? ☐ Yes ☐ No
(if yes, provide a detailed explanation on an attached sheet)

C. Annual sales dollar volume of Contractor: $_____

4. INTEGRITY OF CONTRACTOR: Please provide an explanation on an attached sheet for any of the following questions with the answer "yes".

A. During the past five years has the Contractor:

i. Been subject of a lien or claim of $25,000 or more by a subcontractor or supplier? ☐ Yes ☐ No

ii. Failed to complete a contract? ☐ Yes ☐ No

iii. Been suspended, debarred, disqualified or otherwise declared ineligible to bid? ☐ Yes ☐ No

iv. Been defaulted on any contract? ☐ Yes ☐ No

v. Had a contract terminated? ☐ Yes ☐ No

vi. Had liquidated damages assessed against it upon completion of a contract? ☐ Yes ☐ No

vii. Been a plaintiff or defendant in any lawsuits arising out of public or private construction contracts? ☐ Yes ☐ No

B. During the past five years has the Contractor, Principals or Key Personnel:

i. Been a plaintiff or defendant in any lawsuits arising out of public or private construction contracts? ☐ Yes ☐ No

ii. Been the subject of an investigation involving any alleged violation of criminal law, civil antitrust law or other federal, state, or local civil law? ☐ Yes ☐ No

iii. Been convicted after trial or by plea of any felony under state or federal law? ☐ Yes ☐ No

iv. Entered a plea of nolo contendere to a charge of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property or violation of an antitrust law? ☐ Yes ☐ No

v. Been the subject of an investigation of any alleged violation of federal, state, or local regulations by any public agency? ☐ Yes ☐ No

vi. Been found to have committed a violation of any labor law or regulation including prevailing wage rates and fair labor practices? ☐ Yes ☐ No

vii. Been found to have committed an OSHA "serious violation"? ☐ Yes ☐ No

viii. Been found to have committed a construction-related violation of federal, state, or local environmental law or regulation? ☐ Yes ☐ No

5. BIDDING CAPABILITY AND PREVIOUS EXPERIENCE:

A. Provide a detailed narrative of the Contractor's experience and involvements in highway and/or airport construction projects. Previous experience in this field of construction is necessary for the contractor to be found responsible specific to this Project. Additional information can be provided on an attached sheet.

☐ mark if continued on attached sheet

B. Identify Contractor Specialty capabilities (check all appropriate). Bidder must have self-performing capability for each specialty selected by the Bidder.

- ☐ 1. Sitework
- ☐ 2. Concrete
- ☐ 3. Masonry
- ☐ 4. Metals
- ☐ 5. Carpentry
- ☐ 6. Thermal & Moisture Protection
- ☐ 7. Doors & Windows
- ☐ 8. Finishes
- ☐ 9. Specialties
- ☐ 10. Equipment
- ☐ 11. Furnishings
- ☐ 12. Special Construction
- ☐ 13. Conveying Systems
- ☐ 14. Mechanical
- ☐ 15. Electrical
- ☐ 16. Plumbing
- ☐ 17. HVAC
- ☐ 18. Sprinkler
- ☐ 19. ATC
- ☐ 20. Balancing
- ☐ 21. Fire Alarms
- ☐ 22. Security
- ☐ 23. Pre-fabricated Equipment

C. Contract Capability (determined by size of previous work and bonding capacity):

- ☐ 1. $0 - $10,000
- ☐ 2. $0 - $50,000
- ☐ 3. $0 - $100,000
- ☐ 4. $0 - $250,000
- ☐ 5. $0 - $500,000
- ☐ 6. $0 - $1,000,000
- ☐ 7. $0 - $5,000,000
- ☐ 8. $0 - $10,000,000
- ☐ 9. $0 - >$10,000,000

D. Use the following form to identify experience on completed or ongoing projects over the last five years (a separate sheet must be completed for each project – three minimum).

PROJECT EXPERIENCE WITH HIGHWAY AND/OR AIRPORT CONSTRUCTION PROJECTS

Project Status:
☐ Project completed
☐ Work in progress

Contractor's Role*:
☐ Prime Contractor
☐ Subcontractor
☐ Joint Venture Partner

* Entity submitting proposal is considered "Contractor"

Facility / Project Name: _____

Address of Project: _____

Project Owner: _____

Contract Amount (Contractor's Share): $_____ Was project bonded? ☐ Yes ☐ No

% of total project performed by Contractor by Contractor's own forces: _____%

Was Contractor required to possess a Performance Bond and/or Payment Bond? ☐ Yes ☐ No

Start Date:____ Scheduled Completion Date:_____ Actual Completion Date:__

Construction Manager / Project Manager:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Architect / Engineer:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Reference familiar with Contractor's performance:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Description of work performed by Contractor: _____

_____

_____

PROJECT EXPERIENCE WITH HIGHWAY AND/OR AIRPORT CONSTRUCTION PROJECTS

Project Status:
☐ Project completed
☐ Work in progress

Contractor's Role*:
☐ Prime Contractor
☐ Subcontractor
☐ Joint Venture Partner

* Entity submitting proposal is considered "Contractor"

Facility / Project Name: _____

Address of Project: _____

Project Owner: _____

Contract Amount (Contractor's Share): $_____ Was project bonded? ☐ Yes ☐ No

% of total project performed by Contractor by Contractor's own forces: _____%

Was Contractor required to possess a Performance Bond and/or Payment Bond? ☐ Yes ☐ No

Start Date:____ Scheduled Completion Date:_____ Actual Completion Date:__

Construction Manager / Project Manager:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Architect / Engineer:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Reference familiar with Contractor's performance:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Description of work performed by Contractor: _____

_____

_____

PROJECT EXPERIENCE WITH HIGHWAY AND/OR AIRPORT CONSTRUCTION PROJECTS

Project Status:
☐ Project completed
☐ Work in progress

Contractor's Role*:
☐ Prime Contractor
☐ Subcontractor
☐ Joint Venture Partner

* Entity submitting proposal is considered "Contractor"

Facility / Project Name: _____

Address of Project: _____

Project Owner: _____

Contract Amount (Contractor's Share): $_____ Was project bonded? ☐ Yes ☐ No

% of total project performed by Contractor by Contractor's own forces: _____%

Was Contractor required to possess a Performance Bond and/or Payment Bond? ☐ Yes ☐ No

Start Date:____ Scheduled Completion Date:_____ Actual Completion Date:__

Construction Manager / Project Manager:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Architect / Engineer:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Reference familiar with Contractor's performance:

Company: _____

Address: _____

Telephone: _____ email: _____

Contact Name: _____ Title: _____

Description of work performed by Contractor: _____

_____

_____

BID BOND

(MINIMUM 10% OF TOTAL BID AMOUNT)

KNOW ALL MEN BY THESE PRESENTS that we, _____ the Contractor in the contract hereto annexed, as Principal, and _____, as Surety, jointly and severally, bind ourselves, our heirs, representatives, successors and assigns, as set forth herein to the County of Mono (hereinafter, "Owner") in the sum of $ _____ lawful money of the United States. Principal has submitted the accompanying bid for

RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT.

AIP No. 3-06-0119-06

If the Principal is awarded the contract and enters into a written contract, in the form prescribed by the Owner, at the price designated by his bid, and files two bonds with the Owner, one to guarantee payment for labor and materials and the other to guarantee faithful performance, in the time and manner specified by the Owner, and carries all insurance in the type and amount which conforms to the Contract Documents, and furnishes required certificates and endorsements thereof, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Forfeiture of this bond shall not preclude the Owner from seeking all other remedies provided by law to cover losses sustained as a result of the Principal's failure to do any of the foregoing.

Principal and Surety agree that if the Owner is required to engage the services of an attorney in connection with the enforcement of this bond, each shall pay Owner's reasonable attorney's fees incurred with or without suit.

PRINCIPAL:

Executed on: _____ By: _____

(Seal of Corporation) Title: _____

(Attach notary acknowledgment for Contractor's authorized representative and for Attorney-in-Fact of Surety)

NOTICE: No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in California. A certified copy of Power of Attorney must be attached.

Any claims under this bond may be addressed to:

_____ (Name and address of Surety)

_____

_____

_____

_____

_____ (Name and address of Surety's agent for service of process in California, if different from above)

_____

_____

_____ (Telephone number of Surety's agent in Calif.)

(Attach notary acknowledgement)

_____
SURETY

By: _____
(Attorney-in-Fact)

AGREEMENT BETWEEN THE COUNTY OF MONO AND _____ FOR THE RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT AIP No. 3-06-0119-06

WHEREAS, the County of Mono, a political subdivision of the State of California (hereinafter referred to as "County"), has the need for the construction services of _____ (hereinafter referred to as "Contractor"), and in consideration of the mutual promises, covenants, terms and conditions hereinafter contained, the parties hereby agree as follows:

TERMS AND CONDITIONS

1. SCOPE OF WORK

This Agreement includes and is subject to the provisions of the Project Manual, Federal General Provisions, Special Provisions, Technical Specifications, and Project Plans, and the Standard Specifications for Construction of Local Streets and Roads (2006) and the Standard Plans for Construction of Local Streets and Roads (2006) issued by the California Department of Transportation, as they may have been amended for County's use, which documents are referenced and incorporated herein.

Contractor shall furnish to the County those services and work set forth in the Scope of Work (Attachment A), attached hereto and by reference incorporated herein. Requests by the County to Contractor to perform under this Agreement will be made by the Director of the Mono County Department of Public Works, or an authorized representative thereof.

Services and work provided at the County's request by Contractor under this Agreement will be performed in a manner consistent with the requirements and standards established by applicable federal, state, and county laws, ordinances, regulations, and resolutions. Such laws, ordinances, regulations, and resolutions include, but are not limited to, those to which reference is made in this Agreement.

2. TERM

The term of this Agreement shall be from _____ to _____ unless sooner terminated as provided below.

3. CONSIDERATION

A. Compensation.

County shall pay Contractor in accordance with the Schedule of Fees (set forth in Attachment B, attached hereto and by reference incorporated herein) for the services and work described in the Scope of Work (Attachment A) which are performed by Contractor at the County's request.

B. Travel and Per Diem.

Unless otherwise agreed by the parties, Contractor will not be paid or reimbursed for travel expenses or per diem which Contractor incurs in providing services and work requested by the County under this Agreement.

C. No Additional Consideration.

Except as expressly provided in this Agreement, Contractor shall not be entitled to, nor receive, from the County, any additional consideration, compensation, salary, wages, or other type of remuneration for services and work rendered under this Agreement. Specifically, Contractor shall not be entitled, by virtue of this Agreement, to consideration in the form of overtime, health insurance benefits, retirement benefits, disability retirement benefits, sick leave, vacation time, paid holidays, or other paid leaves of absence of any type or kind whatsoever.

D. Limit Upon Amount Payable Under Agreement.

The total sum of all payments made by the County to Contractor for services and work performed under this Agreement shall not exceed amounts specified in the Schedule of Fees (Attachment B) and/or any authorized adjustments made consistent with the terms and conditions of this Agreement (hereinafter referred to as "contract limit"). The County expressly reserves the right to deny any payment or reimbursement requested by Contractor for services or work performed which is in excess of the contract limit.

E. Billing and Payment.

Contractor shall submit to the County, not more than once per month, an itemized statement of all services and work described in the Scope of Work (Attachment A), which were done at the County's request. The statement to be submitted will cover the period from the first day of the preceding month through and including the last day of the preceding month. This statement shall identify the date on which the services and work were performed and describe the nature of the services and work which were performed. Invoicing shall be informative and concise regarding work performed during that billing period. The County shall make payment to Contractor within 30 days of receipt of Contractor's itemized statement but shall retain ten percent (10%) of each such payment in accordance with Section 9203 of the Public Contract Code until the Project is completed. Should Contractor produce incorrect invoices, the County shall withhold payment until corrected.

F. Federal and State Taxes.

(1) Except as provided in subparagraph (2) below, the County will not withhold any federal or state income taxes or social security from any payments made by the County to Contractor under the terms and conditions of this Agreement.

(2) The County shall withhold California State income taxes from payments made under this Agreement to non-California resident independent contractors when it is anticipated that total annual payments to Contractor under this Agreement will exceed one-thousand four-hundred ninety-nine dollars ($1,499.00).

(3) Except as set forth above, the County has no obligation to withhold any taxes or payments from sums paid by County to Contractor under this Agreement. Payment of all taxes and other assessments on such sums is the sole responsibility of Contractor. The County has no responsibility or liability for payment of Contractor's taxes or assessments.

(4) The total amounts paid by the County to Contractor, and taxes withheld from payments to non-California residents, if any, will be reported annually by the County to the Internal Revenue Service and the California State Franchise Tax Board.

4. WORK SCHEDULE

Upon the issuance of a written "Notice to Proceed," Contractor's obligation is to perform, in a timely manner, those services and work identified in the Scope of Work (Attachment A) which are requested by the County. It is understood by Contractor that the performance of these services and work will require a varied schedule. Contractor, in arranging its own schedule, will coordinate with the County to ensure that all services and work requested by the County under this Agreement will be performed within the time frame set forth by the County in the Contract Documents.

5. REQUIRED LICENSES, CERTIFICATES, AND PERMITS

Any licenses, certificates, or permits required by the federal, state, county, or municipal governments for Contractor to provide the services and work described in Attachment A must be procured by Contractor and be valid at the time Contractor enters into this Agreement. Further, during the term of this Agreement, Contractor must maintain such licenses, certificates, and permits in full force and effect. Licenses, certificates, and permits may include, but are not limited to, driver's licenses, professional licenses or certificates, contractor's licenses, and business licenses. Such licenses, certificates, and permits will be procured and maintained in force by Contractor at no expense to the County. Contractor will provide the County, upon execution of this Agreement, with evidence of current and valid licenses, certificates and permits which are required to perform the services and work identified in Attachment A. Where there is a dispute between Contractor and the County as to what licenses, certificates, and permits are required to perform the services and work identified in Attachment A, the County reserves the right to make such determinations for purposes of this Agreement.

6. OFFICE SPACE, SUPPLIES, EQUIPMENT, ETC.

The Contractor shall provide such office space, supplies, equipment, vehicles, reference materials, support services, and telephone service as is necessary for Contractor to provide the services and work identified in Attachment A to this Agreement. The County is not obligated to reimburse or pay Contractor for any expense or cost incurred by Contractor in procuring or maintaining such items. Responsibility for the costs and expenses incurred by Contractor in providing and maintaining such items is the sole responsibility and obligation of Contractor.

7. COUNTY PROPERTY

A. Personal Property of County.

Any personal property such as, but not limited to, protective or safety devices, badges, identification cards, keys, uniforms, etc., provided to Contractor by the County pursuant to this Agreement are, and at the termination of this Agreement remain, the sole and exclusive property of the County. Contractor will use reasonable care to protect, safeguard, and maintain such items while they are in Contractor's possession. Contractor will be financially responsible for any loss or damage to such items, partial or total, which is the result of Contractor's negligence.

B. Products of Contractor's Work and Services.

Any and all compositions, publications, plans, designs, specifications, blueprints, maps, formulas, processes, photographs, slides, video tapes, computer programs, computer disks, computer tapes, memory chips, soundtracks, audio recordings, films, audio-visual presentations, exhibits, reports, studies, works of art, inventions, patents, trademarks, copyrights, or intellectual properties of any kind which are created, produced, assembled, compiled by, or are the result, product, or manifestation of, Contractor's services or work under this Agreement are, and at the termination of this Agreement remain, the sole and exclusive property of the County. At the termination of the Agreement, Contractor will convey possession and title to all such properties to the County.

8. WORKERS' COMPENSATION

Contractor shall provide worker's compensation insurance coverage, in the legally required amount, for all Contractor's employees utilized in providing services and work pursuant to this Agreement. By executing this Agreement, Contractor acknowledges it's obligations and responsibilities to its employees under the California Labor Code, and warrants that Contractor has complied and will comply during the term of this Agreement with all provisions of the California Labor Code with regard to its employees. Contractor, at the time of execution of this Agreement, shall provide the County with evidence of the required worker's compensation insurance coverage, if requested by the County.

9. PUBLIC WORK

A. Determination.

The services and work to be provided by Contractor under this Agreement constitute a Public Work within the meaning of California Labor Code Sections 1720 and 1720.3. Accordingly, and as required by Section 1771 of the California Labor Code, Contractor and any subcontractor under him, shall pay not less than the general prevailing rate of per diem wages, and not less than the general prevailing rate of per diem wages for holiday and overtime work, to all workers employed in the execution of the services and work requested by the County as described in Attachment A of this Agreement. California Labor Code Section 1771 is incorporated herein by this reference, and a copy of that section is attached to this Agreement as a part of Attachment C.

B. Prevailing Wage Rate.

The general prevailing rate of per diem wages applicable to each class of worker employed in the execution of the services and work described in this Agreement has been determined by the Director of the California Department of Industrial Relations (hereinafter referred to as "Director"). Copies of the Director's determination are on file at the Mono County Department of Public Works office, 74 North School Street, Bridgeport, California, and are available to any interested party upon request.

C. Apprentices.

Pursuant to Section 1777.5 of the California Labor Code, properly registered apprentices, if any, shall be paid the standard wage paid to apprentices under the regulations of the craft or trade at which he or she is employed, and shall be employed only at the work of the craft or trade to which he or she is registered. California Labor Code Section 1777.5 is incorporated herein by this reference, and a copy of that section is attached to this contract as a part of Attachment C.

D. Penalty for Non-Payment of Prevailing Wages.

Pursuant to Section 1775 of the California Labor Code, Contractor, and any subcontractor under him, shall, as a penalty to the County, forfeit not more than fifty dollars ($50.00) for each calendar day, or portion thereof, for each worker paid less than the general rate of per diem wages, as determined by the Director, for the work or craft for which the worker is employed in the performance of services and work provided under this Agreement, except as provided by subdivision (b) of Section 1775 of the California Labor Code. California Labor Code Section 1775 is incorporated herein by reference, and a copy of that section is attached to this Agreement as a part of Attachment C.

E. Payroll Records.

Pursuant to Section 1776 of the California Labor Code, Contractor, and any subcontractor under him, shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the performance of the services and work requested by the County, as described in the Scope of Work (Attachment A) of this Agreement.

F. Inspection of Payroll Records.

Contractor, and any subcontractor under him, shall comply with each of the additional requirements set forth in California Labor Code Section 1776, regarding: (1) the form of records; (2) the provision of records upon request to the County, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the California Department of Industrial Relations; and, (3) the inspection of records by the public. California Labor Code Section 1776 is incorporated herein by this reference, and a copy of that section is attached to this Agreement as a part of Attachment C.

G. Posting of Prevailing Wages at Job Site.

Pursuant to California Labor Code Section 1773.2, Contractor shall post at each job site in connection with this Agreement a copy of the Director's determination of the general prevailing rate of per diem wages for each classification of worker required to execute the services and work requested by the County, as described in the Scope of Work (Attachment A) of this Agreement.

H. Hours.

Pursuant to Section 1810 of the California Labor Code, the time of service of any worker employed by Contractor, or by any subcontractor under him, in the performance of the services and work requested by the County, as described in the Scope of Work (Attachment A) of this Agreement, is limited and restricted to eight hours during any one calendar day, and 40 hours during any one calendar week, except as otherwise provided by the California Labor Code.

I. Overtime.

Pursuant to California Labor Code Section 1815, work performed by employees of Contractor, or employees of any subcontractor under him, in excess of eight hours per calendar day, and 40 hours during any one week, shall be permitted upon compensation for all hours worked in excess of eight hours per calendar day at not less than one and one-half (1½) times the basic rate of pay. California Labor Code Section 1815 is incorporated herein by this reference, and a copy of that section is attached to this contract as a part of Attachment C.

J. Records of Hours.

Contractor, and any subcontractors under him, shall keep an accurate record showing the name of, and actual hours worked each calendar day and each calendar week by, each worker employed by him in connection with the performance of the services and work requested by the County, as described in the Scope of Work (Attachment A) of this Agreement. The record shall be kept open at all reasonable hours to the inspection of the County and to the Division of Labor Standards Enforcement as required by Labor Code Section 1812.

K. Penalty for Violation of Work Hours.

Pursuant to California Labor Code Section 1813, Contractor, and any subcontractors under him, shall, as a penalty to the County, forfeit twenty-five dollars ($25.00) for each worker employed by the respective contractor or subcontractor in the execution of the services and work requested by the County, as described in the Scope of Work (Attachment A) of this Agreement, for each calendar day during which the worker is required or permitted to work more than eight hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of the California Labor Code. California Labor Code Section 1813 is incorporated herein by this reference, and a copy of that section is attached to this contract as a part of Attachment C.

10. INSURANCE

A. General Liability.

Contractor shall procure, and maintain during the entire term of this Agreement, a policy of general liability insurance which covers all the services and work to be performed by Contractor under this Agreement. Such policy shall have a per occurrence combined single limit coverage of not less than one million dollars ($1,000,000). Such policy shall not exclude or except from coverage any of the services and work required to be performed by Contractor under this Agreement. A certificate of insurance shall be provided to the County by Contractor prior to commencing any work under this Agreement.

B. Automobile Liability Insurance.

Contractor shall procure and maintain in force throughout the duration of this Agreement, a business auto liability insurance policy with minimum coverage levels of one million dollars ($1,000,000) per occurrence,

combined single limit for bodily injury liability and property damage liability. The coverage shall include all Contractor-owned, non-owned, and hired vehicles employed by the Contractor in the performance of the services and work requested by the County, as described in the Scope of Work of this Agreement. A certificate of insurance shall be provided to the County by Contractor prior to commencing any work under this Agreement.

C. Pollution Liability Insurance.

Contractor shall procure and maintain in force throughout the duration of this Agreement, pollution liability insurance in the amount of one million dollars with two million dollars aggregate covering liability arising from the sudden and accidental release of pollution.

D. Deductible and Self-Insured Retentions.

Any deductibles or self-insured retentions must be declared to and approved by the County. At the option of the County, either the insurer shall reduce or eliminate such deductibles or self-insured retentions with respect to the County, its officials, officers, employees, and volunteers; or, Contractor shall provide evidence satisfactory to the County guaranteeing payment of losses and related investigations, claim administration, and defense expenses. Notwithstanding the foregoing, the County may elect not to accept any deductibles or self-insured retentions offered by Contractor.

E. Subcontractors.

Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein for Contractor.

F. Other Insurance Provisions.

The required policies of insurance shall be issued by an insurer authorized to sell such insurance by the State of California, and have at least a “Best’s” policyholder’s rating of “A” or “A+”. In addition, said policies are to contain, or be endorsed to contain, the following provisions:

(1) The County, its agents, officers, employees, and volunteers are to be named as additional insureds with respect to liability arising out of automobiles owned, leased, hired, or borrowed by or on behalf of Contractor in the performance of services and work under this Agreement and with respect to liability arising out of services and work performed by or on behalf of Contractor, including materials, parts, supplies, or equipment furnished in connection with such services and work;

(2) Contractor’s insurance coverage shall be primary insurance with respect to the County. Any insurance or self-insurance maintained by the County shall be excess of Contractor’s insurance and shall not contribute with it;

(3) Each insurance policy required by this section shall be “claims-made,” or an alternate form as approved by the County;

(4) Each required insurance policy shall contain a clause providing that written notice shall be given to the County a minimum of 30 days prior to termination, cancellation, suspension, or reduction of coverage or limits; and,

(5) Contractor’s insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer’s liability.

11. BOND REQUIREMENTS

Contractor shall furnish and maintain in effect the following bonds: 1) a labor and materials payment bond in an amount equal to one hundred percent (100%) of the contract price; 2) a faithful performance bond in an amount

equal to one hundred percent (100%) of the contract price; and, 3) upon project completion and acceptance by the County, a one-year warranty bond in an amount equal to ten percent (10%) of the contract price. The bonds shall comply with the requirements of California Civil Code Section 3248 and must be issued by an "Admitted Surety Insurer." For purposes of this Agreement, an Admitted Surety Insurer means a corporate insurer or inter-insurance exchange to which the California State Insurance Commissioner has issued a certificate of authority to transact surety insurance in California, as defined in Section 105 of the California Insurance Code. Bonds shall be in a form acceptable to the Mono County Counsel. The Attorney-in-Fact (resident agent) who executes the bonds on behalf of the surety company must attach a copy of his Power of Attorney as evidence of his authority. A notary shall acknowledge this Power of Attorney as of the date of the execution of the surety bond that it covers. If any surety becomes unacceptable to the County or fails to furnish reports as to its financial condition as requested by the County, Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the County and of persons supplying labor or materials in the prosecution of the work contemplated by this Agreement.

12. STATUS OF CONTRACTOR

All acts of Contractor, its agents, officers, and employees, relating to the performance of this Agreement, shall be performed as independent contractors, and not as agents, officers, or employees of the County. Contractor, by virtue of this Agreement, has no authority to bind or incur any obligation on behalf of, or exercise any right or power vested in, the County, except as expressly provided by law or set forth in Attachment A of this Agreement. No agent, officer, or employee of the County is to be considered an employee of Contractor. It is understood by both Contractor and the County that this Agreement shall not under any circumstances be construed or considered to create an employer-employee relationship or a joint venture. As an independent contractor:

A. Contractor (unless otherwise specified herein) shall determine the method, details, and means of performing the services and work to be provided by Contractor under this Agreement.

B. Contractor shall be responsible to the County only for the requirements and results specified in this Agreement, and except as expressly provided in this Agreement, shall not be subjected to the County's control with respect to the physical action or activities of Contractor in fulfillment of this Agreement.

C. Contractor, its agents, officers and employees are, and at all times during the term of this Agreement shall, represent and conduct themselves as independent contractors, and not as employees of County.

13. DEFENSE AND INDEMNIFICATION

Contractor shall defend, indemnify, and hold harmless the County, its agents, officers, and employees from and against all claims, damages, losses, judgments, liabilities, expenses, and other costs, including litigation costs and attorney's fees, arising out of, resulting from, or in connection with, the performance of this Agreement by Contractor, or Contractor's agents, officers, or employees. Contractor's obligation to defend, indemnify, and hold the County, its agents, officers, and employees harmless applies to any actual or alleged personal injury, death, or damage or destruction to tangible or intangible property, including the loss of use. Contractor's obligation under this paragraph extends to any claim, damage, loss, liability, expense, or other cost which is caused in whole or in part by any act or omission of the Contractor, its agents, employees, suppliers, or anyone directly or indirectly employed by any of them, or anyone for whose acts or omissions any of them may be liable.

Contractor's obligation to defend, indemnify, and hold the County, its agents, officers, and employees harmless under the provisions of this paragraph is not limited to, or restricted by, any requirement in this Agreement for Contractor to procure and maintain a policy of insurance.

14. RECORDS AND AUDIT

A. Records.

Contractor shall prepare and maintain all records required by the various provisions of this Agreement, and federal, state, County, and municipal law, ordinances, regulations, and directions. Contractor shall maintain these records for a minimum of four years from the termination or completion of this Agreement. Contractor may fulfill its obligation to maintain records as required by this paragraph by substitute photographs, micrographs, or other authentic reproduction of such records.

B. Inspections and Audits.

Any authorized representative of the County shall have access to any books, documents, papers, records, including, but not limited to, financial records of Contractor, which the County determines to be pertinent to this Agreement, for the purposes of making audit, evaluation, examination, excerpts, and transcripts during the period such records are to be maintained by Contractor. Further, the County has the right, at all reasonable times, to audit, inspect, or otherwise evaluate the work performed or being performed under this Agreement.

15. NONDISCRIMINATION

During the performance of this Agreement, Contractor, its agents, officers, employees, and subcontractors, shall not unlawfully discriminate in violation of any federal, state, or local law, against any employee, or applicant for employment, or person receiving services under this Agreement, because of race, religion, color, ancestry, national origin, physical handicap, medical condition, marital status, age, or sex. Contractor and its agents, officers, employees, and subcontractors, shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12900, et seq.), and the applicable regulations promulgated thereunder in the California Code of Regulations. Contractor shall also abide by the Federal Civil Rights Act of 1964 (P.L. 88-352) and all amendments thereto, and all administrative rules and regulations issued pursuant to said Act.

16. CANCELLATION

This Agreement may be canceled by the County without cause, and at will, for any reason by giving to Contractor 30 days' written notice of such intent to cancel. If Contractor chooses to cancel this Agreement, it is understood that the County may exercise the applicable bonds to achieve a completed project.

17. ASSIGNMENT

This is an agreement for the services of Contractor. The County has relied upon the skills, knowledge, experience, and training of Contractor as an inducement to enter into this Agreement. Contractor shall not assign or subcontract this Agreement, or any part of it, without the express written consent of the County. Further, Contractor shall not assign any monies due or to become due under this Agreement without the prior written consent of the County.

18. DEFAULT

If Contractor abandons the work, or fails to proceed with the services and work requested by the County in a timely manner, or fails in any way as required to conduct the work and services as required by the County, the County may declare Contractor in default and terminate this Agreement upon five days' written notice to Contractor. Upon such termination by default, County will pay to Contractor all amounts owing to Contractor for services and work satisfactorily performed to the date of termination.

19. WAIVER OF DEFAULT

Waiver of any default by either party to this Agreement shall not be deemed to be a waiver of any subsequent default. Waiver or breach of any provision of this Agreement shall not be deemed to be a waiver of any other or subsequent breach, and shall not be construed to be a modification of the terms of this Agreement unless this Agreement is modified as provided in paragraph 26, below.

20. CONFIDENTIALITY

Contractor agrees to comply with various provisions of the federal, state, and County laws, regulations, and ordinances providing that information and records kept, maintained, or accessible by Contractor in the course of providing services and work under this Agreement, shall be privileged, restricted, or confidential. Contractor agrees to keep confidential all such privileged, restricted or confidential information and records. Disclosure of such information or records shall be made by Contractor only with the express written consent of the County.

21. CONFLICTS

Contractor agrees that it has no interest, and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of the services and work under this Agreement. Contractor agrees to complete and file a conflict of interest statement.

22. POST-AGREEMENT COVENANT

Contractor agrees not to use any confidential, protected, or privileged information which is gained from the County in the course of providing services and work under this Agreement, for any personal benefit, gain, or enhancement. Further, Contractor agrees for a period of two years after the termination of this Agreement, not to seek or accept any employment with any entity, association, corporation, or person who, during the term of this Agreement, has had an adverse or conflicting interest with the County, or who has been an adverse party in litigation with the County, and concerning such, Contractor by virtue of this Agreement has gained access to the County's confidential, privileged, protected, or proprietary information.

23. SEVERABILITY

If any portion of this Agreement or application thereof to any person or circumstance shall be declared invalid by a court of competent jurisdiction, or if it is found in contravention of any federal, state, or County statute, ordinance, or regulation, the remaining provisions of this Agreement, or the application thereof, shall not be invalidated thereby, and shall remain in full force and effect to the extent that the provisions of this Agreement are severable.

24. FUNDING LIMITATION

The ability of the County to enter into this Agreement is based upon available funding from various sources. In the event that such funding fails, is reduced, or is modified, from one or more sources, the County has the option to terminate, reduce, or modify this Agreement, or any of its terms within 10 days of its notifying Contractor of the termination, reduction, or modification of available funding. Any reduction or modification of this Agreement made pursuant to this provision must comply with the requirements (except the requirement of mutual consent) of paragraph 26, below.

25. VENUE

This Agreement shall be governed under the laws of the State of California and venue for any litigation under this Agreement shall be the County of Mono, State of California.

26. AMENDMENT

This Agreement may be extended, modified, amended, changed, added to, or subtracted from, by the mutual consent of the parties hereto, if such amendment or change is in written form, and executed with the same formalities as this Agreement, or, in the case of a change order, if made pursuant to and in conformance with the Public Contract Code, and attached to the original Agreement to maintain continuity.

27. NOTICE

Any notice, communication, amendments, additions, or deletions to this Agreement, including change of address of either party during the term of this Agreement, which either party shall be required, or may desire, to make, shall be in writing and may be personally serviced or sent by prepaid first class mail as follows:

County of Mono:

Department of Public Works
Post Office Box 457
Bridgeport, California 93517

Contractor:

DRAFT

28. ENTIRE AGREEMENT

This Agreement contains the entire agreement of the parties, and no representations, inducements, promises, or agreements otherwise between the parties not embodied herein or incorporated herein by reference, shall be of any force or effect. Further, no term or provision hereof may be changed, waived, discharged, or terminated, unless the same be in writing executed by the parties hereto. This Agreement includes and is subject to the provisions of the Bid & Contract Documents, Specifications and Special Provisions, Project Plans, and the Standard Specifications for Construction of Local Streets and Roads (2006 ed.) and the Standard Plans for Construction of Local Streets and Roads (2006 ed.) issued by the California Department of Transportation, as they may have been amended for the County's use, which documents are attached hereto and/or by reference incorporated herein. Any modification hereto prior to the bid opening shall be made by Addendum issued by the County. Any modification hereto after the award of contract shall be made by contract change order that is formally executed by both the County and Contractor in accordance with the provisions of paragraph 26 of this Agreement and/or the Public Contract Code, depending on the dollar amount of the change order.

IN WITNESS THEREOF, THE PARTIES HERETO HAVE SET THEIR HANDS AND SEALS AS SET FORTH BELOW.

COUNTY OF MONO:

By: DRAFT
Name: Evan Nikirk
Title: Public Works Director
Agency: Mono County Dept. of Public Works
Date: _____

Approved as to Form:

DRAFT
County Counsel Date

DRAFT
Risk Management Date

CONTRACTOR:

By: DRAFT
Name: DRAFT
Title: _____
Firm: _____
Date: _____

Taxpayer Identification or Social Security No.:

_____

ATTACHMENT A

AGREEMENT BETWEEN THE COUNTY OF MONO
AND _____ FOR
THE RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT
AIP No. 3-06-0119-06

TERM:

FROM: _____
TO: _____

SCOPE OF WORK:

The proposed work includes the reconstruction of Runway 15/33 and the construction of electrical improvement projects. In general, this project consists of removal of the existing pavement, earthwork operations, constructing 3-inches of asphalt concrete on 6-inches of aggregate base course, pavement striping, installing medium intensity runway lighting, installing a lighted hold sign, construction of an electrical vault, and construction of a segmented circle with a lighted wind cone. There are seven additive alternatives for this project and they are: construction of a taxiway turnaround with a lighted hold sign, installation of an Automated Weather Observation System, installation of a beacon pole and a rotating beacon, installation of Precision Approach Path Indicators, installation of an apron light, installation of Runway End Identifier Lights, and the installation of Distance Remaining Signs.

Tasks performed in completing the project shall follow generally-accepted practices for the construction industry and shall meet the minimum requirements and guidelines established by federal, state, and local agencies. Work tasks shall be coordinated with the Mono County Department of Public Works.

Note: This Agreement and Scope of Work includes and is subject to the provisions of the Contract Documents, including Project Manual, Federal General Provisions, Special Provisions, Technical Specifications, Project Plans, and the General Prevailing Wage Rates established by the California Department of Industrial Relations and in effect on the date of this agreement, which documents are attached hereto and/or by reference incorporated herein.

ATTACHMENT B

AGREEMENT BETWEEN THE COUNTY OF MONO
AND _____ FOR
THE RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT
AIP No. 3-06-0119-06

TERM:

FROM: _____
TO: _____

SCHEDULE OF FEES:

See Bid Schedule, attached hereto and incorporated herein.

ATTACHMENT C

AGREEMENT BETWEEN THE COUNTY OF MONO
AND _____ FOR
THE RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT
AIP No. 3-06-0119-06

TERM:

FROM: _____
TO: _____

CALIFORNIA LABOR CODE:

Copies of referenced California Labor Code sections (1771, 1775, 1776, 1777.5, 1813, & 1815), attached hereto and incorporated herein.

2008 CALIFORNIA LABOR CODE:
Sections 1771, 1775, 1776, 1777.5, 1813, and 1815

§ 1771. Payment of general prevailing rate

Except for public works projects of one thousand dollars ($1,000) or less, not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the public work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in this chapter, shall be paid to all workers employed on public works.

This section is applicable only to work performed under contract, and is not applicable to work carried out by a public agency with its own forces. This section is applicable to contracts let for maintenance work.

§ 1775. Penalties for violations

(a) (1) The contractor and any subcontractor under the contractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit not more than fifty dollars ($50) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rates as determined by the director for the work or craft in which the worker is employed for any public work done under the contract by the contractor or, except as provided in subdivision (b), by any subcontractor under the contractor.

(2) (A) The amount of the penalty shall be determined by the Labor Commissioner based on consideration of both of the following:

(i) Whether the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the contractor or subcontractor.

(ii) Whether the contractor or subcontractor has a prior record of failing to meet its prevailing wage obligations.

(B) (i) The penalty may not be less than ten dollars ($10) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, unless the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the contractor or subcontractor.

(ii) The penalty may not be less than twenty dollars ($20) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the contractor or subcontractor has been assessed penalties within the previous three years for failing to meet its prevailing wage obligations on a separate contract, unless those penalties were subsequently withdrawn or overturned.

(iii) The penalty may not be less than thirty dollars ($30) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the Labor Commissioner determines that the violation was willful, as defined in subdivision (c) of Section 1777.1.

(C) When the amount due under this section is collected from the contractor or subcontractor, any outstanding wage claim under Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 against that contractor or subcontractor shall be satisfied before applying that amount to the penalty imposed on that contractor or subcontractor pursuant to this section.

(D) The determination of the Labor Commissioner as to the amount of the penalty shall be reviewable only for abuse of discretion.

(E) The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the contractor or subcontractor, and the body awarding the contract shall cause to be inserted in the contract a stipulation that this section will be complied with.

(b) If a worker employed by a subcontractor on a public works project is not paid the general prevailing rate of per diem wages by the subcontractor, the prime contractor of the project is not liable for any penalties under subdivision (a) unless the prime contractor had knowledge of that failure of the subcontractor to pay the specified prevailing rate of wages to those workers or unless the prime contractor fails to comply with all of the following requirements:

(1) The contract executed between the contractor and the subcontractor for the performance of work on the public works project shall include a copy of the provisions of Sections 1771, 1775, 1776, 1777.5, 1813, and 1815.

(2) The contractor shall monitor the payment of the specified general prevailing rate of per diem wages by the subcontractor to the employees, by periodic review of the certified payroll records of the subcontractor.

(3) Upon becoming aware of the failure of the subcontractor to pay his or her workers the specified prevailing rate of wages, the contractor shall diligently take corrective action to halt or rectify the failure, including, but not limited to, retaining sufficient funds due the subcontractor for work performed on the public works project.

(4) Prior to making final payment to the subcontractor for work performed on the public works project, the contractor shall obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages to his or her employees on the public works project and any amounts due pursuant to Section 1813.

(c) The Division of Labor Standards Enforcement shall notify the contractor on a public works project within 15 days of the receipt by the Division of Labor Standards Enforcement of a complaint of the failure of a subcontractor on that public works project to pay workers the general prevailing rate of per diem wages.

§ 1776. Payroll records; retention; noncompliance; penalties; rules and regulations

(a) Each contractor and subcontractor shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct.

(2) The employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by his or her employees on the public works project.

(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the contractor on the following basis:

(1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

(2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.

(3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be

made through either the body awarding the contract, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the contractor, subcontractors, and the entity through which the request was made. The public may not be given access to the records at the principal office of the contractor.

(c) The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the division. The payroll records may consist of printouts of payroll data that are maintained as computer records, if the printouts contain the same information as the forms provided by the division and the printouts are verified in the manner specified in subdivision (a).

(d) A contractor or subcontractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested the records within 10 days after receipt of a written request.

(e) Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract or the subcontractor performing the contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (29 U.S.C. Sec. 175a) shall be marked or obliterated only to prevent disclosure of an individual's name and social security number. A joint labor management committee may maintain an action in a court of competent jurisdiction against an employer who fails to comply with Section 1774. The court may award restitution to an employee for unpaid wages and may award the joint labor management committee reasonable attorney's fees and costs incurred in maintaining the action. An action under this subdivision may not be based on the employer's misclassification of the craft of a worker on its certified payroll records. Nothing in this subdivision limits any other available remedies for a violation of this chapter.

(f) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city, and county, and shall, within five working days, provide a notice of a change of location and address.

(g) The contractor or subcontractor has 10 days in which to comply subsequent to receipt of a written notice requesting the records enumerated in subdivision (a). In the event that the contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars ($25) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due. A contractor is not subject to a penalty assessment pursuant to this section due to the failure of a subcontractor to comply with this section.

(h) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section.

(i) The director shall adopt rules consistent with the California Public Records Act (Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code) and the Information Practices Act of 1977 (Title 1.8 (commencing with Section 1798) of Part 4 of Division 3 of the Civil Code) governing the release of these records, including the establishment of reasonable fees to be charged for reproducing copies of records required by this section.

§ 1777.5. Employment of apprentices; wages; standards; number; apprenticeable craft or trade; exemptions; contributions

(a) Nothing in this chapter shall prevent the employment of properly registered apprentices upon public works.

(b) Every apprentice employed upon public works shall be paid the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered and shall be employed only at the work of the craft or trade to which he or she is registered.

(c) Only apprentices, as defined in Section 3077, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written apprentice agreements under Chapter 4 (commencing with Section 3070) of Division 3 are eligible to be employed at the apprentice wage rate on public works. The employment and training of each apprentice shall be in accordance with either of the following:

(1) The apprenticeship standards and apprentice agreements under which he or she is training.

(2) The rules and regulations of the California Apprenticeship Council.

(d) When the contractor to whom the contract is awarded by the state or any political subdivision, in performing any of the work under the contract, employs workers in any apprenticeable craft or trade, the contractor shall employ apprentices in at least the ratio set forth in this section and may apply to any apprenticeship program in the craft or trade that can provide apprentices to the site of the public work for a certificate approving the contractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the contractor, shall arrange for the dispatch of apprentices to the contractor. A contractor covered by an apprenticeship program's standards shall not be required to submit any additional application in order to include additional public works contracts under that program. "Apprenticeable craft or trade," as used in this section, means a craft or trade determined as an apprenticeable occupation in accordance with rules and regulations prescribed by the California Apprenticeship Council. As used in this section, "contractor" includes any subcontractor under a contractor who performs any public works not excluded by subdivision (o).

(e) Prior to commencing work on a contract for public works, every contractor shall submit contract award information to an applicable apprenticeship program that can supply apprentices to the site of the public work. The information submitted shall include an estimate of journeyman hours to be performed under the contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the awarding body if requested by the awarding body. Within 60 days after concluding work on the contract, each contractor and subcontractor shall submit to the awarding body, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the contract. The information under this subdivision shall be public. The apprenticeship programs shall retain this information for 12 months.

(f) The apprenticeship program that can supply apprentices to the area of the site of the public work shall ensure equal employment and affirmative action in apprenticeship for women and minorities.

(g) The ratio of work performed by apprentices to journeymen employed in a particular craft or trade on the public work may be no higher than the ratio stipulated in the apprenticeship standards under which the apprenticeship program operates where the contractor agrees to be bound by those standards, but, except as otherwise provided in this section, in no case shall the ratio be less than one hour of apprentice work for every five hours of journeyman work.

(h) This ratio of apprentice work to journeyman work shall apply during any day or portion of a day when any journeyman is employed at the jobsite and shall be computed on the basis of the hours worked during the day by journeymen so employed. Any work performed by a journeyman in excess of eight hours per day or 40 hours per week shall not be used to calculate the ratio. The contractor shall employ apprentices for the number of hours computed as above before the end of the contract or, in the case of a subcontractor, before

the end of the subcontract. However, the contractor shall endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the jobsite. Where an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Chief of the Division of Apprenticeship Standards, upon application of an apprenticeship program, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification.

(i) A contractor covered by this section that has agreed to be covered by an apprenticeship program's standards upon the issuance of the approval certificate, or that has been previously approved for an apprenticeship program in the craft or trade, shall employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the applicable apprenticeship standards, but in no event less than the 1-to-5 ratio required by subdivision (g).

(j) Upon proper showing by a contractor that he or she employs apprentices in a particular craft or trade in the state on all of his or her contracts on an annual average of not less than one hour of apprentice work for every five hours of labor performed by journeymen, the Chief of the Division of Apprenticeship Standards may grant a certificate exempting the contractor from the 1-to-5 hourly ratio, as set forth in this section for that craft or trade.

(k) An apprenticeship program has the discretion to grant to a participating contractor or contractor association a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting the contractor from the 1-to-5 ratio set forth in this section when it finds that any one of the following conditions is met:

(1) Unemployment for the previous three-month period in the area exceeds an average of 15 percent.

(2) The number of apprentices in training in the area exceeds a ratio of 1 to 5.

(3) There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either on a statewide basis or on a local basis.

(4) Assignment of an apprentice to any work performed under a public works contract would create a condition that would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large, or the specific task to which the apprentice is to be assigned is of a nature that training cannot be provided by a journeyman.

(l) When an exemption is granted pursuant to subdivision (k) to an organization that represents contractors in a specific trade from the 1-to-5 ratio on a local or statewide basis, the member contractors shall not be required to submit individual applications for approval to local joint apprenticeship committees, if they are already covered by the local apprenticeship standards.

(m) (1) A contractor to whom a contract is awarded, who, in performing any of the work under the contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the director determines is the prevailing amount of apprenticeship training contributions in the area of the public works site. A contractor may take as a credit for payments to the council any amounts paid by the contractor to an approved apprenticeship program that can supply apprentices to the site of the public works project. The contractor may add the amount of the contributions in computing his or her bid for the contract.

(2) At the conclusion of the 2002-03 fiscal year and each fiscal year thereafter, the California Apprenticeship Council shall distribute training contributions received by the council under this subdivision, less the expenses of the Division of Apprenticeship Standards for administering this subdivision, by making grants to approved apprenticeship programs for the purpose of training apprentices. The funds shall be distributed as follows:

(A) If there is an approved multiemployer apprenticeship program serving the same craft or trade and geographic area for which the training contributions were made to the council, a grant to that program shall be made.

(B) If there are two or more approved multiemployer apprenticeship programs serving the same craft or trade and geographic area for which the training contributions were made to the council, the grant shall be divided among those programs based on the number of apprentices registered in each program.

(C) All training contributions not distributed under subparagraphs (A) and (B) shall be used to defray the future expenses of the Division of Apprenticeship Standards.

(3) All training contributions received pursuant to this subdivision shall be deposited in the Apprenticeship Training Contribution Fund, which is hereby created in the State Treasury. Notwithstanding Section 13340 of the Government Code, all money in the Apprenticeship Training Contribution Fund is hereby continuously appropriated for the purpose of carrying out this subdivision and to pay the expenses of the Division of Apprenticeship Standards.

(n) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. The stipulations shall fix the responsibility of compliance with this section for all apprenticeable occupations with the prime contractor.

(o) This section does not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor when the contracts of general contractors or those specialty contractors involve less than thirty thousand dollars ($30,000).

(p) All decisions of an apprenticeship program under this section are subject to Section 3081.

§ 1813. Forfeiture for violations; contract stipulation; report of violations

The contractor or subcontractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars ($25) for each worker employed in the execution of the contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of this article. In awarding any contract for public work, the awarding body shall cause to be inserted in the contract a stipulation to this effect. The awarding body shall take cognizance of all violations of this article committed in the course of the execution of the contract, and shall report them to the Division of Labor Standards Enforcement.

§ 1815. Overtime

Notwithstanding the provisions of Sections 1810 to 1814, inclusive, of this code, and notwithstanding any stipulation inserted in any contract pursuant to the requirements of said sections, work performed by employees of contractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon public work upon compensation for all hours worked in excess of 8 hours per day at not less than 1-1/2 times the basic rate of pay.

ATTACHMENT D

AGREEMENT BETWEEN THE COUNTY OF MONO
AND _____ FOR
THE RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT
AIP No. 3-06-0119-06

TERM:

FROM: _____
TO: _____

CONTRACTOR CONTRACTURAL REQUIREMENTS (FAA):

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 shall comply with the regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), 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, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. the contractor shall not participate either directly of indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

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 lease of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

4. Information and Reports. The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall 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 (FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contract is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the sponsor or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance. In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

a. Withholding of payments to the contractor under the contract until the contractor complies,

and/or

b. Cancellation, termination, or suspension of the contract, in whole or in part.

6. Incorporation of Provisions. The contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result. of such direction, the contractor may request the Sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

FAITHFUL PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that we, _____, the Contractor in the contract hereto annexed, as Principal, and _____, as Surety, are held and firmly bound unto the County of Mono in the sum of $ _____ lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

Signed, Sealed, and Dated _____

The condition of the above obligation is that if said Principal, its successors and assigns, as Contractor in the Agreement hereto annexed, shall faithfully perform each and all of the conditions of said Agreement to be performed by him, and shall furnish all tools, equipment, apparatus, facilities, transportation, labor and materials, other than material, if any, agreed to be furnished by the County, necessary to perform and complete in a good workmanlike manner, the work of RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT AIP No. 3-06-0119-06 in strict conformity with the terms and conditions set forth in the Agreement hereto annexed, then this obligation shall be null and void, otherwise to remain in full force and effect, and the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Agreement or to the work to be performed thereunder or the specifications accompanying the same shall, in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Agreement or to the work or to the specifications.

Surety further agrees, in case suit is brought upon this bond, that it will pay, in addition to the basic obligation herein, a reasonable attorney's fee to be awarded and fixed by the court, and to be taxed as costs, and to included in the judgment therein rendered, provided however, that the amount of such attorney's fee and the amount payable hereunder for Contractor's failure of faithful performance shall not exceed the principal amount of this bond.

DRAFT

Contractor Date

DRAFT

Surety Date

(Attach acknowledgement)

APPROVED AS TO FORM:

DRAFT

County Counsel Date

LABOR AND MATERIALS PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that we, _____,
the Contractor in the contract hereto annexed, as Principal, and _____,
as Surety, are held and firmly bound unto the County of Mono in the sum of $ _____
lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

Signed, Sealed, and Dated _____

The condition of the above obligation is that if said Principal, its successors and assigns, as Contractor in the Agreement hereto annexed, or its subcontractor, fails to pay for any materials, provisions, provider or other supplies, or teams, used in, upon, for, or about the performance of the work contracted to be done by said Contractor, namely to furnish all tools, equipment, apparatus, facilities, transportation, materials, and labor in a good workmanlike manner, the work of RUNWAY RECONSTRUCTION AT THE LEE VINING AIRPORT AIP NO. 3-06-0119-06 in strict conformity with the terms and conditions set forth in the Agreement hereto annexed, or fails to pay for any or for any work or labor done thereon of any kind or fails to pay for amounts due pursuant to Civil Code Section 3248, or fails to pay any of the persons named in Civil Code Section 3181, said Surety will pay for the same in an amount not to exceed the sum hereinabove set forth, and also in case suit is brought upon this bond, a reasonable attorney's fee to be fixed by the court.

This bond is executed in accordance with the requirements of Title XV of the Civil Code and is subject to the provisions thereof, and shall insure to the benefit of any and all persons, companies, and corporations entitled to file claims under and by virtue of the provisions of Civil Code Section 3181, or to their assigns, and the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder, or the specifications accompanying the same, shall in any way affect its obligations on this bond, and it does hereby waive notice of such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

DRAFT

_____
Contractor Date

DRAFT

_____
Surety Date
(Attach acknowledgement)

APPROVED AS TO FORM:

DRAFT

_____
County Counsel Date

FEDERAL GENERAL PROVISIONS

SECTION 10

DEFINITION OF TERMS

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

10-01 AASHTO. The American Association of State Highway and Transportation Officials, the successor association to AASHO.

10-02 ACCESS ROAD. The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public highway.

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 AIP. The Airport Improvement Program, a grant-in-aid program, administered by the Federal Aviation Administration.

10-05 AIR OPERATIONS AREA. For the purpose of these specifications, the term air operations area 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.

10-06 AIRPORT. Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

10-07 ASTM. The American Society for Testing and Materials.

10-08 AWARD. The acceptance, by the owner, of the successful bidder's proposal.

10-09 BIDDER. Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

10-10 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.

10-11 CALENDAR DAY. Every day shown on the calendar.

10-12 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 the work affected by such changes. The work, covered by a change order, shall be within the scope of the contract.

10-13 CONTRACT. The written agreement covering the work to be performed. The awarded contract shall include, but is not limited to: The Advertisement; The Contract Form; The Proposal; The Performance Bond; The Payment Bond; any required insurance certificates; The Specifications; The Plans, and any addenda issued to bidders.

10-14 CONTRACT ITEM (PAY ITEM). A specific unit of work for which a price is provided in the contract.

10-15 CONTRACT TIME. The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.

10-16 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.

10-17 DRAINAGE SYSTEM. The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.

10-18 ENGINEER. The individual, partnership, firm, or corporation duly authorized by the owner (sponsor) to be responsible for engineering supervision of the contract work and acting directly or through an authorized representative.

10-19 EQUIPMENT. All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

10-20 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 Engineer to be necessary to complete the work within the intended scope of the contract as previously modified.

10-21 FAA. The Federal Aviation Administration of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or his/her duly authorized representative.

10-22 FEDERAL SPECIFICATIONS. The Federal Specifications and Standards, and supplements, amendments and indices thereto are prepared and issued by the General Services Administration of the Federal Government.

10-23 INSPECTOR. An authorized representative of the Engineer assigned to make all necessary inspections and/or tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

10-24 INTENTION OF TERMS. Whenever, in these specifications or on the plans, the words “directed,” “required,” “permitted,” “ordered,” “designated,” “prescribed,” or words of the like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer 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, subject in each case to the final determination of the owner.

Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

10-25 LABORATORY. The official testing laboratories of the owner or such other laboratories as may be designated by the Engineer.

10-26 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.

10-27 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 percent of the total amount of the award contract. All other items shall be considered minor contract items.

10-28 MATERIALS. Any substance specified for use in the construction of the contract work.

10-29 NOTICE TO PROCEED. 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.

10-30 OWNER (SPONSOR). The term owner shall mean the party of the first part or the contracting agency signatory to the contract. For AIP contracts, the term sponsor shall have the same meaning as the term owner.

10-31 PAVEMENT. The combined surface course, base course, and sub base course, if any, considered as a single unit.

10-32 PAYMENT BOND. The approved form of security furnished by the Contractor and his/her surety as a guaranty that he will pay in full all bills and accounts for materials and labor used in the construction of the work.

10-33 PERFORMANCE BOND. The approved form of security furnished by the Contractor and his/her surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.

10-34 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.

10-35 PROJECT. The agreed scope of work for accomplishing specific airport development with respect to a particular airport.

10-36 PROPOSAL. The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

10-37 PROPOSAL GUARANTY. The security furnished with a proposal to guarantee that the bidder will enter into a contract if his/her proposal is accepted by the owner.

10-38 RUNWAY. The area on the airport prepared for the landing and takeoff of aircraft.

10-39 SPECIFICATIONS. A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.

10-40 STRUCTURES. Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; under drains; electrical ducts, manholes, hand holes, lighting fixtures and bases; transformers; flexible and rigid pavements; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.

10-41 SUBGRADE. The soil which forms the pavement foundation.

10-42 SUPERINTENDENT. The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

10-43 SUPPLEMENTAL AGREEMENT. A written agreement between the Contractor and the owner covering: (1) work that would increase or decrease the total amount of the awarded contract, or any major contract item, by more than 25 percent, such increased or decreased work being within the scope of the originally awarded contract; or (2) work that is not within the scope of the originally awarded contract.

10-44 SURETY. The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds which are furnished to the owner by the Contractor.

10-45 TAXIWAY. For the purpose of this document, the term taxiway means 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 or aircraft parking areas.

10-46 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.

10-47 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 6 hours toward completion of the contract. Unless work is suspended for causes beyond the Contractor's control, Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work, requiring the presence of an inspector, will be considered as working days.

END OF SECTION 10

SECTION 20

PROPOSAL REQUIREMENTS AND CONDITIONS

20-01 ADVERTISEMENT (Advertisement for Bidders).

The "Advertisement for Bidders" included in the front of these specifications will be (or has been) published at such places and at such times as one required by local law or ordinances and is made a part of the "Contract Documents".

20-02 PREQUALIFICATION OF BIDDERS. Each bidder shall furnish the owner satisfactory evidence of his/her competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, a list of equipment that would be available for the work, and a list of key personnel that would be available. In addition, each bidder shall furnish the owner satisfactory evidence of his/her financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the Contractor's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether his/her financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect his/her (bidders) true financial condition at the time such qualified statement or report is submitted to the owner.

20-03 CONTENTS OF PROPOSAL FORMS. The owner shall furnish bidders with proposal forms. All papers bound with or attached to the proposal forms are necessary parts and must not be detached.

The plans specifications, and other documents designated in the proposal form shall be considered a part of the proposal whether attached or not.

20-04 ISSUANCE OF PROPOSAL FORMS. The owner reserves the right to refuse to issue a proposal form to a prospective bidder should such bidder be 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. Contractor default under previous contracts with the owner.

d. Unsatisfactory work on previous contracts with the owner.

20-05 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is given only as a basis for comparison of proposals and the award of the contract. The owner does not expressly or by implication agrees that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of

such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as hereinafter provided in the subsection titled ALTERATION OF WORK AND QUANTITIES of Section 40 without in any way invalidating the unit bid prices.

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

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

20-07 PREPARATION OF PROPOSAL. The bidder shall submit his/her proposal on the forms furnished by the owner. All blank spaces in the proposal forms must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals for which he proposes to do each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

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

20-08 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 which 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.

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.

20-09 BID GUARANTEE. Each separate proposal shall be accompanied by a certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such check, or collateral, shall be made payable to the owner.

20-10 DELIVERY OF PROPOSAL. Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

20-11 WITHDRAWAL OR REVISION OF PROPOSALS. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the owner in writing or by telegram before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-12 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.

20-13 DISQUALIFICATION OF BIDDERS. A bidder shall be considered disqualified for any of the following reasons:

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

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

c. If the bidder is considered to be in “default” for any reason specified in the subsection titled ISSUANCE OF PROPOSAL FORMS of this section.

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 price written in words shall govern.

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

a. If the proposal is irregular as specified in the subsection titled IRREGULAR PROPOSALS of Section 20.

b. If the bidder is disqualified for any of the reasons specified in the subsection titled DISQUALIFICATION OF BIDDERS of Section 20.

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

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

If awarded, the CONTRACT will be awarded by the OWNER to the lowest, qualified, responsible bidder whose proposal conforms to the cited requirements of the OWNER.

No award will be made until the FAA has concurred in the sponsor's recommendation to make such award and has approved the sponsor's proposed CONTRACT to the extent that such concurrence and approval are required by Part 152 of the Federal Aviation Regulations.

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 the subsection titled APPROVAL OF CONTRACT of this section.

30-04 RETURN OF PROPOSAL GUARANTY. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the owner has made a comparison of bids as hereinbefore specified in the subsection titled CONSIDERATION OF PROPOSALS of this section. Proposal guaranties of the two lowest bidders will be retained by the owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the owner receives the contracts bonds as specified in the subsection titled REQUIREMENTS OF CONTRACT BONDS of this section.

30-05 REQUIREMENTS OF CONTRACT BONDS. At the time of the execution of the contract, the

successful bidder shall furnish the owner a surety bond or bonds which have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 EXECUTION OF CONTRACT. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return such signed contract to the owner, along with the fully executed surety bond or bonds specified in the subsection titled REQUIREMENTS OF CONTRACT BONDS of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder. If the contract is mailed, special handling is recommended.

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

30-08 FAILURE TO EXECUTE CONTRACT. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the 15 calendar day period specified in the subsection titled REQUIREMENTS OF CONTRACT BONDS of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to the owner.

END OF SECTION 30

SECTION 40

SCOPE OF WORK

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

40-02 ALTERATION OF WORK AND QUANTITIES. The owner reserves and shall have the right to make such alterations in the work as may be necessary or desirable to complete the work originally intended in an acceptable manner. Unless otherwise specified herein, the Engineer shall be and is hereby authorized to make such alterations in the work as may increase or decrease the originally awarded contract quantities, provided that the aggregate of such alterations does not change the total contract cost or the total cost of any major contract item by more than 25 percent (total cost being based on the unit prices and estimated quantities in the awarded contract). Alterations which do not exceed the 25 percent limitation shall not invalidate the contract nor release the surety, and the Contractor agrees to accept payment for such alterations as if the altered work had been a part of the original contract. These alterations which are for work within the general scope of the contract shall be covered by “Change Orders” issued by the Engineer. Change orders for altered work shall include extensions of contract time where, in the Engineer's opinion, such extensions are commensurate with the amount and difficulty of added work.

Should the aggregate amount of altered work exceed the 25 percent limitation hereinbefore specified, such excess altered work shall be covered by supplemental agreement. 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.

All supplemental agreements shall be approved by the FAA and shall include valid wage determinations of the U.S. Secretary of Labor when the amount of the supplemental agreement exceeds $2,000. However, if the CONTRACTOR elects to waive the limitations on work that increases or decreases the originally awarded CONTRACT or any major CONTRACT item by more than 25 percent, the supplemental agreement shall be subject to the same U.S. Secretary of Labor Wage determination as was included in the originally awarded CONTRACT.

40-03 OMITTED ITEMS. The Engineer may, in the owner's best interest, omit from the work any contract item, except major contract items. 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 the subsection titled PAYMENT FOR OMITTED ITEMS of Section 90.

40-04 EXTRA WORK. Should acceptable completion of the contract require the Contractor to perform an item of work for which no basis of payment has been provided in the original contract or previously issued change orders or supplemental agreements, the same shall be called Extra Work. Extra work that is within the general scope of the contract shall be covered by written change order. Change orders for such 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 Engineer's opinion, is necessary for completion of such extra work.

When determined by the Engineer to be in the owner's best interest, he may order the Contractor to proceed with extra work by force account as provided in the subsection titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of Section 90.

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 hereinbefore defined in the subsection titled SUPPLEMENTAL AGREEMENT of Section 10.

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. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas of the airport with respect to his/her own operations and the operations of all his/her subcontractors as specified in the subsection titled LIMITATION OF OPERATIONS of Section 80. 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 the subsection titled CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS in Section 70.

With respect to his/her own operations and the operations of all his/her 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.

When the contract requires the maintenance of vehicular traffic on 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 such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor shall furnish erect, and maintain barricades, warning signs, flagmen, and other traffic control devices in reasonable conformity with the manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office), unless otherwise specified herein. 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.

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

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

40-06 REMOVAL OF EXISTING STRUCTURES. All existing structures encountered within the

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

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

Except as provided in the subsection titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this section, 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 utilized in the work as otherwise provided for in the contract and shall remain the property of the owner when so utilized 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 either embankment or waste, he may at his/her option either:

a. Use such material in another contract item, providing such use is approved by the Engineer 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 Engineer; or
c. Use such material for his/her 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., he shall request the Engineer's approval in advance of such use.

Should the Engineer 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 his/her own 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 his/her use of such material so used in the work or removed from the site.

Should the Engineer 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 his/her 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.

40-09 FINAL CLEANING UP. 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. He 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 such property owner.

END OF SECTION 40

SECTION 50

CONTROL OF WORK

50-01 AUTHORITY OF THE ENGINEER. The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work. He shall decide all questions which may arise as to the interpretation of the specifications or plans relating to the work, the fulfillment of the contract on the part of the Contractor, and the rights of different Contractors on the project. The Engineer shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for the under contract.

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 Engineer 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 his/her opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the owner, he will advise the owner of his/her determination that the affected work be accepted and remain in place. In this event, the Engineer will document his/her determination and recommend to the owner a basis of acceptance which will provide for an adjustment in the contract price for the affected portion of the work. The Engineer's determination and recommended contract price adjustments will be based on good engineering judgment and such tests or retests of the affected work as are, in his/her opinion, needed. Changes in the contract price shall be covered by contract modifications (change order or supplemental agreement) as applicable.

If the Engineer 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 Engineer's written orders.

For the purpose of this subsection, 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 Engineer's right to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's prosecution of the work, when, in the Engineer's opinion, such compliance is essential to provide an acceptable finished portion of the work.

For the purpose of this subsection, the term “reasonably close conformity” is also intended to provide the Engineer with the authority to use good engineering judgment in his/her determinations as to acceptance of work that is not in strict conformity but will provide a finished product equal to or better than that intended by the requirements of the contract, plans and specifications.

50-03 COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. 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 FAA advisory circulars; contract general provisions shall govern over plans, cited standards for materials or testing, and cited FAA advisory circulars; plans shall govern over cited standards for materials or testing and cited FAA advisory circulars.

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, he shall immediately call upon the Engineer for his/her interpretation and decision, and such decision shall be final.

50-04 COOPERATION OF CONTRACTOR. The Contractor will be supplied with two copies each of the plans and specifications. He shall have available on the work at all times, one copy each of the plans and specifications. Additional 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 he shall cooperate with the Engineer and his/her inspectors and with other contractors in every way possible. The Engineer shall allocate he work and designate the sequence of construction in case of controversy between contractors. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as his/her 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 Engineer or his/her authorized representative.

50-05 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 his/her work so as 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 his/her contract and shall protect and save harmless the owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced by him because of the presence and operations of other Contractors working within the limits of the same project.

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

50-06 CONSTRUCTION LAYOUT AND STAKES. The Engineer shall establish horizontal and vertical control only. The Contractor must establish all layouts required for the construction of the work. Such stakes and markings as the Engineer may set for either his/her own or the Contractor's guidance shall be preserved by the Contractor. In case of negligence on the part of the Contractor, or his/her employees, resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due the Contractor at the discretion of the Engineer.

50-07 AUTOMATICALLY CONTROLLED EQUIPMENT. Whenever batching or mixing plant equipment is required to be operated automatically under the contract and a breakdown or

malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period 48 hours following the breakdown or malfunction, provided this method of operations will produce results which conform to all other requirements of the contract.

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

Inspectors employed by the owner are authorized to notify the Contractor or his/her 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 Engineer for his/her decision.

50-09 INSPECTION OF THE WORK. All materials and each part or detail of the work shall be subject to inspection by the Engineer. The Engineer 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 Engineer 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.

Any work done or materials used without supervision or inspection by an authorized representative of the owner may be ordered removed and replaced at the Contractor's expense unless the owner's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

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 which does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the Engineer as provided in the subsection titled CONFORMITY WITH PLANS AND SPECIFICATIONS of this section.

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 the subsection titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Section 70.

Work done contrary to the instructions of the Engineer, work done beyond the lines shown on the

plans or as given, 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 forthwith with any order of the Engineer made under the provisions of this subsection, the Engineer will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs (incurred by the owner) from any monies due or to become due 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 which 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 shall be responsible for all damage done by his/her hauling equipment and shall correct such damage at his/her own expense.

50-12 MAINTENANCE DURING CONSTRUCTION. The Contractor shall maintain the work during construction and until the work is accepted. This 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 sub-grade previously constructed, the Contractor shall maintain the previous course or sub-grade 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 the subsection titled MAINTENANCE DURING CONSTRUCTION of this section, the Engineer shall immediately notify the Contractor of such non-compliance. 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 Engineer's notification, the Engineer 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 deducted from monies due or to become due the Contractor.

50-14 PARTIAL ACCEPTANCE. If at any time during the prosecution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the owner, he may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, he may accept it as being completed, 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 Engineer and owner will make an inspection. If all construction provided for and contemplated by the contract is found to be completed in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The Engineer 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 Engineer will give the Contractor the necessary instructions for correction of same and the Contractor shall immediately comply with and execute such instructions. 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 Engineer 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 him for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, he shall notify the Engineer in writing of his/her intention to claim such additional compensation before he begins the work on which he bases the claim. If such notification is not given or the Engineer 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 Engineer 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 l0 calendar days, submit his/her written claim to the Engineer 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.

50-17 RETEST OF WORK. When, as provided for in the Contract Documents, the Owner or Contractor performs sampling and test of the work and the tests show a failure to meet the requirements of the Contract Documents, the expense of re-testing, after re-working or substitution by the Contractor, will be at the expense of Contractor, and such costs will be deducted from amounts due to the Contractor.

50-18 CORRECTION OF WORK AFTER FINAL PAYMENT. Neither the final certificate for payment, nor any provision in the Contract Documents shall relieve the Contractor of responsibility for faulty materials or workmanship and, unless otherwise specified, he shall remedy any defect due thereto and pay for any damage to other work resulting there from, which shall appear within a period of one (1) year from date of Final Acceptance. The Owner shall give notice of observed defects with reasonable promptness. Wherever the work “acceptance” occurs, it shall be understood to mean Final Acceptance.

50-19 WARRANTY AND GUARANTEE. The Contractor warrants to the Owner that all materials furnished under this Contract shall be new unless otherwise specified and that all Work, including without limitation all materials, will be of good quality, free from faults and defects and in conformance with contract requirements. Any work not so conforming to these standards may be considered defective.

If, within one (1) year after the date of Final Acceptance of the Work, or any severable portion thereof, if such portion is accepted by Owner in final form prior to total completion of the Work, or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract, any of the Work is found to be defective or not in accordance with Contract requirements, the Contractor shall correct such defect(s) within ten (10) calendar days after receipt of written notice from the Owner to do so.

The obligations of the Contractor in this paragraph entitled “Warranty and Guarantee” shall be in addition to and not in limitation of any obligations imposed upon him by special guarantees required by the contract or otherwise prescribed by law.

The Contractor shall guarantee the Work performed under this Contract against failures, leaks, and breaks or other unsatisfactory conditions due to defective equipment, materials, or workmanship for a period of one (1) year from the date of Final Acceptance of the entire facility. The one year guarantee period shall commence on the day of recordation of the Final Acceptance of the entire facility. It is understood that partial or entire use, or occupancy of the Work does not constitute acceptance, but rather a benefit to the Contractor from the Owner to enable the Contractor to complete the Work. All repair work or replacement required, in the opinion of the Owner, shall be performed immediately by the Contractor at his/her own expense. Should the Contractor fail to repair such failures, leaks, breaks, or other unsatisfactory conditions or to make replacement within five (5) days after written notice, it shall be lawful for the Owner to make such repairs and replacements and charge the Contractor with the actual costs of such necessary labor and material.

Neither the recordation of Final Acceptance nor the final certification or payment nor any provision of the Contract or partial or entire use, or occupancy of the premises by the Owner shall constitute an acceptance of the Work not performed in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy all effects in the Work and pay for all damage to other work resulting there from which shall appear within a period of one (1) year from the date of Final Acceptance of the entire Project. The Owner will give notice of observed defects with reasonable promptness.

The Owner is hereby authorized to make such repairs, if, within five (5) days after mailing of a notice in writing to the Contractor or his/her agent, the Contractor shall neglect to make or undertake with due diligence the aforesaid repairs; provided, however, that in the case of an emergency where, in the opinion of the Owner, delay would cause hazard to health or serious loss or damage, repairs may be made without notice being sent to the Contractor, and the Contractor shall pay the cost thereof.

If after installation, the operation or use of the materials or equipment furnished under this Contract proves to be unsatisfactory to the Owner, the Owner shall have the right to operate and
use such materials or equipment until it can, without damage to the Owner, be taken out of service for correction or replacement. Such period of use of the defective materials or equipment
pending correction or replacement shall in no way decrease the guarantee period required for the
acceptable corrected or rejected items of materials or equipment. Nothing in this Section shall be construed to limit, relieve or release the Contractor’s, Subcontractor’s and equipment supplier’s liability to the Owner for damages sustained as the result of latent defects in the

equipment furnished caused by the negligence of the supplier's agents, employees or subcontractors. Stated in another manner, the warranty contained in this Section shall not amount to nor shall it be deemed to be a waiver by the Owner of any rights or remedies (or time limits in which to enforce such rights or remedies) it may have against the supplier of the equipment to be furnished under these Specifications for defective materials under the laws of this State pertaining to acts of negligence.

END OF SECTION 50

SECTION 60

CONTROL OF MATERIALS

60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS. The materials used on 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 complete statements to the Engineer as to the origin, composition, and manufacture of all materials to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the Engineer's option, materials may be approved at the source of supply before delivery is stated. 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 conforms to the requirements of cited materials specifications. In addition, where an FAA specification for airport lighting equipment is cited in the plans or specifications, the Contractor shall furnish such equipment that is:

a. Listed in FAA Advisory Circular (AC) 150/5345-1, Approved Airport Equipment, that is in effect on the date of advertisement; and,

b. Produced by the manufacturer qualified (by FAA) to produce such specified and listed equipment.

The following airport lighting equipment is required for this contract and is to be furnished by the Contractor in accordance with the requirements of this subsection:

Medium intensity runway and taxiway lights, mandatory lighted hold signs, wind cone, rotating beacon, PAPI's, REIL's, apron light, and electrical vault equipment

60-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS. All materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer 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 Engineer, shall be removed at the Contractor's expense. Unless otherwise designated, tests in accordance with the cited standard methods of AASHTO or ASTM which are current on the date of advertisement for bids will be made by and at the expense of the owner. Samples will be taken by a qualified representative of the owner. 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 his/her request.

60-03 CERTIFICATION OF COMPLIANCE. The Engineer may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance 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.

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 Engineer.

When a material or assembly is specified by “brand name or equal” and the Contractor elects to furnish the specified “brand name,” 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.

Should the Contractor propose to furnish an “or equal” material or assembly, he shall furnish the manufacturer's certificates of compliance as hereinbefore described for the specified brand name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed “or equal” is suitable for use in the work.

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

60-04 PLANT INSPECTION. The Engineer or his/her 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 his/her acceptance of the material or assembly.

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

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

b. The Engineer 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 Engineer, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

It is understood and agreed that the owner shall have the right to retest any material which has been tested and approved at the source of supply after it has been delivered to the site. The Engineer 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’S FIELD OFFICE AND LABORATORY. When specified and provided for as a contract item, the Contractor shall furnish a building for the exclusive use of the Engineer as a field office and field testing laboratory. The building shall be furnished and maintained by the Contractor

as specified herein and shall become property of the Contractor when the contract work is completed.

60-06 STORAGE OF MATERIALS. Materials shall be so stored as 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 so as to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the Engineer. 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, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the Engineer. 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 Engineer 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 his/her entire 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 Engineer.

No rejected material or assembly, the defects of which have been corrected by the Contractor, shall be returned to the site of the work until such time as the Engineer 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 herein (if any) to be furnished by the owner. Owner-furnished materials shall be made available to the Contractor at the location specified herein.

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 which may occur during the Contractor's handling, storage, or use of such owner-furnished material. The owner will deduct from any monies due or to become due the Contractor any cost incurred by the owner in making good such loss due to the Contractor's handling, storage, or use of owner-furnished materials.

END OF SECTION 60

SECTION 70

LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

70-01 LAWS TO BE OBSERVED. The Contractor shall keep fully informed of all Federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He 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 his/her 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 himself or his/her 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 prosecution 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, he shall provide for such use by suitable legal agreement with the patentee or owner. The Contractor and the surety shall indemnify and save 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 prosecution 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) is indicated as follows:

None.

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

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 so as 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 Engineer, 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 AID PARTICIPATION. For AIP contracts, the United States Government has agreed to reimburse the owner for some portion of the contract costs. Such reimbursement is made from time to time upon the owner's (sponsor's) request to the FAA. In consideration of the United Sates Government's (FAA's) agreement with the owner, the owner has included provisions in this contract pursuant to the requirements of the Airport Improvement Act of 1982, as amended by the Airport and Airway Safety and Capacity Expansion Act of 1987, and the Rules and Regulations of the FAA that pertain to the work.

