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 advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

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

ORDER OF PRECEDENCE

1. **Permits issued by jurisdictional regulatory agencies**
2. **Change Orders**
3. **Contract/Agreement**
4. **Addenda**
5. **Bid/proposal**
6. **Special Provisions for Airport Construction, Division V**
7. **Technical Specifications, Division V**
8. **Project Plans**
9. **FAA General Provisions, Division III**
10. **Standard Plans**
11. **Standard Specifications**
12. **Reference Specifications**

50-04 Cooperation of Contractor. The Contractor will be supplied with five copies each of the plans and specifications. The Contractor 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 shall cooperate with the Engineer and his or her inspectors and with other contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as his or 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 or 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 the 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 or 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 because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange his or 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. The Contractor shall join his or 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. ***Not applicable. A surveyor is not required for this Project.***

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 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 are authorized to notify the Contractor or his or 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 a decision.

50-09 Inspection of the work. All materials and each part or detail of the work shall be subject to inspection. 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 that 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 50-02 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 70-14 titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Section 70.

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

Upon failure on the part of the Contractor to comply with any order of the 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 that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor shall be responsible for all damage done by his or her hauling equipment and shall correct such damage at his or her own expense.

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

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

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

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in the subsection 50-12 titled MAINTENANCE DURING CONSTRUCTION of this section, the Engineer shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the Engineer's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be deducted from monies due or to become due the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the 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, the Engineer may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

50-15 Final acceptance. Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The 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 for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the Engineer in writing of his or her intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the 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 10 calendar days, submit a 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 Cost reduction incentive. The provisions of this subsection will apply only to contracts awarded to the lowest bidder pursuant to competitive bidding.

On projects with original contract amounts in excess of $100,000, the Contractor may submit to the Engineer, in writing, proposals for modifying the plans, specifications or other requirements of the contract for the sole purpose of reducing the cost of construction. The cost reduction proposal shall not impair, in any manner, the essential functions or characteristics of the project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, design and safety standards. This provision shall not apply unless the proposal submitted is specifically identified by the Contractor as being presented for consideration as a value engineering proposal.

Not eligible for cost reduction proposals are changes in the basic design of a pavement type, runway and taxiway lighting, visual aids, hydraulic capacity of drainage facilities, or changes in grade or alignment that reduce the geometric standards of the project.

As a minimum, the following information shall be submitted by the Contractor with each proposal:

a. A description of both existing contract requirements for performing the work and the proposed changes, with a discussion of the comparative advantages and disadvantages of each.

b. An itemization of the contract requirements that must be changed if the proposal is adopted.

c. A detailed estimate of the cost of performing the work under the existing contract and under the proposed changes.

d. A statement of the time by which a change order adopting the proposal must be issued.

e. A statement of the effect adoption of the proposal will have on the time for completion of the contract.

f. The contract items of work affected by the proposed changes, including any quantity variation attributable to them.

The Contractor may withdraw, in whole or in part, any cost reduction proposal not accepted by the Engineer, within the period specified in the proposal. The provisions of this subsection shall not be construed to require the Engineer to consider any cost reduction proposal that may be submitted.

The Contractor shall continue to perform the work in accordance with the requirements of the contract until a change order incorporating the cost reduction proposal has been issued. If a change order has not been issued by the date upon which the Contractor's cost reduction proposal specifies that a decision should be made, or such other date as the Contractor may subsequently have requested in writing, such cost reduction proposal shall be deemed rejected.

The Engineer shall be the sole judge of the acceptability of a cost reduction proposal and of the estimated net savings from the adoption of all or any part of such proposal. In determining the estimated net savings, the Engineer may disregard the contract bid prices if, in the Engineer's judgment such prices do not represent a fair measure of the value of the work to be performed or deleted.

The Owner may require the Contractor to share in the Owner's costs of investigating a cost reduction proposal submitted by the Contractor as a condition of considering such proposal. Where such a condition is imposed, the Contractor shall acknowledge acceptance of it in writing. Such acceptance shall constitute full authority for the Owner to deduct the cost of investigating a cost reduction proposal from amounts payable to the Contractor under the contract.

If the Contractor's cost reduction proposal is accepted in whole or in part, such acceptance will be by a contract change order that shall specifically state that it is executed pursuant to this subsection. Such change order shall incorporate the changes in the plans and specifications which are necessary to permit the cost reduction proposal or such part of it as has been accepted and shall include any conditions upon which the Engineer's approval is based. The change order shall also set forth the estimated net savings attributable to the cost reduction proposal. The net savings shall be determined as the difference in costs between the original contract costs for the involved work items and the costs occurring as a result of the proposed change. The change order shall also establish the net savings agreed upon and shall provide for adjustment in the contract price that will divide the net savings equally between the Contractor and the Owner.

The Contractor's 50% share of the net savings shall constitute full compensation to the Contractor for the cost reduction proposal and the performance of the work.

Acceptance of the cost-reduction proposal and performance of the cost-reduction work shall not extend the time of completion of the contract unless specifically provided for in the contract change order.

END OF SECTION 50

Section 60 Control of Materials

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

In order to expedite the inspection and testing of materials, the Contractor shall furnish 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 advisory circular (AC) 150/5345-53, Airport Lighting Equipment Certification Program, and Addendum that is in effect on the date of advertisement; and,

b. Produced by the manufacturer as listed in the Addendum cited above for the certified equipment part number.

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: Not Applicable

60-02 Samples, tests, and cited specifications. Unless otherwise designated, 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, quality assurance tests in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), Federal Specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids, will be made by and at the expense of the Engineer.

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

The Contractor shall employ a testing organization to perform all Contractor required Quality Control tests. The Contractor shall submit to the Engineer resumes on all testing organizations and individual

persons who will be performing the tests. The Engineer will determine if such persons are qualified. All the test data shall be reported to the Engineer after the results are known. A legible, handwritten copy of all test data shall be given to the Engineer daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the Engineer showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

All test data from the Contractor shall be furnished in **PDF** electronic format.

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, the Contractor 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 or 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 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 the Engineer 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 that 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. An Engineer's field office is not required.

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 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 or 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.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the 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, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

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

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's

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

END OF SECTION 60

Section 70 Legal Regulations and Responsibility to Public

70-01 Laws to be observed. The Contractor shall keep fully informed of all Federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all his or 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 the Contractor or the Contractor's employees.

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

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

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) is indicated as follows: There is no authorized work coordinated with the Owner.

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 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 Airport Improvement Program (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 request to the FAA. In consideration of the United States Government's (FAA's) agreement with the Owner, the Owner has included provisions in this contract pursuant to the requirements of Title 49 of the USC and the Rules and Regulations of the FAA that pertain to the work.

As required by the USC, the contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator, 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 USC, the rules and regulations implementing the USC, 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 or 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 or her health or safety.

70-07 Public convenience and safety. The Contractor shall control his or her operations and those of his or 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 or her own operations and those of his or her subcontractors and all suppliers in accordance with the subsection 40-05 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 80-04 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. Unless otherwise specified, barricades, warning signs, and markings for hazards that are in the air operations area (AOAs) shall be a maximum of 18 inches (0.5 m) high. Unless otherwise specified, barricades shall be spaced not more than 4 feet (1.2 m) apart. Barricades, warning signs, and markings shall be paid for under subsection 40-05.

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 on Uniform Traffic Control Devices.

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 advisory circular (AC) 150/5340-1, Standards for Airport Markings.

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stock piles, and the Contractor's 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.

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 that requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their removal is directed by the Engineer.

Open-flame type lights shall not be permitted.

70-09 Use of explosives. When the use of explosives is necessary for the execution 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 or 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 execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at his or 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 the Contractor 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 or her contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, his or her surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

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

70-13 Opening sections of the work to traffic. 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 or her own estimate of the difficulties involved in arranging the work to permit such beneficial occupancy by the Owner as described below:

Refer to the Construction Safety and Phasing Plan included as Appendix 1 to these Specifications.

Upon completion of any portion of the work listed above, such portion shall be accepted by the Owner in accordance with the subsection 50-14 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 or her expense.

The Contractor shall make his or 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.

Contractor shall be required to conform to safety standards contained AC 150/5370-2 (see Special Provisions).

Contractor shall refer to the approved Construction Safety Phasing Plan (CSPP) to identify barricade requirements and other safety requirements prior to opening up sections of work to traffic.

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 50-14 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 or 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 the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 Contractor's responsibility for utility service and facilities of others. As provided in the subsection 70-04 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 their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and the Owners are indicated as follows:

There are no known public or private utility services within the limits of the contract work.

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

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of his or her plan of operations. Such notification shall be in writing addressed to THE PERSON TO CONTACT as provided in this subsection and subsection 70-

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

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's PERSON TO CONTACT no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

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

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

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the 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 their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his or her surety.

70-15.1 FAA facilities and cable runs. Does not apply.

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

70-17 Personal liability of public officials. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, his or 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 stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or his or her surety, or both, such overpayment as may be sustained, or by failure on the part of the

Contractor to fulfill his or 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. The Contractor 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.

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

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in the subsection 40-04 titled EXTRA WORK of Section 40 and the subsection 90-05 titled PAYMENT FOR EXTRA WORK of Section 90. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with the subsection 80-07 titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Section 80.

END OF SECTION 70

Section 80 Execution and Progress

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

The Contractor shall provide copies of all subcontracts to the Engineer. The Contractor shall perform, with his organization, an amount of work equal to at least **51** percent of the total contract cost.

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

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

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their 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 their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

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 or her operations and the operations of his or her subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct his or her operations within an AOA of the airport, the work shall be coordinated with airport operations (through the Engineer) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the Engineer and until the necessary temporary marking and associated lighting is in place as provided in the subsection 70-08 titled BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS of Section 70.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until the satisfactory conditions are provided. The following 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:

Refer to the Construction Safety and Phasing Plan included as Appendix 1 to these Specifications

Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction (see Special Provisions).

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

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

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

No deviation or modifications may be made to the approved CSPP unless approved in writing by the Owner or Engineer.

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

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

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

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

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall 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, the Contractor 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 Owner shall have the authority to suspend the work wholly, or in part, for such period or periods as the Owner may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the execution 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 Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the 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 or 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 Owner, 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. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and

provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 Determination and extension of contract time. The number of calendar 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:

a. CONTRACT TIME based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his or 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 or 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 six (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 Owner 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 50-15 titled FINAL ACCEPTANCE of Section 50.

(5) The Contractor will be allowed one (1) week in which to file a written protest setting forth his or 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 20-05 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 Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

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

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

If the Contractor finds it impossible for reasons beyond his or her control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this subsection, the Contractor may, at any time prior to the expiration of the contract time as extended, make a written request to the Owner for an extension of time setting forth the reasons which the Contractor believes will justify the granting of his or her request. Requests for extension of time on calendar day projects, caused by inclement weather, shall be supported with National Weather Bureau data showing the actual amount of inclement weather exceeded what could normally be expected during the contract period. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the supporting documentation justify the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Owner may extend the time for completion by a change order that adjusts the contract time or completion date. 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 80-07 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 or her surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Refer to Division V, Item A-100 Special Provisions for Airport Construction for time schedules and liquidated damages.

80-09 Default and termination of contract. The Contractor shall be considered in default of his or 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 and/or materials to assure completion of work in accordance with the terms of the contract, or

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

d. Discontinues the execution of the work, or

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

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

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

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

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

Should the Engineer consider the Contractor in default of the contract for any reason above, the Engineer 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 execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the 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 execution of war or in the interest of national defense.

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

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

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

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

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the Engineer prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate his or her work in such a manner as to ensure safety and a minimum of hindrance to flight operations. All Contractor equipment and material stockpiles shall be stored a minimum or **500** feet from the centerline of an active runway. No equipment will be allowed to park within the approach area of an active runway at any time. No equipment shall be within **500** feet of an active runway at any time.

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 or 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 meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the 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, underdrains, 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 inch.

The term “ton” will mean the short ton consisting of 2,000 lb (907 km) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designed 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 for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

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 (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts or ASTM D633 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 (kg) or hundredweight (km).

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

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 90-05 titled PAYMENT FOR EXTRA 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 gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Scales 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 1/2% 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% 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 km) 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%.

In the event inspection reveals the scales have been underweighing (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 execution thereof, subject to the provisions of the subsection 70-18 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 40-02 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 or 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 40-03 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 the amount of such costs.

90-05 Payment for extra work. Extra work, performed in accordance with the subsection 40-04 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.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the Engineer, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with the subsection 90-07 titled PAYMENT FOR MATERIALS ON HAND of this section. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

The Owner may hold retainage from prime Contractors and provide for prompt and regular incremental acceptances of portions of the prime contract, pay retainage to prime Contractors based on these acceptances, and require a contract clause obligating the prime Contractor to pay all retainage owed to the subcontractor for satisfactory completion of the accepted work within 30 days after the Owner's payment to the prime Contractor. If Option 3 is selected, the percent withheld may not exceed 10%. And if Option 3 is selected, insert the following clause and specify amounts where indicated:

The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. The Owner must ensure prompt and full payment of retainage from the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

From the total of the amount determined to be payable on a partial payment, 5 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 90-08 titled PAYMENT OF WITHHELD FUNDS of this section. The balance 95% of the amount payable, less all previous

payments, shall be certified for payment. Should the Contractor exercise his or her option, as provided in the subsection 90-08 titled PAYMENT OF WITHHELD FUNDS of this section, no such percent retainage shall be deducted.

When at least 95% of the work has been completed, the Engineer shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done.

The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the 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 90-09 titled ACCEPTANCE AND FINAL PAYMENT of this section.

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

90-07 Payment for materials on hand. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

a. The material has been stored or stockpiled in a manner acceptable to the 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 any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of his or 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, if an Owner withholds retainage in accordance with the methods described in subsection 90-06 PARTIAL PAYMENTS, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

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

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

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

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

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of the subsection 50-15 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 the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the 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 50-16 titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Section 50.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, and after the Engineer's receipt of the project closeout documentation required in subsection 90-11 Project Closeout, 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 50-16 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.

90-10 Construction warranty.

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

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

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of:

(1) The Contractor's failure to conform to contract requirements; or

(2) Any defect of equipment, material, workmanship, or design furnished by the Contractor.

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

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

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

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

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

90-11 Project closeout. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the Engineer approves the Contractor's final submittal. The Contractor shall:

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

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

c. Complete final cleanup in accordance with subsection 40-08, FINAL CLEANUP.

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

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

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

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

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

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

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

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

END OF SECTION 90

Section 100 Contractor Quality Control Program

100-01 General. When the specification requires a Contractor Quality Control Program, 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 here 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, their 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 and accepted 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.

Paving projects over $500,000 shall have a Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Contractor, subcontractors, testing laboratories, and Owner's representative at start of construction. The workshop shall address QC and QA requirements of the project specifications. The Contractor shall coordinate with the Airport and the Engineer on time and location of the QC/QA workshop.

100-02 Description of program.

a. General description. The Contractor shall establish a Quality Control Program to perform quality control inspection and testing of 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 that shall be reviewed and approved 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 and approval at least **10** calendar days before the **start of construction** The Contractor's Quality Control Plan and Quality Control testing laboratory must be approved in writing by the Engineer prior to the Notice to Proceed (NTP).

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

a. Quality control organization

b. Project progress schedule

c. Submittals schedule

d. Inspection requirements

e. Quality control testing plan

f. Documentation of quality control activities

g. 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 is deemed necessary to adequately control all production and/or construction processes required by this contract.