As required by the Act, the contract work is subject to the inspection and approval of duly authorized representatives of the Administrator, FAA, and is further subject to those provisions of the rules and regulations that are cited in the contract, plans, or specifications.

No requirement of the Act, the rules and regulations implementing the Act, or this contract shall be construed as making the Federal Government 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 shall provide and maintain in a neat, sanitary condition such accommodations for the use of his/her employees as may be necessary to comply with the requirements of the state and local Board of Health, or of other bodies or tribunals having jurisdiction.

Attention is directed to Federal, state, and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to his/her health or safety.

70-07 PUBLIC CONVENIENCE AND SAFETY. The Contractor shall control his/her operations and those of his/her 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 his/her own operations and those of his/her subcontractors and all suppliers in accordance with the subsection titled MAINTENANCE OF TRAFFIC of Section 40 hereinbefore specified and shall limit such operations for the convenience and safety of the traveling public as specified in the subsection titled LIMITATION OF OPERATIONS of Section 80 hereinafter.

70-08 BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS. The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated.

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office).

When the work requires closing an air operations area of the airport or portion of such area, the Contractor shall furnish, erect, and maintain temporary markings and associated lighting conforming to the requirements of AC 150/5340-1, Marking of Paved Areas on Airports.

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stock piles, and his/her parked construction equipment that may be hazardous to the operation of emergency fire-rescue or maintenance vehicles on the airport in reasonable conformance to AC 150/5370-2, Operational Safety on Airports during Construction Activity.

The Contractor shall identify each motorized vehicle or piece of construction equipment in reasonable conformance to AC 150/5370-2.

The Contractor shall furnish and erect all barricades, warning signs, and markings for hazards prior to commencing work which requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their dismantling is directed by the Engineer.

Open-flame type lights shall not be permitted within the air operations areas of the airport.

70-09 USE OF EXPLOSIVES. When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. The Contractor shall be responsible for all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the Engineer and, in general, not closer than 1,000 feet (300 m) from the work or from any building, road, or other place of human occupancy.

The Contractor shall notify each property owner and public utility company having structures or facilities in proximity to the site of the work of his/her intention to use explosives. Such notice shall be given sufficiently in advance to enable them to take such steps as they may deem necessary to protect their property from injury.

The use of electrical blasting caps shall not be permitted on or within 1,000 feet (300 m) of the airport property.

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 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 prosecution of the work, resulting from any act, omission, neglect, or misconduct in his/her manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have 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, he shall restore, at his/her own 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 he shall make good such damage or injury in an acceptable manner.

70-11 RESPONSIBILITY FOR DAMAGE CLAIMS. The Contractor shall indemnify and save harmless the Engineer and the owner and their officers, 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 his/her contract as may be considered necessary by the owner for such purpose may be retained for the use of the owner or, in case no money is due, his/her surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid 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 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 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. Should it be 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 shall be specified herein and indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his/her own estimate of the difficulties involved in arranging his/her work to permit such beneficial occupancy by the owner as described below:

None

Upon completion of any portion of the work listed above, such portion shall be accepted by the owner in accordance with the subsection titled PARTIAL ACCEPTANCE of Section 50.

No portion of the work may be opened by the Contractor for public use until ordered by the Engineer in writing. Should it become necessary to open a portion of the work to public traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the Engineer, 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 his/her expense.

The Contractor shall make his/her 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.

70-14 CONTRACTOR'S RESPONSIBILITY FOR WORK. Until the Engineer's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with the subsection titled PARTIAL ACCEPTANCE of Section 50, 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 his/her 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 his/her 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 the subsection titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section, 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 his/her 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 the owners are indicated as follows:

None.

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 his/her 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 his/her plan of operations. Such notification shall be in writing addressed to THE PERSON TO CONTACT as provided hereinbefore in this subsection and the subsection titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section. A copy of each notification shall be given to the Engineer.

In addition to the general written notification hereinbefore provided, it shall be the responsibility of the Contractor to keep such individual owners advised of changes in his/her plan of operations that would affect such owners.

Prior to commencing the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such owner of his/her 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 Engineer.

The Contractor's failure to give the two day's notice hereinabove provided shall be cause for the Engineer 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 excavation methods acceptable to the Engineer within 3 feet (90 cm) 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, he shall immediately notify the proper authority and the Engineer 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 Engineer 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 his/her operations whether or not due to negligence or accident. The contract owner reserves the right to deduct such costs from any monies due or which may become due the Contractor or his/her surety.

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

70-17 PERSONAL LIABILITY OF PUBLIC OFFICIALS. In carrying out any of the contract provisions or in exercising any power or authority granted to him by this contract, there shall be no liability upon the Engineer, his/her 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 estop the owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the owner be precluded or estopped from recovering from the Contractor or his/her surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill his/her 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. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

Water sprinkler trucks shall be used to prevent and control dust on haul roads and in construction areas. In the event of strong winds during earthwork operations, it may be necessary to suspend such operations until the conditions are favorable for such operation.

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 his/her operations, any building, part of a building, structure, or object which is incongruous with its surroundings, he shall immediately cease operations in that location and notify the Engineer. The Engineer will immediately investigate the Contractor's finding and will direct the Contractor to either resume his/her operations or to suspend operations as directed.

Should the Engineer 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 modification (change order or supplemental agreement) as provided in the subsection titled EXTRA WORK of Section 40 and the subsection titled PAYMENT FOR EXTRA WORK AND FORCE ACCOUNT WORK of Section 90. If appropriate, the contract modification shall include an extension of contract time in accordance with the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Section 80.

70-21 INSURANCE. Not used.

70-22 ILLEGAL OR VERBAL AGREEMENTS. No verbal agreement or conversation with any officer, agent, or employee of OWNER, either before, during or after the execution of the CONTRACT, shall affect or modify any of the terms or obligations contained in the CONTRACT Documents, nor shall such verbal agreement or conversation entitle CONTRACTOR to any additional payments whatsoever under the terms of the CONTRACT.

70-23 GUARANTEE OF WORKMANSHIP AND MATERIALS AND DATE OF ACCEPTANCE. Besides guarantees required elsewhere, CONTRACTOR shall and does hereby guarantee all workmanship and materials for a period of one year, except as otherwise required in the CONTRACT for a longer period, from and after the date of acceptance of the Work and recordation of Notice of Completion by OWNER and shall repair or replace any or all workmanship and materials, together with any other work which may be displaced in so doing, that, in the opinion of the OWNER, is or becomes defective during the period of said guarantee without expense whatsoever to OWNER. For purposes of the CONTRACT the date of acceptance shall be the date of the resolution of the Governing Body of OWNER accepting the Work; provided, however, that as to all items of the Work which are incomplete upon the date of said resolution, the date of acceptance shall be the date of final payment under this CONTRACT.

70-24 SURETY COMPANY BOND. CONTRACTOR shall give, in addition to the bonds elsewhere required by the CONTRACT documents, an approved Surety Company Bond equal to five percent (5%) of the total amount of the CONTRACT which shall hold good for a period of one year after the completion and acceptance of the Work, to protect the OWNER against result of faulty material or workmanship during that time.

70-25 FAILURE TO COMPLY WITH GUARANTEE. In the event of failure of CONTRACTOR to comply with the requirements of any guarantee required by the CONTRACT within seven (7) days after being notified in writing, OWNER is authorized to proceed to have the defects repaired and made good at the expense of CONTRACTOR who shall pay the costs and charges thereof immediately on demand.

70-26 FORM OF GUARANTEES. Guarantees in the form of written warranty shall be supplied on the CONTRACTOR'S own letterhead as follows:

WARRANTY FOR _____

We hereby warrant that the _____

Has been provided in accordance with the drawings and specifications and that the work as installed will fulfill the requirements of the warranty included in the specifications. We agree to repair or replace any or all of our work together with any other adjacent work which may be displaced by so doing, that may prove to be defective in its workmanship or materials for the period of one year from date of acceptance of the above mentioned structure by the OWNER, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above-mentioned conditions within seven (7) days after being notified in writing us, collectively or separately, do hereby authorize the OWNER to proceed to have said defects repaired and made good at our expense, and we will honor and pay the cost and charges therefore on demand.

Signed: _____
Contractor

70-27 RIGHT OF OWNER TO TAKE OVER WORK. The OWNER, through its Governing Body upon 10 days written notice to the CONTRACTOR and to his surety, may without termination of the CONTRACT take over any part of the work, provided that the ENGINEER shall have certified that sufficient cause exists to justify such action. The ENGINEER may so certify to the governing Body if the CONTRACTOR or any of his subcontractors neglect or fail to prosecute diligently such portions of the work, or neglect or fail to remedy defective work or materials, or otherwise violate any provisions of the CONTRACT.

70-28 MINIMUM WAGES.

(a) All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amounts due at time of payment computed at wage rates not less than those contained in the wage determination decision(s) of the Secretary of Labor which is (are) 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; and the wage determination decision(s) shall be posted by the CONTRACTOR at the site of the work in a prominent place where it (they) can be easily seen by the workers. For the purpose of this paragraph, contributions made or costs reasonably anticipated under Section 1(b) (2) of the Davis-Bacon act on behalf of laborer and mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of subparagraph (d) below. Also for the purposes of this paragraph, regular contributions made or

costs incurred for more than a weekly period under plans, funds, or programs, but covering the particular weekly period, are deemed to be constructively made or incurred during such weekly period (29 CFR 5.5(a) (1) (i)).

(b) Any class of laborers or mechanics, including apprentices and trainees, which is not listed in the wage determination(s) and which is to be employed under the CONTRACT, shall be classified or reclassified conformably to the wage determination(s), and a report of the action taken shall be sent by the Owner to the FAA for approval and transmittal to the Secretary of Labor. In the event that the interested parties cannot agree on the proper classification or reclassification of a particular class of laborers and mechanics, including apprentices and trainees, to be used, the question accompanied by the recommendation of the FAA shall be referred to the Secretary of Labor for final determination (29 CFR 5.5(a) (1) (ii)).

(c) 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 wage rate and the CONTRACTOR is obligated to pay a cash equivalent of such a fringe benefit, an hourly cash equivalent thereof shall be established. In the event the interested parties cannot agree upon a cash equivalent of the fringe benefit, the question accompanied by the recommendation of the FAA shall be referred to the Secretary of Labor for determination (29 CFR 5.5(a) (1) (iii)).

(d) If the CONTRACTOR does not make payments to a trustee or other third person, he may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing benefits under a plan or program of a type expressly listed in the Wage Determination Decision of the Secretary of Labor which is a part of this CONTRACT: Provided, however, the Secretary 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 (29 CFR 5.5(a) (1) (iv)).

The minimum wage rates applicable to this project are included herein and are on file with the Sponsor and may be reviewed by interested parties during regular business hours.

END OF SECTION 70

SECTION 80

PROSECUTION 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 Engineer.

Should the Contractor elect to assign his/her contract, said assignment shall concur 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. In case of approval, the Contractor shall file copies of all subcontracts with the Engineer.

80-02 NOTICE TO PROCEED. The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date contract time will be charged. The Contractor shall begin the work to be performed under the contract within 10 days of the date set by the Engineer in the written notice to proceed, but in any event, the Contractor shall notify the Engineer at least 24 hours in advance of the time actual construction operations will begin.

80-03 PROSECUTION AND PROGRESS. Unless otherwise specified, the Contractor shall submit his/her progress schedule for the Engineer's approval within 10 days after the effective date of the notice to proceed. The Contractor's progress schedule, when approved by the Engineer, may be used to establish major construction operations and to check on the progress of the work. 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 Engineer's request, submit a revised schedule for completion of the work within the contract time and modify his/her operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the prosecution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

For AIP contracts, the Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by the owner.

80-04 LIMITATION OF OPERATIONS. The Contractor shall control his/her operations and the operations of his/her subcontractors and all suppliers so as to provide for the free and unobstructed movement of aircraft in the AIR OPERATIONS AREAS of the airport.

When the work requires the Contractor to conduct his/her operations within an AIR OPERATIONS AREA of the airport, the work shall be coordinated with airport management (through the Engineer) at least 48 hours prior to commencement of such work. The Contractor shall not close an AIR OPERATIONS AREA until so authorized by the Engineer and until the necessary temporary marking and associated lighting is in place as provided in the subsection titled BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS of Section 70.

When the contract work requires the Contractor to work within an AIR OPERATIONS AREA of the airport on an intermittent basis (intermittent opening and closing of the AIR OPERATIONS AREA), the Contractor shall maintain constant communications as hereinafter specified; immediately obey all instructions to vacate the AIR OPERATIONS AREA; immediately obey all instructions to resume

work in such AIR OPERATIONS AREA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AIR OPERATIONS AREA until the satisfactory conditions are provided. The following AIR OPERATIONS AREA (AOA) 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:

AOA	TIME PERIODS AOA CAN BE CLOSED	TYPE OF COMMUNICATIONS REQUIRED WHEN WORKING IN AOA	CONTROL AUTHORITY
R/W 15/33	Construction Period	Unicom	Mono County

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.

All equipment which 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 be such that no injury to previously completed work, adjacent property, or existing airport facilities will result from 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 others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the contract, he may request authority from the Engineer 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 Engineer 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 Engineer 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 subsection.

80-06 TEMPORARY SUSPENSION OF THE WORK. The Engineer shall have the authority to suspend the work wholly, or in part, for such period or periods as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the prosecution of the work, or for such time as is 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 Engineer, 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 Engineer's order to suspend work to the effective date of the Engineer's order to resume the work. Claims for such compensation shall be filed with the Engineer within the time period stated in the Engineer's order to resume work. The Contractor shall submit with his/her claim information substantiating the amount shown on the claim. The Engineer 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, for suspensions made at the request of the Contractor, or for any other delay provided for in the contract, plans, or specifications.

If it should become 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. He 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 or working days allowed for completion of the work shall be stated in the proposal and contract and shall be known as the CONTRACT TIME.

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

CONTRACT TIME based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his/her weekly statement of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved CHANGE ORDERS or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

The Engineer shall base his/her weekly statement of contract time charged on the following considerations:

(1) No time shall be charged for days on which the Contractor is unable to proceed with the principal item of work under construction at the time for at least 6 hours with the normal work force employed on such principal item. Should the normal work force be on a double-shift, 12 hours shall be used. Should the normal work force be on a triple-shift, 18 hours shall apply. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the entire work which have been ordered by the Engineer for reasons not the fault of the Contractor, shall not be charged against the contract time.

(2) The Engineer will not make charges against the contract time prior to the effective date of the notice to proceed.

(3) The Engineer will begin charges against the contract time on the first working day after the effective date of the notice to proceed.

(4) The Engineer will not make charges against the contract time after the date of

final acceptance as defined in the subsection titled FINAL ACCEPTANCE of Section 50.

(5) The Contractor will be allowed 1 week in which to file a written protest setting forth his/her objections to the Engineer's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.

The contract time (stated in the proposal) is based on the originally estimated quantities as described in the subsection titled INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES of Section 20. Should the satisfactory completion of the contract require performance of work in greater quantities than those estimated in the proposal, 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 contract time shall not consider either the cost of work or the extension of contract time that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

b. 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 Engineer'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.

c. When the contract time is a specified completion date, it shall be the date on which all contract work shall be substantially completed.

If the Contractor finds it impossible for reasons beyond his/her control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this subsection, he may, at any time prior to the expiration of the contract time as extended, make a written request to the Engineer for an extension of time setting forth the reasons which he believes will justify the granting of his/her request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he may extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

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 the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Section) the sum specified in the contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his/her surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages that will be incurred by the owner should the Contractor fail to complete the work in the time provided in his/her contract.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no

way operate as a wavier on the part of the owner of any of its rights under the contract.

80-09 DEFAULT AND TERMINATION OF CONTRACT. The Contractor shall be considered in default of his/her 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 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 prosecution 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 him 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 Engineer consider the Contractor in default of the contract for any reason hereinbefore, he 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 Engineer 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 prosecution 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 Engineer 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 prosecution 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 Engineer.

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

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 Engineer, or his/her authorized representatives, using United States Customary Units of Measurement or the International System of Units.

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 meter) 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 Engineer.

Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.

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

In computing volumes of excavation the average end area method or other acceptable methods will be used.

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 inches.

The term “ton” will mean the short ton consisting of 2,000 pounds (907 kilograms) avoirdupois. All materials which are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designated by the Engineer. 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 Engineer directs, and each truck shall bear a plainly legible identification mark.

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 to the Engineer, 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.

When requested by the Contractor and approved by the Engineer 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 Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Bituminous materials will be measured by the gallon (liter) or ton (kilogram). When measured by volume, such volumes will be measured at 60 F (15 C) or will be corrected to the volume at 60 F (15 C) using ASTM D 1250 for asphalts or ASTM D 633 for tars.

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 bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When bituminous materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, may be used for computing quantities.

Cement will be measured by the ton (kilogram) or hundredweight (kilogram).

Timber will be measured by the thousand feet board measure (M.F.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

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.

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 by the Engineer in connection with force account work will be measured as agreed in the change order or supplemental agreement authorizing such force account work as provided in the subsection titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of this section.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, 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 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.

Scales shall be accurate within one-half percent of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the inspector 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 one-tenth of 1 percent of the nominal rated capacity of the scale, but not less than 1 pound (454 grams). The use of spring balances will not be permitted.

Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the inspector can safely and conveniently view them.

Scale installations shall have available ten standard 50-pound (2.3 kilogram) weights for testing the

weighing equipment or suitable weights and devices for other approved equipment.

Scales must be tested for accuracy and serviced before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.

Scales "overweighing" (indicating more than correct weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of one-half of 1 percent.

In the event inspection reveals the scales have been "under weighing" (indicating less than correct weight), they shall be adjusted, and no additional payment to the Contractor will be allowed for materials previously weighed and recorded.

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.

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 Engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

90-02 SCOPE OF PAYMENT. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of the subsection titled NO WAIVER OF LEGAL RIGHTS of Section 70.

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 the subsection titled ALTERATION OF WORK AND QUANTITIES of Section 40 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 his/her unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 PAYMENT FOR OMITTED ITEMS. As specified in the subsection titled OMITTED ITEMS of Section 40, the Engineer 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 Engineer 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 Engineer'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 Engineer'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 Engineer'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 of the amount of such costs.

90-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK. Extra work, performed in accordance with the subsection titled EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work. When the change order or supplemental agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for based on expended labor, equipment, and materials plus a negotiated and agreed upon allowance for overhead and profit.

a. Miscellaneous. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

b. Comparison of Record. The Contractor and the Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor and the Engineer or their duly authorized representatives.

c. Statement. No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer with duplicate itemized statements of the cost of such force account work detailed as follows:

(1) Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.
(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.
(3) Quantities of materials, prices, and extensions.
(4) Transportation of materials.
(5) Cost of property damage, liability and workman's compensation insurance premiums, unemployment insurance contributions, and social security tax.

Statements shall be accompanied and supported by a receipted invoice for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices the Contractor shall furnish an affidavit certifying that such materials were taken from his/her stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

90-06 PARTIAL PAYMENTS. Partial payments will be made at least once each month as the work progresses. Said payments will be based upon estimates prepared by the Engineer of the value of the work performed and materials complete 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 the subsection titled PAYMENT FOR MATERIALS ON HAND of this section.

No partial payment will be made when the amount due the Contractor since the last estimate amounts to less than five hundred dollars.

From the total of the amount determined to be payable on a partial payment, 10 percent of such total amount will be deducted and retained by the owner until the final payment is made, except as may be provided (at the Contractor's option) in the subsection titled PAYMENT OF WITHHELD FUNDS of this section. The balance (90 percent) of the amount payable, less all previous payments, shall be certified for payment. Should the Contractor exercise his/her option, as provided in the subsection titled PAYMENT OF WITHHELD FUNDS of this section, no such 10 percent retainage shall be deducted.

When not less than 95 percent of the work has been completed the Engineer may, at his/her discretion and with the consent of the surety, prepare an estimate from which will be retained 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 Engineer 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 the subsection titled ACCEPTANCE AND FINAL PAYMENT of this section.

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 Engineer at or on an approved site.
b. The Contractor has furnished the Engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
c. The Contractor has furnished the Engineer 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 so stored or stockpiled.
e. The Contractor has furnished the owner evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at anytime 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 his/her 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 subsection.

90-08 PAYMENT OF WITHHELD FUNDS. At the Contractor's option, he/she may request that the owner accept (in lieu of the 10 percent retainage on partial payments described in the subsection titled PARTIAL PAYMENTS of this section) the Contractor's deposits in escrow under 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 10 percent 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 the subsection titled FINAL ACCEPTANCE of Section 50, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of his/her 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 within 15 calendar days of the Contractor's receipt of the Construction Manager's final estimate. The Contractor and the Engineer 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 Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the Engineer'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 the subsection titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Section 50.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, 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 the subsection titled CLAIMS FOR ADJUSTMENTS AND DISPUTES of Section 50 or under the provisions of this subsection, 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.

The Contractor, Subcontractors and Materialmen shall submit a Full Release of All Claims and Waiver Lien on the following form at such time as he receives final payment.

CONDITIONAL
FULL RELEASE OF ALL CLAIMS AND WAIVER OF LIEN
UPON FULL PAYMENT
(GENERAL CONTRACTOR)

WHEREAS, the undersigned, _____ (General Contractor) has furnished labor, materials, and services and/or equipment for the construction of the _____ at the Lee Vining Airport, Mono County (Owner), California.

NOW, THEREFORE, the undersigned, on receipt of a check from the Owner payable to the General Contractor in the sum of $_____, said sum representing full and final payment for the above-mentioned labor, materials, services and/or equipment, does hereby waive and release any and all liens, claims of lien, and demands whatsoever that now exist or may hereafter accrue against the Owner and the Property on account of labor and materials furnished by the undersigned.

The undersigned warrants that all materials and labor placed by the undersigned in the Project are free from any claims, liens, or encumbrances and that all bills and obligations incurred for labor, taxes, withholding taxes based on payroll and payable to the United States of America or State of California, premiums under a voluntary disability insurance policy, if any, carried with a private insurer, and payments to all union health, welfare, pension, apprentice training and vacation funds applicable for workmen employer on the above-described Project, in connection with the work of improvement on the Project, have been paid in full. The undersigned warrants that all subcontractor and materialmen who may have delivered materials and performed work upon the Property for the Project have been fully paid or will be paid from monies received from this final payment. The undersigned shall and does hereby indemnify, save, and hold harmless the Owner and Contractor from all claims, damages, liens and losses, including all costs, professional fees, and reasonable attorneys fees, which the Owner may suffer by reason of filing of any claims, notices, liens or encumbrances, or the failure of the undersigned to obtain cancellation and discharge thereof.

DATED this _____ day of _____, 20___.

_____
Company Name

By _____

_____
(Title)

CONDITIONAL
FULL RELEASE OF ALL CLAIMS AND WAIVER OF LIEN
UPON FULL PAYMENT
(SUB-CONTRACTOR / SUPPLIER)

WHEREAS, the undersigned, _____ (General Contractor) has furnished labor, materials, and services and/or equipment for the construction of the _____ at the Lee Vining Airport, Mono County (Owner), California.

NOW, THEREFORE, the undersigned, on receipt of a check from the General Contractor payable to the Subcontractor in the sum of $_____, said sum representing full and final payment for the above-mentioned labor, materials, services and/or equipment, does hereby waive and release any and all liens, claims of lien, and demands whatsoever that now exist or may hereafter accrue against the Owner and the Property on account of labor and materials furnished by the undersigned.

The undersigned warrants that all materials and labor placed by the undersigned in the Project are free from any claims, liens, or encumbrances and that all bills and obligations incurred for labor, taxes, withholding taxes based on payroll and payable to the United States of America or State of California, premiums under a voluntary disability insurance policy, if any, carried with a private insurer, and payments to all union health, welfare, pension, apprentice training and vacation funds applicable for workmen employed on the above-described Project, in connection with the work of improvement on the Project, have been paid in full. The undersigned warrants that all subcontractors and materialmen who may have delivered materials and performed work upon the Property for the Project have been fully paid or will be paid from monies received from this final payment. The undersigned shall and does hereby indemnify, save, and hold harmless the Owner and Contractor from all claims, damages, liens and losses, including all costs, professional fees, and reasonable attorneys fees, which the Owner may suffer by reason of filing of any claims, notices, liens or encumbrances, or the failure of the undersigned to obtain cancellation and discharge thereof.

DATED this _____ day of _____, 20___.

_____
Company Name

By _____

_____
(Title)

END OF SECTION 90

SECTION 100

CONTRACTOR QUALITY CONTROL PROGRAM

100-01 GENERAL. The Contractor shall establish, provide, and maintain an effective Quality Control Program 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 herein and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The intent of this section is to enable the Contractor to establish a necessary level of control that will:

a. Adequately provide for the production of acceptable quality materials.

b. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.

c. Allow the Contractor as much latitude as possible to develop his or her own standard of control.

The Contractor shall be prepared to discuss and present, at the preconstruction conference, his/her understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed by the Engineer. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed.

The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer.

100-02 DESCRIPTION OF PROGRAM.

a. General Description. The Contractor shall establish a Quality Control Program for all items of work required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program 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 quality control.

b. Quality Control Program. The Contractor shall describe the Quality Control Program in a written document which shall be reviewed by the Engineer prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review at least 5 calendar days before the start of work.

The Quality Control Program shall be organized to address, as a minimum, the following items:

(1) Quality control organization;

(2) Project progress schedule;

(3) Submittals schedule;

(4) Inspection requirements;

(5) Quality control testing plan;

(6) Documentation of quality control activities; and

(7) Requirements for corrective action when quality control and/or acceptance criteria are not met.

The Contractor is encouraged to add any additional elements to the Quality Control Program that he/she deems necessary to adequately control all production and/or construction processes required by this contract.

The Contractor's QC Manual shall describe the responsibility, authority and interrelation of all personnel who manage, perform, and verify work affecting quality. This shall include personnel who need the organizational freedom and authority to:

(1) Initiate the actions necessary to prevent the occurrence of nonconformances;

(2) Identify and record any product quality problems;

(3) Initiate, recommend or provide solutions through designated channels;

(4) Verify the implementation of solutions;

(5) Control further processing, delivery or installation of nonconforming material or items until the deficiency has been corrected.

100-03 QUALITY CONTROL ORGANIZATION. The Contractor's Quality Control Program shall be implemented by the establishment of a separate quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel. The Contractor shall use only inspection personnel who are independent of craft supervision and field Engineering to perform quality verification inspection and testing.

The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be utilized 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 Quality Control Program, the personnel assigned shall be subject to the qualification requirements of paragraph 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor

employees and which are provided by an outside organization.

The quality control organization shall consist of the following minimum personnel:

a. Program Administrator. The Program Administrator shall be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The Program Administrator shall have a minimum of 5 years of experience in airport and/or highway construction and shall have had prior quality control experience on a project of comparable size and scope as the contract.

Additional qualifications for the Program Administrator shall include at least 1 of the following requirements:

(1) Professional engineer with 1 year of airport paving experience acceptable to the Engineer.

(2) Engineer-in-training with 2 years of airport paving experience acceptable to the Engineer.

(3) An individual with 3 years of highway and/or airport paving experience acceptable to the Engineer, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

(4) Construction materials technician certified at Level III by the National Institute for Certification in Engineering Technologies (NICET).

(5) Highway materials technician certified at Level III by NICET.

(6) Highway construction technician certified at Level III by NICET.

(7) A NICET certified engineering technician in Civil Engineering Technology with 5 years of highway and/or airport paving experience acceptable to the Engineer.

The Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract plans and technical specifications. The Program Administrator shall report directly to a responsible officer of the construction firm. The Program Administrator may supervise the Quality Control Program on more than one project provided that person can be at the job site within 2 hours after being notified of a problem.

The Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to endure compliance with the contract plans and technical specification. The Program Administrator shall report directly to a responsible officer of the construction firm. The Program Administrator may supervise the Quality Control Program on more that one project provided that person can be at the job site within 2 hours after being notified of a problem.

The Contractor's Program Administrator or designated qualified field representative shall be present at the site at all times that the Contractor or subcontractor work is in progress.

The Contractor's Program Administrator's qualifications shall be submitted to the Construction Manager for review and approval. At the option of the Construction Manager, the Contractor's

Program Administrator candidate shall be subject to interview by the Construction Manager prior to approval.

The Contractor Construction Manager approved Program Administrator shall not be removed or replaced without prior written approval by the Construction Manager.

The General Contractor shall be required to deliver a letter to the Construction Manager stating that the Quality Control Program Administrator has the authority to stop work when and where deemed necessary to endure compliance with the Contract Documents.

b. Quality Control Technicians. A sufficient number if approved by the Construction Manager of the quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be either engineers, engineering technicians, or experienced craftsmen with qualifications in the appropriate field equivalent to NICET Level II or higher construction materials technician or highway construction technician and shall have a minimum of 3 years of experience in their area of expertise.

The quality control technicians shall report directly to the Program Administrator 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 Section 100-06.

(2) Performance of all quality control tests as required by the technical specifications and Section 100-07.

Certification at an equivalent level, by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

c. Staffing Levels. The Contractor shall provide sufficient qualified quality control 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 Quality Control Program shall state where different technicians will be required for different work elements.

100-04 PROJECT PROGRESS SCHEDULE. The Contractor shall submit a coordinated construction schedule for all work activities. The schedule shall be prepared as a network diagram in Critical Path Method (CPM), PERT, or other format, or as otherwise specified in the contract. As a minimum, it shall provide information on the sequence of work activities, milestone dates, and activity duration.

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.

100-05 SUBMITTALS SCHEDULE. The Contractor shall submit a detailed listing of all submittals (e.g., mix designs, materials certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:

a. Specification item number;

b. Item description;

c. Description of submittal;

d. Specification paragraph requiring submittal; and

e. Scheduled date of submittal.

100-06 INSPECTION OF REQUIREMENTS. Quality control 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 Section 100-07. The Contractor QC Manual shall require that all inspection will be performed in accordance with the Inspection and Test Plan (see paragraph 2.0). The contractor shall use only inspection personnel who are independent of craft supervision and field Engineering to perform quality verification inspection and testing.

The Contractor QC Manual shall control testing operations required to qualify, demonstrate, or ensure the quality and characteristics of items, site condition, or the erection and construction of contract required items. All items shall be performed in accordance with the Inspection and Test Plan.

Modifications, repairs and replacements required as a result of test failures will be treated as nonconforming items and controlled in accordance with the controls for nonconforming items.

Personnel performing inspections and test must have a minimum three years of quality control inspection experience in the applicable discipline and activity they are required to perform and shall have a demonstrated ability to understand quality control techniques and criteria.

Inspection and testing activity must be performed in accordance with procedures that my be supplemented by specific or standard instructions, work operations, or planning documents, including inspection plans delineating inspection hold points. The inspection activities that shall be planned in advance include:

A. Receiving inspection;

B. Construction inspection and testing;

C. Installation inspection and testing.

Inspection and test activities shall have documentation reflecting the applicable inspection or tests performed. Inspection and test procedures and instructions shall provide:

A. Reference to applicable documents, such as drawings, specifications, and procedures;

B. Identification of prerequisites and special-process control requirements, such as personnel, procedure or equipment qualifications, suitable and controlled environmental conditions, and calibrated instruments;

C. Identification of characteristics to be inspected;

D. Identification of individuals or groups for performing the inspection;

E. Acceptance and rejection criteria (explicit or by reference) obtained from specifications, drawing, supplier instructions, and construction standards.

F. A description of the method of inspection and equipment to be used or reference to an appropriate procedure;

G. Identification of frequency of inspection or sampling;

H. Provisions for establishing mandatory inspection hold points for witness by the Construction Manager;

I. Requirements that inspections of modifications, repairs, and replacements be performed in accordance with either the original inspection procedure, instruction, plan, special procedures or plans appropriate to the work activity;

J. Requirements that inspection and test records contain:

(1) A description of the observations;

(2) Record of the date and results of the inspection or test, including any special documentation and sign-off by the inspector;

(3) Inspector identification;

(4) Evidence as to acceptability of the results;

(5) Verification that inspection or test operations are complete and acceptable;

(6) Action taken to resolve any discrepancies noted;

(7) Adequate documentation to demonstrate that the completed inspections or tests have met the objectives defined in the Inspection and Test Plan.

Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:

a. During plant operation for material production, quality control test results and periodic inspections shall be utilized 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 utilized in proportioning and mixing shall be inspected to ensure its proper operating condition. The Quality Control Program shall detail how these and other quality control functions will be accomplished and utilized.

b. During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and workmanship. All equipment utilized 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 Program shall document how these and other quality control functions will be accomplished and utilized.

100-07 QUALITY CONTROL TESTING PLAN. As a part of the overall Quality Control Program, the Contractor shall implement a quality control 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 quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

The 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., Plant Mix Bituminous Pavements);

c. Test type (e.g., gradation, grade, asphalt content);

d. Test standard (e.g., ASTM or 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); and

g. Control requirements (e.g., target, permissible deviations).

The testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D 3665. The Engineer shall be provided the opportunity to witness quality control sampling and testing.

All quality control test results shall be documented by the Contractor as required by Section 100-08.

100-08 DOCUMENTATION. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspection 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 Engineer daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's Program Administrator.

Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

a. Daily Inspection Reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations on a form

acceptable to the Engineer. These technician's daily reports shall provide factual evidence that continuous quality control 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) Safety inspection.

The daily inspection reports shall identify inspections 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 quality control technician and the Program Administrator. The Engineer shall be provided at least one copy of each daily inspection report on the work day following the day of record.

b. Daily Test Reports. The Contractor shall be responsible for establishing a system which will record all quality control 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; and

(9) Retests.

Test results from each day's work period shall be submitted to the Engineer prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be signed by the responsible quality control technician and the Program Administrator.

100-09 CORRECTIVE ACTION REQUIREMENTS. The Quality Control Program 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 Quality Control Program as a whole, and for individual items of work contained in the technical specifications.

The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of 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 utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

100-1 SURVEILLANCE BY THE ENGINEER. All items of material and equipment shall be subject to surveillance by the Engineer at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to surveillance by the Engineer at the site for the same purpose.

Surveillance by the Engineer does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

100-2 NONCOMPLIANCE.

a. The Engineer will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or his/her authorized representative to the Contractor or his/her authorized representative at the site of the work, shall be considered sufficient notice.

b. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:

(1) Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.

(2) Order the Contractor to stop operations until appropriate corrective actions are taken.

END OF SECTION 100

SECTION 110

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)

110-01 GENERAL. When the specifications provide for material to be sampled and tested on a statistical basis, the material will be evaluated for acceptance in accordance with this section. All test results for a lot will be analyzed statistically, using procedures to determine the total estimated percent of the lot that is within specification limits. This concept, termed percent within limits (PWL), is a statistically based evaluation method, whereby the PWL is computed on a lot basis, using the average (X) and standard deviation (S_n) of the specified number (n) of sub lot tests 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(s) (Q_L for Lower Quality Index and/or Q_U for Upper Quality Index) is computed and the PWL for the specified n is determined from Table 1.

110-02 METHOD FOR COMPUTING PWL. The computational sequence for computing the PWL is as follows:

a. Divide the lot into n sub lots in accordance with the acceptance requirements of the specification.

b. Locate the sampling position within the sub lot in accordance with the random sampling 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. Average all sub lot values within the lot to find X by using the following formula:

$$X = (x_1 + x_2 + x_3 + \ldots x_n) / n$$

Where:

X = Average of all sub lot values within a lot

x_1, x_2 = Individual sub lot values

n = Number of sub lots

e. Find the standard deviation S_n by use of the following formula:

$$S_n = [(d_1^2 + d_2^2 + d_3^2 + \ldots d_n^2) / n-1]^{1/2}$$

Where:

S_n = standard deviation of the number of sub lot values in the set

d_1, d_2 = deviations of the individual sub lot values X_1, X_2 ... from the average value X that is d_1

$= (x_1 - X)$, $d_2 = (x_2 - X)$ .. $d_n = (x_n - X)$

n = number of sub lots

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:

$$Q_L = (X - L) / S_n \quad \text{and} \quad Q_U = (U - X) / S_n$$

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
   A04 98.35

   n = 4

2. Calculate average density for the lot.

   $X = (x_1 + x_2 + x_3 + .. x_n) / n$

   $X = (96.60 + 97.55 + 99.30 + 98.35) / 4$

   $X = 97.95$ percent 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)

   $Q_L = (X - L) / S_n$

   $Q_L = (97.95-96.30) / 1.15$

   $Q_L = 1.4384$

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.

   $X = (x_1 + x_2 + x_3 .. n) / n$

   $X = (5.00 + 3.74 + 2.30 + 3.25) / 4$

   $X = 3.57$ percent

3. Calculated 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 $Q_L = 1.40$ and n=4.

   $P_L = 97$

6. Calculate the Upper Quality Index Q_U for the lot (U=5.0)

   $Q_U = (U - X) / S_n$

   $Q_U = (5.00 0 3.57) / 1.12$

   $Q_U = 1.2702$

7. Determine P_U by entering Table 1 with $Q_U = 1.27$ and n = 4.

   $P_U = 93$

8. Calculate Air Voids PWL

   $PWL = (P_L + P_U) - 100$
   $PWL = (97 + 93) - 100 = 90$

TABLE 1. TABLE FOR ESTIMATING PERCENT OF LOT WITHIN LIMITS (PWL)

Percent Within Limits (PWL), P_L, and P_U	Positive Values of Q					
	n=3	n=4	n=5	n=6	n=7	n=8
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4716
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630
87	1.0597	1.1100	1.1173	1.1191	1.1199	1.1204
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015
83	0.9939	0.9900	0.9785	0.9715	0.9672	0.9643
82	0.9749	0.9600	0.9452	0.9367	0.9325	0.9281
81	0.9550	0.9300	0.9123	0.9025	0.8966	0.8928
80	0.9342	0.9000	0.8799	0.8690	0.8625	0.8583
79	0.9124	0.8700	0.8478	0.8360	0.8291	0.8245
78	0.8897	0.8400	0.8160	0.8036	0.7962	0.7915
77	0.8662	0.8100	0.7846	0.7716	0.7640	0.7590
76	0.8417	0.7800	0.7535	0.7401	0.7322	0.7271
75	0.8165	0.7500	0.7226	0.7089	0.7009	0.6958
74	0.7904	0.7200	0.6921	0.6781	0.6701	0.6649
73	0.7636	0.6900	0.6617	0.6477	0.6396	0.6344
72	0.7360	0.6600	0.6316	0.6176	0.6095	0.6044
71	0.7077	0.6300	0.6016	0.5878	0.5798	0.5747
70	0.6787	0.6000	0.5719	0.5583	0.5504	0.5454
69	0.6490	0.5700	0.5423	0.5290	0.5213	0.5164
68	0.6187	0.5400	0.5129	0.4999	0.4924	0.4877
67	0.5878	0.5100	0.4836	0.4710	0.4638	0.4592
66	0.5563	0.4800	0.4545	0.4424	0.4354	0.4310
65	0.5242	0.4500	0.4255	0.4139	0.4073	0.4031
64	0.4916	0.4200	0.3967	0.3856	0.3793	0.3753
63	0.4586	0.3900	0.3679	0.3575	0.3515	0.3477
62	0.4251	0.3600	0.3392	0.3295	0.3239	0.3203
61	0.3911	0.3300	0.3107	0.3016	0.2964	0.2931
60	0.3568	0.3000	0.2822	0.2738	0.2691	0.2660
59	0.3222	0.2700	0.2537	0.2461	0.2418	0.2391
58	0.2872	0.2400	0.2254	0.2186	0.2147	0.2122
57	0.2519	0.2100	0.1971	0.1911	0.1877	0.1855
56	0.2164	0.1800	0.1688	0.1636	0.1613	0.1592
55	0.1806	0.1500	0.1408	0.1363	0.1338	0.1322
54	0.1447	0.1200	0.1125	0.1090	0.1070	0.1057
53	0.1087	0.0900	0.0843	0.0817	0.0802	0.0792
52	0.0725	0.0600	0.0562	0.0544	0.0534	0.0528
51	0.0363	0.0300	0.0281	0.0272	0.0267	0.0264
50	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 1. TABLE FOR ESTIMATING PERCENT OF LOT WITHIN LIMITS (PWL)

Percent Within Limits (PWL), P_L, and P_U	Positive Values of Q					
	n=3	n=4	n=5	n=6	n=7	n=8
49	-0.0363	-0.0300	-0.0281	-0.0272	-0.0267	-0.0264
48	-0.0725	-0.0600	-0.0562	-0.0544	-0.0534	-0.0528
47	-0.1087	-0.0900	-0.0843	-0.0817	-0.0802	-0.0792
46	-0.1447	-0.1200	-0.1125	-0.1090	-0.1070	-0.1057
45	-0.1806	-0.1500	-0.1408	-0.1363	-0.1338	-0.1322
44	-0.2164	-0.1800	-0.1688	-0.1636	-0.1607	-0.1592
43	-0.2519	-0.2100	-0.1971	-0.1911	-0.1877	-0.1855
42	-0.2872	-0.2400	-0.2254	-0.2186	-0.2147	-0.2122
41	-0.3222	-0.2700	-0.2537	-0.2461	-0.2418	-0.2391
40	-0.3568	-0.3000	-0.2822	-0.2738	-0.2691	-0.2660
39	-0.3911	-0.3300	-0.3107	-0.3016	-0.2964	-0.2931
38	-0.4251	-0.3600	-0.3392	-0.3295	-0.3239	-0.3203
37	-0.4586	-0.3900	-0.3679	-0.3575	-0.3515	-0.3477
36	-0.4916	-0.4200	-0.3967	-0.3856	-0.3793	-0.3753
35	-0.5242	-0.4500	-0.4255	-0.4139	-0.4073	-0.4031
34	-0.5563	-0.4800	-0.4545	-0.4424	-0.4354	-0.4310
33	-0.5878	-0.5100	-0.4836	-0.4710	-0.4638	-0.4592
32	-0.6187	-0.5400	-0.5129	-0.4999	-0.4924	-0.4877
31	-0.6490	-0.5700	-0.5423	-0.5290	-0.5213	-0.5164
30	-0.6787	-0.6000	-0.5719	-0.5583	-0.5504	-0.5454
29	-0.7077	-0.6300	-0.6016	-0.5878	-0.5798	-0.5747
28	-0.7360	-0.6600	-0.6316	-0.6176	-0.6095	-0.6044
27	-0.7636	-0.6900	-0.6617	-0.6477	-0.6396	-0.6344
26	-0.7904	-0.7200	-0.6921	-0.6781	-0.6701	-0.6649
25	-0.8165	-0.7500	-0.7226	-0.7089	-0.7009	-0.6958
24	-0.8417	-0.7800	-0.7535	-0.7401	-0.7322	-0.7271
23	-0.8662	-0.8100	-0.7846	-0.7716	-0.7640	-0.7590
22	-0.8897	-0.8400	-0.8160	-0.8036	-0.7962	-0.7915
21	-0.9124	-0.8700	-0.8478	-0.8360	-0.8291	-0.8245
20	-0.9342	-0.9000	-0.8799	-0.8690	-0.8625	-0.8583
19	-0.9550	-0.9300	-0.9123	-0.9025	-0.8966	-0.8928
18	-0.9749	-0.9600	-0.9452	-0.9367	-0.9325	-0.9281
17	-0.9939	-0.9900	-0.9785	-0.9715	-0.9672	-0.9643
16	-1.0119	-1.0200	-1.0124	-1.0071	-1.0037	-1.0015
15	-1.0288	-1.0500	-1.0467	-1.0435	-1.0413	-1.0399
14	-1.0448	-1.0800	-1.0817	-1.0808	-1.0800	-1.0794
13	-1.0597	-1.1100	-1.1173	-1.1191	-1.1199	-1.1204
12	-1.0736	-1.1400	-1.1537	-1.1587	-1.1613	-1.1630
11	-1.0864	-1.1700	-1.1909	-1.1995	-1.2043	-1.2075
10	-1.0982	-1.2000	-1.2290	-1.2419	-1.2492	-1.2541
9	-1.1089	-1.2300	-1.2683	-1.2860	-1.2964	-1.3032
8	-1.1184	-1.2600	-1.3088	-1.3323	-1.3461	-1.3554
7	-1.1269	-1.2900	-1.3508	-1.3810	-1.3991	-1.4112
6	-1.1342	-1.3200	-1.3946	-1.4329	-1.4561	-1.4716
5	-1.1405	-1.3500	-1.4407	-1.4887	-1.5181	-1.5381
4	-1.1456	-1.3800	-1.4897	-1.5497	-1.5871	-1.6127
3	-1.1496	-1.4100	-1.5427	-1.6181	-1.6661	-1.6993
2	-1.1524	-1.4400	-1.6016	-1.6982	-1.7612	-1.8053
1	-1.1541	-1.4700	-1.6714	-1.8008	-1.8888	-1.9520

END OF SECTION 110

SECTION 120

NUCLEAR GAGES

120-01 TESTING. When the specifications provide for nuclear gage acceptance testing of material for Items P-152, P-154, P-208, and P-209, the testing shall be performed in accordance with this section. At each sampling location, the field density shall be determined in accordance with ASTM D 2922 using the Direct Transmission Method. The nuclear gage shall be calibrated in accordance with Annex A1. Calibration and operation of the gage shall be in accordance with the requirements of the manufacturer. The operator of the nuclear gage must show evidence of training and experience in the use of the instrument. The gage shall be standardized daily in accordance with ASTM D 2922, paragraph 8.

Use of ASTM D 2922 results in a wet unit weight, and when using this method, ASTM D 3017 shall be used to determine the moisture content of the material. The moisture gage shall be standardized daily in accordance with ASTM D 3017, paragraph 7.

The material shall be accepted on a lot basis. Each Lot shall be divided into eight (8) sublots when ASTM D 2922 is used.

120-02. When PWL concepts are incorporated, compaction shall continue until a PWL of 90 percent or more is achieved using the lower specification tolerance limits (L) below.

The percentage of material within specification limits (PWL) shall be determined in accordance with the procedures specified in Section 110 of the General Provisions.

The lower specification tolerance limit (L) for density shall be:

Specification Item Number	Specification Tolerance (L) for Density, (percent of laboratory maximum)	
Item P-152	90.5 for cohesive material,	95.5 for non-cohesive
Item P-154	95.5	
Item P-208	97.0	
Item P-209	97.0	

If the PWL is less than 90 percent, the lot shall be reworked and recompacted by the Contractor at the Contractor's expense. After reworking and recompaction, the lot shall be resampled and retested. Retest results for the lot shall be reevaluated for acceptance. This procedure shall continue until the PWL is 90 percent or greater.

120-03 VERIFICATION TESTING. (For Items P-152 and P-154 only.) The Engineer will verify the maximum laboratory density of material placed in the field for each lot. A minimum of one test will be made for each lot of material at the site. The verification process will consist of; (1) compacting the material and determining the dry density and moisture-density in accordance with ASTM D 698 for aircraft gross weights less than 60,0000 pounds, and (2) comparing the result with the laboratory moisture-density curves for the material being placed. This verification process is commonly referred to as a "one-point Proctor". If the material does not conform to the existing moisture-density curves, the Engineer will establish the laboratory maximum density

and optimum moisture content for the material in accordance with ASTM D 698 for aircraft gross weights less than 60,0000 pounds.

Additional verification tests will be made, if necessary, to properly classify all materials placed in the lot.

The percent compaction of each sampling location will be determined by dividing the field density of each sublot by the laboratory maximum density for the lot.

END OF SECTION 120

SPECIAL PROVISIONS

SPECIAL PROVISIONS

SECTION 1. PROPOSAL REQUIREMENTS AND CONDITIONS

1-1 GENERAL. The bidder's attention is directed to the proposal requirements and conditions identified in the Invitation for Bids, Instructions to Bidders, General Provisions and these Special Provisions for the requirements and conditions which the bidder must observe in the preparation of the proposal form and the submission of the bid.

Each proposal shall have listed therein the name, address, and California license number of each subcontractor who will be employed, along with the items of work that will be done by each subcontractor listed, if the contract is awarded to the bidder. A sheet for listing the subcontractors is included in the Proposal.

In conformance with Public Contract Code Section 7106, a Noncollusion Affidavit is included in the Proposal. Signing the Proposal shall also constitute signature of the Noncollusion Affidavit.

The contractor, sub-recipient 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. Each subcontract signed by the bidder must include this assurance.

1-2 FEDERAL LOBBYING RESTRICTIONS. Section 1352, Title 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier subrecipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a federal agency or Congress in connection with the awarding of any federal-aid contract, the making of any federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than federal funds have been paid for the same purposes in connection with this federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completed disclosure form as part of the bid documents.

A certification for federal-aid contracts regarding payment of funds to lobby Congress or a federal agency is included in the Proposal. Standard Form – LLL, "Disclosure of Lobbying Activities," with instructions for completion of the Standard Form is also included in the Proposal. Signing the Proposal shall constitute signature of the Certification.

The above referenced certification and disclosure of lobbying activities shall be included in each subcontract and any lower-tier contracts exceeding $100,000. All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

a. A cumulative increase if $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered federal action; or

b. A change in the person(s) or individual(s) influencing or attempting to influence a covered federal action; or

c. A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal Action.

1-3 DISADVANTAGED BUSINESS ENTERPRISE (DBE) This contract is subject to Part 26, title 49, Code of Federal Regulations entitled "Participation By Minority Business Enterprise In Department of Transportation Programs." The regulations in their entirety are incorporated herein by this reference.

Bidders shall be fully informed respecting the requirements of the Regulations and the Department's Disadvantaged Business (DBE) program developed pursuant to the Regulations; particular attention is directed to the following matters:

a. A DBE must be a small business concern as defined pursuant to Section 3 of U.S. Small Business Act and relevant regulations promulgated pursuant thereto:

b. A DBE may participate as a prime contractor, subcontractor, joint venture partner with the prime or subcontractor, vendor of material or supplies, or as a trucking company;

c. A DBE bidder, not bidding as a joint venture with a non-DBE, will be required to document one or a combination of the following:

1. The bidder will meet the goal by performing work with its own forces.

2. The bidder will meet the goal through work performed by DBE subcontractors, suppliers or trucking companies.

3. The bidder, prior to bidding, made adequate good faith efforts to meet the goal.

d. A DBE joint venture partner must be responsible for specific contract items of work, or portions thereof. Responsibility means actually performing, managing and supervising the work with its own forces. The DBE joint venture partner must share in the capital contribution, control, management, risks and profits of the joint venture. The DBE joint venturer must submit the joint venture agreement with the proposal or the DBE Information form required in the Section entitled "Submission of DBE Information" of these special provisions;

e. A DBE must perform a commercially useful function, i.e., must be responsible for the execution of a distinct element of the work and must carry out its responsibility by actually performing, managing and supervising the work;

f. DBEs must be certified by either the California Department of Transportation, or by a participating agency which certifies in conformance with title 49, Code of Federal Regulations, Part 26, as of the date of bid opening. It is the Contractor's responsibility to verify that DBEs are certified. Listings of certified DBEs are available from the following sources:

1. The Department's DBE Directory, which is published quarterly. This Directory may be obtained from the Department of Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520;

2. The Department's Electronic Information Bulletin Board Service, which is accessible by modem and is updated weekly. The Bulletin Board may be accessed by first contacting the Department's Business Enterprise Program at Telephone: (916) 227-8937 and obtaining a user identification and password.

3. The Department's web site at www.dot.ca.gov/hq/bep/index.htm;

g. Credit for materials or supplies purchased from DBEs will be as follows:

1. If the materials or supplies are obtained from a DBE manufacturer, 100 percent of the cost of the materials or supplies will count toward the DBE goal. A DBE manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.

2. If the materials or supplies are purchased from a DBE regular dealer, 60 ercent of the cost of the materials or supplies will count toward the DBE goal. A DBE regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a DBE regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in questions. A person may be a DBE regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in this paragraph G.2. if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not DBE regular dealers within the meaning of this paragraph G.2.

3. Credit for materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer will be limited to the entire amount of fees or commissions charged for assistance in the procurement of the material and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, provided the fees are reasonable and not excessive as compared with fees charged for similar services.

H. Credit for DBE trucking companies will be as follows:

1. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and

there cannot be a contrived arrangement for the purpose of meeting the DBE goal;

2. The DBE must itself own and operate at least one fully-licensed, insured, and operational truck used on the contract;

3. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs;

4. The DBE may lease trucks from another DBE firm, including an owneroperator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract;

5. The DBE may also lease trucks from a non-DBE firm, including an owneroperator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.

6. For the purposes of this paragraph H, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

i. Noncompliance by the Contractor with the requirements of the regulations constitutes a breach of this contract and may result in termination of the contract or other appropriate remedy for a breach of this contract;

j. Bidders are encouraged to use services offered by financial institutions owned and controlled by DBEs.

1-3.1 DBE GOAL FOR THIS CONTRACT The County has established the following goal for Disadvantaged Business Enterprise (DBE) participation for this contract:

Disadvantaged Business Enterprise (DBE): 0% percentage.

1-3.2 SUBMISSION OF DBE INFORMATION The required DBE information shall be submitted on the "LOCAL AGENCY BIDDER-DBE INFORMATION" form included in the Proposal. If the DBE information is not submitted with the bid, the DBE Information form shall be removed from the documents prior to submitting the bid.

It is the bidder's responsibility to make enough work available to DBEs and to select those portions of the work or material needs consistent with the available DBEs to meet the goal for DBE participation or to provide information to establish that, prior to bidding, the bidder made adequate good faith efforts to do so.

If DBE information is not submitted with the bid, the apparent successful bidder (low bidder), the second low bidder and the third low bidder shall submit DBE information to the County of Mono, P.O. Box 457, Bridgeport, California 93517 so the information is received by the County of Mono no later than 4:00 p.m. on the fourth day, not including Saturdays, Sundays and legal holidays, following bid opening. DBE information sent by U.S. Postal Service certified mail with return receipt and certificate of mailing and mailed on or before the third day, not including Saturdays, Sundays and legal holidays, following bid opening will be accepted even if it is received after the fourth day following bid opening. Failure to submit the required DBE information by the time specified will be grounds for finding the bid or proposal nonresponsive. Other bidders need not submit Dbe information unless requested to do so by the County of Mono.

The bidder's DBE information shall establish that good faith efforts to meet the DBE goal have been made. To establish good faith efforts, the bidder shall demonstrate that the goal will be met or that, prior to bidding, adequate good faith efforts to meet the goal were made.

Bidders are cautioned that even though their submittal indicates they will meet the stated DBE goal, their submittal should also include their adequate good faith efforts information along with their DBE goal information to protect their eligibility for award of the contract in the event the County, in its review, finds that the goal has not been met.

The bidder's DBE information shall include the names, addresses and phone numbers of DBE firms that will participate, with a complete description of work or supplies to be provided by each, the dollar value of each DBE transaction, and a written confirmation from the DBE that it is participating in the contract. A copy of the DBE's quote will serve as written confirmation that the DBE is participating in the contract. When 100 percent of a contract item of work is not to be performed or furnished by a DBE, a description of the exact portion of the work to be performed or furnished by that DBE shall be included in the DBE information, including the planned location of that work. The work that a DBE prime contractor has committed to performing with its own forces as well as the work that it has committed to be performed by DBE subcontractors, suppliers and trucking companies will count toward the goal.

The information necessary to establish the bidder's adequate good faith efforts to meet the DBE goal should include:

a. The names and dates of each publication in which a request for DBE participation for this project was placed by the Bidder.

b. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested.

c. The items of work which the bidder made available to DBE firms, including, where appropriate, any breaking down of the contract work items (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to meet the DBE goal was made available to DBE firms.

d. The names, addresses and phone numbers of rejected DBE firms, the firms selected for that work, and the reasons for the bidder's choice.

e. Efforts made to assist interested DBEs in obtaining bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to DBEs.

f. Efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or service's excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate.

g. The names of agencies contacted to provide assistance in contacting, recruiting and using DBE firms.

h. Any additional data to support a demonstration of good faith efforts.

SECTION 2. CONTRACT REQUIREMENTS

2-1 NONDISCRIMINATION

a. FAIR EMPLOYMENT HOUSING ACT. During the performance of this agreement, Contractor and its subcontractors shall not unlawfully discriminate against any employee or applicant for employment because of race, religion, color, national origin, ancestry, physical handicap, medical condition, marital status, age, or sex. Contractor and subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code, Section 12900 et seq.) and applicable regulations promulgated there under (California Code of Regulations, Title 2, Section 7285.0 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing

Government code, Section 12990, set forth in chapter 5 of Division 4 of Title 2 of the California Code of Regulations are incorporated into this contract by reference and made a part hereof as if set forth in full. Contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

Appendix A, relative to nondiscrimination on federally assisted programs, is attached hereto and made a part of this agreement.

Contractor shall comply with Title VI of the Civil Rights Act of 1964, as amended. Accordingly, 49 CFR 21 through Appendix C and 23 CFR 710.405(b) are applicable to this contract by reference.

b. DISADVANTAGED, WOMAN-OWNED, AND MINORITY-OWNED BUSINESS ENTERPRISE (DBE, WBE, AND MBE) PARTICIPATION. The County has established goals of 0% for the participation of DBE's in this contract. However, the Contractor shall be fully informed regarding the Code of Federal Regulations as described herein and is urged to obtain DBE participation should a clearly defined portion of the work become available.

Any DBE working under subcontract for this project must be responsible for the execution of a distinct element of the work and must carry out its responsibility by actually performing, managing and supervising the work.

The Contractor shall make every reasonable effort to replace a certified DBE subcontractor that is unable to perform the provision of this contract with another certified DBE.

DBE participation shall be in accordance with Part 23, Title 49, Code of Federal Regulations, which is incorporated by reference.

It is the policy of the County of Mono that DBE firms, as defined in said Part 23, Title 49, CFR, shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds. The Contractor shall ensure that DBE's, as defined in said Part 23, have the maximum opportunity to participate in the performance of this contract and shall take all necessary and reasonable steps, as set forth in said Part 23, for such assurance. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of subcontracts.

Failure to carry out the requirements of this paragraph shall constitute a breach of contract and may result in termination of this contract or such other remedy the County may deem appropriate.

If DBE participation is obtained, the Contractor shall maintain records of all subcontracts entered into with DBE subcontractors and records of materials purchased from DBE suppliers. Such records shall show the name and business address of each DBE subcontractor or vendor and the total dollar amount actually paid each DBE subcontractor or vendor. Upon completion of the contract, a summary of these records shall be prepared and certified correct by the Contractor or his authorized representative, and shall be furnished to the County Resident Engineer.

c. Contract Assurance. The contractor or subcontract 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 recipient deems appropriate.

2-2 PREVAILING WAGE RATES. The Contractor shall be required to comply with all Federal/State/Local laws and ordinances applicable to the work. State/Federal Prevailing Wage Rates apply to all contractor personnel performing work under this contract.

a. The Contractor shall comply with the labor code requirements and the payroll records requirements. Contractor shall submit this information on appropriate forms as approved by the County. Submittal shall be made no later than 15 days after the end of the month in which the work occurred.

b. Within 15 days after the effective date of the Notice to Proceed, the Contractor and all sub-contractors shall submit to the Engineer, in a format acceptable to him, a master list of their current and/or proposed payroll amounts for each classification of worker, including:

1. Worker Classification
2. Base Rate
3. Vacation
4. Benefits
5. Dues
6. Any Fees

c. Pursuant to Section 1771 of the Labor Code, not less than the general prevailing rate for work of a similar character in the county in which the work is to be performed shall be paid.

d. Pursuant to section 1773 of the California Labor Code, the general prevailing rate of wages in the counties in which the work under this agreement is to be done, has been determined by the Director of the Department of Industrial Relations. The Contractor shall pay not less than the prevailing rate of per diem wages as determined by the Director of the Department of Industrial Relations. The Contractor shall comply with all of the provisions of Section 1775 of the Labor Code relative to penalties paid to the

STATE and local agencies regarding wage underpayments to workers employed on Public Works projects.

e. If the published wage rates to not refer to a predetermined wage rate to be paid after the expiration date, said published wage rates shall be in effect for the life of this contract. If the published wage rates refer to a predetermined wage rate to become effective upon expiration of the published wage rate and the predetermined wage rate is on file with the Department of Industrial Relations, such predetermined wage rate shall become effective on the date following the expiration date and shall apply to this contract in the same manner as if it had been published. If the predetermined wage rate refers to one or more additional expiration dates which additional predetermined wage rates which expiration dates occur during the life of this contract, each successive predetermined wage rate shall apply to this contract on the date following the expiration date of the previous wage rate. If the last such predetermined wage rate expires during the life of this contract, such wage shall apply to the balance of the contract.

f. Federal minimum wage rates have been determined by the United States Secretary of Labor and are made a part of these Special Provisions. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors shall pay not less than the higher wage rate. The County will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes “helper” (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors shall pay not less than the Federal minimum wage rate which most closely approximates the duties of the employees in question.

GENERAL DECISION: CA20080031 02/27/2009 CA31

Date: February 27, 2009
General Decision Number: CA20080031 02/27/2009

Superseded General Decision Number: CA20070031

State: California

Construction Types: Building, Heavy (Heavy and Dredging) and Highway

Counties: Inyo, Kern and Mono Counties in California.

BUILDING CONSTRUCTION PROJECTS; DREDGING PROJECTS (does not include hopper dredge work); HEAVY CONSTRUCTION PROJECTS (does not include water well drilling); HIGHWAY CONSTRUCTION PROJECTS.

Modification Number	Publication Date
0	02/08/2008
1	02/15/2008
2	02/22/2008
3	02/29/2008
4	03/07/2008
5	03/28/2008
6	04/04/2008
7	04/11/2008
8	05/09/2008
9	06/20/2008
10	07/04/2008
11	07/11/2008
12	07/18/2008
13	08/01/2008
14	08/08/2008
15	08/29/2008
16	09/12/2008
17	10/31/2008
18	01/02/2009
19	01/16/2009
20	02/06/2009
21	02/27/2009

ASBE0005-001 08/07/2007

INYO AND KERN

	Rates	Fringes
Fire Stop Technician (Application of Firestopping Materials for wall openings and penetrations in walls, floors, ceilings and curtain walls)	$ 20.76	10.23
Insulator/asbestos worker (Includes the application of all insulating materials, protective coverings, coatings & finishes to all		

types of mechanical systems).....$ 37.01 10.84

ASBE0005-005 08/07/2006

INYO AND KERN

	Rates	Fringes
Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)....	$ 19.55	6.38

ASBE0016-003 01/01/2009

MONO

	Rates	Fringes
Asbestos Workers/Insulator (Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems).....	$ 39.08	15.21

BOIL0092-005 10/01/2008

INYO AND KERN

	Rates	Fringes
BOILERMAKER.....	$ 39.24	20.26

BOIL0549-003 10/01/2007

MONO COUNTY

	Rates	Fringes
BOILERMAKER.....	$ 36.52	19.37

BRCA0004-005 05/01/2008

	Rates	Fringes
Bricklayer; Marble Setter.....	$ 34.10	9.60

BRCA0018-010 10/08/2007

	Rates	Fringes
TERRAZZO FINISHER.....	$ 25.54	8.62
TERRAZZO WORKER/SETTER.....	$ 32.63	9.41

BRCA0018-011 08/01/2008

	Rates	Fringes
TILE LAYER	$ 29.79	9.34

BRCA0018-012 06/01/2006

KERN

	Rates	Fringes
MARBLE FINISHER	$ 22.52	7.65
TILE FINISHER	$ 18.57	7.25

CARP0409-002 07/01/2007

	Rates	Fringes
Diver		
(1) Wet	$ 634.24	8.20
(2) Standby	$ 317.12	8.20
(3) Tender	$ 309.12	8.20
(4) Assistant Tender	$ 285.12	8.20

Amounts in "Rates' column are per day

CARP0409-005 07/01/2007

	Rates	Fringes
Drywall		
DRYWALL INSTALLER/LATHER	$ 35.51	9.17
STOCKER/SCRAPPER	$ 10.00	6.56

CARP0409-006 07/01/2007

	Rates	Fringes
CARPENTER		
(01) Carpenter, cabinet installer, insulation installer, floor worker and acoustical installer	$ 34.94	9.20
(02) Millwright	$ 36.01	9.20
(03) Pile driver; Derrick barge; Bridge or Dock Carpenter; Heavy framer; Rockslinger; Rock Bargeman; Scowman	$ 35.64	9.20
(04) Shingler (Commercial)	$ 35.07	9.20
(05) Table Power Saw Operator	$ 35.04	9.20
(06) Pneumatic Nailer or Power Stapler	$ 35.19	9.20
(07) Roof Loader of Shingles (Commercial)	$ 24.55	9.20
(08) Saw Filer	$ 35.03	9.20
(09) Scaffold Builder	$ 27.46	9.20

FOOTNOTE: Work of forming in the construction of open cut sewers or storm drains, on operations in which horizontal lagging is used in conjunction with steel H-Beams driven or placed in pre-drilled holes, for that portion of a lagged trench against which concrete is poured, namely, as a substitute for back forms (which work is performed by piledrivers): $0.13 per hour additional.

ELEC0011-002 03/01/2008

COMMUNICATIONS AND SYSTEMS WORK

	Rates	Fringes
Communications System		
Installer	$ 26.43	3%+7.60
Technician	$ 28.23	3%+7.60

SCOPE OF WORK:
Installation, testing, service and maintenance of systems utilizing the transmission and/or transference of voice, sound, vision and digital for commercial, educational, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call systems, radio page, school intercom and sound, burglar alarms, fire alarm (see last paragraph below) and low voltage master clock systems in commercial buildings. Communication Systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding all other data systems or multiple systems which include control function or power supply; excluding installation of raceway systems, conduit systems, line voltage work, and energy management systems. Does not cover work performed at China Lake Naval Ordnance Test Station. Fire alarm work shall be performed at the current inside wireman total cost package.

ELEC0428-001 06/01/2007

	Rates	Fringes
CABLE SPLICER		
China Lake Naval Weaons		
Center, Edwards AFB	$ 37.37	3%+13.54
Remainder of Kern County	$ 32.62	3%+13.54
ELECTRICIAN		
China Lake Naval Weapons		
Center, Edwards AFB	$ 34.40	3%+13.54
Remainder of Kern County	$ 29.65	3%+13.54

ELEC0477-001 06/04/2008

INYO AND MONO

	Rates	Fringes

ELECTRICIAN.....$ 34.35 3%+14.35

CABLE SPLICER: $1.00 above Electrician.
TUNNEL WORK: 10% above Electrician.

ELEC1245-001 06/01/2008

	Rates	Fringes
LINE CONSTRUCTION		
(1) Lineman; Cable splicer..	$ 43.07	12.57
(2) Equipment specialist (operates crawler tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), overhead & underground distribution line equipment).....	$ 34.40	11.53
(3) Groundman.....	$ 26.31	11.29
(4) Powderman.....	$ 38.46	11.69

HOLIDAYS: New Year's Day, M.L. King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and day after Thanksgiving, Christmas Day

---

ELEV0018-001 01/01/2009

	Rates	Fringes
ELEVATOR MECHANIC.....	$ 44.10	18.285

FOOTNOTE:
PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.
PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

ENGI0012-003 07/01/2008

	Rates	Fringes
POWER EQUIPMENT OPERATOR (All Other Work)		
GROUP 1.....	$ 35.28	16.47
GROUP 2.....	$ 36.06	16.47
GROUP 3.....	$ 36.35	16.47
GROUP 4.....	$ 37.84	16.47
GROUP 5.....	$ 38.94	16.47
GROUP 6.....	$ 38.06	16.47
GROUP 7.....	$ 39.16	16.47
GROUP 8.....	$ 38.17	16.47
GROUP 9.....	$ 39.27	16.47
GROUP 10.....	$ 38.29	16.47
GROUP 11.....	$ 39.39	16.47
GROUP 12.....	$ 38.46	16.47
GROUP 13.....	$ 38.56	16.47

GROUP 14	$ 38.59	16.47
GROUP 15	$ 38.67	16.47
GROUP 16	$ 38.79	16.47
GROUP 17	$ 38.96	16.47
GROUP 18	$ 39.06	16.47
GROUP 19	$ 39.17	16.47
GROUP 20	$ 39.29	16.47
GROUP 21	$ 39.46	16.47
GROUP 22	$ 39.56	16.47
GROUP 23	$ 39.67	16.47
GROUP 24	$ 39.79	16.47
GROUP 25	$ 39.96	16.47
POWER EQUIPMENT OPERATOR (Cranes, Piledriving & Hoisting)		
GROUP 1	$ 36.63	16.47
GROUP 2	$ 37.41	16.47
GROUP 3	$ 37.70	16.47
GROUP 4	$ 37.84	16.47
GROUP 5	$ 38.06	16.47
GROUP 6	$ 38.17	16.47
GROUP 7	$ 38.29	16.47
GROUP 8	$ 38.46	16.47
GROUP 9	$ 38.63	16.47
GROUP 10	$ 39.63	16.47
GROUP 11	$ 40.63	16.47
GROUP 12	$ 41.63	16.47
GROUP 13	$ 42.63	16.47
POWER EQUIPMENT OPERATOR (Tunnel Work)		
GROUP 1	$ 37.13	16.47
GROUP 2	$ 37.91	16.47
GROUP 3	$ 38.20	16.47
GROUP 4	$ 38.34	16.47
GROUP 5	$ 38.56	16.47
GROUP 6	$ 38.67	16.47
GROUP 7	$ 38.79	16.47

FOOTNOTES:
PREMIUM PAY of $3.75 per hour shall be paid on all power equipment operator work at Camp Pendleton, Point Arguello, and Vandenburg AFB.
Workers required to suit up and work in a hazardous material environment: $2.00 per hour additional. Combination mixer and compressor operator on gunite work shall be classified as a concrete mobile mixer operator.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Bargeman; Brakeman; Compressor operator; Ditch Witch, with seat or similar type equipment; Elevator operator-inside; Engineer Oiler; Forklift operator (includes loed, lull or similar types under 5 tons; Generator operator; Generator, pump or compressor plant operator; Pump operator; Signalman; Switchman

GROUP 2: Asphalt-rubber plant operator (nurse tank operator); Concrete mixer operator-skip type; Conveyor operator; Fireman; Forklift operator (includes loed, lull or similar types over 5 tons; Hydrostatic pump operator; oiler crusher

(asphalt or concrete plant); Petromat laydown machine; PJU side dum jack; Screening and conveyor machine operator (or similar types); Skiploader (wheel type up to 3/4 yd. without attachment); Tar pot fireman; Temporary heating plant operator; Trenching machine oiler

GROUP 3: Asphalt-rubber blend operator; Bobcat or similar type (Skid steer); Equipment greaser (rack); Ford Ferguson (with dragtype attachments); Helicopter radioman (ground); Stationary pipe wrapping and cleaning machine operator

GROUP 4: Asphalt plant fireman; Backhoe operator (mini-max or similar type); Boring machine operator; Boxman or mixerman (asphalt or concrete); Chip spreading machine operator; Concrete cleaning decontamination machine operator; Concrete Pump Operator (small portable); Drilling machine operator, small auger types (Texoma super economatic or similar types - Hughes 100 or 200 or similar types - drilling depth of 30' maximum); Equipment greaser (grease truck); Guard rail post driver operator; Highline cableway signalman; Horizontal Directional Drilling Machine; Hydra-hammer-aero stomper; Micro Tunneling (above ground tunnel); Power concrete curing machine operator; Power concrete saw operator; Power-driven jumbo form setter operator; Power sweeper operator; Rock Wheel Saw/Trencher; Roller operator (compacting); Screed operator (asphalt or concrete); Trenching machine operator (up to 6 ft.); Vacuum or much truck

GROUP 5: Equipment Greaser (Grease Truck/Multi Shift).

GROUP 6: Articulating material hauler; Asphalt plant engineer; Batch plant operator; Bit sharpener; Concrete joint machine operator (canal and similar type); Concrete planer operator; Dandy digger; Deck engine operator; Derrickman (oilfield type); Drilling machine operator, bucket or auger types (Calweld 100 bucket or similar types - Watson 1000 auger or similar types - Texoma 330, 500 or 600 auger or similar types - drilling depth of 45' maximum); Drilling machine operator; Hydrographic seeder machine operator (straw, pulp or seed), Jackson track maintainer, or similar type; Kalamazoo Switch tamper, or similar type; Machine tool operator; Maginnis internal full slab vibrator, Mechanical berm, curb or gutter(concrete or asphalt); Mechanical finisher operator (concrete, Clary-Johnson-Bidwell or similar); Micro tunnel system (below ground); Pavement breaker operator (truck mounted); Road oil mixing machine operator; Roller operator (asphalt or finish), rubber-tired earth moving equipment (single engine, up to and including 25 yds. struck); Self-propelled tar pipelining machine operator; Skiploader operator (crawler and wheel type, over 3/4 yd. and up to and including 1-1/2 yds.); Slip form pump operator (power driven hydraulic lifting device for concrete forms); Tractor operator-bulldozer, tamper-scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types); Tugger hoist operator (1 drum); Ultra high pressure waterjet cutting tool system operator; Vacuum blasting machine operator

GROUP 7: Welder - General

GROUP 8: Asphalt or concrete spreading operator (tamping or finishing); Asphalt paving machine operator (Barber Greene or similar type); Asphalt-rubber distribution operator; Backhoe operator (up to and including 3/4 yd.), small ford, Case or similar; Cast-in-place pipe laying machine operator; Combination mixer and compressor operator (gunite work); Compactor operator (self-propelled); Concrete mixer operator (paving); Crushing plant operator; Drill Doctor; Drilling machine operator, Bucket or auger types (Calweld 150 bucket or similar types - Watson 1500, 2000 2500 auger or similar types - Texoma 700, 800 auger or similar types - drilling depth of 60' maximum); Elevating grader operator; Grade checker; Gradall operator; Grouting machine operator; Heavy-duty repairman; Heavy equipment robotics operator; Kalamazoo balliste regulator or similar type; Kolman belt loader and similar type; Le Tourneau blob compactor or similar type; Loader operator (Athey, Euclid, Sierra and similar types); Mobark Chipper or similar; Ozzie padder or similar types; P.C. slot saw; Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pumpcrete gun operator; Rock Drill or similar types; Rotary drill operator (excluding caisson type); Rubber-tired earth-moving equipment operator (single engine, caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator (multiple engine up to and including 25 yds. struck); Rubber-tired scraper operator (self-loading paddle wheel type-John Deere, 1040 and similar single unit); Self-propelled curb and gutter machine operator; Shuttle buggy; Skiploader operator (crawler and wheel type over 1-1/2 yds. up to and including 6-1/2 yds.); Soil remediation plant operator; Surface heaters and planer operator; Tractor compressor drill combination operator; Tractor operator (any type larger than D-5 - 100 flywheel h.p. and over, or similar-bulldozer, tamper, scraper and push tractor single engine); Tractor operator (boom attachments), Traveling pipe wrapping, cleaning and bendng machine operator; Trenching machine operator (over 6 ft. depth capacity, manufacturer's rating); trenching Machine with Road Miner attachment (over 6 ft depth capacity): Ultra high pressure waterjet cutting tool system mechanic; Water pull (compaction) operator

GROUP 9: Heavy Duty Repairman

GROUP 10: Drilling machine operator, Bucket or auger types (Calweld 200 B bucket or similar types-Watson 3000 or 5000 auger or similar types-Texoma 900 auger or similar types-drilling depth of 105' maximum); Dual drum mixer, dynamic compactor LDC350 (or similar types); Monorail locomotive operator (diesel, gas or electric); Motor patrol-blade operator (single engine); Multiple engine tractor operator (Euclid and similar type-except Quad 9 cat.); Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Pneumatic pipe ramming tool and similar types; Prestressed wrapping machine operator; Rubber-tired earth-moving equipment operator (single

engine, over 50 yds. struck); Rubber tired earth moving equipment operator (multiple engine, Euclid, caterpillar and similar over 25 yds. and up to 50 yds. struck), Tower crane repairman; Tractor loader operator (crawler and wheel type over 6-1/2 yds.); Woods mixer operator (and similar Pugmill equipment)

GROUP 11: Heavy Duty Repairman - Welder Combination, Welder - Certified.