100-03 Quality control organization. The Contractor 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 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 used for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the 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, as a minimum, consist of the following 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 five (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 one of the following requirements:

(1) Professional Engineer with one (1) year of airport paving experience.

(2) Engineer-in-training with two (2) years of airport paving experience.

(3) An individual with three (3) years of highway and/or airport paving experience, 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 five (5) years of highway and/or airport paving experience.

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 two (2) hours after being notified of a problem.

b. Quality control technicians. A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be either Engineers, engineering technicians, or experienced craftsman 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 two (2) 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 subsection 100-06.

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

(3) Performance of density tests for the Engineer when required by the technical specifications.

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), Program Evaluation and Review Technique (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 (for example, mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:

a. Specification item number

b. Item description

c. Description of submittal

d. Specification paragraph requiring submittal

e. Scheduled date of submittal

100-06 Inspection 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 subsection 100-07.

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 used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The Quality Control Program shall detail how these and other quality control functions will be accomplished and used.

b. During field operations, quality control test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and used.

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 (for example, P-401)

b. Item description (for example, Plant Mix Bituminous Pavements)

c. Test type (for example, gradation, grade, asphalt content)

d. Test standard (for example, ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)

e. Test frequency (for example, as required by technical specifications or minimum frequency when requirements are not stated)

f. Responsibility (for example, plant technician)

g. Control requirements (for example, target, permissible deviations)

The testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. 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 subsection 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 inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the 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. 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) Review of quality control tests

(7) 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 that 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

(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 use statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

100-10 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 here 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.

100-11 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 or her authorized representative to the Contractor or his or 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 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 105 Mobilization

Refer to Technical Specifications, Item A-105

END OF SECTION 105

Section 110 Method of Estimating Percentage of Material Within Specification Limits (PWL)

Deleted.

NOT APPLICABLE TO THIS PROJECT.

DIVISION IV

Special Provisions for Airport Construction

SEE DIVISION V
SECTION A-100 SPECIAL PROVISIONS FOR AIRPORT CONSTRUCTION

DIVISION V

Technical Specifications

DIVISION V

ADDITIONAL TECHNICAL SPECIFICATIONS

(Non-FAA Specifications)

Section A-100, Miscellaneous Provisions for Airport Construction

100-1 Overview. This Section provides for construction safety in an Airport environment; limitations on construction operations; minimum requirements for construction management and scheduling; and site specific information pertaining to potential impacts on construction activities. Unless otherwise noted, all costs associated with related work shall be included in the Contract pay item for Airfield Safety and Traffic Control.

100-2 Construction Safety and Phasing Plan (CSPP). The Contractor shall comply with the Project specific CSPP included as *Appendix 1* at the end of the Project Specifications. Included as part of the requirements of the CSPP is the Safety Plan Compliance Document (SPCD) that must be completed, by the Contractor, and submitted for approval before Notice to Proceed with Construction is given.

100-3 Construction and Submittal Schedule. A construction schedule shall be submitted to the Engineer by the Contractor within ten (10) working days of the Notice of Award of contract. The schedule shall be presented before the preconstruction meeting and once accepted, updated and presented for each weekly Project construction meeting. A County-approved schedule will be required prior to issuing a Notice to Proceed with construction.

The Construction Schedule shall be a Critical Path Method type. Schedule shall indicate complete sequence of each construction activity, indicating a time bar for each major category or unit of work to be performed. Work shall be properly sequenced and indicate work being fully completed within the scheduled time of completion or substantial completion at the County's desecration.

Format of construction progress schedule shall be horizontal bar chart type with separate bar representing each major category of work. Arrangement of major work categories shall be reflective of the Project bid schedule items.

Schedule shall be coordinated by the primary Contractor, with all other Contractors, subcontractors and material suppliers prior to submission. Primary Contractor shall automatically update schedule for each weekly construction meeting or whenever there is a significant change in progress, whether in a particular phase or total job progress.

The Submittal schedule shall incorporate Construction Management Plan listed submittals, contractor provided product data, and material sample submissions. Schedule shall indicate preparation time, approval time, resubmissions, fabrications, delivery dates and installation time.

100-4 Lines and Grades. The Contractor shall provide construction and layout staking for the Engineer to review and confirm prior to work being started. The Engineer will be given 48 hours' notice of pavement marking and electrical facility layout so it may be checked.

100-5 Record Drawings. The Contractor shall maintain Record Drawings of all work continuously as the job progresses. A separate set of prints, for this purpose only, shall be kept at the job site at all times. It shall be required that these Drawings be up to date and be reviewed by the field inspector at the time each progress bill is submitted. All deviations from the Project Drawings, exact locations and sizes of all utilities, mechanical and electrical lines, equipment details, and all stub outs and connections for future expansion shall be incorporated. Documentation of Record Drawings shall be included in other items of work and no separate payment will be made.

100-6 Material Testing and Retesting. All Quality Control testing shall be performed by the Contractor; all acceptance testing will be performed by the Engineer as necessary. The Quality Control Testing shall include but is not limited to

1. Compaction testing for soils, aggregates, and pavements prior to acceptance testing of cores by Engineer. **The Contractor is allotted one acceptance test per area per material per lot.** In the event the acceptance tests do not pass and the Engineer is required to retest the area, the cost for each retest shall be borne by the Contractor.

2. All Hot Mix Asphalt and Portland cement concrete mix designs and other conformance testing required in the technical specifications.
   All prequalification testing required by the technical specifications and as described in the Construction Management Plan.

100-7 Schedule of Values. Refer to the Instructions to Bidders in Division I of these Specifications.

100-8 Time Limitations. The overall time of completion for the project is 57 working days, if both Base Bid and Bid Alternate 1 are awarded. Should the time schedule for any phase or element of this project not be met, liquidated damages will be assessed. Contract time is divided as follows:

A. Mobilization. Notice to Proceed with Mobilization will be given shortly after award of Contract. All work included in Mobilization shall be completed within 15 working days. No work shall be conducted that in any way restricts Airport operations.

B. Construction. Notice to Proceed with construction will be issued at the County's discretion after completion of Mobilization. All work included in the Base Bid of the Construction Element shall be completed within 30 working days. If Bid Alternate No.1 is awarded, an additional 12 working days will be added to the construction time. (Only the pavement shown on the Plans may be closed during each phase of construction.)

100-9 Liquidated Damages. If the approved time limitation for any phase of work not be met, liquidated damages of $1,500.00 per calendar day will be assessed. The County, at its own discretion, may allow additional time for delays caused by phasing requirements contained herein or by factors beyond the Contractor's control**.**

100-10 Barricades. The County shall provide twenty-five, 8-foot long, low profile barricades as detailed on the Plans. The Contractor shall supply additional barricades and delineators as necessary. Lighting for barricades will be provided as indicated on the plans and approved by the County. All costs associated with this item shall be included in price for Airfield Safety and Traffic Control. Additional new low profile barricades and solar-powered red flashers purchased by the Contractor for its work on this project shall be turned over to the Airport at completion of the project.

100-11 Radio Communication with Airport Traffic. All traffic on the Airport, including aircraft and motor vehicles, are uncontrolled. The Contractor shall have on-site at all times an Air Band VHF Transceiver, which receives and transmits on a **frequency of 122.800.** Two-way radio communication shall be monitored at all times when working or traveling within the Airport perimeter. The Contractor shall be required to monitor communications during construction hours.

100-12 Access and Security.

A. Contractor Access. Contractor access to the work area shall be via the access route indicated on the Plans. Haul routes on Airport property shall be approved by the Airport. All access routes and haul roads shall be kept clean and free of debris. Dust control shall be maintained. Where haul

routes cross active taxiways or aprons, temporary stop signs shall be provided by the Contractor as shown on the Plans.

B. Access Security Control.

1. The Contractor shall be responsible for maintaining Airport security at all gates designated for his use. Gates must be closed and locked or manned by the Contractor's personnel to ensure no unauthorized access to the air operations area.
2. All access gates shall be kept clear of equipment and material.

100-13 Work Hour Limitations. With the exception of the specified night work, the Airport's normal work hours are from 7:00 a.m. to 4:00 p.m., Pacific Time, Monday through Friday, excluding holidays. All work performed outside of this schedule shall be coordinated and approved in advance by the Engineer. The Contractor will be charged for work performed outside of this schedule that requires inspection or observation by the Engineer or Airport staff. The rate for Airport personnel is $125.00 per hour including expenses. The rate for Engineer is $177.00 per hour.

100-14 Construction Water. The source of construction water for the Project shall be coordinated by the Contractor. The Contractor shall pay water and meter fees; and make all necessary arrangements with appropriate local utility to secure construction water for the duration of the Contract. No direct payment will be made for this work. The Contractor shall include all costs associated with construction water in the price of the work.

100-15 STORM WATER DISCHARGE PERMIT (Construction NPDES).

A. Construction activity under this Project will be subject to requirements of the State Water Resources Control Board (SWRCB), Division of Water Quality Order No. 2010-0014-DWG, National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) No. CAS000002, Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities. The Permit requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared by the Contractor and implemented during construction of this Project.

B. The Contractor shall comply with all terms and conditions of this Permit for the duration of permit coverage. The Contractor shall be held solely responsible for any sanctions, fines, penalties, or other actions taken against the County as a result of the Contractor's failure to meet the terms and conditions.

C. The County will submit to the SWRCB the initial Permit Registration Documents (PRD) in accordance with requirements of the CGP for the discharge of storm water from the site during the construction of the Project. Prior to commencing work, the Contractor's Qualified SWPPP Developer (QSD) shall review the SWPPP and make any modifications required. Upon commencing work, the Contractor shall be responsible for managing the SWPPP for the duration of the Project, including revisions and updating the SWPPP via SMARTS (Storm water Multi-Application and Report Tracking System) online database as necessary and as approved by the County.

D. The Contractor's QSD shall be in charge of the SWPPP until coverage under the permit is terminated. A paper copy of the SWPPP shall be kept on file at the construction site for the duration of the Project. The SWPPP shall be implemented and Best Management Practices (BMPs) monitored by the Contractor's Qualified SWPPP Practitioner (QSP) for the duration of permit coverage.

E. Post construction monitoring responsibility shall be transferred to County upon completion of the Project and final acceptance by the Engineer. The final Project inspection shall include verification of SWPPP compliance.

The Best Management Practices (BMP) and Best Available Technology (BAT) measures called for in these Bid Documents and shown on the Plans shall be considered as minimum requirements. The Contractor shall comply with all BMP and BAT provisions in the Contract, and shall implement additional and ongoing BMP and/or BAT measures as deemed necessary to comply with the SWPPP.

Payment for the BMPs called for on the Plans will be made under applicable pay items. The cost of SWPPP management, including revisions, all required monitoring, and meeting all reporting requirements as specified by the PRD and CGP shall be included in the lump sum item for SWPPP Preparation, Management, and Monitoring**.** The Contractor shall be responsible for all electronic submittals required.

If the County requires additional work beyond what is shown on the Plans in order to comply with the SWPPP, the Contractor will be paid for such work based on an increase to existing erosion control quantities or by new work addressed by change order.

METHOD OF MEASUREMENT

100-2.1 Airfield Safety and Traffic Control will be measured as a lump sum item.

100-2.2 SWPPP Preparation, Management, and Monitoring will be measured as a lump sum item.

BASIS OF PAYMENT

100-3.1 Airfield Safety and Traffic Control will be paid for at the Contract lump sum price. This price shall include full compensation for all labor, materials, tools, equipment, and incidentals necessary to complete the work as specified and requirements shown on the Plans.

100-3.2 SWPPP Preparation, Management, and Monitoring will be paid for at the Contract lump sum price. This price shall include full compensation for all labor, materials, tools, equipment, and incidentals necessary to complete the work as specified and requirements shown on the Plans.

Payment will be made under:

Item A-100-3.1	Airfield Safety and Traffic Control – per lump sum
Item A-100-3.2	SWPPP Preparation, Management, and Monitoring – per lump sum

END OF ITEM A-100

Item A-105, Mobilization

DESCRIPTION

105-1.1 General. Mobilization shall consist of preparatory work and operations, including, but not limited to, attending preconstruction meeting; preparing Project schedules; coordination; submittal documents, including submittal of SCPD; those actions necessary for the movement of personnel, equipment, supplies, traffic control devices, and incidentals to the Project site; establishing all facilities necessary for work on the Project; and for all other work and operations that must be performed or costs incurred prior to beginning work on the various Contract items on the Project site as well as removing temporary facilities from the site and cleaning at the completion of the Project.

105-1.2 Posted Notices. Prior to commencement of construction activities the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-1.3 Submittals. All materials and equipment used to construct this item shall be submitted to the Project Engineer for approval prior to ordering the equipment. Any material ordered prior to completion of the review for that material is at the Contractor's risk.

The data submitted shall be sufficient, in the opinion of the Project Engineer, to determine compliance with the Drawings and Contract Documents. Submittals consisting of marked catalog sheets or Shop Drawings shall be provided in a clear, precise, thorough, and legible manner. Original catalog sheets are preferred, but good quality, legible photocopies are also acceptable. Submitted documents shall boldly and clearly mark, using arrows or circles with highlighting, pertinent products or models applicable to this project. Additionally, all optional equipment shall be similarly identified. Any deviations or substitutions from the Specifications shall be identified, in writing, at the time of the submittal. Submittals can be made as hardcopies or electronically submitted as a Portable Document Format (pdf) file. The Project Engineer reserves the right to reject any and all equipment, materials or procedures, which, in the Project Engineer's opinion, do not meet the system design and the standards and codes specified.

The Contractor is solely responsible for delays in the Project resulting directly or indirectly from late submissions or resubmission of submittals. Any submittals received after the completion of the Mobilization Phase may be subject to a charge of $150 per hour of review.

For items listed under 'A.' below – the Contractor shall provide the submittals at least five (5) working days prior to the pre-construction meeting. Issuance of a Notice to Proceed is dependent on the timelines and the proper level of detail of these submittals.

A. General Requirements
Key Personnel, their roles and responsibilities, emergency telephone numbers, addresses, Project Construction Schedule (CPM), Safety Plan Compliance Document (SPCD).

Manufacturer's catalogs (or excerpts thereof) and affidavits of compliance with the contract documents shall be submitted for all materials to be used on the project. Alternate products may be approved by the Engineer upon submittal of the following information and subject to the acceptance of the FAA.

The Engineer will not consider an alternate product that does not have adequate demonstrated experience and meet all performance requirements of this specification.

Contractor shall allow a minimum of ten (10) working days for evaluation of requests for substitution or deviation from the Contract Documents.

METHOD OF MEASUREMENT

105-2.1 Mobilization will be measured as a lump sum item.

BASIS OF PAYMENT

105-3.1 Payment for Mobilization.

A. When the monthly partial payment estimate of the amount earned, not including the amount earned for Mobilization, is 5 percent or more of the original Contract amount, 50 percent of the Contract item price for Mobilization will be included in the estimate for payment.

B. When the monthly partial payment estimate of the amount earned, not including the amount earned for Mobilization, is 10 percent or more of the original Contract amount, the total amount earned for Mobilization shall be 75 percent of the Contract item price for Mobilization and said amount will be included in the estimate for payment.

C. When the monthly partial payment estimate of the amount earned, not including the amount earned for Mobilization, is 20 percent or more of the original Contract amount, the total amount earned for Mobilization shall be 95 percent of the Contract item price for Mobilization and said amount will be included in the estimate for payment.

D. When the monthly partial payment estimate of the amount earned, not including the amount earned for Mobilization, is 50 percent or more of the original Contract amount, the total amount earned for Mobilization shall be 100 percent of the Contract item price for Mobilization and said amount will be included in the estimate for payment.