GROUP 12: Auto grader operator; Automatic slip form operator; Drilling machine operator, bucket or auger types (Calweld, auger 200 CA or similar types - Watson, auger 6000 or similar types - Hughes Super Duty, auger 200 or similar types - drilling depth of 175' maximum); Hoe ram or similar with compressor; Mass excavator operator less tha 750 cu. yards; Mechanical finishing machine operator; Mobile form traveler operator; Motor patrol operator (multi-engine); Pipe mobile machine operator; Rubber-tired earth- moving equipment operator (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Rubber-tired self- loading scraper operator (paddle-wheel-auger type self-loading - two (2) or more units)

GROUP 13: Rubber-tired earth-moving equipment operator operating equipment with push-pull system (single engine, up to and including 25 yds. struck)

GROUP 14: Canal liner operator; Canal trimmer operator; Remote- control earth-moving equipment operator (operating a second piece of equipment: $1.00 per hour additional); Wheel excavator operator (over 750 cu. yds.)

GROUP 15: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine-up to and including 25 yds. struck)

GROUP 16: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 17: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 50 cu. yds. struck); Tandem tractor operator (operating crawler type tractors in tandem - Quad 9 and similar type)

GROUP 18: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck)

GROUP 19: Rotex concrete belt operator (or similar types);

Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds.and up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck)

GROUP 20: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 21: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

GROUP 22: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, up to and including 25 yds. struck)

GROUP 23: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating with the tandem push-pull system (multiple engine, up to and including 25 yds. struck)

GROUP 24: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 25: Concrete pump operator-truck mounted; Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

CRANES, PILEDRIVING AND HOISTING EQUIPMENT CLASSIFICATIONS

GROUP 1: Engineer oiler; Fork lift operator (includes loed, lull or similar types)

GROUP 2: Truck crane oiler

GROUP 3: A-frame or winch truck operator; Ross carrier

operator (jobsite)

GROUP 4: Bridge-type unloader and turntable operator; Helicopter hoist operator

GROUP 5: Hydraulic boom truck; Stinger crane (Austin-Western or similar type); Tugger hoist operator (1 drum)

GROUP 6: Bridge crane operator; Cretor crane operator; Hoist operator (Chicago boom and similar type); Lift mobile operator; Lift slab machine operator (Vagtborg and similar types); Material hoist and/or manlift operator; Polar gantry crane operator; Self Climbing scaffold (or similar type); Shovel, backhoe, dragline, clamshell operator (over 3/4 yd. and up to 5 cu. yds. mrc); Tugger hoist operator

GROUP 7: Pedestal crane operator; Shovel, backhoe, dragline, clamshell operator (over 5 cu. yds. mrc); Tower crane repair; Tugger hoist operator (3 drum)

GROUP 8: Crane operator (up to and including 25 ton capacity); Crawler transporter operator; Derrick barge operator (up to and including 25 ton capacity); Hoist operator, stiff legs, Guy derrick or similar type (up to and including 25 ton capacity); Shovel, backhoe, dragline, clamshell operator (over 7 cu. yds., M.R.C.)

GROUP 9: Crane operator (over 25 tons and up to and including 50 tons mrc); Derrick barge operator (over 25 tons up to and including 50 tons mrc); Highline cableway operator; Hoist operator, stiff legs, Guy derrick or similar type (over 25 tons up to and including 50 tons mrc); K-crane operator; Polar crane operator; Self erecting tower crane operator maximum lifting capacity ten tons

GROUP 10: Crane operator (over 50 tons and up to and including 100 tons mrc); Derrick barge operator (over 50 tons up to and including 100 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 50 tons up to and including 100 tons mrc), Mobile tower crane operator (over 50 tons, up to and including 100 tons M.R.C.); Tower crane operator and tower gantry

GROUP 11: Crane operator (over 100 tons and up to and including 200 tons mrc); Derrick barge operator (over 100 tons up to and including 200 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 100 tons up to and including 200 tons mrc); Mobile tower crane operator (over 100 tons up to and including 200 tons mrc)

GROUP 12: Crane operator (over 200 tons up to and including 300 tons mrc); Derrick barge operator (over 200 tons up to and including 300 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 200 tons, up to and including 300 tons mrc); Mobile tower crane operator (over 200 tons, up to and including 300 tons mrc)

GROUP 13: Crane operator (over 300 tons); Derrick barge operator (over 300 tons); Helicopter pilot; Hoist operator, stiff legs, Guy derrick or similar type (over 300 tons);

Mobile tower crane operator (over 300 tons)

TUNNEL CLASSIFICATIONS

GROUP 1: Skiploader (wheel type up to 3/4 yd. without attachment)

GROUP 2: Power-driven jumbo form setter operator

GROUP 3: Dinkey locomotive or motorperson (up to and including 10 tons)

GROUP 4: Bit sharpener; Equipment greaser (grease truck); Slip form pump operator (power-driven hydraulic lifting device for concrete forms); Tugger hoist operator (1 drum); Tunnel locomotive operator (over 10 and up to and including 30 tons)

GROUP 5: Backhoe operator (up to and including 3/4 yd.); Small Ford, Case or similar; Drill doctor; Grouting machine operator; Heading shield operator; Heavy-duty repairperson; Loader operator (Athey, Euclid, Sierra and similar types); Mucking machine operator (1/4 yd., rubber-tired, rail or track type); Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pneumatic heading shield (tunnel); Pumpcrete gun operator; Tractor compressor drill combination operator; Tugger hoist operator (2 drum); Tunnel locomotive operator (over 30 tons)

GROUP 6: Heavy Duty Repairman

GROUP 7: Tunnel mole boring machine operator

ENGI0012-004 08/01/2008

	Rates	Fringes
POWER EQUIPMENT OPERATOR (DREDGING)		
(1) Leverman	$ 43.28	16.47
(2) Dredge dozer	$ 38.81	16.47
(3) Deckmate	$ 38.70	16.47
(4) Winch operator (stern winch on dredge)	$ 38.15	16.47
(5) Fireman-Oiler, Deckhand, Bargeman, Leveehand	$ 37.61	16.47
(6) Barge Mate	$ 38.22	16.47

IRON0002-004 07/01/2008

	Rates	Fringes
Ironworkers:		
Fence Erector	$ 25.96	14.08
Ornamental, Reinforcing and Structural	$ 31.83	22.17

PREMIUM PAY:

$6.00 additional per hour at the following locations:

China Lake Naval Test Station, Chocolate Mountains Naval Reserve-Niland,
Edwards AFB, Fort Irwin Military Station, Fort Irwin Training Center-Goldstone, San Clemente Island, San Nicholas Island, Susanville Federal Prison, 29 Palms - Marine Corps, U.S. Marine Base - Barstow, U.S. Naval Air Facility - Sealey, Vandenberg AFB

$4.00 additional per hour at the following locations:

Army Defense Language Institute - Monterey, Fallon Air Base, Naval Post Graduate School - Monterey, Yermo Marine Corps Logistics Center

$2.00 additional per hour at the following locations:

Port Hueneme, Port Mugu, U.S. Coast Guard Station - Two Rock

LABO0300-001 07/01/2008

	Rates	Fringes
Brick Tender	$ 27.17	13.75

LABO0300-003 07/01/2008

	Rates	Fringes
LABORER (GUNITE)		
GROUP 1	$ 29.79	16.87
GROUP 2	$ 28.84	16.87
GROUP 3	$ 25.30	16.87
LABORER (TUNNEL)		
GROUP 1	$ 30.74	14.04
GROUP 2	$ 31.06	14.04
GROUP 3	$ 31.52	14.04
GROUP 4	$ 32.21	14.04
LABORER		
GROUP 1	$ 26.33	13.75
GROUP 2	$ 26.88	13.75
GROUP 3	$ 27.43	13.75
GROUP 4	$ 28.98	13.75
GROUP 5	$ 29.33	13.75
Laborers:		
GROUP 1	$ 26.33	13.75
GROUP 2	$ 26.88	13.75
GROUP 3	$ 27.43	13.75
GROUP 4	$ 28.98	13.75
GROUP 5	$ 29.33	13.75

FOOTNOTE: GUNITE PREMIUM PAY: Workers working from a Bosn'n's Chair or suspended from a rope or cable shall receive 40 cents per hour above the foregoing applicable classification rates. Workers doing gunite and/or shotcrete work in a tunnel shall receive 35 cents per hour above the foregoing applicable classification rates, paid on a portal-to-portal basis. Any work performed on, in or above any smoke stack, silo, storage elevator or similar

type of structure, when such structure is in excess of 75'-0" above base level and which work must be performed in whole or in part more than 75'-0" above base level, that work performed above the 75'-0" level shall be compensated for at 35 cents per hour above the applicable classification wage rate.

LABORER CLASSIFICATIONS

GROUP 1: Cleaning and handling of panel forms; Concrete screeding for rough strike-off; Concrete, water curing; Demolition laborer, the cleaning of brick if performed by a worker performing any other phase of demolition work, and the cleaning of lumber; Fire watcher, limber, brush loader, piler and debris handler; Flag person; Gas, oil and/or water pipeline laborer; Laborer, asphalt-rubber material loader; Laborer, general or construction; Laborer, general clean-up; Laborer, landscaping; Laborer, jetting; Laborer, temporary water and air lines; Material hose operator (walls, slabs, floors and decks); Plugging, filling of shee bolt holes; Dry packing of concrete; Railroad maintenance, repair track person and road beds; Streetcar and railroad construction track laborers; Rigging and signaling; Scaler; Slip form raiser; Tar and mortar; Tool crib or tool house laborer; Traffic control by any method; Window cleaner; Wire mesh pulling - all concrete pouring operations

GROUP 2: Asphalt shoveler; Cement dumper (on 1 yd. or larger mixer and handling bulk cement); Cesspool digger and installer; Chucktender; Chute handler, pouring concrete, the handling of the chute from readymix trucks, such as walls, slabs, decks, floors, foundation, footings, curbs, gutters and sidewalks; Concrete curer, impervious membrane and form oiler; Cutting torch operator (demolition); Fine grader, highways and street paving, airport, runways and similar type heavy construction; Gas, oil and/or water pipeline wrapper - pot tender and form person; Guinea chaser; Headerboard person - asphalt; Laborer, packing rod steel and pans; Membrane vapor barrier installer; Power broom sweeper (small); Riprap stonepaver, placing stone or wet sacked concrete; Roto scraper and tiller; Sandblaster (pot tender); Septic tank digger and installer(lead); Tank scaler and cleaner; Tree climber, faller, chain saw operator, Pittsburgh chipper and similar type brush shredder; Underground laborer, including caisson bellower

GROUP 3: Buggymobile person; Concrete cutting torch; Concrete pile cutter; Driller, jackhammer, 2-1/2 ft. drill steel or longer; Dri-pak-it machine; Gas, oil and/or water pipeline wrapper, 6-in. pipe and over, by any method, inside and out; High scaler (including drilling of same); Hydro seeder and similar type; Impact wrench multi-plate; Kettle person, pot person and workers applying asphalt, lay-kold, creosote, lime caustic and similar type materials ("applying" means applying, dipping, brushing or handling of such materials for pipe wrapping and waterproofing); Operator of pneumatic, gas, electric tools, vibrating machine, pavement breaker, air blasting, come-alongs, and similar mechanical tools not separately classified herein; Pipelayer's backup person, coating, grouting, making of

joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services; Rock slinger; Rotary scarifier or multiple head concrete chipping scarifier; Steel headerboard and guideline setter; Tamper, Barko, Wacker and similar type; Trenching machine, hand-propelled

GROUP 4: Asphalt raker, lute person, ironer, asphalt dump person, and asphalt spreader boxes (all types); Concrete core cutter (walls, floors or ceilings), grinder or sander; Concrete saw person, cutting walls or flat work, scoring old or new concrete; Cribber, shorer, lagging, sheeting and trench bracing, hand-guided lagging hammer; Head rock slinger; Laborer, asphalt- rubber distributor boot person; Laser beam in connection with laborers' work; Oversize concrete vibrator operator, 70 lbs. and over; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit and any other stationary type of tubular device used for the conveying of any substance or element, whether water, sewage, solid gas, air, or other product whatsoever and without regard to the nature of material from which the tubular material is fabricated; No-joint pipe and stripping of same; Prefabricated manhole installer; Sandblaster (nozzle person), water blasting, Porta Shot-Blast

GROUP 5: Blaster powder, all work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; Driller: All power drills, excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and any and all other types of mechanical drills without regard to the form of motive power; Toxic waste removal

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Batch plant laborer; Bull gang mucker, track person; Changehouse person; Concrete crew, including rodder and spreader; Dump person; Dump person (outside); Swamper (brake person and switch person on tunnel work); Tunnel materials handling person

GROUP 2: Chucktender, cabletender; Loading and unloading agitator cars; Nipper; Pot tender, using mastic or other materials (for example, but not by way of limitation, shotcrete, etc.); Vibrator person, jack hammer, pneumatic tools (except driller)

GROUP 3: Blaster, driller, powder person; Chemical grout jet person; Cherry picker person; Grout gun person; Grout mixer person; Grout pump person; Jackleg miner; Jumbo person; Kemper and other pneumatic concrete placer operator; Miner, tunnel (hand or machine); Nozzle person; Operating of troweling and/or grouting machines; Powder person (primer house); Primer person; Sandblaster; Shotcrete person; Steel form raiser and setter; Timber person, retimber person, wood or steel; Tunnel Concrete finisher

GROUP 4: Diamond driller; Sandblaster; Shaft and raise work

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Rodmen, Nozzlemen

GROUP 2: Gunmen

GROUP 3: Reboundmen

---

* LABO0882-002 01/01/2009

	Rates	Fringes
Asbestos Removal Laborer	$ 26.15	13.25

SCOPE OF WORK: Includes site mobilization, initial site cleanup, site preparation, removal of asbestos-containing material and toxic waste, encapsulation, enclosure and disposal of asbestos- containing materials and toxic waste by hand or with equipment or machinery; scaffolding, fabrication of temporary wooden barriers and assembly of decontamination stations.

LABO1184-001 07/01/2008

	Rates	Fringes
Laborers: (HORIZONTAL DIRECTIONAL DRILLING)		
(1) Drilling Crew Laborer	$ 27.05	9.40
(2) Vehicle Operator/Hauler	$ 27.22	9.40
(3) Horizontal Directional Drill Operator	$ 29.07	9.40
(4) Electronic Tracking Locator	$ 31.07	9.40
Laborers: (STRIPING/SLURRY SEAL)		
GROUP 1	$ 27.75	12.06
GROUP 2	$ 29.05	12.06
GROUP 3	$ 31.06	12.06
GROUP 4	$ 32.80	12.06

LABORERS - STRIPING CLASSIFICATIONS

GROUP 1: Protective coating, pavement sealing, including repair and filling of cracks by any method on any surface in parking lots, game courts and playgrounds; carstops; operation of all related machinery and equipment; equipment repair technician

GROUP 2: Traffic surface abrasive blaster; pot tender - removal of all traffic lines and markings by any method (sandblasting, waterblasting, grinding, etc.) and preparation of surface for coatings. Traffic control person: controlling and directing traffic through both conventional and moving lane closures; operation of all related machinery and equipment

GROUP 3: Traffic delineating device applicator: Layout and application of pavement markers, delineating signs, rumble and traffic bars, adhesives, guide markers, other traffic delineating devices including traffic control. This category includes all traffic related surface preparation (sandblasting, waterblasting, grinding) as part of the application process. Traffic protective delineating system installer: removes, relocates, installs, permanently affixed roadside and parking delineation barricades, fencing, cable anchor, guard rail, reference signs, monument markers; operation of all related machinery and equipment; power broom sweeper

GROUP 4: Striper: layout and application of traffic stripes and markings; hot thermo plastic; tape traffic stripes and markings, including traffic control; operation of all related machinery and equipment

---

PAIN0036-009 10/01/2008

	Rates	Fringes
DRYWALL FINISHER/TAPER	$ 29.19	11.29

PAIN0036-021 07/01/2008

	Rates	Fringes
Painters: (Including Lead Abatement)		
(1) Journeyman Painter	$ 25.20	8.54
(2) Repaint	$ 23.10	8.54
(3) High Iron & Steel - Kern County only	$ 27.20	8.54

REPAINT:
Repaint of any structure with the exception of work involving the aerospace industry, breweries, commercial recreational facilities, hotels which operate commercial establishments as part of hotel service, and sports facilities, tenant improvement work not included in conjunction with the construction of the building and all repainting of tenant improvement projects.

HIGH IRON & STEEL:
Aerial towers, towers, radio towers, smoke stacks, flag poles (any flag poles that can be finished from the ground with a ladder excluded), elevated water towers, steeples and domes in their entirety and any other extremely high and hazardous work, cooning steel, bos'n chair, or other similar devices, painting in other high hazardous work shall be classified as high iron & steel

---

* PAIN0169-002 01/14/2009

	Rates	Fringes
GLAZIER	$ 29.68	14.10

PAIN1247-001 05/01/2008

	Rates	Fringes
SOFT FLOOR LAYER	$ 20.27	8.39

PLAS0200-007 08/06/2008

	Rates	Fringes
PLASTERER	$ 34.66	8.63

U.S. MARINE CORPS-PICKLE MEADOW & MOUNTAIN WARFARE TRAINING CENTER:
$3.00 additinal per hour.

PLAS0500-002 07/01/2007

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 28.00	16.45

PLUM0345-001 07/01/2008

	Rates	Fringes
PLUMBER		
Landscape/Irrigation Fitter	$ 25.98	13.01
Sewer & Storm Drain Work	$ 24.62	14.84

PLUM0460-002 07/01/2008

	Rates	Fringes
PLUMBER (Plumber, Pipefitter, Steamfitter, Refrigeration)		
0 to 50 miles radius from 6718 Meany Avenue in Bakersfield	$ 31.24	16.01
50 to 75 miles radius	$ 35.74	16.01
75 miles radius or more	$ 38.24	16.01

FOOTNOTE: Work from a swinging scaffold, swinging basket, spider or from a bosun chair: 10% above the regular rate of pay for that day.

ROOF0027-001 01/01/2009

	Rates	Fringes
ROOFER	$ 26.75	8.05

FOOTNOTE: Work with pitch, pitch base of pitch impregnated products or any material containing coal tar pitch, on any building old or new, where both asphalt and pitchers are used in the application of a built-up roof or tear off: $2.00 per hour additional.

SFCA0669-007 01/01/2009

	Rates	Fringes
SPRINKLER FITTER	$ 32.15	16.05

SHEE0105-003 01/01/2009

LOS ANGELES (South of a straight line drawn between Gorman and Big Pines)and Catalina Island, INYO, KERN (Northeast part, East of Hwy 395), MONO ORANGE, RIVERSIDE, AND SAN BERNARDINO COUNTIES

	Rates	Fringes
SHEET METAL WORKER		
(1) Commercial - New Construction and Remodel work	$ 38.57	16.19
(2) Industrial work including air pollution control systems, noise abatement, hand rails, guard rails, excluding aritechtural sheet metal work, excluding A-C, heating, ventilating systems for human comfort	$ 33.22	21.74

SHEE0105-004 01/01/2009

KERN (Excluding portion East of Hwy 395) & LOS ANGELES (North of a straight line drawn between Gorman and Big Pines including Cities of Lancaster and Palmdale) COUNTIES

	Rates	Fringes
SHEET METAL WORKER	$ 32.91	14.62

TEAM0011-002 07/01/2008

	Rates	Fringes
TRUCK DRIVER		
GROUP 1	$ 26.44	18.24
GROUP 2	$ 26.59	18.24
GROUP 3	$ 26.72	18.24
GROUP 4	$ 26.91	18.24
GROUP 5	$ 26.94	18.24
GROUP 6	$ 26.97	18.24
GROUP 7	$ 27.22	18.24
GROUP 8	$ 27.47	18.24
GROUP 9	$ 27.67	18.24
GROUP 10	$ 27.97	18.24
GROUP 11	$ 28.47	18.24
GROUP 12	$ 28.90	18.24

WORK ON ALL MILITARY BASES:
PREMIUM PAY: $3.00 per hour additional.
[29 palms Marine Base, Camp Roberts, China Lake, Edwards AFB, El Centro Naval Facility, Fort Irwin, George AFB, Marine Corps Logistics Base at Nebo & Yermo, Mountain Warfare Training Center, Bridgeport, Point Arguello, Point

Conception, Vandenberg AFB]

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Truck driver

GROUP 2: Driver of vehicle or combination of vehicles - 2 axles; Traffic control pilot car excluding moving heavy equipment permit load; Truck mounted broom

GROUP 3: Driver of vehicle or combination of vehicles - 3 axles; Boot person; Cement mason distribution truck; Fuel truck driver; Water truck - 2 axle; Dump truck, less than 16 yds. water level; Erosion control driver

GROUP 4: Driver of transit mix truck, under 3 yds.; Dumpcrete truck, less than 6-1/2 yds. water level

GROUP 5: Water truck, 3 or more axles; Truck greaser and tire person ($0.50 additional for tire person); Pipeline and utility working truck driver, including winch truck and plastic fusion, limited to pipeline and utility work; Slurry truck driver

GROUP 6: Transit mix truck, 3 yds. or more; Dumpcrete truck, 6-1/2 yds. water level and over; Vehicle or combination of vehicles - 4 or more axles; Oil spreader truck; Dump truck, 16 yds. to 25 yds. water level

GROUP 7: A Frame, Swedish crane or similar; Forklift driver; Ross carrier driver

GROUP 8: Dump truck, 25 yds. to 49 yds. water level; Truck repair person; Water pull - single engine; Welder

GROUP 9: Truck repair person/welder; Low bed driver, 9 axles or over

GROUP 10: Dump truck - 50 yds. or more water level; Water pull - single engine with attachment

GROUP 11: Water pull - twin engine; Water pull - twin engine with attachments; Winch truck driver - $1.25 additional when operating winch or similar special attachments

GROUP 12: Boom Truck 17K and above

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

==========

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

In the listing above, the "SU" designation means that rates

listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

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

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

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

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

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

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

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

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

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

==========

END OF GENERAL DECISION

2-3 FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

GENERAL.—The work herein proposed will be financed in whole or in part with Federal funds, and therefore all of the statutes, rules and regulations promulgated by the Federal Government and applicable to work financed in whole or in part with Federal funds will apply to such work. The "Required Contract Provisions, Federal-Aid Construction Contracts, "Form FHWA 1273, are included in this Section 14. Whenever in said required contract provisions references are made to "SHA contracting officer," "SHA resident engineer," or "authorized representative of the SHA," such references shall be construed to mean "Engineer" as defined in Section 1-1.18 of the Standard Specifications.

PERFORMANCE OF PREVIOUS CONTRACT.—In addition to the provisions in Section II, "Nondiscrimination," and Section VII, "Subletting or Assigning the Contract," of the required contract provisions, the Contractor shall comply with the following:

The bidder shall execute the CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS located in the proposal. No request for subletting or assigning any portion of the contract in excess of $10,000 will be considered under the provisions of Section VII of the required contract provisions unless such request is accompanied by the CERTIFICATION referred to above, executed by the proposed subcontractor.

NON-COLLUSION PROVISION.—The provisions in this section are applicable to all contracts except contracts for Federal Aid Secondary projects.

Title 23, United States Code, Section 112, requires as a condition precedent to approval by the Federal Highway Administrator of the contract for this work that each bidder file a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has 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 submitted bid. A form to make the non-collusion affidavit statement required by Section 112 as a certification under penalty of perjury rather than as a sworn statement as permitted by 28, USC, Sec. 1746, is included in the proposal.

PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN SUBCONTRACTING.—Part 26, Title 49, Code of Federal Regulations applies to this Federal-aid project. Pertinent sections of said Code are incorporated in part or in its entirety within other sections of these special provisions.

Schedule B—Information for Determining Joint Venture Eligibility

(This form need not be filled in if all joint venture firms are DBE owned.)

1. Name of joint venture _____

_____

2. Address of joint venture _____

_____

3. Phone number of joint venture _____

_____

4. Identify the firms which comprise the joint venture. (The DBE partner must complete Schedule A.) _____

_____

a. Describe the role of the DBE firm in the joint venture.

_____

b. Describe very briefly the experience and business qualifications of each non-DBE joint venturer: _____

_____

5. Nature of the joint venture's business _____

_____

6. Provide a copy of the joint venture agreement.

7. What is the claimed percentage of DBE ownership? ___

_____

8. Ownership of joint venture: (This need not be filled in if described in the joint venture agreement, provided by question 6.).

a. Profit and loss sharing.
b. Capital contributions, including equipment.
c. Other applicable ownership interests.

9. Control of and participation in this contract. Identify by name, race, sex, and "firm" those individuals (and their titles) who are responsible for day-to-day management and policy decision making, including, but not limited to, those with prime responsibility for:

a. Financial decisions _____

_____

b. Management decisions, such as:

1. Estimating _____

_____

2. Marketing and sales _____

_____

3. Hiring and firing of management personnel ___

_____

4. Purchasing of major items or supplies _____

_____

c. Supervision of field operations _____

_____

Note.—If, after filing this Schedule B and before the completion of the joint venture's work on the contract covered by this regulation, there is any significant change in the information submitted, the joint venture must inform the grantee, either directly or through the prime contractor if the joint venture is a subcontractor.

Affidavit

"The undersigned swear that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the undersigned covenant and agree to provide to grantee current, complete and accurate information regarding actual joint venture work and the payment therefor and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records and files of the joint venture, or those of each joint venturer relevant to the joint venture, by authorized representatives of the grantee or the Federal funding agency. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements."

.....	.....
Name of Firm	Name of Firm
.....	.....
Signature	Signature
.....	.....
Name	Name
.....	.....
Title	Title
.....	.....
Date	Date

Date _____

State of _____

County of _____

On this ____ day of _____, 19 __, before me appeared (Name) _____, to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public _____

Commission expires _____

[Seal]

Date _____

State of _____

County of _____

On this ___ day of _____, 19 __, before me appeared (Name) _____ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public _____

Commission expires _____

[Seal]

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

(Exclusive of Appalachian Contracts)

ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4, and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 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 DOL, or the contractor's employees or their representatives.

6. **Selection of Labor:** During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: 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, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively

administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 26, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

III NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

a. All mechanics and laborers 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 regulations (29 CFR 3)] issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c) the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) 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 be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, 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 paragraphs 4 and 5 of this Section IV.

b. 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.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. Classification:

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

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

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

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

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification 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 DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour 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.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional 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 Wage and Hour Administrator for determination. Said 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

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

a. 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 or subcontractors, as appropriate, shall either pay the benefit

as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a 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.

4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:

a. Apprentices:

(1) 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 DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees 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 employee 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 listed in 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 or subcontractor 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-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) 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 journeyman-level 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 for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) 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 DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who 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.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level 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-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor 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.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. Apprentices and Trainees (Programs of the U.S. DOT):

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding:

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor 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, as 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 SHA contracting officer may, after written notice to the contractor, 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.

7. Overtime Requirements:

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation:

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her 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, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages:

The SHA shall upon its own action or upon written request of any authorized representative of the DOL 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 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3):

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found 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 and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/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 maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or 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 the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.

e. 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 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, 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 SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions 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.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever being an officer, agent, or employee of the United States, or any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized

for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. 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 clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. 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 clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal 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.

b. 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 Federal 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.

2. 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 31 U.S.C. 1352. 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.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

FEDERAL-AID FEMALE AND MINORITY GOALS

In accordance with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-aid Construction Contracts" the following are the goals for female utilization:

Goal for Women (applies nationwide).....(percent)	6.9

The following are goals for minority utilization:

CALIFORNIA ECONOMIC AREA

	Goal (Percent)
174 Redding, CA:	
Non-SMSA Counties ..... CA Lassen; CA Modoc; CA Plumas; CA Shasta; CA Siskiyou; CA Tehama.	6.8
175 Eureka, CA:	
Non-SMSA Counties . ..... CA Del Norte; CA Humboldt; CA Trinity.	6.6
176 San Francisco-Oakland-San Jose, CA:	
SMSA Counties:	
7120 Salinas-Seaside-Monterey, CA.... ..... CA Monterey.	28.9
7360 San Francisco-Oakland, CA..... CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo.	25.6
7400 San Jose, CA..... CA Santa Clara.	19.6
7485 Santa Cruz, CA. ..... CA Santa Cruz.	14.9
7500 Santa Rosa, CA..... CA Sonoma.	9.1
8720 Vallejo-Fairfield- Napa, CA ..... CA Napa; CA Solano	17.1
Non-SMSA Counties..... CA Lake; CA Mendocino; CA San Benito.	23.2
177 Sacramento, CA:	
SMSA Counties:	
6920 Sacramento, CA..... CA Placer; CA Sacramento; CA Yolo.	16.1
Non-SMSA Counties..... CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba.	14.3
178 Stockton-Modesto, CA:	
SMSA Counties:	
5170 Modesto, CA ..... CA Stanislaus.	12.3
8120 Stockton, CA ..... CA San Joaquin.	24.3
Non-SMSA Counties..... CA Alpine; CA Amador; CA Calaveras; CA Mariposa; CA Merced; CA Tuolumne.	19.8
179 Fresno-Bakersfield, CA:	
SMSA Counties:	
0680 Bakersfield, CA..... CA Kern.	19.1
2840 Fresno, CA..... CA Fresno.	26.1
Non-SMSA Counties..... CA Kings; CA Madera; CA Tulare.	23.6
180 Los Angeles, CA:	
SMSA Counties:	
0360 Anaheim-Santa Ana-Garden Grove, CA. ..... CA Orange.	11.9
4480 Los Angeles-Long Beach, CA ..... CA Los Angeles.	28.3
6000 Oxnard-Simi Valley-Ventura, CA ..... CA Ventura.	21.5

6780 Riverside-San Bernardino-
Ontario, CA. 19.0
CA Riverside;
CA San Bernardino.
7480 Santa Barbara-Santa Maria-
Lompoc, CA 19.7
CA Santa Barbara.
Non-SMSA Counties 24.6
CA Inyo; CA Mono;
CA San Luis Obispo.

181 San Diego, CA:

SMSA Counties
7320 San Diego, CA. 16.9
CA San Diego.
Non-SMSA Counties 18.2
CA Imperial.

In addition to the reporting requirements set forth elsewhere in this contract the Contractor and subcontractors holding subcontracts, not including material suppliers, of $10,000 or more, shall submit for every month of July during which work is performed, employment data as contained under Form FHWA PR-1391 (Appendix C to 23 CFR, Part 230), and in accordance with the instructions included thereon.

2-4 LEGAL DAY'S WORK. In accordance with the provisions of the Labor Code of the State of California, eight (8) hours labor shall constitute a regular day's work, and no worker in the employ of Contractor or any subcontractor doing or contracting to do any part of the work contemplated by this contract shall be required or permitted to work more than eight (8) hours in any one calendar day, or forty (40) hours during any calendar week, except as provided in the Labor Code. Contractor and each subcontractor shall keep an accurate record showing the name of and actual hours worked by each worker employed on the work contemplated by this contract, which record shall be kept open at all reasonable hours to the inspection of County and to the Division of Labor Law Enforcement. A certified copy of such record shall be furnished to County upon request. Contractor shall forfeit, as penalty to County, the sum of Twenty-Five Dollars ($25.00) for each worker employed in the execution of this contract by him or by any subcontractor for each calendar day during which said worker is required or permitted to labor more than eight (8) hours in violation of the provisions of the Labor Code.

2-5 INSURANCE, DEFENSE AND INDEMNIFICATION. Bidders' attention is directed to the insurance requirements indicated below. It is highly recommended that bidders confer with their respective insurance carriers or brokers to determine the availability of insurance certificates and endorsements as prescribed and provided herein in advance of bid submission. If an apparent low bidder fails to comply strictly with the insurance requirements, that bidder may be disqualified from award of the Contract.

Contractor shall procure and maintain, for the duration of the contract, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors. The cost of such insurance shall be included in the Contractor's Bid.

a. MINIMUM SCOPE OF INSURANCE. Coverage shall be at least as broad as:

1. Commercial General Liability: Contractor shall procure and maintain during the entire term of this Agreement a policy of Commercial General Liability insurance which includes blanket contractual liability, broad form property damage, products/completed operations and personal injury coverages.

2. Automobile/Aircraft/Watercraft/Mobile Equipment/Contractor's Equipment Liability Insurance: Contractor shall provide comprehensive automobile/aircraft/watercraft/mobile equipment/contractor's equipment liability insurance for bodily injury (including death) and property damage applicable to all owned, non-owned, and hired vehicles, aircraft, watercraft, mobile equipment and contractor's equipment utilized for the performance of this Agreement.

3. Workers' Compensation insurance as required by the Labor Code of the State of California and Employers' Liability Insurance.

4. Builder's Risk: Contractor shall procure and maintain in force throughout the duration of this Agreement builder's risk insurance equal to one hundred percent (100%) of the completed value of such work being performed. Said policy shall not include a deductible of more than $5,000 per occurrence. The Contractor shall provide the County with a complete copy of the Builder's Risk policy.

5. Pollution Liability Insurance: Contractor shall procure and maintain in force throughout the duration of this Agreement pollution liability insurance.

b. LIMITS. The Contractor shall maintain limits of no less than:

1. Commercial General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. If any earth work, including, but not limited to: road work, excavation, footings, slabs, trenching, digging, etc., is required, the policy or other form of coverage shall include coverage for damage and injury caused by explosion, blasting, collapse, structural injuries, or damage to underground utilities.

2. Automobile Liability: $1,000,000 combined single limit per accident for bodily injury and property damage.

3. Workers' Compensation and Employers Liability: Workers' compensation limits as required by the Labor Code of the State of California and Employers Liability limits of $ 1,000,000 per accident.

4. Builder's Risk: _____ Required ___X___ Not Required

5. Pollution Liability Insurance: Pollution liability insurance provided will have a minimum limit of $1,000,000 for each occurrence and $2,000,000 aggregate.

c. DEDUCTIBLES AND SELF-INSURED RETENTIONS. Any deductibles or selfinsured retentions must be declared to and approved by the County. At the option of the County, either:

1. The insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees and volunteers; or

2. The Contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

d. OTHER INSURANCE PROVISIONS. The policies are to contain, or be endorsed to contain, the following provisions:

1. General Liability and Automobile Liability Coverage

(a) The County, its officers, officials, employees and volunteers are to be covered as insureds as respects: liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the County, its officers, officials, employees or volunteers.

(b) The Contractor's insurance coverage shall be primary insurance as respects the County, its officers, officials, employees and volunteers. Any insurance or self-insurance maintained by the County, its officers,

officials, employees or volunteers shall be in excess of the Contractor's insurance and shall not contribute with it.

(c) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the County, its officers, officials, employees or volunteers. The Contractors insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the limits of the insurer's liability.

2. Workers' Compensation and Employers Liability Coverage. The Insurer shall agree to waive all rights of subrogation against the County, its officers, officials, employees and volunteers for losses arising from work performed by the Contractor for the County.Contractor expressly waives its immunity for injuries to its employees and agrees that the obligation to indemnify, defend and hold harmless provided for in this Contract extends to any claim brought by or on behalf of any employee of the Contractor. This waiver is mutually negotiated by the parties. This waiver shall not apply to any damage resulting from the sole negligence of the County, its agents and employees. To the extent any of the damages referenced herein were caused by or resulted from the concurrent negligence of the County, its agents or employees, the obligation provided herein to indemnify, defend and hold harmless is valid and enforceable only to the extent of the negligence of the Contractor, its officers, agents and employees. This insurance shall be in strict accordance with the requirements of the most current and applicable State Worker's Compensation Insurance laws.

3. All Coverages. Each insurance policy required by this clause shall be endorsed to County that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after at least thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the County.

e. ACCEPTABILITY OF INSURERS. Insurance is to be placed with insurers with a Best's rating of no less than B+. Notwithstanding the foregoing, Worker's Compensation and Employers liability Coverages may be placed with an insurer with a lower Best's rating, subject to approval by the County, which approval shall not be unreasonably withheld.

f. VERIFICATION OF COVERAGES. Contractor shall furnish the County with Certificates of Insurance and with original endorsements effecting coverage required by this clause. The Certificates and endorsements for each insurance policy are to be signed by a Person authorized by that insurer to bind coverage on its behalf. All Certificates and endorsements are to be received and approved by the County before work commences by mailing or delivering the same to the County of Mono. The County reserves the right to require complete, certified copies of all required insurance policies at any time.

g. SUBCONTRACTORS. The Contractor shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

h. DEFENSE AND INDEMNIFICATION . Contractor shall defend, indemnify and hold harmless the County, its agents, officers, employees, and volunteers from and against all claims, damages, losses, judgments, liabilities, expenses and other costs, including

litigation costs and attorney's fees, arising out of, resulting from, or in connection with the performance of this Contract by the Contractor, or Contractor's agents, officers or employees. Contractor's obligation to defend, indemnify and hold the County, its agents, officers, employees, and volunteers harmless applies to any actual or alleged personal injury, death, or damage or destruction to tangible or intangible property, including the loss of use. Excepting only those liabilities, claims, and damages caused solely and exclusively by the active fault or negligence of the County, the Engineer, or their officers, agents, employees, or volunteers, the Contractor's obligation under this paragraph extends to any claim, damage, loss, liability, expense or other cost which is caused in whole or in part by any act or omission of the Contractor or any of its subcontractors or the agents, employees, suppliers, or materialmen of any of them or anyone directly or indirectly employed by any of them, or anyone for whose acts or omissions any of them may be liable. Contractor's obligation to defend, indemnify and hold the County, its agents, officers, employees, and volunteers harmless under the provisions of this paragraph is not limited to or restricted by any requirement in this Contract for the Contractor to procure and maintain a policy of insurance coverage.

i. CONTRACTOR'S LIABILITY NOT LIMITED BY INSURANCE. Nothing contained in the insurance requirements applicable to the Contractor pursuant to this Contract shall be construed as limiting the liability of the Contractor or the Contractor's Sureties.

2-6 BUY AMERICA REQUIREMENTS. Attention is directed to the "Buy America" requirements of the Surface Transportation Assistance Act of 1932 (Section *165)* and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Sections 104 1(a) and 1048(a), and the regulations adopted pursuant thereto. In accordance with said law and regulations, all manufacturing processes for steel materials furnished for incorporation into the work on this project shall occur in the United States. The application of coatings, such as epoxy coating, galvanizing, painting, and any other coating that protects or enhances the value of such steel or iron materials shall be considered a manufacturing process subject to the "Buy America" requirements.

A Certificate of Compliance, conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications, shall be furnished for all steel and iron materials. The Certificates, in addition to certifying that the materials comply with the specifications, shall also specifically certify that all-manufacturing processes for the materials occurred in the United States.

The requirements imposed by said law and regulations do not prevent a minimal use of foreign steel and iron materials if the total combined cost of such materials used does not exceed onetenth of 1 percent (0.1%) of the total contract cost or $2,500, whichever is greater. The Contractor shall furnish the Engineer acceptable documentation of the quantity and value of any foreign steel prior to incorporating such materials into the work.

2-7 SUBCONTRACTING. The prime contractor is responsible for compliance with the requirements by all subcontractors and lower tier subcontractors. Failure of the prime contractor to comply with this requirement is grounds for local agency termination of the contract with the contractor and debarment of the contractor by FHWA Pursuant to the provisions of Section 1777.1 of the Labor Code, the Labor Commissioner publishes and distributes a list of contractors ineligible to perform work as a subcontractor on a public works project. This list of debarred contractors is available from the Department of Industrial Relations web site at:

http://www.dir.ca.gov/dir/Labor_law/DLSE/Debar.html.

The Contractor shall perform with the Contractor's own organization contract work amounting to not less than 50 percent of the original contract price. This requirement is not changed by the Federal Aid requirement specified under "Required Contract Provisions Federal-Aid Construction Contracts" that the Contractor perform not less than 30 percent of the original contract work with the Contractor's own organization.

Each subcontract and any lower tier subcontract that may in turn be made shall include the "Required Contract Provisions Federal-Aid Construction Contracts" of these special provisions. This requirement shall be enforced as follows:

> Noncompliance shall be corrected. Payment for subcontracted work involved will be withheld from progress payments due, or to become due, until correction is made. Failure to comply may result in termination of the contract.

In conformance with the Federal DBE regulations Sections 26.53(f)(1) and 26.53(f)(2) Part 26, Title 49 CFR:

> a. The Contractor shall not terminate for convenience a DBE subcontractor listed in response to "Submission of DBE Information," and then perform that work with its own forces, or those of an affiliate without the written consent of the Department, and
>
> b. If a DBE subcontractor is terminated or fails to complete its work for any reason, the Contractor will be required to make good faith efforts to substitute another DBE subcontractor for the original DBE subcontractor, to the extent needed to meet the contract goal.

The requirement in "Disadvantaged Business Enterprise (DBE)," of these special provisions that DBEs must be certified on the date bids are opened does not apply to DBE substitutions after award of the contract.

County will deal only through Contractor who shall be responsible for the proper execution of the whole work. Subletting the whole or any part of the contract shall be made only in accordance with the provisions of Sections 4100 et seq. inclusive of the Public Contract Code of the State of California.

Pursuant to the provision of Sections 4100 et seq. inclusive of the Public Contract Code of the State of California, Contractor shall not, without the consent of the County either:

> a. Substitute any persons as subcontractors in place of the subcontractors designated in his original bid.
>
> b. Permit subcontract to be assigned or transferred to allow it to be performed by anyone other than the original subcontractor listed in the bid.
>
> c. Sublet or subcontract any portion of the work in excess of one-half of one percent of his bid as to which his original bid did not designate a subcontractor.
>
> d. Sublet or subcontract any portion of the work in excess of one-half of one percent of his bid as to which his original bid did not designate a subcontractor. Should Contractor

violate any of the provisions of said Section 4100 to 4108 inclusive of the Government Code, his so doing shall be deemed a violation of this contract, and County may cancel the contract. In the event of such violation, Contractor shall be penalized to the extent of ten percent (10%) of the amount of the subcontract involved.

2-7.1 SUBCONTRACTOR AND DBE RECORDS. The Contractor shall maintain records of all subcontracts. The records shall show those subcontracts entered into with certified DBE subcontractors and records of materials purchased from certified DBE suppliers. Such records shall show the name and business of each DBE subcontractor or vender and the total dollar amount actually paid each DBE subcontractor or vendor.

Upon completion of the contract, a summary of these records shall be prepared on “Final Report – Utilization of Disadvantaged Business Enterprises – (DBE), First-Tier Subcontractors” (Exhibit 17-F/Form CEM-2402) and certified correct by the Contractor or his authorized representative, and shall be furnished to the engineer.

2-7.2 PERFORMANCE OF DBE SUBCONTRACTORS AND SUPPLIERS. The DBE’s listed by the Contractor in response to the requirements in the section of these special provisions entitled "Submission of DBE Information, Award, And Execution Of Contract", which are determined by the County to be certified DBEs, shall perform the work and supply the materials for which they are listed unless the Contractor has received prior written authorization to perform the work with other forces or to obtain the materials from other sources.

a. The listed DBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract, when such written contract, based upon the general terms, conditions, plans and specifications for the project, or on the terms of such subcontractor's or supplier's written bid, is presented by the Contractor.

b. The listed DBE becomes bankrupt or insolvent.

c. The listed DBE fails or refuses to perform his subcontract or furnish the listed materials.

d. The Contractor stipulated that a bond was a condition of executing a subcontract and the listed DBE subcontractor fails or refuses to meet the bond requirements of the Contractor.

e. The work performed by the listed subcontractor is substantially unsatisfactory and is not in substantial accordance with the plans and specifications, or the subcontractor is substantially delaying or disrupting the progress of the work.

f. It would be in the best interest of the County.

The Contractor shall not be entitled to any payment for such work or material unless it is performed or supplied by the listed DBE or by other forces (including those of the Contractor) pursuant to prior written authorization of the Engineer.

2-7.3 DBE CERTIFICATION STATUS. If a DBE subcontractor is decertified during the life of the project, the decertified subcontractor shall notify the Contractor in writing with the date of decertification. If a subcontractor becomes a certified DBE during the life of the project, the

subcontractor shall notify the Contractor in writing with the date of certification. The Contractor shall furnish the written documentation to the Engineer.

Upon completion of the contract, Form CEM-2403 (F) indicating the DBE's existing certification status shall be signed and certified correct by the Contractor. The certified form shall be furnished to the Engineer within 90 days from the date of contract acceptance.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DISADVANTAGED BUSINESS ENTERPRISES (DBE) CERTIFICATION STATUS CHANGE

CP-CEM-2403(F) (New. 10/99)

CONTRACT NUMBER	COUNTY	ROUTE	POST MILES/POST KILOMETERS	ADMINISTERING AGENCY	CONTRACT COMPLETION DATE
PRIME CONTRACTOR			BUSINESS ADDRESS		ESTIMATED CONTRACT AMOUNT $

Prime Contractor: List all DBEs with change in certification status (certified/decertified) while in your employ, whether or not firms were originally listed for goal credit. Attach DBE certification/decertification letter in accordance with the Special Provisions.

CONTRACT ITEM NO.	SUBCONTRACTOR NAME AND BUSINESS ADDRESS	BUSINESS PHONE	CERTIFICATION NUMBER	AMOUNT PAID WHILE CERTIFIED	CERTIFICATION/ DECERTIFICATION DATE Letter attached ☐
				$	☐
				$	☐
				$	☐
				$	☐
				$	☐
				$	☐
				$	☐
				$	☐
				$	☐

Comments:

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT

CONTRACTOR REPRESENTATIVE SIGNATURE	TITLE	BUSINESS PHONE NUMBER	DATE

TO THE BEST OF MY KNOWLEDGE, THE ABOVE INFORMATION IS COMPLETE AND CORRECT

RESIDENT ENGINEER SIGNATURE	BUSINESS PHONE NUMBER	DATE

DISTRIBUTION Original-DLAE Copy to: 1) Business Enterprise Program 2) Prime Contractor 3) Local Agency 4) Resident Engineer

INSTRUCTIONS FOR Form CP-CEM 2403 (new 10/99)
DISADVANTAGED BUSINESS ENTERPRISES (DBE)
CHANGE IN CERTIFICATION STATUS REPORT

The top of the form requires specific information regarding the construction project: Contract Number, County, Route, Post Miles/Post Kilometers, the Administering Agency, the Contract Completion Date and the Estimated Contract Amount. It requires the Prime Contractor name and Business Address. The focus of the form is to substantiate and verify the actual DBE dollar amount paid to contractors on Federally-funded projects that had a change in Certification status during the course of the completion of the contract. The two situations that are being addressed by CP-CEM 2403(F) are if a firm certified as a DBE and doing work on the contract during the course of the project becomes Decertified, and if a non-DBE firm doing work on the contract during the course of the project becomes Certified as a DBE.

The form has a column to enter the Contract Item No. (or Item No's) as well as a column for the Subcontractor Name, Business Address, Business Phone, and contractor's Certification Number.

The column entitled Amount Paid While Certified will be used to enter the actual dollar value of the work performed by those contractors who meet the conditions as outlined above during the time period they are Certified as a DBE. This column on the CP-CEM-2403(F) should only reflect the dollar value of work performed while the firm was Certified as a DBE.

The column called Certification/Decertification Date (Letter attached) will reflect either the date of the Decertification Letter sent out by the Civil Rights Program or the date of the Certification Certificate mailed out by the Civil Rights Program. There is a box to check that support documentation is attached to the CP-CEM-2403(F) form.

There is a Comments section for any additional information that may need to be provided regarding any of the above transactions.

The CEM-2403(F) has an area at the bottom where the Contractor and the Resident Engineer sign and date that the information provided is complete and correct.

2-7.4 PROMPT PROGRESS PAYMENT TO SUBCONTRACTORS. Attention is directed to the provisions in Sections 10262 and 10262.5 of the Public Contract Code and Section 7108.5 of the Business and Professions Code concerning prompt payment to subcontractors.

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of it contract no later than ten days from the receipt of each payment the prime contractor receives from Mono County.

Any delay or postponement of payment from the above-referenced time frame may occur only for good cause following written approval of the County. This clause applies to both DBE and non-DBE subcontractors.

2-7.5 PROMPT PAYMENT OF WITHHELD FUNDS TO SUBCONTRACTORS. The Contractor shall return all moneys withheld in retention from the subcontractor within 30 days after receiving payment for work satisfactorily completed, even if the other contract work is not completed and has not been accepted in conformance with Section 7-1.17, "Acceptance of Contract," of the Standard Specifications. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor or deficient subcontract performance or noncompliance by a subcontractor.

Any delay or postponement of payment from the above-referenced time frame may occur only for good cause following written approval of the County. This clause applies to both DBE and non-DBE subcontractors.

2-7.6 REQUIRED SUBCONTRACT AND MATERIAL SUPPLY CONTRACT PROVISION. All contracts valued at more than $15,000 between the General Contractor and its subcontractors and suppliers shall include a provision that the subcontractors and suppliers shall be bound to the Contractor to the same extent that the Contractor is bound to the County by all terms and provisions of this Contract.

2-8 STATE CONTRACT ACT NOT APPLICABLE. This Contract is not governed by the provisions of the State Contract Act. The adoption and use of the Standard Specifications in the performance of the work called for in this Contract shall not be construed as an election by the County to proceed under Section 20396 of the Public Contract Code. In the event that a dispute arises between the parties, they are not obligated to submit the matter to arbitration in any form (although they may do so upon written agreement).

2-9 RESOLUTION OF CONSTRUCTION CLAIMS. All public works claims of three hundred seventy-five thousand dollars ($375,000.00) or less which arise between County and Contractor under this Contract shall be governed by Article 1.5 (commencing with Section 20104) of the Public Contract Code. Section 20104.2 of the Public Contract Code provides: For any claim subject to this article, the following requirements apply:

a. The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

b. 1. For claims of less than fifty thousand dollars ($50,000.00), the local agency shall respond in writing to any written claim within 45 days of receipt of the

claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the local agency may have against the claimant.

2. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

3. The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.

c. 1. For claims of over fifty thousand dollars ($50,000.00) and less than or equal to three hundred seventy-five thousand dollars ($375,000.00), the local agency shall respond in writing to all written claims within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the local agency may have against the claimant.

2. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

3. The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or requested documentation, whichever is greater.

d. If the claimant disputes the local agency's written response, or the local agency fails to respond within the time prescribed, the claimant may so notify the local agency, in writing, either within 15 days of receipt of the local agency's response or within 15 days of the local agency's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the local agency shall schedule a meet and confer conference within 30 days for settlement of the dispute.

e. If, following the meet and confer conference, the claim or any portion remains in dispute, the claimant may file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim pursuant to subdivision (a) until the time the claim is denied, including any period of time utilized by the meet and confer conference.

Section 20104.4 of the Public Contract Code provides: The following procedures are established for all civil actions filed to resolve claims subject to this article:

a. Within 60 days, but no earlier than 30 days, following the filing of responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

b. 1. If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141. 11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

2. Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law, and, upon stipulation of the parties, mediators and arbitrators shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by State or County funds.

3. In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, any party who after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, pay the attorney's fees of the other party arising out of the trial de novo.

Section 20104.6 of the Public Contract Code provides:

a. No local agency shall fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the Contract.

b. In any suit filed under Section 20104.4, the local agency shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

2-10 RECORDS RETENTION CLAUSE. For the purpose of determining compliance with Public Contract Code Section 10115 et.seq. and Title 21, California Code of Regulations, Chapter 21, Section 2500 et. seq., when applicable, and other matters connected with the performance of the Contract pursuant to Government Code Section 8546.7, the Contractor, subcontractors, and the County shall maintain all books, documents, papers, accounting records, and other evidence pertaining to the performance of the Contract, including but not limited to, the costs of administering the Contract. All parties shall make such materials available at their respective offices at all reasonable times during the contract period for three years from the date of final payment under the Contract. The County, the County Auditor, FAA, or any duly authorized representative of the Federal government shall have access to any books, records, and documents

of the Contractor that are pertinent to the Contract for audits, examinations, excerpts, and transactions, and copies thereof shall be furnished if requested.

2-11 VETERAN'S PREFERENCE. With respect to the employment of labor, preference shall be given to Veterans of the Vietnam era and disable veterans as defined in Section 47112 of Title 49, United States Code. This preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates and does not apply to executive, administrative, and supervisory positions.

SECTION 3. OPERATIONS AND SAFETY

3-1 TEMPORARY CONTRACTOR FACILITIES. At a minimum**,** Contractor shall provide chemical toilets for use by contractor and subcontractor employees. Chemical toilets shall be regularly serviced to maintain a clean and odorless facility.

The Contractor may store equipment and materials at the airport, at his own risk. The final location of the area for Contractor's use shall be determined at the pre-construction conference. The Contractor shall secure at his own expense any additional area required for plant sites, storage of equipment or materials, or for other purposes if sufficient area is not available. Equipment and materials must be located so as not to interfere with access, apron, taxiway or runway operations or safety.

The Owner will not be responsible to provide telephone, electrical, water, sewer, or any other temporary utility for use by the Contractor.

The Contractor shall remove all equipment, materials, and rubbish from the work areas which he occupies and shall leave the areas in a clean, safe and presentable condition.

3-2 BORROW, DISPOSAL AND MATERIAL SITES The operation of any borrow or disposal sites used by the Contractor to produce or dispose of materials for this project shall comply with the requirements of the contract documents, the general provisions and these special provisions. All provisions for water pollution, air pollution, and sound control that apply within the limits of the contract shall apply to all borrow or disposal sites utilized by the Contractor.

Full compensation for complying with the requirements for borrow, disposal and material sites in this section shall be considered as included in the contract prices paid for the items of work which require the use of the sites and no additional compensation will be allowed therefore.

3-3 WATER SUPPLY. The contractor is responsible to make his own arrangements to obtain an adequate supply of water required for the proper construction of this project in accordance with the plans, specifications, contract documents or these Special Provisions. The Contractor shall be responsible for all costs associated with obtaining construction water.

The Contractor shall, whenever possible and not in conflict with the above requirements, minimize the use of water during construction of the project. Watering equipment shall be kept in good working order; water leaks shall be repaired promptly; and washing of equipment, except when necessary for safety or for the protection of equipment, shall be discouraged.

When ordered by the Engineer, a dust palliative conforming to the provisions of Section 18, "Dust Palliative," of the Standard Specifications shall be used to control dust on this project. Dust palliative ordered by the Engineer will be paid for as extra work in accordance with section 4-1.03D of the Standard Specifications.

3-4 EXISTING FACILITIES. The Contractor shall be responsible to protect all existing structures and facilities at the airport from damage. Any such damage resulting from the Contractor's operations shall be repaired immediately, at the Contractor's expense.

3-5 RELATIONS WITH CALIFORNIA DEPARTMENT OF FISH AND GAME It is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any stream, river, or lake without first notifying the Department of

Fish and Game, unless the project or activity is noticed and constructed in accordance with all conditions imposed under Fish and Game Code Section 1601.

As the project is designed to be completed without any impacts or adverse disturbance to local water bodies or any of the associated flows, wetland habitat areas, or other waters of the state, no permit has been required. The Contractor is responsible to complete the project without any impacts or adverse disturbance to Bridgeport Reservoir, any of the associated flows, wetland habitat areas or other waters of the state.

SECTION 4. QUALITY CONTROL / QUALITY ASSURANCE

4-1 NOTIFICATION. The Owner has identified the tests and frequencies in the following to be the minimum reasonable numbers and types of tests to be performed by the Owner and Contractor for this work. The Owner reserves the right to unilaterally adjust the numbers and/or frequencies of those tests he will perform. Such listing of tests required by the Contractor may not be all-inclusive and does not relieve the Contractor of any QA/QC obligation included elsewhere in the plans, General Provision, Special Provision or Technical Specifications.

There will be no direct payment for the tests performed by the Contractor as they are considered incidental to the related items of work.

TABLE 1.

TABLE OF TESTING REQUIREMENTS
QUALITY ASSURANCE (OWNER) AND QUALITY CONTROL (CONTRACTOR)

Spec. Item	Reference	Description	Minimum Frequency	Owner's Responsibility	Contractor's Responsibility
P-152 Field	ASTM D 698	Moisture-Density Relations	As required for subgrade; 2,500 cubic yards for embankment	X	X
P-152 Field	ASTM D 4718	Correction for Oversized Particles	As Required	X	X
P-152 Field	ASTM D 1556, 2167 or 2922	Density of In-Place Soil / Soil Aggregate Mixtures	2,000 square yards subgrade preparation; 2,500 cubic yards embankment	X	X
P-209S Acceptance	ASTM C 29	Unit Weight of Aggregate	1 each		X
P-209S Acceptance	ASTM C 88	Sodium Sulfate Soundness	1 each		X
P-209S Acceptance	ASTM C 131	Los Angeles Abrasion	1 each		X
P-209S Acceptance	ASTM C 117 & C136	Sieve Analysis	1 each		X
P-209S Acceptance	ASTM D 2419	Sand Equivalent	1 each		X
P-209S Acceptance	ASTM D 4318	Atterberg Limits	1 each		X
P-209S Acceptance	ASTM D 693	Flat or Elongated Pieces	1 each		X
P-209S Field	ASTM C 117 & C136	Sieve Analysis	1 per each sublot	X	X

TABLE 1.

TABLE OF TESTING REQUIREMENTS
QUALITY ASSURANCE (OWNER) AND QUALITY CONTROL (CONTRACTOR)

Spec. Item	Reference	Description	Minimum Frequency	Owner's Responsibility	Contractor's Responsibility
P-209S Field	ASTM D 1556 OR 2167 OR 2922 & 3017	Density of In-Place Soil / Soil Aggregate Mixtures	1 per each sublot; 2 per each sublot if ASTM D 2922 & 3017 Used	X	X
P-209S Field	ASTM D 698	Moisture-Density Relations	1 per each 5 days of placement or as required	X	X
P-401S Acceptance		Smoothness	Every 25’	X	X
P-401S Acceptance	ASTM D 3665 or Caltrans	Mat Density	1 per sublot	X	X
P-401S Acceptance	ASTM D 3665 or Caltrans	Joint Density	1 per sublot	X	X
P-401S Acceptance	ASTM C 131	Los Angeles Abrasion for Coarse Aggregate	1 each		X
P-401S Acceptance	ASTM C 88	Sodium Sulfate Soundness for Coarse Aggregate	1 each		X
P-401S Acceptance	ASTM D 4791	Flat or Elongated Pieces for Coarse Aggregate	1 each		X
P-401S Acceptance	ASTM D 4318	Atterberg Limits for Fine Aggregate	1 each		X
P-401S Acceptance	ASTM D 2419	Sand Equivalent	1 each		X
P-401S Acceptance	AASHTO T 316	Rotational Viscosity	1 each		X
P-401S Acceptance	AASHTO T 48	Flash Point	1 each		X

TABLE 1.

TABLE OF TESTING REQUIREMENTS
QUALITY ASSURANCE (OWNER) AND QUALITY CONTROL (CONTRACTOR)

Spec. Item	Reference	Description	Minimum Frequency	Owner's Responsibility	Contractor's Responsibility
P-401S Acceptance	Caltrans	Sieve Test	1 each		X
P-401S Acceptance	AASHTO T 315	Dynamic Shear Modulus	1 each on Unaged Binder 1 each on RTFO Binder 1 each on PAV Binder		X
P-401S Acceptance	AASHTO T 240	Average Mass Change	1 each		X
P-401S Acceptance	AASHTO T 313	Flexural Creep Stiffness Modulus and m-value	1 each		X
P-401S Acceptance	AASHTO T 314	Direct Tension Strain	1 each or as required		X
P-401S Acceptance	ASTM D 113	Ductility	1 each on Unaged Binder or as required 1 each on PAV Binder or as required		X
P-401S Acceptance	ASTM D 5801	Toughness and Tenacity	1 each or as required		X
P-401S Acceptance	ASTM D 4867	Tensile Strength Ratio	1 per each mix design		X
P-401S Acceptance	ASTM D 1074	Dry Strength	1 per each mix design		X
P-401S Acceptance	ASTM C 136 and C 117	Aggregate Gradation	1 per each mix design		X
P-401S Production	ASTM D 6927	Laboratory Compacted Specimen for Flow and Stability	1 set per sublot	X	

TABLE 1.

TABLE OF TESTING REQUIREMENTS
QUALITY ASSURANCE (OWNER) AND QUALITY CONTROL (CONTRACTOR)

Spec. Item	Reference	Description	Minimum Frequency	Owner's Responsibility	Contractor's Responsibility
P-401S Production	ASTM D 3203	Laboratory Compacted Determination of Air Voids	1 set per sublot	X	
P-401S Production	ASTM D 2726 or D 1188	Laboratory Compacted Bulk Specific Gravity	1 set per sublot	X	
P-401S Production	ASTM D 2041	Laboratory Compacted Theoretical Maximum Specific Gravity	2 set per sublot	X	
P-401S Production	ASTM D 2726 or D 118	Cored Samples Bulk Specific Gravity	Mat – 1 per sublot Joint – 1 per sublot	X	X Coring
P-401S Production	ASTM D 2172 or 6307 or D 4125	Asphalt Content	2 per sublot		X
P-401S Production	ASTM D 5444 and ASTM 6307	Aggregate Gradation	2 per sublot		X
P-401S Production	ASTM C 566	Moisture Content	1 per sublot		X
P-401S Production	ASTM D 1461 or AASHTO T 110	Moisture Content of Misture	1 per lot		X
P-401S Production	ASTM D 2950	In-Place Density	As Required		X
P-603	ASTM D 977 or 2397	Bituminous Material	1 sample		X
P-610 Plant	ASTM C 136	Sieve Analysis	1 per each aggregate per mix design		X
P-610 Mix Design	ASTM C 39	Compression Tests	3 per each test age, 7, 28 and 56 days		X

TABLE 1.

TABLE OF TESTING REQUIREMENTS
QUALITY ASSURANCE (OWNER) AND QUALITY CONTROL (CONTRACTOR)

Spec. Item	Reference	Description	Minimum Frequency	Owner's Responsibility	Contractor's Responsibility
P-610 Field	ASTM C 39	Compressive Strength	4 per each hour or every 100 cubic yards tested at 7 days, 2 at 28 days - 1 hold	X	X
P-610 Field	ASTM C 143	Slump of Concrete	1 per each 50± cubic yards	X	X
P-610 Field	ASTM C 231	Air Content	1 per each 50± cubic yards	X	X
P-610 Field	ASTM D 698	Moisture-Density Relations	As Required		X
P-610 Field	ASTM D 1556 OR 2167 OR 2922 & 3017	Density of In-Place Soil / Soil Aggregate Mixtures	1 per each lift		X
P-612	ASTM D 977 or 2397	Bituminous Material	1 sample	X	X
L-108 Field		Meggar Test	Baseline prior to work, 1 each circuit series 5 after construction, 1 each circuit		X
L-108 Field		Operation	On/Off 10 times each circuit; continuous 1/2 hour each circuit	X	
L-801 Field		Operation	On/Off 10 times	X	
L-807 Field		Operation	On/Off 10 times	X	
L-849 Field		Operation	Each unit turned on for a minimum of 30 minutes continuously	X	

TABLE 1.

TABLE OF TESTING REQUIREMENTS
QUALITY ASSURANCE (OWNER) AND QUALITY CONTROL (CONTRACTOR)

Spec. Item	Reference	Description	Minimum Frequency	Owner's Responsibility	Contractor's Responsibility
L-861 Field		Operation	All lights turned on for a minimum of 30 minutes continuously	X	
L-881 Field		Aiming Angle	Once per PAPI unit	X	
L-881 Field		Operation	Each unit turned on for a minimum of 30 minutes continuously	X	

SECTION 5. PROJECT CLOSEOUT

5-1 RECORD DRAWINGS. The Contractor shall maintain a set of accurate record drawings during the course of the project. Any project work completed that varies from the plans as issued shall be legibly noted on the Record Drawings in red ink. Both text and line work shall be used to reflect the changes. At the completion of the project and prior to final payment, the Record Drawings shall be delivered to the County and, upon receipt, be maintained as the property of the County.

5-2 GUARANTEE. In addition to guarantees required elsewhere, Contractor agrees that all work and materials provided under this contract are guaranteed for a period of one (1) year against defects of any kind or nature and that any defective work or materials resulting from Contractor negligence will be repaired or replaced by Contractor forthwith upon notification by County. The Contractor shall furnish a warranty bond in the amount of ten percent (10%) of the contract price with a corporate surety approved by the County. The warranty bond shall be furnished and approved prior to final payment and release and shall remain in effect for the duration of the guarantee period to insure the repair or replacement of defective work or materials.

SECTION 6. CONTRACTOR'S QUALITY CONTROL SURVEY PLAN

6-1 QUALITY CONTROL. The Contractor shall provide Contractor Quality Control Surveying (CQCS) for all work associated with the project. Horizontal and vertical control monuments are shown on the plan and shall be used for establishing lines and grades. If necessary, the Engineer will provide additional control to facilitate the construction staking. The Contractor shall engage the services of a State of California licensed Professional Land Surveyor to perform the work listed under "Staking" below. All staking on the project shall be performed by, or under, the direct supervision of a Professional Land Surveyor.

CQCS shall be the Contractor's responsibility as there will be no direct payment for this item since it is considered incidental to other related items of work.

6-2 FLAGGING CODE. A color code will be established by the Contractor and submitted for Engineer's approval prior to construction, but not later than 30 days from the Notice To Proceed, indicating specific colors for the various kinds of stakes to be set.

6-3 STAKING. Contractor is responsible for providing all staking and setting out data sufficient to complete the work under this contract.

6-4 QUALITY ASSURANCE. The Owner will be conducting Owner quality Assurance Surveys (OQAS) of the Contractor's layout as the work progresses. OQAS will be conducted on all items listed herein. Any discrepancies found by the OQAS will be resolved prior to continuing with the affected item of work.

The Contractor shall make appropriate allowances in his scheduling of the work for Owner Quality Assurance Surveys. The Contractor shall allow a minimum period of 24 hours after providing written notice that CQCS are completed and ready for checking.

Performance of OQAS does not relieve the Contractor of responsibility for construction to the lines and grades shown on the approved construction documents.

SECTION 7. PROGRESS MEETINGS

7-01 WEEKLY PROGRESS MEETINGS. The Engineer will conduct Progress Meetings weekly at regularly scheduled times convenient for all parties involved. Progress Meetings are in addition to specific meetings held for other purposes, such as coordination meetings. A Two Week Look Ahead Schedule will be developed by the Contractor prior to the start of the meeting and will be discussed during the planning portion of the agenda. Additionally, discussions will address administrative and technical issues of concern, determining resolutions and development of deadlines for resolution within allowable time frames.

7-02 ATTENDEES. As may be required by the Engineer, in addition to representatives of Mono County and the Contractor, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by individuals directly involved with the Contract and authorized to conclude matters relating to progress.

7-03 AGENDA. The agenda shall include:

A. Review and correct or approve minutes of the previous Progress meeting prepared by the Engineer. The meeting minutes will document issues of significance including submittals, schedules, quality control, safety, problems encountered, and the assignment of responsibilities for future action.

B. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.

C. Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

D. Review the present and future needs of each entity present, including such item

(1) Interface Requirements
(2) Time
(3) Sequences
(4) Deliveries
(5) Off-Site Fabrication Problems
(6) Access
(7) Site Utilization
(8) Submittals
(9) Requests for Information
(10) Non-Compliance Notices
(11) Temporary Facilities and Services
(12) Hours of Work
(13) Resource Allocation
(14) Hazards and Risks
(15) Housekeeping

(16) Quality and Work Standards
(17) Safety Issues
(18) Change Orders
(19) Documentation of Information for Payment Requests

The Engineer will record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

TECHNICAL SPECIFICATIONS

ITEM P-100

MOBILIZATION/DEMOBILIZATION

DESCRIPTION

100-1.1 Mobilization/Demobilization shall consist of the preparatory work and operations in mobilizing for beginning work on the Project, including but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the Project Site, and for the establishment of temporary offices, building facilities, utilities, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and state and local laws and regulations. The costs including Contractor overhead and profit, or bonds, permits and other preconstruction expense necessary for the start of the work, excluding the cost of construction materials, shall also be included in this section. Demobilization shall consist of the movement of personnel, equipment and supplies from the Project Site and all required clean up or restoration of the staging and/or storage areas.

METHOD OF MEASUREMENT

100-2.1 All preparatory work, equipment and establishment of operations prior to construction as well as those incurred after construction shall be included in the lump sum item. Mobilization costs for subcontracted work shall be considered to be included in the Contract unit price bid items for which it is required.

BASIS OF PAYMENT

100-3.1 The work and incidental costs covered under this item will be paid for at the Contract lump sum price for the items of Mobilization and Demobilization.

Payment shall be based on the following schedule:

First Pay Request	35%
Second Pay Request	35%
Substantial Completion	30%

The standard retainage shall be applied to this schedule.

Payment shall be made under:

Item P-100-1	Mobilization/Demobilization - Lump Sum

END OF ITEM P-100

ITEM P-104

REMOVAL OF EXISTING IMPROVEMENTS

DESCRIPTION

104-1.1 The work to be performed in accordance with this item shall consist of removing the existing asphalt concrete, tire segmented circle, wind cone, and wire fence as shown on the Plans or designated by the Engineer. The work shall include the furnishing of all labor, tools, equipment, materials and the performing of all operations required to provide a complete item in accordance with the project plans and these specifications.

For airfield electrical demolition (the removal of existing runway and taxiway edge lights and threshold lights), refer to Technical Specification L-100 – Electrical General Requirements.

CONSTRUCTION METHODS

104-3.1 LIMITS OF WORK. Confine removal of existing improvements to within the area of construction as shown on the plans.

104-3.2 PAVEMENT REMOVAL. The existing asphalt concrete shall be sawcut, removed, and stockpiled at a location approved by the Engineer. The stockpiled asphalt concrete can be pulverized and used as modified aggregate base material as discussed in Technical Specification P-209S, Crushed Aggregate Base Course. The existing asphalt concrete varies in depth from 4.6-inches to 5.8-inches.

104-3.3 WIRE FENCE REMOVAL. The fence and all other materials associated with the fence, including but not limited to concrete, wire, and posts, shall be removed to an approved offsite disposal area. Wooden posts shall be completely removed from the ground and not be broken off at ground level.

Backfill post holes and the depression resulting from the removal of the fence with native soils and/or aggregate base and compact sufficiently to prevent depressions and/or settlement.

104-3.4 TIRE SEGMENTED CIRCLE. The tires around the existing wind cone that serve as a segmented circle shall be removed to an approved offsite disposal area. Any device used to anchor these tires to the ground shall also be removed.

104-3.5 LIGHTED WIND CONE. The lighted wind cone and all other materials associated with the wind cone, including but not limited to concrete, wires, base cans, and conduit, shall be removed to an approved offsite disposal area.

METHOD OF MEASUREMENT

104-4.1 Measurement of the quantity for pavement removal shall be the number of square yards of material removed and accepted by the Engineer.

Measurement of the quantity for fence removal shall be the number of linear feet of fence removed as indicated on the plans or as directed by the Engineer.

There will be no direct measurement for the removal of the tire segmented circle as it is a lump sum item.

There will be no direct measurement for the removal of the lighted wind cone as it is a lump sum item.

BASIC OF PAYMENT

104-5.1 Payment for pavement removal shall be made at the contract unit price per square yard. This price shall be for full compensation for furnishing all labor, equipment, materials, tools, and incidentals necessary to complete the item.

Payment for fence removal shall be made at the contract unit price per linear foot. This price shall be for full compensation for furnishing all labor, equipment, materials, tools, backfilling post holes with native material, and incidentals necessary to complete the item.

Payment for tire segmented circle removal shall be made at the contract lump sum price. This price shall be for full compensation for furnishing all labor, equipment, materials, tools and incidentals necessary to complete the item.

Payment for wind cone removal shall be made at the contract lump sum price. This price shall be for full compensation for furnishing all labor, equipment, materials, tools and incidentals necessary to complete the item.

Payment shall be made under:

Item P-104-1	Pavement Removal – per square yard
Item P-104-2	4-Strand Barbed Wire Fence Removal – per linear foot
Item P-104-3	Tire Segmented Circle Removal – per lump sum
Item P-104-4	Lighted Wind Cone Removal – per lump sum

END OF ITEM P-104

ITEM P-151

CLEARING & GRUBBING

DESCRIPTION

151-1.1 This item shall consist of clearing and grubbing and the disposal of materials, for the runway, taxiway, the safety areas, and other areas noted on the plans or as required by the Engineer.

Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all brush, undergrowth, hedges, heavy growth of grass or weeds, debris, and rubbish of any nature, natural obstructions or such material which in the opinion of the Engineer is unsuitable for the foundation of strips, pavements, or other required structures, including the disposal from the project of all spoil materials resulting from clearing and grubbing by burning or otherwise.

CONSTRUCTION METHODS

151-2.1 GENERAL. The runway, taxiway, and the safety areas to be cleared and grubbed shall be staked on the ground by the Contractor. The clearing and grubbing shall be done at a satisfactory distance in advance of the grading operations.

Any broken concrete or masonry that cannot be used in construction, and all other materials not considered suitable for use elsewhere, shall be disposed of by the Contractor. In no case shall any discarded materials be left in windrows or piles adjacent to or within the airport limits. The manner and location of disposal of materials shall be subject to the approval of the Engineer and shall not create an unsightly or objectionable view. When the Contractor is required to locate a disposal area outside the airport property limits at his/her own expense, he shall obtain and file with the Engineer, permission in writing from the property owner for the use of private property for this purpose.

151-2.2 CLEARING AND GRUBBING. In areas designated to be cleared and grubbed, all stumps, roots, buried logs, brush, grass, and other unsatisfactory materials shall be removed.

METHOD OF MEASUREMENT

151-3.1 The quantity of clearing and grubbing as shown by the limits on the plans or as ordered by the Engineer shall be the number of acres or fractions thereof, of land specifically cleared and grubbed.

BASIS OF PAYMENT

151-4.1 Payment shall be made at the contract unit price per acre for clearing and grubbing. 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-151-1	Clearing and Grubbing – per acre
Item P-151-1-A1	Clearing and Grubbing – per acre
Item P-151-1-A3	Clearing and Grubbing – per acre

END OF ITEM P-151

ITEM P-152
EXCAVATION 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 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 section(s) 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.

b. Drainage Excavation. Drainage excavation shall consist of all excavation made for the primary purpose of drainage and includes drainage ditches, such as intercepting, inlet or outlet; temporary levee construction; or any other type as shown on the plans.

152-1.3 EXCAVATION OF UNSUITABLE MATERIAL. Any material containing vegetable or organic matter, such as muck, peat, organic silt, sod, and highly plastic material shall be considered unsuitable for use in embankment construction.

CONSTRUCTION METHODS

152-2.1 GENERAL. Before beginning excavation, grading, and embankment operations in any area, the area shall be completely cleared and grubbed in accordance with Item P-151.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued. At the direction of the Engineer, 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.

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 Engineer, who shall arrange for their removal if necessary. The Contractor shall, at his/her own expense, 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.

152-2.2 EXCAVATION. No excavation shall be started until the work has been staked out by the Contractor and the Engineer has performed a Quality Assurance Survey. All suitable

excavated material shall be used in the formation of embankment, subgrade, or for other purposes shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

The grade shall be maintained so that the surface is well drained at all times. When necessary, temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the work.

a. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, or shoulders shall be excavated to the depth indicated on the plans or as directed by the Engineer.

b. Overbreak. Overbreak, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the Engineer. The Engineer shall determine if the displacement of such material was unavoidable and his/her decision shall be final. All overbreak shall be graded or removed by the Contractor and disposed of as directed; however, payment will not be made for the removal and disposal of overbreak that the Engineer determines as avoidable. Unavoidable overbreak will be classified as "Unclassified Excavation".

c. Removal of Utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by someone other than the Contractor, e.g., the utility company unless otherwise shown on the plans.

The in-place field density shall be determined in accordance with ASTM D 1556 or ASTM D 2167. Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in the top 6 inches of the subgrade.

In cuts, all loose or protruding rocks on the back slopes shall be barred loose or otherwise removed to line of finished grade of slope. 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 Engineer.

152-2.3 BORROW EXCAVATION. When borrow sources are outside the boundaries of the airport property, it shall be the Contractor's responsibility to locate and obtain the supply, subject to the approval of the Engineer. The Contractor shall notify the Engineer, at least 15 days prior to beginning the excavation, so necessary measurements and tests can be made. All unsuitable material shall be disposed of by the Contractor. All borrow pits shall be opened up to expose the vertical face of various strata of acceptable material to enable obtaining a uniform product. Borrow pits shall be excavated to regular lines to permit accurate measurements, and they shall be drained and left in a neat, presentable condition with all slopes dressed uniformly.

152-2.4 DRAINAGE EXCAVATION. Drainage excavation shall consist of excavating for drainage ditches such as intercepting; inlet or outlet, for temporary levee construction; or for any other type as designed or as shown on the plans. The work shall be performed in the proper sequence with the other construction. All satisfactory material shall be placed in fills; unsuitable material shall be placed in waste areas or as directed. Intercepting ditches shall be constructed prior to starting adjacent excavation operations. All necessary work shall be performed to secure a finish true to line, elevation, and cross section.

The Contractor shall maintain ditches constructed on the project to the required cross section and shall keep them free of debris or obstructions until the project is accepted.

No direct payment shall be made for the work performed under this section.

152-2.5 PREPARATION OF EMBANKMENT AREA. The area, including all sod, vegetable matter, and sagebrush, shall be cleared and grubbed from the surface upon which the embankment is to be placed, and the cleared surface shall be completely broken up by scarifying to a minimum depth of 6 inches. This area shall then be compacted as indicated in paragraph 2.6.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing will be paid for under the respective items of work.

152-2.6 FORMATION OF EMBANKMENTS. The area shall be formed in successive horizontal layers of not more than 8 inches in loose depth for the full width of the cross section, and compacted to a depth of 6 inches to a density of 95 percent of the maximum density as determined by ASTM D 698**,** unless otherwise approved by the Engineer.

The grading operations shall be conducted, and the various soil strata shall be placed, to produce a soil structure as shown on the typical cross section or as directed. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Operations on earthwork shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing, or other unsatisfactory conditions of the field. The Contractor shall drag, blade, or slope the embankment to provide proper surface drainage.

The material in the layer shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. In order to achieve uniform moisture content throughout the layer, wetting or drying of the material and manipulation shall be required when necessary. Should the material be too wet to permit proper compaction or rolling, all work on all of the affected portions of the embankment shall be delayed until the material has dried to the required moisture content. Sprinkling of dry material to obtain the proper moisture content shall be done with approved equipment that will sufficiently distribute the water. Sufficient equipment to furnish the required water shall be available at all times. Samples of all embankment materials for testing, both before and after placement and compaction, will be taken for each 2,500 cubic yards of material placed per layer. Based on these tests, the Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content in order to achieve the correct embankment density.

Rolling operations shall be continued until the embankment is compacted to not less than 95 percent of maximum density as determined by ASTM D 698.

The in-place field density shall be determined in accordance with ASTM D 1556 or ASTM D 2167.

Compaction areas shall be kept separate, and no layer shall be covered by another until the proper density is obtained.

During construction of the embankment, the Contractor shall route his/her equipment at all times, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment. The equipment shall be operated in such a manner that hardpan, cemented gravel, clay, or other chunky soil material will be broken up into small particles and become incorporated with the other material in the layer.

In the construction of embankments, layer placement shall begin in the deepest portion of the fill; as placement progresses, layers shall be constructed approximately parallel to the finished pavement grade line.

When rock and other embankment material are excavated at approximately the same time, the rock shall be incorporated into the outer portion of the embankment and the other material shall be incorporated under the future paved areas. Stones or fragmentary rock larger than 4 inches in their greatest dimensions will not be allowed in the top 6 inches of the subgrade. Rockfill shall be brought up in layers as specified or as directed and every effort shall be exerted to fill the voids with the finer material forming a dense, compact mass. Rock or boulders shall not be disposed of outside the excavation or embankment areas, except at places and in the manner designated by the Engineer.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in layers of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in layers not exceeding 2 feet in thickness. Each layer shall be leveled and smoothed with suitable leveling equipment and by distribution of spalls and finer fragments of rock. These type lifts shall not be constructed above an elevation 4 feet below the finished subgrade.

Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material.

There will be no separate measurement of payment for compacted embankment, and all costs incidental to placing in layers, compacting, disking, watering, mixing, sloping, and other necessary operations for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.7 FINISHING AND PROTECTION OF SUBGRADE. After the subgrade has been substantially completed the full width shall be conditioned by removing any soft or other unstable material that will not compact properly. The resulting areas and all other low areas, holes or depressions shall be brought to grade with suitable select material. 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.

Grading of the subgrade shall be performed so that it will drain readily. The Contractor shall take all precautions necessary to protect the subgrade from damage. He/she shall limit hauling over the finished subgrade to that which is essential for construction purposes.

All ruts or rough places that develop in a completed subgrade shall be smoothed and recompacted.

No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been approved by the Engineer.

152-2.8 HAUL. All hauling will be considered a necessary and incidental part of the work. Its cost shall be considered by the Contractor and included 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.

152-2.9 TOLERANCES. The surface of the subgrade shall be of such smoothness that, when tested with a 12-foot straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2-inch, or shall not be more than 0.05-foot from true grade as established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials; reshaping; and recompacting by sprinkling and rolling.

On safety areas, intermediate and other designated areas, the surface shall be of such smoothness that it will not vary more than 0.10 foot from true grade as established by grade hubs. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.10 OVEREXCAVATION OF UNSUITABLE MATERIAL AND BACKFILL. In the event that the sub-grade is found to be unstable, soft, or yielding (pumping), the area shall be excavated three feet below sub-grade elevation unless otherwise determined by the Engineer. The excavated material shall be placed in windrows and also allowed to aerate. The windrows shall be occasionally turned to allow complete aeration of the material. If aeration of the sub-grade and the excavated material does not correct the problem within two working days, the Engineer will determine if it is necessary to overexcavate the area and replace with suitable material. If it has been decided by the Engineer to overexcavate the existing unsuitable material, it shall be removed from below the lower limit of excavation to a depth that will provide adequate bearing, as determined by the Engineer. Remove the unsuitable material and dispose off-site at an approved location. A geotextile fabric such as Mirafi 500x or an approved equal shall be placed on the bottom of the excavation, in accordance with the manufacturer's recommendations, prior to backfilling with suitable material. Replace the overexcavated material with aggregate base or imported fill conforming to these specifications.

METHOD OF MEASUREMENT

152-3.1 There will be no direct measurement for the Unclassified Excavation and Embankment as it is a lump sum item.

152-3.2 Overexcavation of Unsuitable Materials and Backfill with Suitable will be measured by the cubic yard. The quantity of Overexcavation of Unsuitable Materials and Backfill listed in the bid schedule represents no actual estimate, is nominal only, and may be greatly increased or decreased or reduced to zero. The increase or reduction of this quantity as compared with that set forth in the bid schedule shall not constitute a basis for claim by the Contractor for extra payment

or damages. Overexcavation of unsuitable soils will be measured from subgrade elevation to the bottom of the excavation.

BASIS OF PAYMENT

152-4.1 Payment for Unclassified Excavation and Embankment and Drainage Excavation shall be made at the contract lump sum price. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Payment for Excavation of Unsuitable Material and Backfill shall be made at the contract unit price per cubic yard of soil actually removed and replaced with suitable material. The final pay quantity shall be by field measurement. The Engineer's representative and the Contractor shall agree upon the quantity daily at which time it shall be recorded and initialed by both the Contractor and the Engineer's representative in the daily inspection report. This price shall be full compensation for furnishing all materials, labor, equipment, tools, geotextile fabric, and incidentals necessary to complete the item.

Payment will be made under:

Item P-152-1	Unclassified Excavation and Embankment – per lump sum
Item P-152-1-A1	Unclassified Excavation and Embankment – per lump sum
Item P-152-2	Overexcavation of Unsuitable Material and Backfill with Suitable – per cubic yard
Item P-152-2-A1	Overexcavation of Unsuitable Material and Backfill with Suitable – per cubic yard

TESTING REQUIREMENTS

ASTM D 698	Test for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-pound Rammer and 12-inch Drop
ASTM D 1556	Test for Density of Soil In Place by the Sand-Cone Method
ASTM D 1557	Test for Laboratory Compaction Characteristics of Soil Using Modified Effort
ASTM D 2167	Test for Density and Unit Weight of Soil In Place by the Rubber Ballon Method

END OF ITEM P-152

ITEM P-156

TEMPORARY AIR AND WATER POLLUTION, SOIL, EROSION AND SILTATION CONTROL

DESCRIPTION

156-1.1 This item shall consist of temporary control measures as shown on the plans or as ordered by the Engineer during the life of a contract to control water pollution, soil erosion, and siltation through the use of berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

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 equipment and material storage sites, waste areas, and temporary plant sites.

MATERIALS

156-2.1 FILTER FENCE. Filter fabric shall be non-woven-propex 4553 8-ounce or Fibretex grade 300 or approved equal and the welded wire shall be 4-inch by 4-inch.

156-2.2 BALE. The bales shall be wire or nylon bound.

156-2.3 OTHER. All other materials shall meet commercial grade standards and shall be approved by the Engineer before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

156-3.1 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 Contractor shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

156-3.2 SCHEDULE. Prior to the start of construction, the Contractor shall submit schedules for accomplishment of temporary and permanent erosion control work, as are applicable 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 Engineer.

156-3.3 AUTHORITY OF ENGINEER. The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, to limit the surface area of

erodible earth material exposed by excavation, borrow and fill operations, and to direct the Contractor to 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.

156-3.4 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 accepted schedule. 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 is likely to be a problem, clearing and grubbing operations should be scheduled and performed so that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise, temporary erosion control measures may be required between successive construction stages.

The Engineer will 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 in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

In the event that 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 are ordered by the Engineer, such work shall be performed by the Contractor at his/her own expense.

The Engineer may increase or decrease the area of erodible earth material to be exposed at one time as determined by analysis of project conditions.

The erosion control features installed by the Contractor shall be acceptably maintained by the Contractor during the construction period.

Whenever construction equipment must cross watercourses at frequent intervals, and such crossings will adversely affect the sediment levels, temporary structures should be provided.

Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into or near rivers, streams, and impoundments or into natural or manmade channels leading thereto.

MEASUREMENT

156-4.1 There will be no direct measurement for Temprorary Air and Water Pollution, Soil, Erosion and Siltation Control as it is a lump sum item.

PAYMENT

156-5.1 Payment for Temporary Air and Water Pollution, Soil, Erosion and Siltation Control shall be made at the contract lump sum price. This price shall be full compensation for the furnishing of all materials; for all preparation; the installation of these materials; the removal of these materials when the project is complete, and for all labor, equipment, tools, and incidentals necessary to complete the work**.**

Payment will be made under:

Item P-156-1	Temporary Air and Water Pollution, Soil, Erosion and Siltation Control **–** per lump sum
Item P-156-1-A1	Temporary Air and Water Pollution, Soil, Erosion and Siltation Control **–** per lump sum

END OF ITEM P-156

ITEM P-209S

CRUSHED AGGREGATE BASE COURSE

DESCRIPTION

209S-1.1 This item consists of a base course composed of crushed aggregates constructed on a prepared course in accordance with these specifications and in conformity to the dimension and typical cross sections shown on the plans.

MATERIALS

209S-2.1 Materials shall be in accordance with this specification or in accordance with Section 26 of the 2006 State of California Department of Transportation Standard Specifications for ¾" maximum, Class 2 aggregate base.

209S-2.2 AGGREGATE. Aggregates shall consist of clean, sound, durable particles or crushed stone, crushed gravel, or crushed slag and shall be free from coatings of clay, silt, vegetable matter, and other objectionable materials and shall contain no clay balls. Fine aggregate passing the No. 4 sieve shall consist of fines from the operation of crushing the coarse aggregate. If necessary, fine aggregate may be added to produce the correct gradation. The fine aggregate shall be produced by crushing stone, gravel, or slay that meet the requirements for wear and soundness specified for coarse aggregate.

The crushed slag shall be an air-cooled, blast furnace slag and shall have a unit weight of not less that 70 pounds per cubic foot when tested in accordance with ASTM C 29.

The crushed aggregate portion which is retained on the No. 4 sieve shall contain not more that 15 percent, by weight, of flat or elongated pieces as defined in ASTM D 693 and shall have at least 90 percent by weight of particles with at least two fractured faces and 100 percent with at least one fractured face. The area of each face shall be equal to at least 75 percent of the smallest midsectional area of the piece. When two fractured faces are contiguous, the angle between the places of fractures shall be at least 30 to count as two fractured faces.

The percentage of wear shall not be greater than 45 percent when tested in accordance with ASTM C 131. The sodium sulfate soundness loss shall not exceed 12 percent, after 5 cycles, when tested in accordance with ASTM C 88.

The fraction passing the No. 40 sieve shall have a liquid limit no greater than 25 and a plasticity index of not more than 4 when tested in accordance with ASTM D 4318. The fine aggregate shall have a minimum sand equivalent value of 35 when tested in accordance with ASTM D 2419.

Sampling and Testing. Samples of aggregates shall be taken by the Engineer at least once daily during production. Sampling shall be in accordance with ASTM D 75, and testing shall be in accordance with ASTM C 136 and C 117.

Gradation Requirements. The gradation (job mix) of the final mixture shall fall within the design range indicated in Table 1, when tested in accordance with ASTM C 117 and C 136. The final gradation shall be continuously well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on an adjacent sieve or vice versa.

TABLE 1. REQUIREMENTS FOR GRADATION OF AGGREGATE

Sieve Size	Design Range Percentage by Weight Passing Sieve	Design Range Job Mix Tolerances Percent
2 in.	100	0
1 ½ in	95-100	± 5
1-in	70-95	± 8
¾"	55-85	± 8
No. 4	30-60	± 8
No. 30	12-30	± 5
No. 200	0-8	± 3

The maximum percent of material, by weight, of particles smaller than 0.02 mm shall be 3 percent. *Contractor is cautioned, it also may be necessary to have a very low percentage of material passing the No. 200 sieve to help control the percentage of particles smaller than 0.02 mm.*

The job mix tolerance in Table 1 shall be applied to the job mix gradation to establish a job control grading band. The full tolerance still will apply if application of the tolerances results in a job control grading band outside the design range.

209S-2.3 RECYCLED ASPHALT CONCRETE BASE. The existing Asphalt Concrete may be pulverized and mixed with the underlying native aggregate base material and used as the new aggregate base course layer provided that the pulverized material meets the requirements for ¾" maximum, Class 2 aggregate base as specified by the State of California Department of Transportation. The pulverized material shall be removed and stockpiled while the subgrade soil is scarified and compacted. Properties for ¾" maximum, Class 2 aggregate base shall meet the following requirements:

Sieve Size	Design Range Percentage by Weight Passing Sieve
1 ½ in	100
¾-in	90-100
No. 4	35-60
No. 30	10-30
No. 200	2-9
R-Value	78 Minimum
Sand Equivalence	22 Minimum
Durability Index	35 Minimum

CONSTRUCTION METHODS

209S-3.1 PREPARING UNDERLYING COURSE. The underlying course shall be checked and accepted by the Engineer before placing and spreading operations are started. Any ruts or soft yielding places caused by improper drainage conditions, hauling, or any other cause shall be corrected at the Contractor's expense before the base course is placed thereon. Material shall not be placed on frozen subgrade.

209S-3.2 MIXING. The aggregate shall be uniformly blended during crushing operations or mixed in a plant. The plant shall blend and mix the materials to meet the specifications and to secure the proper moisture content for compaction.

209S-3.3 PLACING. The crushed aggregate base material shall be placed on the moistened subgrade in layers of uniform thickness with a mechanical spreader.

The maximum depth of a compacted layer shall be 6 inches. If the total depth of the compacted material is more than 6 inches, it shall be constructed in two or more layers. In multi-layer construction, the base course shall be placed in approximately equal-depth layers.

The previously constructed layer should be cleaned of loose and foreign material prior to placing the next layer. The surface of the compacted material shall be kept moist until covered with the next layer.

209S-3.4 COMPACTION. Immediately upon completion of the spreading operations, the crushed aggregate shall be thoroughly compacted. The number, type, and weight of rollers shall be sufficient to compact the material to the required density.

The moisture content of the material during placing operations shall not be below, nor more than 2-percentage points above, the optimum moisture content as determined by ASTM D 698.

209S-3.5 ACCEPTANCE SAMPLING AND TESTING FOR DENSITY. Aggregate base course shall be accepted for density on a lot basis. A lot will consist of one day's production where it is not expected to exceed 2,400 square yards. A lot will consist of one-half day's production where a day's production is expected to consist of between 2,400 and 4,800 square yards.

Each lot shall be divided into two equal sublots. One test shall be made for each sublot. Sampling locations will be determined by the Engineer on a random basis in accordance with statistical procedures contained in ASTM D 3665.

Each lot will be accepted for density when the field density is at least 95 percent of the maximum density of laboratory specimens prepared from samples of the base course material delivered to the job site. The specimens shall be compacted and tested in accordance with ASTM D 698. The in-place field density shall be determined in accordance with ASTM D 1556 or D 2167. If the specified density is not attained, the entire lot shall be reworked and/pr recompacted and two additional tests made. This procedure shall be followed until the specified density is reached.

In lieu of the core method of field density determination, acceptance testing may be accomplished using a nuclear gage in accordance with ASTM D 2922 and ASTM D 3017. The gage should be field calibrated in accordance with paragraph 4 of ASTM D 2922. Calibration tests shall be conducted on the first lot of material placed that meets the density requirements.

Use of ASTM D 2922 results in a wet unit weight, and when using this method, ASTM D 3017 shall be used to determine the moisture content of the material. Calibration and Standardization shall be conducted in accordance with ASTM Standards.

If a nuclear gage is used for density determination, two random reading shall be made for each sublot.

209S-3.6 FINISHING. The surface f the aggregate base course shall be finished by blading or with automated equipment especially designed for this purpose.

In no case will the addition of thin layers of material be added to the top layer of base course to meet grade. If the elevation of the top layer is ½ inch or more below grade, the top layer of base shall be scarified to a depth of at least 3 inches, new material added, and the layer shall be blended an recompacted to bring it to grade. If the finished surface is above plan grade, it shall be cut back to grade and rerolled.

209S-3.7 SURFACE TOLERANCES. The finished surface shall not vary more than 3/8 inch when tested with a 12-foot straightedge applied parallel with or at right angles to the centerline. Any deviation in excess of this amount shall be corrected by the Contractor at the Contractor's expense.

209S-3.8 THICKNESS CONTROL. The completed thickness of the base course shall be within ½ inch of the design thickness. Four determinations of thickness shall be made for each lot of material placed. The lot size shall be consistent with that specified in paragraph 3.5. Each lot shall be divided into four equal sublots. One test shall be made for each sublot. Sampling locations will be determined by the Engineer on a random basis in accordance with procedures contained in ASTM D 3665. Where the thickness is deficient by more than ½ inch, the Contractor shall correct such areas at no additional cost for excavating to the required depth and replacing with new material. Addition test holes may be required to identify the limits of deficient areas.

209S-3.9 MAINTENANCE. The base course shall be maintained in a condition that will meet all specification requirements until the work is accepted. Equipment used in the construction of an adjoining section may be routed over completed portions of the base course, provided no damage results and provided that the equipment is routed over the full width of the base course to avoid rutting or uneven compaction.

The Contractor shall remove all survey and grade hubs from the base courses prior to placing any bituminous surface course.

METHOD OF MEASUREMENT

209S-4.1 The quantity of 6-inch crushed aggregate base course to be paid for will be determined by measurement of the number of square yards of material constructed and accepted by the Engineer as complying with the plans and specifications. The one-foot width of aggregate base with a thickness of 7.5 inches along the edge of pavement will be measured as 6 inches.

METHOD OF PAYMENT

209S-5.1 Payment shall be made at the contract unit price per square yard for 6-inch 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-209S-1	6-inch Aggregate Base Course – per square yard
Item P-209S-1-A1	6-inch Aggregate Base Course – per square yard
Item P-209S-1-A3	6-inch Aggregate Base Course – per square yard

TESTING REQUIREMENTS

ASTM C 29	Unit Weight of Aggregate
ASTM C 88	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C 117	Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
ASTM C 131	Resistance to Degradation of Small-Size Coarse Aggregate by abrasion and impact in the Los Angeles Machine
ASTM C 136	Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	Sampling Aggregate
ASTM D 693	Crushed Aggregate for Macadam Pavements
ASTM D 698	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb Rammer and 12-in Drop
ASTM D 1556	Density of Soil in Place by the Sand-Cone Method
ASTM D 2167	Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2419	Sand Equivalent Value of Soils and Fine Aggregate
ASTM D 2922	Density of Soil and Soil-Aggregate in Place by Nuclear Methods

ASTM D 3017	Water Content of Soil and Rock in Place by Nuclear Methods
ASTM D 3665	Random Sampling of Construction Materials
ASTM D 4318	Liquid Limit, Plastic Limit, and Plasticity Index of Soils

END OF ITEM P-209S

ITEM P-401S

PLANT MIX BITUMINOUS PAVEMENTS

DESCRIPTION

401S-1.1 This item shall consist of pavement courses composed of mineral aggregate and bituminous material mixed in a central mixing plant and placed on a prepared 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

401S-2.1 Plant mix bituminous pavements shall be in accordance with this specification or shall be in accordance with Section 39 of the 2006 State of California Department of Transportation Standard Specifications for Type A, ½" maximum, 50 blow, and PG64-28PM. Acceptance for payment shall be in accordance with section 401S-5.2 Acceptance Criteria set forth in these specifications.

401S-2.2 AGGREGATE. Aggregates shall consist of crushed stone, crushed gravel, or crushed slag with or without natural sand or other inert finely divided mineral aggregate. The portion of materials retained on the No. 4 sieve is coarse aggregate. The portion passing the No. 4 sieve and retained on the No. 200 sieve is fine aggregate, and the portion passing the No. 200 sieve is mineral filler.

a. Coarse Aggregate. Coarse aggregate shall consist of sound, tough, durable particles, free from adherent films of matter that would prevent thorough coating and bonding with the bituminous material and be free from organic matter and other deleterious substances. The percentage of wear shall not be greater than 40 percent when tested in accordance with ASTM C 131. The sodium sulfate soundness loss shall not exceed 10 percent, or the magnesium sulfate soundness loss shall not exceed 13 percent, after five cycles, when tested in accordance with ASTM C 88.

Aggregate shall contain at least 50 percent by weight of individual pieces having two or more fractured faces and 65 percent by weight having at least one fractured face. The area of each face shall be equal to at least 75 percent of the smallest midsectional 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. Fractured faces shall be obtained by crushing.

The aggregate shall not contain more than a total of 8 percent, by weight, of flat particles, elongated particles, and flat and elongated particles, when tested in accordance with ASTM D 4791 with a value of 5:1.

b. Fine Aggregate. Fine aggregate shall consist of clean, sound, durable, angular shaped particles produced by crushing stone, slag, or gravel that meets the requirements for wear and

soundness specified for coarse aggregate. The aggregate particles shall be free from coatings of clay, silt, or other objectionable matter and shall contain no clay balls. The fine aggregate, including any blended material for the fine aggregate, shall have a plasticity index of not more than 6 and a liquid limit of not more than 25 when tested in accordance with ASTM D 4318.

Natural (nonmanufactured) sand may be used to obtain the gradation of the aggregate blend or to improve the workability of the mix. The amount of sand to be added will be adjusted to produce mixtures conforming to requirements of this specification. If used, the natural sand shall meet the requirements of ASTM D 1073 and shall have a plasticity index of not more than 6 and a liquid limit of not more than 25 when tested in accordance with ASTM D 4318.

The aggregate shall have sand equivalent values of 45 or greater when tested in accordance with ASTM D 2419.

c. Sampling. ASTM D 75 shall be used in sampling coarse and fine aggregate, and ASTM C 183 shall be used in sampling mineral filler.

401S-2.3 MINERAL FILLER. If filler, in addition to that naturally present in the aggregate, is necessary, it shall meet the requirements of ASTM D 242.

401S-2.4 BITUMINOUS MATERIAL. Bituminous material shall conform to AASHTO M320 Performance Grade PG64-28PM or shall conform with Section 39 of the 2006 State of California Department of Transportation Standard Specifications and approved by the Owner.

The Contractor shall furnish vendor's certified test reports for each lot of bituminous material shipped to the project. The vendor's certified test report for the bituminous material can be used for acceptance or tested independently by the Engineer.

401S-2.5 PRELIMINARY MATERIAL ACCEPTANCE. Prior to delivery of materials to the job site, the Contractor shall submit certified test reports to the Engineer for the following materials:

a. Coarse Aggregate.

(1) Percent of wear.
(2) Soundness.
(3) Unit weight of slag.

b. Fine Aggregate.

(1) Liquid limit.
(2) Plasticity index.
(3) Sand equivalent.

c. Mineral Filler.

d. Bituminous Material. Test results for bituminous material shall include temperature/viscosity charts for mixing and compaction temperatures.

The certification(s) shall show the appropriate ASTM test(s) for each material, the test results, and a statement that the material meets the specification requirement.

The Engineer may request samples for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

401S-2.6 ANTI-STRIPPING AGENT. Any anti-stripping agent or additive if required shall be heat stable, shall not change the asphalt cement viscosity beyond specifications, shall contain no harmful ingredients, shall be added in recommended proportion by approved method, and shall be a material approved by the Department of Transportation of the State in which the project is located.

COMPOSITION

401S-3.1 COMPOSITION OF MIXTURE. The bituminous plant mix shall be composed of a mixture of well-graded aggregate, filler and anti-strip agent if required, and bituminous material. The several 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).

401S-3.2 JOB MIX FORMULA. No bituminous mixture for payment shall be produced until a job mix formula has been approved in writing by the Engineer. The bituminous mixture shall be designed using procedures contained in Chapter III, MARSHALL METHOD OF MIX DESIGN, of the Asphalt Institute's Manual Series No. 2 (MS-2), Mix Design Methods for Asphalt Concrete, and shall meet the requirements of Table 1 and 2.

The design criteria in Table 1 are target values necessary to meet the acceptance requirements contained in paragraph 401S-5.2b. The criteria is based on a production process which has a material variability with the following standard deviations:

Stability (lbs.) = 270
Flow (0.01 inch) = 1.5
Air Voids (%) = 0.65

If material variability exceeds the standard deviations indicated, the job mix formula and subsequent production targets shall be based on a stability greater than shown in Table 1, and the flow and air voids shall be targeted close to the mid-range of the criteria in order to meet the acceptance requirements.

Tensile Strength Ratio (TSR) of the composite mixture, as determined by ASTM D 4867, shall not be less than 75, nor shall the dry strength be less than 200 psi as determined by ASTM D 1074. Anti-stripping agent shall be added to the asphalt, as necessary**,** to produce a TSR of not less than 75 while maintaining a minimum dry strength of 200 psi. If an antistrip agent is required, it will be provided by the Contractor at no additional cost to the Owner.

The job mix formula shall be submitted in writing by the Contractor to the Engineer at least 30 days prior to the start of paving operations and shall include as a minimum:

a. Percent passing each sieve size for total combined gradation, individual gradation of all aggregate stockpiles and percent by weight of each stockpile used in the job mix formula.

b. Percent of asphalt cement.

c. Asphalt performance, viscosity or penetration grade.

d. Number of blows of hammer compaction per side of molded specimen.

e. Mixing temperature.

f. Compaction temperature.

g. Temperature of mix when discharged from the mixer.

h. Temperature-viscosity relationship of the asphalt cement.

i. Plot of the combined gradation on the Federal Highway Administration (FHWA) 45 power gradation curve.

j. Graphical plots of stability, flow, air voids, voids in the mineral aggregate, and unit weight versus asphalt content.

k. Percent natural sand.

l. Percent fractured faces.

m. Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).

n. Tensile Strength Ratio (TSR).

o. Dry strength

p. Antistrip agent (if required).

The Contractor shall submit to the Engineer the results of verification testing of 3 asphalt samples prepared at the optimum asphalt content. The average of the results of this testing shall indicate conformance with the job mix formula requirements specified in Tables 1 and 2.

When the project requires asphalt mixtures of differing aggregate gradations, a separate job mix formula and the results of job mix formula verification testing must be submitted for each mix.

The job mix formula for each mixture shall be in effect until a modification is approved in writing by the Engineer. Should a change in sources of materials be made, a new job mix formula must be submitted within 10 days and approved by the Engineer in writing before the new material is used. After the initial production job mix formula(s) has/have been approved by the Engineer and a new or modified job mix formula is required for whatever reason, the subsequent cost of the Engineer's approval of the new or modified job mix formula will be borne by the Contractor. There will be no time extension given or considerations for extra costs associated with the stoppage of production paving or restart of production paving due to the time needed for the Engineer to approve the initial, new or modified job mix formula.

TABLE 1. MARSHALL DESIGN CRITERIA

TEST PROPERTY	
Number of blows	50
Stability, pounds minimum	1350 (6005)
Flow, 0.01 in.	10-18
Air voids (percent)	2.8-4.2
Percent voids in mineral aggregate, minimum	16*

* 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 the Asphalt Institute Manual Series No. 2 Latest Version when tested in accordance with ASTM C 136 and C 117.

The gradations in Table 2 represent the limits that shall determine the suitability of aggregate for use from the sources of supply. The aggregate, as selected (and used in the JMF), shall have a gradation within the limits designated in Table 2 and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa, but shall be well graded from coarse to fine.

Deviations from the final approved mix design for bitumen content and gradation of aggregates shall be within the action limits for individual measurements as specified in paragraph 401S-6.5a. The limits still will apply if they fall outside the master grading band in Table 2.

The maximum size aggregate used shall not be more than one-half of the thickness of the course being constructed except where otherwise shown on the plans or ordered by the Engineer.

TABLE 2. AGGREGATE - BITUMINOUS PAVEMENTS

Sieve Size	Percentage by Weight Passing Sieve
1 in.	100
¾ in.	100
½ in.	79-99
⅜ in.	68-88
No. 4	48-68
No. 8	33-53
No. 16	20-40
No. 30	14-30
No. 50	9-21
No. 100	6-16
No. 200	3-6
Asphalt percent	
Stone or gravel	5.0-7.5
Slag	6.5-9.5

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 Manual Series No. 2 (MS-2), Chapter III.

401S-3.4 TEST SECTION. Prior to full production, the Contractor shall prepare and place a quantity of bituminous mixture according to the job mix formula. The test section shall be the overrun of Runway 15. The amount of mixture shall be sufficient to construct a test section 240 feet long and 30 feet wide**,** placed in two lanes, with a longitudinal cold joint, and shall be of the same depth specified for the construction of the course which it represents. A cold joint is an exposed construction joint at least 4 hours old or whose mat has cooled to less than 160° F. The underlying grade or pavement structure upon which the test section is to be constructed shall be the same as the remainder of the course represented by the test section. The equipment used in construction of the test section shall be the same type and weight to be used on the remainder of the course represented by the test section.

The test section shall be evaluated for acceptance as a single lot in accordance with the acceptance criteria in paragraph 401-5.1. The test section shall be divided into equal sublots. As a minimum the test section shall consist of 3 sublots.

The test section shall be considered acceptable if; 1) stability, flow, mat density, air voids, and joint density are 90 percent or more within limits, 2) gradation and asphalt content are within the action limits specified in paragraphs 401-6.5a and 5b, and 3) the voids in the mineral aggregate are within the limits of Table 1.

If the initial test section should prove to be unacceptable, the necessary adjustments to the job mix formula, plant operation, placing procedures, and/or rolling procedures shall be made. A second test section shall then be placed. If the second test section also does not meet specification requirements, both sections shall be removed at the Contractor's expense. Additional test sections, as required, shall be constructed and evaluated for conformance to the specifications. Any additional sections that are not acceptable shall be removed at the Contractor's expense. Full production shall not begin until an acceptable section has been

constructed and accepted in writing by the Engineer. Once an acceptable test section has been placed, payment for the initial test section and the section that meets specification requirements shall be made in accordance with paragraph 401-8.1.

Job mix control testing shall be performed by the Contractor at the start of plant production and in conjunction with the calibration of the plant for the job mix formula. If aggregates produced by the plant do not satisfy the gradation requirements or produce a mix that meets the JMF. It will be necessary to reevaluate and redesign the mix using plant-produced aggregates. Specimens shall be prepared and the optimum bitumen content determined in the same manner as for the original design tests.

401S-3.5 TESTING LABORATORY. The Contractor's laboratory used to develop the job mix formula shall meet the requirements of ASTM D 3666 including the requirement to be accredited by a national authority such as the National Voluntary Laboratory Accreditation Program (NVLAP), the American Association for Laboratory Accreditation (AALA), or AASHTO Accreditation Program (AAP). Laboratory personnel shall meet the requirements of Section 100 of the General Provisions. A certification signed by the manager of the laboratory stating that it meets these requirements shall be submitted to the Engineer prior to the start of construction. The certification shall contain as a minimum:

a. Qualifications of personnel; laboratory manager, supervising technician, and testing technicians.

b. A listing of equipment to be used in developing the job mix.

c. A copy of the laboratory's quality control system.

d. Evidence of participation in the AASHTO Materials Reference Laboratory (AMRL) program.

e. ASTM D 3666 certification of accreditation by a nationally recognized accreditation program.

CONSTRUCTION METHODS

401S-4.1 WEATHER LIMITATIONS. The bituminous mixture shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 3. The temperature requirements may be waived by the Engineer, if requested; however, all other requirements including compaction shall be met.

TABLE 3. BASE TEMPERATURE LIMITATIONS

Mat Thickness	Base Temperature (Minimum) Deg. F
3 in. or greater	40
Greater than 1 in. but less than 3 in.	45
1 in. or less	50

401S-4.2 BITUMINOUS MIXING PLANT. Plants used for the preparation of bituminous mixtures shall conform to the requirements of ASTM D 995 with the following changes:

a. Requirements for All Plants.

(1) Truck Scales. The bituminous mixture shall be weighed on approved scales furnished by the Contractor, or on certified public scales at the Contractor's expense. Scales shall be inspected and sealed as often as the Engineer deems necessary to assure their accuracy. Scales shall conform to the requirements of the General Provisions, Section 90-01.

In lieu of scales, and as approved by the Engineer, asphalt mixture weights may be determined by the use of an electronic weighing system equipped with an automatic printer that weighs the total paving mixture. Contractor must furnish calibration certification of the weighing system prior to mix production and as often thereafter as requested by the Engineer.

(2) Testing Facilities. The Contractor shall provide laboratory facilities at the plant for the use of the Engineer's acceptance testing and the Contractor's quality control testing. The Engineer will always have priority in the use of the laboratory. The lab shall have sufficient space and equipment so that both testing representatives (Engineer's and Contractor's) can operate efficiently. The lab shall also meet the requirements of ASTM D 3666.

The plant testing laboratory shall have a floor space area of not less than 150 square feet, with a ceiling height of not less than 7½ feet. The laboratory shall be weather tight, sufficiently heated in cold weather, air-conditioned in hot weather to maintain temperatures for testing purposes of 70° F ±5° F. The plant testing laboratory shall be located on the plant site to provide an unobstructed view, from one of its windows, of the trucks being loaded with the plant mix materials.

Laboratory facilities shall be kept clean, and all equipment shall be maintained in proper working condition. The Engineer shall be permitted unrestricted access to inspect the Contractor's laboratory facility and witness quality control activities. The Engineer will advise the Contractor in writing of any noted deficiencies concerning the laboratory 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.

As a minimum, the plant testing laboratory shall have:

(a) Adequate artificial lighting
(b) Electrical outlets sufficient in number and capacity for operating the required testing equipment and drying samples.

(c) Fire extinguishers (2), Underwriter's Laboratories approved
(d) Work benches for testing, minimum 2½ feet by 10 feet.
(e) Desk with 2 chairs
(f) Sanitary facilities convenient to testing laboratory
(g) Exhaust fan to outside air, minimum 12-inch blade diameter
(h) A direct telephone line and telephone including a FAX machine operating 24 hours per day, seven days per week
(i) File cabinet with lock for Engineer
(j) Sink with running water, attached drain board and drain capable of handling separate material
(k) Metal stand for holding washing sieves
(l) Two element hot plate or other comparable heating device, with dial type thermostatic controls for drying aggregates
(m) Mechanical shaker and appropriate sieves (listed in JMF, Table 3) meeting the requirements of ASTM E-11 for determining the gradation of coarse and fine aggregates in accordance with ASTM C 136
(n) Marshall testing equipment meeting ASTM D 6926, ASTM D 6927, automatic compaction equipment capable of compacting three specimens at once and other apparatus as specified in ASTM C 127, D 2172, D 2726, and D 2041
(o) Oven, thermostatically controlled, inside minimum 1 cubic foot
(p) Two volumetric specific gravity flasks, 500 cc
(q) Other necessary hand tools required for sampling and testing
(r) Library containing contract specifications, latest ASTM volumes 4.01, 4.02, 4.03 and 4.09, AASHTO standard specification parts I and II, and Asphalt Institute Publication MS-2.
(s) Equipment for Theoretical Specific Gravity testing including a 4,000 cc pycnometer, vacuum pump capable of maintaining 30 ml mercury pressure and a balance, 16-20 kilograms with accuracy of 0.5 grams
(t) Extraction equipment, centrifuge and reflux types and ROTOflex equipment
(u) A masonry saw with diamond blade for trimming pavement cores and samples
(v) Telephone

Approval of the plant and testing laboratory by the Engineer requires all facilities and equipment to be in good working order during production, sampling and testing. Failure to provide the specified facilities shall be sufficient cause for disapproving bituminous plant operations.

The Owner shall have access to the lab and the plant whenever Contractor is in production.

(3) Inspection of Plant. The Engineer, or Engineer'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.

(4) Storage Bins and Surge Bins. Use of surge and storage bins for temporary storage of hot bituminous mixtures will be permitted as follows:

(a) The bituminous mixture may be stored in surge bins for *a* period of time not to exceed 3 hours.

(b) The bituminous mixture may be stored in insulated storage bins for a period of time not to exceed 24 hours.

The bins shall be such that mix drawn from them meets the same requirements as mix loaded directly into trucks.

If the Engineer determines that there is an excessive amount of heat loss, segregation, or oxidation of the mixture due to temporary storage, no temporary storage will be allowed.

401S-4.3 HAULING EQUIPMENT. Trucks used for hauling bituminous mixtures shall have tight, clean, and smooth metal beds. To prevent the mixture from adhering to them, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other approved material. 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.

401S-4.4 BITUMINOUS PAVERS. Bituminous pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of bituminous plant mix material 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 paver shall have a receiving hopper of sufficient capacity to permit a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed without segregation. The screed shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

The paver shall be equipped with a control system capable of automatically maintaining the specified screed elevation. The control system shall be automatically actuated from either a reference line and/or through a system of mechanical sensors or sensor-directed mechanisms or devices that will maintain the paver screed at a predetermined transverse slope and at the proper elevation to obtain the required surface. The transverse slope controller shall be capable of maintaining the screed at the desired slope within plus or minus 0.1%.

The controls shall be capable of working in conjunction with any of the following attachments:

a. Ski-type device of not less than 30 feet in length.

b. Taut stringline (wire) set to grade.

c. Short ski or shoe.

d. Laser control.

If, during construction, it is found that 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 and satisfactory equipment shall be provided by the Contractor.

401S-4.5 ROLLERS. Rollers of the vibratory, steel wheel, and pneumatic-tired type shall be used. They shall be in good condition, capable of operating at slow speeds to avoid displacement of the bituminous mixture. The number, type, and weight of rollers shall be sufficient to compact the mixture to the required density while it is still in a workable condition.

All rollers shall be specifically designed and suitable for compacting hot mix bituminous 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. Depressions in pavement surfaces caused by rollers shall be repaired by the Contractor at its own expense.

The use of equipment that causes crushing of the aggregate will not be permitted.

a. Nuclear Densometer. The Contractor shall have on site a nuclear densometer 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 also supply a qualified technician during all paving operations to calibrate the nuclear densometer and obtain accurate density readings for all new bituminous concrete. These densities shall be supplied to the Engineer upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

401S-4.6 PREPARATION OF BITUMINOUS MATERIAL. The bituminous material shall be heated in a manner that will avoid local overheating and provide a continuous supply of the bituminous material to the mixer at a uniform temperature. The temperature of the bituminous material 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, unless otherwise required by the manufacturer.

401S-4.7 PREPARATION OF MINERAL AGGREGATE. The aggregate for the mixture shall be heated and dried prior to introduction into the mixer. 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 when the asphalt 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.

401S-4.8 PREPARATION OF BITUMINOUS MIXTURE. The aggregates and the bituminous material shall be weighed or metered and introduced into the mixer in the amount specified by the job mix formula.

The combined materials shall be mixed until the aggregate obtains a uniform coating of bitumen 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 D 2489, 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 bituminous mixtures upon discharge shall not exceed 0.5%.

401S-4.9 PREPARATION OF THE UNDERLYING SURFACE. Immediately before placing the bituminous mixture, the underlying course shall be cleaned of all dust and debris. A prime coat or tack coat shall be applied in accordance with Item P-602 or P-603, if shown on the plans.

401S-4.10 LAYDOWN PLAN, TRANSPORTING, PLACING, AND FINISHING. Prior to the placement of the bituminous mixture, the Contractor shall prepare a laydown plan for approval by the Engineer. This is to minimize the number of cold joints in the pavement. The laydown plan shall include the sequence of paving laydown by stations, width of lanes, temporary ramp location(s), and laydown temperature. The laydown plan shall also include estimated time of completion for each portion of the work (i.e. milling, paving, rolling, cooling, etc.). Modifications to the laydown plan shall be approved by the Engineer.

The bituminous mixture shall be transported from the mixing plant to the site in vehicles conforming to the requirements of paragraph 401S-4.3. Deliveries shall be scheduled so that placing and compacting of mixture 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 atmospheric temperature.

The Contractor may elect to use a material transfer vehicle to deliver mix to the paver.

Edges of existing bituminous pavement abutting the new work shall be saw cut and carefully removed as shown on the drawings and painted with bituminous tack coat before new material is placed against it.

Upon arrival, the mixture shall be placed to the full width by a bituminous paver. It shall be struck off in a uniform layer of such depth that, when the work is completed, it shall have the required thickness and conform to the grade and contour indicated. The speed of the paver shall

be regulated to eliminate pulling and tearing of the bituminous mat. Unless otherwise permitted, placement of the mixture shall begin along the centerline of a crowned section or on the high side of areas with a one-way slope. The mixture shall be placed in consecutive adjacent strips except where edge lanes require less width to complete the area. The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least 1 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 mixture may be spread and luted by hand tools. Areas of segregation in the surface course, as determined by the Engineer, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of 2 inches deep. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet long.

401S-4.11 COMPACTION OF MIXTURE. After placing, the mixture shall be thoroughly and uniformly compacted by power rollers. The surface shall be compacted as soon as possible when the mixture 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 displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once.

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 mixture to the roller, the wheels shall be equipped with a scraper and kept properly moistened but excessive water will not be permitted.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with approved power driven tampers. Tampers shall weigh not less than 275 pounds, have a tamping plate width not less than 15 inches, be rated at not less than 4,200 vibrations per minute, and be suitably equipped with a standard tamping plate wetting device.

Any mixture 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.

401S-4.12 JOINTS. The formation of all joints shall be made in such a manner as 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 mixture 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 given a tack coat of bituminous material before placing any fresh mixture against the joint.

Longitudinal joints which are irregular, damaged, uncompacted, or otherwise defective or which have been left exposed for more than 4 hours, or whose surface temperature has cooled to less than 160° F shall be cut back to expose a clean, sound surface for the full depth of the course. All contact surfaces shall be given a tack coat of bituminous material prior to placing any fresh mixture against the joint. The cost of this work and tack coat shall be considered incidental to the cost of the bituminous course.

401S-4.13 SKID RESISTANT SURFACES/SAW-CUT GROOVING. Not used.

401S-4.14 EQUIPMENT. The Engineer reserves the right to reject the Contractor's use of paving equipment which does not accomplish the required end product.

MATERIAL ACCEPTANCE

401S-5.1 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 Engineer at no cost to the Contractor except that coring as required in this section shall be completed and paid for by the Contractor. Testing organizations performing these tests shall meet the requirements of ASTM D 3666. All equipment in Contractor furnished laboratories shall be calibrated by an independent testing organization prior to the start of operations at the Contractor's expense.

a. Plant-Produced Material. Plant-produced material shall be tested for stability, flow, and air voids on a lot basis. Sampling shall be from material deposited into trucks at the plant or from trucks at the job site. Samples shall be taken in accordance with ASTM D 979. A lot will consist of 2,000 square yards of asphalt placed or one day's production, whichever produces the most lots. Where more than one plant is simultaneously producing material for the job, the lot sizes shall apply separately for each plant.

(1) Sampling. Each lot will consist of four equal sublots. Sufficient material for preparation of test specimens for all testing will be sampled by the Engineer on a random basis, in accordance with the procedures contained in ASTM D 3665. One set of laboratory compacted specimens will be prepared for each sublot in accordance with ASTM D 6926, at the number of blows required by paragraph 401S-3.2, Table 1. Each set of laboratory compacted specimens will consist of three test portions prepared from the same sample increment.

The sample of bituminous mixture 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

stabilize to compaction temperature. The compaction temperature of the specimens shall be as specified in the job mix formula.

(2) Testing. Sample specimens shall be tested for stability and flow in accordance with ASTM D 6927. Air voids will be determined by the Engineer in accordance with ASTM D 3203.

Prior to testing, the bulk specific gravity of each test specimen shall be measured by the Engineer in accordance with ASTM D 2726 using the procedure for laboratory-prepared thoroughly dry specimens, or ASTM D 1188, whichever is applicable, for use in computing air voids and pavement density.

For air voids determination, the theoretical maximum specific gravity of the mixture shall be measured twice for each sublot in accordance with ASTM D 2041, Type C, D or E container. The value used in the air voids computation for each sublot shall be based on the average of the two maximum specific gravity measurements for the sublot.

The stability and flow for each sublot shall be computed by averaging the results of all test specimens representing that sublot.

(3) Acceptance. Acceptance of plant produced material for stability, flow, and air voids shall be determined by the Engineer in accordance with the requirements of paragraph 401S-5.2b.

b. Field Placed Material. Material placed in the field shall be tested for mat and joint density on a lot basis.

(1) Mat Density. The lot size shall be the same as that indicated in paragraph 401S-5.1a and shall be divided into four equal sublots. One core of finished, compacted materials shall be taken by the Contractor from each sublot. Core locations will be determined by the Engineer on a random basis in accordance with procedures contained in ASTM D 3665. Cores shall not be taken closer than one foot from a transverse or longitudinal joint.

(2) Joint Density. The lot size shall be the total length of longitudinal joints constructed by a lot of material as defined in paragraph 401S-5.1a. The lot shall be divided into four equal sublots. One core of finished, compacted materials shall be taken by the Contractor from each sublot. Core locations will be determined by the Engineer on a random basis in accordance with procedures contained in ASTM D 3665. ALL CORING SHALL BE CENTERED ON THE JOINT. THE MINIMUM CORE DIAMETER FOR JOINT DENSITY DETERMINATION SHALL BE 5 INCHES.

(3) Sampling. Samples shall be neatly cut with a core drill. The cutting edge of the core drill bit shall be of hardened steel or other suitable material with diamond chips embedded in the metal cutting edge. The minimum diameter of the sample shall be five inches. Samples that are clearly defective, as a result of sampling, shall be discarded and another sample taken. The Contractor shall furnish all tools, labor, and materials for cutting samples and filling the cored pavement. Cored holes shall be filled in a manner acceptable to the Engineer and within one day after sampling.

(4) Testing. The bulk specific gravity of each cored sample will be measured by the Engineer in accordance with ASTM D 2726 or ASTM D 1188, whichever is applicable. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each sublot sample by the average bulk specific gravity of all laboratory prepared specimens for the lot, as determined in paragraph 401S-5.1a(2). The bulk specific gravity used to determine the joint density at joints formed between different lots shall be the lowest of the bulk specific gravity values from the two different lots.

(5) Acceptance. Acceptance of field placed material for mat density will be determined by the Engineer in accordance with the requirements of paragraph 401S-5.2b(1). Acceptance for joint density will be determined in accordance with the requirements of paragraph 401S-5.2b(3).

c. Partial Lots — Plant-Produced Material. When operational conditions cause a lot to be terminated before the specified number of tests have been made for the lot, or when the Contractor and Engineer agree in writing to allow overages or other minor square yard placements to be considered as partial lots, the following procedure will be used to adjust the lot size and the number of tests for the lot.

The last batch produced where production is halted will be sampled, and its properties shall be considered as representative of the particular sublot from which it was taken. In addition, an agreed to minor placement will be sampled, and its properties shall be considered as representative of the particular sublot from which it was taken. Where three sublots are produced, they shall constitute a lot. Where one or two sublots are produced, they shall be incorporated into the next lot, and the total number of sublots shall be used in the acceptance plan calculation, i.e., n = 5 or n = 6, for example. Partial lots at the end of asphalt production on the project shall be included with the previous lot.

d. Partial Lots — Field Placed Material. The lot size for field placed material shall correspond to that of the plant material, except that, in no cases, shall less than three (3) cored samples be obtained, i.e., n = 3.

401S-5.2 ACCEPTANCE CRITERIA.

a. General. Acceptance will be based on the following characteristics of the bituminous mixture and completed pavement as well as the implementation of the Contractor Quality Control Program and test results:

(1) Stability
(2) Flow
(3) Air voids
(4) Mat density
(5) Joint density
(6) Thickness
(7) Smoothness
(8) Grade
(9) Absence of Ponding

Mat density and air voids will be evaluated for acceptance in accordance with paragraph 401S-5.2b(1). Stability and flow will be evaluated for acceptance in accordance with paragraph 401S-5.2b(2). Joint density will be evaluated for acceptance in accordance with paragraph 401S-5.2b(3).

Thickness will be evaluated by the Engineer for compliance in accordance with paragraph 401S-5.2b(4). Acceptance for smoothness will be based on the criteria contained in paragraph 401S-5.2b(5). Acceptance for grade will be based on the criteria contained in paragraph 401S-5.2b(6).

The Engineer may at any time, notwithstanding previous plant acceptance, reject and require the Contractor to dispose of any batch of bituminous mixture which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or improper mix temperature. 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 Engineer, and if it can be demonstrated in the laboratory, in the presence of the Engineer, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

b. Acceptance Criteria.

(1) Mat Density and Air Voids. Acceptance of each lot of plant produced material for mat density and air voids shall be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot shall be acceptable. Acceptance and payment shall be determined in accordance with paragraph 401S-8.1.

(2) Stability and Flow. Acceptance of each lot of plant produced material for stability and flow shall be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot shall be acceptable. If the PWL is less than 90%, the Contractor

shall determine the reason and take corrective action. If the PWL is below 80%, the Contractor must stop production and make adjustments to the mix. Lots with PWL below 80% for stability or flow values shall be removed and replaced at the expense of the Contractor.

(3) Joint Density. Acceptance of each lot of plant produced material for joint density shall be based on the percentage of material within specification limits (PWL). If the PWL of the lot is equal to or exceeds 90%, the lot shall 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 SHALL BE REDUCED BY 5 PERCENTAGE POINTS. This lot pay factor reduction shall be incorporated and evaluated in accordance with paragraph 401S-8.1.

(4) Thickness. Thickness of each lift of surface course shall be evaluated by the Engineer for compliance to the requirements shown on the plans. Measurements of thickness shall be made by the Engineer using the cores extracted for each sublot for density measurement. The maximum allowable deficiency at any point shall not be more than ¼-inch less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, shall not be less than the indicated thickness. Where the thickness tolerances are not met, the lot or sublot 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 Engineer to circumscribe the deficient area.

(5) Smoothness. The final surface shall be free from roller marks. The finished surfaces of each course of the pavement, except the finished surface of the final course, shall not vary more than ⅜-inch when evaluated with a 16-foot straightedge. The finished surface of the final course of pavement shall not vary more than ¼-inch when evaluated with a 16-foot straightedge. The lot size shall be 2,000 square yards. Smoothness measurements shall be made at 50-foot intervals and as determined by the Engineer. In the longitudinal direction, a smoothness reading shall be made at the center of each paving lane. In the transverse direction, smoothness readings shall be made continuously across the full width of the pavement. However, transverse smoothness readings shall not be made across designed grade changes. At warped transition areas, straightedge position shall be adjusted to measure surface smoothness and not design grade transitions. When more than 15 percent of all measurements within a lot exceed the specified tolerance, the Contractor shall remove the deficient area to the depth of the final course of pavement and replace with new material. Skin patching shall not be permitted. Isolated high points may be ground off providing the course thickness complies with the thickness specified on the plans. High point grinding

will be limited to 15 square yards. Areas in excess of 15 square yards will require removal and replacement of the pavement in accordance with the limitations noted above.

(6) Grade. The finished surface of the pavement shall not vary from the gradeline elevations and cross sections shown on the plans by more than ½-inch. The finished grade of each lot will be determined by running levels at intervals of 50 feet or less longitudinally and all breaks in grade transversely (not to exceed 50 feet) to determine the elevation of the completed pavement. The Contractor shall pay the cost of surveying of the level runs that shall be performed by a licensed surveyor. The documentation, stamped and signed by a licensed surveyor, shall be provided by the Contractor to the Engineer. The lot size shall be 2,000 square yards. When more than 15% of all the measurements within a lot are outside the specified tolerance, or if any one shot within the lot deviates ¾-inch or more from planned grade, the Contractor shall remove the deficient area to the depth of the final course of pavement and replace with new material. Skin patching shall not be permitted. Isolated high points may be ground off providing the course thickness complies with the thickness specified on the plans. High point grinding will be limited to 15 square yards. Areas in excess of 15 square yards will require removal and replacement of the pavement in accordance with the limitations noted above.

c. Percentage of Material Within Specification Limits (PWL). The percentage of material within specification limits (PWL) shall be determined in accordance with procedures specified in Section 110 of the General Provisions. The specification tolerance limits (L) for lower and (U) for upper are contained in Table 4.

d. Outliers. All individual tests for mat density and air voids shall be checked for outliers (test criterion) in accordance with ASTM E 178, at a significance level of 5%. Outliers shall be discarded, and the PWL shall be determined using the remaining test values.

TABLE 4. MARSHALL ACCEPTANCE LIMITS FOR STABILITY, FLOW, AIR VOIDS, DENSITY

TEST PROPERTY	Pavements Designed for Aircraft Gross Weights Less Than 60,000 Lbs. or Tire Pressures Less Than 100 Psi	
Number of Blows	50	
	Specification Tolerance Limits	
	L	U
Stability, minimum, pounds	1000	--
Flow, 0.01-inch	8	20
Air Voids Total Mix, percent	2	5
Surface Course Mat Density, percent	96.3	--
Base Course Mat Density, percent	95.5	--
Joint density, percent	93.3	--

The criteria in Table 4 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 (%), 2.1

The Contractor should note that (1) 90 PWL is achieved when consistently producing a surface course with an average mat density of at least 98% 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 97.5% with 1.55% or less variability, and (3) 90 PWL is achieved when consistently producing joints with an average joint density of at least 96% with 2.1% or less variability.

401S-5.3 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 Engineer. A retest will consist of all the sampling and testing procedures contained in paragraphs 401S-5.1b and 401S-5.2b(1). Only one resampling per lot will be permitted.

(1) A redefined PWL shall be calculated for the resampled lot. The number of tests used to calculate the redefined PWL shall 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 shall be used to calculate the payment for that lot in accordance with Table 5.

c. Outliers. If the tests within a lot include a very large or a very small value that appears to be outside the normal limits of variation, check for an outlier in accordance with ASTM E 178, at a significance level of 5 percent, to determine if this value should be discarded when computing the PWL.

CONTRACTOR QUALITY CONTROL

401S-6.1 GENERAL. The Contractor shall develop a Quality Control Program in accordance with Section 100 of the General Provisions. The program shall address all elements that affect the quality of the pavement including, but not limited to:

a. Mix Design
b. Aggregate Grading
c. Quality of Materials
d. Stockpile Management
e. Proportioning
f. Mixing and Transportation
g. Placing and Finishing
h. Joints
i. Compaction
j. Surface Smoothness
k. Personnel
l. Laydown Plan

The Contractor shall perform quality control sampling, testing, and inspection during all phases of the work and shall perform them at a rate sufficient to ensure that the work conforms to the contract requirements, and at minimum test frequencies required by paragraph 401S-6.3 and Section 100 of the General Provisions. As a part of the process for approving the Contractor's plan, the Engineer may require the Contractor's technician to perform testing of samples to demonstrate an acceptable level of performance.

No partial payment will be made for materials that are subject to specific quality control requirements without an approved plan.

401S-6.2 TESTING LABORATORY. The Contractor shall provide a fully equipped asphalt laboratory meeting the requirements of paragraph 401S-3.5 and 401S-4.2a(2) located at the plant or job site. The Contractor shall provide the Engineer with certification stating that all of the testing equipment to be used is properly calibrated and will meet the specifications applicable for the specified test procedures.

401S-6.3 QUALITY CONTROL TESTING. The Contractor shall perform all quality control tests necessary to control the production and construction processes applicable to these specifications and as set forth in the approved Quality Control Program. 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 Quality Control Testing Plan shall be developed as part of the Quality Control Program.

a. Asphalt Content. A minimum of two extraction tests shall be performed per lot in accordance with ASTM D 6307 or ASTM D 2172 for determination of asphalt content. The weight of ash portion of the extraction test, as described in ASTM D 2172, shall be determined as part of the first extraction test performed at the beginning of plant production; and as part of every tenth extraction test performed thereafter, for the duration of plan production. The last weight of ash value obtained shall be used in the calculation of the asphalt content for the mixture. The asphalt content for the lot will be determined by averaging the test results.

   The use of the nuclear method for determining asphalt content in accordance with ASTM D 4125 is permitted, provided that it is calibrated for the specific mix being used.

b. Gradation. Aggregate gradations shall be determined a minimum of twice per lot from mechanical analysis of extracted aggregate in accordance with ASTM D 5444 and ASTM C 136 (Dry Sieve). When asphalt content is determined by the nuclear method, aggregate gradation shall be determined from hot bin samples on batch plants, or from the cold feed on drum mix or continuous mix plants, and tested in accordance with ASTM C 136 (dry sieve) using actual batch weights to determine the combined aggregate gradation of the mixture.

c. Moisture Content of Aggregate. The moisture content of aggregate used for production shall be determined a minimum of once per lot in accordance with ASTM C 566.

d. Moisture Content of Mixture. The moisture content of the mixture shall be determined once per lot in accordance with ASTM D 1461 (or AASHTO T110).

e. Temperatures. Temperatures shall be checked, at least four times per lot, at necessary locations to determine the temperatures of the dryer, the bitumen in the storage tank, the mixture at the plant, and the mixture 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 D 2950.

g. Additional Testing. Any additional testing that the Contractor deems necessary to control the process may be performed at the Contractor's option.

h. Monitoring. The Engineer reserves the right to monitor any or all of the above testing.

401S-6.4 SAMPLING. When directed by the Engineer, 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.

401S-6.5 CONTROL CHARTS. The Contractor shall maintain linear control charts both for individual measurements and range (i.e., difference between highest and lowest measurements) for aggregate gradation and asphalt content.

Control charts shall be posted in a location satisfactory to the Engineer and shall be 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 Engineer 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 and asphalt content. 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
1 inch	0%	0%
½ inch	±6%	±9%
⅜ inch	±6%	±9%
No. 4	±6%	±9%
No. 16	±5%	±7.5%
No. 50	±3%	±4.5%
No. 200	±%	±3%
Asphalt Content	±0.45%	±0.70%

b. **Range**. Control charts for range shall be established to control process variability for the test parameters and Suspension Limits listed below. The range shall be computed for each lot 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 (Based on n = 2)	
Sieve	Suspension Limit
1 inch	0%
½ inch	11%
⅜ inch	11%
No. 4	11%
No. 16	9%
No. 50	6%
No. 200	3.5%
Asphalt Content	0.8%

c. **Corrective Action**. The Contractor Quality Control Program shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain sets of 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.

401S-6.6 QUALITY CONTROL REPORTS. The Contractor shall maintain records and shall submit reports of quality control activities daily, in accordance with the Contractor Quality Control Program described in General Provisions, Section 100.

METHOD OF MEASUREMENT

401S-7.1 MEASUREMENT. Plant mix bituminous concrete pavement shall be measured by the number of square yards of 3-inch bituminous mixture used in the accepted work.

BASIS OF PAYMENT

401S-8.1 PAYMENT. Payment for an accepted lot of bituminous concrete pavement shall be made at the contract unit price square yard for bituminous mixture adjusted according to paragraph 401S-8.1a, subject to the limitation that:

The total project payment for plant mix bituminous concrete pavement shall not exceed 100% of the product of the contract unit price and the total number of square yards of bituminous mixture used in the accepted work (see note 1 under Table 5).

The price shall be compensation for furnishing all materials, for all preparation, mixing, and placing of these materials, including bituminous fog seal, and for all labor, equipment, tools, and incidentals necessary to complete the item.

a. Basis of Adjusted Payment. The pay factor for each individual lot shall be calculated in accordance with Table 5. 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%.

TABLE 5. PRICE ADJUSTMENT SCHEDULE [1]

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	1.4PWL – 12
Below 55	Reject [2]

[1] ALTHOUGH IT IS THEORETICALLY POSSIBLE TO ACHIEVE A PAY FACTOR OF 106 PERCENT FOR EACH LOT, ACTUAL PAYMENT ABOVE 100 PERCENT SHALL BE SUBJECT TO THE TOTAL PROJECT PAYMENT LIMITATION SPECIFIED IN PARAGRAPH 401S-8.1.

[2] The lot shall be removed and replaced. However, the Engineer may decide to allow the rejected lot to remain. In that case, if the Engineer and Contractor agree in writing that the lot shall not be removed, it shall be paid for at 50 percent of the contract unit price and the total project payment shall be reduced by the amount withheld for the rejected lot.

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 401S-8.1. Payment in excess of 100 percent for accepted lots of bituminous concrete pavement shall be used to offset payment for accepted lots of bituminous concrete pavement that achieve a lot pay factor less than 100 percent. There will be no separate pay item for sawcutting asphalt concrete as it is considered incidental to other related items of work.

b. Payment will be made under:

Item P-401S-1 3-inch Plant Mix Bituminous Pavement w/ Fog Seal – per square yard

Item P-401S-1-A1 3-inch Plant Mix Bituminous Pavement w/ Fog Seal – per square yard

TESTING REQUIREMENTS

ASTM C 29	Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C 88	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C 117	Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
ASTM C 127	Specific Gravity and Absorption of Coarse Aggregate
ASTM C 131	Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	Sieve Analysis of Fine and Coarse Aggregates
ASTM C 183	Sampling and the Amount of Testing of Hydraulic Cement
ASTM C 566	Total Evaporable Moisture Content of Aggregate by Drying
ASTM D 75	Sampling Aggregates
ASTM D 979	Sampling Bituminous Paving Mixtures
ASTM D 995	Mixing Plants for Hot-Mixed Hot-Laid Bituminous Paving Mixtures
ASTM D 1073	Fine Aggregate for Bituminous Paving Mixtures
ASTM D 1074	Compressive Strength of Bituminous Mixtures
ASTM D 1188	Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Paraffin-Coated Specimens
ASTM D 1461	Moisture or Volatile Distillates in Bituminous Paving Mixtures
ASTM D 2041	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D 2172	Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
ASTM D 2419	Sand Equivalent Value of Soils and Fine Aggregate
ASTM D 2489	Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures

ASTM D 2726	Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
ASTM D 2950	Density of Bituminous Concrete in Place by Nuclear Methods
ASTM D 3203	Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D 3665	Random Sampling of Construction Materials
ASTM D 3666	Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
ASTM D 4125	Asphalt Content of Bituminous Mixtures by the Nuclear Method
ASTM D 4318	Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 4791	Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D 4867	Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D 5444	Mechanical Size Analysis of Extracted Aggregate
ASTM D 6926	Preparation of Bituminous Specimens Using MARSHALL Apparatus
ASTM D 6927	MARSHALL Stability and Flow of Bituminous Mixtures
ASTM E 11	Wire-Cloth Sieves for Testing Purposes
ASTM E 178	Dealing with Outlying Observations
ASTM E 1274	Measuring Pavement Roughness Using a Profilograph
AASHTO T 30	Mechanical Analysis of Extracted Aggregate
AASHTO T 110	Moisture or Volatile Distillates in Bituminous Paving Mixtures
The Asphalt Institute's Manual No. 2 (MS-2)	Mix Design Methods for Asphalt Concrete

MATERIAL REQUIREMENTS

ASTM D 242	Mineral Filler for Bituminous Paving Mixtures
ASTM D 946	Penetration Graded Asphalt Cement for Use in Pavement Construction

ASTM D 3381	Viscosity-Graded Asphalt Cement for Use in Pavement Construction
ASTM D 4552	Classifying Hot-Mix Recycling Agents
AASHTO M320	Performance Graded Asphalt Binder

END OF ITEM P-401S

ITEM P-603

BITUMINOUS TACK COAT

DESCRIPTION

603-1.1 This item shall consist of preparing and treating a bituminous or concrete surface with bituminous material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

603-2.1 BITUMINOUS MATERIALS. The bituminous material shall be emulsified asphalt and shall conform to the requirements of Table 1. The type, grade, controlling specification, and application temperature of bituminous material to be used are given in Table 1.

TABLE 1. BITUMINOUS MATERIAL

Type and Grade	Specification	Application Temperature Deg. F
Emulsified Asphalt		
SS-1, SS-1h	ASTM D 977	75-130
CSS-1, CSS-1h	ASTM D 2397	75-130

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 above 60° F. The temperature requirements may be waived, but only when so directed by the Engineer.

603-3.2 EQUIPMENT. The Contractor shall provide equipment for heating and applying the bituminous material.

The distributor shall be designed, equipped, maintained, and operated so that bituminous material at even heat may be applied uniformly on variable widths of surface at the specified rate. The allowable variation from the specified rate shall not exceed 10%. Distributor equipment shall include a tachometer, pressure gages, volume-measuring devices or a calibrated tank, and a thermometer for measuring temperatures of tank contents. The distributor shall be self-powered and shall be equipped with a power unit for the pump and full circulation spray bars adjustable laterally and vertically.

If the distributor is not equipped with an operable quick shut off valve, the tack operations shall be started and stopped on building paper. The Contractor shall remove blotting sand prior to asphalt concrete lay down operations at no additional expense to the owner.

A power broom and/or blower shall be provided for any required cleaning of the surface to be treated.

603-3.3 APPLICATION OF BITUMINOUS MATERIAL. Immediately before applying the tack coat, the full width of surface to be treated shall be swept with a power broom and/or airblast to remove all loose dirt and other objectionable material.

Emulsified asphalt shall be diluted by the addition of water when directed by the Engineer and shall be applied a sufficient time in advance of the paver to ensure that all water has evaporated before any of the overlying mixture is placed on the tacked surface.

The bituminous material including vehicle or solvent shall be uniformly applied with a bituminous distributor at the rate of 0.05 to 0.15 gallons per square yard depending on the condition of the existing surface. The type of bituminous material and application rate shall be approved by the Engineer prior to application.

Following the application, the surface shall be allowed to cure without being disturbed for such period of time as may be necessary to permit drying out and setting of the tack coat. This period shall be determined by the Engineer. The surface shall then be maintained by the Contractor until the next course has been placed. Suitable precautions shall be taken by the Contractor to protect the surface against damage during this interval.

Tack coat shall be applied only so far in advance that it will be covered with bituminous mixture within 18 hours. If left open for more that 18 hours, additional tack coat shall be applied by the Contractor and no additional compensation shall be allowed.

603-3.4 BITUMINOUS MATERIAL CONTRACTOR'S RESPONSIBILITY. Samples of the bituminous material that the Contractor proposes to use, together with a statement as to its source and character, must be submitted and approved before use of such material begins. The Contractor shall require the manufacturer or producer of the bituminous material to furnish material subject to this and all other pertinent requirements of the contract. Only satisfactory materials so demonstrated by service tests, shall be acceptable.

The Contractor shall furnish the vendor's certified test reports for each carload, or equivalent, of bituminous material shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the bituminous material shall not be interpreted as a basis for final acceptance. All such test reports shall be subject to verification by testing samples of material received for use on the project.

METHOD OF MEASUREMENT

603.4.1 There will be no direct measurement for this item.

BASIS OF PAYMENT

603.5-1 There will be no direct payment for this item, payment will be made indirectly under other related items of work.

MATERIAL REQUIREMENTS

ASTM D 633	Volume Correction Table for Road Tar
ASTM D 977	Emulsified Asphalt
ASTM D 1250	Petroleum Measurement Tables
ASTM D 2028	Cutback Asphalt (Rapid-Curing Type)
ASTM D 2397	Cationic Emulsified Asphalt
Asphalt Institute Manual MS-6 Table IV-3	Asphalt Pocketbook of Useful Information (Temperature-Volume Corrections for Emulsified Asphalts)

END OF ITEM P-603

ITEM P-610

STRUCTURAL PORTLAND CEMENT CONCRETE

DESCRIPTION

610-1.1 This item shall consist of plain structural portland cement concrete, prepared and constructed in accordance with these specifications, at the locations and of the form and dimensions shown on the plans.

MATERIALS

610-2.1 GENERAL. The materials shall conform to the requirements of these specifications or shall be in accordance with Section 90 of the 2006 State of California Department of Transportation Standard Specifications and approved by the Owner.

Only approved materials, conforming to the requirements of these specifications or Caltrans, shall be used in the work. They may be subjected to inspection and tests at any time during the progress of their preparation or use. The source of supply of each of the materials shall be approved by the Engineer before delivery or use is started. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be scored and handled to insure the 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 therein.

In no case shall the use of pit-run or naturally mixed aggregates be permitted. Naturally mixed aggregate shall be screened and washed, and all fine and coarse aggregates shall be stored separately and kept clean. The mixing of different kinds of aggregates from different sources in one storage pile or alternating batches of different aggregates will not be permitted.

610-2.2 COARSE AGGREGATE. The coarse aggregate for concrete shall meet the requirements of ASTM C 33. Crushed stone aggregate shall have a durability factor, as determined by ASTM C 666, greater than or equal to 95

Coarse aggregate shall be well graded from coarse to fine and shall meet one of the gradations shown in Table 1, using ASTM C 136.

610-2.3 FINE AGGREGATE. The fine aggregate for concrete shall meet the requirements of ASTM C 33

The fine aggregate shall be well graded from fine to coarse and shall meet the requirements of Table 2 when tested in accordance with ASTM C 136:

TABLE 1. GRADATION FOR COARSE AGGREGATE

Sieve Designation	Percentage by Weight Passing Sieves						
	2”	1½”	1”	¾“	½”	3/8”	No. 4
No. 4 to ¾ in.			100	90-100		20-55	0-10
No. 4 to 1 in.		100	90-100		25-60		0-10
No. 4 to 1-1/2 in.	100	95-100		35-70		10-30	0-5

TABLE 2. GRADATION FOR FINE AGGREGATE

Sieve Designation	Percentage by Weight Passing Sieves
3/8-inch	100
No. 4	95-100
No. 16	45-80
No. 30	25-55
No. 50	10-30
No. 100	2-10

Blending will be permitted, if necessary, in order to meet the gradation requirements for fine aggregate. Fine aggregate deficient in the percentage of material passing the No. 50 mesh sieve may be accepted, provided that such deficiency does not exceed 5% and is remedied by the addition of pozzolanic or cementitious materials other than portland cement, as specified in 610-2.6 on admixtures, in sufficient quantity to produce the required workability as approved by the Engineer.

610-2.4 CEMENT. Cement shall conform to the requirements of ASTM C150 Type II.

The Contractor shall furnish vendors' certified test reports for each carload, or equivalent, of cement shipped to the project. The report shall be delivered to the Engineer before permission to use the cement is granted. All such test reports shall be subject to verification by testing sample materials received for use on the project.

610-2.5 WATER. The water used in concrete shall be free from sewage, oil, acid, strong alkalies, vegetable matter, and clay and loam. If the water is of questionable quality, it shall be tested in accordance with AASHTO T 26.

610-2.6 ADMIXTURES. The use of any material added to the concrete mix shall be approved by the Engineer. Before approval of any material, the Contractor shall be required to submit the results of complete physical and chemical analyses made by an acceptable testing laboratory. Subsequent tests shall be made of samples taken by the Engineer 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.

Pozzolanic admixtures shall be fly ash or raw or calcined natural pozzolons meeting the requirements of ASTM C 618.

Air-entraining admixtures shall meet the requirements of ASTM C 260. Air-entraining admixtures shall be added at the mixer in the amount necessary to produce the specified air content.

Water-reducing, set-controlling admixtures shall meet the requirements of ASTM C 494, Type A, water-reducing or Type D, water-reducing and retarding. Water-reducing admixtures shall be added at the mixer separately from air-entraining admixtures in accordance with the manufacturer's printed instructions.