The Contract lump sum price paid for Mobilization shall include full compensation for all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in Mobilization/Demobilization as specified herein.

Payments made for Mobilization will be excluded from consideration in determining compensation under changed quantities.

Payment will be made under:

Item A-105-3.1 Mobilization – per lump sum

END OF ITEM A-105

Item A-300 Crack Routing and Sealing, Full Depth Corner Break Repair, and Partial Depth Joint Spall Repair

DESCRIPTION

300-1.1 General. This item shall consist of providing crack routing and sealing, existing joint sealant removal, full depth PCC slab removal, full depth repair for PCC corner break, and partial depth repair for PCC joint spalls.

MATERIALS

300-2.1 Crack Sealant. Crack sealing materials shall meet the requirements of ASTM D 6690, Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements. See Item P-605 Joint Sealants for Concrete Pavements. The Contractor shall provide submittals for prequalification of all materials used in this item. No separate payment will be made for prequalification tests.

Each lot or batch of sealing compound shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, and the safe heating temperature and shall be accompanied by the manufacturer's certification stating that the compound meets the requirements of this Specification.

Do not place sealant unless the ambient temperature is at least 40°F (4°C) and rising and the concrete pavement temperature shall be equal to or greater than 50°F (10°C) at the time of installation of the poured joint sealing material.

300-2.2 Concrete. See P-610, Structural Portland Cement Concrete.

CONSTRUCTION METHODS

300-3.1 Crack Routing and Sealing. Cracks shall be routered to provide clean, stable edges to be sealed. All cracks in the existing concrete as indicated on the PLANS shall be blown clean with a high-pressure air nozzle and a pre-emergent herbicide applied. The application of the sealant shall be completed before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F and rising at the time of application of the poured joint sealing material

300-3.2 Full Depth Repair – Corner Break. The Contractor shall follow the following steps to repair full depth corner breaks.

1. Mark the limits of the area to be repaired. For corner breaks the repair area should be square.
2. Make a full-depth saw cut along the constructed joints at least 2 feet (0.6 m) beyond the limits of the break and make saw cuts perpendicular to the constructed joints from these points until they intersect. See Figure A-4.
3. If dowels or tie bars are present along any edges, either of the following options is acceptable:

a. If dowels or tie bars will be exposed and saved, saw edges full depth just beyond the end of the dowels or tie bars. Carefully saw joints on the joint line to within 1 inch (2.5 cm) of the depth of the dowel or tie bar. Use light 30 pound (14 kg) or less jackhammers or other approved equipment to carefully break up and remove the narrow strips of concrete along the doweled edges.

b. If dowel or tie bars are cut and replaced, make a full depth saw cut along the constructed joint cutting the dowels and tie bars.

4. Take care to prevent damage to remaining dowels, tie bars, or concrete.
5. Use light weight equipment, i.e., jackhammers less than 30 pounds (14 kg), hand tools, etc., to remove the remaining damaged PCC pavement. Work from inside the saw cut toward the edge of the slab of the area being removed to prevent damage to the pavement remaining.
6. Remove by hand all loose material and vacuum to minimize any disturbance to the subgrade or base materials.
7. Restore subgrade or base material if required.
8. Install deformed tie-bars in each face of the parent panel by drilling horizontal holes into the face and using an epoxy bonding agent.
9. If existing dowel bars have been cut and removed, install new dowel bars of the type and size of the existing dowel bars in the joint that parallels the direction of traffic. On aprons and areas where traffic may be oblique to joints, install dowels in both joint faces.
10. Install dowels by drilling and epoxying into the PCC pavement at least 3 inches (8 cm) from the location of the existing dowels which were cut off. Space dowel bars at least 3 inches (8 cm) from the edge of the repair area and at least one bar spacing apart at corners of intersecting joints.
11. Oil the exposed ends of dowel bars prior to backfilling the repair area with concrete.
12. Install nonabsorbent board or other approved material within the limits of the joint seal reservoir (Step 1). The nonabsorbent board will be a standard ½ inch (13 mm) asphalt impregnated fiber-board or other approved material. For joints wider than ½ inch (13 mm), adjust the width of the nonabsorbent board to fit the joint width.
13. Fill the repair area with concrete and consolidate with a vibrator. Concrete should meet the requirements of P-501 or State DOT specifications for pavements.
14. Finish the surface to match existing pavement.
15. Spray with curing compound per ASTM C309.
16. Remove the nonabsorbent board (Step 2) and place joint sealant per ASTM D6690 and manufacturer's requirements (Step 3).
17. Do not allow traffic until the patch has cured.
18. Completely clean the work area before opening the pavement to aircraft traffic.

300-3.3 Partial Depth Repair – Joint Spall. The Contractor shall follow the following steps to repair partial depth joint spalls.

1. Mark the limits of the area of spall repair.

2. Make vertical saw cuts a minimum of 2 inches (5 cm) in depth and approximately 3 inches (8 cm) beyond the limit of the spall area. Saw cuts should be straight lines defining the perimeter of the spall repair area. The spall repair area should be a rectangular area.
3. When there are adjacent spall repair areas within a slab, the minimum distance between spall repair areas is 1-1/2 feet (45 cm). When spall repair areas are less than 1-1/2 feet (45 cm) apart, combine the spall repair areas into one repair. When the spall repair areas are greater than 1-1/2 feet (45 cm) apart, maintain separate spall repair areas.
4. Chip out and remove all unsound concrete and at least ½ inch (13 mm) of visually sound concrete between the saw cut and the joint, or crack.
5. Use light weight equipment, i.e., jackhammers less than 30 pounds (14 kg), hand tools, etc., to remove the damaged PCC pavement. Work from inside the saw cut toward the joint to prevent damage to the remaining pavement.
6. Remove all loose material by hand and vacuum to minimize any damage to the remaining pavement.
7. Clean the spall repair area with high-pressure water.
8. Place nonabsorbent board or other approved material (Step 1) in the existing joint and form a new joint sealant reservoir adjacent to the repair area. Maintain the joint through the full depth of the spall repair and prevent a bond between the patch and the adjacent slab.
9. Prepare the surface of the joint repair area in accordance with the manufacturer's recommendations for the material used for the repair. This may require treating the surface of the spall repair with a neat cement grout or a liquid bonding agent.
10. Place the patch.
11. Finish the patch to match the texture of the adjacent pavement.
12. Cure the patch in accordance with the material manufacturer's recommendations.
13. Remove the nonabsorbent board or other approved material from the joint (Step 2) and place joint sealant per ASTM D6690 (Step 3).
14. Protect the patch from traffic until the material has set.
15. Thoroughly clean the work area before opening the pavement to aircraft traffic.

METHOD OF MEASUREMENT

300-4.1 Crack Routing and Sealing shall be measured by linear foot.

300-4.2 Full Depth Corner Break Repair and Partial Depth Joint Spall Repair shall be measured by the square yard.

BASIS OF PAYMENT

300-5.1 Crack Routing and Sealing shall be paid at the Contract price per linear foot. The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

300-5.2 Full Depth Corner Break Repair shall be paid at the Contract price per square yard. The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

300-5.3 Partial Depth Joint Spall Repair shall be paid for at the Contract unit price per square yard. The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item A-300-5.1	Crack Routing and Sealing – per linear foot
Item A-300-5.2	Full Depth Corner Break Repair – per square yard
Item A-300-5.3	Partial Depth Joint Spall Repair – per square yard

TESTING REQUIREMENTS

ASTM D 412	Tests for Rubber Properties in Tension
ASTM D 1644	Tests for Nonvolatile Content of Varnishes

MATERIAL REQUIREMENTS

ASTM D 1854	Jet-Fuel-Resistant Concrete Joint Sealer, Hot-Poured Elastic Type
ASTM D 2628	Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements
ASTM D 3405	Joint Sealants, Hot-Poured, for Concrete and Asphalt Pavements
ASTM D 3406	Joint Sealants, Hot-Poured, Elastomeric-Type, for Portland Cement Concrete Pavements
ASTM D 3569	Joint Sealant, Hot-Poured, Elastometric, Jet-Fuel-Resistant Type, for Portland Cement Concrete Pavements
ASTM D 3581	Joint Sealant, Hot-Poured, Jet-Fuel-Resistant Type, for Portland Cement Concrete and Tar-Concrete Pavements
ASTM D 5249	Standard Specification for Backer Material for Use with Cold and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D 5893	Standard Specification for Cold applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland cement Concrete Pavements
ASTM D 6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
Fed. Spec.	Sealing Compounds, Two Component, Elastomeric, SS-S-200 Polymer Type, Jet-Fuel Resistant, Cold Applied

END OF ITEM A-300

DIVISION V

TECHNICAL SPECIFICATIONS

Item P-101 Surface Preparation

DESCRIPTION

101-1.1 This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable drawings.

EQUIPMENT

101-2.1 All equipment shall be specified here and in the following paragraphs or approved by the Engineer. The equipment shall not cause damage to the pavement to remain in place.

CONSTRUCTION

101-3.1 Removal of existing pavement.

A. Concrete pavement. The existing concrete pavement to be removed shall be freed from the pavement to remain by sawing through the complete depth of the slab one foot inside the perimeter of the final removal limits or outside the dowels, whichever is greater when the limits of removal are located on the joints. The pavement between the perimeter of the pavement removal and the saw cut shall be carefully broken up and removed using hand-held jackhammers, weighing 30 pounds or less, or other light-duty equipment which will not cause distress in the pavement which is to remain in place. The Contractor shall have the option of sawing through the dowels at the joint, removing the pavement and installing new dowels. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, then the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods suitable to the Engineer which will not cause distress in the pavement which is to remain in place. If the material is to be wasted on the airport site, it shall be reduced to a maximum size designated by the Engineer. The Contractor's removal operation shall not cause damage to cables, utility ducts, pipelines, or drainage structures under the pavement. Concrete slabs that are damaged by under breaking shall be removed. Any damage shall be repaired at the Contractor's expense.

B. Asphalt concrete pavement. - *Not Used.*

101-3.2 Preparation of joints and cracks. – *Not Used.*

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101-3.3 Removal of paint and rubber. - *Not Used.*

101-3.4 Concrete spall or failed asphaltic concrete pavement repair.

A. Repair of concrete spalls. – *Not Used.*

B. Asphaltic concrete pavement repair. – *Not Used.*

101-3.5 Cold milling. Milling shall be performed with a power-operated milling machine or grinder, capable of producing a finished surface that provides a smooth surface meeting desired grades. The milling machine or grinder shall operate without tearing or gouging the under laying surface. The milling machine or grinder shall be equipped with automatic grade and slope controls. All millings shall be removed and disposed off Airport property, unless otherwise specified. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material that was removed with new material at no additional cost to the Owner.

A. Profiling, grade correction, or surface correction. The milling machine shall have a minimum width of 7 feet and it shall be equipped with electronic grade control devices that will cut the surface to the grade and tolerances specified. The machine shall cut vertical edges. A positive method of dust control shall be provided. The machine shall have the ability to remove the millings or cuttings from the pavement and load them into a truck**.**

B. Clean-up. The Contractor shall sweep the milled surface daily and immediately after the milling until all residual aggregate and fines are removed from the pavement surface. Prior to paving, the Contractor shall wet down the milled pavement and thoroughly sweep and/or blow the surface to remove any remaining aggregate or fines.

101-3.6. Preparation of asphalt pavement surfaces. - *Not Used.*

101-3.7 Maintenance. The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the Engineer. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

101-3.8 Preparation of Joints in Rigid Pavement.

101-3.8.1 Removal of Existing Joint Sealant. All existing joint sealants will be removed by plowing or use of hand tools. Any remaining sealant and or debris will be removed by use of wire brushes or other tools as necessary. Resaw joints removing no more than 1/16 inch from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry. Allow sufficient time to dry out joints prior to sealing.

101-3.8.2 Cleaning prior to sealing. Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Clean joints by sandblasting, or other method approved by the Engineer, on each joint face with nozzle held at an angle and not more than three inches from face. Following sandblasting, clean joints with air free of oil and water. Joint surfaces will be surface-dry prior to installation of sealant.

101-3.9 Preparation of Cracks in Flexible Pavement. – *Not Used.*

METHOD OF MEASUREMENT

101-4.1 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment.

101-4.2 Cold Milling. The unit of measure for cold milling shall be **1-**inch of milling per square yard. The location and average depth of the cold milling shall be determined and agreed to by the Engineer and the Contractor prior to beginning the work. If the initial cut doesn't correct the condition and surface correction is required, the Contractor shall re-mill the area and will be paid only once for the total depth of milling.

101-4.3 Removal of Existing Joint Sealant. The unit of measurement for removal of existing sealant shall be the number of linear feet removed, resawn, and cleaned by the contractor.

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item P 101-5.1	Pavement Removal – per the square yard (SY)
Item P 101-5.2	Cold Milling – per the square yard (SY)
Item P-101-5.3	Removal of Existing Joint Sealant – per the linear foot (LF)

MATERIAL REQUIREMENTS

ASTM D6690	Standard Specification For Joint And Crack Sealants, Hot Applied, For Concrete And Asphalt Pavements

END OF ITEM P-101

Item P-152 Excavation, Subgrade, and Embankment

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

A. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature**.**

152-1.3 Unsuitable excavation. Any material containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material, suitable for topsoil may be used on the embankment slope when approved by the Engineer.

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.

The suitability of material to be placed in embankments shall be subject to approval by the Engineer. All unsuitable material shall be disposed of in waste areas shown on the plans. All waste areas shall be graded to allow positive drainage of the area and of adjacent areas. The surface elevation of waste areas shall not extend above the surface elevation of adjacent usable areas of the airport, unless specified on the plans or approved by the Engineer.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the Engineer notified per subsection 70-20. 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.

Those areas outside of the limits of the pavement areas where the top layer of soil material has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches, to loosen and pulverize the soil.

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, at his or her expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the Engineer has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the Engineer. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

When the volume of the excavation exceeds that required to construct the embankments to the grades indicated, the excess shall be used to grade the areas of ultimate development or disposed as directed by the Engineer. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

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. **Selective grading.** When selective grading is indicated on the plans, the more suitable material designated by the Engineer shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas so that it can be measured for payment as specified in paragraph 152-3.3.

B. **Undercutting.** Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches below the subgrade or to the depth specified by the Engineer. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of off the airport. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard for **as extra work.** The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans.

C. **Overbreak.** Overbreak, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the Engineer. All overbreak shall be graded or removed by the Contractor and disposed of as directed by the Engineer. The Engineer shall determine if the displacement of such material was unavoidable and his or her decision shall be final. 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."

D. **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; for example, the utility unless otherwise shown on the plans. All existing foundations shall be excavated at least 2 feet below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the Engineer. All foundations thus excavated shall be backfilled with suitable material and compacted as specified.

E. **Compaction requirements.** The subgrade under areas to be paved shall be compacted to the depth and to the density as shown on the plans at the percent of the maximum density as determined by ASTM **698.** The material to be compacted shall be within ±2% of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils).

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in the top 6 inches of the subgrade. The finished grading operations, conforming to the typical cross-section, shall be completed and maintained at least 1,000 feet ahead of the paving operations or as directed by the Engineer.

All loose or protruding rocks on the back slopes of cuts shall be pried loose or otherwise removed to the slope finished grade line. 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.

Blasting shall not be allowed.

F. **Proof rolling.** After compaction is completed, the subgrade area shall be proof rolled with a 20 ton Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 100 psi in the presence of the Engineer. Apply a minimum of 80% coverage, or as specified by the Engineer, to all paved areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch or show permanent deformation greater than 1 inch shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications.

152-2.3 Borrow excavation. Borrow areas within the airport property are indicated on the plans. Borrow excavation shall be made only at these designated locations and within the horizontal and vertical limits as staked or as directed by the Engineer.

When borrow sources are outside the boundaries of the airport property, it shall be the Contractor's responsibility to locate and obtain the borrow sources, 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 borrow pits shall be opened up to expose the various strata of acceptable material to allow obtaining a uniform product. All unsuitable material shall be disposed of by the Contractor. 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 ditches; for temporary levee construction; or for any other type as designed or as shown on the plans. The work shall be performed in sequence with the other construction.

Intercepting ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas

or as directed by the Engineer. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of embankment area. Where an embankment is to be constructed to a height of 4 feet or less, all sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches and shall then be compacted as indicated in paragraph 152-2.6. When the height of fill is greater than 4 feet, sod not required to be removed shall be thoroughly disked and recompacted to the density of the surrounding ground before construction of embankment.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.6 Formation of embankments. Embankments shall be formed in successive horizontal layers of not more than 8 inches in loose depth for the full width of the cross-section, unless otherwise approved by the Engineer.

The layers shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the Engineer. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each layer shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. To achieve a uniform moisture content throughout the layer, the material shall be moistened or aerated as necessary. Samples of all embankment materials for testing, both before and after placement and compaction, will be taken for each **500 square yards.** Based on these tests, the Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

Rolling operations shall be continued until the embankment is compacted to not less than 95% of maximum density for noncohesive soils, and 90% of maximum density for cohesive soils as determined by ASTM **698.** Under all areas to be paved, the embankments shall be compacted to a depth of **8"** and to a density of not less than **95** percent of the maximum density as determined by ASTM **698.**

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory shall perform all density tests in the Engineer's presence and provide the test results upon completion to the Engineer for acceptance.

Compaction areas shall be kept separate, and no layer shall be covered by another layer until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each layer is placed. Layer placement shall begin in the deepest portion of the embankment fill. As placement progresses, the 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 by the Engineer and the finer material shall be used to fill the voids with 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 on the plans or 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 equipment by distribution of spalls and finer fragments of rock. The layer shall not be constructed above an elevation 4 feet below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in layers, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.7 Finishing and protection of subgrade. After the subgrade is substantially complete, the Contractor shall remove any soft or other unstable material over the full width of the subgrade that will not compact properly. All low areas, holes or depressions in the subgrade 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 protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes. All ruts or rough places that develop in the completed subgrade shall be graded 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. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

152-2.9 Tolerances. In those areas upon which a subbase or base course is to be placed, the top 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 feet from true grade as established by grade hubs. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials; reshaping; and recompacting.

On safety areas, intermediate and other designated areas, the surface shall be of such smoothness that it will not vary more than 0.10 feet 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 Topsoil. *Deleted.*

METHOD OF MEASUREMENT

152-3.1 The quantity of compacted embankment in-place to be paid for shall be the number of cubic yards measured in its final position.

BASIS OF PAYMENT

152-4.1 For embankment in place, payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-152-4.1	Subgrade Preparation and Backfill – per cubic yard

TESTING REQUIREMENTS

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)

ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)
ASTM D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

END OF ITEM P-152

Item P-153 Controlled Low-Strength Material (CLSM)

DESCRIPTION

153-1.1 This item shall consist of furnishing, transporting, and placing a controlled low-strength material (CLSM) as flowable backfill in trenches or at other locations shown on the plans or as directed by the Engineer.

MATERIALS

153-2.1 Materials.

A. Portland cement. Portland cement shall conform to the requirements of ASTM **C150** Type **II/V.** If for any reason, cement becomes partially set or contains lumps of caked cement, it shall be rejected. Cement salvaged from discarded or used bags shall not be used.

B. Fly ash. Fly ash shall conform to ASTM C618, Class C or F.

C. Fine aggregate (sand). Fine aggregate shall conform to the requirements of ASTM C33 except for aggregate gradation. Any aggregate gradation which produces performance characteristics of the CLSM specified here will be accepted, except as follows.

Sieve Size	Percent Passing by weight
3/4 inch	100
No. 200	0 - 12

D. Water. Water used in mixing shall be potable and free of oil, salt, acid, alkali, sugar, vegetable matter, or other substances injurious to the finished product.

MIX DESIGN

153-3.1 Proportions. The Contractor shall submit, to the Engineer, a mix design including the proportions and source of aggregate, fly ash, cement, water, and approved admixtures. No CLSM mixture shall be produced for payment until the Engineer has given written approval of the proportions. The proportions shall be prepared by a laboratory and shall remain in effect for the duration of the project. Laboratory costs are incidental to this item. The proportions shall establish a single percentage or weight for aggregate, fly ash, cement, water, and any admixtures proposed.

A. Compressive strength. CLSM shall be designed to achieve a 28-day compressive strength of 100 to 200 psi when tested in accordance with ASTM D4832. There should be no significant strength gain after 28 days.

B. Consistency. CLSM should be designed to achieve a consistency that will produce an approximate 8-inch diameter circular-type spread without segregation when tested by: (1) filling a 3-inch inside diameter by 6-inch length flow cylinder (non-absorbent pipe) (2) strike off of the flow cylinder and start of lift within five seconds of filling and (3) by steady upward pull, lift the cylinder in a time period of between two and four seconds. Adjustments of the material proportions should be made to achieve proper solid suspension and flowable characteristics, however the theoretical yield shall be maintained at one cubic yard for the given batch weights.

CONSTRUCTION METHODS

153-4.1 Placement.

A. Placement. CLSM may be placed by any reasonable means from a mixing unit into the space to be filled. Agitation is required during transportation and waiting time. Placement shall be performed so structures or pipes are not displaced from their final position and intrusion of CLSM into unwanted areas is avoided. The material shall be brought up uniformly to the fill line shown on the plans or as directed by the Engineer. Each placement of CLSM shall be as continuous an operation as possible. If CLSM is placed in more than one layer, the base layer shall be free of surface water and loose foreign material prior to placement of the next layer.

B. Limitations of placement. CLSM shall not be placed on frozen ground. Mixing and placing may begin when the air or ground temperature is at least 35°F and rising. At the time of placement, CLSM shall have a temperature of at least 40°F. Mixing and placement shall stop when the air temperature is 40°F and falling or when the anticipated air or ground temperature will be 35°F or less in the 24 hour period following proposed placement.

153-4.2 Curing and protection

A. Curing. The air in contact with the CLSM shall be maintained at temperatures above freezing for a minimum of 72 hours. If the CLSM is subjected to temperatures below 32°F, the material may be rejected by the Engineer if damage to the material is observed.

B. Protection. The CLSM shall not be subject to loads and shall remain undisturbed by construction activities for a period of 48 hours or until a compressive strength of 15 psi is obtained. The Contractor shall be responsible for providing evidence to the Engineer that the material has reached the desired strength. Acceptable evidence shall be based upon compressive tests made in accordance with paragraph 153-3.1a.

153-4.3 Acceptance. Acceptance of CLSM delivered and placed as shown on the plans or as directed by the Engineer shall be based upon mix design approval and batch tickets provided by the Contractor to confirm that the delivered material conforms to the mix design. The Contractor shall verify by additional testing, each 1,000 cubic yards of material used. Verification shall include confirmation of material proportions and tests of compressive strength to confirm that the material meets the original mix design and the requirements of CLSM as defined in this specification. Adjustments shall be made as necessary to the proportions and materials prior to further production.

METHOD OF MEASUREMENT

153-5.1 Measurement. There shall be no separate measurement for Controlled low-strength material and it shall be considered incidental to the subgrade compaction required under new PCC pavements.

BASIS OF PAYMENT

153-6.1 Payment. There is no separate payment for Accepted quantities of controlled low-strength material.

TESTING REQUIREMENTS

ASTM D4832	Standard Test Method for Preparation and Testing of Controlled Low-Strength Material (CLSM) Test Cylinders

MATERIAL REQUIREMENTS

ASTM C33	Standard Specification for Concrete Aggregates
ASTM C150	Standard Specification for Portland Cement
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C595	Standard Specification for Blended Hydraulic Cements

END OF ITEM P-153

Item P-209, Crushed Aggregate Base Course

DESCRIPTION

209-1.1 This item consists of a base course composed of crushed aggregate base constructed on a prepared course in accordance with these specifications and in conformity to the dimensions and typical cross-sections shown on the plans.

MATERIALS

209-2.1 Crushed aggregate base. Crushed aggregate shall consist of clean, sound, durable particles of crushed stone, crushed gravel, or crushed slag and shall be free from coatings of clay, silt, organic material, or other objectionable materials. Aggregates shall contain no clay lumps or balls. Fine aggregate passing the No. 4 sieve shall consist of fines from the coarse aggregate crushing operation. If necessary, fine aggregate may be added to produce the correct gradation. The fine aggregate shall be produced by crushing stone, gravel, or slag that meet the coarse aggregate requirements for wear and soundness.

The crushed slag shall be an air-cooled, blast furnace slag and shall have a unit weight of not less than 70 pounds per cubic foot when tested per ASTM C29.

The coarse aggregate portion, defined as the material retained on the No. 4 sieve, shall not have a loss of greater than 45% when tested per ASTM C131. The sodium sulfate soundness loss shall not exceed 12%, or the magnesium sulfate soundness loss shall not exceed 18%, after five cycles, when tested in accordance with ASTM C88. The aggregate shall contain no more than 15%, by weight, of flat, elongated, or flat and elongated particles per ASTM D4791. A flat particle is one having a ratio of width to thickness greater than 3; an elongated particle is one having a ratio of length to width greater than three (3). The aggregate shall have at least 90% by weight of particles with at least two fractured faces and 100% with at least one fractured face per ASTM D5821. The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

A. Sampling and testing for initial aggregate base requirements. Samples shall be taken by the Contractor in the presence of the Engineer. Material shall meet the requirements in paragraph 209-2.1 and 209-2.2. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

209-2.2 Gradation requirements. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation shall be well graded from coarse to fine as defined by ASTM D2487 and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa. The fraction of material passing the No. 200 sieve shall not exceed one-half the fraction passing the No. 40 sieve.

Requirements for Gradation of Aggregate Base

Sieve Size	Design Range Percentage by Weight	Contractor's Final Gradation	Job Control Grading Band Tolerances for Contractor's Final Gradation Percent
2 inch	100		0
1-1/2 inch	95-100		±5
1 inch	70-95		±8
3/4 inch	55-85		±8
No. 4	30-60		±8
No. 40	10-30		±5
No. 200	0-8		±3

The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.

A. Sampling and testing for gradation. Gradation tests shall be performed by the Engineer per ASTM C136 and sieve analysis on material passing the No. 200 sieve per ASTM C117. The Engineer shall take at least two aggregate base samples per lot to check the final gradation. Sampling shall be per ASTM D75. The lot will be consistent with the lot size used for density. The samples shall be taken from the in-place, un-compacted material in the presence of the Engineer. Sampling points and intervals will be designated by the Engineer.

CONSTRUCTION METHODS

209-3.1 Preparing underlying subgrade and/or subbase. The underlying subgrade and/or subbase shall be checked and accepted by the Engineer before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase in accordance with P-152, at the Contractor's expense, may be required by the Engineer if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

209-3.2 Production. The aggregate shall be uniformly blended and, when at a satisfactory moisture content per paragraph 209-3.4, the approved material may be transported directly to the spreading equipment.

209-3.3 Placing. The aggregate base material shall be placed on the prepared underlying subgrade and/or subbase and compacted in layers to the thickness shown on the plans. Work shall progress without

interruption. The material shall be deposited and spread in lanes in a uniform layer without segregation to such loose depth that, when compacted, the layer shall have the specified thickness. The aggregate base course shall be constructed in layers of uniform thickness of not less than 3 inches nor more than 6 inches of compacted thickness. The aggregate as spread shall be of uniform grading with no pockets of fine or coarse materials. The aggregate, unless otherwise permitted by the Engineer, shall not be spread more than 2,000 square yards in advance of the rolling. Any necessary sprinkling shall be kept within these limits. Care shall be taken to prevent cutting into the underlying layer during spreading. No material shall be placed in snow or on a soft, muddy, or frozen course. The aggregate base material shall be spread by spreader boxes or other approved devices. This equipment shall have positive thickness controls that spread the aggregate in the required amount to avoid or minimize the need for hand manipulation. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

When more than one layer is required, the construction procedure described herein shall apply similarly to each layer.

209-3.4 Compaction. Immediately after completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade. The moisture content of the material during placing operations shall be within ±2 percentage points of the optimum moisture content as determined by ASTM D6938.

209-3.5 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 if it does not exceed 2,400 square yards. A lot will consist of one-half day's production if a day's production consists of between 2,400 and 4,800 square yards. The Engineer shall perform all density tests**.**

Each lot shall be divided into two equal sublots. One test shall be made for each sublot and shall consist of the average of two random locations for density determination. Sampling locations will be determined by the Engineer on a random basis per ASTM D3665.

Each lot will be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens. The specimens shall be compacted and tested per ASTM 698. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the entire lot shall be reworked and/or recompacted and two additional random tests made at the Contractor's expense. This procedure shall be followed until the specified density is reached.

209-3.6 Surface tolerances. After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches, reshaped and recompacted to

grade. Until the required smoothness and accuracy are obtained and approved by the Engineer. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

A. Smoothness. The finished surface shall not vary more than 3/8 inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.

B. Accuracy. The grade and crown shall be measured on a 50-foot grid and shall be within +0 and -1/2 inch of the specified grade.

209-3.7 Thickness control. The thickness of the base course shall be within +0 and -1/2 inch of the specified thickness as determined by survey performed by the Contractor in the presence of the Engineer. Survey grades shall be taken at intervals representing no more than 300 square yards per test. Sampling locations will be determined by the Engineer per ASTM D3665. Where the thickness is deficient by more than 1/2 inch, the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches, adding new material of proper gradation, and the material shall be blended and recompacted to grade. Additional test holes may be required to identify the limits of deficient areas. The Contractor shall replace, at his expense, base material where depth tests have been taken.

209-3.8 Protection. Perform construction when the atmospheric temperature is above 35°F. When the temperature falls below 35°F, protect all completed areas by approved methods against detrimental effects of freezing. Correct completed areas damaged by freezing, rainfall, or other weather conditions to meet specified requirements. When the aggregates contain frozen materials or when the underlying course is frozen or wet, the construction shall be stopped. Hauling equipment may be routed over completed portions of the base course, provided no damage results. Equipment shall be routed over the full width of the base course to avoid rutting or uneven compaction. The Engineer will stop all hauling over completed or partially completed base course when, in the Engineer's opinion, such hauling is causing damage. Any damage to the base course shall be repaired by the Contractor at the Contractor's expense.

209-3.9 Maintenance. The Contractor shall maintain the base course in a satisfactory condition until the full pavement section is completed and accepted by the Engineer. The surface shall be kept clean and free from foreign material and properly drained at all times. Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact. Any base course that is not paved over prior to the onset of winter shall be retested to verify that it still complies with the requirements of this specification. Any area of base course that is damaged shall be reworked or replaced as necessary to comply with this specification.

Equipment used in the construction of an adjoining section may be routed over completed base course, if no damage results and 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

209-4.1 The quantity of crushed aggregate base course will be determined by measurement of the number of cubic yards of material actually constructed and accepted by the Engineer as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

209-5.1 Payment shall be made at the contract unit price per cubic yard for crushed aggregate base course. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-209-5.1	Crushed Aggregate Base Course - per cubic yard

TESTING REQUIREMENTS

ASTM C29	Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D422	Standard Test Method for Particle-Size Analysis of Soils
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3)
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3)
ASTM D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method

ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4718	Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

END OF ITEM P-209

Item P-605, Joint Sealants for Concrete Pavements

DESCRIPTION

605-1.1 This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints and cracks in rigid pavements.