610-2.7 PREMOLDED JOINT MATERIAL. Premolded joint material for expansion joints shall meet the requirements of ASTM D1751**.**

610-2.8 JOINT FILLER. The filler for joints shall meet the requirements of Item P-605, unless otherwise specified in the proposal.

610-2.9 COVER MATERIALS FOR CURING. Curing materials shall conform to one of the following specifications:

Waterproof paper for curing concrete	ASTM C 171
Polyethylene Sheeting for Curing Concrete	ASTM C 171
Liquid Membrane-Forming Compounds for Curing Concrete	ASTM C 309, Type 2

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 herein. All machinery and equipment owned or controlled by the Contractor, which he proposes to use on the work, shall be of sufficient size to meet the requirements of the work, and shall be such as to produce satisfactory work; all work shall be subject to the inspection and approval of the Engineer.

610-3.2 CONCRETE COMPOSITION. The concrete shall develop a compressive strength of 3,000 psi in 28 days as determined by test cylinders made in accordance with ASTM C 31 and tested in accordance with ASTM C 39. The concrete shall contain not less than 470 pounds of cement per cubic yard. The concrete shall contain 5% of entrained air, plus or minus 1%, as determined by ASTM C 231 and shall have a slump of not more than 4 inches as determined by ASTM C 143.

610-3.3 ACCEPTANCE SAMPLING AND TESTING. Concrete for each structure will be accepted on the basis of the compressive strength specified in paragraph 3.2. The concrete shall be sampled in accordance with ASTM C 172. Compressive strength specimens shall be made in accordance with ASTM C 31 and tested in accordance with ASTM C 39.

Concrete cylindrical test specimens shall be made in accordance with ASTM C 31 and tested in accordance with ASTM C 39. The Contractor shall cure and store the test specimens under such conditions as directed. The Engineer will make the actual tests on the specimens at no expense to the Contractor.

610-3.4 PROPORTIONING AND MEASURING DEVICES. When package cement is used, the quantity for each batch shall be equal to one or more whole sacks of cement. The aggregates shall be measured separately by weight. If aggregates are delivered to the mixer in batch trucks, the exact amount for each mixer charge shall be contained in each batch compartment. Weighing boxes or hoppers shall be approved by the Engineer and shall provide means of regulating the flow of aggregates into the batch box so that the required and exact weight of aggregates can be readily obtained.

610-3.5 CONSISTENCY. The consistency of the concrete shall be checked by the slump test specified in ASTM C 143.

610-3.6 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 C 94.

610-3.7 MIXING CONDITIONS. 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 permission of the Engineer. If permission 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/her expense.

Retempering of concrete by adding water or any other material shall not be permitted.

The delivery of concrete to the job shall be in such a manner that batches of concrete will be deposited at uninterrupted intervals.

610-3.8 FORMS. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the Engineer. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as designed 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 Contractor shall bear responsibility for their adequacy. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes.

The internal ties shall be arranged so that, when the forms are removed, no metal will show in the concrete surface or discolor the surface when exposed to weathering. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied shortly before the concrete is placed. Forms shall be constructed so that they can be removed without injuring the concrete or concrete surface. The forms shall not be removed before the expiration of at least 30 hours from vertical faces, walls, slender columns, and similar structures; forms supported by falsework under slabs, beams, girders, arches, and similar construction shall not be removed until tests indicate that at least 60% of the design strength of the concrete has developed.

610-3.9 PLACING REINFORCEMENT. All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concreting. 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.

610-3.10 EMBEDDED ITEMS. Before placing concrete, any items that are to be embedded shall be firmly and securely fastened in place as indicated. All such items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The embedding of wood shall be avoided. The concrete shall be spaded and consolidated around and against embedded items.

610-3.11 PLACING CONCRETE. All concrete shall be placed during daylight, unless otherwise approved. The concrete shall not be placed until the depth and character of foundation, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved. Concrete shall be placed as soon as practical after mixing and in no case later than 1 hour after water has been added to the mix. The method and manner of placing shall be such to avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. Dropping the concrete a distance of more than 5 feet, or depositing a large quantity at one point, will not be permitted. Concrete shall be placed upon clean, damp surfaces, free from running water, or upon properly consolidated soil.

The concrete shall be compacted with suitable mechanical vibrators operating within the concrete. When necessary, vibrating shall be supplemented by hand spading with suitable tools to assure proper and adequate compaction. Vibrators shall be manipulated so as to work the concrete thoroughly around the reinforcement and embedded fixtures and into corners and angles of the forms. The vibration at any joint shall be of sufficient duration to accomplish compaction but shall not be prolonged to the point where segregation occurs. Concrete deposited under water shall be carefully placed in a compact mass in its final position by means of a tremie, a closed bottom dump bucket, or other approved method and shall not be disturbed after being deposited.

610-3.12 CONSTRUCTION JOINTS. When the placing of concrete is suspended, necessary provisions shall be made for joining future work before the placed concrete takes its initial set. For the proper bonding of old and new concrete, such provisions shall be made for grooves, steps, keys, dovetails, reinforcing bars or other devices as may be prescribed. The work shall be arranged so that a section begun on any day shall be finished during daylight of the same day. Before depositing new concrete on or against concrete that has hardened, the surface of the hardened concrete shall be cleaned by a heavy steel broom, roughened slightly, wetted, and covered with a neat coating of cement paste or grout.

610-3.13 EXPANSION JOINTS. Expansion joints shall be constructed at such points and of such dimensions as may be indicated on the drawings. The premolded filler shall be cut to the same shape as that of the surfaces being joined. The filler shall be fixed firmly against the surface of the concrete already in place in such manner that it will not be displaced when concrete is deposited against it.

610-3.14 DEFECTIVE WORK. Any defective work discovered after the forms have been removed shall be immediately removed and replaced. If any dimensions are deficient, or if the surface of the concrete is bulged, uneven, or shows honeycomb, which in the opinion of the Engineer cannot be repaired satisfactorily, the entire section shall be removed and replaced at the expense of the Contractor.

610-3.15 SURFACE FINISH. All exposed concrete surfaces shall be true, smooth, and free from open or rough spaces, depressions, or projections. The concrete in horizontal plane surfaces shall be brought flush with the finished top surface at the proper elevation and shall be struck-off with a straightedge and floated. Mortar finishing shall not be permitted, nor shall dry cement or sand-cement mortar be spread over the concrete during the finishing of horizontal plane surfaces.

When directed, the surface finish of exposed concrete shall be a rubbed finish. If forms can be removed while the concrete is still green, the surface shall be pointed and wetted and then rubbed with a wooden float until all irregularities are removed. If the concrete has hardened before being rubbed, a carborundum stone shall be used to finish the surface. When approved, the finishing can be done with a rubbing machine.

610-3.16 CURING AND PROTECTION. All concrete shall be properly cured and protected by the Contractor. The work shall be protected from the elements, flowing water, and from defacement of any nature during the building operations. The concrete shall be cured as soon as it has sufficiently hardened by covering with an approved material. Water-absorptive coverings shall be thoroughly saturated when placed and kept saturated for a period of at least 3 days. All curing mats or blankets shall be sufficiently weighted or tied down to keep the concrete surface covered and to prevent the surface from being exposed to currents of air. Where wooden forms are used, they shall be kept wet at all times until removed to prevent the opening of joints and drying out of the concrete. Traffic shall not be allowed on concrete surfaces for 7 days after the concrete has been placed.

610-3.17 DRAINS OR DUCTS. Drainage pipes, conduits, and ducts that are to be encased in concrete shall be installed by the Contractor before the concrete is placed. The pipe shall be held rigidly so that it will not be displaced or moved during the placing of the concrete.

610-3.18 COLD WEATHER PROTECTION. When concrete is placed at temperatures below 40° F, the Contractor shall provide satisfactory methods and means to protect the mix from injury by freezing. The aggregates, or water, or both, shall be heated in order to place the concrete at temperatures between 50° F and 100° F.

Calcium chloride is not allowed.

After the concrete has been placed, the Contractor shall provide sufficient protection such as cover, canvas, framework, heating apparatus, etc., to enclose and protect the structure and maintain the temperature of the mix at not less than 50° F until at least 60% of the designed strength has been attained.

610-3.19 FILLING JOINTS. All joints that require filling shall be thoroughly cleaned, and any excess mortar or concrete shall be cut out with proper tools. Joint filling shall not be started until after final curing and shall be done only when the concrete is completely dry. The cleaning and filling shall be carefully done with proper equipment and in a manner to obtain a neat looking joint free from excess filler.

METHOD OF MEASUREMENT

610-4.1 There will be no direct measurement for this item.

BASIS OF PAYMENT

610-5-1 There will be no direct payment for this item, payment will be made indirectly under other related items of work. Plastic or hardened concrete not meeting acceptable tolerances indicated in this specification shall be rejected and immediately removed and replaced at the contractor's expense. However, items of work using concrete that does not meet the required compressive strength in a 28-day period shall be paid for at a lesser rate. Payment reduction applies to all other items of work for which structural portland cement concrete is to be used. Payment reduction for substandard concrete shall be as indicated in the following table:

Percent of Compressive Strength	Pay Reduction (percent)
100	0
95	0
94	3
93	6
92	9
91	12
90	15
89	18
88	21
87	24
86	27
85	30

Less than 85% - Remove and Replace the concrete at no additional cost to the Owner, however, the Owner may decide to accept the item of work. In that case, if the Owner and Contractor agree in writing, that concrete with less than the required compressive strength shall not be removed, and the item of work for which the concrete is used will be

paid for at 50 percent of the contract price. Payment reductions shall apply to the unit price of the item for which exterior concrete is used.

TESTING REQUIREMENTS

ASTM C 31	Making and Curing Test Specimens in the Field
ASTM C 39	Compressive Strength of Cylindrical Concrete Specimens
ASTM C 136	Sieve Analysis of Fine and Coarse Aggregates
ASTM C 138	Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C 143	Slump of Hydraulic Cement Concrete
ASTM C 231	Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 666	Resistance of Concrete to Rapid Freezing and Thawing
ASTM C 1077	Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM C 1260	Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)

MATERIAL REQUIREMENTS

ASTM A 184	Specification for Fabricated Deformed Steel Bar or Rod Mats for Concrete Reinforcement
ASTM A 185	Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 497	Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement
ASTM A 615	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 704	Welded Steel Plain Bars or Rod Mats for Concrete Reinforcement
ASTM C 33	Concrete Aggregates
ASTM C 94	Ready-Mixed Concrete
ASTM C 150	Portland Cement
ASTM C 171	Sheet Materials for Curing Concrete

ASTM C 172	Sampling Freshly Mixed Concrete
ASTM C 260	Air-Entraining Admixtures for Concrete
ASTM C 309	Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 494	Chemical Admixtures for Concrete
ASTM C 595	Blended Hydraulic Cements
ASTM C 618	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM D 1751	Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)
ASTM D 1752	Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
AASHTO T 26	Quality of Water to be Used in Concrete

END OF ITEM P-610

ITEM P-612

BITUMINOUS FOG SEAL

DESCRIPTION

612-1.1 DESCRIPTION OF WORK. The work to be performed in accordance with this section includes furnishing and applying emulsified asphalt fog seal to the surface of the asphalt concrete pavement.

MATERIALS

612-2.1 MATERIALS ACCEPTANCE. The contractor shall furnish manufacturer's Certificates of Compliance for the Bituminous Fog Seal for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. The Contractor shall furnish the Supplier's Recommendations for the Type and Grade of Bituminous Fog Seal to be used. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of material to the site.

612-2.2 PRODUCT DELIVERY STORAGE AND HANDLING. Take all precautions in handling, storing and applying emulsified asphalts so as not to damage the product or damage the environment.

612-2.3 BITUMINOUS FOG SEAL. Selection of the particular type and grade of asphalt emulsion is dependent on the type of materials and the environmental conditions during construction. Select one of the emulsions listed below as recommended by the emulsion supplier.

ASTM D977, SS-1, SS-1h or ASTM D2397, CSS-1 or CSS-1h.

CONSTRUCTION METHODS

612-3.1 PRELIMINARY INVESTIGATION OF THE WORK. Verify all preliminary work has been performed in accordance with the plans and specifications prior to application of bituminous fog seal.

612-3.2 WEATHER LIMITATIONS. Apply bituminous fog seal only when the application surface is dry, when the atmospheric temperature is above 50^{o}F and when the weather is not foggy, rainy or excessively windy.

612-3.3 PREPARATION OF SURFACE. Thoroughly clean surfaces to receive fog seal of all loose material including rubber residue, dirt, and other objectionable material. Use equipment specifically suited for the work and approved by the Owner.

612-3.4 APPLICATION OF BITUMINOUS MATERIAL. Application shall be completed as follows:

a. Dilution. Dilute asphalt as recommended by the supplier and as approved by the owner. Unless otherwise approved, dilute 1 to 1 with water. Always add water to emulsion.

b. Area Application. Apply bituminous tack coat with a pressure operated distributor truck designed, equipped, maintained and operated for such use. The distributor truck shall meet the requirements of that used for the application of the prime coat.

c. Application Rate. Apply bituminous fog seal at a rate of 0.07 to 0.12 gallons per square yard. The exact rate of application shall be as recommended by the supplier and approved by the owner. Apply the fog seal at the approved application rate in one application.

d. Drying Time. Maintain the sealed surface until the bituminous material has sufficiently dried so it will no longer be picked up or otherwise damaged by the paving operation (breaks).

MEASUREMENT

612-4.1 There will be no direct measurement for this item.

PAYMENT

612-5.1 There will be no direct payment for this item, payment will be made indirectly under other related items of work.

TESTING REQUIREMENTS

ASTM D977 Emulsified Asphalt

END OF ITEM P-612

ITEM P-620

PAVEMENT MARKING AND STRIPING

DESCRIPTION

620-1.1 This item shall consist of the 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 Engineer. **All permanent markings and stripes shall be painted twice.**

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. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site.

620-2.2 PAINT. Paint shall be Waterborne in accordance with the requirements of paragraph 620-2.2 a. Paint shall be furnished in white 37925 or yellow 33538 or 33655 in accordance with Federal Standard No 595.

a. WATERBORNE. Paint shall meet the requirements of Federal Specification TT-P-1952E.

620-2.3 REFLECTIVE MEDIA. Glass beads shall meet the requirements of Federal Specification TT-B-1325D, Type I Gradation A, Type III, or Type IV. 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.

Type IV glass beads shall meet the requirements of AASHTO M 247 and the following:

Characteristic	Test Method	Requirement
Roundness, beads passing U.S. Sieve Size No. 20	ASTM-1155	85 percent, minimum
Roundness, beads retained U.S. Sieve Size No. 20	Beads shall be judged optically by the percent having an aspect ratio of less than 1.2	85 percent, minimum
Index of Refraction	TT-B-1325C	1.50 minimum
Specific Gravity	TT-B-1325C	2.30 minimum
Crushing Strength	ASTM D 1213	40,000 psi minimum

Gradation					
		Type IV-A		*Type IV-B*	
U.S. Sieve No.	Microns	Minimum percent passing by weight	Maximum percent passing by weight	Minimum percent passing by weight	Maximum percent passing by weight
12	1700	100	--	100	--
14	1400	95	100	--	--
16	1180	80	95	95	100
18	1000	10	40	--	--
20	850	0	5	35	70
25	710	--	--	--	--
30	600	--	--	0	5
PAN					

CONSTRUCTION METHODS

620-3.1 WEATHER LIMITATIONS. The painting shall be performed only when the surface is dry and when the surface temperature is at least 45° F and rising and the pavement surface temperature is at least 5° F above the dew point and when the weather is not foggy or windy. The contractor shall follow the manufacturer's recommendation to the pavement surface condition and atmospheric conditions for placement of the pavement markings. Markings shall not be applied when the pavement temperature is greater than 120° F.

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 marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross sections and clear-cut edges without running or spattering and without over spray.

620-3.3 PREPARATION OF SURFACE. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material that would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance, and loose materials without damage to the pavement surface. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the Engineer.

620-3.4 LAYOUT OF MARKINGS. The proposed markings shall be laid out in advance of the paint application. All pavement markings shall receive glass beads.

620-3.5 APPLICATION. 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 Engineer. The edges of the markings shall not vary from a

straight line more than ½-inch in 50 feet and marking dimensions and spacings shall be within the following tolerances:

Dimension and Spacing	Tolerance
36 inches or less	±½-inch
greater than 36 inches to 6 feet	±1-inch
greater than 6 feet to 60 feet	±2 inches
greater than 60 feet	±3 inches

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate(s) shown in Table 1. The addition of thinner will not be permitted. A period of 24 hours shall elapse between placement of a bituminous surface course or seal coat and application of the paint.

TABLE 1. APPLICATION RATES FOR PAINT AND GLASS BEADS

Paint Type	*Paint Square feet per gallon, ft^2/gal*	*Glass Beads, Type I, Gradation A Pounds per gallon of paint—lb./gal.*	*Glass Beads, Type III Pounds per gallon of paint—lb./gal.*	*Glass Beads, Type IV Pounds per gallon of paint—lb./gal.*
Waterborne	115 ft^2/gal. maximum	7 lb./gal. minimum	12 lb./gal. minimum	--
Waterborne	90 ft^2/gal. maximum	--	--	8 lb./gal. minimum

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 which is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate(s) shown in Table 1. Glass beads shall not be applied to black paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made.

All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.
All permanent markings shall receive two coats of paint. The first layer of paint shall be applied to asphalt surfaces a minimum of 24 hours after the placement of the asphalt concrete and the second layer shall be applied a minimum of 14 days after the placement of the asphalt concrete. Temporary markings shall receive one coat of paint. Glass beads shall be applied after each coat of paint.

620-3.6 PROTECTION AND CLEANUP. After application of the paint, all markings shall be protected from damage until the paint is dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings of paint. The Contractor shall remove from the site all debris, waste, loose or unadhered reflective media, and by-products generated by the surface preparation and application operations to the

satisfaction of the Engineer. 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 Striping will be measured by the linear foot for each size and color of stripe painted in accordance with the Plans and Specifications and accepted by the Engineer. Holding position marking, runway numerals, and striated threshold markings will be measured per each painted by the Contractor and accepted by the Owner.

BASIS OF PAYMENT

620-5.1 Payment shall be made at the respective contract price per linear foot of 6-inch solid yellow stripe, 12-inch solid white stripe, and 36-inch yellow chevron stripe. Payment shall be made at the respective contract price per each for the white runway numerals, white striated threshold markings, and the yellow holding position marking. This price shall be full compensation for furnishing all materials, including glass beads, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-620-1	6-inch Solid Yellow Stripe – per linear foot
Item P-620-1-A1	6-inch Solid Yellow Stripe – per linear foot
Item P-620-2	12-inch Solid White Stripe – per linear foot
Item P-620-3	36-inch Yellow Chevron Stripe – per linear foot
Item P-620-4	White Runway Numerals – per each
Item P-620-5	White Striated Threshold Markings – per each
Item P-620-6	Yellow Holding Position Marking – per each
Item P-620-6-A1	Yellow Holding Position Marking – per each

TESTING REQUIREMENTS

ASTM C 136	Sieve Analysis of Fine and Coarse Aggregates
ASTM C 146	Chemical Analysis of Glass Sand
ASTM C 371	Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders
ASTM D 92	Test Method for Flash and Fire Points by Cleveland Open Cup

ASTM D 711	No-Pick-Up Time of Traffic Paint
ASTM D 968	Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D 1213-54	Test Method for Crushing Resistance of Glass Spheres (1975)
ASTM D 1652	Test Method for Epoxy Content of Epoxy Resins
ASTM D 2074	Test Method for Total Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D 2240	Test Method for Rubber Products-Durometer Hardness
ASTM G 15453	Operating Light and Water-Exposure Apparatus (Fluorescent Light Apparatus UV-Condensation Type) for Exposure of Nonmetallic Materials
Federal Test Method Standard No. 141D/GEN	Paint, Varnish, Lacquer and Related Materials; Methods of Inspection, Sampling and Testing

MATERIAL REQUIREMENTS

ASTM D 476	Specifications for Dry Pigmentary Titanium Dioxide Pigments Products
Code of Federal Regulations	40 CFR Part 60, Appendix A – Definition of Traverse Point Number and Location
Code of Federal Regulations	29 CFR Part 1910.1200 – Hazard Communications
FED SPEC TT-B-1325C	Beads (Glass Spheres) Retroreflective
AASHTO M 247	Glass Beads Used in Traffic Paints
FED SPEC TT-P-1952D	Paint, Traffic and Airfield Marking, Waterborne
Commercial Item Description (CID) A-A-2886A	Paint, Traffic, Solvent Based
FED STD 595	Colors used in Government Procurement

END OF ITEM P-620

ITEM D-701

PIPE FOR STORM DRAINS AND CULVERTS

DESCRIPTION

701-1.1 This item shall consist of the construction of pipe culverts and storm drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

MATERIALS

701-2.1 Materials shall meet the requirements shown on the plans and specified below.

Reinforced Concrete Pipe - Class III

701-2.2 PIPE. The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements.

Reinforced Concrete Pipe	ASTM C 76

701-2.3 CONCRETE. Concrete for pipe cradles shall have a minimum compressive strength of 3,000 psi at 28 days and conform to the requirements of ASTM C 94.

701-2.4 RUBBER GASKETS. Rubber gaskets for rigid pipe shall conform to the requirements of ASTM C 443. Rubber gaskets for PVC pipe and polyethylene pipe shall conform to the requirements of ASTM F 477.

701-2.5 JOINT MORTAR. Pipe joint mortar shall consist of one part portland cement and two parts sand. The portland cement shall conform to the requirements of ASTM C 150, Type I. The sand shall conform to the requirements of ASTM C 144.

701-2.6 JOINT FILLERS. Poured filler for joints shall conform to the requirements of ASTM D 1190.

701-2.7 PLASTIC GASKETS. Plastic gaskets shall conform to the requirements of AASHTO M 198 (Type B).

CONSTRUCTION METHODS

701-3.1 EXCAVATION. The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but it shall not be less than the external diameter of the pipe plus 6 inches on each side. The trench walls shall be approximately vertical.

Where rock, hardpan, or other unyielding material is encountered, the Contractor shall remove it from below the foundation grade for a depth of at least 12 inches or ½-inch for each foot of fill over the top of the pipe (whichever is greater) but for no more than three-quarters of the nominal diameter of the pipe. The width of the excavation shall be at least 1 foot greater than the horizontal outside diameter of the pipe. 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 Engineer shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

The excavation for pipes that are placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the pipe as shown on the plans.

701-3.2 BEDDING. The pipe bedding shall conform to the class specified on the plans. When no bedding class is specified or detailed on the plans, the requirements for Class C bedding shall apply.

a. Rigid Pipe. Class A bedding shall consist of a continuous concrete cradle conforming to the plan details.

Class B bedding shall consist of a bed of granular material having a thickness of at least 6 inches below the bottom of the pipe and extending up around the pipe for a depth of not less than 30 percent of the pipe's vertical outside diameter. The layer of bedding material shall be shaped to fit the pipe for at least 10 percent of the pipe's vertical diameter and shall have recesses shaped to receive the bell of bell and spigot pipe. The bedding material shall be sand or selected sandy soil, all of which passes a 3/8-inch sieve and not more than 10 percent of which passes a No. 200 sieve.

Class C bedding shall consist of bedding the pipe in its natural foundation to a depth of not less than 10 percent of the pipe's vertical outside diameter. The bed shall be shaped to fit the pipe and shall have recesses shaped to receive the bell of bell and spigot pipe.

b. Flexible Pipe. For flexible pipe, the bed shall be roughly shaped to fit the pipe, and a bedding blanket of sand or fine granular material shall be provided as follows:

Pipe Corrugation Depth, in.	Minimum Bedding Depth, in.
½	1
1	2
2	3
2½	3½

c. PVC and Polyethylene Pipe. For PVC and polyethylene pipe, the bedding material shall consist of coarse sands and gravels with a maximum particle size of ¾-inch. For pipes installed under paved areas, no more than 12 percent of the material shall pass the No. 200 sieve. For all other areas, no more than 50 percent of the material shall pass the No. 200 sieve. The bedding shall have a thickness of at least 6 inches below the bottom of the pipe and extend up around the pipe for a depth of not less than 50 percent of the pipe's vertical outside diameter.

701-3.3 LAYING PIPE. The pipe laying shall begin at the lowest point of the trench and proceed upgrade. The lower segment of the pipe shall be in contact with the bedding throughout its full length. Bell or groove ends of rigid pipes and outside circumferential laps of flexible pipes shall be placed facing upgrade.

Paved or partially lined pipe shall be placed so that the longitudinal center line of the paved segment coincides with the flow line.

Elliptical and elliptically reinforced pipes shall be placed with the manufacturer's top of pipe mark within five degrees of a vertical plane through the longitudinal axis of the pipe.

701-3.4 JOINING PIPE. Joints shall be made with (1) portland cement mortar, (2) portland cement grout, (3) rubber gaskets, (4) plastic gaskets, or (5) coupling bands.

Mortar joints shall be made with an excess of mortar to form a continuous bead around the outside of the pipe and shall be finished smooth on the inside. Molds or runners shall be used for grouted joints in order to retain the poured grout. Rubber ring gaskets shall be installed to form a flexible watertight seal.

a. Concrete Pipe. Concrete pipe may be either bell and spigot or tongue and groove. The method of joining pipe sections shall be such that the ends are fully entered and the inner surfaces are reasonably flush and even. Joints shall be thoroughly wetted before mortar or grout is applied.

b. Metal Pipe. Metal pipe shall be firmly joined by form fitting bands conforming to the requirements of ASTM A 760 for steel pipe and AASHTO M 196 for aluminum pipe.

c. PVC and Polyethylene Pipe. Joints for PVC and Polyethylene pipe shall conform to the requirements of ASTM D 3212 when water tight joints are required. Joints for PVC and Polyethylene pipe shall conform to the requirements of AASHTO M 304 when soil tight joints are required. Fittings for polyethylene pipe shall conform to the requirements of AASHTO M 252 or M 294M.

701-3.5 BACKFILLING. Pipes shall be inspected before any backfill is placed; any pipes found to be out of alignment, unduly settled, or damaged shall be removed and relaid or replaced at the Contractor's expense.

Material for backfill shall be fine, readily compatible soil, granular material selected from the excavation or a source of the Contractor's choosing. It shall not contain frozen lumps, stones that

would be retained on a 2-inch sieve, chunks of highly plastic clay, or other objectionable material. No less than 95 percent of a granular backfill material shall pass through a ½-inch sieve, and no less than 95 percent of it shall be retained on a No. 4 sieve.

When the top of the pipe is even with or below the top of the trench, the backfill shall be compacted in layers not exceeding 6 inches on both sides of the pipe and shall be brought up one foot above the top of the pipe or to natural ground level, whichever is greater. Care shall be exercised to thoroughly compact the backfill material under the haunches of the pipe. Material shall be brought up evenly on both sides of the pipe.

When the top of the pipe is above the top of the trench, the backfill shall be compacted in layers not exceeding 6 inches and shall be brought up evenly on both sides of the pipe to 1 foot above the top of the pipe. The width of backfill on each side of the pipe for the portion above the top of the trench shall be equal to twice the pipe's diameter of 12 feet, whichever is less.

For PVC and polyethylene pipe, the backfill shall be placed in two stages; first to the top of the pipe and then at least 12 inches over the top of the pipe. The backfill material shall meet the requirements of paragraph 701-3.2c.

All backfill shall be compacted to the density required under Item D-761.

METHOD OF MEASUREMENT

701-4.1 The 24-inch RCP shall be measured by linear feet of pipe in place, completed, and approved by the owner. It shall be measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. The 24-inch RCP End Sections shall be measured as each, installed, completed, and approved by the owner.

BASIS OF PAYMENT

701-5.1 Payment for 24-inch RCP will be made at the contract unit price per linear foot. This price shall fully compensate the Contractor for furnishing all materials and for all preparation, excavation, installation of these materials, and backfilling; and for all labor, equipment, tools, and incidentals necessary to complete the item. Payment for 24-inch RCP end sections will be made at the contract unit price per each. This price shall fully compensate the Contractor for furnishing all materials and for all preparation, excavation, installation of these materials, backfilling, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item D-701-1-A1	24-inch RCP – per linear foot
Item D-701-2-A1	24-inch RCP End Sections – per each

MATERIAL REQUIREMENTS

ASTM C 14	Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C 76	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C 94	Ready Mixed Concrete
ASTM C 144	Aggregate for Masonry Mortar
ASTM C 150	Portland Cement
ASTM C 443	Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
ASTM D 1056	Flexible Cellular Materials—Sponge or Expanded Rubber
AASHTO M 198	Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets

END OF ITEM D-701

ITEM D-703

ROCK RIP-RAP

DESCRIPTION

703-1.1 The work to be performed in accordance with this section includes furnishing and installing stone, with or without grout as indicated on the plans and specified herein. The work shall include the furnishing of all labor, tools, equipment, materials and the performing of all operations required to provide a complete item in accordance with the project plans and these specifications.

MATERIALS

703-2.1 STONE. Stone shall be sound and durable, and free from seams and coatings. Loss by abrasion shall not exceed 45 percent after 500 revolutions when tested in accordance with ASTM C131.

A. Shape - Do not use rounded boulders or cobbles on slopes steeper than 2 to 1 unless grouted.

B. Size - Stone shall conform to the following gradation:

% Smaller than given size by weight	Rock Dimension
70-100	15-inch
50-70	12-inch
35-50	9-inch
2-10	3-inch

C. Type - Waste concrete is not to be used unless specifically approved by the Owner.

D. Specific Gravity - 2.5 minimum.

703-2.2 PORTLAND CEMENT GROUT. Portland cement grout shall consist of one part Portland cement to three parts aggregate by volume. The aggregate shall be two parts sand and one part 3/8 inch aggregate. The sand shall meet the requirements of ASTM C144. The aggregate shall meet the requirements of ASTM C404, Size No. 1.

CONSTRUCTION METHODS

703-3.1 PRELIMINARY INVESTIGATION OF THE WORK. The contactor shall verify all preliminary work has been performed in accordance with these specifications prior to placement of rock rip-rap or gabions.

703-3.2 PREPARATION OF GROUND SURFACES. Trim and shape bed to provide even surfaces to the plan elevation. Excavate, backfill and compact bed for rip-rap in accordance with Technical Specification P-152 Excavation & Embankment.

703-3.3 ROCK RIP-RAP.

A. Depth Less Than 20 Inches - Place stone by hand to provide a minimum of voids. Place larger stone in the trench at the slope toe, as foundation course, and on the perimeter. Place stones with longitudinal axis normal to the face of the embankment and arranged so that each stone has at least 3 point bearing on underlying stones. Chink interstices with small stones. The finished surface shall be even and tight and shall not vary from the planned surface by more than 3 inches per foot of depth.

B. Depth Greater Than 20 Inches. Stone may be placed by dumping and spreading in layers with suitable equipment. Arrange with equipment to produce stable and dense layer.

703-3.4 GROUTED ROCK RIP-RAP. Place rip-rap as specified above and grout with Portland cement grout. Mix grout in an appropriate machine mixer. Place grout to the depth as shown on the plan but in no case less than 70 percent of the depth of rip-rap. Place and consolidate grout so as to provide a dense stone and mortar layer with all voids and interstices filled. The stone face surface shall be exposed. If required, use water pressure to clean stone faces after the mortar has achieved sufficient strength. Cure grouted rip-rap with standard concrete procedures.

METHOD OF MEASUREMENT

703.4.1 Rock Rip-Rap will be measured per square foot of 24-inch thick rock rip-rap placed by the Contractor and accepted by the Owner.

BASIS OF PAYMENT

703.5-1 Payment for 24-inch Thick Rock Rip-Rap will be made at the Contract unit 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:

D-703-1	24-inch Thick Rock Rip-Rap – per square foot
D-703-1-A1	24-inch Thick Rock Rip-Rap – per square foot

MATERIAL REQUIREMENTS

ASTM C131	Standard Test Method for Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C144	Standard Specification for Masonry Mortar
ASTM C404	Standard Specification for Aggregates for Masonry Grout

END OF ITEM D-703

ITEM D-761

TRENCH EXCAVATION AND BACKFILL

DESCRIPTION

761-1.1 The work to be performed in accordance with this section includes the excavation, trenching, backfilling and surface repair for all conduit pipelines, pipe culverts, accessories and lines connected thereto, complete, including sheeting and shoring, dewatering, grading and cleanup.

Excavation for appurtenant structures such as manholes, inlets, transition structures, junction structures, vaults, valve boxes, catch basins, pull-boxes, etc. shall be included in this section.

The work shall include the furnishing of all labor, tools, equipment, materials and performing all operations to provide a complete item in accordance with the project plans and these specifications.

761-1.2 DEFINITIONS.

1. Trench - An excavation in which the depth is greater than the width of the bottom of the trench.
2. Foundation - Material on which bedding is to be directly placed.
3. Bedding - Granular material on which pipe or structure is to be directly placed. The bedding extends from the foundation to 6 inches above the top of the pipe.
4. Select Backfill - Material placed from top of the bedding to the finished subgrade.

761-1.3 QUALITY CONTROL. The contractor shall provide all preliminary material testing for imported bedding and backfill prior to the start of construction. Material test reports shall be prepared by an independent laboratory and stamped by a Professional Engineer licensed in the State of Nevada. Test Reports shall include moisture density relations (proctor), gradations, plastic limits, etc. of the materials proposed for use as bedding and backfill. The Owner may accept certified test results performed within a one-year period indicating tests results that meet specification requirements. The owner will provide compliance testing during construction. All failed compliance tests shall be retested by the contractor at his expense.

A. Reference Test Standards and Specifications

ASTM C94 Ready Mix Concrete.
ASTM C117 Standard Test Method for Materials Finer than No. 200 Sieve 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 Method for Sieve Analysis of Fine and Coarse Aggregate.
ASTM D1557 Test Methods for Moisture Density of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18-inch Drop.
ASTM D1556 Density of Soil in Place by the Sand-Cone Method.

ASTM D2922 Density of Soil and Soil-Aggregate in Place by Nuclear Methods.
ASTM D3017 Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods.
ASTM D4215 Standard Specification for Cold Mixed, Cold Laid Bituminous Paving Mixture.
ASTM D4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils. Rock Correction Procedure for Maximum Density Determination, AASHTO Methods.

B. Frequency of Testing

1. Maximum Dry Density and Optimum Moisture Content, ASTM D1557.
   a. Perform one test for each different class or type of material.
   b. Perform one test when previous test is suspect, due to subtle changes in the material, as determined by the Engineer.

2. Density of Soil In-Place by Sand Cone or by Nuclear Methods
   a. Bedding. Perform at least one test per 500 linear feet of trench or one test between manholes, whichever provides the most number of tests.
   b. Backfill. Perform at least one test per lift thickness, per 500 linear feet of trench or one test, per lift thickness between manholes or valves, whichever provides the most number of tests.
   c. Provide additional tests at Engineer's request.

C. Testing Tolerances

1. Percent Compaction. Not less than as specified on the plans or in these specifications.
2. In-Place Moisture Content. As required to achieve specified percent relative compaction.
3. Soft or Yielding Surfaces. Regardless of percent relative compaction obtained by test, areas which are determined by the engineer to be soft and/or yield under the load of construction equipment are to be removed and replaced at no additional cost to the owner.

761-1.4 SUBMITTALS. The Contractor shall provide the following items prior to the start of construction.

A. Materials Test Reports. Material test reports shall be prepared by an independent laboratory and stamped by a Professional Engineer licensed in the State of Nevada.
   1. Report of maximum dry density and optimum moisture content of soils proposed for use in the work prior to beginning of construction.
   2. Report of bedding and backfill materials compliance tests, (density, gradation, etc.) as required.

B. Shoring Plan. Provide plans, details and calculations by a professional engineer

registered in the appropriate jurisdiction if shoring or sheeting is required.

761-1.5 JOB CONDITIONS.

A. Geotechnical Report. A Geotechnical investigation of the site has been performed and is included in the Appendix.

B. Dewatering - It is not expected that dewatering will be required. The Contractor is cautioned that the depth of groundwater is variable depending upon season and whether irrigation is in progress. Therefore, the actual depths to groundwater encountered may be different than that previously encountered. The Contractor shall include any necessary dewatering requirements in the appropriate pipeline, trenching or earthwork Bid Item, and no additional payment will be made for dewatering or water control. All water obtained during the dewatering process shall be disposed of in accordance with applicable state and local laws, in a manner so as to not cause a nuisance for adjoining property owners.

C. Protection of Existing Utilities - Maintain all utilities, not scheduled for abandonment, both underground and overhead in continuous service throughout the contract period. The contractor shall be liable for damages to or interruption of services from said utilities caused by the construction.

D. Soil with high moisture content - The contractor is cautioned that the existing soils may have a high moisture content. The Contractor shall include any necessary soil drying requirements in the appropriate pipeline, trenching or earthwork Bid Item, and no additional payment will be made for the drying of the soils.

MATERIALS

761-2.1 SOIL AND SOIL AGGREGATE MATERIALS. The materials shall conform to the requirements of these specifications or shall be in accordance with Section 19 of the 2006 State of California Department of Transportation Standard Specifications and approved by the Owner.

A. Unsuitable materials not to be incorporated in the work include:

1. Organic matter such as peat, mulch, organic silt or sod.
2. Soils containing expansive clays.
3. Material containing rubbish & debris.
4. Poorly graded coarse material.
5. Particles with sizes in excess of 6-inches.
6. Material which will not achieve density and/or bearing requirements.

B. Bedding - Bedding is required for all pipe lines 4-inch and greater in diameter, and shall be Class A, B, or C backfill or Type 2 Class B aggregate base. Bedding for all pipe lines less than 4 inches shall be bedded in Class A, B, or C backfill. Manholes shall be bedded in Class A, B, or C backfill or Type 2 Class B aggregate base.

C. Backfill - Select backfill shall be Class A, B, C, or E backfill.

Bedding and Backfill Material Specifications.

1. Class A Backfill. Sandy material, non-plastic, and shall conform to the following:

Sieve Sizes	Percentage by Weight Passing Sieve
3/8-inch	100
No. 4	90-100
No. 50	10- 40
No. 100	3- 20
No. 200	0- 15

2. Class B Backfill:

Sieve Sizes	Percentage by Weight Passing Sieve
2-inch	100
No. 4	0-15
No. 200	0-3

3. Class C Backfill. Free of organic impurities, clay lumps or unstable substances.

Sieve Sizes	Percentage by Weight Passing Sieve
1-inch	100
3/4-inch	90-100
3/8-inch	10-55
No. 4	0-10

4. Class D Backfill. Gravel free of organic impurities, clay lumps or unstable particles.

Sieve Sizes	Percentage by Weight Passing Sieve
2-inch	100
1-1/2 inch	90-100
3/4-inch	0-5

5. Class E Backfill. Native granular material free of organic material.

Sieve Sizes	Percentage by Weight Passing Sieve
4-inch	100
3/4-inch	70-100
No. 40	10-50
No. 200	0-35

6. Type 2, Class B, Aggregate Base. Crushed aggregate or processed natural material, clean, hard, sound and free of any detrimental quantity of soft, friable elongated or laminated pieces, organic matter or other deleterious substances. Properties of which shall meet the following requirement:

   a. Gradation, ASTM C136 and ASTM C117.

Sieve Size	Percent by Weight Passing
1 inch	100
3/4-inch	90-100
No. 4	35-65
No. 16	15-40
No. 200	2-10

   b. Durability Index, 35 percent minimum.
   c. Plasticity Index and Liquid Limit, ASTM D4318, maximum plasticity index of 5, maximum liquid limit of 35 percent.
   d. Sand Equivalent, 22 percent minimum.
   e. Resistance R-Value, ASTM D2844, 78 percent minimum.

761-2.2 PORTLAND CEMENT CONCRETE. All Portland cement concrete shall have a compressive strength of 3,000 psi.

761-2.3 BURIED WARNING AND IDENTIFICATION TAPE. Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for locating, warning, and identification of buried utility lines shall be used. Provide tape on rolls, 3-inch minimum width, color coded as stated below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing is to be permanent, unaffected by moisture or soil.

WARNING TAPE COLOR CODES	
Red	Electric
Yellow	Gas, Oil, Dangerous Materials
Orange	Telephone and Other Communications
Blue	Water Systems
Green	Sewer Systems
White	Steam Systems

A. Warning Tape for Metallic Piping - Acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements indicated above. Minimum thickness of the tape shall be 0.003 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise with a maximum 350 percent elongation.

B. Detectable Warning Tape for Non-Metallic Piping - Polyethylene plastic tape to the width, color, and printing requirements indicated above. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise.

CONSTRUCTION METHODS

761-3.1 PRELIMINARY INVESTIGATION OF THE WORK. The contractor shall verify that all of the preliminary work including construction staking has been performed in accordance with the plans and specifications prior to trenching and backfill operations.

761-3.2 TRENCHING IN FILL AREA. Grade fill areas to within 1 foot of the finish grade prior to trenching and placement of the pipeline.

761-3.3 EXCAVATION.

A. General - Perform all excavations of every description and of whatever substances encountered to the depths indicated on the plans and including excavation ordered by the Owner of compacted fill for the purpose of performing tests. Use open cut excavation methods unless otherwise indicated on the plans or approved by the Engineer.

B. Trench Widths. Excavate trenches for pipe to the dimensions indicated. Maintain trench walls as vertical as possible except as required by safety standards and as required for sheeting and shoring.

Size of Pipe (I.D.)	Maximum Width of Trench at Top of Pipe Greater than O.D. of Pipe	Minimum Width of Trench at Springline each Side of Pipe
Less than 18"	16"	6"
18" to 24" inclusive	19"	7-1/2"
27" to 39" inclusive	22"	9"
42" to 60" inclusive	2" O.D.	12"
Over 60"	36"	12"

If the maximum trench width is exceeded at the top of the pipe provide necessary additional load bearing capacity by means approved by the Owner at no additional cost to the Owner.

C. Overexcavation

1. Unauthorized Overexcavation - Fill and compact unauthorized excavation beyond the specified grade line at the contractor's expense with Type 2 Class B aggregate base. Compact to 95 percent of the maximum density. No payment will be made for unauthorized overexcavation.
2. Rock - Overexcavate rock encountered in the trench to provide a minimum of six inches of bedding below the pipe and the minimum width at the springline.
3. Unsuitable Material - Overexcavate unsuitable material to the depth necessary to provide the required support as determined by the Owner. Backfill the overexcavation with bedding material and compact to at least 95 percent of the maximum density.

A. Excavation for Manholes, Valves, Inlets, Catch Basins and Other Accessories - Provided the excavated surfaces are firm and unyielding, the contractor may elect to cast concrete for the structure directly against excavated surfaces. Overexcavate to provide bedding where shown on the plans.

B. Pavement and Concrete Cutting and Removal - Saw cut, remove and dispose of existing pavements and concrete in accordance with Specifications.

C. Grading and Stockpiling

1. Grading - Grade in the vicinity of the trench to prevent surface water from flowing into the trench. Remove any water accumulated in the trench by pumping or by other approved methods. Stockpile excavated material in an orderly manner a sufficient distance back from the edges of the trench to

avoid overloading and to prevent slides or cave-ins.

2. Topsoil - Excavate topsoil and stockpile separately. Replace topsoil in areas to be vegetated upon completion of backfill and grade to the elevations indicated on the plans.

D. Shoring and Sheeting - Shore, sheet and brace excavations as set forth in the rules, orders and regulations of the United States Department of Labor Occupational Health and Safety Administration (OSHA). Provide detailed plan and calculations as prepared by a registered professional engineer for excavations 20 feet in depth or greater or when shoring, sheeting or bracing deviates from OSHA standards. Place and remove shoring, sheeting and bracing so as not to damage adjacent improvements, utilities or utility being placed. Costs for shoring, sheeting and bracing to be incidental to the pipe item.

E. Open Trench

1. Maximum Length - The maximum length of open trench at any one location is not to exceed 500 feet. The trench is considered open until backfill is completed to the adjacent finish grade elevation.
2. Street Crossings - Complete backfill of trench across streets at the end of each work day. Use temporary patch material or steel plates as required.
3. Temporary Provisions - Furnish and install trench bracing and steel plating required to provide safe and convenient vehicular and pedestrian passage across trenches where required. Maintain access to and from emergency facilities at all times.

761-3.4 FOUNDATION, BEDDING, BACKFILLING AND COMPACTION.

A. Foundation - Excavate trench bottom to the depth and width as shown. Remove all loose, disturbed material from the bottom of the trench such that the bedding or pipe, as detailed, shall rest on firm, densified or undisturbed soil.

B. Bedding - Moisture condition and place bedding material to the required thickness. Compact bedding material to the specified density.

C. Fine Grading - Accurately grade the bottom of the trench to provide uniform bearing and support for each section of pipe at every point along its entire length, except where it is necessary to excavate for joints.

D. Moisture Conditioning - Moisture condition all bedding and backfill materials by aerating or wetting to obtain the moisture content required to achieve the specified percent compaction. Completely mix the material until the moisture content is uniform throughout the lift.

E. Lift Thickness

LIFT DESCRIPTION	MAXIMUM LOOSE LIFT THICKNESS, INCHES
Initial Bedding	8
Bedding	1/3 Pipe Diameter, or 8 inches, whichever is less.
Backfill	8
Aggregate Base Surfacing	6

Lift thickness may be increased by the engineer if the contractor can prove, through a series of density tests, at the contractors expense, that minimum density is achieved throughout the lift thickness.

F. Compaction

1. Compaction Methods - Water consolidation, water jetting or rubber tire wheel rolling are not acceptable methods of compaction and are prohibited.
2. Pipe Haunch - Hand compact initial backfill in pipe haunch with a pipe haunch compactor (J-bar) or mechanical vibrator sized to fit the narrow width between the pipe and the trench. Give special attention to provide proper compactive effort in the pipe haunch zone.

3. Compaction Densities - Thoroughly compact trench bedding and backfill to not less than the percent compaction as shown on the plan or as indicated herein.

PERCENT COMPACTION MINIMUM DENSITY REQUIRED				
Back-fill Type	Location	From subgrade surface to 2' below surface	From 2' below surface to 1' above top of pipe	From 1' above top of pipe to bottom of trench
I	Under any existing or proposed pavement, curb, gutter, side-walk, or such construction included in the contract, or when any part of the trench excavation is within 2' of the above.	95%	90%	90%
II	On any utility easement, street, road or alley right-of-way outside limits of (I).	90%	90%	90%
III	Under or around any structures or exposed utilities.	95% in all cases.		

761-3.5 BURIED WARNING AND IDENTIFICATION TAPE. Place warning and identification tape to the depth indicated on the plans. Center tape over pipeline.

761-3.6 BACKFILL FOR MANHOLES, VALVES, INLETS, CATCH BASINS AND OTHER ACCESSORIES. Bedding, backfill, lift thickness and compaction for appurtenant structures shall be as indicated for the adjacent trench detail.

761-3.7 PAVEMENT REPLACEMENT AND SURFACE RESTORATION.

A. Grading - Perform all grading adjacent to backfilled trenches and structures necessary to leave the area in a neat and satisfactory condition as approved by the Engineer.

B. Surface Restoration - Restore all paved streets, gravel roads, valley gutters or other surfaces which were broken into or damaged by the installation of the new work to a condition as good as or better than originally encountered. The restoration shall be in accordance with these specifications, accepted standards and as acceptable to the owner.

C. Clean Up - Remove all excess soil, concrete, construction debris etc. from the premises. Leave job site in a neat and clean condition.

METHOD OF MEASUREMENT

761-4.1 No measurement for Trench Excavation and Backfill will be made.

PAYMENT

761-5.1 No payment will be made for Trench Excavation and Backfill. The work required for Trench Excavation and Backfill shall be considered as incidental to the other items of work for which it is required.

END OF ITEM D-761

ITEM F-161
WIRE FENCE

DESCRIPTION

161-1.1 This item provides the requirements for furnishing materials and constructing new wire fences with steel and wood posts in accordance with the details included herein and as shown on the plans. The fence to be erected shall be woven wire fencing surmounted by four strands of barbed wire as indicated on the plans and in the bid proposal.

MATERIALS

161-2.1 WIRE.

a. Woven Wire (Zinc-coated). The woven wire fencing shall be 7-bar, 26-inch field fence with top and bottom wires No. 10 gauge, and filler and stay wires No. 12 ½ gauge. Stay wires shall be spaced 6 inches apart. All wire shall be smooth galvanized steel wire conforming to ASTM A 121, Type B. All wires shall be two-dip and spaced as shown on the plans.

b. Barbed Wire (Zinc-coated). Zinc-coated barbed wire shall be 2-strand twisted No. 12 ½ gauge galvanized steel wire with 4-point barbs of No. 14 gauge galvanized steel wire. All wire shall conform to ASTM A 121, Type A. The barbs shall be spaced approximately 4 inches apart.

c. Bracing Wire (Zinc-coated). Wire used for cable for bracing shall be No. 9 smooth galvanized soft wire.

161-2.2 METAL FENCE POSTS, GATES, RAILS, BRACES, AND ACCESSORIES.

These items, when specified, shall conform to the requirements of Fed. Spec. RR-F-191 and shall be zinc-coated.

161-2.3 WOOD FENCE POSTS AND BRACING.

a. Species. All posts shall be one of the following species of wood, unless otherwise noted in the proposal.

Group I	**Group II**
Cedar	Douglas-fir
Chestnut	Gum, Red
Cypress, Southern	Larch, Western
Locust, Black	Pine, Southern Yellow
Osage-orange	Pine, Lodgepole
Redwood	Tamarack
Yew, Pacific	Ash

Honeylocust	Maple, Sugar
Oak, White	Oak, Red
Mulberry	Spruce
Live Oak	

Posts of Group I may be used untreated, provided at least 75% of the wood is heartwood. Posts of less than 75% heartwood of Group I shall be given a preservative treatment for the part of the post that will have contact with the ground line in accordance with the method specified under subparagraph e(1) below. Posts of Group II shall be given a preservative treatment in accordance with the method specified under subparagraph e(2) below.

b. Quality. Posts shall be peeled, sound, straight-grained, free from decay, cracks, and splits; shakes shall not be in excess of ¼-inch wide and 3 feet long. Checks (lengthwise separations of the wood in a generally radial direction) are permitted, provided they are not injurious.

c. Dimensions. All posts shall be of the length shown on the plans. Posts shall have the minimum top diameters shown on the plans or as specified. Sawed and split posts are acceptable in lieu of round posts provided their dimensions are such that round posts of required diameter could be turned there from.

d. Manufacture. Outer bark shall be completely removed from all posts including depressions. Inner bark shall be removed from all post surfaces to be treated, except inner bark may remain in depressions. The amount of wood shaved off in the removal of inner bark shall be held to a minimum.

e. Treatment.

(1) Butt treatment. All timber shall be thoroughly seasoned and dry (22% maximum moisture content) before applying preservative treatment. The treatment shall be by a process at least equal to a hot and cold bath process. The hot bath temperature shall be from 200 to 230° F for a duration of 45 minutes, and the cold bath temperature not over 120° F for a duration of 45 minutes. The preservative shall be either coal-gas tar or coke-oven tar creosote conforming to American Wood Preservers Association (AWPA) Specification No. 4 for Grade 1 creosote; or a 5% minimum, by weight, pentachlorophenol petroleum solution made by either mixing a liquid concentrate of pentachlorophenol in fuel oil or kerosene, or by dissolving pentachlorophenol crystals of technical purity in suitable fuel oil solvents, as specified by AWPA.

(2) Full length treatment. Posts shall be conditioned by air seasoning, steaming, or heating in oil in a manner that prevents injurious checking, splitting, or warping before treating. The treatment, care and preservative shall be in accordance with AWPA.

161-2.4 STAPLES. Staples shall be made from No. 9 U.S. Steel Wire Gage Galvanized and shall be of the L-shaped (strong-hold) type. The long shank shall be threaded one (1) inch long for hardwood posts and 1 ½ inches long for use in softwood posts.

161-2.5 CONCRETE. Concrete shall be of a commercial grade with a minimum 28-day compressive strength of 3,000 psi.

CONSTRUCTION METHODS

161-3.1 GENERAL. The fence shall be constructed in accordance with the details on the plans and as specified herein using new materials, and all work shall be performed in a workmanlike manner satisfactory to the Engineer. Prior to the beginning of the work or upon the request of the Contractor, the Engineer shall locate the position of the work by establishing and marking the property line or fence line. When directed, the Contractor shall span the opening below the fence with barbed wire fastened to stakes of the required length at locations of small natural or drainage ditches where it is not practical to conform the fence to the general contour of the ground surface. The new fence shall be permanently tied to the terminals of existing fences whenever required by the Engineer. The finished fence shall be plumb, taut, true to line and ground contour, and complete in every detail. When directed, the Contractor shall stake down the woven wire fence at several points between posts.

When directed, in order to keep stock on adjoining property enclosed at all times, 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 or such length that the stock can be kept in the proper field. 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. Any openings in the fence shall be guarded when stock is using the adjoining property.

161-3.2 CLEARING FENCE LINE. The site of the fence shall be sufficiently cleared of obstructions, and surface irregularities shall be graded so that the fence will conform to the general contour of the ground. The fence line shall be cleared to a minimum width of 2 feet on each side of the centerline of the fence. This 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 placed a uniform distance above ground, as specified in the plans. When shown on the plans or as directed by the Engineer, the existing fences which coincide with, or are in a position to 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 material acceptable to the Engineer and shall be compacted properly with tampers.

The work shall include the handling and disposal of all material cleared, excavated or removed, regardless of the type, character, composition, or condition of such material encountered.

161-3.3 INSTALLING METAL POSTS. All posts shall be spaced as shown on the plans. Metal posts shall be set in concrete bases as shown on the plans. The top of the base shall be slightly above the ground surface, trowel finished, and sloped to drain. Holes of full depth and

size for the concrete bases for posts shall be provided even if blasting of rock or other obstructions is necessary. All line posts may be either driven or set in dug holes to a penetration of 3 feet. All post setting shall be done carefully and to true alignment. Dirt removed for placing posts, anchor bars, flanges, etc., shall be replaced, tamped, and leveled. When posts are driven, care shall be exercised to prevent marring or buckling of the posts. Damaged posts shall be replaced at the Contractor's expense. No extra compensation will be made for rock excavation. Rock excavation shall not be grounds for extension of time.

161-3.4 SETTING WOOD POSTS. Posts shall be set with large ends down, plumb, and in good line on the side on which the wire is to be fastened. Posts shall be set full depth and shall not be cut off to eliminate rock or other excavation. Where rock is encountered, it shall be removed, even if blasting is necessary, to provide full-depth and full-size holes. The bottoms of all posts shall be cut off square. The diameter of the holes shall be at least 6 inches larger than the diameter of the posts. When cleats are used on posts, the holes shall be dug large enough to accommodate them. After posts are placed and lined, the holes shall be backfilled with suitable material that shall be properly compacted by the use of tampers. The posts adjacent to end, corner, anchor, and gate posts shall be set and braced with braces and wire, as shown on the plans. No extra compensation shall be made for rock excavation. Rock excavation shall not be grounds for extension of time.

161-3.5 BRACING. All corner, anchor, end, and gate posts shall be wood and braced as shown on the plans. Anchor posts shall be set at approximately 500-foot intervals and braced to the adjacent posts.

End, corner, anchor, and gate posts shall be braced by using a post of sufficient length or a piece of sawed lumber of the proper size, together with a wire cable. The wooden brace shall be gained and securely spiked into the end, corner, anchor, or gate posts and into the next intermediate posts about 6 inches from the top of the respective posts. A cable made of a double strand of galvanized soft wire shall be looped around the end, corner, anchor, or gate post near the ground and around the next intermediate post about 12 inches from the top. After the cable has been stapled in this position, it shall be twisted until tight. The staples used to hold the cable shall be not less than 1½ inches long. The tool used for twisting the cable shall be left in placed to permit later adjustment of bracing if found necessary. Anchor posts shall be set at approximately 500-foot intervals and braced to the adjacent posts. Posts shall be braced before the wire fencing is placed.

161-3.6 INSTALLING WIRE. All barbed wire and woven wire shall be placed on the side of the post away from the airport, or as directed, at the height indicated on the plans. The woven wire shall be carefully stretched and hung without sag and with true alignment. Care shall be taken not to stretch the wire so tightly that it will break in cold weather or pull up corner and brace posts. All horizontal wires shall be fastened securely to each post by fasteners or clips designed for use with the posts furnished. The woven wire shall be wrapped around end, corner, and gate posts, and the ends of all horizontal wires shall be tied with snug, tight twists. The wire shall be secured to prevent slipping up and down the post. Barbed wire strands shall be stretched and each strand secured to each post to prevent slipping out of line or becoming loose. At end, corner, and gate posts the barbed wire shall be securely wrapped and anchored once about the post from outside and secured against slipping by tying the ends with snug, tight twists.

However, on spans of less than 100 feet both ends of the span need not be wrapped around the posts. The bottom wire of the woven wire fencing shall clear the ground by not more than 4 inches or less than 1 inch at any place.

161-3.7 SPLICING WIRE. Splices in barbed and woven wire will be permitted if made with an approved galvanized bolt-clamp splice or a wire splice made as follows: The ends of each wire shall be carried 3 inches past the splice tool and wrapped around the other wire for at least six turns in opposite directions. After the tool is removed, the space occupied by it shall be closed by pulling the ends together. The unused ends of the wire shall be cut close to make a neat, workmanlike job.

161-3.8 STAPLES. Staples shall be set so as to hold the sire securely, but should not be buried in the post in such a manner as to severely nick or bend the wire.

161-3.9 INSTALLING GATES. The gates shall be hung on gate fittings as shown on the plans. They shall be attached in such a manner that the gate cannot be lifted off the hinges. Gates shall be erected to swing in the direction indicated and shall be provided with gate stops, as specified or as shown on the plans. Gates shall be erected at locations shown on the plans.

161-3.10 EXISTING FENCE CONNECTIONS. Wherever the new fence joins an existing fence, either at a corner or at the intersection of straight fence lines, a corner or anchor post shall be set at the junction and braced and anchored the same as herein described for corner posts.

If the connection is made at other than the corner of the new fence, the last span of the old fence shall contain a brace span.

161-3.11 ELECTRICAL GROUNDS. Electrical grounds shall be constructed where a power line passes over a fence. The grounds shall be installed directly below the point of the crossing. The ground shall be accomplished with a copperclad rod 8 feet long and a minimum of 5/8 inch 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 the element of the fence is grounded. Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction.

161-3.12 CLEANING UP. The Contractor shall remove from the vicinity of the completed work all tools, buildings, equipment, etc., used during construction.

METHOD OF MEASUREMENT

161-4.1 Wire fence shall be measured per linear foot in place from outside to outside of end posts or corner posts and shall be the length of fence actually constructed.

BASIS OF PAYMENT

161-5.1 Payment shall be made at the contract unit price per linear foot for wire fence, including but not limited to posts, wire, staples, electrical grounds, bracing, connections to existing fence, and concrete. This 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.

Payment will be made under:

Item F-161-1	4-Strand Barbed Wire Fence – per linear foot

MATERIAL REQUIREMENTS

ASTM A 121	Standard Specification for Zinc Coated (Galvanized) Steel Barbed Wire
FED SPEC RR-F-191/Gen	Fencing, Wire, and Post, Metal

END OF ITEM F-161

ITEM L-103
AIRPORT BEACON TOWERS

DESCRIPTION

103-1.1 This item shall consist of furnishing and installing an airport beacon tower of the type shown in the plans, in accordance with these specifications. This work shall include the clearing of the site, erection of the tower, installation of lightning protection, painting, and all incidentals necessary to place it in operating condition as a completed unit to the satisfaction of the Engineer.

EQUIPMENT AND MATERIALS

103-2.1 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 Engineer.

b. Manufacturer's certifications shall not relieve the Contractor of the Contractor's responsibility to provide materials in accordance with these specifications and acceptable to the Engineer. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the Engineer and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

c. All materials and equipment used to construct this item shall be submitted to the Engineer 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 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 boldly and clearly made with arrows or circles (highlighting is not acceptable). Contractor is solely responsible for delays in project accruing directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the plans and specifications. The Engineer reserves the right to reject any and all equipment, materials or procedures, which, in the Engineer's opinion, does not meet the system design and the standards and codes, specified herein.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least 12 months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

103-2.2 TOWER. The beacon tower shall conform to the requirements of Advisory Circular (AC) 150/5340-30, Design and Installation Details for Airport Visual Aids, Chapter 6.

103-2.3 LIGHTNING PROTECTION. Lightning protection shall comply with NFPA-780, Standard for the Installation of Lightning Protection Systems. All materials shall comply with Class II requirements regardless of tower height. Ground rods and underground cables shall be installed in accordance with and paid for as described in Item L-108, Underground Power Cable for Airports.

103-2.4 PAINT.

a. Priming paint for galvanized steel towers shall be zinc dust-zinc oxide primer paint conforming to MIL-DTL-24441/19B. If necessary, add not more than ½ pint of turpentine to each gallon.

b. Priming paint for ungalvanized steel towers shall be a high solids alkyd primer conforming to the Master Painter's Institute, Reference #9, Exterior Alkyd, Gloss, VOC Range E2.

c. Orange paint for the body and finished coats on metal and wood surfaces shall consist of a ready-mixed non-fading paint meeting the requirements of Fed. Spec. TT-E-489. The color shall be in accordance with Federal Standard 595, Aviation Gloss Orange Number 12197.

d. White paint for steel tower shall be ready-mixed paint conforming to Commercial Item Description A-A-3067.

CONSTRUCTION METHODS

103-3.1 CLEARING AND GRADING. The site on which the beacon tower is to be erected shall be cleared and leveled. All trees and brush shall be removed from the area within a distance of 20 feet from the tower. Stumps shall be removed to a depth of 18 inches below finished grade and the excavation filled with earth and tamped. If a transformer vault or other structure is included as part of the installation, the area shall be cleared to a distance of 25 feet from these structures. The ground near the tower shall be leveled to permit the operation of mowing machines. The leveling shall extend at least 2 feet outside the tower legs. All debris removed from the tower site shall be disposed of by the Contractor to the satisfaction of the Engineer and in accordance with Federal, state, or local regulations.

103-3.2 EXCAVATION AND FILL. Excavation for the tower footings shall be carried to a minimum of 4 inches below the footing depth. The excess excavation below the footing depth shall then be backfilled with gravel or crushed stone and compacted to the required level. The

footing plates shall be installed, and a thickness of not less than 18 inches of the same gravel or crushed stone shall be placed immediately above the footing plates in layers of not over 6 inches. Each layer above the footing plates shall be thoroughly tamped in place. The remainder of the backfill may be of excavated earth placed in layers not to exceed 6 inches. Each layer shall be thoroughly compacted by tamping.

Where solid rock is encountered, which prevents the carrying of the foundation legs to the required depth but which is of sufficient strength to use holddown bolts, the tower anchor posts shall be cut off at the required length and the holddown bolts shall be installed as indicated in the plans with the approval of the Engineer. Each tower leg shall be anchored to the rock by means of two 7/8-inch diameter by 3-foot long expansion or split bolts and shall be grouted with neat portland cement into holes drilled into the natural rock. Except as required for rock foundations, the footing members shall not be cut off or shortened. If excavated material is of such character that it will not readily compact when backfilled, the Engineer may order the excavation backfilled with concrete or other suitable material.

The concrete footing for tubular beacon towers shall be installed in accordance with the manufacturer's recommendations. Portions of the footing in the topsoil layer shall not be included in the footing height.

103-3.3 ERECTION. Detail erection drawings furnished by the manufacturer shall be strictly followed during construction. All towers shall be erected in sections from the ground up unless otherwise specified. In final assembly, all bolts and fastenings shall be installed, and the structure shall be plumb, true, square, and level. Nuts shall be taken up to a firm bearing after which the bolts shall, if necessary, be cut to proper length to protrude three full threads. Approved locknuts shall be placed on each bolt over the regular nut. Ladder bolts shall be inserted with the head to the outer face of the tower. Diagonal, leg, and handrail bolts shall be installed with nuts on the outer face of the tower, unless otherwise specified. Bent parts shall be straightened before erection without damage to the protective coating. Surfaces abraded or bared of protective coating shall be painted with the proper priming paint as specified in these specifications.

The Contractor shall install the ladder on the side of the tower adjacent to the driveway or most accessible approach to the tower. Tubular beacon towers shall be erected in accordance with the manufacturer's recommendations. The safety cable shall be located on the side of the tower adjacent to the driveway or most accessible approach to the tower.

103-3.4 LIGHTNING PROTECTION. The Contractor shall furnish and install an air terminal, down conductor, and at least one ground plate or rod for each beacon tower or as indicated in the plans. The air terminal shall be installed at the top of the tower with the tip of the rod extending not less than 6 inches above the top of the beacon.

Down-conductor cables shall be securely fastened to the surface of the tower leg at 5-foot intervals with suitable bronze fasteners having bronze or noncorrosive metal bolts. Sharp turns or bends in the down conductor will not be permitted.

All connections of cable to cable, cable to air terminals, and cable to ground plates or rods shall be made with solderless connectors or noncorrosive metal approved by the engineer and shall be of substantial construction.

The down-conductor cable shall be securely attached to ground rods or plates placed at least 2 feet away from the tower foundations. The ground rod shall be driven into the ground so that the top is at least 6 inches below grade. The down-conductor shall be firmly attached to the ground plate or rod by means of a ground connector or clamp. Plates shall be embedded in the area of permanent moisture.

The complete lightning protection installation shall be accomplished to the satisfaction of the Engineer. The resistance to ground of any part of the lightning protection system shall not exceed 25 ohms.

103-3.5 PAINTING. The Contractor shall furnish all materials and labor for painting the beacon tower. The color scheme for the steel tower shall be as shown in the plans.

a. Parts to be Painted. Tower parts (except those parts to be exposed to earth) shall not be treated or primed before erection. All tower parts placed below ground level or within 12 inches above ground level shall be given two coats of approved bituminous paint.

   The paint shall be applied uniformly in the proper consistency by skilled painters. The finished paint shall be free from sags, holidays, and smears. Division lines between colors shall be sharply defined. Each coat of paint shall be given ample time to dry and harden before the next coat is applied. A minimum of 4 days shall be allowed for drying on metal surfaces. Painting shall not be done in cold, damp, foggy, dusty, or frosty atmospheres, or when air temperature is below 40º F, nor started when the weather forecast indicates such conditions for the day.

   All surfaces shall be cleaned before painting. The surfaces shall be dry and free from scale, grease, rust, dust, and dirt when paint is applied.

   The number of coats of paint applied shall be in accordance with the following instructions:

b. Steel Towers, Galvanized. One priming coat of zinc dust-zinc oxide primer after erection and one body and one finish of white or orange paint (as required by the color scheme) shall be applied after erection.

c. Steel Towers, Not Galvanized. One priming coat of corrosion-inhibiting primer and one body and one finish coat of white or orange paint (as required by the color scheme) shall be applied after erection.

   The above specified orange and white ready-mixed paints shall be thinned for the body coats in accordance with the manufacturer's recommendations. In the absence of such recommendations, the following shall apply:

d. Body Coats. Add not more than ½-pint of turpentine to each gallon of ready-mixed paint for body coats.

e. Finish Coats. The ready-mixed paint shall be used as it comes from the container for finish coats.

METHOD OF MEASUREMENT

103-4.1 The quantity to be paid for under this item shall be by the number of tipdown poles installed as completed units in place, accepted, and ready for operation.

BASIS OF PAYMENT

103 5.1 Payment will be made at the contract unit price for each completed and accepted job. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, the concrete foundation, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item L-103-1-A3	55’ Tipdown Beacon Pole, in place – per each

MATERIAL REQUIREMENTS

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
FED SPEC TT-E-489	Enamel, Alkyd, Gloss, Low VOC Content
FED STD 595	Colors Used in Government Procurement
MIL-DTL-24441/19B	Paint, Epoxy-Polyamide, Zinc Primer, Formula 159, Type III
NFPA-780	Standard for the Installation of Lightning Protection Systems
	Master Painter’s Institute

END OF ITEM L-103

ITEM L-130

SEGMENTED CIRCLE

DESCRIPTION

130-1.1 Description of Work. This section covers the work necessary for installing the segmented circle including but not limited to furnishing and installing all materials, incidentals, and related work.

MATERIALS

130-2.1 The segmented circle shall be manufactured by Olson Industries (402-925-5090) or an approved equal. Submittals for manufactured products may be a product catalogue or brochure.

CONSTRUCTION METHODS

130-3.1 Furnish and install the segmented circle in accordance with the details on the plans and/or as recommended by the manufacturer at the indicated locations.

MEASUREMENT

130-4.1 No measurement will be performed for the Segmented Circle because it is a lump sum item.

PAYMENT

130-5.1 Payment for segmented circle shall be made at the contract lump sum price. This price shall be full compensation for the furnishing of all materials including sheet metal, posts, screws, and concrete; for all preparation; the installation of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Item L-130-1	Segmented Circle – per lump sum

END OF ITEM L-130

ITEM L-131

RETROREFLECTIVE MARKER

DESCRIPTION

131-1.1 Description of Work. This section covers the work necessary for installing retro reflective markers including but not limited to furnishing and installing all materials, incidentals, and related work.

MATERIALS

131-2.1 Retroreflective markers shall conform to the requirements of FAA Airport Circular 150/5345-39C for Type II L-853 and the details on the plans. Retro reflective markers shall be constructed of 2-inch diameter PVC pipe having closed metallic ends for soil mounting. Material submittals for retro reflective markers may be a product catalogue or brochure.

CONSTRUCTION METHODS

131-3.1 Retroreflective markers shall be installed at the locations indicated on the plans and shall be installed in accordance with the manufacturer's recommendations.

MEASUREMENT

131-4.1 Retroreflective markers shall be measured per each, complete, in-place as accepted by the Owner**.**

PAYMENT

131-5.4 Payment for retroreflective markers shall be made at the contract unit price per each. This price shall be full compensation for the furnishing of all materials; for all preparation, hauling, and placing of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the work**.**

Payment will be made under:

Item L-131-1-A1	Retroreflective Markers – per each

END OF ITEM L-131

ITEM L-100

ELECTRICAL GENERAL REQUIREMENTS

DESCRIPTION

100-1.1 GENERAL. This Item includes furnishing and installing all material, equipment and apparatus, and all labor, tools, services and equipment required for the demolition/removal of portions of the existing airfield electrical systems and the following general electrical items and for other complete and operable electrical systems as specified in the following specification items to accommodate the scope of this project as specified in this specification and as shown in the Plans.

Installation shall be in accordance with Specifications FAA-C-1217 and FAA-C-1391, except as specified herein. Perform all work not included in the FAA Specifications in accordance with the National Electrical Code, applicable local and Mono County, California standards and regulations.

100-1.2 DEMOLITION AND SALVAGE.

a. Removal and/or salvage of airfield electrical elements included under this Item shall include, but not be limited to the specific elements, of the following:
   1. Airfield Lighting Vault Work
   2. Airfield Lighting Fixtures and Bases
   3. Existing Airfield Lighting cable, cable connectors and conduit
   4. Existing Signs and Sign Bases
   5. Isolation transformers
   6. Concrete structures

100-1.3 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions, apply to work specified in this Item and electrical technical specifications in the L-series specifications.

100-1.4 TEMPORARY LIGHTING AND CIRCUITS.

a. CONTRACTOR shall coordinate with the OWNER at the end of each daylight work shift to verify that all active airfield lighting circuits are operational. CONTRACTOR shall provide all labor and material for this work.

b. CONTRACTOR shall provide and maintain on hand at all times sufficient equipment required to provide temporary lighting and circuit extensions. This includes, but is not limited to the following items:

   1. Temporary taxiway fixtures with bases,
   2. Medium intensity runway edge lights,
   3. Transformers sized for fixtures,
   4. Two-inch conduit,
   5. Temporary L-824 cable,
   6. L-823 connector kits.

The contractor shall turn over all temporary equipment to the Owner at the completion of the project.

.

ITEM L-100

ELECTRICAL GENERAL REQUIREMENTS

100-1.5 SPECIFICATIONS AND STANDARDS. As a supplement to the installation requirements of this item, the following standard specifications and regulations of the issues in effect on the date of this solicitation are incorporated herein by reference and are made a part hereof for electrical work and installation and splicing of underground cables.

NEC	National Electrical Code
FAA-STD-019b	Lightning Protection, Grounding, Bonding and Shielding Requirements for Facilities
FAA-C-1217e	Electrical Work, Interior
FAA-C-1391b	Installation and Splicing of Underground Cables
Utility Company Rules and Regulations	Southern California Edison
Local Governing Bodies' Codes and Regulations	Mono County, California

100-1.6 SHOP DRAWINGS AND MATERIAL LISTS. Prior to the installation of any material and equipment and within 10 days of contract award, CONTRACTOR shall submit to OWNER for approval 4 copies of manufacturers' brochures containing complete dimensional and performance characteristics, wiring diagrams, installation and operation instructions, etc., for the equipment listed in the individual L-Series specification Items.

In addition to the above specific items, a materials list shall be submitted listing each specification paragraph number and stating whether the materials proposed are as specified or are substitutions. If the item is a substitute item, a complete submittal as described in the above paragraphs shall be provided for that item.

The submittal shall be complete and made in one submission in booklet form with hardbound cover. Partial submissions will not be reviewed or considered.

EQUIPMENT AND MATERIALS

100-2.1 EQUIPMENT. Conduits, conduit fittings, conductors, connectors, boxes, wiring devices, panelboards, and circuit breakers shall meet requirements of Specification FAA-C-1217.

100-2.2 CONDUIT, EXTERIOR. Conduits in concrete slabs, in block walls or exterior exposed shall be rigid galvanized steel (RGS). Conduits run on the exterior of the building above or below the grade for the earth grounding system shall be rigid zinc-coated steel. Radius of bends in RGS shall be minimum 12 nominal pipe diameters. Rigid galvanized steel conduit run in concrete or below slab on grade, or in the ground, shall be field wrapped or shall have factory-applied coating as required in Specification FAA-C-1217. Field-made joints, fittings, abrasions and holidays shall be coated or wrapped with material equal to the original coating or wrapping.

100-2.3 CONDUIT, INTERIOR. Conduits 2 inches and larger shall be rigid galvanized steel. EMT smaller than 2 inches may be installed in dry locations, in stud walls, and run exposed within the building.

ITEM L-100

ELECTRICAL GENERAL REQUIREMENTS

100-2.4 CONDUIT, UNDERGROUND. Conduits run underground are specified in Item L-110 of these specifications.

100-2.5 600 VOLT WIRE. Wire shall be as specified in Item L-108.

100-2.6 ENCLOSURES AND SWITCHES. Exterior meter enclosures with breakers and safety switches shall have the capability to have the entrance cover locked with a padlock. All exterior safety switches shall have the capability of having the handle locked in the On and Off position.