MATERIALS

605-2.1 Joint sealants. Joint sealant materials shall meet the requirements of ASTM D6690 Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

605-2.2 Backer rod. The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant. The material shall have a water absorption of not more than 5% when tested in accordance with ASTM C509. The backer-rod material shall be 25% ± 5 % larger in diameter than the nominal width of the crack.

605-2.3 Backup materials. Provide backup material that is a compressible, nonshrinking, nonstaining, nonabsorbing material, nonreactive with the joint sealant. The material shall have a melting point at least 5°F greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The material shall have a water absorption of not more than 5% of the sample weight when tested in accordance with ASTM C509. The backup material shall be 25 ±5% larger in diameter than the nominal width of the crack.

605-2.4 Bond breaking tapes. Provide a bond breaking tape or separating material that is a flexible, nonshrinkable, nonabsorbing, nonstaining, and nonreacting adhesive-backed tape. The material shall have a melting point at least 5°F greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately 1/8 inch wider than the nominal width of the joint and shall not bond to the joint sealant.

CONSTRUCTION METHODS

605-3.1 Time of application. Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

605-3.2 Equipment. Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, **5 working** days prior to use on the project.

A. **Tractor-mounted routing tool**. Provide a routing tool, used for removing old sealant from the joints, of such shape and dimensions and so mounted on the tractor that it will not damage the sides of the joints. The tool shall be designed so that it can be adjusted to remove the old material to varying depths as required. The use of V-shaped tools or rotary impact routing devices will not be permitted. Hand-operated spindle routing devices may be used to clean and enlarge random cracks.

B. **Concrete saw.** Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified or for refacing joints or cleaning sawed joints where sandblasting does not provide a clean joint.

C. **Sandblasting equipment.** Sandblasting shall not be allowed.

D. **Waterblasting equipment.** Include with the waterblasting equipment a trailer-mounted water tank, pumps, high-pressure hose, wand with safety release cutoff control, nozzle, and auxiliary water resupply equipment. Provide water tank and auxiliary resupply equipment of sufficient capacity to permit continuous operations. The nozzle shall have an adjustable guide that will hold the nozzle aligned with the joint approximately one inch above the pavement surface. Adjust the height, angle of inclination and the size of the nozzle as necessary to obtain satisfactory results. A pressure gauge mounted at the pump shall show at all times the pressure in psi at which the equipment is operating.

E. **Hand tools.** Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces. Where spalled joint edges have not been repaired prior to any previous sealing, it may be necessary for the Contractor to employ other types of small tools for the repair work.

F. **Hot-poured sealing equipment.** The unit applicators used for heating and installing ASTM D6690 joint sealant materials shall be mobile and shall be equipped with a double-boiler, agitator-type kettle with an oil medium in the outer space for heat transfer; a direct-connected pressure-type extruding device with a nozzle shaped for inserting in the joint to be filled; positive temperature devices for controlling the temperature of the transfer oil and sealant; and a recording type thermometer for indicating the temperature of the sealant. The applicator unit shall be designed so that the sealant will circulate through the delivery hose and return to the inner kettle when not in use.

605-3.3 Preparation of joints.

A. **Sawing**. All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

B. **Sealing**. Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by tractor-mounted routing equipment **or** concrete saw **or** waterblaster as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of 1/2 inch from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

C. **Back-up material.** When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a back-up material to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backup material is placed at the specified depth and is not stretched or twisted during installation.

D. **Bond-breaking tape.** Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-breaker separating tape to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

605-3.4 Installation of sealants. Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the Engineer before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 1/4 inch ±1/16 inch below the pavement surface. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until authorized by the Contracting Officer. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

605-3.5 Inspection. The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

605-3.6 Clean-up. Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

METHOD OF MEASUREMENT

605-4.1 Joint sealing material shall be measured by the linear foot of sealant in place, completed, and accepted.

BASIS OF PAYMENT

605-5.1 Payment for joint sealing material shall be made at the contract unit price per linear foot. The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-605-5.1	Joint Sealing Filler - per linear foot

TESTING REQUIREMENTS

ASTM D412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
ASTM C509	Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
ASTM D1644	Standard Test Methods for Nonvolatile Content of Varnishes

MATERIAL REQUIREMENTS

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
ASTM D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5893	Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

END ITEM P-605

Item P-610 Structural Portland Cement Concrete

DESCRIPTION

610-1.1 This item shall consist of reinforced structural portland cement concrete (PCC), prepared and constructed in accordance with these specifications, at the locations and of the form and dimensions shown on the plans. This specification shall be used for all structural and miscellaneous concrete including signage bases.

MATERIALS

610-2.1 General. Only approved materials, conforming to the requirements of these specifications, shall be used in the work. Materials may be subject to inspection and tests at any time during their preparation or use. The source of all materials shall be approved by the Engineer before delivery or use in the work. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be stored and handled to ensure preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed in them.

The use of pit-run aggregates shall not be permitted unless the pit-run aggregate has been screened and washed, and all fine and coarse aggregates stored separately and kept clean. The mixing of different aggregates from different sources in one storage stockpile or alternating batches of different aggregates shall not be permitted.

A. **Reactivity.** Fine and Coarse aggregates to be used in all concrete shall be evaluated and tested by the Contractor for alkali-aggregate reactivity in accordance with both ASTM C1260 and C1567. Aggregate and mix proportion reactivity tests shall be performed for each project.

(1) Coarse and fine aggregate shall be tested separately in accordance with ASTM C1260. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.10% at 28 days (30 days from casting).

(2) Combined coarse and fine aggregate shall be tested in accordance with ASTM C1567, modified for combined aggregates, using the proposed mixture design proportions of aggregates, cementitious materials, and/or specific reactivity reducing chemicals. If lithium nitrate is proposed for use with or without supplementary cementitious materials, the aggregates shall be tested in accordance with Corps of Engineers (COE) CRD C662. If lithium nitrate admixture is used, it shall be nominal 30% ±0.5% weight lithium nitrate in water.

(3) If the expansion of the proposed combined materials test specimens, tested in accordance with ASTM C1567, modified for combined aggregates, or COE CRD C662, does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion of the proposed combined materials test specimens is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

610-2.2 Coarse aggregate. The coarse aggregate for concrete shall meet the requirements of ASTM C33. The Engineer may consider and reserve final approval of other State classification procedures addressing aggregate durability.

Coarse aggregate shall be well graded from coarse to fine and shall meet the following gradation shown in the table below when tested per ASTM C136.

Gradation For Coarse Aggregate

Sieve Designation (square openings)	Percentage by Weight Passing Sieves						
	2″	1-1/2″	1″	3/4″	1/2″	3/8″	No. 4
No. 4 to 3/4 in.			100	90-100		20-55	0-10

610-2.2.1 Aggregate susceptibility to durability (D) cracking. Aggregates that have a history of D-cracking shall not be used.

Coarse aggregate may be accepted from sources that have a 20 year service history for the same gradation to be supplied with no durability issues.

A. The Contractor shall submit a current certification that the aggregate does not have a history of D-cracking and that the aggregate meets the state specifications for use in PCC pavement for use on interstate highways. Certifications, tests and any history reports must be for the same gradation as being proposed for use on the project. Certifications which are not dated or which are over one (1) year old or which are for different gradations will not be accepted. Test results will only be accepted when tests were performed by a State Department of Transportation (DOT) materials laboratory or an accredited laboratory.

610-2.3 Fine aggregate. The fine aggregate for concrete shall meet the requirements of ASTM C33.

The fine aggregate shall be well graded from fine to coarse and shall meet the requirements of the table below when tested in accordance with ASTM C136:

Gradation For Fine Aggregate

Sieve Designation (square openings)	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, 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, if the deficiency does not exceed 5% and is remedied by the addition of pozzolanic or cementitious materials other than Portland cement, as specified in paragraph 610-2.6, 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/V.**

If aggregates are deemed innocuous when tested in accordance with paragraph 610-2.1.a.1 and accepted in accordance with paragraph 610-2.1.a.3, higher equivalent alkali content in the cement may be allowed if approved by the Engineer and FAA. If cement becomes partially set or contains lumps of caked cement, it shall be rejected. Cement salvaged from discarded or used bags shall not be used.

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 use of the cement is granted. All 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 fresh, clean and potable; free from injurious amounts of oils, acids, alkalies, salts, organic materials or other substances deleterious to concrete.

610-2.6 Admixtures and supplementary cementitious material. The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the Engineer may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the 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.

A. **Air-entraining admixtures**. Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entrainment agent and any water reducer admixture shall be compatible.

B. **Water-reducing admixtures**. Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

C. **Other chemical admixtures**. The use of set retarding, and set-accelerating admixtures shall be approved by the Engineer. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and set-accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

D. **Fly ash.** Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash for use in mitigating alkali-silica reactivity shall have a Calcium Oxide (CaO) content of less than 13%.

610-2.7 Premolded joint material. Premolded joint material for expansion joints shall meet the requirements of ASTM **D 1752**

610-2.8 Joint filler. The filler for joints shall meet the requirements of Item P-605, unless otherwise specified.

610-2.9 Steel reinforcement. Reinforcing shall consist of **Welded Steel Wire Fabric** conforming to the requirements of **ASTM A1064.**

610-2.10 Materials for curing concrete. Curing materials shall conform to White-pigmented Liquid Membrane-Forming Compound, Type 2, Class B, ASTM C309.

CONSTRUCTION METHODS

610-3.1 General. The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified here. All machinery and equipment used by the Contractor on the work, shall be of sufficient size to meet the requirements of the work. All work shall be subject to the inspection and approval of the Engineer.

610-3.2 Concrete composition. The concrete shall develop a compressive strength of **4,000** psi in 28 days as determined by test cylinders made in accordance with ASTM C31 and tested in accordance with

ASTM C39. The concrete shall contain not less than 470 pounds of cement per cubic yard. The concrete shall contain 5% of entrained air, ±1%, as determined by ASTM C231 and shall have a slump of not more than 4 inches as determined by ASTM C143.

610-3.3 Acceptance sampling and testing. Concrete for each structure will be accepted on the basis of the compressive strength specified in paragraph 610-3.2. The concrete shall be sampled in accordance with ASTM C172. Concrete cylindrical compressive strength specimens shall be made in accordance with ASTM C31 and tested in accordance with ASTM C39. The Contractor shall cure and store the test specimens under such conditions as directed by the Engineer. The Engineer will make the actual tests on the specimens at no expense to the Contractor.

610-3.4 Qualifications for concrete testing service. Perform concrete testing by an approved laboratory and inspection service experienced in sampling and testing concrete. Testing agency must meet the requirements of ASTM C1077 or ASTM E329.

610-3.5 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 the required, exact weight of aggregates is obtained.

610-3.6 Consistency. The consistency of the concrete shall be determined by the slump test specified in ASTM C143.

610-3.7 Mixing. Concrete may be mixed at the construction site, at a central point, or wholly or in part in truck mixers. The concrete shall be mixed and delivered in accordance with the requirements of ASTM C94.

610-3.8 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 expense.

Retempering of concrete by adding water or any other material shall not be permitted.

The rate of delivery of concrete to the job shall be sufficient to allow uninterrupted placement of the concrete.

610-3.9 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 shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy.

The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms

shall be constructed so they can be removed without injuring the concrete or concrete surface. The forms shall not be removed until at least 30 hours after concrete placement for 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 the concrete has developed at least 60% of the design strength.

610-3.10 Placing reinforcement. All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concrete placement. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

610-3.11 Embedded items. Before placing concrete, all embedded items shall be firmly and securely fastened in place as indicated. All embedded items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The concrete shall be spaded and consolidated around and against embedded items. The embedding of wood shall not be allowed.

610-3.12 Placing concrete. All concrete shall be placed during daylight hours, unless otherwise approved. The concrete shall not be placed until the depth and condition of foundations, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved by the Engineer. Concrete shall be placed as soon as practical after mixing, but in no case later than one (1) hour after water has been added to the mix. The method and manner of placing shall avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. The concrete shall not be dropped from a height of more than 5 feet. Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to procedures which cause segregation. Concrete shall be placed on clean, damp surfaces, free from running water, or on a properly consolidated soil foundation.

610-3.13 Vibration. Vibration shall follow the guidelines in American Concrete Institute (ACI) Committee 309, Guide for Consolidation of Concrete. Where bars meeting ASTM A775 or A934 are used, the vibrators shall be equipped with rubber or non-metallic vibrator heads. Furnish a spare, working, vibrator on the job site whenever concrete is placed. Consolidate concrete slabs greater than 4 inches in depth with high frequency mechanical vibrating equipment supplemented by hand spading and tamping. Consolidate concrete slabs 4 inches or less in depth by wood tampers, spading, and settling with a heavy leveling straightedge. Operate internal vibrators with vibratory element submerged in the concrete, with a minimum frequency of not less than 6000 cycles per minute when submerged. Do not use vibrators to transport the concrete in the forms. Penetrate the previously placed lift with the vibrator when more than one lift is required. Use external vibrators on the exterior surface of the forms when internal vibrators do not provide adequate consolidation of the concrete. Vibrators shall be manipulated to work the concrete thoroughly around the reinforcement and embedded fixtures and into corners and angles of the forms. The vibration at any point shall be of sufficient duration to accomplish compaction but shall not be prolonged to where segregation occurs. Concrete deposited under water shall be carefully placed in a compact mass in its final position by means of a tremie or other approved method and shall not be disturbed after placement.

610-3.14 Construction joints. If the placement 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, provisions shall be made for grooves, steps, reinforcing bars or other devices as specified. 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.

610-3.15 Expansion joints. Expansion joints shall be constructed at such points and dimensions as indicated on the drawings. The premolded filler shall be cut to the same shape as the surfaces being joined. The filler shall be fixed firmly against the surface of the concrete already in place so that it will not be displaced when concrete is deposited against it.

610-3.16 Defective work. Any defective work discovered after the forms have been removed, which in the opinion of the Engineer cannot be repaired satisfactorily, shall be immediately removed and replaced at the expense of the Contractor. Defective work shall include deficient dimensions, or bulged, uneven, or honeycomb on the surface of the concrete.

610-3.17 Surface finish. All exposed concrete surfaces shall be true, smooth, and free from open or rough areas, depressions, or projections. All concrete horizontal plane surfaces shall be brought flush to the proper elevation with the finished top surface struck-off with a straightedge and floated. 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.

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 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 finishing machine.

610-3.18 Curing and protection. All concrete shall be properly cured and protected by the Contractor. The concrete shall be protected from the weather, flowing water, and from defacement of any nature during the project. The concrete shall be cured by covering with an approved material as soon as it has sufficiently hardened. Water-absorptive coverings shall be thoroughly saturated when placed and kept saturated for at least three (3) days following concrete placement. 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 air currents. Wooden forms shall be kept wet at all times until removed to prevent opening of joints and drying out of the concrete. Traffic shall not be allowed on concrete surfaces for seven (7) days after the concrete has been placed.

610-3.19 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.

610-3.20 Cold weather placing. 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 to place the concrete at temperatures between 50°F and 100°F.

Calcium chloride may be incorporated in the mixing water when directed by the Engineer. Not more than 2 pounds of Type 1 nor more than 1.6 pounds of Type 2 shall be added per bag of cement. 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.

610-3.21 Hot weather placing. Concrete shall be properly placed and finished with procedures previously submitted. The concrete-placing temperature shall not exceed **120**°F when measured in accordance with ASTM C1064. Cooling of the mixing water and aggregates, or both, may be required to obtain an adequate placing temperature. A retarder meeting the requirements of paragraph 610-2.6 may be used to facilitate placing and finishing. Steel forms and reinforcement shall be cooled prior to concrete placement when steel temperatures are greater than 120°F. Conveying and placing equipment shall be

cooled if necessary to maintain proper concrete-placing temperature. Submit the proposed materials and methods for review and approval by the Engineer, if concrete is to be placed under hot weather conditions.

610-3.22 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 start until after final curing and shall be done only when the concrete is completely dry. The cleaning and filling shall be done with proper equipment to obtain a neat looking joint free from excess filler.

METHOD OF MEASUREMENT

610-4.1 Portland cement concrete shall be measured by the number of cubic yards of concrete complete in place and accepted. In computing the yardage of concrete for payment, the dimensions used shall be those shown on the plans or ordered by the Engineer. No measurements or other allowances shall be made for forms, falsework, cofferdams, pumping, bracing, expansion joints, or finishing of the concrete. No deductions in yardage shall be made for the volumes of reinforcing steel or embedded items.

610-4.2 Reinforcing steel shall not be measured separately, but shall be included with the measurement and payment of the Structural PCC Concrete.

BASIS OF PAYMENT

610-5.1 Payment shall be made at the contract unit price per cubic yard for structural Portland cement concrete. Reinforcing steel shall be incidental and included in the price for Structureal PCC Concrete. These prices shall be full compensation for furnishing all materials and for all preparation, delivery and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-610-5.1	Structural Portland Cement Concrete, per cubic yard

TESTING REQUIREMENTS

ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C1017	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1064	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete

ASTM C1077 Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation

ASTM C1260 Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)

ASTM C1567 Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregates (Accelerated Mortar-Bar Method)

ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

U.S. Army Corps of Engineers (USACE) Concrete Research Division (CRD) C662 Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials, Lithium Nitrate Admixture and Aggregate (Accelerated Mortar-Bar Method)

MATERIAL REQUIREMENTS

ASTM A184 Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement

ASTM A185 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM A704 Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement

ASTM A706 Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

ASTM A775 Standard Specification for Epoxy-Coated Steel Reinforcing Bars

ASTM A934 Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars

ASTM A1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

ASTM C33 Standard Specification for Concrete Aggregates

ASTM C94 Standard Specification for Ready-Mixed Concrete

ASTM C150 Standard Specification for Portland Cement

ASTM C171 Standard Specification for Sheet Materials for Curing Concrete

ASTM C172 Standard Practice for Sampling Freshly Mixed Concrete

ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete

ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

ASTM C494 Standard Specification for Chemical Admixtures for Concrete

ASTM C595 Standard Specification for Blended Hydraulic Cements

ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 309R	Guide for Consolidation of Concrete

END OF ITEM P-610

APPENDICES

Appendix 1

Construction Safety and Phasing Plan

BLYTHE MUNICIPAL AIRPORT

COUNTY OF RIVERSIDE

CONSTRUCTION SAFETY AND PHASING PLAN

PCC Apron Rehabilitation

AIP No. 3-06-0025-010-2016

Prepared by

Mead & Hunt

July 1, 2016

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1. OVERVIEW

This document presents the Construction Safety and Phasing Plan (CSPP) for the PCC Apron Rehabilitation at the Blythe Municipal Airport (Airport), being performed under Federal Aviation Administration (FAA) Airport Improvement Program (AIP) Grant No. 3-06-0025-010-2016. The anticipated construction duration is August 2016 to October2016. Specifically, the Project scope includes the following elements:

1.1 BASE BID

1.1.1 PCC Apron – Rehabilitation of eastern area including:

(a) Removal of existing PCC slabs requiring replacement and associated tie-down anchors.

(b) PCC Slab replacement.

(c) Spall repair of the PCC slabs in the associated Project area.

(d) Crack repair in various PCC slabs in the Project area.

(e) Profile grinding of PCC slab edges.

(f) Sawcutting and cleaning of all joints in the Project area, then sealing with new joint sealant.

1.2 BID ALTERNATE

1.1.2 PCC Apron - additional rehabilitation of area adjacent to eastern area, including:

(a) Removal of existing PCC slabs requiring replacement and associated tie-down anchors.

(b) PCC Slab replacement.

(c) Spall repair of the PCC slabs in the associated Project area.

(d) Crack repair in various PCC slabs in the Project area.

(e) Profile grinding of PCC slab edges.

(f) Sawcutting and cleaning of all joints in the Project area, then sealing with new joint sealant.

The objective of this CSPP is to provide a general outline of the construction safety and phasing provisions for working in or near the Air Operations Area (AOA) contained in the Contract Documents (Project Plans and Specifications), and to explain how those provisions will be implemented during construction.

2. PURPOSE

The CSPP provides single source procedural information for all key Project personnel to use during construction, and defines the specific responsibilities of the Airport Operator (County of Riverside), the Contractor, Airport users/tenants, and the Project Engineer. The FAA's Safety and Phasing Plan Checklist was utilized in the preparation of this CSPP, which includes (but is not limited to) provisions for Airport safety and security, operational limitations on construction activities, identifying potential hazards and the impacts those hazards may have on airfield and construction activities, and construction phasing requirements to minimize impact to airfield operations.

Requirements for maintaining operational safety during construction are in conformance with FAA Advisory Circular 150/5370-2F, "*Operational Safety on Airports During Construction*." The Project specific safety and

phasing provisions for the Project elements are shown on Plan Sheet G-081 as well as detailed in the Project Specifications. Copies of the Plan Sheets are attached to this report as *Attachment A*.

3. CONSTRUCTION SAFETY AND PHASING RESPONSIBILITIES

3.1 AIRPORT OPERATOR

The Airport Operator is responsible for operational safety on the Airport at all times. The County of Riverside (County) is the Airport Operator. The County will issue Notice to Airmen (NOTAMS) whenever construction activities occur in the AOA. County staff will provide oversight of all construction activities and coordinate those activities with the Airport users (pilots), and Airport tenants. The County will hold weekly construction progress and safety meetings. During those meetings, operational safety will be reviewed and an action plan will be developed as needed to address any discrepancies in safety that need to be corrected. The County will require the Contractor to submit a Safety Plan Compliance Document (SPCD) which details the Contractor's compliance with the CSPP. County approval of the SPCD will be required prior to issuance of the Notice to Proceed with Construction.

3.2 CONSTRUCTION CONTRACTOR

The Contractor will be determined by a competitive bidding process. The Contractor's responsibilities for safety and phasing are detailed and defined in the Contract Documents. The Contractor will be required to attend weekly progress and safety meetings and to correct any discrepancies found on the Project. The Contractor is required to submit a completed SPCD to the County for approval by the County before the Notice to Proceed for Construction can be issued. A sample SPCD is included as *Attachment B.*

3.3 AIRPORT USERS AND TENANTS

The County will notify Airport users and tenants of all pending construction activities that impact them and advise the users and tenants of planned pavement closures and other activities in the AOA that will affect aircraft/Airport operations. Users and tenants will be permitted to attend weekly construction progress and safety meetings when appropriate.

3.4 PROJECT ENGINEER

As part of the Project construction management, observation, and quality assurance process the Project Engineer will monitor construction safety on a daily basis, utilizing the "*Construction Project Daily Safety Inspection Checklist*" (see *Attachment C)* to ensure an appropriate level of priority is given to safety. Any discrepancies in safety will be immediately brought to the attention of the Contractor and County for corrective action implementation.

4. CONSTRUCTION SAFETY AND PHASING

4.1. COORDINATION

4.1.1 DESIGN PROGRESS MEETINGS.

Predesign conferences are held during the Project development and design (Preliminary, 30%, 90, and Final Bid Documents) phases. These meetings are held to help avoid possible conflicts between construction activities and the operation of the Airport. The CSPP will be formally submitted

to the FAA for approval when the Project design is 90% complete and County comments can be incorporated.

4.1.2 PREBID CONFERENCE.

A prebid conference will be held to help clarify and explain construction methods, procedures, and safety measures required by the Contract. The prebid conference will be held a minimum of 10 (ten) days prior to the bid opening date.

4.1.3 PRECONSTRUCTION CONFERENCE.

A preconstruction conference will be held as soon as practicable after the Contract has been awarded and before issuance of the Notice to Proceed. The preconstruction conference participants should include, but not be limited to, the County, Project Engineer, Airport management, testing laboratory representative, Contractor and subcontractor(s), Contractor's project superintendent, Contractor's project clerk, Airport users, utility companies, emergency personnel, federal, state, or local agencies affected by the proposed construction, and FAA representative. The Contractor shall submit copies of the proposed construction schedule five (5) working days prior to the preconstruction meeting for the Project Engineer to distribute. The schedule will be presented by the Contractor at the preconstruction meeting.

4.1.4 BADGING REQUIREMENTS. Not Applicable.

4.1.5 CONTRACTOR PROGRESS MEETINGS.

Contractor progress meetings will be held weekly for the duration of construction. Operational safety will be a standing agenda item for discussion during progress meetings throughout the Project. The Contractor's project superintendent, project manager, and project foreman are required to attend meetings. Date, time, and location of the progress meetings will be determined at the preconstruction meeting.

4.1.6 SCOPE OR SCHEDULE CHANGES.

Scope or schedule changes for the Project may necessitate revisions to the CSPP and require review and approval by the County and the FAA.

4.1.7 FAA AIR TRAFFIC ORGANIZATION (ATO) COORDINATION. Not Applicable.

4.2. PHASING AND TIME LIMITATIONS

The Project has been divided into two Elements: 1) Mobilization and 2) Construction. The Construction Element has been divided into Work Areas to separate the phases and define the sequence of the work associated with the Project. A separate Notice to Proceed will be issued for Mobilization Element and the Construction Element. The Notice to Proceed for the Construction Element will not be issued until the Mobilization Element is complete and the SPCD is approved by the FAA. The work efforts and affected airfield areas within the AOA are detailed below. The Mobilization Element will be completed as follows depending on the contract award:

Contract Award	Mobilization Element	Construction Element	Total
Base Bid	15 Working Days	30 Working Days	45 Working Days
Bid Alternate 1	0	12 Working Days	12 Working Days
Base Bid + Bid Alternate Combined	15 Working Days	42 Working Days	57 Working Days

If the Contractor fails to meet any of these time limitations, liquidated damages will be assessed as described in the Project Specifications.

4.2.1 ELEMENT 1 – MOBILIZATION.

(15 Working Days – No additional days for Bid Alternate 1)

During this Element of the Project, no work will be conducted that in any way restricts Airport operations. Mobilization work will include, but not be limited to, the following:

(a) Processing of required submittals, including the Contractor's work schedule.

(b) Preparation and submission of the SPCD.

(c) All prequalification testing, review, and approval.

(d) Mix design preparation, review, and approval.

(e) Airfield Safety Devices delivered/prepared at the site (construction flags, low profile barricades, airport radios).

(f) Construction materials and equipment delivered to site, as applicable.

(g) Survey layout (optional).

(h) Underground utility investigation and potholing. (Controlled access.)

(i) All miscellaneous Mobilization efforts required to commence construction.

All preliminary work required to pursue construction to completion will be finalized during the Mobilization Element to minimize delays during construction.

4.2.2 ELEMENT 2 – CONSTRUCTION, BASE BID plus BID ALTERNATE 1.

4.2.2.1 Award of Contract for Construction

(a) Base Bid Only (30 working days) – Project Work Areas 1 & 1A.

The Base Bid work affects the PCC apron, object free area of Taxiway A, access to the aviation fuel tanks, and hangars to the east and south of the PCC apron.

(b) Bid Alternate 1 (additional 12 working days) – Project Work Areas 2 & 2A.

The Bid Alternate 1 work affects the PCC apron, object free area of Taxiway A, access to the aviation fuel tanks, and hangars to the east and south of the PCC apron.

4.2.2.2 Critical Airfield Areas for Construction Element.

(a) Taxiway Object Free Area (TOFA). Work cannot be completed within the TOFA while the Taxiway is open unless the TOFA dimension is temporarily adjusted for use by smaller aircraft only, temporary offset taxiway markings are used, or construction proceeds with the following restrictions: appropriate notices to airmen (NOTAM's) have been issued by the County, barricading and lighting provisions have been implemented by the Contractor, and flaggers and wingwalkers are utilized to maintain a 5-foot separation between aircraft and all equipment of materials.

(1) Taxiway A. TOFA is 131 feet wide centered on the Taxiway centerline.

4.2.2.3 Definition of Work Areas and Phasing Limitations.

The following phasing restrictions apply:

(a) The pavement rehabilitation improvements within the Project work area will be completed within 30 consecutive working days of the overall working days allotted for the Base Bid Construction. This area is included as Project Work Area 1 on the proposed Project phasing plans. For the Bid Alternate work (Project Work Area 2) an additional 12 working days will be allotted if the Bid Alternate is awarded.

(b) The Project Work Areas of both the Base Bid (Project Work Area 1) and the Bid Alternate 1 (Project Work Area 2) work include the rehabilitation of pavements, which are also within the Taxiway Object Free Area of Taxiway A. This area is broken into two sub-Phases 1A & 2A to define the area of work to be performed under a "pull-back" basis. The pavement rehabilitation within the limits of the TOFAs and Taxiway A will be completed within the work days allotted.

(c) During the pavement improvements Airport security will be maintained at all times.

(d) Prior to reopening airfield pavements to traffic, the areas must be safety area compliant per Section 4.17 "Protection of Runway and Taxiway Critical Areas."

4.2.2.4 Work Areas 1 & 1A Summary (Base Bid)

(a) Scope of Work – PCC Apron Rehabilitation South of Taxiway A TSA.

(b) Area closed to aircraft operations – East side of the PCC Apron

(c) Duration of closure – Up to thirty (30) consecutive working days.

(d) Alternate taxi route – Not Applicable.

(e) Emergency access routes – Not affected during construction.

(f) Construction staging area – Material and equipment storage on the west / southwest corner of the PCC apron.

(g) Construction access and haul route – Via Hobsonway, and the airport access gates adjacent to the vacant terminal building and adjacent to the general aviation office.

(h) Impacts to NAVAIDs – NAVAIDS not affected by construction.

(i) Lighting and marking changes – Airfield lighting not affected during construction.

(j) Required hazard marking and lighting – Low profile barricades and delineators placed around the Project Work Area south of Taxiway A TSA, west edge of the work area, and south edge of the work area. Low profile barricades and delineators shall also be

placed around the Contractor Staging Area located on the southwest side of the PCC Apron.

(k) Lead times for required notification – 72 hours.

4.2.2.5 Work Areas 2 & 2A Summary (Bid Alternate 1)

(a) Scope of Work – PCC Apron Improvements within TSA of Taxiway A.

(b) Area closed to aircraft operations – Eastside of the PCC Apron.

(c) Duration of closure – Up to twelve (12) consecutive working days.

(d) Alternate taxi route – Not applicable.

(e) Emergency access routes – Not affected during construction.

(f) Construction staging area – Material and equipment storage on the west / southwest corner of the PCC apron.

(g) Construction access and haul route – Via Hobsonway, and the airport access gates adjacent to the vacant terminal building and adjacent to the general aviation office.

(h) Impacts to NAVAIDs – NAVAIDS not affected during construction.

(i) Lighting and marking changes – Airfield lighting not affected during construction.

(j) Required hazard marking and lighting – Low profile barricades and delineators placed around the Contractor Staging Area located on the southwest side of the PCC Apron.