100-2.7 CONDUIT FITTINGS. Each conduit and nipple entrance to junction boxes, panelboards, disconnect switches, duct, raceway, equipment cabinets, and other such electrical enclosures shall be fitted with double locknuts (one each side of metal penetrated) and insulating bushing. Bushings on 1-1/4 inch and larger conduits shall be insulated metallic, or equal; bushings for ¾-inch and 1-inch shall be plastic insulated rated for 150 C, or equal. The bushings shall be connected to the grounding system within the terminating enclosure and not on the underground end. The buried end of each conduit shall be fitted with a thermosetting, plastic-insulated, metallic bushing. All openings where conduits enter junction boxes, other enclosures and shelters shall be sealed weathertight. The conduit shall be capped, if left empty, or sealed with Ducseal, or equal, around the conductors for exterior conduits.

100-2.8 CONCRETE-ENCASED DUCT. Duct shall be as detailed on the Plans and specified in Item L-110.

100-2.9 CONCRETE DUCT MARKERS. Markers shall be as specified in Item L-110 and as detailed on the Plans.

100-2.10 CONCRETE HANDHOLES. Handhole shall be specified in Item L-127 and detailed on the plans.

100-2.11 GUIDANCE SIGNS. Runway and Taxiway guidance signs are specified in Item L-858 and as detailed on the Plans.

100-2.12 RUNWAY END IDENTIFIER LIGHTS (REILS). REILS shall be as specified in Item L-849 and as detailed on the Plans.

100-2.13 PRECISION APPROACH PATH INDICATORS (PAPI). PAPIs shall be as specified in Item L-881 and as detailed on the Plans.

100-2.14 ROTATING BEACON. The Rotating Beacon shall be as specified in Item L-801 and as detailed on the Plans. The beacon support pole and base are specified under Civil sections.

100-2.15 WINDCONE. The Windcone shall be as specified in Item L-807 and as detailed on the Plans.

100-2.16 WIRE. Wire shall be as specified in Item L-108.

100-2.17 LIGHT BASES AND TRANSFORMER HOUSING. Bases and covers shall be specified in item L-867/868 and as detailed on the Plans.

ITEM L-100

ELECTRICAL GENERAL REQUIREMENTS

100-2.18 CONSTANT CURRENT REGULATORS. Regulator equipment installed in vaults is covered by individual FAA equipment specifications, AC 150/5345-10 (current edition). Constant Current Regulators shall be as specified in Item L-109

100-2.19 ELECTRICAL PULL BOXES. Pullboxes shall H-20 Traffic Load Rated as detailed on plans. Includes, pulling eye, recessed cover, traffic load rated lid, ground rod knockout and ground rod.

100-2.20 AWOS. The AWOS shall be as detailed on the Plans.

CONSTRUCTION METHODS

100-3.1 EXISTING UTILITIES. Prior to any excavation or trenching, locate any existing cables and utilities that will be crossed by the trench. Ensure these utilities are permanently disconnected if they are going to be demolished. The existing service lines shall be exposed by hand digging in those areas that will be crossed and shall be protected from any possible damage. If any damage occurs, it shall be CONTRACTOR's responsibility to immediately repair such damage with materials and methods approved by OWNER and in compliance with applicable codes and standards, at no additional cost to OWNER. Existing utilities to be abandoned or removed at the point of crossing as shown on the Plans.

The CONTRACTOR shall protect existing airport lighting systems. Any portion of the existing airport lighting systems damaged or disconnected during installation of the new systems shall be repaired and reconnected and must be fully functional prior to dusk each day or during adverse weather conditions, to the satisfaction of the ENGINEER. This work shall be completed at the CONTRACTOR's sole expense**.**

The CONTRACTOR shall be responsible for troubleshooting and investigative work necessary to install completely operating lighting circuits and temporary circuits. These shall be incidental to the other electrical work and no separate payment will be made.

100-3.2 DEMOLITION.

a. General Airfield Lighting.
   1. Remove indicated lights, transformers, conduits, ducts, handholes, manholes and conductors from site and dispose of according to local regulations.
   2. At the request of the Owner, salvageable material and equipment, including fixtures, isolation transformers, generators, transformers, etc. shall be turned over to the appropriate airport personnel.
   3. Nonsalvageable material, including conduit, concrete handholes, base cans and conductors shall become the property of Contractor and shall be removed from the site.

100-3.3 CONDUCTORS. Installation of underground 5 kV conductors is specified in Item L-108 of these specifications.

ITEM L-100

ELECTRICAL GENERAL REQUIREMENTS

100-3.4 GROUNDING. All metal support structures and metal enclosures shall be grounded in accordance with the requirements of the Specifications FAA-C-1217, FAA-C-1391, and FAA-STD-019, and as indicated on the Plans.

100-3.5 GROUND RODS. Grounding rods shall be ¾-inch diameter by 10 feet long copper-jacketed steel. Grounding connections shall be by the exothermic weld process, Cadweld or equal. Extruded, drawn or stamped-type ground clamps will not be acceptable. The resistance to ground shall not exceed 25 ohms.

100-3.6 GROUND CONDUCTORS. Equipment grounding conductors shall be insulated copper, except where shown on the Plans to be bare, and sized as shown on the Plans; and all grounds will be shown in accordance with Article 250-122 of the National Electrical Code and with FAA-STD-019. Attachment of wire to supports, boxes, etc., shall be accomplished using approved ground lug attached with a separate stainless steel screw, lock washer and nut. Screws used for support of the electrical enclosure shall not be used for connection of the ground wire. Pipe straps shall not be used for ground purposes.

100-3.7 IDENTIFICATION. Conductors, panelboards, switches, circuit breakers and motor controllers shall be identified as per FAA-C-1217, Sections 4.6.4.2.4 and 4.16. Cable tagging and markers shall be identified as per FAA-C-1391, Sections 3.5.1 and 2. Transformers and junction boxes shall be identified by nameplate of nonferrous metal or rigid plastic, engraved with 3/8-inch high lettering with information as per FAA-C-1217, Section 4.16.

100-3.8 CONSTANT CURRENT REGULATORS. Electric Tests. The supply voltage and input tap shall be checked to see that they correspond. With the load disconnected, the regulator shall be energized and the open circuit protector observed to see that it de-energizes the regulator within 3 seconds. After testing the circuits for open connections and grounds and after determining that all lamps are good and in place, the circuit load shall be applied to the regulator and the voltage and current measured simultaneously on all brightness taps. The true RMS voltmeter and ammeter shall have an accuracy of plus or minus one percent. Readings shall be recorded and shall be made during the day and night in order to obtain the average supply voltage. The output current on each brightness tap shall be within plus or minus 2 percent of the nameplate values after any necessary correction is made in the supply voltage. If the output current on tap 5 of the 5-step regulators or tap 3 of the 3-step regulators deviates from the nameplate value by more than 2 percent, and the regulator is not overloaded, the internal adjustment shall be checked as described on the regulator instruction plate. Since the adjustment may be rather delicate, it is acceptable that a deviation of up to plus or minus 5 percent be allowed on the lower taps before attempting to readjust the regulator.

100-3.9 TESTING AND SUBMITTALS. Equipment and materials list and shop drawings shall be submitted as per FAA-C-1217, Section 5.1. Testing shall be required and performed as per FAA-C-1217, Section 5.3 and FAA-C-1391, Section 4. CONTRACTOR shall pretest all cable on the reel prior to installation and provide a copy of the test results to OWNER. CONTRACTOR shall be responsible for repairs or replacement of any cable found defective after installation.

CONTRACTOR shall secure the services of an independent testing service to test the installed airfield lighting and miscellaneous power cables prior to the start of and at the completion of this project. The

results of the testing shall be provided to OWNER for review and acceptance. CONTRACTOR shall be responsible for repairs or replacement of any cable found defective after installation.

Installation tests in addition to all tests contained in other L-Series Items shall be provided as follows:

Item	Test Required	Manufacturer's Rep. Present?
5 kV Rated Airfield Lighting and Power Cables (Installed in This Project)	Meggar check at 1000 volts at the completion of installation. Test every circuit for conductor-to-ground and conductor-to-conductor (between circuits) insulation resistance. Test results shall be tabulated and given to OWNER for acceptance. It is required that the readings be greater than 100 megohms.	No
600 V Rated Power Cables (Installed in This Project)	Meggar check at 500 volts at the completion of installation. Test every circuit for conductor-to-ground and conductor-to-conductor (between circuits) insulation resistance. Test results shall be tabulated and given to OWNER for acceptance. It is required that the readings be greater than 100 megohms.	No
5 kV Rated Airfield Lighting and Power Cables – Existing affected by this project (All Circuits Emanating from the Lighting Vault Modified in This Project)	Meggar check at 1,000 volts prior to the start of and at the completion of installation. Test every circuit for conductor-to-ground and conductor-to-conductor (between circuits) insulation resistance. Test results after completion shall match or exceed the pre-start of construction test results. Correction of the deficient test results becomes the responsibility of CONTRACTOR. All test results shall be reported to OWNER.	No
Regulators	The regulators shall be tested per item L-100-3.10 and certified to ensure correct operation of all output and alarm functions and the test results provided to the Construction Manager.	No

100-3.10 CONSTANT CURRENT REGULATOR TESTING. Airfield lighting circuit testing shall include the measurement of the following characteristics of the Constant Current Regulator (CCR) and airfield circuit including:

(1) Input current to the regulator (Iin).
(2) Input voltage to the regulator (Vin).
(3) Output current from the regulator (lout).

(4) Output voltage from the regulator (Vout).
(5) Total power (KVA).
(6) Reactive power (KVAR).
(7) Resistive power (kW).
(8) Power Factor (PF).
(9) Total harmonic distortion of current (THD Current).
(10) Total harmonic distortion of voltage (THD Voltage).
(11) Insulation resistance to ground of the airfield circuit.

Note: Measurements of the input to the CCR are only required to be performed if the input voltage to the CCR is 240 volts or less.

Measurements shall be made at one intermediate operating step and at the highest operating step of the controlling regulator. The regulator output current and voltage shall be set using a true RMS meter for calibration prior to the start of circuit testing.

In addition, voltage and current wave forms of the regulator input and current wave forms of the regulator output shall be obtained using an oscilloscope and recorded in an effort to identify any unusual circuit characteristics.

Suggested contact for this service, or Engineer approved equal (requires backup):

Navaid Lighting Associates, Inc.
141 Autumn Glenn Road
Saltillo, MS 38866
Tel: (662) 869-8655
Fax: (662) 869-0065
www.navaidlighting.com

100-3.11 MEGGAR TEST EXISTING CABLE. The contractor shall Meggar test all the existing cable that will remain during the project. The cables consist of Runway 15-33, Wind cones, REILs, and PAPIs as noted on the plans as existing to remain. Meggar test results shall be provided to the Engineer and the Owner for review. At the discretion of the Engineer and the Owner, the contractor will replace the cable connector kits on the existing cables when the Meggar results are poor. Poor results will be determined by the Engineer and Owner. See Item L-108 for connector kit payments.

.

CONSTRUCTION INSPECTION

100-4.1 INSPECTION. The electrical construction inspection will be performed during three site visits by the Engineer during construction. The three inspections will coincide with the following inspection phases:

a. Inspection Phase One: Inspection for this phase will include:
   1. Underground components installed - without backfill
   2. Concrete forms and reinforcing in place

b. Inspection Phase Two: Inspection for this phase will include:
   1. Building Exterior complete, and electrical rough-in complete.
   2. Airfield Concrete components poured, wire pulled, through splices complete.

b. Inspection Phase Three: Inspection for this phase will include:
   1. Fixtures, Navaids and signs installed on concrete bases, tested and operational.
   2. Building electrical installed, tested and operational.
   4. Demolition and removal of all objects required, finish grading complete.

The Contractor shall notify the Engineer a week in advance when the first, second, and third construction inspection phases will be ready for inspection. Construction shall not continue to the next phase without the Engineer performing the inspection and providing the Contractor with a written inspection report including authorization to continue into the next inspection phase.

METHOD OF MEASUREMENT

100-5.1 DEMOLITION AND REMOVAL. Demolition of electrical equipment will not be measured for it is lump sum.

100-5.2 TEMPORARY AIRFIELD ELECTRICAL. No separate measurement will be made for temporary electrical equipment for it is lump sum.

100-5.3 METER AND ELECTRICAL SERVICE. Measurement of the Meter and Electrical Service as detailed on the electrical sheets is a lump sum Item and will not be measured.

100-5.4 TESTING. Testing will not be measured for it is lump sum.

100-5.5 AWOS. AWOS shall be measured per each installed and accepted by the Owner.

BASIS OF PAYMENT

100-6.1 AIRFIELD ELECTRICAL DEMOLITION AND REMOVAL. Payment will be made at the lump sum contract price for the demolition and removal by the Contractor and accepted by the Owner. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete this Item. This item includes removal of fixtures, isolation transformers, conduit, ductbanks, base cans, cable, transformers, generators, switches, regulators, panels and miscellaneous power equipment as noted on the plans.

125-6.2 TEMPORARY AIRFIELD ELECTRICAL Payment will be made at the lump sum bid price for each complete temporary run way or taxiway edge light, conduit, and cable installed and removed by the CONTRACTOR and accepted by OWNER. This price shall be full compensation for furnishing all materials, and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item, including, but not limited to: light fixtures, base cans, concrete encasement, base plate, lamps, isolation transformers, all connections to circuit and transformer, L-823 connectors, frangible couplings, bolts, hardware, spare fixtures, and spare lamps

ITEM L-100

ELECTRICAL GENERAL REQUIREMENTS

100-6.3 METER AND ELECTRICAL SERVICE. Payment will be made at the lump sum contract price for the electrical services installed by the Contractor and accepted by the Owner. This price shall be full compensation for coordinating with the power company, and for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete this Item, including disconnect switch, conduit, concrete base, frangible supports, weatherproof housings, appurtenances, fittings, and all cable connections.

100-6.4 TESTING. Payment will be made at the lump sum contract price for Testing by the Independent Sub-Contracted Specialist and accepted by the Owner. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete this Item, including reports furnished to the Owner.

100-6.4 AWOS. Payment will be made at the lump sum contract price for the AWOS equipment procured by the electrical contractor and installed by the Manufacturer approved sub contractor and accepted by the Owner. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete this Item, including testing and commissioning, furnished to the Owner

Item L-100-6.1	Airfield Electrical Demolition and Removal – per lump sum
Item L-100-6.2	Temporary Airfield Electrical – per lump sum
Item L-100-6.3	Meter and Electrical Service – per lump sum
Item L-100-6.4	Regulator Testing – per lump sum
Item L-100-6.5	Cable Meggar Testing – per lump sum
Item L-100-6.5	AWOS – per each

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

END OF ITEM L-100

ITEM L-108

UNDERGROUND CABLE FOR AIRPORTS

DESCRIPTION

108-1.1 GENERAL. This Item shall consist of underground power cable, grounding wire, and counterpoise wire furnished and installed in accordance with this specification at the locations and in accordance with the design, dimensions, and details shown in the plans. This Item shall include the installation of cable in duct or conduit. It shall include splicing, cable marking, and testing of the installation and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the OWNER. This Item shall not include the installation of the duct or conduit.

New cable required for this project is shown on the Plans along with some of the existing cable which shall remain in place. (All other existing cables, including those to remain are not shown on the Plans for clarity.) Limited as-built drawings are available from the Lee Vining Airport, which show the majority of the existing cable and shall be used to supplement the construction drawings. However, the CONTRACTOR shall field verify the existing conditions with the as-built drawings and the construction drawings prior to beginning the work. CONTRACTOR shall identify and mark the cable to distinguish between the cable to be removed and the cable to remain in place.

108-1.2 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions, apply to work specified in this Item.

108-1.3 APPLICABLE DOCUMENTS. The publications listed at the end of this Item are incorporated herein by reference and form a part of this Item to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of this solicitation shall be applicable. In the text of this Item, such publications are referred to by basic designation only. Additional details and specifications pertaining to a specific system are contained in these documents and are to be considered as part of this Item. Perform all work in accordance with these documents except as specified herein. In the event of a conflict between contract documents and the referenced documents, the more stringent rule shall be applied.

108-1.4 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

a. 5 kV airfield lighting cable.
b. L-823 5 kV connector kits.
c. Bare copper grounding conductor.
d. Bare Copper counterpoise conductors.
e. 600V power cables.

108-1.5 COVERED UNDER OTHER ITEMS.

a. Cable for L-861T (Temporary) Elevated Medium Intensity Taxiway Edge Lights shall be as specified under Item 100, paragraph 100-1.4.

EQUIPMENT AND MATERIALS

108-2.1 GENERAL. Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Washington, D.C. 20591. Manufacturer shall certify that L-824 cable meets FAA specification as contained in Advisory Circular 150/5345-7, current edition.

All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturers' certification of compliance with the applicable specification, when requested by the ENGINEER.

If there are cable roll ends (remains) of 5 kV cable, they shall become the property of the Lee Vining Airport and be paid for as part of the total cable linear footage.

108-2.2 CABLE INSTALLATION TOOLS.

a. The CONTRACTOR shall supply all tools necessary to install all new airfield lighting, power and communication cables.

b. The CONTRACTOR shall use during construction and turn over to the Airport Maintenance Shop the following equipment:

1. Crimping tool (a minimum of two each), hand-held ratcheting type, T&B TMB20S (or equal).

108-2.3 5 kV AIRFIELD LIGHTING CABLE. Underground power cable shall conform to the requirements of Specification for L-824, Underground Electrical Cables for Airport Lighting Circuits. Airfield lighting cable used on this project shall be L-824 Type "C" with 5,000 volt cross-linked polyethylene (XLP) insulation.

108-2.4 600 VOLT WIRE. All wire shall have copper conductors. Size shall be American Wire Gauge (AWG) with size for power circuit as shown on the project drawings. Size for all control circuits shall be #16 AWG. Power wire #10 AWG and smaller shall be solid; #8 and larger wire and all control wire shall be stranded. Insulation shall be Type THW or THWN and shall be continuous and color coded as follows:

		120/208V	277/480V
Line 1 or	Phase "A"	Black	Brown
Line 2 or	Phase "B"	Red	Orange
	Phase "C"	Blue	Yellow
	Neutral	White	Gray
	Ground See Item 100-3.5		
	Control Black with numbered adhesive markers on both ends.		

All wire shall be continuous; no splices will be permitted. All wire shall be drawn into conduit with adequate lubricating compound to prevent damage to insulation. Pull tension shall not exceed manufacturer's recommendation.

108-2.5 BARE COPPER WIRE. Bare copper wire for grounding shall conform to ASTM Specifications B3 and B8 and as sized on the Plans. Counterpoise conductors shall be solid wire, #6 AWG; grounding conductors shall be #6 AWG stranded

108-2.6 5 kV CABLE CONNECTIONS. In-line connections of underground cables shall meet the requirements of and be certified by FAA Type L-823, 54 Super kit as manufactured by Amerace or approved equivalent.

ITEM L-108

UNDERGROUND CABLE FOR AIRPORTS

CONSTRUCTION METHODS

108-3.1 GENERAL. The CONTRACTOR shall install the specified cable at the locations indicated in the plans. This Item includes the underground installation of all lighting, power, control, and communication cables. The CONTRACTOR shall provide all materials. Cable pulling tensions shall not exceed manufacturer's requirements, and continuous tape readout from pulling winch strain gauge shall be provided and notated for ENGINEER's review at completion of project.

108-3.2 TESTING. See Item L-100, Paragraph 100-3.9, for applicable tests, in addition to those hereinafter.

108-3.3 5 kV CABLE INSTALLATION IN DUCT OR CONDUIT. This Item includes the installation of the cable in duct or conduit as described below. 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 in accordance with the latest National Electrical Code or the code of the local agency having jurisdiction.

Conductors shall be loaded into multiway conduit assemblies and ducts as follows:

- **a.** Start installing conductors in lower level of conduits first.
- **b.** Leave pull ropes in each spare conduit.
- **c.** Install one ground wire per duct.

CONTRACTOR shall make no connections or joints of any kind in cables installed in conduits or ducts.

The ducts or conduits are existing or shall be installed as separate items in accordance with Item L-110, "Airport Underground Electrical Conduit and Duct." 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 covering. The ends of all cables shall be sealed with moisture-seal tape before pulling into the conduit and shall be left sealed until connections are made. Where more than one cable is to be installed in a duct under the same contract, all cable 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. Pulling tensions should be governed by recommended standard practices for straight pulls or bends. Use of tractor or CONTRACTOR'S truck for pulling cable will not be accepted. A lubricant recommended for the type of cable being installed shall be used where pulling lubricant is required. Duct or conduit markers temporarily removed for excavations shall be replaced as required.

The CONTRACTOR, in pulling cables through ducts and/or conduits, shall not exceed the maximum allowable tension values for the cables as specified in FAA-C-1391.

A cable slack loop of 27 feet +/- 6 inches shall be left on each end of cable runs in manholes, 12 feet +/- 6 inches in handholes, and 3 feet +/- 6 inches at all other locations as shown on the plans. Loops shall have no bends with an inner radius less than twelve times the outside diameter of the cable.

100-3.4 CABLE INSTALLATION. This Item includes the underground installation of all power and control cables. CONTRACTOR shall provide all materials. Cables shall only be spliced in base cans, handholes, or manholes, and shall not be spliced in conduit.

ITEM L-108

UNDERGROUND CABLE FOR AIRPORTS

Power cables serving specific runways and taxiways shall be tagged with numbers and the information required by FAA-C-1391.

108-3.5 GROUNDING CONDUCTOR INSTALLATION. Grounding conductor installation shall be incidental to the respective conduit, duct bank, manhole, handhole, fixture base or sign base. Grounding conductor shall be installed in all new conduits and ducts (one conductor per multi-conduit array). Conductors shall also be installed in existing conduits/ducts where such connects between new portions of conduits/ducts. Ground conductor shall be connected to grounding lug in every fixture base and ground rod in every manhole or handhole. A bare copper (#6) conductor shall be installed in each segment of power conduit/duct systems. A single conductor shall be installed in any multiway duct or conduit array which terminates all conduits at the same pullbox or manhole at each end. The grounding conductors shall be exothermically bonded to ground rods which are to be installed in each handhole or manhole. Ground rods shall be driven to full depth before exothermic weld is accomplished. Driving ground rod after exothermic weld will not be accepted. Ground rods for grounding conductor installation shall be incidental to the cable installation.

At connections to existing duct or conduit systems that are without ground conductor(s): Install a grounding conductor per above, from the duct or conduit point of connection back to the point of either 1) the next grounding conductor and/or ground rod or 2) the termination of the duct or conduit system at a site facility (building, equipment shelter, etc.). Bond this new grounding conductor to the next existing (or new) grounding system element (conductor or ground rod).

Reference: FAA AC 150/5340-30 (current edition)

108-3.6 COUNTERPOISE CONDUCTOR INSTALLATION. Counterpoise conductor installation shall be incidental to the respective conduit, duct bank, manhole, handhole, fixture base or sign base. Counterpoise conductor shall be installed adjacent to or above every new conduit or duct array per details on the Plans. Counterpoise conductor shall NOT be connected to the ground conductor system NOR to the fixture bases. Provide ground rods at 300 feet on center (approximate). Bond with exothermic weld to conductor. These ground rods need not be accessible. Ground rods for counterpoise conductor installation shall be incidental to the cable installation.

At connections to existing systems with direct buried counterpoise conductors, provide connection with counterpoise at duct or conduit point of connection.

Reference: Required per FAA AC 150/5340-30 (current edition)

108-3.7 600 VOLT POWER CABLE INSTALLATION. All runs shall be as continuous as possible with no splices permitted between terminations except where noted in the Plans and except where required by lengths supplied (normally 2,000 feet maximum). Locations of splices other than in handholes or manholes are to be approved by the OWNER.

108-3.8 5 kV POWER CABLE SPLICES. Cable splicing materials shall be as shown on the project Plans or as specified herein. All splicing methods shall be as recommended by the manufacturer of the splicing material for the particular type of cable being spliced and shall be approved by ENGINEER prior to installation.

Connections of the type shown in the Plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

ITEM L-108

UNDERGROUND CABLE FOR AIRPORTS

All splicing of airfield lighting cables in this project shall be in accordance with the manufacturer's recommendations for the FAA Type L-823 connector kits with heat shrink and tape as required.

All splices shall be made only in base cans, manholes, or handholes. All splices shall be accessible by either a splice can (approved by OWNER) encased in concrete or handhole where applicable.

CONTRACTOR shall provide Lee Vining Airport, Mono County, with 20 spare 5 kV splice kits.

All splices shall be made only in base cans, manholes, or handholes. All splices shall be accessible by either a splice can (approved by OWNER) encased in concrete or handhole where applicable.

108-3.9 POWER CABLE TESTING. The CONTRACTOR shall furnish all necessary equipment and appliances for testing the underground cable circuits after installation. As well as tests required in Item L-100, Paragraph 3.11, the CONTRACTOR shall test and demonstrate to the satisfaction of the OWNER the following:

a. That all lighting power circuits are continuous and free from short circuits.
b. That all circuits are free from unspecified grounds.
c. That the insulation resistance to ground of all nongrounded series 5 kV lighting circuits is not less than 500 megohms.
d. That the insulation resistance to ground of all nongrounded conductors of multiple circuits is not less than 100 megohms.
e. That all circuits are properly connected in accordance with applicable wiring diagrams.
f. That all circuits 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 ½ hour.

108-3.10 CABLE IDENTIFICATION. All power (5 kV and 600 V), multipair cables, and fiber optic cables shall be identified at every handhole, manhole, light base and termination cabinet by use of engraved or stamped plastic or nonferrous metallic tags as detailed on the Plans. Tags shall be secured to cables by use of #14 copper wire. Tags must identify system (i.e., power, control, fiber optic) and destination or circuit (i.e., RW, TW, 15 PAPI, etc.) Tags shall be installed on both sides of L-823 splices or at entry and exit of every manhole and handhole. For unspliced cables labeling shall be in accordance with FAA-C-1391.

108-3.11 PHASING, INTERRUPTIONS, AND TEMPORARY CABLES. Airfield power cables shall be kept in service to maintain taxiway lighting as required for airfield operations. Temporary cable may be run to maintain circuits to keep lighting operational. Temporary cable shall be placed above ground in temporary conduit or below ground in existing conduit and shall be burial-type cable. The surface mounted conduit and cable shall be secured in place by use of sandbags placed at 20-foot intervals. The use of temporary cable shall be approved by OWNER AND ENGINEER prior to installation and shall be promptly removed when the permanent construction is able to be used.

ITEM L-108

UNDERGROUND CABLE FOR AIRPORTS

METHOD OF MEASUREMENT

108-4.1 5kV AIRFIELD LIGHTING CABLE. Measurement of cable shall be per linear foot installed by the CONTRACTOR and accepted by the OWNER.

108-4.2 600V POWER CABLE. 600V power cable shall not be measured as it is incidental to the completion of Miscellaneous Vault Work.

BASIS OF PAYMENT

108-5.1 CABLE. Payment will be made at the contract unit price per linear feet of cable installed in conduit or duct, through manholes, handholes, and light bases (include indicated length of slack for each cable in each) in place by the CONTRACTOR and accepted by the OWNER. 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 necessary to complete this Item. This item includes all connections, connectors, and testing.

NOTES:

1. The installation and removal of 100 linear feet of temporary cable shall be allotted for each temporary light fixture and shall be incidental to each temporary light fixture type. The indicated length of cable for temporary run way or taxiway edge lighting is to be included as part of the lump sum price as stated in Item L-100, paragraph 5.2. Payment under these items shall include all removal of temporary light fixture, transformers, cables, conduits and sandbags. No separate measurement or payment will be made for moving temporary facilities as required to provided contractor's access to work sites.

2. Grounding conductor installation shall be incidental to the respective conduit, duct bank, manhole, handhole, sign or fixture. Ground rods for grounding conductor installation shall be incidental to the cable installation.

108-5.2 600V POWER CABLE. Payment will be made under the lump sum price under Miscellaneous Vault Work.

Payment will be made under:

Item L-108-5.1	5 kV L-824C Cable - per linear foot
Item L-108-5.1-A1	5 kV L-824C Cable - per linear foot
Item L-108-5.1-A3	5 kV L-824C Cable - per linear foot
Item L-108-5.1-A4	5 kV L-824C Cable - per linear foot
Item L-108-5.1-A6	5 kV L-824C Cable - per linear foot
Item L-108-5.1-A7	5 kV L-824C Cable - per linear foot

ITEM L-108

UNDERGROUND CABLE FOR AIRPORTS

REFERENCED PUBLICATIONS

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

108-6.1 FEDERAL AVIATION ADMINISTRATION (FAA) SPECIFICATIONS REFERENCED IN ITEM L-108

Number	Title
AC 150/5345-7	Specification for L-824 Underground Electrical Cables for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
FAA-C-1391	Installation and Splicing of Underground Cables

108-6.2 FEDERAL AVIATION ADMINISTRATION (FAA) STANDARD REFERENCED IN ITEM L-108

Number	Title
FAA-STD-019	Lightning Protection, Grounding, Bonding and Shielding Requirements for Facilities

108-6.3 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) SPECIFICATIONS REFERENCED IN ITEM L-108

Number	Title
ASTM B3-74	Soft or Annealed Copper Wire
ASTM BB-8-86	Concentric-Lay-Stranded Copper Conductor, Hard, Medium-Hard or Soft

END OF ITEM L-108

ITEM L-109

AIRFIELD LIGHTING VAULT AND EQUIPMENT

DESCRIPTION

109-1.1 GENERAL. This Item shall consist of the construction of a new airport lighting vault in accordance with this specification at the location and in accordance with the design and dimensions shown in the plans. This work shall also include the furnishing of all vault equipment, installing and providing constant current regulators, control unit wiring, cable, conduit, and grounding systems; the marking and labeling of equipment and the labeling or tagging of wires; the testing of the installation; removal and relocation of a Type I air-to-ground radio, decoder, remote antenna, and the furnishing of all incidentals necessary to place it in operating condition as a completed unit to the satisfaction of the Owner.

109-1.2 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions, apply to work specified in this Item.

109-1.3 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

- **a.** Constant current regulator and appurtenances.
- **b.** S1 5kV lighting field circuit disconnects.
- **c.** Equipment cabinets and appurtenances.
- **d.** Distribution branch circuit panelboards and circuit breakers.
- **e.** Disconnect switches.
- **f.** Cable tray and wireways (gutters, trays, conduits, and specialty fittings) with mounting hardware and installation drawings.
- **g.** Light fixtures.
- **h.** Light Switches and convenience receptacles.
- **i.** Surge suppression (TVSS)
- **j.** 5 kV and 600 V power cables.
- **k.** Removal and relocation of L-854, radio controller
- **l.** Concrete masonry block.
- **m.** Doors, frames and mounting hardware.
- **n.** Concrete mix designs.
- **o.** Concrete Reinforcing components.
- **p.** Framing and bracing.
- **q.** Roofing materials.

EQUIPMENT AND MATERIALS

109-2.1 GENERAL.

Airfield Lighting vault shall be constructed in accordance with the requirements as shown and specified in the set. See the Structural Series plans for specifics regarding methods and materials.

Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration Advisory Circular 150/5345-1, current edition

and Advisory Circular 150/5345-53, current edition, Airport Lighting Equipment Certification Program.

All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturers' certification of compliance with the applicable specification when requested by the Owner.

109-2.2 PLASTIC CONDUIT. Plastic conduit shall not be used in the vault.

109-2.3 RIGID STEEL CONDUIT. Rigid steel conduit and fittings shall be in accordance with Fed. Spec. WW-C-581.

109-2.4 SAFETY SWITCH. UL 98. Heavy-duty type unless otherwise indicated. Provide one set of spare fuses for all fused switches.

109-2.5 SQUARE DUCT. Duct shall be square, similar to that manufactured by the Square D Company, "Lay-in Wireway", (or equal) or the Trumbull Electric Manufacturing Company (or equal). The entire front of the duct on each section shall consist of hinged cover for ready access to the interior. The cross section of the duct shall be not less than 6 by 6 inches except where otherwise shown in the plans. Duct shall match existing in every particular.

109-2.6 GROUNDING. All metallic elements contained in the vault shall be grounded to the building grounding system per Item L-100.

109-2.7 CONSTANT CURRENT REGULATORS. Regulator equipment installed in vaults are covered by individual FAA equipment specifications, AC 150/5345-10, current edition. The specification is listed below:

Specification for L-828 Constant Current Regulator with Stepless Brightness Control
Constant current regulators shall be dry type, air cooled, L-828, designed to supply either three- or five-precision output current levels (6.6 amp maximum) to power series lighting circuits on airport runways and taxiways. The regulators shall be FERRORESONANT style.

The regulators shall use solid-state circuitry to accurately regulate the output current from the phase-linear power transformer to within ±3 percent of the preset current level from no load to full load and with input voltage variations of –5 percent to +10 percent of nominal (-40° to +55° C). The nominal output current levels shall be maintained even when 50 percent of the isolation transformers in the series lighting circuit have open secondaries.

Brightness-step selection shall be either by manual operation of the rotary control switch or push buttons on the regulator's front panel or by 48 V ac or 120 V ac remote control signals from a distant location.

Efficient operation (which results in high primary power factor) at low loads shall be ensured by a half-power tap on the output winding of the main transformer. Regulator supply voltages shall be 240 V, 1 phase, 60 Hz and set at the factory according to user requirements.

ITEM L-109

AIRFIELD LIGHTING VAULT AND EQUIPMENT

Protective circuitry shall automatically deenergize the regulator when an overcurrent or open-circuit is sensed in the series lighting circuit. The regulators shall be connected directly to a load switching device (such as an L-847 switching panel) without causing regulator malfunction or damage to the series lighting circuit. The regulators shall be shipped ready for use and can be floor mounted or mounted on a rack or shelf.

Other features and characteristics shall include:

a. Primary contactor shall never open or close under load.
b. LED indicators for open-circuit, overcurrent, W-VA and system-in-operation.
c. Remote input shall have 1,000 V ac surge withstand capability.
d. Built-in true rms-reading ammeter (10 A maximum scale.)
e. Minimum power factor of 0.90 (at full load, using proper tap.)
f. On/off switching capability under any load.
g. Overcurrent, open-circuit, undervoltage, transient protection from lightning (25,000 amp surge) and other sources on output lines and remote input lines.
h. Input lightning protection assemblies.
i. Output current surge limitation--protects series incandescent lamps.
j. After a supply power loss, operation shall resume within 5 seconds after input power is restored at preset brightness level.
k. Pressure-type terminal blocks for connections of external remote control wiring.
l. The regulator shall use no solid-state components directly in the output (series) circuit and shall not be susceptible to extraneous signals which can affect solid-state design CCRs.
m. The regulators shall be designed not to cause any electromagnetic interference which can affect the operation of other airport equipment.
n. Automatic shutdown if supply voltage is ±15 percent of optimum.
o. Automatic shutdown if series circuit is disconnected.
p. Regulators shall have full self-diagnostic capabilities.

109-2.8 OTHER ELECTRICAL EQUIPMENT. Cutouts, relays, terminal blocks, transfer relays, circuit breakers, and all other regularly used commercial items of electrical equipment not covered by FAA equipment specifications shall conform to the applicable rulings and standards of the Institute of Electrical and Electronic Engineers (IEEE) or the National Electrical Manufacturers Association (NEMA). When specified, test reports from a testing laboratory indicating that the equipment meets the specifications shall be supplied. In all cases, equipment shall be new and a first-grade product. This equipment shall be supplied in the quantities required for the specific project and shall incorporate the electrical and mechanical characteristics specified in the specification and plans.

109-2.9 S1 CUTOUTS. The series cutout shall meet or exceed the requirements of FAA Advisory Circular AC150/5340-4, current edition. Moreover, it shall have a working voltage of 5KV AC and a nominal carrying capacity of 20 AMPS AC. The cutout shall have 3 working positions (“operation, maintenance and test measurement”). The cut out shall be key lockable in the operation and maintenance position.

109-2.10 WIRE.

Power Cables.

a. 5,000 Volt: L-824 Airfield lighting cable shall meet the requirements of Item L-108.

b. 600 Volt: Fed. Spec. J-C-30, Type RHW, for rubber-insulated, fibrous-covered wire. For ratings up to 600 volts, thermoplastic wire conforming to Fed. Spec. J-C-30, Types TW, THW, and THWN, shall be used. The wires shall be of the type, size, number of conductors, and voltage shown in the plans or in the specification.

Control Circuits. Wire shall be not less than No. 12 AWG and shall be insulated for 600 volts. Multiple pair telephone-grade communication/control cables for installation in ducts, conduits and cable trays shall be No. 19 AWG Aerial and Duct Telephone Cable conforming to U.S. Department of Agriculture, Rural Electrification Administration (REA) Specification PE-22.

INSTALLATION OF EQUIPMENT IN VAULT

109-3.1 GENERAL. The Contractor shall furnish and install constant current regulator, connect, and test all equipment, equipment accessories, conduit, cables, wires, buses, grounds and support necessary to ensure a complete and operable electrical distribution center for the airport lighting system as specified herein and shown in the plans.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and local code agency having jurisdiction.

109-3.2 SYSTEM TESTING. Test all lighting and control systems per applicable FAA A/C's and directives. Notify Owner 48 hours prior to performing tests. Refer to Item L-100-3.10 for tests of applicable equipment.

109-3.3 CONSTANT CURRENT REGULATORS. Each constant current regulator shall be visually examined to insure that porcelain bushings are not cracked, no shipping damage has occurred, internal and external connections are correct, switches and relays operate freely and are not tied or blocked, fuses (if required) are correct. The instructions on the plates attached to the regulators shall be accomplished. After examination and tests are completed, replace all covers tightly.

109-3.4 PILOT CONTROLLED RADIO. The radio control unit shall be removed and relocated into the new airfield lighting vault as shown in the plans and connected in accordance with FAA AC 150/5345-49 (current edition). Payment for removal and relocation of the radio controller shall be under Item 109-5.2.

109-3.5 S1 CUTOUTS AND CIRCUIT BREAKERS. Cutouts, panelboard-mounted circuit breakers, cabinets and other similar items shall be furnished and installed at the locations shown in the plans.

109-3.6 ANCHOR BOLTS. Wall- or ceiling-mounted items shall be attached to the concrete or cement masonry unit (CMU) wall or ceiling with galvanized bolts of not less than 3/8-inch diameter engaging metal expansion shields or anchors with a minimum of 3 inches of embedment.

109-3.7 CABLE ENTRANCE. Incoming underground cable from field circuits and supply circuits will be installed outside the walls of the lighting vault as a separate item under Item L-108. The Contractor installing the vault equipment shall bring the cables from the trench or duct through the entrance conduits into the vault and make the necessary electrical connections. For the incoming and outgoing high-voltage load circuits, the Contractor shall furnish and install rigid metallic conduit risers, surmounted by potheads, from floor level to the level as shown in the plans.

109-3.8 WIRING AND CONNECTIONS. The Contractor shall make all necessary electrical connections in the vault in accordance with the wiring diagrams furnished. In wiring to the terminal blocks, the Contractor shall leave sufficient extra length on each control lead to make future changes in connections at the terminal block. This shall be accomplished by running each control lead the longest way around the box to the proper terminal. Leads shall be neatly laced in place.

109-3.9 MARKING AND LABELING. All equipment, control wires, terminal blocks, etc., shall be tagged, marked or labeled as specified below:

a. **Wire Identification.** Also refer to Item L-100, Paragraph 100-3.3 for 5 kV and 600V cable identification. The Contractor shall furnish and install self-sticking wire labels or identifying tags on all control wires at the point where they connect to the control equipment or to the terminal blocks. Wire labels, if used, shall be of the self-sticking, preprinted type and of the manufacturer's recommended size for the wire involved. Identification markings designated in the plans shall be followed. Tags, if used, shall be nonferrous metal not less than 3/4-inch in diameter and not less than 1/32-inch thick. Identification markings designated in the plans shall be stamped on tags by means of small tool dies. Each tag shall be securely tied to the proper wire by a nonmetallic cord.

b. **Labels.** The Contractor shall provide engraved phenolic identifying labels on the cases of regulators at circuit breakers, and on distribution and control relay cases. The attachment method, colors, sizes, and letter and numeral type shall match the existing protocol. The Contractor shall also mark the correct circuit designations in accordance with the wiring diagram on the terminal marking strips which are a part of each terminal block.

METHOD OF MEASUREMENT

109-4.1 REGULATOR. Measurement of regulators will be per each provided and installed by the Contractor and accepted by the Owner.

109-4.2 MISCELLANEOUS VAULT WORK. The miscellaneous vault work will not be measured for it is a lump sum item.

ITEM L-109

AIRFIELD LIGHTING VAULT AND EQUIPMENT

109-4.3 VAULT BUILDING. Measurement of vault building will not be measured for it is a lump sum item.

BASIS OF PAYMENT

109-5.1 REGULATOR. Payment will be made at the contract unit price for each regulator provided and installed by the Contractor and accepted by the Owner. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete the item, including regulator, removal and relocation of the radio controller, wiring, conduit, and connections..

109-5.2 MISCELLANEOUS VAULT WORK. Payment will be made at the lump sum contract unit price for miscellaneous vault work by the Contractor and accepted by the Owner. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete the item, including removal and relocation of radio controller, service and distribution equipment, connection of the beacon , AWOS, Apron light, etc., mechanical systems, 600 Volt wire, lighting and power systems, etc. and connections of all to provide an operational lighting vault.

109-5.3 VAULT BUILDING. Payment will be made at the lump sum contract unit price for construction of the airfield lighting vault building by the Contractor, in accordance with the structural plans and specifications, and accepted by the Owner. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete the item to provide an operational lighting vault.

Payment will be made under:

Item L-109-5.1	New 4 kW Constant Current Regulator - per each
Item L-109-5.1-A4	New 4 kW Constant Current Regulator - per each
Item L-109-5.1-A6	New 4 kW Constant Current Regulator - per each
Item L-109-5.2	New 10 kW Constant Current Regulator - per each
Item L-109-5.3	Miscellaneous Vault Work – per lump sum
Item L-109-5.3-A2	Miscellaneous Vault Work – per lump sum
Item L-109-5.3-A3	Miscellaneous Vault Work – per lump sum
Item L-109-5.3-A4	Miscellaneous Vault Work – per lump sum
Item L-109-5.3-A5	Miscellaneous Vault Work – per lump sum
Item L-109-5.4	Vault Building – per lump sum

ITEM L-109

AIRFIELD LIGHTING VAULT AND EQUIPMENT

REFERENCED PUBLICATIONS

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

FAA SPECIFICATIONS REFERENCED IN ITEM L-109.

Note: Current edition for all references, including any changes.

AC 150/5345-7	Specification for L-824 Underground Electrical Cables for Airport Lighting Circuits
AC 150/5345-10	Specification for L-828 Constant Current Regulator with Stepless Brightness Control
AC 150/5345-53	Airport Lighting Equipment Certification Program

FEDERAL SPECIFICATIONS REFERENCED IN ITEM L-109.

Number	Title
J-C-30	Cable and Wire, Electrical (Power, Fixed Installation)
WW-C-581	Conduit, Metal, Rigid; and Coupling, Elbow and Nipple, Electrical Conduit: Zinc-Coated

AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI) SPECIFICATION REFERENCED IN ITEM L-109.

Number	Title
ANSI B16.3	Malleable Iron Threaded Fittings, Class 150 and 300

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) PUBLICATION REFERENCED IN ITEM L-109.

Number	Title
BU1-1978	Busways

END OF ITEM L-109

ITEM L-110

AIRPORT UNDERGROUND ELECTRICAL CONDUIT AND DUCT

DESCRIPTION

110-1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions, apply to work specified in this Item.

110-1.2 GENERAL. This item shall consist of underground electrical conduits and ducts furnished and installed in accordance with this Specification at the locations and in accordance with the dimensions, designs, and details shown in the Plans. It shall also include all trenching, backfilling, removal, and restoration of any paved areas; concrete encasement, mandreling, installation of steel drag wires (or nylon pull rope) and duct markers, capping, and the testing of the installation as a completed duct/conduit system ready for installation of cables, to the satisfaction of the OWNER. As used in this Item, "conduit" shall mean a single raceway direct buried or encased in concrete, while "ducts" or "ductbank" shall mean multiple conduits direct buried or encased in concrete.

110-1.3 APPLICABLE DOCUMENTS. The publications listed at the end of this Item are incorporated herein by reference and form a part of this Item to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of this solicitation shall be applicable. In the text of this Item, such publications are referred to by basic designation only. Additional details and specifications pertaining to a specific system are contained in these documents and are to be considered as part of this Item. Perform all work in accordance with these documents except as specified herein. In the event of a conflict between contract documents and the referenced documents, the more stringent rule shall be applied.

110-1.4 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

a. Conduit encased and direct bury.
b. Conduit fittings.
c. Conduit carrier fittings.

EQUIPMENT AND MATERIALS

110-2.1 GENERAL. 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 OWNER.

110-2.2 BITUMINOUS FIBER DUCT. Not used in this contract.

110-2.3 STEEL CONDUIT. Not used in this contract. Rigid steel conduit and fittings shall conform to the requirements of Fed. Spec. WW-C-581.

110-2.4 ASBESTOS CEMENT DUCT. Not used in this contract.

110-2.5 BACKFILL. Backfill shall conform to the requirements of Item P-152.

110-2.6 CONCRETE. Backfill concrete shall conform to Item P-610, Structural Portland Cement Concrete. Concrete shall be red when used to encase ducts (see Paragraph 110-29 below.) It shall have a design compressive strength of 3,000 psi at 28 days when tested in accordance with ASTM C39.

110-2.7 VINYL WARNING TAPE. Vinyl warning tape for installation in trenches above either direct earth burial or concrete-encased ducts shall be preprinted on red 4- to 6-inch wide continuous plastic ribbon. Install 12 inches below finish grade. NOTE: Warning tape shall be used in addition to coloring the concrete as in Paragraph 110-2.6.

110-2.8 PLASTIC CONDUIT. Plastic conduit and fittings shall conform to the requirements of Fed. Spec. W-C-1094 and shall be one of the following:

a. Type I: Suitable for underground use either directly in the earth or encased in concrete.
b. Type II: Schedule 40, suitable for either above ground or direct burial underground use.

110-2.9 CONDUIT/DUCT SPACER SYSTEM. On all multiple conduit arrays, the CONTRACTOR shall furnish and install a conduit spacer system as required to maintain uniform conduit spacing. The system shall consist of plastic spacers that interlock vertically and horizontally. A spacer assembly shall consist of base spacers, intermediate spacers, and top spacers to provide a completely enclosed and locked-in conduit assembly. Install spacers per manufacturer's instructions, but provide a minimum of five spacer assemblies per 20 feet of 2-inch conduit array or a minimum of four spacer assemblies per 20 feet of 4-inch and larger conduit arrays.

110-2.10 DIRECTIONAL BORING. Directional boring of electrical conduit shall be as stated in ASTM F 1962-99 "Standard Guide for Use of Maxi-horizontal Directional Drilling for placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings."

CONSTRUCTION METHODS

110-3.1 GENERAL. The CONTRACTOR shall install underground duct banks and conduits at the approximate locations indicated on the Plans. The ENGINEER shall indicate specific locations as the work progresses, if required to differ from the Plans. Ductbanks 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. No duct bank or underground conduit shall be less than 18 inches below finished grade, unless otherwise noted. Where the duct bank is under pavement, the top of the duct bank shall not be less than 18 inches below the subgrade, unless otherwise noted.

The CONTRACTOR shall mandrel each individual conduit whether the conduit is direct-buried or part of a ductbank. 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 base cans, manhole, 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 sole expense. All accessible points shall be kept closed when not installing cable. The CONTRACTOR shall verify existing ducts proposed for use in the Work as clear and open. The CONTRACTOR shall notify the ENGINEER 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 contaminate 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 utilized when crossing under pavements expected to carry aircraft loads.

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. The CONTRACTOR shall ascertain the type of soil or rock to be excavated before bidding. All such rock removal shall be performed and paid for under Item P-152.

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 ENGINEER. If not shown on the Plans, the warning tape shall be located six inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared in accordance with 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 Plans, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the OWNER, the unsuitable material shall be removed

in accordance with Item P-152 and replaced with suitable material. Alternatively, additional duct bank supports that are adequate and stable shall be installed, as approved by the OWNER.

All excavation shall be unclassified and shall be considered incidental to the respective L-110 pay item of which it is a component part. Dewatering necessary for duct installation, erosion and turbidity control, in accordance with Federal, State, and Local requirements is incidental to its respective pay item as a part of Item L-110. The cost of all excavation regardless of type of material encountered shall be included in the unit price bid for the L-110 Item.

Unless otherwise specified, excavated materials that are deemed by the OWNER to be unsuitable for use in backfill or embankments shall be removed and disposed of off site.

Any excess excavation shall be filled with suitable material approved by the OWNER and compacted in accordance with 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 insure 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 OWNER, 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.

All conduits and ducts shall be provided with a bare copper counterpoise conductor and a bare copper grounding conductor in accordance with Item L-108.

110-3.2 DUCTS (CONDUIT(S) ENCASED IN CONCRETE). Unless otherwise shown in the plans, concrete-encased ducts shall be installed so that the top of the conduit is not less than 18 inches below the finished subgrade 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, ducts under paved areas shall be concrete encased and at least 3 feet beyond the edges of the pavement or 3 feet beyond any underdrains that may be installed alongside the paved area. Trenches for ducts shall be opened the complete length before concrete is placed so that if any obstructions are encountered, proper 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. Where two or more conduits in the duct bank are intended to carry conductors of equivalent voltage insulation rating, the CONTRACTOR shall space the conduits not less than 1-1/2 inches apart (measured from outside wall to outside wall). Where two or more conduits in the duct bank are intended to carry conductors of differing voltage insulation rating, 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. End bells or couplings shall be installed flush with the concrete encasement at access points.

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 ENGINEER 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, 4-6 inch wide tape 8 inches minimum below grade above all underground conduit or duct lines not installed under pavement.

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 ENGINEER 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 ENGINEER.

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, and the trench for two 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.

A layer of fine earth material, at least 3 inches thick (loose measurement), shall be placed in the bottom of the trench as bedding for the conduit. This bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a ¼-inch sieve. The bedding material shall be tamped until firm, per Item P-152.

Unless otherwise shown in the Plans, conduits for direct burial shall be installed so that the tops of all conduits are at least 18 inches below the finished grade.

When two or more conduits are installed in the same trench without concrete encasement, they shall be spaced not less than 2 inches apart (measured from outside wall to outside wall) in a horizontal direction and not less than 2 inches apart in a vertical direction.

Trenches shall be opened the complete length before conduit is installed so that if any obstructions are encountered, proper provisions can be made to avoid them.

110-3.4 CONDUIT FILL PROCEDURE. Conduits shall be filled from the bottom left of the array upward, leaving the upper levels as spares as much as practical.

Spare conduits shall be provided with a pull rope per FAA-STD-1391b and shall be plugged with removable plastic caps.

110-3.5 TEMPORARY ABOVE GRADE CONDUIT. PVC 40 conduit and L-867 light bases shall be secured per Item L-100-5.2.

110-3.6 MARKERS. The location of the ends and changes in direction of all conduits shall be marked by a concrete slab marker, 2 feet square and 4 inches thick, extending approximately 1-inch above the surface. The markers shall be located above the ends and changes in direction of all conduits or duct banks, except where conduits terminate in a handhole, manhole, or building.

The CONTRACTOR shall impress the word “DUCT” on each marker slab. He shall also impress on the slab the number and size of conduits beneath the marker. The letters shall be 4 inches high and 3 inches wide with width of stroke ½-inch and ¼-inch deep, or as large as the available space permits.

110-3.7 BACKFILLING. After concrete-encased ducts have been properly installed and the concrete has had time to set, the trench shall be backfilled in at least 2 layers in accordance with Item P-152. The first layer shall be up to the level of the counterpoise, so that the counterpoise can be installed, then the second layer shall be from the counterpoise level the bottom of the new pavement.

Trenches shall not be excessively wet and shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled level with the adjacent surface.

Excess excavated material shall be removed and disposed of in accordance with instructions issued by ENGINEER.

For ducts without concrete envelope, 8 inches of sand, soft earth or other fine fill (loose measurement) shall be placed around the ducts and carefully tamped around and over them with hand tampers. The remaining trench may be filled with flowable fill as specified above or with excavated material not larger than 4 inches in diameter and thoroughly tamped and compacted as required in Item P-152.

110-3.8 RESTORATION.

a. Pavement Subgrade. Material removed from trenches in subgrade shall be removed from the immediate vicinity.
b. All Nonpavement Areas. All areas disturbed by the trenching, storing of dirt, cable laying, pad construction and other work shall be restored to their original condition. The CONTRACTOR shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance.

110-3.9 DIRECTIONAL BORING. Directional boring of electrical conduit shall be as stated in ASTM F 1962-99 "Standard Guide for Use of Maxi-horizontal Directional Drilling for placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings."

METHOD OF MEASUREMENT

110-4.1 CONDUIT AND DUCT. Measurement of conduit and duct assemblies will be per linear feet of conduit or duct installed by the CONTRACTOR and accepted by the OWNER, measured in place along one conduit in the duct assembly.

BASIS OF PAYMENT

110-5.1 CONDUIT AND DUCT. Payment will be made at the contract unit price per linear foot for each type of duct assembly installed by the CONTRACTOR and accepted by the OWNER. This price shall be full compensation for furnishing all materials including trench excavation, backfill, compaction, sand bedding, concrete encasement (AKA Direct Burial = D.B.; concrete encased = C.E.), couplings, spacers, plugs, pull wires, counterpoise, ground wires warning tape, and for all labor, grounding conductor, counterpoise conductor, equipment, tools and incidentals necessary to complete this Item.

Payment will be made under:

Item L-110-5.1	Three 2-inch Conduit, Concrete Encased (C.E.) – per linear foot
Item L-110-5.2	Four 2-inch Conduit, Concrete Encased (C.E.) – per linear foot
Item L-110-5.3	Five 2-inch Conduit, Concrete Encased (C.E.) – per linear foot
Item L-110-5.4	One 2- inch Conduit, Direct Buried (D.B.) – per linear foot
Item L-110-5.5	Three 2- inch Conduit, Direct Buried (D.B.) – per linear foot
Item L-110-5.6	Five 2- inch Conduit, Direct Buried (D.B.) – per linear foot
Item L-110-5.6-A1	Five 2- inch Conduit, Direct Buried (D.B.) – per linear foot
Item L-110-5.6-A2	Five 2- inch Conduit, Direct Buried (D.B.) – per linear foot
Item L-110-5.6-A3	Five 2- inch Conduit, Direct Buried (D.B.) – per linear foot
Item L-110-5.6-A4	Five 2- inch Conduit, Direct Buried (D.B.) – per linear foot
Item L-110-5.6-A5	Five 2- inch Conduit, Direct Buried (D.B.) – per linear foot
Item L-110-5.6-A7	Five 2- inch Conduit, Direct Buried (D.B.) – per linear foot

ITEM L-110

AIRPORT UNDERGROUND ELECTRICAL CONDUIT AND DUCT

REFERENCED PUBLICATIONS

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

110-6.1 FAA SPECIFICATION REFERENCED IN ITEM L-110

Number	Title
FAA-C-1391	Installation and Splicing of Underground Cables

110-6.2 FEDERAL SPECIFICATIONS REFERENCED IN ITEM L-110

Number	Title
W-C-1094	Conduit and Fittings; Nonmetallic, Rigid (Plastic)
WW-C-581	Conduit, Metal, Rigid; and Coupling, Elbow; and Nipple, Electrical Conduit: Zinc-Coated

END OF ITEM L-110

ITEM L-127

CONCRETE MANHOLES AND HANDHOLES

DESCRIPTION

127.1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions and Compensation Conditions, apply to work specified in this Item.

127-1.2 GENERAL. This Item shall consist of furnishing and installing pre-cast concrete manholes and handholes in dimensions and locations shown on the Plans. This item shall include the installation of each electrical junction structure with all associated excavation, backfilling, sheeting and bracing, concrete, reinforcing steel, ladders, appurtenances, testing, dewatering and restoration of surfaces to the satisfaction of the ENGINEER.

127-1.3 EQUIPMENT AND MATERIAL All Equipment and materials covered be referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when so requested by the ENGINEER.

Manufacturer's certifications shall not relieve the CONTRACTOR of the CONTRACTOR's responsibility to provide materials in accordance with these specifications and acceptable to the ENGINEER. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the ENGINEER and replaced with materials, which do comply with these specifications, at the sole cost of the CONTRACTOR.

All materials and equipment used to construct this item shall be submitted to the ENGINEER for approval prior to ordering the equipment per Item L-100-1.6. 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 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 boldly and clearly made with arrows or circles (highlighting is not acceptable). CONTRACTOR is solely responsible for delays in project accruing directly or indirectly from late submissions or resubmissions of submittals.

The data submitted shall be sufficient, in the opinion of the ENGINEER, to determine compliance with the plans and specifications. The CONTRACTOR's submittals shall be neatly bound in a properly sized 3-ring binder, tabbed by specification. The ENGINEER reserves the right to reject any and all equipment, materials or procedures, which, in the ENGINEER's opinion, does not meet the system design and the standards and codes, specified herein.

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.

127-1.3 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

a. Concrete handholes, cover and frame.
b. Manufacturer's installation details.
c. Structural calculations.
d. Handhole equipment and appurtenances

EQUIPMENT AND MATERIALS

127-2.1 PRECAST CONCRETE STRUCTURES. All manholes and handholes shall be reinforced precast concrete as shown on the Plans and shall be furnished with the appropriate traffic-rated covers as listed below and as detailed on the Plans. All new manhole and handhole covers shall be marked "Electrical" or "Power" or as otherwise indicated on the Plans.

a. Decks and covers noted as "Aircraft Load Rated" which are subject to direct, heavy aircraft loadings such as manhole covers, inlet grates, electric boxes, etc., shall be designed for the following loadings:
   1. Entire structure for 20,000- wheel loads with 250 psi (1.7 MN/m^2) tire pressure.
   2. For spans of 2 feet or less in the least direction, a uniform live load of 250 psi (1.7 MN/m^2).
   3. For spans between 2 feet and 10 feet in the least direction, a uniform live load varying between 250 psi (1.7 MN/m^2) and 50 psi, in inverse proportion to the span length.
   4. For spans of 10 feet or greater in the least direction, the design shall be based on the number of wheels which will fit the span. Wheel loads of 20,000 pounds shall be used.

b. Handholes.
   1. Type I, Aircraft Load Rated. Airport and Dock Structure, or approved equal, 4-foot x 4-foot inside dimension and/or as otherwise sized as shown on the Plans. Assembly shall be designed per the loading requirements listed above.
      a As detailed on the Plans, each handhole shall be provided with a hinged, spring-assist open, 30-inch x 30-inch clear manway with ductile iron aircraft-load-rated lid. Spring assembly shall consist of a minimum of two 302 stainless steel springs capable of lifting 70 percent of the lid weight. Hinged lid shall be provided with a pivoting galvanized steel hold-open bar and a minimum of two stainless steel hold-down bolts. Manways shall be provided with load-rated ductile/cast iron cast-in flange.
   2. Provide each new handhole with the appurtenances listed below and as shown on Plans.

c. All Handholes Shall:
   1. Be fitted on each wall with two 24-inch galvanized inserts for cable racks (Unistrut P-3000 or equal). Each rack shall be provided with a minimum of two saddle rack type arms with two saddles. Rack arms shall be made of galvanized steel or of non-flammable polymer as manufactured by Underground Devices, Inc., or equal, or as detailed on the Plans.
   2. Be provided with ½-inch diameter threaded inserts for pull eye on each inside wall and a drainage sump in the bottom. DO NOT knock the bottom out of this sump.

3. Be provided with ¾-inch x 10-foot copper-clad ground rod in each handhole/ manhole for use as a standard for circuit testing. Exothermically bond ground rod to the grounding conductor system.
4. Be provided with ¾-inch x 10-foot copper-clad ground rod external to each handhole/ manhole to which an encircling counterpoise conductor shall be exothermically bonded.

d. All Manholes and Handholes Shall:
1. Be fitted on each wall with two 24-inch galvanized inserts for cable racks (Unistrut P-3000 or equal). Each rack shall be provided with a minimum of two saddle rack type arms with two saddles. Rack arms shall be made of galvanized steel or of non-flammable polymer as manufactured by Underground Devices, Inc., or equal, or as detailed on the Plans.
2. Be provided with ½-inch diameter threaded inserts for pull eye on each inside wall and a drainage sump in the bottom. DO NOT knock the bottom out of this sump.
5. Be provided with ¾-inch x 10-foot copper-clad ground rod in each handhole/ manhole for use as a standard for circuit testing. Exothermically bond ground rod to the grounding conductor system. (See Item L-100 for ground rod specification.)
6. Be provided with ¾-inch x 10-foot copper-clad ground rod external to each handhole/ manhole to which an encircling counterpoise conductor shall be exothermically bonded.

INSTALLATION

127-3.1 CONSTRUCTION METHODS 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 ENGINEER without additional expense to the OWNER.

The CONTRACTOR shall perform excavation for structure and structure footings to the lines and grades or elevations shown on the plans. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure footings shown.

All Excavation shall be unclassified and shall be considered incidental to the respective L-127 pay item of which it is a component part. Dewatering necessary for L-127 structure installation, erosion and turbidity control, in accordance with Federal, State, and Local requirements is incidental to its respective pay item as a part of Item L-127. The cost of all excavation regardless of type of material encountered shall be included in the unit price bid for the L-127 Item.

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 ENGINEER. 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.

After each excavation is completed, the CONTRACTOR shall notify the ENGINEER. Structures shall be placed after the ENGINEER has approved the depth of the excavation and suitability of the foundation material.

Prior to installation the CONTRACTOR shall provide a minimum of 6 inches of sand or a material approved be the ENGINEER 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.

127.3.2 HANDHOLES. Unless otherwise noted, aircraft-load-rated (Type I) handholes shall be installed in all areas within the Airport boundaries. Unless otherwise noted, handholes shall be located parallel to and 35 feet from taxiway and 50 feet from runway edges/taxiway centerlines and/or as indicated on the Plans.

127-3.3 ALL HANDHOLES. Installation shall be in accordance with manufacturer's requirements and as follows:

a. Be set ¼-inch above finished pavement or 1 inch above finished grade as shown on Plans.
b. Manholes and handholes shall be bedded on compacted aggregate base, 12-inch minimum depth, with ¾-inch gradation.
c. Have ducts stubbed into the manholes and handholes, which shall terminate in end bells cast in concrete flush with inside walls.

METHOD OF MEASUREMENT

127-4.1 CONCRETE HANDHOLES. The quantity of handholes to be paid for shall be the number of each type installed by CONTRACTOR and accepted by OWNER.

BASIS OF PAYMENT

127-5.1 CONCRETE HANDHOLES. Payment for new and modified concrete handholes will be made at the contract unit price, including all structural excavation and backfilling, installed and accepted, which price and payment shall constitute full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the work. The unit price of each of these items shall also include CONTRACTOR’s overhead, profit and markup.

Payment will be made under:

Item L-127-5.1 Handhole, Type I, Furnished and Installed – per each

END OF ITEM L-127

ITEM L-801

AIRPORT ROTATING BEACON

DESCRIPTION

801-1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions, apply to work specified in this Item.

801-1.2 SCOPE. This Item shall consist of removing and relocating of an L-801A, rotating beacon, nominal support structure and concrete foundation in accordance with this specification and as detailed in the Plans. Provide structural and miscellaneous metal work shown on the Plans, and as needed for a complete and proper installation.

The Item shall also include all cable connections, conduit and conduit fittings, the testing of the installations, and all incidentals necessary to place the beacon in operation.

801-1.3 APPLICABLE DOCUMENTS. The publications listed at the end of this Item are incorporated herein by reference and form a part of this Item to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of this solicitation shall be applicable. In the text of this Item, such publications are referred to by basic designation only. Additional details and specifications pertaining to a specific system are contained in these documents and are to be considered as part of this Item. Perform all work in accordance with these documents except as specified herein. Perform shop and/or field welding required in connection with the work of this Section in strict accordance with pertinent recommendation of the American Welding Society. In the event of a conflict between contract documents and the referenced documents, the more stringent rule shall be applied.

801-1.4 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

a. Beacon support structure as indicated in plans.
b. Mass base and mounting hardware.
c. Structural calculations for Beacon structure support base, prepared by California Professional Engineer.

EQUIPMENT AND MATERIALS

801-2.1 GENERAL. Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Airports Service, Washington, D.C. 20590, and shall be listed in 150/5345-53 (current edition), Airport Lighting Equipment Certification Program.

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 Owner.

ITEM L-801

AIRPORT ROTATING BEACON

801-2.2 ROTATING BEACON. The rotating beacon shall be removed and relocated next to the new airfield lighting vault as shown in the plans and connected in accordance with FAA AC 150/5345-49 (current edition).

801-2.3 MASS TYPE ISOLATION BASE STRUCTURE. The base support structure shall meet the following criteria:

a. Restrained spring mountings shall have a free-standing and laterally stable spring within a rigid housing that includes vertical limit stops to prevent spring extension when weight is removed. Springs shall be complete with a molded neoprene cup or 1/4-inch-thick neoprene pad. Spring diameters shall be no less than 0.8 of the compressed height of the spring at rated load with a minimum additional travel to solid equal to 50% of the rated deflection. A minimum clearance of 1/2 inch shall be maintained around restraining bolts and between the housing and the spring so as not to interfere with the spring action. Mountings shall have Anchorage Preapproval "R" Number from OSHPD in the State of California certifying the maximum certified horizontal and vertical load ratings. Mountings shall be Type SSLFH with 2-inch deflection as manufactured by Mason Industries, Inc.

b. Vibration isolation manufacturer shall furnish rectangular steel concrete pouring forms for floating and inertia foundations. Bases for split case pumps shall be large enough to provide for suction and discharge elbows. Bases shall be a minimum of 1/12th of the longest dimension of the base but not less than 6 inches. The base depth need not exceed 12 inches unless specifically recommended by the base manufacturer for mass or rigidity. Forms shall include minimum concrete reinforcing consisting of #4 bars welded in place on 6-inch centers running both ways in a layer 1-1/2 inches above the bottom. Forms shall be furnished with steel templates to hold the anchor bolts, sleeves and anchors while concrete is being poured. Height-saving brackets shall be employed in all mounting locations to maintain a 1-inch clearance below the base. Base shall be Type BMK or K as manufactured by Mason Industries, Inc.

c. All installation hardware shall include, but not be limited to, base anchor bolts and beacon attachment bolts and accessories, as needed for a complete and functioning installation.

801-2.4 AIRPORT BEACON SUPPORT STRUCTURE. The support structure shall be provided and install as detailed on drawings.

The support structure and beacon assembly shall be capable of withstanding 100 mph wind with one-third gusts.

METHOD OF MEASUREMENT

801-3.1 ROTATING BEACON. The quantity to be paid for under this Item shall be per each rotating beacon supplied and installed by the contractor, and accepted.

ITEM L-801

AIRPORT ROTATING BEACON

801-3.2 MASS BASE AND SUPPORT STRUCTURE. The quantity to be paid for under this Item shall be the mass base and metal support structure furnished, installed, complete and accepted operational unit ready for operation.

BASIS OF PAYMENT

801-4.1 ROTATING BEACON. Payment will be made at the contract unit price for each rotating beacon. The unit price shall be full compensation for furnishing all materials necessary to complete this Item. The unit price of each of these items shall also include the contractor's overhead, profit and markup.

801-4.2 MASS BASE AND SUPPORT STRUCTURE. Payment will be made at the contract unit price for each accepted mass base and support structure. The unit price shall be full compensation for furnishing all materials and for all preparation, assembly, and shipping of these materials. The unit price of each of these items shall also include the contractor's overhead, profit and markup.

Payment will be made under:

Item L-801-4.1	L-801A Rotating Beacon, Installed --per each.
Item L-801-4.2	Mass Base and Support Structure, Installed--lump sum.

REFERENCE PUBLICATIONS

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

FEDERAL AVIATION ADMINISTRATION (FAA) SPECIFICATIONS REFERENCED IN ITEM L-801

AC 150/5345-12C	Specification for Airport and Heliport Beacon.
AC 150/5345-53A	Airport Lighting Equipment Certification Program.

END OF ITEM L-801

ITEM L-807

AIRPORT 12-FOOT WIND CONES

DESCRIPTION

807-1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions apply to work specified in this item.

807-1.2 GENERAL. This Item shall consist of furnishing and installing a FAA-approved (L-807) airport wind cone and wind cone light assembly with (L-810) obstruction light and associated bases, controls and power connections in accordance with these specifications and in accordance with the dimensions, design, and details shown in the Plans.

The work shall include the furnishing and installation of a support for mounting the wind cone, the specified wire, and a concrete foundation. The Item shall also include all cable connections, conduit and conduit fittings, the furnishing and installation of all lamps, ground rod and ground connection, the testing of the installation, and all incidentals necessary to place the wind cone and obstruction lights in operation as a completed unit to the satisfaction of the OWNER.

807-1.3 APPLICABLE DOCUMENTS. The publications listed at the end of this Item are incorporated herein by reference and form a part of this Item to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of this solicitation shall be applicable. In the text of this Item, such publications are referred to by basic designation only. Additional details and specifications pertaining to a specific system are contained in these documents and are to be considered as part of this Item. Perform all work in accordance with these documents except as specified herein. In the event of a conflict between contract documents and the referenced documents, the more stringent rule shall be applied.

807-1.4 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

a. L-807 Wind Cone, internally lighted, low VA lamps
b. L-810 LED Obstruction Light
c. Concrete Foundation
d. L-867 Base Can
e. Control and power wiring diagrams.
f. Control equipment base.
g. Spare parts, testing and maintenance tools

EQUIPMENT AND MATERIALS

108-2.1 GENERAL. Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Washington, D.C. 20591. Manufacturer shall certify that L-807 wind cone meets FAA specification as contained in Advisory Circular (AC) 105/5345-53 (current edition), Airport Lighting Equipment Certification Program.

All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturers' certification of compliance with the applicable specification, when requested by the Engineer.

ITEM L-807

AIRPORT 12-FOOT WIND CONES

All materials and equipment used to construct this item shall be submitted to the Engineer for approval prior to ordering the equipment.

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.

807-2.2 WIND CONES. The 12-foot wind cones and assemblies shall conform to the requirements of AC 150/5345-27,current edition, Specification for Wind Cone Assemblies and be manufactured by an FAA approved manufacturer per FAA AC 150/5345-1 (current edition). Wind cone shall be internally lit, 120 V AC, with Low VA lamps. Wind cone shall have center-mounted braked winch allowing single person maintenance, nylon windsock, and L-810 LED obstruction light.

807-2.3 WIRE. Wire shall be per Item L-108.

807-2.4 CONDUIT. Conduit shall be per item L-110.

807-2.5 BASE CANS. Base cans shall be per L-867.

807-2.6 CONCRETE. The concrete for foundations shall be proportioned, placed, and shall have a design compressive strength of 3000 psi at 28 days when tested in accordance with ASTM C39.

807-2.7 PAINTING. Equipment shall be factory painted in accordance with Fed. Std. 595 and shall be shipped with protective packaging to assure the finish will not be damaged. Any paint damage shall be repaired per manufacturer's requirements. The paint shall meet the requirements of Fed. Spec. TT-E-489. The color shall be in accordance with Federal Standard 595, Aviation Gloss Orange Number 12197.

807-2.8 MATERIALS. All parts and materials shall be suitable for the intended purpose and shall be adequately protected against corrosion. The components shall have adequate capacity and shall not be operated in excess of the component manufacturer's recommended rating. Any plastic components exposed to sunlight shall be made of ultraviolet-stabilized material. All fasteners shall be of corrosion-resistant material. Copper-bearing hardware in contact with aluminum shall be plated with cadmium, nickel, or zinc.

a. **Structural Shapes and Plates**. Structural shapes and plates furnished by the CONTRACTOR shall be ASTM A36 steel.

b. **Pipe**. Pipe to be used shall be ASTM A53, Type S, Grade B steel.

c. **Nuts and Bolts**. Nuts and bolts shall be ASTM A307, Grade A steel. All nuts shall be full, self-locking structural nuts.

d. **Galvanizing**. All the above structural components and all miscellaneous steel hardware shall be hot-dip galvanized per ASTM A123 and A153. Where galvanized surfaces are damaged by cutting, drilling, welding, or by any other process, the surfaces shall be painted with zinc-rich compound.

807-2.9 NAMEPLATES. Install a rigid, laminated plastic tag with 3/8-inch high lettering inscribed or engraved at each panelboard, control cabinet, switch enclosure, transformer, and circuit breaker enclosure. The tags shall indicate the function, voltage, and phase of function of the electrical device to be identified. The exact location of the identification marking shall be as designated by the OWNER.

CONSTRUCTION METHODS

807-3.1 WORKMANSHIP. The equipment shall be fabricated in accordance with the highest quality workmanship. All wiring shall be neatly run and laced. All sharp edges and burrs shall be removed. Painted surfaces shall be free from runs, blotches, and scratches.

807-3.2 INSTRUCTION BOOK. Furnish to the OWNER with each system 2 copies of instruction books containing the following information.

a. Complete system schematic and wiring diagrams showing all components cross-indexed to the parts list.

b. Complete parts list with applicable rating and characteristics of each part and with the component manufacturer's name and part number. Installation instructions, including aiming, calibration of the aiming system, focusing, and adjustment of the tilt switch.

c. Maintenance instructions, including relamping procedure, theory of operation and trouble-shooting charts.

d. Operating instructions.

807-3.3 INSTALLATION.

a. **Foundation.** The hinged support or hinged pole shall be installed on a concrete foundation as shown in the Plans. Foundation shall not be more than 1 inch (25 mm) above grade

b. **Electrical.** The installation shall conform to the applicable sections of the National Fire Protection Association, NFPA-70, National Electrical Code and local codes. All electrical connections to the light unit shall be made via plugs and receptacles to allow the unit to pull free in the event it is struck by an aircraft. Any extra control circuitry shall be housed in an enclosure to protect it from the environment. All underground cable shall be installed in accordance with Item L-108. Any underground connections shall be made via splices or appropriately rated plugs

807-3.4 POLE INSTALLATION. The CONTRACTOR shall erect the pole on the foundation following the manufacturer’s requirements and erection details. The pole shall be level and secure.

807-3.5 LAMPS. The CONTRACTOR shall furnish and install Low VA and LED lamps as specified by the manufacturer and described in Item L-807-2.2.

807-3.6 CHAIN AND PADLOCK. The CONTRACTOR shall furnish and install a suitable operating chain for lowering and raising the hinged top section. The chain shall be attached to the pole support in a manner to prevent the light fixture assembly from striking the ground in the lowered position. Keys for the padlock shall be delivered to the OWNER.

.

807-3.7 FIELD INSPECTION. Prior to placing any concrete in forms, the reinforcing and formwork will be inspected by the OWNER'S INSPECTOR, and any discrepancies found shall be corrected by the CONTRACTOR at his expense. The CONTRACTOR shall give the OWNER'S INSPECTOR at least 24 hours advance notice for such inspection. All concrete shall be placed in the presence of the OWNER'S INSPECTOR.

When excavations are completed, notify OWNER'S INSPECTOR for his inspection and approval prior to installation of cables, ducts, or piping.