(k) Lead times for required notification – 72 hours.

4.2.3 CONSTRUCTION SAFETY AND PHASING PLAN SHEETS.

Drawings specifically indicating operational safety procedures and methods in affected areas have been developed for each construction work area. These Drawings are included in the Contract Drawing Bid Package (Plan Sheet G-081).

4.3. AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION

4.3.1 RUNWAYS.

Runways 8-26 and 17-35 will be unaffected by construction.

4.3.2 TAXIWAYS AND TAXILANES.

Refer to Section 4.2. “Phasing and Time Limitations” for work area specific taxiway closures and alternate taxi routes. Only Taxiway A, adjacent to the PCC Apron will be affected.

4.4. NAVAID PROTECTION

4.4.1 MALSR.

Not Applicable.

4.4.2 VOR/DME.

The VOR will remain operational for the entire duration of the Project.

4.4.3 PAPI.

Not Applicable.

4.4.4 VASI.

Runways 26, 17, and 35 VASI will be unaffected by construction.

4.5. CONTRACTOR ACCESS

4.5.1 LOCATION OF STOCKPILED CONSTRUCTION MATERIALS AND EQUIPMENT.

Location of stockpiled materials and equipment storage will be in the staging areas. Stockpiling materials and equipment outside the staging areas will require prior approval from the County and will be subjected to additional limitations depending on the height(s). Stockpiled material will meet the requirements of Section 4.6, "Wildlife Management*"* to prevent the stockpile location(s) from becoming wildlife attractants.

4.5.2 VEHICLE AND PEDESTRIAN OPERATIONS.

4.5.2.1 Construction Site Parking.

Employees' vehicles will be parked outside the security fence as designated on the plans. No employee vehicles will be allowed inside the AOA limits.

4.5.2.2 Construction Equipment Parking.

All service and construction vehicles and/or equipment will be parked in the staging area when not in use, and will be positioned within the area designated on the plans. See Section 4.17, "Protection of Runway and Taxiway Critical Areas" for further parking restrictions within safety areas and object free areas. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment will not be allowed to within project work limits. If it is necessary to leave specialized equipment within the project work area at night, the County must approve the request and the equipment will be lighted in accordance with Section 4.18, "Other Limitations on Construction."

4.5.2.3 Access and Haul Roads.

The Contractor will be restricted to use the Project security gates and haul routes shown on the drawings. Phase specific haul routes are shown on the Project Layout Plan. Right-of-way will be given to all emergency vehicles and aircraft sharing the haul routes with the Contractor.

4.5.2.4 Marking and Lighting of Vehicles.

Only marked Contractor-owned/operated vehicles required for the proper execution of the work will be allowed in the work area. Motor vehicles will be equipped with an omni-directional amber flashing light, head lights, tail lights, and flashers that will be used between sunset and sunrise or when visibility is low. Vehicles within the airfield environment will display company identification markings on both sides of the vehicle. Non-motorized equipment will have reflective devices displayed on the front, back, and sides. Vehicles and equipment will have an FAA orange and white checkered flag, 3 feet by 3 feet minimum, attached to a pole mounted on the rear bumper, and visible from 300 feet at all angles during daytime hours. All supervisory and survey personnel operating without an County escort within the airfield environment but outside the work area, will have a company vehicle with an amber flashing light mounted on the roof of the cab and identifying markings visible from 300 feet mounted on both sides of the vehicle.

4.5.2.5 Training Requirement for Vehicle Drivers.

The Contractor will designate construction personnel (maximum of 5) to receive training on movement around the Airport during the construction Project. The designated trained personnel will be responsible for escorting non-trained construction personnel who will be working within the airfield environment. The designated construction personnel will attend an airfield orientation/driver training class conducted by the County as part of the requirements to obtain authorization to operate on the airfield. The Contractor will contact the Airport Operations Manager, a minimum of 48 hours in advance to schedule training class for the select construction personnel. No training classes will be available on Saturdays or Sundays. The approximate duration of the training class is one hour (Airfield Orientation/Driver).

4.5.2.6 Situational Awareness.

Yield the right-of-way to moving aircraft (whether under tow or their own power) and pedestrians. While driving or working within the airfield environment, personnel will not wear any devices in or on their ears, other than those used to protect hearing or communicate company business. Yield right-of-way to emergency vehicles displaying rotating beacons (other than amber) and/or using sirens, and other audible emergency signals. In the event of an emergency, be prepared to move workers, vehicles, and equipment immediately at the direction of the County.

Texting while driving anywhere on airport property is strictly prohibited.

4.5.2.7 Two-Way Radio Communication Procedures.

All radio communications with the Common Traffic Advisory Frequency (CTAF) will be performed by Airport Personnel / County personnel and/or a trained Contractor-provided construction safety coordinator. All activities within aircraft movement areas will require two-way radio communication. The Contractor's on-site foremen/lead/superintendents will carry (or have immediately available) a VHF aviation radio. Additionally, if a sweeper is being used in the movement area and a flagger is not coordinating his/her movements, the sweeper operator will also carry a radio. Frequencies that will be used by County personnel are:

- CTAF – 122.800

4.5.2.8 Airport Security.

In areas of work activities, the Contractor will maintain security against unauthorized access to the airfield area through the security gate(s). Gates will be locked or manned at all times. The gate will be closed and locked when not in use. Where the Contractor's lock is used for access through County gates, the lock will be marked to identify the ownership of the Contractor. Place the lock in series with existing locks. Failure to adhere to these requirements will result in the Contractor's lock being removed by the County.

4.6. WILDLIFE MANAGEMENT

Procedures to maintain existing wildlife mitigation devices, limit wildlife attractants, and notify City of wildlife encounters.

4.6.1 TRASH.

Receptacles will be provided by the Contractor and equipped with metal, canvas, or plastic covers. Food scraps or other trash may not be disposed on the ground and must be collected and placed in the covered receptacles so not to attract wildlife.

4.6.2 STANDING WATER.

Staging areas, stockpile areas, and the work area will be graded to drain to avoid attracting wildlife.

4.6.3 TALL GRASS AND SEEDS.

The use of low quality seed mixtures that contain seeds of plants (such as clover) that attract wildlife will not be used. Grass and weeds will be managed, or cut if necessary, within work areas to avoid attracting wildlife habitation.

4.6.4 FENCING AND GATES.

Fences and/or gates that are unmaintained and/or left open and unattended permit unwanted wildlife to enter inside the Airport perimeter fence. Refer to 4.5.2.8, "*Airport Security*" for requirements of maintaining the secured area of the Airport. Contractor personnel will immediately notify the County if any unwanted wildlife is observed inside the Airport perimeter fence.

4.6.5 DISRUPTION OF EXISTING WILDLIFE HABITAT.

Not applicable for this Project.

4.7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT AND DUST CONTROL

The Contractor will be required to ensure the airfield environment is kept continuously free of construction debris, equipment and/or materials that might endanger or be ingested by an aircraft. Contractor will take extreme care to ensure that no work-related debris or other loose items are allowed to be blown by wind or aircraft engine blast. The Contractor will be responsible for any resulting damage to aircraft engines and/or other property arising from failure to secure and/or protect debris, tools, supplies, or other loose items. Following the requirements described herein will help eliminate the potential for FOD. In areas that may result in the tracking of soil, sediments, or hazardous materials on the wheels of hauling equipment outside the area that are enclosed by erosion and silt/sediment control devices, the Contractor will provide the means and methods to remove these materials prior to the vehicle exiting the controlled area. If water wash stations are used, the Contractor will provide systems for the collection, treatment, and disposal of wheel wash water and accumulated sediment. Equipment operated on haul routes over existing pavements will be kept free of material spillage and foreign matter at all times. Haul routes that are shared with aircraft operations will be cleaned continuously with regenerative air vacuum sweepers, or other County approved methods.

Dust control will be in conformance with "Dust Control" of the State Standard Specifications and these Special Provisions. The Contractor will provide the ways and means to prevent dust, grit and other waste products from becoming a nuisance in and around the working areas. The Contractor will take action as necessary, with the approval of the County, to reduce or eliminate such nuisance. The Contractor will control dust during the entire Contract period, including holidays and weekends.

Application of water for controlling dust caused by construction operations or the passage of traffic through the work area(s) will be applied as directed by the County at the Contractor's expense.

4.8. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

4.8.1 SHIPMENTS OF HAZARDOUS MATERIALS

If shipments of hazardous material (including hazardous debris, contaminated soil or water, and hazardous waste) will be unloaded onto or loaded from County property, the Contractor will have a qualified person available onsite when shipments are received or prepared to ship, who is current with U.S. Department of Transportation (DOT) approved training for the transportation of hazardous materials. Contractor will properly characterize and manifest waste material leaving the County property for disposal. When the waste reaches its final destination, the owner or operator of the designated and permitted treatment, storage, and disposal (TSD) facility will sign the manifest and return a copy to the County within 35 days to confirm receipt.

4.8.2 SPILLS

4.8.2.1 Minor Spills

Minor spills can be controlled by the first responder at the discovery of the spill. Use absorbent materials on small spills rather than hosing down or burying the spill. First responder should contain the spread of the spill, recover spilled materials, clean the contaminated area, and properly dispose of contaminated materials. For minor spills, consult the products Material Safety Data Sheets (MSDS) for recommended actions for spills or container leaks. Additionally, MSDSs will provide emergency phone numbers and occupational health hazard information.

4.8.2.2 Semi-significant Spills

Semi-significant spills can be controlled by the first responder along with the aid of other personnel such as laborers, the foreman, etc. Notify the County of semi-significant spills. Spills should be cleaned up immediately. Contain the spread of the spill and notify the Project foreman immediately. If the spill occurs on paved or impermeable surfaces, clean up by using dry methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

4.8.2.3 Significant / Hazardous Spills

Significant/Hazardous spills that cannot be controlled by personnel in the immediate vicinity must be reported to the local emergency response by dialing 911. In addition to 911, the Contractor will notify the County, proper City officials, and the state Emergency Services Warning Center. The services of a Spills Contractor or a HAZMAT team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staff arrives at the jobsite. Other agencies that may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Highway Patrol, the City/County Police Department, and the Department of Toxic Substance.

4.8.3 DELIVERY AND STORAGE OF HAZARDOUS GOODS

(a) Ensure that hazardous goods and material delivered to or from the construction site meet applicable DOT labeling and placarding requirements. Upon request from the County, supply MSDS for all hazardous material being delivered to the site.

(b) The storage and shipment of hazardous waste will also comply with the requirements of this section.

(c) It is emphasized, however, that although spills resulting from incidents or accidents should be responded to, securing the well-being of people will be the first priority.

(d) Good housekeeping practices should be utilized during equipment fueling and maintenance operations. Inspect fueling equipment for leaks prior to dispensing. Fueling operations will be continuously attended to while dispensing fuel. Fueling and maintenance operations will not be performed within 50 feet of a storm drain, inlet, ditch, surface water, wetland, etc. to allow adequate time for containment in the event of a spill.

4.9. NOTIFICATION OF CONSTRUCTION ACTIVITIES

4.9.1. RESPONSIBLE REPRESENTATIVES / POINTS OF CONTACT:

Airports/Utility Staff Member	Title	Phone/Office	Cell
Daryl Shippy	Airports Manager	(951) 955-9418	(951) 538-5046

Additional points of contact will be provided at the Preconstruction Meeting.

4.9.2. NOTICES TO AIRMEN (NOTAM).

Only the County may initiate or cancel a NOTAM on Airport conditions and is the only entity that can close or open a runway. Points of contact for issuing NOTAMS are as follows: Main Contact: Daryl Shippy

4.9.3. EMERGENCY CONTACT INFORMATION

- Emergency – Dial 911
- Department of Airports Emergency Line – (951) 712-5995
- Blythe Police Department – (760) 922-6111
- Blythe Fire Department – (760) 922-6617
- Hospital (Palo Verde Hospital) –(760)-922-4115
- California Poison Center – 1-(800)-222-1222

4.9.4. COORDINATION WITH AIRCRAFT RESCUE AND FIREFIGHTING PERSONNEL.

The Project may block airfield emergency routes. The Project is not anticipated to include the use of hazardous materials. Emergency personnel will be briefed by the County as to the construction schedule and determine alternate emergency access routes as well as the schedule for temporary deactivation of hydrants. If additional notification of emergency personnel is required, the Contractor will contact the County.

4.9.5. NOTIFICATION OF THE FAA

(a) Part 77. The Project will not affect navigable airspace while runway(s) are open, therefore, the County will not be required to submit a FAA Form 7460-1, “Notice of Proposed Construction or Alteration” for a specific element. The County will, however,

submit Form 7460-1 for the proposed critical construction equipment within the project work areas when the runways are open. Any equipment (cranes, graders, other equipment) used by the Contractor that exceeds the height limitation in Section 4.18, "Other Limitations on Construction" must also have a Form 7460-1 airspace evaluation and determination prior to use.

(b) Airport owned/FAA maintained NAVAIDS. If construction operations require a shutdown of more than 24 hours or more than 4 hours on consecutive days of a NAVAID owned by the Airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown. Shutdowns are not anticipated for this Project.

(c) FAA owned NAVAIDS. The County must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs. Impacts to FAA equipment covered by a Reimbursable Agreement (RA) do not have to be reported by the Airport Operator. The County must coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office including any necessary reimbursable agreements and flight checks. In the event of an unanticipated utility outage or cable cuts that impact FAA NAVAIDs, contact the Airport Manager immediately. Shutdowns are not anticipated for this project.

4.10. INSPECTION REQUIREMENTS

4.10.1 DAILY INSPECTIONS.

Inspections should be conducted by the Contractor at least daily, but more frequently if necessary, to ensure conformance with the CSPP. Special attention will be given to areas shared by construction traffic and air traffic. These areas will be maintained in accordance with Section 4.7, "Foreign Object Debris Management." The County will have the final authority in determining if the area is suitable for aircraft use.

4.10.2 FINAL INSPECTIONS.

A final inspection will be conducted by the County prior to the commissioning of any construction-impacted areas open to air traffic. The County will have the final authority in determining if the area is suitable for aircraft use. *Attachment C* contains a Daily Safety Inspection Checklist that may be used by the Contractor or County.

4.11. UNDERGROUND UTILITIES AND NOTIFICATION RESPONSIBILITIES.

Contractor must notify the Underground Service Alert (Southern California by calling 8-1-1 (www.digalert.org), and any other owners of underground utilities within the construction area or within affected public rights-of-way or easements in advance of the commencement of excavation activities. Also, notify the County when the call is being initiated so the County can provide information to Airport utilities as well.

Contractor will not cross electrical or communication cables unless protected by approved means. In the event of interruption to field-located utility services as a result of the work, promptly notify the County first, and then the proper authority. Cooperate with said authority in restoring service as promptly as possible. If required, the Contractor will install suitable temporary service until permanent repair is completed.

4.12. PENALTIES

The Contractor is responsible for maintaining security during construction as detailed herein. The Airport is subject to fines up to $20,000 for security violations. The Contractor will be responsible for any fines caused by his failure to observe the security requirements contained herein or required by the SPCD. Violations will be cause for the Project to be stopped and Project safety procedures evaluated. Contractor working days will continue to be charged, even if the County ceases construction operations. The County will decide if and when work will continue. Enforcement of these regulations will be by the County, Police, and/or Airport Operations Staff.

4.13. SPECIAL CONDITIONS, SAFETY ADHERENCE

During construction on the Airport Contractor must be aware of the following conditions and required actions.