After foundations have been constructed and have reached adequate set, trenches and excavations shall be backfilled. Backfill shall be placed on both sides of foundations at the same time and both sides tamped prior to placing of the next layer of material. Special care shall be taken to prevent any uneven wedging action against the structure. The OWNER'S INSPECTOR shall inspect all installations prior to placement of backfill. Placement of backfill shall be in 6-inch layers. Base material under concrete bases shall be 12 inches of 3/4-inch aggregate base compacted to 95% in accordance with ASTM D1557.

METHOD OF MEASUREMENT

807-4.1 WINDCONE The quantity of wind cones to be paid for shall be per each installed by the CONTRACTOR as completed units in place ready for operation and accepted by the OWNER.

BASIS OF PAYMENT

807-5.1 WINDCONE Payment will be made at the bid price for each completed and accepted installation by the CONTRACTOR and accepted by the OWNER. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this Item including (but not limited to) the wind cone assembly, concrete base, cables, connections, LED obstruction light, low VA lamps, ground rod, etc.

Payment will be made under:

Item L-807-5.1 Size 2 Wind Cone with New Concrete Foundation, Installed Complete - per each

ITEM L-807

AIRPORT 12-FOOT WIND CONES

REFERENCED PUBLICATIONS

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

FAA SPECIFICATIONS REFERENCED IN L-807

Number	Title
AC 150/5345-7	Specification for L-824 Underground Cables for Airport Lighting Circuits
AC 150/5345-27	Specification for Wind Cone Assemblies
FED SPEC TT-E-489	Enamel, Alkyd, Gloss, Low VOC Content
FED SPEC J-C-30	Cable and Wire, Electrical (Power, Fixed Installation) (cancelled; replaced by AA-59544 Cable and Wire, Electrical (Power, Fixed Installation))
FED SPEC W-P-115	Panel, Power Distribution
FED STD 595	Colors Used in Government Procurement
MIL-DTL-24441/20	Paint, Epoxy-Polyamide, Green Primer, Formula150, Type III
Underwriters Laboratories	Rigid Metal Conduit Standard 6
Underwriters Laboratories 514	Fittings for Conduit and Outlet Boxes Standard
Underwriters Laboratories	Intermediate Metal Conduit
NFPA-70	National Electric Code
Master Painter's Institute	

END OF ITEM L-807

ITEM L-849

RUNWAY END IDENTIFIER LIGHTS (REIL)

849-1.1 GENERAL. This Item shall consist of a unidirectional runway end identifier light (REIL) system in accordance with this Specification at the locations and in accordance with the dimensions, design, and details shown in the Plans.

849-1.2 RELATED DOCUMENTS. The General Provisions of the Contract, including Special Requirements, apply to work specified in this Item.

849-1.3 APPLICABLE DOCUMENTS. The publications listed at the end of this Item are incorporated herein by reference and form a part of this Item to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of this solicitation shall be applicable. In the text of this Item, such publications are referred to by basic designation only. Additional details and specifications pertaining to a specific system are contained in these documents and are to be considered as part of this Item. Perform all work in accordance with these documents except as specified herein. In the event of a conflict between contract documents and the referenced documents, the more stringent rule shall be applied.

849-1.4 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

- **a.** Runway End Identifier Light (REIL) with control unit and flashers
- **b.** Concrete foundations
- **c.** L-830 isolation transformer
- **d.** L-867 base cans
- **e.** Spare parts list

EQUIPMENT AND MATERIALS

849-2.1 GENERAL. Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Airports Service, Washington, D.C. 20590, and shall be listed in Advisory Circular AC 150/5345-53 (current edition), Airport Lighting Equipment Certification Program.

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 OWNER.

849-2.2 RUNWAY END IDENTIFIER LIGHTS (REIL) SYSTEM. The flashing light units and control unit shall be provided and installed per all applicable codes and FAA publications. Lights shall be L-849, Style E, High, Medium, and Low Intensity/Three Step, current sensing type 3, 6.6 amps, REIL meeting FAA AC150/5345-51 (current edition).

The L-849 REIL system shall consist of a Master control cabinet with LED Flash head and a Slave cabinet with led flash head. The Slave unit shall be identical to the Master except that timing signals shall come from the Master control cabinet. The flash heads shall consist of LED sources, one-step current sensor and interlock switch. An input current of 6.6A shall be input into both Master and Slave units. Master and slave units shall flash 120 times per minute with minimal time delay (< 10 ms) between units.

ITEM L-849

RUNWAY END IDENTIFIER LIGHTS (REIL)

The REIL system shall operate from a 6.6A constant current supply for the new REIL circuit REIL. REIL system shall include manufacturer recommended L-830 isolation transformers and flasher unit baffles and shall conform to requirements of the applicable Advisory Circular.

Included with the REIL system shall be (2) instruction manuals turned over to the OWNER.

849-2.3 WIRE. Wire shall meet the requirements specified in Item L-108.

849-2.4 CONDUIT. Conduit shall meet the requirements specified in Item L-110.

849-2.5 CONCRETE. Concrete foundations shall meet the requirements specified in Item P-610 and be dimensioned as defined on the Plans.

849-2.6 TRENCH AND BACKFILL. Trench and backfill shall meet the requirements specified in Item P-152.

849-2.7 SPARE PARTS AND TEST EQUIPMENT. Spare parts and test equipment to be turned over to the OWNER, incidental to the installation, provided with the REIL shall include as a minimum:

- **a.** Aiming device.
- **b.** One (1) controller board of each type in the system.
- **c.** Two (2) lenses.
- **d.** Two (2) lamp assemblies.
- **e.** Two (2) flashers.
- **f.** Two (2) baffles.

CONSTRUCTION METHODS

849-3.1 INSTALLATION. The flasher units and control unit shall be installed on concrete foundations as shown in the Plans and in accordance with FAA Order 6850.2A, 9/13/85, Visual Guidance Lighting Systems.

849-3.2 ELECTRICAL CONNECTION. The CONTRACTOR shall furnish all labor and materials and shall make complete electrical connections in accordance with the wiring diagram furnished with the project Plans.

849-3.3 GROUND CONNECTION AND GROUND ROD. The CONTRACTOR shall connect equipment, ground to ground rod, and grounding cable with exothermic welds, not ground clamps, for grounding the REIL assemblies. The end of the grounding cable shall be securely attached to a leg of the REIL housing or to the base of the pipe support with noncorrosive metal and shall be of substantial construction. The resistance to ground shall not exceed 25 ohms. Grounding shall be in accordance with FAA Standard FAA-STD-019, 9/26/85, Lightning Protection, Grounding, Bonding, and Shielding Requirements for Facilities.

849-3.4 LAMPS. The CONTRACTOR shall furnish and install manufacturer provided lamps.

849-3.5 REIL AIMING. The light units shall be aimed at an angle of fifteen degrees (15°) away from a line parallel to the runway centerline and in the direction of the approach zone. The light units shall also be aimed at a vertical angle of ten degrees (10°) above the horizontal.

ITEM L-849

RUNWAY END IDENTIFIER LIGHTS (REIL)

Install a rigid, laminated plastic or brass tag (1-inch high with 3/8-inch high lettering) on each housing with the aiming angle inscribed or engraved. These tags shall be attached to the housings with sheet metal screws in a conspicuous location as indicated by the OWNER.

849-3.6 PRELIMINARY FLIGHT CHECKING. The CONTRACTOR shall provide preliminary flight checking of the operational system to assure a minimum of complications during the FAA acceptance procedure.

Before commissioning, the REIL shall be flight checked to ensure that the system meets the requirements of the latest edition of Handbook OA P 8200.1, FSNFO, Supplement 40, Paragraph 218.321. FSNFO 3, United States Standard Flight Inspection Manual.

849-3.7 QUALITY ASSURANCE - INSPECTION. The CONSTRUCTION MANAGER (CM) will inspect all work specified in this Item before acceptance of the work. Operational test of REIL units for a minimum of 30 minutes is required.

METHOD OF MEASUREMENT

849-4.1 RUNWAY END IDENTIFIER LIGHTS. Measurement of REIL will be per each installed by the CONTRACTOR and accepted by the OWNER.

BASIS OF PAYMENT

849-5.1 RUNWAY END IDENTIFIER LIGHTS. Payment will be made at the contract unit price for each REIL installed by the CONTRACTOR and accepted by the OWNER. This unit price shall be full compensation for furnishing all materials and for all preparation, earthwork associated with this bid item, assembly, and installation of these materials and for all labor, equipment, tools, and incidentals necessary to complete this Item including the master and slave flasher and control units, concrete foundations, control and power cables, L-830 isolation transformer, L-867 base cans, flight checking and testing, grounding, and all connections.

Payment will be made under:

Item L-849-5.1-A6 REIL and Controller, Installed Complete and Tested – per each

ITEM L-849

RUNWAY END IDENTIFIER LIGHTS (REIL)

REFERENCE PUBLICATIONS

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

849-6.1 FEDERAL AVIATION ADMINISTRATION (FAA) SPECIFICATIONS REFERENCED IN ITEM L-849

AC 150/5345-51	Specification for Discharge-type Flashing Light / Flasher Equipment.
AC 150/5345-53	Airport Lighting Equipment Certification Program.
FAA-E-2159	Runway End Identifier Light System (REIL).
Order 6850.2A	Visual Guidance Lighting Systems.

849-6.2 FEDERAL AVIATION ADMINISTRATION (FAA) STANDARD REFERENCED IN ITEM L-849

FAA-STD-019	Lightning Protection, Grounding, Bonding, and Shielding Requirements for Facilities.

849-6.3 FEDERAL SPECIFICATIONS REFERENCED IN ITEM L-849

Fed. Spec. J-C-30	Cable and Wire, Electrical (Power, Fixed Installation).
Fed. Spec. TT-P-59	Paint: Ready-Mixed, International / Aviation Gloss Orange No. 12197.
Fed. Spec. TT-P-102	Paint, Oil: Titanium-Lead-Zinc and Oil, Exterior, Ready-Mixed, White and Light Tints.
Fed. Spec. TT-P-641	Primer, Paint; Zinc Dust-Zinc Oxide (for Galvanized Surfaces).
Fed. Spec. WW-C-581	Conduit, Metal, Rigid; and Coupling, Elbow and Nipple, Electrical Conduit: Zinc-Coated.

849-6.4 FEDERAL STANDARD REFERENCED IN ITEM L-849

Fed. Std. 595	Colors.

END OF ITEM L-849

ITEM L-858

AIRPORT GUIDANCE LIGHTING SYSTEMS (SIGNAGE)

DESCRIPTION

858-1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions and Compensation Conditions, apply to work specified in this Item.

858-1.2 GENERAL. This item shall consist of airport guidance signage installed, relocated, modified or removed in accordance with this specification, the referenced specifications, and the applicable Advisory Circulars. The signs shall be installed or removed and reinstalled 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 OWNER.

Refer to Plans Series E2.xx, “Electrical Layout Plan," for sign information and installation specifics.

858-1.3 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, paragraph 100-1.6, for the following equipment:

a. L-867 base
b. Concrete sign base showing dimensions and installation procedures.
c. L-858 sign
d. Schedule of sign faces
e. Isolation transformer

858-1.4 LOCATION/ELEVATION. Guidance signs and distance markers shall be located where indicated on the drawings. Longitudinal tolerance is 1’-0”. Base elevation shall be 1 to 2 inches above finish grade as established on the civil grading and drainage drawings.

EQUIPMENT AND MATERIALS

858-2.1 GENERAL. Airport signage equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Airports Service, Washington, D.C. 20591, and shall be listed in Advisory Circular 150/5345-1, Approved Airport Lighting Equipment**.** Also, manufacturer shall certify that L-858 Airfield Guidance Signage meets FAA specification as contained in Advisory Circular 150/5345-44 (current edition).

All other equipment and materials covered by other referenced specifications shall be subject to acceptance through the manufacturer's certification of compliance with the applicable specifications and subject to OWNER's approval.

Lists of the equipment and materials required for a particular system are contained in the applicable Advisory Circulars.

858-2.2 CONCRETE. Concrete for bases shall conform to the requirements of Item P-610 Structural Portland Cement Concrete.

858-2.3 CONDUIT. Rigid steel and EMT conduit and fittings shall conform to the requirements of Fed. Spec. WW-C-581. PVC conduit and fittings shall conform to the requirements of Fed. Spec. W-C-1094.

ITEM L-858

AIRPORT GUIDANCE LIGHTING SYSTEMS (SIGNAGE)

858-2.4 LIGHT BASE. Light bases shall be type L-867, size B, 24-inch, one-piece, class 1, meeting the requirements of FAA AC 150/5345-42 (current edition).

858-2.5 SIGNS. Runway guidance signs provided under this work shall be of the type L-858 as scheduled and detailed on the Plans. The work shall conform to the requirements of the applicable Advisory Circular. Signs shall be manufactured by an FAA approved manufacturer, featuring:
a. High efficiency, low volt-amp (VA) load with power factor exceeding 85%
b. Class: 1
c. Style: 3 (5-step, 2.8 to 6.6 Amp, for Runway lighting circuits)
d. Size: 2
e. 48Watt halogen lamps or 18 watt fluorescent lamps (or approved equivalent wattage)

The CONTRACTOR shall provide the following as incidental to the cost of the signs:
a. Spare lamps (10% of total quantity rounded up to nearest whole number) to OWNER.

858-2.6 RDR SIGNS. Runway Distance Remaining signs provided under this work shall be of the type L-858 as scheduled and detailed on the Plans. The work shall conform to the requirements of the applicable Advisory Circular. Signs shall be manufactured by an FAA approved manufacturer, featuring:
a. High efficiency, low volt-amp (VA) load with power factor exceeding 85%
b. Class: 1
c. Style: 3 (5-step, 2.8 to 6.6 Amp, for Runway lighting circuits)
d. Size: 4
e. 48Watt halogen lamps or 18 watt fluorescent lamps (or approved equivalent wattage)

858-2.7 ISOLATION TRANSFORMER. Isolation transformers shall be of the type L-830 meeting the requirements of the applicable Advisory Circular. The isolation transformers for each sign shall be a minimum 100W (per manufacturer's recommendations). The isolating transformers shall be provided with the signs and shall conform to requirements of the applicable Advisory Circular. Isolation transformers shall have connectors per Item L-108. Provide secondary cable extension kit with each sign.

CONSTRUCTION METHODS

858-3.1 GENERAL. The installation and testing details for the systems shall be as specified in the applicable Advisory Circulars.

858-3.2 PLACING SIGNS. The signs shall be installed at the locations indicated in the plans and in accordance with AC 150/5340-18 (current edition)..

858-3.3 PRECAST CONCRETE BASES. Concrete bases shall be either precast or cast-in-place and provided new as per details and schedules on the Plans. The concrete shall meet the requirements of P-610 for 3000 psi concrete.

858-3.4 TRANSFORMER. The transformer shall be installed in L-867 bases at location and position as indicated on the Plans. The primary cable connections shall be made by use of the Amerace Superkit L-823 plug and receptacle cable connectors.

858-3.5 CABLE CONNECTORS. The cable connector shall be Amerace Superkit not requiring heat shrink and in accordance with FAA A/C 150/5345-26 (current edition).

ITEM L-858

AIRPORT GUIDANCE LIGHTING SYSTEMS (SIGNAGE)

858-3.6 LAMPS. Lamps of the type and wattage as required will be provided with and installed in all guidance signs. The CONTRACTOR shall provide 10% extra lamps as spare parts to the OWNER as incidental to the cost of the signs.

858-3.7 IDENTIFICATION NUMBERS. An identifying number shall be assigned to each sign in accordance with the Plans. The placing of these numbers shall be accomplished by use of 2-inch diameter nonferrous metal tag, with the numerals approximately ¼-inch in height, stamped in, embedded in the concrete base as detailed on the Plans, so each faces the taxiway or runway.

METHOD OF MEASUREMENT

858-4.1 NEW SIZE 2 SIGNS. The quantity of signs shall be per each installed as completed unit, connected to circuit, ready for operation and accepted by OWNER.

BASIS OF PAYMENT

858-5.1 NEW SIZE 2 SIGNS. Payment will be made at the contract unit price for each complete taxiway guidance sign configuration listed below installed in place by CONTRACTOR and accepted by OWNER. This price shall be full compensation for furnishing and installing new concrete base, earthwork associated with this bid item, L-867 Type I base, and stub out from base; and wiring of sign and L-823 connectors and for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item. The unit price of each of these items shall also include CONTRACTOR's overhead, profit and markup.

Payment will be made under:

Item L-858-5.1	New Size 2, 1-Module Guidance Sign Complete with New Concrete Base, Base Can, Isolation Transformer and Connections – per each
Item L-858-5.1-A1	New Size 2, 1-Module Guidance Sign Complete with New Concrete Base, Base Can, Isolation Transformer and Connections – per each
Item L-858-5.2-A7	New Size 4, RDR Sign, with New Concrete Base, Base Can, Isolation Transformer and Connections – per each

ITEM L-858

AIRPORT GUIDANCE LIGHTING SYSTEMS (SIGNAGE)

FEDERAL SPECIFICATIONS REFERENCED IN ITEM L-858

108-6.1 FEDERAL AVIATION ADMINISTRATION (FAA) SPECIFICATIONS REFERENCED IN ITEM L-108

AC 150/5340-18	Standards for Airport Sign Systems
AC 150/5345-1	Approved Airport Lighting Equipment.
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connections AC 150/5345-42C Specification for Light Base and Transformer Housings, Junction Boxes and Accessories (including Change 1)
AC 150/5345-44	Specification for Taxiway and Runway Signs
AC 150/5345-47	Isolation Transformers for Airport Lighting Systems.

WW-C-581	Conduit, Metal, Rigid; and Coupling, Elbow; and Nipple, Electrical Conduit: Zinc-Coated
W-C-1094	Conduit, Plastic-Type II Schedule 40

END OF SECTION L-858

ITEM L-861

ELEVATED MEDIUM INTENSITY RUNWAY EDGE LIGHTS

DESCRIPTION

861-1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions apply to work specified in this Item.

861-1.2 GENERAL. This Item shall consist of furnishing and installing L-861 medium intensity runway edge lights (MIRL), bases and isolation transformers in accordance with these specifications and at the locations shown on the plans.

This Item involves the following work:

a. During the several stages of construction install, relocate and remove temporary surface-mounted lights, bases and conduit as detailed on the plans.
b. Installing new edge lights as detailed on the Plans.

861-1.3 APPLICABLE DOCUMENTS. The publications listed at the end of this Item are incorporated herein by reference and form a part of this Item to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of this solicitation shall be applicable. In the text of this Item, such publications are referred to by basic designation only. Additional details and specifications pertaining to a specific system are contained in these documents and are to be considered as part of this Item. Perform all work in accordance with these documents except as specified herein. In the event of a conflict between contract documents and the referenced documents, the more stringent rule shall be applied.

861-1.4 IDENTIFICATION NUMBERS. An identifying number and circuit number/name shall be assigned to each light in accordance with the Owner. The placing of these numbers shall be accomplished by use of paint sprayed on the adjacent pavement with a stencil. The Contractor shall coordinate with the Owner for numbering scheme and sequence.

861-1.5 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

a. L-861 light fixtures
b. Lens Colors
c. L-830 Isolation transformers.
d. L-823 Cable Connectors.

861-1.6 LOCATION/ELEVATION. Lights shall be placed on existing bases in existing locations.

861-1.7 TESTING. Refer to Item L-100, paragraph 100-3.9.

MATERIALS

861-2.1 GENERAL. Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Airports Service, Washington, D.C. 20590, and shall be listed in Advisory Circular 150/5345-53B, Airport Lighting Equipment Certification Program, current edition.

ITEM L-861

ELEVATED MEDIUM INTENSITY RUNWAY EDGE LIGHTS

861-2.2 LIGHT FIXTURES. Light fixtures shall meet the requirements of FAA AC 150/5345-46 (current edition). Installed height to top of globe shall be 14 inches above base. Lamps shall be 45watt/6.6 amp halogen. Runway Edge lights shall have Clear colored as standard color. Threshold lights shall have Red and Green split color globes.

The CONTRACTOR shall provide the following as incidental to light fixture pay item:

a. Provide spare fixtures for each type of light fixture (5% of total quantity rounded up to nearest whole number) to Owner – incidental to fixture pay item.
b. Provide spare lamps for each type of light fixture (10% of total quantity rounded up to nearest whole number) to Owner – incidental to fixture pay item.

861-2.3 LIGHT BASES. Specified in Item L-867/868.

861-2.4 ISOLATION TRANSFORMERS. Type L-830, 45W, 60 hertz, meeting the requirements of FAA AC 150/5345-47 (current edition).

861-2.5 HARDWARE. All bolts, nuts, washers and lock washers shall be stainless steel. Install using Loctite 252 compound. Provide all taxiway edge lights with 2" threaded male adapter frangible coupling per details in the plans.

861-2.6 LIGHTING CABLE. Specified in Item L-108.

P861-2.7 LUG AND RECEPTACLE CABLE CONNECTORS. L-823 5 kV connections shall conform to the requirements of Item L-108. Provide with longer pigtail leads were required due to existing base dimensions. Contractor to field verify before ordering.

861-2.8 FLANGE BASE PLATE. Where required by type of replacement configuration defined in plans, provide with flange base plate for anchoring to existing concrete over existing threaded fixture mounting hole. Flange to be low profile with at least 4 bolt holes, and 2" female adapter for new frangible couplings.

861-2.9 SEALANT. Shall meet the requirements of ASTM D 3405, Joint Sealants, hot poured for bituminous pavements, and applicable section(s) of FAA Specification Item P-605. Each lot or batch of sealing compound shall be delivered to the job site in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, and the safe heating temperature and shall be accompanied by the manufacturer's certification stating that the compound meets the requirements of this specification.

METHOD OF MEASUREMENT

861-3.1 RUNWAY EDGE LIGHTS. Measurement of runway edge lights shall be per each installed by the CONTRACTOR and accepted by the OWNER.

861-3.1 THRESHOLD EDGE LIGHTS. Measurement of threshold lights shall be per each installed by the CONTRACTOR and accepted by the OWNER

ITEM L-861

ELEVATED MEDIUM INTENSITY RUNWAY EDGE LIGHTS

BASIS OF PAYMENT

861-4.1 RUNWAY EDGE LIGHTS. Payment for the installation of runway edge lights shall be made at the contract unit price for each installed by the Contractor and accepted by the Owner. The unit price shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the item, including light fixtures, aiming, lamps, isolation transformers, all connections to circuit and transformer, L-823 connectors, mounting flange adapters, 2" frangible couplings, cleaning surfaces for mounting, installation of flange adapters, bolts and hardware, spare fixtures, and spare lamps.

861-4.2 THRESHOLD EDGE LIGHTS. Payment for the installation of threshold lights shall be made at the contract unit price for each installed by the Contractor and accepted by the Owner. The unit price shall be full compensation for all labor, materials, equipment and incidentals necessary to complete the item, including light fixtures, aiming, lamps, isolation transformers, all connections to circuit and transformer, L-823 connectors, mounting flange adapters, 2" frangible couplings, cleaning surfaces for mounting, installation of flange adapters, bolts and hardware, spare fixtures, and spare lamps.

Payment will be made under:

Item L-861-4.1	MIRL Runway edge light, Installed Complete – per each
Item L-861-4.2	Runway Threshold light, Installed Complete – per each

Note: Light fixture installation types are defined in the plans.

REFERENCED PUBLICATIONS

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

862-8.1 **FAA SPECIFICATIONS REFERENCED IN L-861.** All references are current edition.

AC 150/5340-24	Design and Installation Details for Airport Visual Aides
AC 150/5345-7	Specification for L-824 Underground Cables For Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connections (including Changes 1 and 2)
AC 150/5345-42	Specification for Light Base and Transformer Housings, Junction Boxes and Accessories (including Change 1)
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Isolation Transformers for Airport Lighting Systems
AC 150/5345-53B	Airport Lighting Equipment Certification Program (Including Change 1)

END OF ITEM L-861

ITEM L-861T LED

ELEVATED MEDIUM INTENSITY TAXIWAY EDGE LIGHTS

DESCRIPTION

861T-1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions apply to work specified in this Item.

861T-1.2 GENERAL. This Item shall consist of installing new and installing/removing temporary elevated taxiway edge lights and the removal and replacement of existing light fixtures as shown on the plans.

This Item involves the following work:

a. During the several stages of construction install, relocate and remove temporary surface-mounted lights, bases and conduit as detailed on the plans.
b. Installing new edge lights as detailed on the Plans.

861T-1.3 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, paragraph 100-1.6, for the following equipment.

a. L-861T light fixture.
b. L-867 base.
c. Isolation transformer.

861T-1.4 LOCATION/ELEVATION. Taxiway edge lights and removal/re-installed lights shall be place in locations shown on the plans. Survey and note the location of the existing lights scheduled for removal and re-installation before removal. Re-install existing fixture in the surveyed location. The new fixtures shall be located at the dimensions noted in the plans for that fixture.

MATERIALS

861T-2.1 GENERAL. Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Airports Service, Washington, D.C. 20590, and shall be listed in Advisory Circular 150/5345-53B, Airport Lighting Equipment Certification Program.

861T-2.2 ELEVATED TAXIWAY LIGHT FIXTURES. Type L-861T LED, omni-directional, meeting the requirements of FAA AC 150/5345-46 (current edition). Lights shall have blue optical system filters. Installed height to top of globe shall be 14-inches above the base plate. Light fixtures shall be provided with 6.6 amp LED type lamps.

The CONTRACTOR shall provide the following as incidental to light fixture pay item:

a. Spare fixtures (5% of total quantity rounded up to nearest whole number) to OWNER
b. Spare lamps (10% of total quantity rounded up to nearest whole number) to OWNER

861T-2.3 LIGHT BASE. Light bases shall be size B, 24-inch deep, class 1, L-867 type, meeting the requirements of the applicable Advisory Circular. Light base shall be encased in concrete as per the details on the Plans. Concrete shall meet the requirements of P-610 for 3000 psi concrete. Provide base can with internal grounding lug per the details on the Plans specifications. Refer to Item L-867/868 for base and base plate specifications.

ITEM L-861T LED

ELEVATED MEDIUM INTENSITY TAXIWAY EDGE LIGHTS

861T-2.4 ISOLATION TRANSFORMER. Type L-830, 10 watts, 60 hertz, meeting the requirements of FAA AC 150/5345-47 (current edition). Isolation transformers shall have factory molded L-824 pugs and receptacles: two single-conductor primary cables (8 AWG, 5kV) with a molded style 2 plug on one lead and molded style 9 receptacle on the other lead, and one two-conductor secondary cable (12AWG, 600v) with style 8 two-pin receptacle.

861T-2.5 HARDWARE. All bolts, nuts, washers and lock washers shall be stainless steel and meet FAA requirements. All bolts ¼-inch and larger shall be hex head type. All bolts smaller than ¼" trade sized shall be recessed Allen type. All bolted connection shall utilize and anti-rotational locking type device. The base can cover and fixture mounting bolts shall extend through the base can mounting flange into the base can a minimum of ½". The bolts shall have enough thread length so they do not shoulder out before the fixture is securely tighten.

The CONTRACTOR shall use anti-sieve compound manufactured by Ideal: "Noalox", or approved equal. Use Dow Corning Compound III valve lubricant, no curing sealant, or approved equal to seal between section of base cans, spacer rings, adapter rings, or fixtures.

861T-2.6 PLUG AND RECEPTACLE CABLE CONNECTORS. Provide with connector kits meeting the requirements of Item L-108 and the applicable Advisory Circular.

861T-2.7 FRANGIBLE COUPLINGS: All elevated lights shall be installed on frangible couplings in accordance with the applicable Advisory Circular. Frangible couplings shall be metallic and provide an electrical grounding path between the fixture and the base can.

METHOD OF MEASUREMENT

861T-3.1 TAXIWAY EDGE LIGHTS. The quantity to be measured shall be per each for the installation of new elevated taxiway edge light fixtures.

BASIS OF PAYMENT

861T-4.1 TAXIWAY EDGE LIGHTS. The accepted quantities of taxiway edge light fixtures will be paid for at the contract unit price per each fixture completed and in place. This price shall be full compensation for all preparation, testing and installing of the light fixtures, isolation transformers, connectors and lighting cable, and for all labor, equipment, tools and incidentals necessary to complete the work as accepted. The unit price of each of these items shall also include CONTRACTOR's overhead, profit and markup.

Payment will be made under:

Item L-861T-4.1	New Elevated Taxiway LED Edge Light, Installed Complete – per each

ITEM L-861T LED

ELEVATED MEDIUM INTENSITY TAXIWAY EDGE LIGHTS

REFERENCED PUBLICATIONS

FAA SPECIFICATIONS REFERENCED IN L-861T

****** IMPORTANT NOTE: Current edition for all references, including any changes ******

AC 150/5340-24	Runway and Taxiway Edge Lighting System
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connections
AC 150/5345-42	Specification for Light Base and Transformer Housings, Junction Boxes and Accessories (including Change 1)
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Isolation Transformers for Airport Lighting Systems
AC 150/5345-53	Airport Lighting Equipment Certification Program (including Change 1)

END OF ITEM L-861T

ITEM L-867/868

LIGHT BASE AND TRANSFORMER HOUSING

DESCRIPTION

867/867-1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions apply to work specified in this item.

867/868-1.2 GENERAL. Elements under this Item shall consist of L-867 and L-868 bases or appurtenances for the miscellaneous connections of runway and taxiway edge lighting systems. This item is also for reference for bases for guidance signs, and isolation transformer housings. All other L-867/868 bases installed under this contract are to be provided as part of other Items in these specifications.

867/868-1.3 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, paragraph 100-1.6, for the following equipment:

a. Bases, extensions and rings.
b. Blank cover plates.

MATERIALS

867/868-2.1 GENERAL. Airport lighting equipment and materials covered by FAA specifications shall have the prior approval of the Federal Aviation Administration, Airports Service, Washington, D.C. 20590, and shall be listed in Advisory Circular 150/5345-53B, Airport Lighting Equipment Certification Program.

867/868-2.2 CONSTRUCTION.

a. Steel shall be used in the construction of L-867 and L-868 bases, extensions, and accessories and shall meet the requirements of ASTM A-36. All welds shall be continuous to provide watertightness. All bases, sections, and extensions shall meet the test requirements in Sections 868-3.1 to 3.6.

b. Construction of PVC or polyethylene plastic for L-868 and L-867 bases will not be accepted.

867/868-2.3 TOP FLANGE. The dimensions of the flange and its bolt circle shall be as required for the appropriate fixture. The flat surface of the flange shall be installed at an angle of 90°, plus or minus 0.25°, to the axis of the cylindrical body. The flange shall be continuously attached to the body to provide a watertight seal.

867/868-2.4 BODY. The two-piece body (base and extension), including sides and bottom, shall be fabricated from one or more pieces. The dimensions of the base and/or extension shall be as shown on the Plans. Two duct couplings or grommets shall be provided and installed near the bottom of the base as shown on the Plans. The location and size, as shown on the Plans, shall be considered standard. However, the location, number, type, and size of the duct connections can be altered to meet special conditions. Any sharp edges formed on the inside of the bases where duct couplings meet the inside surface of the housing shall be removed to prevent cutting of cable insulation at these points. The length of the body section as shown in the Plans shall be considered standard, but the length may vary to meet special conditions. Extensions may vary in length as required to the closest 1/16-inch.

ITEM L-867/868

LIGHT BASE AND TRANSFORMER HOUSING

867/868-2.5 EXTENSION RINGS. Each base will be provided with, as indicated, one ½-inch and/or one ¼-inch thick steel extension rings with appropriate bolt hole pattern.

867/868-2.6 HARDWARE. Bolts and lockwashers, suitable for use in threaded holes as shown on the applicable AC, shall be supplied with each base and extension assembly. The bolts shall conform to dimensions specified in the AC and shall be fabricated from 18-8 stainless steel. Install with high temperature, anti-seize compound.

867/868-2.7 "MUD" COVERS. Plywood protection and installation covers shall be fabricated according to the details and dimensions compatible with bases to be installed. The covers shall be fabricated from exterior grade plywood or a material of equal strength of weather resistance.

867/868-2.8 BLANK COVERS. Blank base covers shall be steel, minimum ¾-inch thick, with traffic rating of 100,000 pounds. Covers used temporarily during construction/paving shall be turned over to Airport Maintenance at job completion. Temporary covers in non-traffic areas shall be plywood.

867/868-2.9 GROMMETS. Grommets supplied for duct entrances into bases shall be sized to provide a watertight connection and be made of a material suitable for direct earth burials or encasement by asphalt, Portland cement concrete, or epoxy sealers. The grommet material shall have a hardness of 50 ±5 as determined by a durometer (ASTM D-2240). Typical grommet details are shown on the Plans.

867/868-2.10 GROUNDING LUGS. An internal ground connector shall be supplied with each L-867 or L-878 base and on each L-867 base cover plate (see Plans). For steel bases, a steel lug shall be welded to the interior wall of each base before galvanizing. The details and location of the grounding lug are shown on the Plans. The location of the lug may be varied to meet specified conditions. A three-hole bronze or copper ground connector shall be fastened to the steel lug after galvanizing.

867/868-2.11 PROTECTIVE COATING. After fabrication, burrs and sharp edges shall be removed, and all metal parts shall be treated for corrosion protection. Prior to tapping operations, all parts of bases, junction boxes, spacer rings in excess of ¼-inch in thickness, extensions, and conversion rings shall be hot-dip galvanized as specified in ASTM A-386, Class A, and applied in accordance with ASTM A-385. Base flanges, covers, and rings shall be wiped smooth to a flatness of +0.010 inch. Mud plates, grooved spacer rings, and other spacer rings ¼-inch or less in thickness shall be plated with zinc in accordance with the requirements of Federal Specification QQ-Z-325, Type II, Class 1, or with cadmium in accordance with the requirements of Fed. Spec. QQ-P-416, Type II, Class 1. Tapped holes shall be protected with a polyurethane varnish or equivalent. A zinc dust primer meeting MIL-P-26915 (USAF) shall be permitted for touchup. The area covered by zinc dust primer shall not exceed 10 percent of the total treated area. Any case iron may be coated with a minimum of 2.0 mils of oxyplast powder in lieu of galvanizing.

867/868-2.12 QUALIFICATION TEST. Tests shall be in accordance with FAA AC 150/5345-42C dated 4 January 1982.

PREPARATION FOR DELIVERY

867/868-3.1 BASES - PACKING. Each unit shall be individually packed as follows: The flange surface of each light base and transformer housing shall be protected by a cover as described in Paragraph 2.7

herein. A polyethylene gasket of 3-mil thickness shall be placed between the shipping cover and the base flange. The shipping cover shall be bolted to the flange by means of size 3/8, 16 hex-head stainless steel machine bolts seated to 25 inch-pounds of torque. Threaded duct entrances shall be protected with an anti-seize compound and standard thread protectors.

867/868-3.2 BASES – MARKING. Light bases and transformer housing, extensions, and accessories shall be marked for shipment with consignee's name and address, manufacturer's name and address, and other pertinent information as needed by the installer to identify non-standard length bases, special extensions, or other accessories.

CONSTRUCTION METHODS

867/868-4.1 LIGHT BASES. Light bases shall be installed at the locations shown on the Plans with the coverplate set flush with the future taxiway shoulder pavement surface. The bases and concrete encasement shall be installed prior to the start of paving operations.

867/868-4.2 CONDUIT CONNECTIONS. Coincident with concrete encasement, conduit connections shall be made at the base hubs to form a watertight connection as shown on the Plans.

867/868-4.3 EXCAVATION AND BACKFILL. Each light base location shall be carefully excavated by widening the conduit trench to the outer dimension of the concrete encasement. After the casement has set and conduits are connected to the base, the trench and base excavation shall be backfilled to the requirements of Item P-610. The coverplates shall be visible and free of debris following completion of the backfill.

METHOD OF MEASUREMENT

867/868-5.1 TAXIWAY LIGHT FIXTURE, PAPI, REIL, WINDCONE, AND SIGN BASES. Light and sign bases for all lights and signs shall not be measured as it is incidental to the various types of lights and signs installed.

867/868-5.2 BASES FOR GROUND RODS AND SINGLE OR GANGED JUNCTIONS. The quantity to be measured shall be per each installed an accepted.

BASIS OF PAYMENT

867/868-6.1 TAXIWAY LIGHT FIXTURE, PAPI, REIL, WINDCONE, AND SIGN BASES. Payment for all other light base installations shall be part of payment for the various types of lights installed.

867/868-6.2 BASE CANS. The accepted quantities of bases for isolation transformers will be paid for at the contract unit price per each complete and in place. This price shall be full compensation for furnishing all materials and for all preparation including temporary plywood cover plates, excavation, backfilling and placing of the materials; furnishing and installing connections to conduits as may be required to complete the item as shown on the Plans; and for all labor, equipment, tools, and incidentals

necessary to complete the work. The unit price of each of these items shall also include CONTRACTOR's overhead, profit and markup.

Payments will be made under:

Item L-867-6.1	Size "D" L-867 Three Base Can Assembly – per each
Item L-867-6.2	Size "D" L-867 Four Base Can Assembly– per each
Item L-867-6.3	Size "D" L-867 Base Can and Cover For Ground Rod – per each

REFERENCED PUBLICATIONS

FAA SPECIFICATIONS REFERENCED IN L-867/868

AC 150/5345-42C	Specification for Light Base and Transformer Housing, Junction Boxes and Accessories (Including Change 1)
AC 150/5345-53B	Airport Lighting Equipment Certification Program (including Change 1)

END OF ITEM L-867/868

BID ITEM L-881

PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEMS

DESCRIPTION

881-1.1 RELATED DOCUMENTS. The General Provisions of the Contract, including General and Special Conditions and Compensation Conditions, apply to work specified in this Item.

881-1.2 SCOPE. This Item shall consist of the following and be as detailed on the Drawings:

a. Furnishing and installing FAA-approved two-light-unit (Type L-881) constant current powered Style B Precision Approach Path Indicator Systems (PAPIs) and associated concrete bases, controls and power connections.

b. Furnishing aiming and calibration equipment (may be integral to the light units) and providing an allowance for factory initial aiming and calibration preparatory to FAA and Airport acceptance.

c. Providing an allowance for factory-supported startup, trouble shooting and maintenance personnel training in PAPI setup and operation.

881-1.3 APPLICABLE DOCUMENTS. The publications listed at the end of this Item are incorporated herein by reference and form a part of this Item to the extent indicated by the references thereto. Except where a specific date is given, the issue in effect (including amendments, addenda, revisions, supplements, and errata) on the date of this solicitation shall be applicable. In the text of this Item, such publications are referred to by basic designation only. Additional details and specifications pertaining to a specific system are contained in these documents and are to be considered as part of this Item. Perform all work in accordance with these documents except as specified herein. In the event of a conflict between contract documents and the referenced documents, the more stringent rule shall be applied.

881-1.4 SHOP DRAWINGS AND MATERIAL LISTS. Shall be in accordance with Item L-100, Paragraph 100-1.6, for the following equipment:

a. Light housing units.
b. Light housing bases.
c. Series circuit isolation transformer.
d. Control and power wiring diagrams.
e. Control equipment base.
f. Spare parts, testing and maintenance tools.

881-1.5 CLASSIFICATION.

a. Type. L-881 - System consisting of 2 light units.
b. Style. Style B - Constant-current-powered systems.
c. Class. Class I - Systems which operate down to -35°C.
d. Options. Tilt switch, lamp bypass devices as specified in Paragraph 2.1 e.
e. Photocell intensity controls.

881-1.6 ENVIRONMENTAL REQUIREMENTS. The equipment shall be designed for outdoor installation and continuous operation under the following environmental conditions:

a. Temperature. Any temperature from -35°C (Class I systems).
b. Humidity. Any relative humidity up to 100 percent.
c. Sand and Dust. Exposure to wind-borne sand and dust particles.
d. Wind-blown Rain. Exposure to wind-blown rain from any direction.
e. Wind. Exposure to wind speeds up to 100 mph (161 km/hr) from any direction.
f. Salt Spray. Exposure to a salt-laden atmosphere.
g. Sunshine. Exposure to solar radiation.

MATERIALS

881-2.1 LIGHT UNITS.

a. Photometric Requirements. Each light unit shall have at least two lamps and shall provide a beam of light split horizontally to produce white light in the top sector and red light in the bottom sector. When viewed by an observer at a distance of 1,000 feet (300 m), the transition from red light to white light shall occur within an angle of 3 minutes of arc at the beam center and within an angle of 5 minutes of arc at the beam edges. A line drawn through the center of the transition band at +10°, 0°, and -10° shall be straight to within 3 minutes of arc. The light colors shall be aviation white and aviation red as defined in MIL-C-25050. Light transmitting covers shall conform to the requirements of MIL-C-7989. The lamps shall have a minimum rated life of 1,000 hours in this application and shall achieve full intensity within 5 seconds after a cold start.

b. Light Unit Construction. Each light unit shall be designed so that dynamic loading due to wind, or static loading due to snow, will not cause the light pattern to be displaced. The weight of each light unit shall not exceed 100 pounds (45 kg) (unless the PCU is incorporated in the light unit) and shall be no higher than 40 inches (1 m) when installed at the minimum mounting height. The light unit shall have an overhang or other means to inhibit rain or snow from reaching the optical lens.

c. Mounting Provisions. The light units shall have a minimum of three mounting legs which shall be adjustable to permit leveling where one side of the unit is installed up to 1 inch (25 mm) higher or lower than the opposite side. The legs shall consist of mounting and adjusting hardware, 2-inch electrical metallic tubing (EMT) (furnished by the Contractor), frangible couplings conforming to FAA drawing C-6046, and flanges suitable for mounting on a concrete pad. The adjusting hardware shall be designed to prevent any displacement of the optical system due to vibration. Alternate mounting systems may be proposed where equivalent rigidity, frangibility, and adjustability are provided.

d. Aiming.

1. The light housing assemblies shall be aimed at the vertical angles indicated on the criteria schedule on the drawings. Light assembly aiming equipment shall be provided with each PAPI installation and shall become the property of the Owner. Aiming angles shall be verified by the Owner. This equipment will be used by the installing contractor to aim the light housing assemblies at the vertical angles indicated on the criteria schedule on the drawings.

2. The light units shall be provided with integral adjustments to permit accurate vertical positioning of the center of the light beam at any elevation between 2 and 8 degrees. The

center of the light beam is defined as the transition band between red and white light. An aiming device shall be provided that will indicate the vertical angle of the light beam center within an accuracy of [+][±]3 minutes of arc. The aiming device shall indicate minutes of arc and shall have at least 1 division every 10 minutes. Alternatively, the units may be factory calibrated to a fixed vertical angle (to an angle specified by the purchaser) where means are provided to permit field installation at the desired angle within an accuracy of ±3 minutes. The manufacturer shall provide a procedure to check the calibration of the aiming system in the field. This testing shall be witnessed by the Owner and the FAA preparatory to the FAA testing and acceptance.

3. Install on individual light housing assemblies a 1-inch-wide, rigid, laminated plastic tag with 3/8-inch engraved lettering which indicates the vertical aiming angles. These tags shall be attached with pop rivets in a conspicuous place as designated by the Owner.

e. Tilt Switch. A tilt switch system shall be provided which deenergizes all the lamps in the system when the optical pattern of one light unit is inadvertently lowered between 1/4 and 1/2 degree or raised between 1/2 and 1 degree with respect to the preset aiming angle. The tilt switch shall have a time delay of 10-30 seconds that will prevent intermittent tilt switch activation due to vibration. The tilt switch shall have fail-safe operation so that any malfunction of the tilt switch, including loss of input power, shall deenergize the PAPI system.

f. Leads. All wiring shall be introduced into the light units through leads fitted with factory-molded plugs. The length of the leads shall be adequate to extend from the unit through a flexible conduit to a frangible coupling at ground level. Strain relief shall be provided to prevent pulling on the lead from being transmitted to its connections in the light unit.

g. Shorting Device. A lamp bypass device which provides a short circuit around a burned-out lamp shall be provided.

881-2.2 CONCRETE. Concrete shall conform to P-610.

881-2.3 CONDUIT. Rigid galvanized steel (RGS) and plastic (PVC Schedule 40) conduit shall be as specified in Item L-110. All requirements installed below grade or in concrete shall be field wrapped with PVC tape.

881-2.4 CONDUCTORS. Conductors shall be L-824 Type and 600 volt THWN or THW as specified in Item L-108.

881-2.5 GROUNDING. All metal support structures and metal enclosures shall be grounded in accordance with the requirements of the Specifications FAA-C-1217, FAA-C-1391, and FAA-STD-019, and as indicated on the drawings.

881-2.6 GROUND RODS. Grounding rods shall be 3/4-inch diameter by 10 feet long copper-jacketed steel. Grounding connections shall be by the exothermic weld process, Cadweld or equal. Extruded, drawn or stamped-type ground clamps will not be acceptable. Ground rod connections shall be made accessible by installing a handhole with minimum nominal dimensions of 7-7/8 inches diameter by 12 inches deep. In traffic areas the handhole shall be Brooks Products (El Monte, California) with No. 1-RD body and No. 1-RDT cast iron cover; Quicket Utility Vault WA-17 (Associated Concrete, Santa Ana, California), or equal. Handhole shall be installed in such a manner that ground rod clamp is in center and 3 inches below handhole

cover.

881-2.7 ISOLATION TRANSFORMER Shall be Type L-830 meeting the requirements of the applicable Advisory Circular. The isolation transformers for each PAPI unit shall be per manufacturer's recommendations. The isolating transformers shall be provided with the PAPI units and shall conform to requirements of the applicable Advisory Circular. Isolation transformers shall have connectors per Item L-108. Provide secondary cable extension kit with each PAPI.

881-2.8 PAINTING. Equipment shall be factory painted in accordance with Fed. Std. 595 and shall be shipped with protective packaging to assure the finish will not be damaged. Any paint damage shall be repaired per manufacturer's requirements.

881-2.9 MATERIALS. All parts and materials shall be suitable for the intended purpose and shall be adequately protected against corrosion. The components shall have adequate capacity and shall not be operated in excess of the component manufacturer's recommended rating. Any plastic components exposed to sunlight shall be made of ultraviolet-stabilized material. All fasteners shall be of corrosion-resistant material. Copper-bearing hardware in contact with aluminum shall be plated with cadmium, nickel, or zinc.

a. Structural Shapes and Plates. Structural shapes and plates furnished by the Contractor shall be ASTM A36 steel.

b. Pipe. Pipe to be used shall be ASTM A53, Type S, Grade B steel.

c. Nuts and Bolts. Nuts and bolts shall be ASTM A307, Grade A steel. All nuts shall be full, self-locking structural nuts.

d. Galvanizing. All the above structural components and all miscellaneous steel hardware shall be hot-dip galvanized per ASTM A123 and A153. Where galvanized surfaces are damaged by cutting, drilling, welding, or by any other process, the surfaces shall be painted with zinc-rich compound.

881-2.10 MAINTENANCE. All system components shall be designed for ease of maintenance and shall have mean-time-between-failures of at least 6 months (excluding lamps). If lamp defocusing occurs after lamp replacement, the manufacturer must furnish any special tools and procedures required for refocusing. The design of the system shall be such that adjustment and repairs can be made with commercially available tools. Two (2) sets of special tools, if required for servicing, shall be furnished by the manufacturer and shall be turned over to the airport maintenance group.

881-2.11 NAMEPLATES. Install a rigid, laminated plastic tag with 3/8-inch high lettering inscribed or engraved at each panelboard, control cabinet, switch enclosure, transformer, and circuit breaker enclosure. The tags shall indicate the function, voltage and phase of function of the electrical device to be identified. The exact location of the identification marking shall be as designated by the Owner.

SPARE PARTS AND TESTING EQUIPMENT. Spare parts and testing equipment provided with each PAPI shall include as a minimum:

e. Aiming device.
f. One (1) controller board of each type in the system.
g. Four (4) spare lamps per LHA (8 total).

h. All testing equipment deemed necessary by manufacturer for field maintenance, testing, calibration and aiming.

CONSTRUCTION METHODS

881-3.1 WORKMANSHIP. The equipment shall be fabricated in accordance with the highest quality workmanship. All wiring shall be neatly run and laced. All sharp edges and burrs shall be removed. Painted surfaces shall be free from runs, blotches, and scratches.

881-3.2 INSTRUCTION BOOK. Furnish to the Owner with each system 6 copies of instruction books containing the following information.

a. Complete system schematic and wiring diagrams showing all components cross-indexed to the parts list.

b. Complete parts list with applicable rating and characteristics of each part and with the component manufacturer's name and part number.

c. Installation instructions, including aiming, calibration of the aiming system, focusing, and adjustment of the tilt switch.

d. Maintenance instructions, including relamping procedure, theory of operation and trouble-shooting charts.

e. Operating instructions.

881-3.3 OPERATING INSTRUCTION, FACTORY STARTUP AND TROUBLE SHOOTING.

a. PAPI manufacturer shall provide the personnel designated by the Owner with a minimum of 8 hours of instruction regarding aiming, maintenance, and repair of the PAPI assemblies. Factory-authorized personnel shall provide startup and initial aiming.

881-3.4 QUALIFICATION REQUIREMENTS. Qualification standards as detailed in AC 150/5345-28, Precision Approach Path Indicator (PAPI), shall have been met and approval obtained as required and equipment shall be listed in AC 150/5345-53, Airport Lighting Equipment Certification Program.

881-3.5 PRODUCTION TESTS. The manufacturer shall have submitted for FAA approval a test procedure to verify the light output and aiming device accuracy for each production unit. After FAA approval, these tests shall be used on all production units.

881-3.6 FIELD INSPECTION. Prior to placing any concrete in forms, the reinforcing and formwork will be inspected by the Owner's Inspector, and any discrepancies found shall be corrected by the Contractor at his expense. The Contractor shall give the Owner's Inspector at least 24 hours advance notice for such inspection. All concrete shall be placed in the presence of the Owner's Inspector.

When excavations are completed, notify Owner's Inspector for his inspection and approval prior to installation of cables, ducts, or piping.

After foundations have been constructed and have reached adequate set, trenches and excavations shall be

backfilled. Backfill shall be placed on both sides of foundations at the same time and both sides tamped prior to placing of the next layer of material. Special care shall be taken to prevent any uneven wedging action against the structure. The Owner's Inspector shall inspect all installations prior to placement of backfill. Placement of backfill shall be in 6-inch layers. Base material under concrete bases shall be 12 inches of 3/4-inch aggregate base compacted to 95% in accordance with ASTM D1557.

881-3.7 INSTALLATION DETAILS.

a. Foundations. Foundations for mounting light boxes shall be made of concrete and designed to prevent frost heave or other displacement. The foundation shall be constructed as detailed on drawings. Foundation shall not be more than 1 inch (25 mm) above grade. All light boxes shall be frangibly mounted to the foundation as detailed on the plans.

b. Electrical. The installation shall conform to the applicable sections of the National Electrical Code and local codes. All electrical connections to the light unit shall be made via plugs and receptacles to allow the unit to pull free in the event it is struck by an aircraft. Any extra control circuitry shall be housed in an enclosure to protect it from the environment. All underground cable shall be installed in accordance with Item L-108. Any underground connections shall be made via splices or appropriately rated plugs.

881-3.8 PRELIMINARY FLIGHT CHECKING. The Contractor shall provide an allowance for preliminary flight checking of the operational system to assure a minimum of complications during the Airport acceptance procedure.

881-3.9 QUALITY ASSURANCE - INSPECTION. The Owner will inspect all work specified in this Item before acceptance of the work. Operational test burn of PAPI units for a minimum of 24 hours is required.

881-3.10 COMMISSIONING NOTICE TO AIRMEN (NOTAM). The Flight Service Station (FSS) which has jurisdiction over the airport where the PAPI is installed shall be notified when the system is ready to be commissioned. The following items shall be reported in writing to the Owner in order to notify FSS.

a. Airport name and location.
b. Runway number and location of PAPI (left or right side of runway).
c. Type of PAPI (2-box).
d. Glide slope angle.
e. Threshold crossing height.
f. Date of commissioning.

SITING AND INSTALLATION STANDARDS

881-4.1 SIGNAL PRESENTATION. The precision approach path indicator (PAPI) shall be a system of two identical light units placed on the left of the runway in a line perpendicular to the centerline. The boxes are positioned and aimed to produce the signal presentation described below.

a. Type L-881 System. When making an approach, the pilot will:

1. When on or close to the established approach path, see the unit nearest the runway as red and the other unit farthest from the runway as white; and

2. When above the approach path, see both units as white; and

3. When below the approach path, see the both units as red.

881-4.2 GENERAL SITING CONSIDERATIONS. When viewed from the approach end, the PAPI systems shall be located on the left side of the runway or at the locations indicated on the plans.

881-4.3 SITING PAPI ON RUNWAY WITHOUT AN ILS GLIDE SLOPE.

a. The PAPI for Runway 15-33 has been sited to provide a minimum threshold crossing height (TCH) of 40 feet.

b. Threshold Crossing Height (TCH). The TCH is the height of the lowest on-course signal at a point directly above the intersection of the runway centerline and the threshold. The minimum allowable TCH varies according to the height group of aircraft that uses the runway and is shown in Table 1. The PAPI approach path must provide the proper TCH for the most demanding height group that uses the runway.

c. Glide Path Angle. The visual glide path angle is the center of the on-course zone and is normally 3 degrees when measured from the horizontal.

d. The PAPI Obstacle Clearance Surface. The PAPI obstacle clearance surface is established to provide the pilot with a minimum clearance over obstacles during approach. The PAPI must be positioned and aimed so that no obstacles penetrate this surface. The surface begins 300 feet (90 m) in front of the PAPI system (closer to the threshold) and proceeds outward into the approach zone at an angle 1 degree less than the aiming angle of the third light unit from the runway. The surface extends 10 degrees on either side of the runway centerline extended and extends 4 statute miles from its point of origin.

TABLE 1. VISUAL THRESHOLD CROSSING HEIGHTS

REPRESENTATIVE AIRCRAFT TYPE	APPROXIMATE COCKPIT-TO-WHEEL HEIGHT	VISUAL THRESHOLD CROSSING HEIGHT	RUNWAY (APPROACH TYPE)
Height Group 1: General aviation Small commuters Corporate turbo jets	10 feet or less	40 feet +5, -20 10 meters +2, -6	Runway 15 and Runway 33 (visual)

881-4.4 AIMING. After the visual glide path angle has been selected, the PAPI units are aimed to define that path. The aiming angles for Type L-881 systems are shown in Table 2.

TABLE 2. AIMING OF TYPE L-881 (2-BOX) PAPI
RELATIVE TO A PRESELECTED GLIDE PATH

LIGHT UNIT	STANDARD INSTALLATION
Unit nearest runway	15' above glide path
Unit farthest from runway	15' below glide path

881-4.5 OTHER SITING DIMENSIONS AND TOLERANCES.

a. Distance from Runway Edge. The inboard light unit shall be approximately 30 feet from the runway edge, as scheduled on the drawings.

b. Separation between Light Units. The PAPI units shall have a lateral separation of 20 feet as detailed on the drawings.

c. Azimuthal Aiming. Each light unit shall be aimed outward into the approach zone on a line parallel to the runway centerline within a tolerance of ±1/2 degree.

d. Mounting Height Tolerances. The beam centers of all light units shall be within ±1 inch of a horizontal plane. This horizontal plane shall be within ±1 foot (0.3 m) of the elevation of the runway centerline at the intercept point of the visual glide path with the runway.

e. Tolerance Along Line Perpendicular to Runway. The front face of each light unit in a bar shall be located on a line perpendicular to the runway centerline within ±6 inches.

881-4.6 POWER AND CONTROL DESIGN.

a. Style B Systems - The PAPI shall operate on a new 4 KW Constant Current Regulator, in a series configuration using L-824C airfield lighting cable per Item L-108.

b. Wiring the Light Boxes - All PAPI light boxes have a tilt switch and provision for grounding. All wiring which enters the PAPI box must be through plugs and receptacles which will separate if the box is struck by an aircraft. The receptacles are located and held at the frangible point on the breakable couplings. A length of flexible watertight conduit conveys the wire between the breakable coupling and the PAPI box. The flexible conduit is required so that the PAPI box may be aimed. All underground connections shall be made with either splices or plugs and receptacles intended for that purpose.

c. Brightness Control -

1. Style B System - The Style B system are being equipped with a photocell for automatic control of brightness which will choose between a day and night intensity setting. There shall be two night intensity settings, and the PAPI shall be configured to deliver either intensity when the night mode is selected.

2. Radio Control - Each PAPI shall be individually turned on and off by an existing air-to-ground radio control together with the runway lighting circuit. Daytime use will be configured with the photocell to only activate the PAPI with radio control. The control which activates these systems shall be located in the airfield lighting vault.

d. Other Control Configurations -

1. Interlock Relay - During hours of darkness, it is desirable that the PAPI be on only when the runway lights are on. To provide this feature, an interlock relay shall be installed in series with the night intensity contacts on the photocell controller. The contacts are normally open but are closed by photocell action during hours of darkness. The normally open contacts of the interlock relay are closed only when the relay senses current in the runway circuit. This configuration prevents energizing the PAPI during hours of darkness unless the runway lights are on. It shall not affect daytime operation of the PAPI.

881-4.7 INSTALLATION DETAILS.

a. Foundations. Foundations for mounting light boxes shall be made of concrete and designed to prevent frost heave or other displacement. The foundation shall be constructed as detailed on drawings. Foundation shall not be more than 1 inches (25 mm) above grade. All light boxes shall be frangibly mounted to the foundation as detailed on the plans.

b. Electrical. The installation shall conform to the applicable sections of the National Electrical Code and local codes. All electrical connections to the light unit shall be made via plugs and receptacles to allow the unit to pull free in the event it is struck by an aircraft. Any extra control circuitry shall be housed in an enclosure to protect it from the environment. All underground cable shall be installed in accordance with Item L-108. Any underground connections shall be made via splices or appropriately rated plugs.

METHOD OF MEASUREMENT

881-5.1 QUANTITY. The quantity to be measured shall be lump sum for the furnishing and installation of each Type L-881, Style B, PAPI system and accepted by the Airport.

BASIS OF PAYMENT

881-6.1 PAPI SYSTEM. Payment shall be made at the contract price for each PAPI systems' installation, in place furnished, shipped and accepted by the Airport. Under Bid Item in proposal, the unit price shall be full compensation for furnishing all materials and for all preparation, earthwork associated with this bid item, erection and installation of these materials, including light units, spare parts, maintenance tools, instruction manuals, power/control unit, grounding system (ground rods, conductors and ground rod stations), L-830 isolation transformers, L-867 base cans, conduit and conductors, concrete bases, concrete handhole(s) at the PAPI site, installation and an allowance for factory aiming, and preliminary flight checking, completed in accordance with plans and specifications to complete the Item. The unit price of each of these items shall also include the contractor’s overhead, profit and markup.

BID ITEM L-881

PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEMS

Payment will be made under:

Item L-881-6.1-A4 Type L-881, Style B PAPI, Complete--per Lump Sum (LS).

REFERENCED PUBLICATIONS

AMERICAN IRON AND STEEL INSTITUTE (AISI) SPECIFICATION REFERENCED IN ITEM L-881.

AISI 302	Stainless Steel, Chromium Nickel.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) SPECIFICATIONS REFERENCED IN ITEM L-881.

ASTM A36-96	Carbon Structural Steel.
ASTM A53-95a	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
ASTM A123-89a	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
ASTM A153-96	Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
ASTM A307-94	Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
ASTM D1557-91	Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu.ft. (2,700 kN-m/cu.m.)).

FEDERAL AVIATION ADMINISTRATION (FAA) SPECIFICATIONS REFERENCED IN ITEM L-881.

AC 150/5300-4	Utility Airports - Air Access to National Transportation.
AC 150/5300-12	Airport Design Standards - Transport Airports.
AC 150/5345-10E	Specification for Constant Current Regulators and Regulator Monitors.
AC 150/5345-28D	Precision Approach Path Indicator (PAPI) Systems.
AC 150/5345-47A	Isolation Transformers for Airport Lighting Systems.
AC 150/5345/49A	Radio Controls.
AC 150/5345-53A	Airport Lighting Equipment Certification Program.
AC 150/5370-10	Standards for Specifying Construction of Airports.

FEDERAL AVIATION ADMINISTRATION (FAA) STANDARDS AND DRAWINGS REFERENCED IN ITEM L-881.

FAA-C-1391b	Installation and Splicing of Underground Cable.
FAA-C-2042	Electrical Work, Exterior.
FAA-STD-019b	Lightning Protection, Grounding, Bonding and Shielding Requirements for Facilities.
FAA-STD-020	Transient Protection, Grounding, Bonding, and Shielding.

BID ITEM L-881

PRECISION APPROACH PATH INDICATOR (PAPI) SYSTEMS

Order 6850.2A 9/13/95	Visual Guidance Lighting Systems.
Drawing C-6046	Frangible Coupling, Type 1 and 1A, Details.

FEDERAL STANDARD REFERENCED IN ITEM L-881.

Fed. Std. 595A	Colors.

ILLUMINATING ENGINEERING SOCIETY (IES) TRANSACTION REFERENCED IN ITEM L-881.

LM-35	IES Approved Method for Photometric Testing of Floodlights Using Incandescent or Discharge Lamps.

MILITARY SPECIFICATIONS REFERENCED IN ITEM L-881.

MIL-I-7854	Indicator Assemblies, Wind Cone, Unlighted and Externally or Internally Lighted.
MIL-C-7989	Covers, Light Transmitting, for Aeronautical Lights, General Specification for.
MIL-C-25050	Colors, Aeronautical Lights and Lighting Equipment, General Requirements for.
MIL-P-26915	(USAF) Primer Coating, Zinc Dust Pigmented, for Steel Surfaces.

MILITARY STANDARDS REFERENCED IN ITEM L-881.

MIL-STD-462	Electromagnetic Test Methods.
MIL-STD-810	Environmental Test Methods.

END OF ITEM L-881

ITEM L-893

LIGHTED X RUNWAY CLOSURE MARKER

DESCRIPTION

893-1.1 Description of Work. This section covers the work necessary for the operation of the lighted X runway closure markers including but not limited to furnishing, assembling, and installing all materials, incidentals, and related work. Lighted X runway closure markers shall be placed at the ends of the runway for the duration of the construction and shall be delivered to and become the property of the Owner at the conclusion of the project.

MATERIALS

893-2.1 The lighted X runway closure marker shall be manufactured by Hali-Brite (800-553-6269), Neubert Aero Corporation (727-538-8744), or an approved equal and conform to FAA Specification AC 150/5345-55A. Submittals for manufactured products may be a product catalogue or brochure.

The runway closure marker shall consist of four folding arms which open up to length of 14-feet. The marker shall be self-powered by a generator and able be highway towable. The marker shall also be delivered with a protective cover.

CONSTRUCTION METHODS

893-3.1 Furnish, assemble, and locate the marker at the locations shown on the plans. The markers shall be assembled per the manufacturer's instructions.

The Contractor shall supply fuel for the markers for the duration of the project at no additional cost to the Owner.

MEASUREMENT

893-4.1 The quantity to be paid for under this item shall be by the number of Lighted X Runway Closure Markers installed as completed units in place, accepted, and ready for operation.

PAYMENT

893-5.1 Payment for Lighted X Runway Closure Markers will be made at the contract unit price for each completed and accepted marker. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, gas, cover, and for all labor, equipment, tools, and incidentals necessary to complete this item. Payment for this item also includes delivery of the lighted runway closure markers to the Owner at the conclusion of the project.

Payment will be made under:

Item L-893-1	Lighted X Runway Closure Marker – per each

END OF ITEM L-893

ITEM E-16502
EXTERIOR LIGHTING FIXTURES

GENERAL

16502-1.1 RELATED DOCUMENTS. Drawings and General Provisions of the Contract, including Special Provisions and Supplementary Conditions, apply to the Work specified in this Item.

Refer to Item E-16503 for requirements for lighting poles and standards.

DESCRIPTION OF WORK

16502-2.1 The extent of exterior lighting fixture Work is indicated by drawings and in schedules and by the requirements of this Item.

a. **Types.** The types of exterior lighting fixtures required for the Project include the following:

1. High Intensity Discharge. High Pressure Sodium and/or Metal Halide.

b. **Applications.** The applications of exterior lighting fixtures required for the Project include the following:

1. Outdoor area lighting.

QUALITY CONTROL

16502-3.1 MANUFACTURERS. Firms regularly engaged in the manufacture of exterior lighting fixtures of types and ratings required whose products have been in satisfactory use in similar service for not less than five years.

16502-3.2 CONTRACTOR. A firm with at least three years of successful installation experience on projects with exterior lighting fixture work similar to that required for the Project.

16502-3.3 NFPA COMPLIANCE. Comply with National Electrical Code (NFPA No. 70) as applicable to installation and construction of exterior lighting fixtures.

16502-3.4 NEMA COMPLIANCE. Comply with applicable portions of National Electrical Manufacturers Association standards pertaining to outdoor lighting equipment.

16502-3.5 ANSI COMPLIANCE. Comply with applicable American National Standards Institute standards pertaining to lamp materials and lamp ballasts.

16502-3.6 UL LABELS. Provide exterior lighting fixtures which have been listed and labeled by Underwriters' Laboratories.

SUBMITTALS

ITEM E-16502
EXTERIOR LIGHTING FIXTURES

16502-4.1 PRODUCT DATA. Submit manufacturer's data on exterior lighting fixtures, including photometric data.

16502-4.2 SHOP DRAWINGS. Submit dimensioned drawings of exterior lighting fixture installations, including but not necessarily limited to, layout, spatial relationship to associated panelboards, and connections to panelboards. Submit fixture shop drawings in booklet form with a separate sheet for each fixture, assembled in luminaire "type" alphabetical order with the proposed fixture and accessories clearly indicated on each sheet.

In addition to the normal shop drawing requirements, a complete computer calculation of the overall site shall be made and submitted with other shop drawings. The computer readout shall be at a 1"=50' scale showing building, fence, roadway and taxiway outlines and shall be on a single sheet with footcandle readings every 25 feet (or 1/2 inch.)

Average maintained footcandles shall be 2 with an average maximum-to-minimum ratio of less than 8. Pole locations shall not be altered. Use a light loss factor of **.**81 and a lumen level of 145,000. Asymmetric cutoff distributions shall be used to produce the most even illumination practicable without unnecessary light leakage to adjoining parcels.

CONTRACTOR shall provide a computer photometric calculation from the factory of the fixture manufacturer providing the specific photometric levels from the electrical design. The fixtures shall be aimed as detailed in the drawings specifically for avoiding the ATCT's line of sight. The submitted photometric data shall contain the vertical and horizontal values at 25' increments.

16502-4.3 PRODUCT DELIVERY, STORAGE AND HANDLING. Deliver exterior lighting fixtures individually wrapped in factory-fabricated, fiberboard-type containers.

Handle exterior fixtures carefully to prevent breakage, denting and scoring of fixture finishes. Do not install damaged lighting fixtures; replace and return damaged units to equipment manufacturer.

Store exterior lighting fixtures in a clean, dry space. Store in original cartons and protect from dirt and debris, physical damage, weather and construction traffic.

PRODUCTS

16502-5.1 EXTERIOR LIGHTING FIXTURES - GENERAL. Provide lighting fixtures of sizes, types, and ratings indicated; complete with but not necessarily limited to: housings, lamps, lampholders, reflectors, ballasts, starters, and wiring.

16502-5.2 BALLASTS. Provide HID lamp ballasts capable of operating lamps of type and rating indicated, auto-regulator type, high power factor 90 percent minimum, core and coil assembly encapsulated in non-melt resin; install capacitor outside ballast encapsulation for easy field replacement and enclose assembly in drawn aluminum alloy housing(s) unless otherwise specified.

16502-5.3 MANUFACTURERS. Provide products by or equal to the type indicated on the drawings in the fixture schedule.

16502-5.4 POLES. Poles shall be steel, or Corten weathering steel manufactured to industry standards. Steel poles of more than one section shall be on-site welded to join upper and lower sections using a copper -based electrode and equipment meeting AWS Specification D1.1-72, Sections 1 through 8.

Steel poles shall be galvanized, primed, and painted, or coated before the track is installed. All sections shall be match-marked to facilitate assembly.

The base flange, foundation and anchor bolts shall meet 1985 AASHTO standards. Anchor bolts shall be specified and supplied by the pole manufacturer. The complete installation of pole and associated components shall meet 1985 AASHTO standards. In addition, poles shall meet the requirements in Specification Section E-16503 “LIGHTING POLES AND STANDARDS”.

EXECUTION

16502-6.1 INSPECTION. CONTRACTOR must examine the areas and conditions under which exterior lighting fixtures are to be installed and notify the OWNER in writing of conditions detrimental to the proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the CONTRACTOR.

16502-6.2 INSTALLATION. Install exterior lighting fixtures of types indicated, where shown and at indicated heights, in accordance with lighting fixture manufacturer's written instructions and with recognized industry practices to ensure that fixtures comply with requirements and serve intended purposes. Comply with NEMA standards and requirements of National Electrical Code pertaining to installation of exterior lighting fixtures and with applicable portions of NECA's "Standard of Installation."

Fasten fixtures securely to indicated structural support and check to ensure that fixtures are plumb.

16502-6.3 ADJUST AND CLEAN. Clean exterior lighting fixtures of dirt and debris upon completion of installation.

Protect installed fixtures from damage during remainder of construction period.

16502-6.4 FIELD QUALITY CONTROL.

a. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.

    1. Verify operation of photoelectric controls.

b. Illumination Tests:

1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):

    (a) IESNA LM-64, "Photometric Measurements of Parking Areas", applicable sections.
    (b) IESNA LM-72, "Directional Positioning of Photometric Data", applicable sections.

c. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

METHOD OF MEASUREMENT

16502-7.1 FURNISHING AND INSTALLING EXTERIOR LIGHT FIXTURE ASSEMBLY. The quantity to be measured shall be per each exterior lighting assembly installed complete and accepted by the Owner.

BASIS OF PAYMENT

16502-8.1 EXTERIOR LIGHT FIXTURES. Payment will be made at the Contract Price for the following exterior light fixture assembly, installed and accepted. This price shall be full compensation for furnishing all materials, including floodlights, obstruction lights, pole and pole base, conductors, concrete handhole, control panel and for all labor, equipment, tools, and incidentals necessary to complete these items. The Unit Price for each of these items shall include the Contractor's overhead, profit and markup.

Payment will be made under:

Item E-16502-8.1-A5	Type A Exterior Apron Light Fixture Assembly (2 lights) - per each assembly

END OF ITEM E-16502

ITEM 16503

LIGHTING POLES AND STANDARDS

GENERAL

16503-1.1 RELATED DOCUMENTS. Drawings and General Provisions of the Contract, including Special Provisions and Supplementary Conditions, apply to the Work specified in this Item.

The requirements of the Item L-100 govern the Work specified in this Item, where applicable.

DESCRIPTION

16503-2.1 The extent of lighting poles and standards Work is indicated by drawings and in schedules and by the requirements of this Item.

a. Type. The type of lighting poles and standards required for the Project includes the following:

   1. Outdoor Exterior Area Lighting.

b. Concrete for embedding poles and for pole foundations and footings are specified in P-610.

c. Refer to Item P-152 for excavation and backfilling required in connection with electrical poles and standards (not Work of this Item).

d. Refer to Item P-610 for concrete work required in connection with electrical poles and standards.

e. Refer to Item 16502 for exterior lighting fixtures required in connection with electrical poles and standards (no Work of this Item).

f. Refer to Item L-108 for cable, wire and connectors required in conjunction with electrical poles and standards (no Work of this Item).

QUALITY ASSURANCE

16503-3.1 MANUFACTURERS. Firms regularly engaged in the manufacture of poles and standards of the types and sizes required whose products have been in satisfactory use in similar service for not less than five years.

16503-3.2 INSTALLER. A firm with at least three years of successful installation experience on projects with electrical installation work similar to that required for the Project.

16503-3.3 NEC COMPLIANCE. Comply with the latest edition of the National Electrical Code (NFPA No. 70) as applicable to location and installation of poles and standards.

16503-3.4 NEMA COMPLIANCE. Comply with applicable portions of National Electrical Manufacturers Association standards pertaining to lighting poles and standards.

SUBMITTALS

16503-4.1 MANUFACTURER'S DATA. Shall be as per Item L-100-1.6 and also submit certification of experience described in 16503-3.2.

PRODUCTS

16503-5.1 PRODUCT DELIVERY, STORAGE AND HANDLING. Handle metal lighting standards carefully to prevent breakage, denting and scoring of the finish.

16503-5.2 FABRICATED POLES AND STANDARDS.

a. Metal Lighting Standards. Provide metal raceway-type lighting poles and standards of the size and type indicated, comprised of shaft and bracket, equipped with a grounding connection readily accessible from handhole or transformer base access door, and constructed of the following materials and additional construction features:

   1. Material. Painted square steel.
   2. Configuration. Anchor-base type with handhole and cover where indicated.

b. Metal Lighting Standard Accessories. Provide accessories for metal lighting standards, including anchor bolts, as recommended by the standard manufacturer of size and material needed to meet erection and loading application requirements.

16503-5.3 MANUFACTURERS. Provide products by or equal to the type indicated on the drawings in the Fixture Schedule.

EXECUTION

16503-6.1 INSPECTION. Installer must examine the areas and conditions under which lighting poles and standards are to be installed and notify the Engineer in writing of conditions detrimental to the proper completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

16503-6.2 INSTALLATION.

a. Install lighting poles and standards where shown in accordance with the manufacturer's written instructions and with recognized industry practices to ensure that the poles and standards comply with the requirements and serve the intended purposes. Comply with requirements of NEMA standards for installation of electrical poles and standards.

b. In order to protect finish, use belt slings or rope (not chain or cable) to raise and set finished poles or standards.

c. Set poles and standards plumb. Support adequately during backfilling or anchoring to foundations.

d. Provide sufficient space encompassing the hand access and cable entrance holes for installation of cables from underground where indicated.

e. Grout around the pole base plate and concrete base for smooth, complete finish.

16503-6.3 GROUNDING. Provide positive equipment ground for each pole and standard installation where indicated.

16503-6.4 TESTING. Test all wiring to ensure it is free of shorts and properly connected.

MEASUREMENT

16503-7.1 LIGHTING POLES AND STANDARDS. Measurement of lighting poles and standards will not be measured as it is part of the measurement of Apron Lighting Assembly Item 16502-8.1.

PAYMENT

16503-8.1 LIGHTING POLES AND STANDARDS. Payment for lighting poles and standards will be part of payment for the Apron Lighting Assembly Item 16502-8.1.

END OF ITEM 16503

ITEM T-901 HYDROSEEDING

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 Engineer 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 Fed. Spec. A-A-2671. Seed shall be furnished separately or in mixtures in standard containers 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 Engineer 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 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. Seeds shall be applied as follows:

		lbs per acre
Seed Mix:	Luna pubescent wheatgrass	20
	Tegmar intermediate wheatgrass	20
	Potomac orchardgrass	12
	Lutana cicer milkgrass	20
Fertilizer:	Ammonium Phosphate (16-20-0)	500
Mulch:	Wood fiber (Only if hydoseeded) Clean straw	500
Tackifier:	Fisch-Stik or approved equal	80

Seeding shall be performed during the period between September and October inclusive, unless otherwise approved by the Engineer.

901-2.2 LIME. Lime shall be ground limestone containing not less than 85% of total carbonates, and shall be ground to such fineness that 90% will pass through a No. 20 mesh sieve and 50% will pass through a No. 100 mesh sieve. Coarser material will be acceptable, providing the rates of application are increased to provide not less than the minimum quantities and depth specified in the special provisions on the basis of the two sieve requirements above. Dolomitic lime or a high magnesium lime shall contain at least

10% of magnesium oxide. Lime shall be applied at the rate approved by the Engineer. All liming materials shall conform to the requirements of ASTM C 602.

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 herein, and shall meet the requirements of Fed. Spec. A-A-1909 and 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.

CONSTRUCTION METHODS

901-3.1 ADVANCE PREPARATION AND CLEANUP. After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

The Contractor shall perform soil testing as necessary to determine if the application of lime will be required.

901-3.2 WET APPLICATION METHOD.

a. General. The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an

aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

b. Spraying Equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 pounds per square inch (690 kPa). The pump shall be mounted in a line that will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8 inch (15 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. Brackish water shall not be used at any time. The Contractor shall identify to the Engineer all sources of water at least 2 weeks prior to use. The Engineer 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 Engineer 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 2 hours from the time they were mixed or they shall be wasted and disposed of at locations acceptable to the Engineer.

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 (8 cm), 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 insure 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 Engineer, 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.

901-3.3 MAINTENANCE OF SEEDED AREAS. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the Engineer. 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 application is done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the Engineer. A grass stand shall be considered adequate when bare spots are one square foot or less, randomly dispersed, and do not exceed 3% of the area seeded. If at the time when the contract has been otherwise completed it is not possible to make an adequate

determination of the color, density, and uniformity of such stand of grass, payment for the unaccepted portions of the areas seeded out of season will be withheld until such time as these requirements have been met.

METHOD OF MEASUREMENT

901-4.1 The quantity of hydroseeding to be paid for shall be the number of acres measured on the ground surface, completed by the Contractor and accepted by the Engineer.

BASIS OF PAYMENT

901-5.1 Payment 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-901-1	Hydroseeding – per acre
Item T-901-1-A1	Hydroseeding – per acre
Item T-901-1-A3	Hydroseeding – per acre

MATERIAL REQUIREMENTS

ASTM C 602	Agricultural Liming Materials
ASTM D 977	Emulsified Asphalt
FED SPEC A-A-1909	Fertilizer
FED SPEC A-A-2671	Seeds, Agriculture

END OF ITEM T-901

GEOTECHNICAL INVESTIGATION

FOR THE

LEE VINING AIRPORT

LEE VINING, CALIFORNIA

Prepared For:

PBS&J

555 Double Eagle Court, Suite 2000
Reno, Nevada 89521
(775) 828-1622

Prepared By:

EASTERN SIERRA ENGINEERING

CIVIL ENGINEERING & CONSTRUCTION SERVICES

Job No. 044.07

January 9, 2009

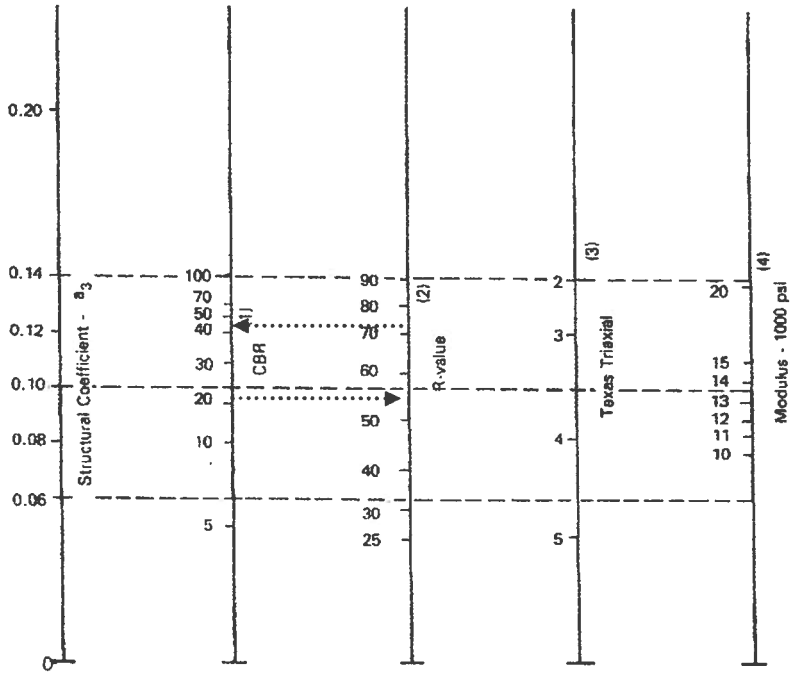
RENO
4515 Towne Drive, Suite A
Reno, NV 89521-9696
(775) 828-7220 fax (775) 828-7221

MINDEN
1645 Esmeralda Avenue
Minden, NV 89423-4203
(775) 782-3277 fax (775) 782-3226

MAMMOTH LAKES
PO Box 3207
Mammoth Lakes CA, 93546
(760) 924-8164

Pavement/Geotechnical Investigation

On November 30, 2007, we investigated the existing pavement and soil conditions at the Lee Vining Airport in Lee Vining, California, by collecting samples of native soil as well as existing asphalt concrete (AC) cores in various locations throughout the runway and proposed improvement areas. Six test pits (*TP#1-TP#6*) were excavated by hand at the locations shown in the attached site plan ***(Figure 1)***. Five AC core samples were collected within the existing runway at locations shown in ***Figure 1***. The existing runway pavement consists of 2 lifts of asphalt concrete pavement underlain by native and structural fill, which makes up the subgrade. Samples of both AC cores and subgrade soils were taken to our certified laboratory to undergo thickness determinations, soil classification, and resistance (R-value) value testing to determine the structural characteristics of the existing subgrade soil. Results of the testing conducted are presented in ***Figures 8-17*** and show the materials properties. The attached site plan indicates the limits of investigation as well as soil profiles from each test pit ***(Figures 2-7)***. ***Table 1*** summarizes the sample test results and presents the design CBR value, which was estimated based upon correlations derived using Figure 2.7 below (AASHTO Design of Pavement Structures; 1993).



(1) Scale derived from correlations from Illinois.

(2) Scale derived from correlations obtained from The Asphalt Institute, California, New Mexico and Wyoming.

(3) Scale derived from correlations obtained from Texas.

(4) Scale derived on NCHRP project *(3)*.

Figure 2.7. Variation in Granular Subbase Layer Coefficient (a_3) with Various Subbase Strength Parameters (3)

Table 1: Summary of Test Results at Test Pit Locations

Test Pit	Soil Description	R-Value	CBR
TP-1 @ 2'-3'	Poorly Graded Sand w/Silt & Gravel (SP-SM)	69	40
TP-2 @ 2'-3'	Poorly Graded Sand w/Silt & Gravel (SP-SM)	70	40
TP-3 @ 2'-3'	Poorly Graded Sand w/Silt & Gravel (SP-SM)	-	-
TP-4 @ 2'-3'	Poorly Graded Sand w/Silt & Gravel (SP-SM)	-	-
TP-5 @ 2'-3'	Poorly Graded Gravel w/Sand (GP)	66	35
TP-6 @ 2'-3'	Poorly Graded Gravel w/Sand (GP)	-	-

As shown in ***Table 1***, the investigation encountered relatively high-strength native material within the subgrade of both the existing structures and future improvement areas. R-value testing was conducted on 3 of the 6 test pits, which varied from 66 to 70. The airfield pavement sections were designed using a design R-Value of 55 (approximately 85% the lowest R- value), which correlates to a CBR value of approximately 20.

Table 2 summarizes the findings of the existing asphalt concrete surface course. The average thickness throughout the project area was found to be 5.2". All cores encountered were comprised of 2 separate lifts of AC, which appeared to be constructed at different times. The top lift of AC was a consistent 3 inches and appeared to be an overlay to the original lift, which makes up the remaining thickness (1 ½" -2"). Surface conditions include transverse cracking throughout the length of the existing runway.

Table 2: Summary of Asphalt Concrete Core Samples

Core #	Location (Distance from Runway 15 End, ft)	Thickness
1	±3582'	5.8"
2	±2975'	5.2"
3	±2165'	5.5"
4	±1555'	4.9"
5	±200'	4.6"
	Average	**5.2"**

Design Inputs

Flexible Pavements

The flexible pavement design curves are based on the California Bearing Ratio (CBR) method of design. The CBR design method is basically empirical; however, a great deal of research has been done with the method and reliable correlations have been developed. Gear configurations are related using theoretical concepts as well as empirically developed data. The design curves provide the required total thickness of flexible pavement (surface, base, and subbase) needed to support a given weight of aircraft over a particular subgrade. The curves also show the required

surface thickness. Minimum base course thicknesses are given in ***Table 3-4.*** The proposed project includes removal and replacement of existing airfield pavements and construction of new pavement sections for taxiways, aprons, and runways extensions.

Airfield Traffic Data

The Lee Vining Airport consists of runway 15/33 as well as an existing apron near the airport entrance. Based upon an Airport Layout Plan provided by PBS&J dated August, 2005, the design aircraft for the Lee Vining Airport is the Cessna 182, which is a single wheel gear aircraft. There is no anticipated change in runway traffic, therefore the controlling design aircraft and loading for the entire airfield was taken to be the Cessna 182, which has a maximum design weight of 3,100 pounds. Based upon FAA circular **AC 150/5320-6D,** Chapter 5, this aircraft falls under the category of light aircraft (<30,000 pounds). The design aircraft weight is also less than expected maintenance equipment loading such as snow plows and fueling equipment. For design purposes the loading for the airport pavements used was taken as 30,000 pounds, which is rather conservative and expected to accommodate heavier aircrafts as well as maintenance equipment. The airport receives limited traffic and therefore the average annual departures were estimated conservatively at 1,200 departures a year.

Table 3 lists the input parameters utilized for the design of the airfield pavement section as set forth by the Federal Aviation Administration advisory circular **AC 150/5320-6D,** Airport Pavement Design and Evaluation. For design purposes, the design loading shall be 30,000 lbs, which is the minimum weight used within the FAA design charts.

Table 3: Design Input Parameters for the Design of Flexible Pavements; Design of Pavements For Light Aircrafts

Parameter	Value
Design Aircraft	Cessna 182
Design Loading	30,000 lbs
Annual Departures	1,200
Landing Gear Type & Geometry	Single Wheel
Subgrade CBR-Value	20

Critical and Non-Critical Areas

There is no distinction made between critical and non-critical pavement sections for pavements serving light aircrafts as stated in **AC 150/5320-6D.**

Results

Total Pavement Thickness

The total pavement thickness was determined using design curves for flexible pavements serving light aircraft, which is attached; ***Figure 5-2.*** By using the design CBR value (20) and gross aircraft weight (30,000 lbs), the total thickness required was found to be approximately 8 inches.

Subgrade/Subbase

Based upon laboratory results for the existing subgrade it was found that the subgrade is adequate for use as the subbase, which, in turn, cancels the need for imported subbase as long as the subgrade, along with any required structural fill in new runway extension, taxiway, and apron areas, is compacted in conformance with the following recommendations and the project specifications.

The subgrade shall be compacted to a minimum of 95% maximum dry density as determined by *ASTM D 698* to a compaction depth of 6-9 inches. Structural fill shall also be compacted to a minimum of 95% maximum dry density as determined by *ASTM D 698.*

Aggregate Base

The minimum aggregate base thickness is 4 inches as shown in ***Table 3-4***, for a Single Wheel aircraft weighing between 30,000-50,000 lbs. However, based upon the FAA Design Curve, ***Figure 5-2***, the total structural thickness required, is 8 inches. We recommend placing a minimum of 6 inches of aggregate base, compacted to 100% maximum dry density as determined by *ASTM D 698.*

TABLE 3-4. MINIMUM BASE COURSE THICKNESS

Design Aircraft	Design Load Range		Minimum Base Course Thickness	
	lbs.	(kg)	in.	(mm)
Single Wheel	30,000 - 50,000	(13600 - 22 700)	4	(100)
	50,000 - 75,000	(22700 - 34 000)	6	(150)
Dual Wheel	50,000 - 100,000	(22700 - 45 000)	6	(150)
	100,000 - 200,000	(45 000 - 90 700)	8	(200)
Dual Tandem	100,000 - 250,000	(45 000 - 113 400)	6	(150)
	250,000 - 400,000	(113400 - 181 000)	8	(200)
757 767	200,000 - 400,000	(90700 - 181000)	6	(150)
DC-10 L1011	400,000 - 600,000	(181 000 - 272000)	8	(200)
B-747	400,000 - 600,000	(181 000 - 272000)	6	(150)
	600,000 - 850,000	(272 000 - 385 700)	8	(200)
c-130	75,000 - 125,000	(34 000 - 56 700)	4	(100)
	125,000 - 175,000	(56700 - 79 400)	6	(150)

Note: The calculated base course thicknesses should be compared with the minimum base course thicknesses listed above. The greater thickness, calculated or minimum, should be specified in the design section.

Hot Mix Asphalt

The required asphalt concrete surface thickness is computed by taking the total structural thickness required (8"), minus the thickness of base course (6"), which equals 2". ESE recommends placing a ¾" or ½" 'Type A' hot mix asphalt with a minimum surface thickness of 3 inches. Hot mix asphalt shall conform to Section 39 of the Caltrans Standard Specifications. Asphalt binder shall be PG 64-28 and shall comply with Section 92 of the Caltrans Standard Specifications.

Foundation Design

Based on the soil characteristics encountered, an allowable soil bearing capacity of 2,000 lb/ft2 is recommended for the design of the foundations as per Table 1804.2 of the 2006 International Building Code (IBC). The lateral bearing pressure of the foundation soil shall be 150 lb/ft2 per foot of depth below the natural grade. For seismic loadings evaluated using 2006 International Building Code (IBC) method we recommend using Site Class D (Applicable to stiff soil profile with an average shear wave velocity of 600 to 1,200 feet/second) (Table 1613.5.2).

Conclusions and Recommendations

The recommended pavement section for the Lee Vining Airport is shown below in ***Table 4***. It was found that native soils found within the runway and apron areas investigated exhibit relatively high strength properties as suggested by the R-values associated with the samples. We recommend placing a minimum of 3 inches of asphalt concrete over 6-inches of aggregate base. As an alternative, recycled base, generated onsite may be used as base material provided the minimum strength properties as set forth in the specifications are achieved with the blend of pulverized asphalt concrete and subgrade.

Table 4: Pavement Design Summary

Pavement Section	Thickness (inches)
Asphalt Concrete	3
Aggregate Base / Recycled Base	6

We trust this provides the information you require at this time regarding the pavement design of the runway, taxiway and apron at the Lee Vining Airport in Lee Vining California. If you have any questions or require additional information, please contact me at (775) 828-7220.

Sincerely,

Eastern Sierra Engineering, P.C.

Shawn W. Jenkins, P.E.
Principal Engineer

Enc. Figure 5-2: Design Curve For Flexible Pavements – Light Aircraft
Figure 1: Site Plan
Figures 2-7: Soil Profiles
Figures 8-17: Laboratory Test Results

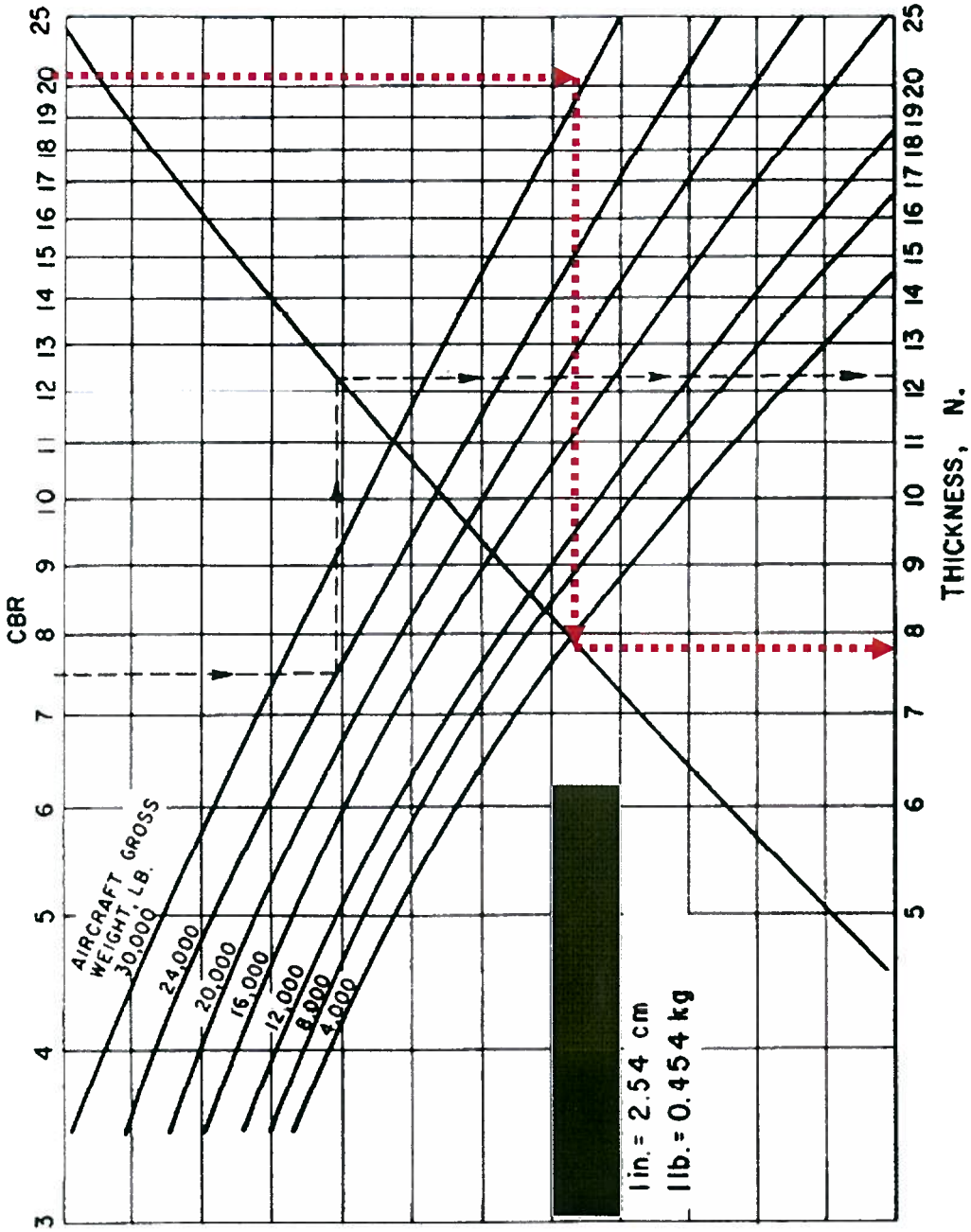
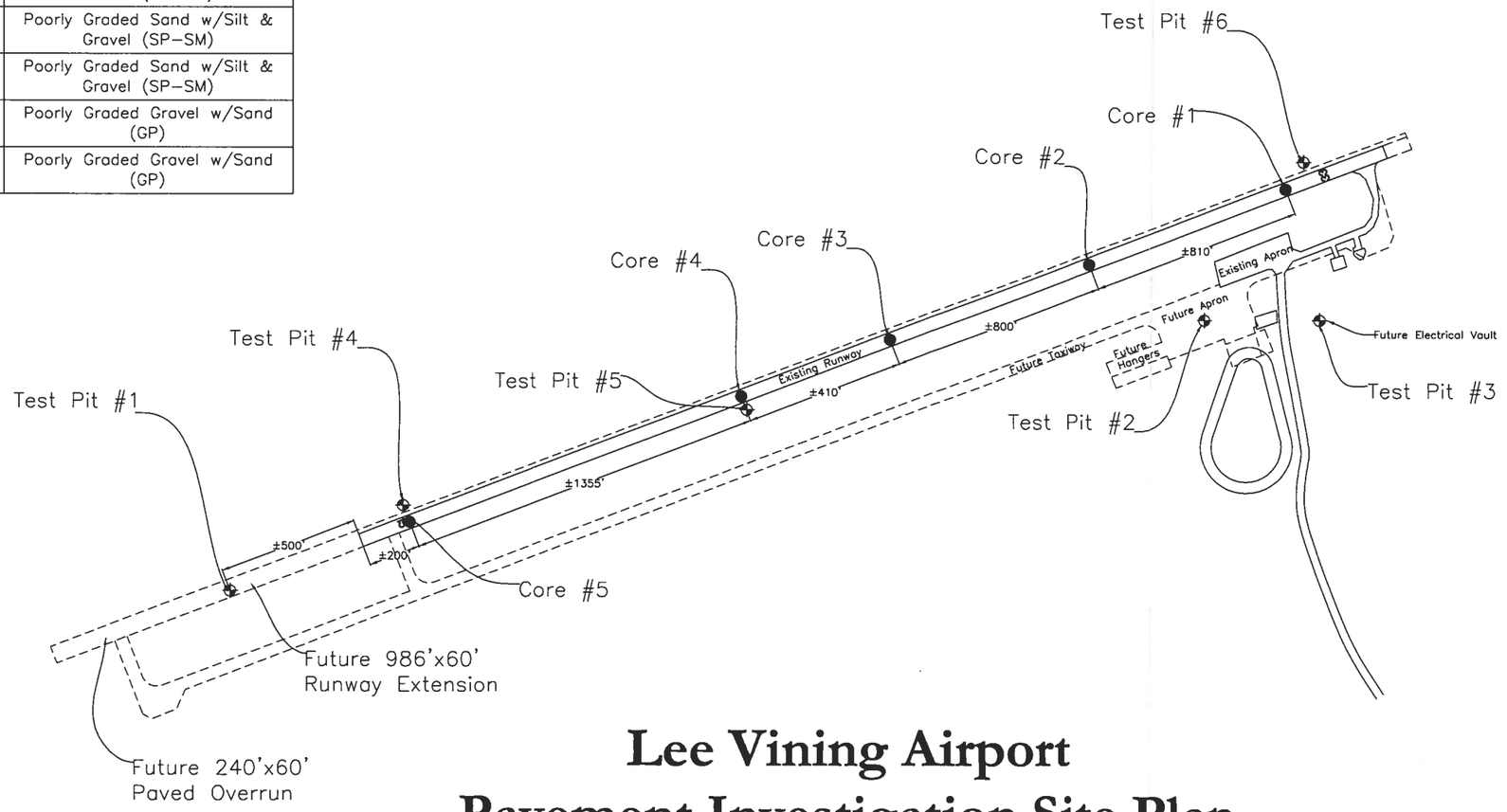


FIGURE 5-2. DESIGN CURVES FOR FLEXIBLE PAVEMENTS - LIGHT AIRCRAFT

SUBGRADE SAMPLE SUMMARY				
TEST PIT #	LOCATION	DEPTH	GW	SOIL TYPE
1	Future Runway Extension 500' N. of Ex Runway End	2–'3'	NO	Poorly Graded Sand w/Silt & Gravel (SP–SM)
2	Future Apron Location	2'–3'	NO	Poorly Graded Sand w/Silt & Gravel (SP–SM)
3	Future Elec. Vault Location	2'–3'	NO	Poorly Graded Sand w/Silt & Gravel (SP–SM)
4	Adj. to Core #5 East shldr of runway	2'–3'	NO	Poorly Graded Sand w/Silt & Gravel (SP–SM)
5	Adjacent to Core #4 West shldr of runway	2'–3'	NO	Poorly Graded Gravel w/Sand (GP)
6	Ajacent Core #1 East shldr of runway	2'–3'	NO	Poorly Graded Gravel w/Sand (GP)

CORE SUMMARY		
CORE #	LOCATION (Dist. from Runway 15 edge pavement)	THICKNESS
1	±3582'	5.8"
2	±2975'	5.2"
3	±2165'	5.5"
4	±1555'	4.9"
5	±200'	4.6"



Lee Vining Airport
Pavement Investigation Site Plan

- ● CORE LOCATION
- ◈ TEST PIT LOCATION FOR SUBGRADE SAMPLE
- ------ FUTURE IMPROVEMENTS
- ——— EXISTING STRUCTURES

N

NTS

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES
4515 TOWNE DRIVE, SUITE A
RENO, NV 89521
MAIN: (775) 828-7220
FAX: (775) 828-7221

PROJECT: PAVEMENT INVESTIGATION
SITE PLAN
CORE/SUBGRADE SAMPLE LOCATIONS

ADDRESS: LEE VINING AIRPORT
LEE VINING, CA
MONO COUNTY CALIFORNIA

Designed:	DBB
Drawn By:	DBB
Approved By:	SWJ
Job No:	044.07
Scale:	NTS
Date:	01-08-08

FIGURE 1

SOIL PROFILE

TEST PIT NO:	1	DATE:	12/14/07
TYPE OF BORING:	HAND EXCAVATED	DEPTH TO GROUND WATER (ft):	N/A
LOGGED BY:	BUCKY BROWN	GROUND ELEVATION (ft):	~6750

LAYER NO.	ESE BULK #	R-VALUE	% PASSING #200 SIEVE	PLASTICITY INDEX	DEPTH (FT)	USCS SYMBOL	LITHOLOGY	
								NATIVE SANDY SURFACE WITH DRY GRASS & BRUSH, ORGANICS TO UP TO 12" DEPTH.
A	X 3555	69	9.4	NP	1 2	SP-SM		DRY, SANDY, LIGHT BROWN MATERIAL. NO NOTICABLE LAYER CHANGES THROUGHOUT EXCAVATION. USCS SOIL CLASSIFICATION: POORLY GRADED SAND W/SILT & GRAVEL (SP-SM)
					3			EXTENT OF BORING
					4 5 6 7 8			

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES
4515 TOWNE DRIVE, SUITE A
RENO, NV 89521
MAIN: (775) 828-7220
FAX: (775) 828-7221

LEE VINING AIRPORT
SOIL PROFILE TP-1
FUTURE RUNWAY ±500' N. OF EXISTING RUNWAY

FIGURE 2

DRAWN BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DBB	044.07	SJ	01-08-08		

SOIL PROFILE

TEST PIT NO: 2

TYPE OF BORING: HAND EXCAVATED

LOGGED BY: BUCKY BROWN

DATE: 12/14/07

DEPTH TO GROUND WATER (ft): N/A

GROUND ELEVATION (ft): ~6780'

LAYER NO.	ESE BULK #	R-VALUE	% PASSING #200 SIEVE	PLASTICITY INDEX	DEPTH (FT)	USCS SYMBOL	LITHOLOGY	
					1			SAND SURFACE W/PATCHY GRASS AND ROOTS
A	X 3556	70	11.4	NP	2	SP-SM		NATIVE SANDY D.G. MATERIAL USCS SOIL CLASSIFICATION: POORLY GRADED SAND W/SILT & GRAVEL (SP-SM)
					3			EXTENT OF BORING
					4			
					5			
					6			
					7			
					8			

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES
4515 TOWNE DRIVE, SUITE A
RENO, NV 89521
MAIN: (775) 828-7220
FAX: (775) 828-7221

LEE VINING AIRPORT
SOIL PROFILE TP-2
FUTURE APRON LOCATION

FIGURE 3

DRAWN BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DBB	044.07		01-08-08		

SOIL PROFILE

TEST PIT NO: 3

TYPE OF BORING: HAND EXCAVATED

LOGGED BY: BUCKY BROWN

DATE: 12/14/07

DEPTH TO GROUND WATER (ft): N/A

GROUND ELEVATION (ft): ~6780'

LAYER NO.	ESE BULK #	R-VALUE	% PASSING #200 SIEVE	PLASTICITY INDEX	DEPTH (FT)	USCS SYMBOL	LITHOLOGY	
					1			SAND SURFACE W/PATCHY GRASS AND ROOTS
A	3557		6.7	NP	2	SP-SM		NATIVE SANDY D.G. MATERIAL USCS SOIL CLASSIFICATION: POORLY GRADED SAND W/SILT & GRAVEL (SP-SM)
					3			EXTENT OF BORING
					4			
					5			
					6			
					7			
					8			

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES
4515 TOWNE DRIVE, SUITE A
RENO, NV 89521
MAIN: (775) 828-7220
FAX: (775) 828-7221

LEE VINING AIRPORT
SOIL PROFILE TP-3
FUTURE ELECTICAL VAULT LOCATION

FIGURE 4

DRAWN BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DBB	044.07		01-08-08		

SOIL PROFILE

TEST PIT NO: 4

TYPE OF BORING: HAND EXCAVATED

LOGGED BY: BUCKY BROWN

DATE: 12/14/07

DEPTH TO GROUND WATER (ft): N/A

GROUND ELEVATION (ft): ~4110'

LAYER NO.	ESE BULK #	R-VALUE	% PASSING #200 SIEVE	PLASTICITY INDEX	DEPTH (FT)	USCS SYMBOL	LITHOLOGY	
								ASPHALT CONCRETE SURFACE (±4.6" THICK) (2-LIFTS)
A	3558		6.0	NP	1 2 3	SP-SM		**VERY UNIFORM LIGHT BROWN SILTY SAND. NO NOTICABLE LAYER CHANGES THROUGHOUT EXCAVATION.** **USCS SOIL CLASSIFICATION: POORLY GRADED SAND W/SILT & GRAVEL (SP-SM)**
					3			**EXTENT OF BORING**
					4 5 6 7 8			

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES
4515 TOWNE DRIVE, SUITE A
RENO, NV 89521
MAIN: (775) 828-7220
FAX: (775) 828-7221

LEE VINING AIRPORT
SOIL PROFILE TP-4
EXISTING RUNWAY N. END

FIGURE 5

DRAWN BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DBB	044.07		01-08-08		

SOIL PROFILE

TEST PIT NO:	5	DATE:	12/14/07
TYPE OF BORING:	HAND EXCAVATED	DEPTH TO GROUND WATER (ft):	N/A
LOGGED BY:	BUCKY BROWN	GROUND ELEVATION (ft):	~6770

LAYER NO.	ESE BULK #	R-VALUE	% PASSING #200 SIEVE	PLASTICITY INDEX	DEPTH (FT)	USCS SYMBOL	LITHOLOGY	
								ASPHALT CONCRETE SURFACE (±4.8" THICK) (2 LIFTS)
A	3559	66	4.0	NP	1–3	GP		**VERY UNIFORM LIGHT BROWN SILTY SAND. NO NOTICABLE LAYER CHANGES THROUGHOUT EXCAVATION.** **USCS SOIL CLASSIFICATION: POORLY GRADED GRAVEL W/SAND (GP)**
					3			**EXTENT OF BORING**
					4–8			

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES
4515 TOWNE DRIVE, SUITE A
RENO, NV 89521
MAIN: (775) 828-7220
FAX: (775) 828-7221

LEE VINING AIRPORT
SOIL PROFILE TP-5
EXISTING RUNWAY MIDDLE

FIGURE 6

DRAWN BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DBB	044.07		01-08-08		

SOIL PROFILE

TEST PIT NO: 6

TYPE OF BORING: HAND EXCAVATED

LOGGED BY: BUCKY BROWN

DATE: 11/30/07

DEPTH TO GROUND WATER (ft): N/A

GROUND ELEVATION (ft): ~6800

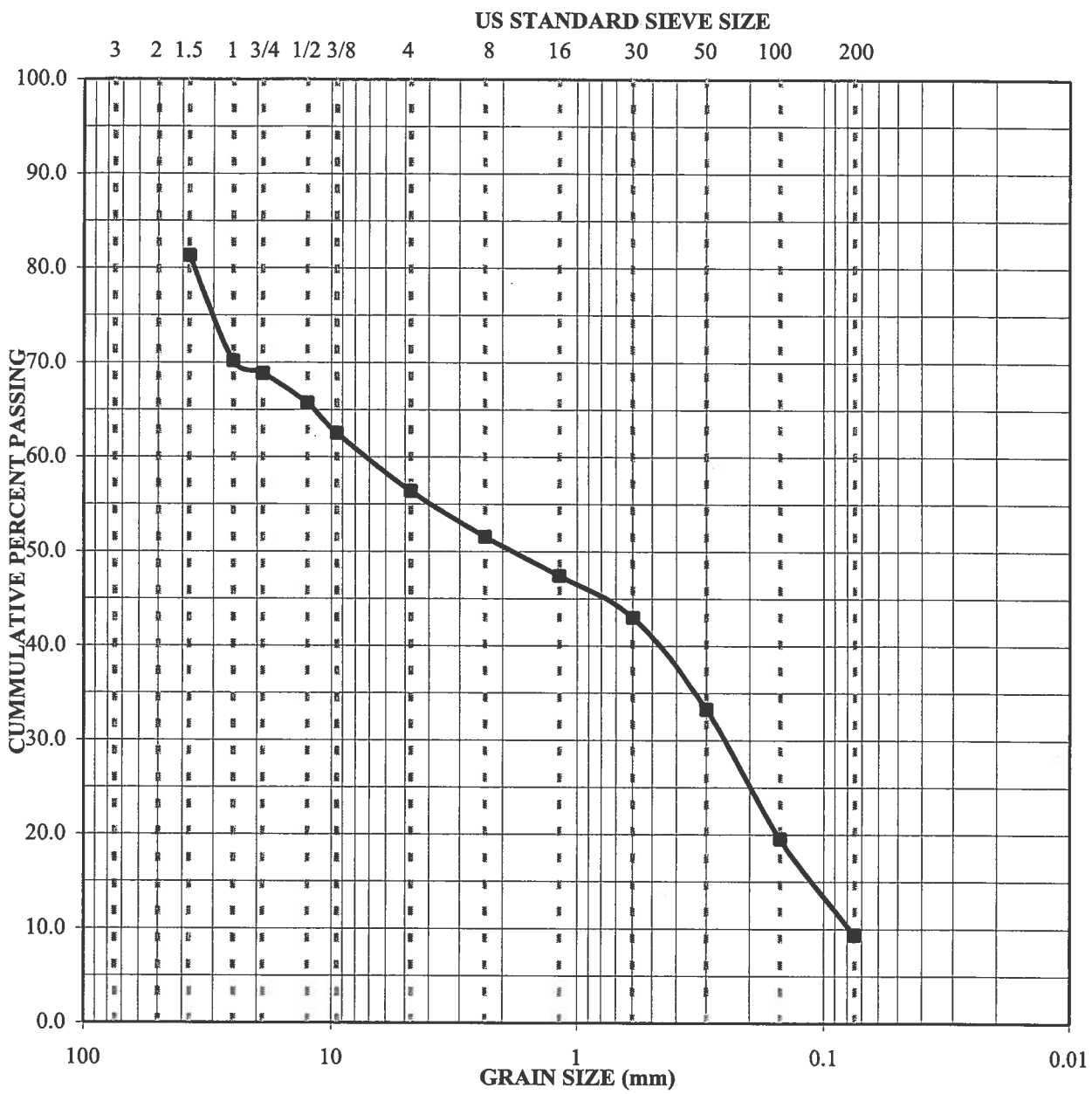
LAYER NO.	ESE BULK #	R-VALUE	% PASSING #200 SIEVE	PLASTICITY INDEX	DEPTH (FT)	USCS SYMBOL	LITHOLOGY	
								ASPHALT CONCRETE SURFACE (±5.8" THICK) (2 LIFTS)
A	3560		3.0	NP	1 2 3	GP		**STRUCTURAL FILL MATERIAL. D.G. WITH GRAVEL AND COBBLES THROUGHOUT. SOME ASPHALT GRINDINGS THROUGHOUT BORING AS WELL.** **USCS SOIL CLASSIFICATION: POORLY GRADED GRAVEL W/SAND (GP)**
					4 5 6 7 8			**EXTENT OF BORING**

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES
4515 TOWNE DRIVE, SUITE A
RENO, NV 89521
MAIN: (775) 828-7220
FAX: (775) 828-7221

LEE VINING AIRPORT
SOIL PROFILE TP-6
RUNWAY S. END

FIGURE 7

DRAWN BY	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DBB	044.07		01-08-08		



COBBLES	GRAVEL	SAND	SILT OR CLAY

Symbol	Sample Source	Classification
□	TP#1 Bulk#3555	Poorly Graded Sand w/Silt & Gravel (SP-SM)

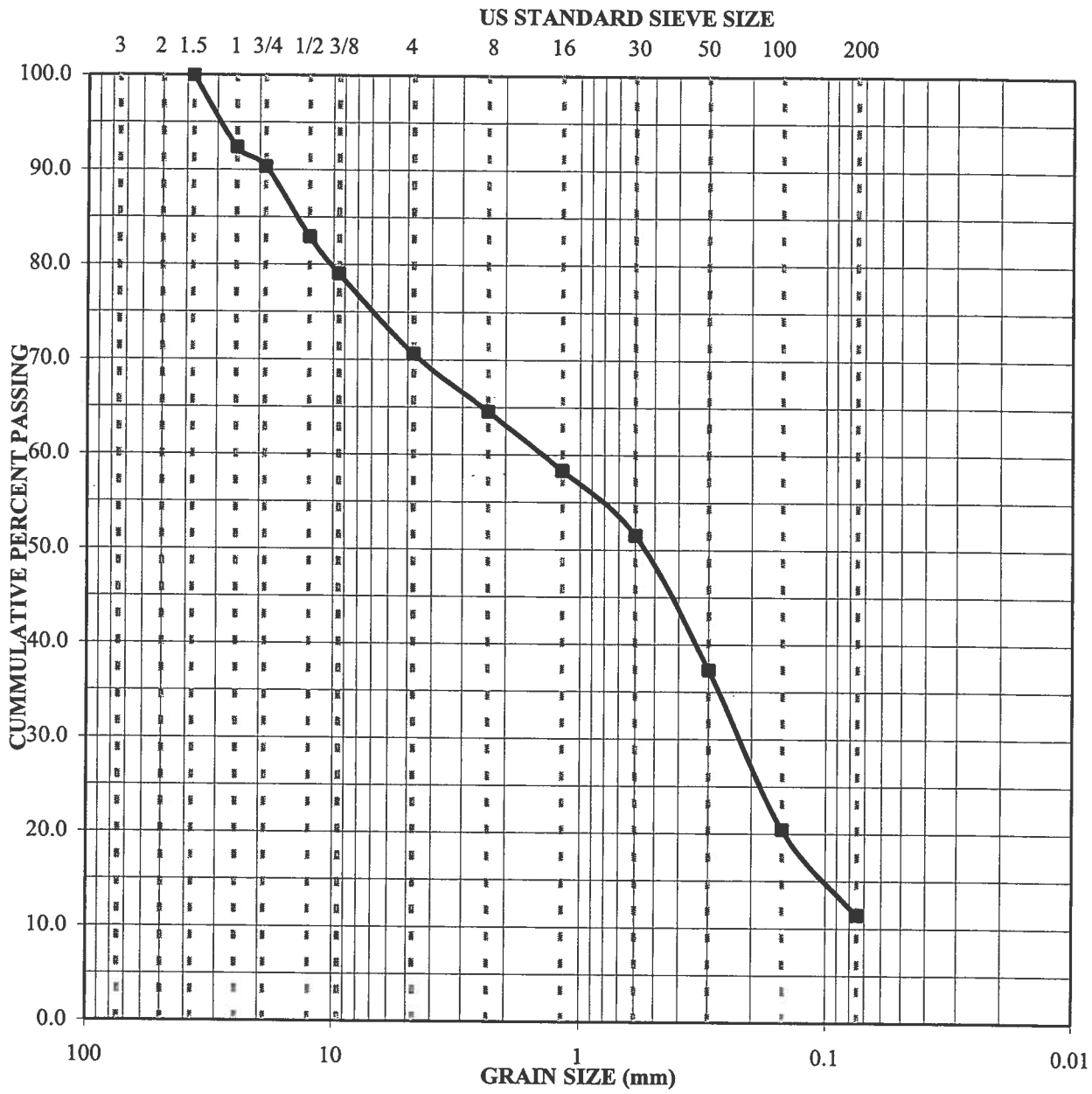
D_{60}= 6.70 C_c= 0.04
D_{30}= 0.186 C_u= 46.1
D_{10}= 0.145

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

PARTICLE SIZE ANALYSIS
LEE VINING AIRPORT

FIGURE
8

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07		12/11/07		



COBBLES	GRAVEL	SAND	SILT OR CLAY

Symbol	Sample Source	Classification
□	TP#2 Bulk#3556	Poorly Graded Sand w/Silt & Gravel (SP-SM)

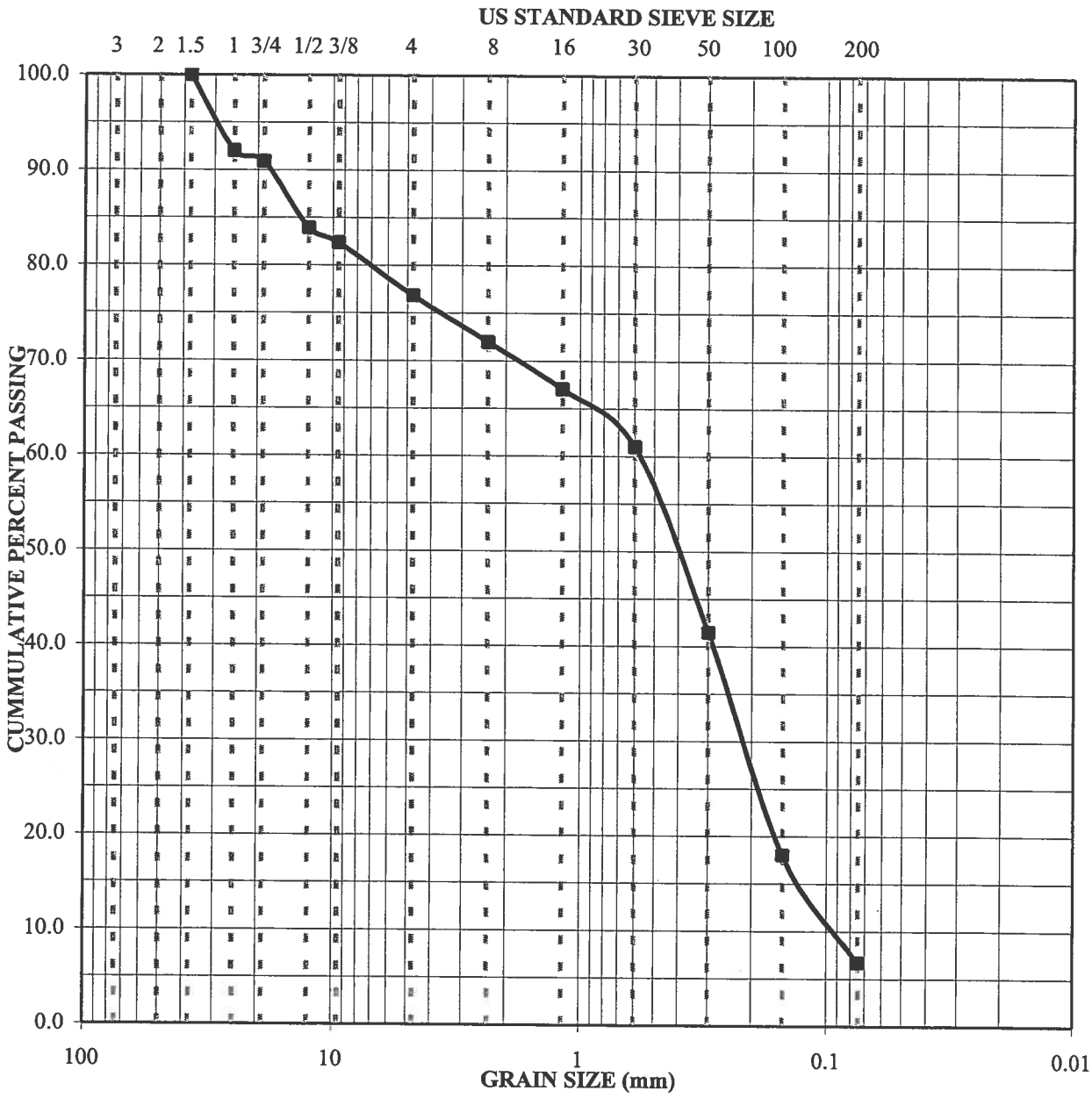
D_{60}= 2.05 C_c= 0.30
D_{30}= 0.215 C_u= 27.3
D_{10}= 0.075

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

PARTICLE SIZE ANALYSIS
LEE VINING AIRPORT

FIGURE
9

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07		12/11/07		



COBBLES	GRAVEL	SAND	SILT OR CLAY

Symbol	Sample Source	Classification
□	TP#3 Bulk#3557	Poorly Graded Sand w/Silt & Gravel (SP-SM)

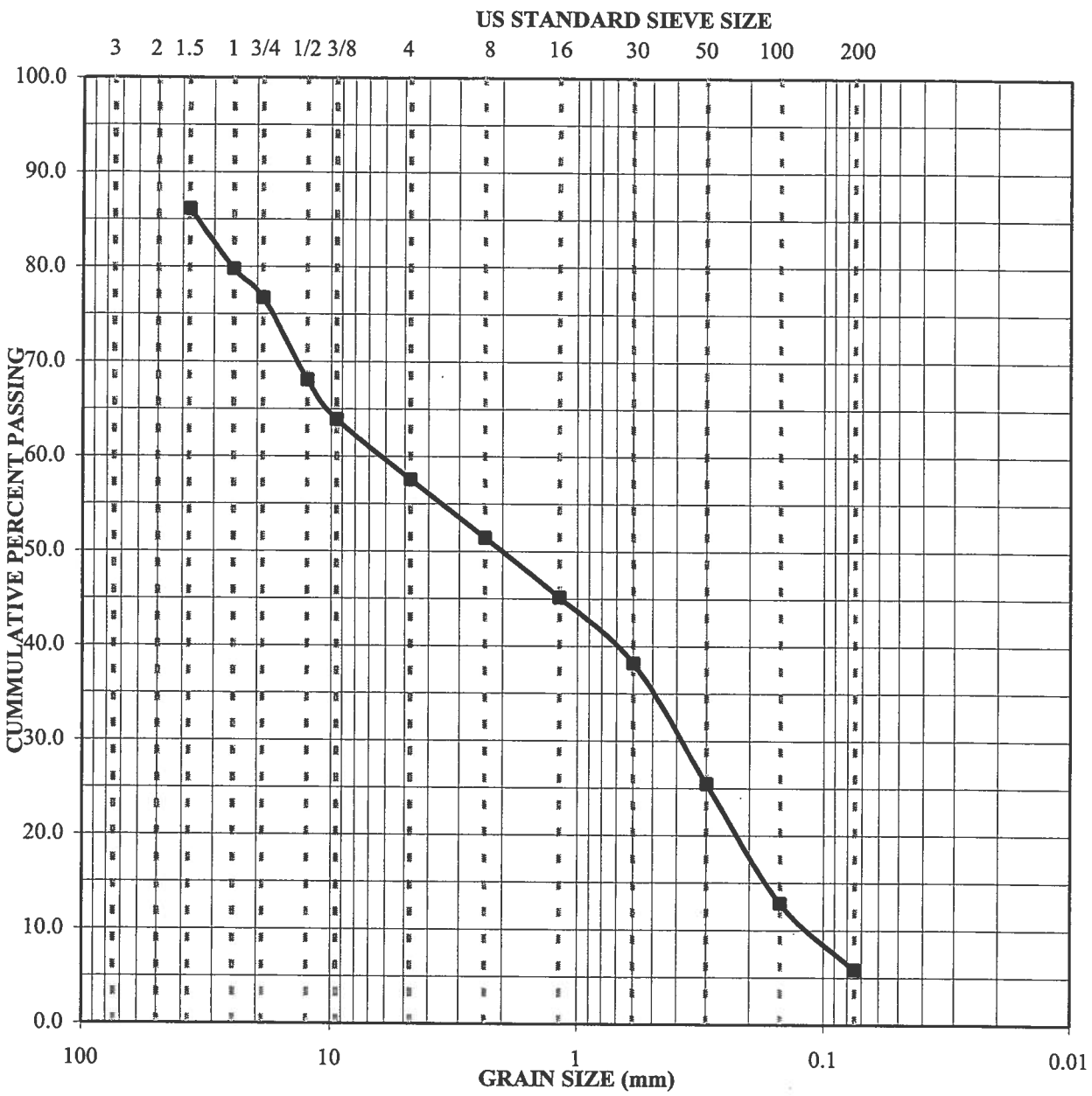
D_{60}= 0.32 C_c= 1.24
D_{30}= 0.223 C_u= 2.5
D_{10}= 0.128

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

PARTICLE SIZE ANALYSIS
LEE VINING AIRPORT

FIGURE
10

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07		12/11/07		



COBBLES	GRAVEL	SAND	SILT OR CLAY

Symbol	Sample Source	Classification
□	TP#4 Bulk#3558	Poorly Graded Sand w/Silt & Gravel (SP-SM)

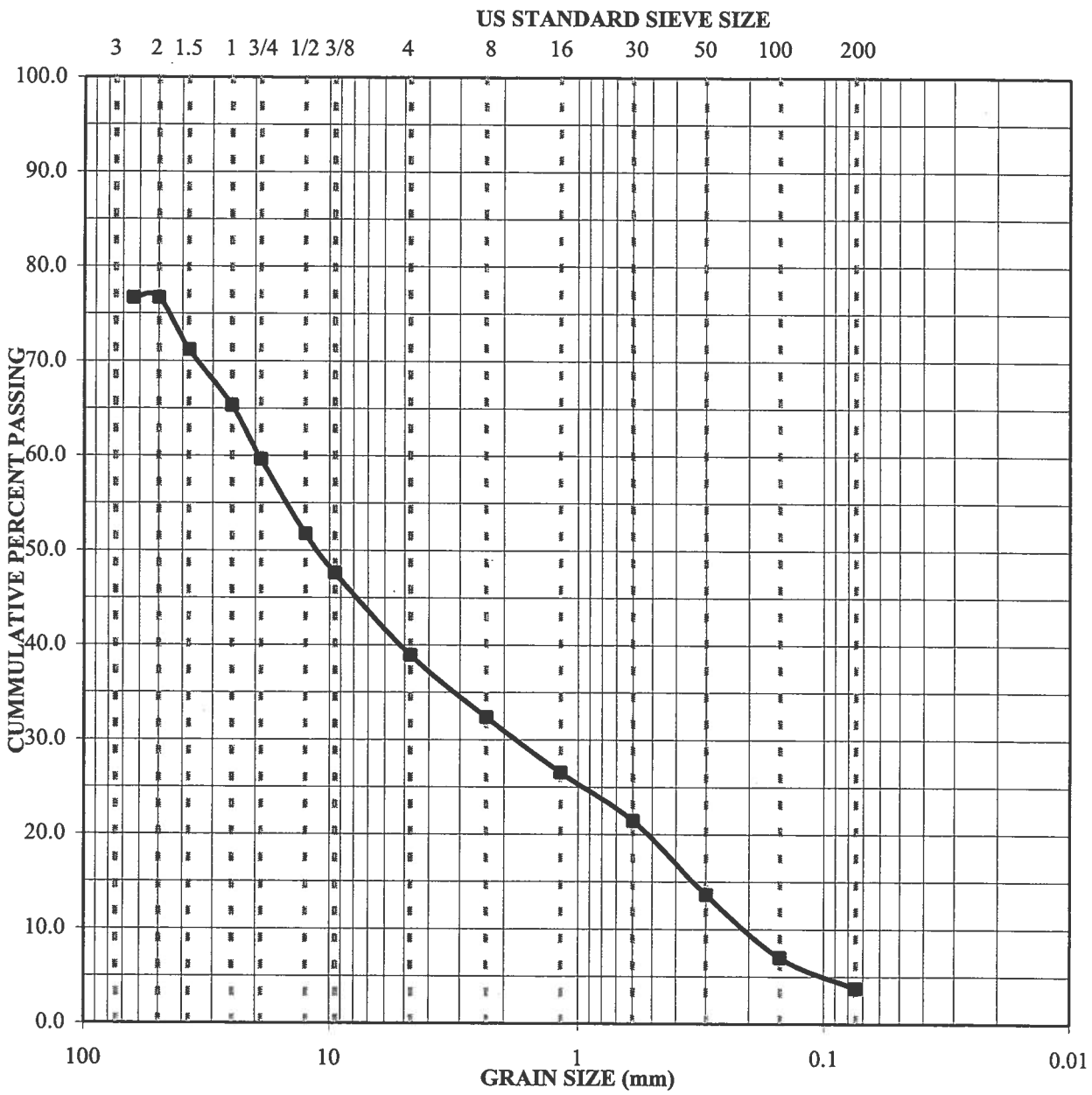
D_{60}= 7.68 C_c= 0.30
D_{30}= 0.494 C_u= 72.9
D_{10}= 0.105

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

PARTICLE SIZE ANALYSIS
LEE VINING AIRPORT

FIGURE
11

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07		12/11/07		



COBBLES	GRAVEL	SAND	SILT OR CLAY

Symbol	Sample Source	Classification
□	TP#5 Bulk#3559	Poorly Graded Gravel w/Sand (GP)

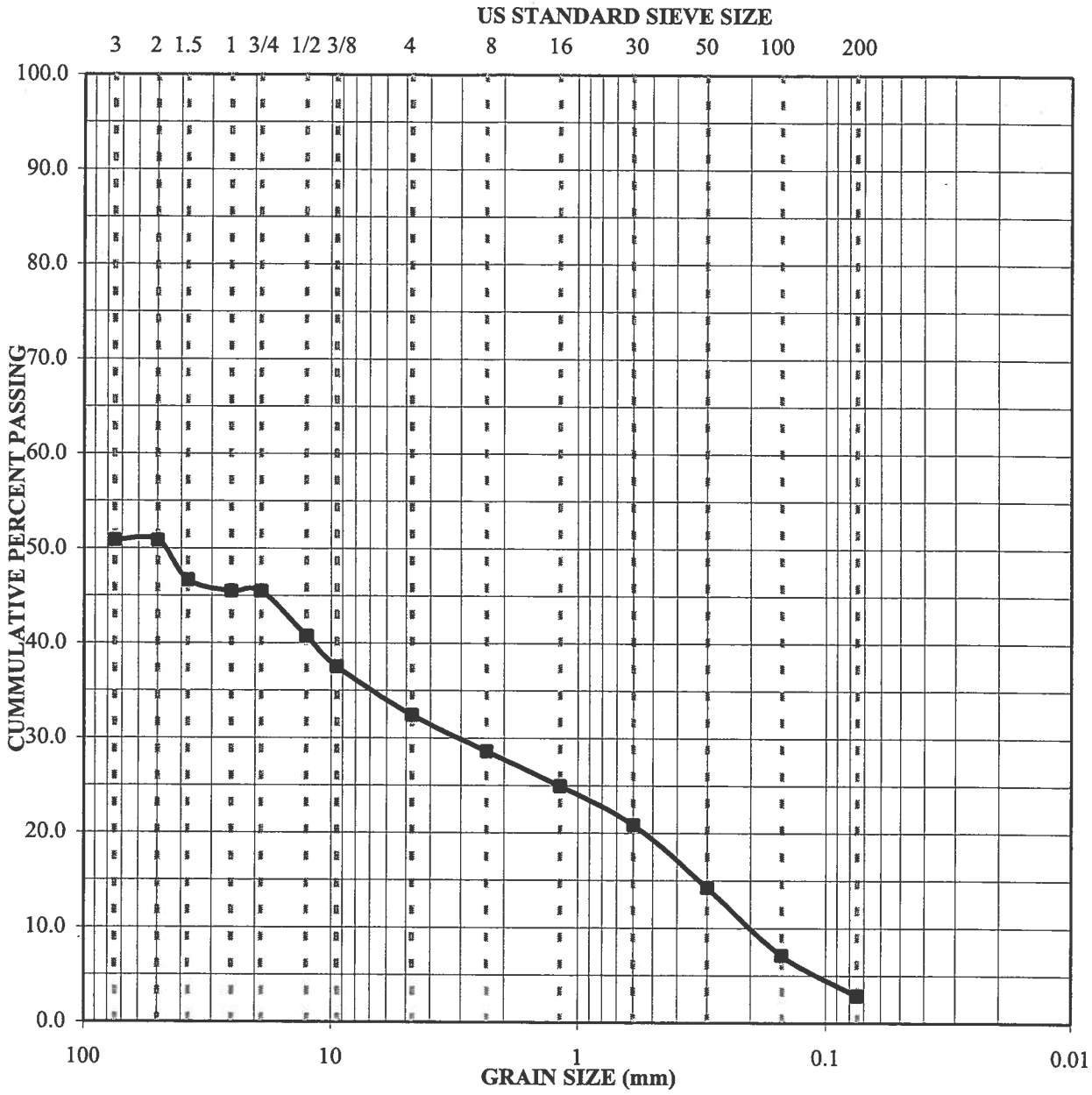
D_{60}= 24.59 C_c= 0.48
D_{30}= 1.658 C_u= 105.9
D_{10}= 0.232

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

PARTICLE SIZE ANALYSIS
LEE VINING AIRPORT

FIGURE
12

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07	SO	12/11/07		



COBBLES	GRAVEL	SAND	SILT OR CLAY

Symbol	Sample Source	Classification
□	TP#6 Bulk#3560	Poorly Graded Gravel w/Sand (GP)

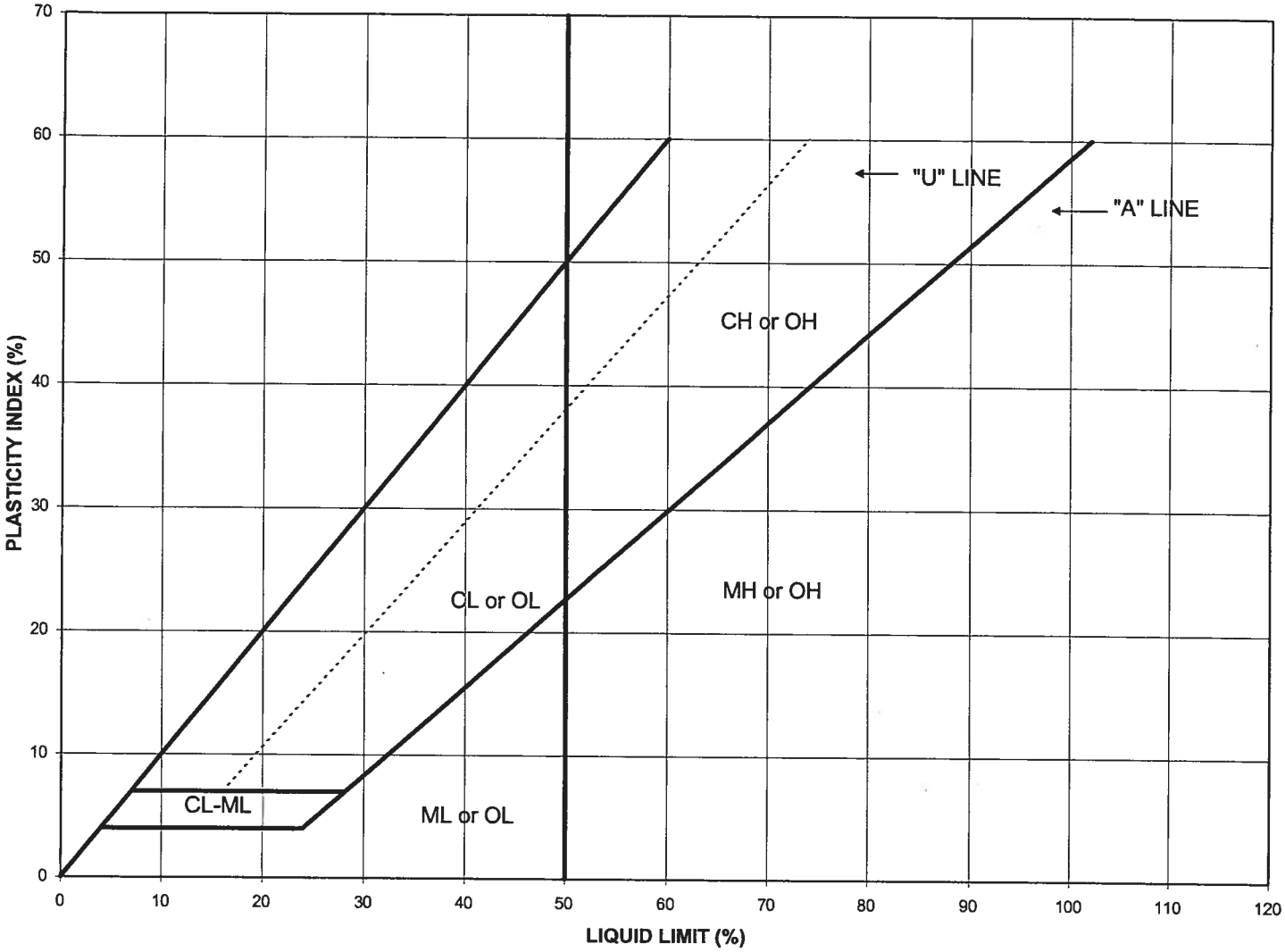
D_{60}= 75.00 C_c= 0.83
D_{30}= 3.870 C_u= 313.1
D_{10}= 0.240

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

PARTICLE SIZE ANALYSIS
LEE VINING AIRPORT

FIGURE
13

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07	SF	12/11/07		



Symbol D 4318-00	Sample Source	Classification	Natural M.C. (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
	TP#1	Poorly Graded Sand w/Silt & Gravel(SP-SM)	<1	–	–	NP	9.4
	TP#2	Poorly Graded Sand w/Silt & Gravel(SP-SM)	<1	–	–	NP	11.4
	TP#3	Poorly Graded Sand w/Silt & Gravel(SP-SM)	<1	–	–	NP	6.7
	TP#4	Poorly Graded Sand w/Silt & Gravel(SP-SM)	<1	–	–	NP	6.0
	TP#5	Poorly Graded Gravel w/Sand (GP)	<1	–	–	NP	4.0
	TP#6	Poorly Graded Gravel w/Sand (GP)	<1	–	–	NP	3.0

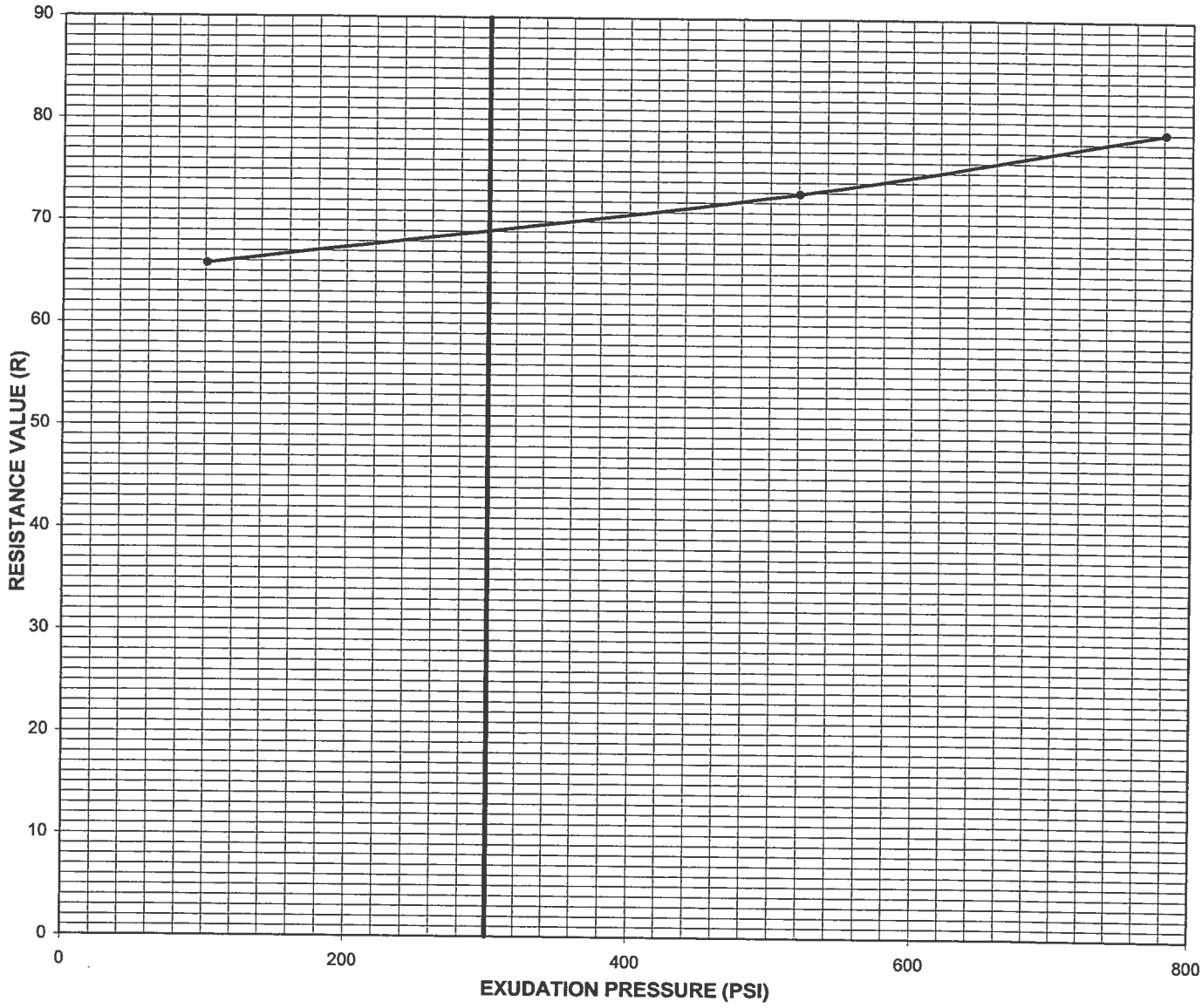
NOTE: NP = NON -PLASTIC

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

PLASTICITY CHART
LEE VINING AIRPORT
LEE VINING, CA

FIGURE
14

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07	SS	12/11/2007		



D 2844-01 Symbol	Sample Source	Classification	Expansion Pressure (psf)	R-value
o	FUTURE RUNWAY EXTENSION TP#1	POORLY GRADED SAND W/ SILT AND GRAVEL (SP-SM)	0.0	69

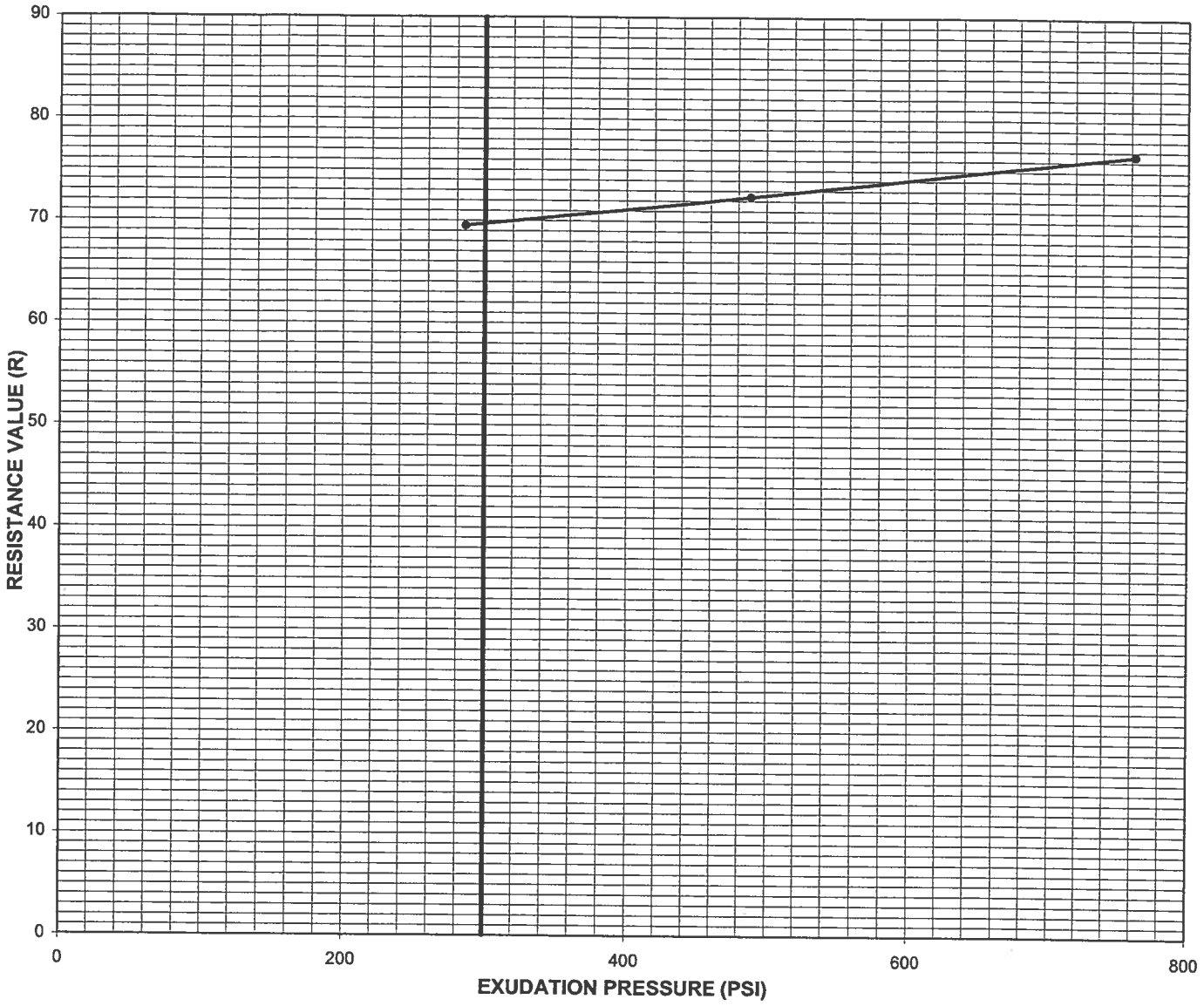
POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	8.6	122.1	781	0	79
2	9.4	120.1	521	0	73
3	10.4	118.3	101	0	66
4					
5					
6					

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

RESISTANCE VALUE TEST DATA
LEE VINING AIRPORT
LEE VINING, CALIFORNIA

Figure 15

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07		1/4/08		



D 2844-01 Symbol	Sample Source	Classification	Expansion Pressure (psf)	R-value
o	FUTURE APRON LOCATION TP# 2	POORLY GRADED SAND W/ SILT AND GRAVEL (SP-SM)	0.0	70

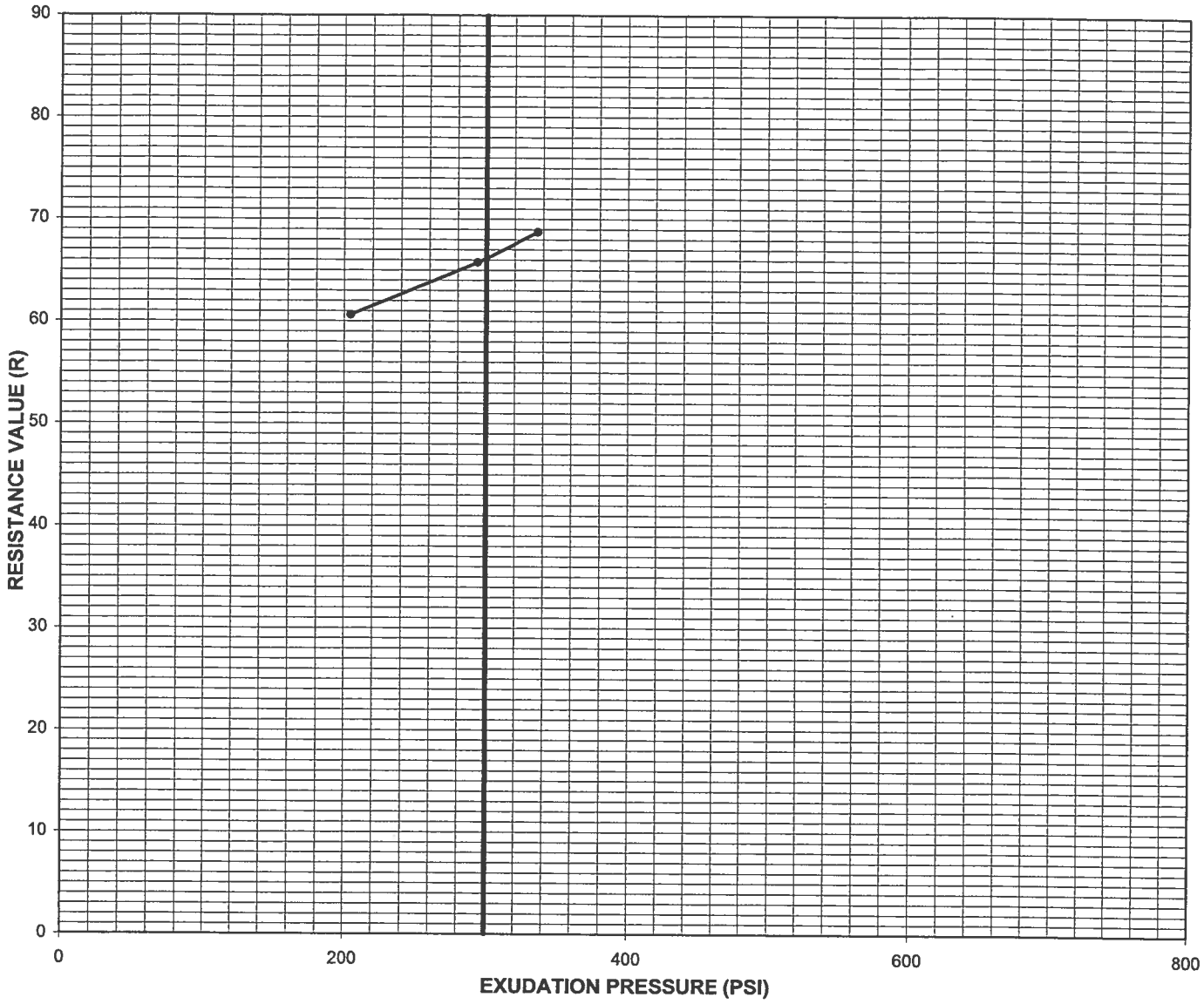
POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	9.3	119.0	763	0	77
2	9.8	118.6	489	0	72
3	10.1	117.7	286	0	69
4					
5					
6					

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

RESISTANCE VALUE TEST DATA
LEE VINING AIRPORT
LEE VINING, CALIFORNIA

Figure 16

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07	ST	1/4/08		



D 2844-01 Symbol	Sample Source	Classification	Expansion Pressure (psf)	R-value
o	ADJACENT TO CORE #4 TP# 5	POORLY GRADED GRAVEL W/ SAND (GP)	0.0	66

POINT #	WATER CONTENT (%)	DRY DENSITY (PCF)	EXUDATION PRESS. (PSI)	EXPANSION PRESS. (PSF)	RESISTANCE VALUE (R)
1	8.5	124.1	336	0	69
2	9.8	122.3	294	0	66
3	9.7	121.6	205	0	61
4					
5					
6					

EASTERN SIERRA ENGINEERING
CIVIL ENGINEERING & CONSTRUCTION SERVICES

RESISTANCE VALUE TEST DATA
LEE VINING AIRPORT
LEE VINING, CALIFORNIA

Figure 17

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
DL	044.07	SS	1/8/08		