(a) An aircraft in distress may require the Contractor to immediately move equipment away from an aircraft movement area. The County will notify the Contractor in the unlikely event of an aircraft in distress. The Contractor will be required to comply with all County and/or ATC instructions.

(b) Various circumstances, such as an aircraft accident, security breach, or other unforeseen events may require suspension of the construction. The County will notify the Contractor when suspension of the work will be required. See Section 4.9, “Notification of Construction Activities” for emergency contact information.

(c) A VPD (vehicle / pedestrian deviation) is any entry or movement on the movement area by a vehicle or pedestrian that has not been authorized by ATC. In the event of a VPD, the County reserves the right to suspend the work or any portion thereof and continue suspension until the completion of any investigation or evaluation by the County and full compliance with any corrective measures that the County may reasonably require. In addition, the County may require the Contractor to provide to the County a written plan, satisfactory to the County, to demonstrate the Contractor’s ability to prevent future violations. See Section 4.5, “Contractor Access” for vehicle and pedestrian operations and two-way radio communication requirements.

(d) During CAL FIRE, U.S. Forest Service or any other emergency air operations, the Contractor may be instructed to cease work or vacate specific areas of the Airport. Any delays caused by ordered cessation of work will be grounds for time extensions as approved by the Engineer. No additional payment will be allowed for emergency cessation of work.

4.14. RUNWAY AND TAXIWAY VISUAL AIDS

4.14.1 TEMPORARY SIGNS OR VISUAL NAVAIDS.

The nature of this construction Project and duration of closures will not require the addition of temporary lighting signs or visual NAVAIDs to be incorporated into this Project.

4.14.2 LIGHTING.

4.14.2.1 Temporarily Closed Taxiways. Not applicable.

4.14.2.2 Temporarily Closed Runways. Not applicable.

4.14.3 AIRFIELD SIGNS

4.14.3.1 Temporarily Closed Taxiways. Not applicable.

4.14.3.2 Temporarily Closed Runways. Not applicable.

4.15. MARKING AND SIGNS FOR ACCESS ROUTES

The Contractor will place traffic control signs and/or devices along Hobsonway, the Airport entrance driveway and adjacent to the Airport entrance gates, as appropriate, to advise the Airport users of construction operations and hauling. Signs and/or devices will conform to the California Manual on Uniform Traffic Control Devices (MUTCD), Current Edition.

4.16. HAZARD MARKING AND LIGHTING

(a) Before starting work, provide and have available all signs, barricades, and lights necessary for protection of the work (County to provide barricades). Install and maintain adequate warning signs and lighted barricades to protect property and personnel in the work area. Barricades will be weighted or anchored to prevent overturning from wind or aircraft engine blast.

(b) Barricades are not permitted in any active safety area. Barricades located within a runway or taxiway object free area and/or on aprons must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights. The Contractor will provide low-level barricades (up to 120), marked with diagonal, alternating orange and white stripes, to separate all construction/maintenance areas from the movement areas listed above. For the barricades, the Contractor will provide red omni-directional flashers (2 per barricade) and an orange vinyl flag. Low-level barricades will be spaced a maximum of 4 feet apart unless directed otherwise by the County.

(c) Runway closure markers are not applicable for this Project.

(d) The Contractor will have a person on call 24 hours a day for emergency maintenance of Airport hazard lighting and barricades. The Contractor must file the contact person's information with the County. Lighting will be checked for proper operation at least once per day, preferably at dusk.

(e) Open trenches, excavations, or obstructions not being actively worked will be marked with lighted and weighted barricades that can be seen from a reasonable distance.

(f) Stakes will be used to delineate restricted areas as shown on the Drawings. Stakes will be wooden lath with a minimum 1 foot buried in the ground and 3 feet exposed above ground. The top one foot above ground will be painted fluorescent orange.

4.17. PROTECTION OF RUNWAY AND TAXIWAY CRITICAL AREAS

4.17.1 RUNWAY SAFETY AREA (RSA).

No construction may occur within the existing RSA while the runway is open for aircraft operations. Open trenches or excavations are not permitted within the RSA while the runway is open. If possible, backfill trenches before the runway is opened. If the runway must be opened before excavations are backfilled, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft (160,000 pound dual wheel loading) operating on the runway across the trench without damage to the aircraft. Contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the County, and light them with red lights during hours of restricted visibility or darkness. Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no

potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting the occasional passage of aircraft without causing structural damage to the aircraft. The ground surface within the RSA will not have edges exceeding 3 inches or slopes greater than 5 percent unless the runway is closed. The dimensions for the Runway 8-26 RSA (Category D-II) and Runway 17-35 RSA (Category D-II) is 250 feet each side of centerline and 1,000 feet beyond each runway end. The RSAs are depicted on the work area Plans contained in *Attachment A*. The RSAs will be unaffected during construction.

4.17.2 RUNWAY OBJECT FREE AREA (ROFA).

Construction, including excavations, may be permitted within the ROFA; however, equipment must be removed from the ROFA when not in use and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the ROFA requires submittal of a 7460-1 form and County approval. The dimensions for the Runway 8-26 ROFA (Category D-II) and Runway 17-35 ROFA (Category D-II) is 400 feet each side of centerline and 1,000 feet beyond each runway end. The ROFA will be unaffected during construction.

4.17.3 TAXIWAY SAFETY AREA (TSA).

No construction may occur in the TSA while the taxiway is open to aircraft operations, unless otherwise specified. Open trenches or excavations are not permitted within the TSA while the taxiway is open. If possible, trenches should be backfilled before the taxiway is opened. If the taxiway must be opened before excavations are backfilled, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operations of the heaviest aircraft (160,000 pound dual wheel loading) operating on the taxiway across the trench without damage to the aircraft. Contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the County, and light them with red lights during hours of restricted visibility or darkness. The ground surface within the TSA will not have edges exceeding 3 inches or slopes greater than 5 percent unless the taxiway is closed. Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and be capable, under dry conditions, of supporting the occasional passage of aircraft without causing structural damage to the aircraft. Based on ADG-II aircraft activity, the TSA for Taxiway A is 39.5 feet each side for centerline. The TSA is depicted on the work area Plans contained in *Attachment A.* The TSA will be unaffected during construction.

4.17.4 TAXIWAY OBJECT FREE AREA (TOFA).

No construction will be allowed within the TOFA while the taxiway is open to aircraft operations except as provided below:

- The taxiway object fee area dimensions are temporarily reduced to match restricted aircraft operations meeting the resulting TOFA area available or
- The taxiway pavement markings are offset to provide the required TOFA width or
- No adjustments are required to the TOFA width as long as the following occur:
    - Appropriate NOTAMs are issued by the County.
    - Areas where aircraft will be operating are clearly and visibly separated from construction areas by the Contractor and that these areas remain clearly marked

and visible at all times. Contractor shall ensure marking, lighting, signs and visual NAVAIDs remain in place and operational.

- Contractor provides flaggers and coordinates with the County to provide qualified wing walkers to guide aircraft through the construction zone providing five-foot of clearance between equipment and materials and any part of the aircraft or

- Contractor shall remove all equipment, personnel, and materials from the aircrafts path maintaining a minimum of five-feet clear between any part of the aircraft and the equipment, personnel, and materials.

The Taxiway A aircraft are ADG-II aircraft and the resulting TOFA is 65.5 feet on each side of the taxiway centerline. This TOFA is depicted on the work area Plans contained in Attachment A.

4.17.5 OBSTACLE FREE ZONE (OFZ).

Personnel, material, and/or equipment may not penetrate the runway OFZ while the runway is open to aircraft operations. The dimensions for the Runway 8-26 OFZ (Category D-II) and Runway 17-35 OFZ (Category D-II) is 200 feet each side of centerline and 200 feet beyond each runway end. The OFZ will be unaffected during construction.

4.17.6 RUNWAY APPROACH/DEPARTURE SURFACES.

When runway is open, all personnel, material, and/or equipment must remain clear of the threshold siting surfaces (approach and departure surfaces).

4.17.7.1 Runway 8-26 Approach Surface. Runway 8-26 is a non-precision runway. Using Table 3-2 and Figure 3-3 from AC150/5300-13A for Runway Category 3, the resulting approach surface begins 200 feet from the runway threshold and consists of a trapezoid with the following dimensions:

(a) Width at inner departure – 400 feet

(b) Width at outer departure – 1,000 feet

(c) Length of departure – 1,500 feet

(d) Approach slope – 20:1

4.17.7.2 Runway 8-26 Departure Surface. Runway 8-26 is a non-precision runway. Using Table 3-2 and Figures 3-4 from AC150/5300-13 for Runway Category 9, the resulting departure surface begins at the runway threshold and consists of a trapezoid with the following dimensions:

(a) Width at inner departure (runway threshold) – 1,000 feet

(b) Width at outer departure – 6,466 feet

(c) Length of departure – 10,200 feet

(d) Departure slope – 40:1

4.17.7.3 Runway 17-35 Approach Surface. Runway 17-35 is a visual runway. Using Table 3-2 and Figure 3-3 from AC150/5300-13A for Runway Category 3, the resulting approach surface begins at the runway threshold and consists of a trapezoid with the following dimensions:

(a) Width at inner departure – 400 feet

(b) Width at outer departure – 1,000 feet

(c) Length of departure – 1,500 feet

(d) Approach slope – 20:1

4.17.7.4 Runway 17-35 Departure Surface. Runway 17-35 is a visual runway. Using Table 3-2 and Figure 3-4 from AC150/5300-13A for Runway Category 9, the resulting departure surface begins at the runway threshold and consists of a trapezoid with the following dimensions:

(a) Width at inner departure (runway threshold) – 1,000 feet

(b) Width at outer departure – 6,466 feet

(c) Length of departure – 10,200 feet

(d) Departure slope – 40:1

4.17.7.5 Affected Approach Surface. The approach surfaces for Runway 8-26 and Runway 17-35 will be unaffected by construction on the apron.

4.17.7.6 Affected Departure Surface. The departure surfaces for Runway 8-26 and Runway 17-35 will be unaffected by construction on the apron.

4.18. OTHER LIMITATIONS ON CONSTRUCTION

4.18.1 PROHIBITIONS.

(a) Open flame welding or torches are prohibited unless fire safety precautions are provided and the County has approved their use.

(b) Electrical blasting caps are prohibited on or within 1,000 feet of the Airport property.

(c) The use of flare pots are prohibited within the AOA.

(d) No smoking will be allowed within the airfield environment except as designated by the County.

4.18.2 RESTRICTIONS, EQUIPMENT

(a) Construction equipment that extends 15 feet or more above ground level will have to be cleared through the County prior to moving onto site. Equipment that may be lowered readily will be lowered at night, during reduced daytime visibility, and during other periods of storage to comply with the 15-foot height limitation and/or removed from the work area.

(b) If directed by the County, construction equipment that cannot be lowered below the 15-foot height limitation will be lighted at night and during periods of reduced daytime visibility. The light will be mounted on the highest point of equipment; will be omni-directional; and will consist of, at a minimum, one 100-watt bulb enclosed within an aviation red lens. Also, for daytime operations, mount an FAA-approved 3-foot square orange and white checkered flag at the highest point.

(c) During daylight hours with severe visibility problems or heavy fog, cranes will not operate. The County will determine when visibility problems exist and will coordinate and designate requirements for position and location of flag and light.

4.19. SAFETY PLAN COMPLIANCE DOCUMENT (SPCD), INFORMATION.

The SPCD will detail how the Contractor will comply with the CSPP. This will include all Project-specific Construction Safety Plan details not included in the CSPP, including construction equipment heights, any applicable hazard management requirements, and contact information for the Contractor's safety management staff responsible for monitoring the CSPP and SPCD during construction. The SPCD will be an attachment to, and enhancement of, the Project CSPP. See *Attachment B* for example of SPCD.

The SPCD must include a statement that the Contractor understands the operational safety requirements of the CSPP and an assertion that the Contractor will not deviate from the approved CSPP and SPCD without written approval from the County. Any construction operation, activity, or practice proposed by the Contractor that does not conform to the CSPP and SPCD will require a revision to those documents. The revised CSPP must be submitted to FAA for review and approval prior to performing any activities that are not in compliance with a previously approved CSPP.

Copies of the approved CSPP and SPCD must be available on-site at all times. The Contractor will ensure all construction personnel are familiar with safety procedures and regulations applicable to construction on the Airport. At least one of the Contractor's safety management staff must be on-site whenever active construction is ongoing to act as point of contact and immediate response coordinator to correct any construction-related activity that may adversely affect operational safety of the Airport.

ATTACHMENTS:
Attachment A – Plan Sheets
Attachment B – SPCD Example
Attachment C – Inspection Checklist
Attachment D – Definition of Terms

ATTACHMENTS

Attachment A - Plan Sheets

See Project Plan Sheets Set

Attachment B - Safety Plan Compliance Document (SPCD)

CONTRACTOR'S
SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)
(AC 150/5370-2F)

Project Information

Airport and Sponsor: BLYTHE MUNICIPAL AIRPORT, RIVERSIDE COUNTY

Project ID: FAA AIP NO. 3-06-0025-010-2016

Description of Project: PCC Apron Rehabilitation

Type of Work: _____

FAA Project Manager: _____ Phone: _____

Airport Operator Contact: _____ Phone: _____

Contractor's Information

Prime Contractor: _____

Address: _____

Contractor Contact: _____ Phone: _____

Contractor's Responsibility

In accordance with Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5370-2F, *Operational Safety During Airport Construction,* a SPCD for a project must be submitted to the FAA and to the Airport Operator for review and approval prior to the issuance of a Notice-to-Proceed for Construction. The SPCD will be prepared in a detailed written and graphical format that identifies the timing and methodology for the Contractor's compliance with the project's Construction Safety and Phasing Plan (CSPP).

The Contractor will comply with all provisions contained herein and provide the following project-specific complementary and supplemental information to the FAA-approved Construction Safety and Phasing Plan:

1. Contractor will have copies of the CSPP and SPCD available at all times for reference by the Airport Operator and its representatives, and by Contractor's and subcontractor's employees.

   Location(s) of CSPP and SPCD: _____

   _____

2. Provide contact information for the person responsible for initiating and coordinating an immediate response to correct any construction-related activity that may adversely affect the operational safety of the Airport. Project will require 24-hour coverage.

   Point of Contact: _____ Phone: _____

3. Provide list of Contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD whenever active construction is ongoing.

   Contact Person: _____ Phone: _____
   Contact Person: _____ Phone: _____
   Contact Person: _____ Phone: _____
   Contact Person: _____ Phone: _____

4. Contractor will conduct inspections at least once daily, and more frequently if necessary to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards. A Construction Project Daily Safety Inspection Checklist is attached.

5. Describe details of Contractor's plan to restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate and as specified in the CSPP. Include the appropriate plan sheets to identify timing and/or location of control measures: [***Contractor to insert detailed description.]***

6. Describe details of Contractor's plan to ensure that no employees of Contractor, subcontractors, suppliers, or other persons enter any part of the Air Operations Area (AOA) unless authorized. [***Contractor to insert detailed description***.]

7. Provide a description and schedule of anticipated operation for all Contractor equipment over 15 feet in height (e.g. cranes, concrete pumps, other similarly tall equipment) and heights of stockpiles and haul routes when different from what is shown on previously filed CSPP. [***Contractor to insert detailed equipment list/stockpile heights as applicable.]***

   (As necessary, the Contractor must coordinate with the Airport Operator for the purpose of filing a supplemental submittal of FAA Form 7460-1 to the FAA for determination of whether or not an aeronautical study must be conducted prior to allowing tall equipment operations to begin.)

8. Provide a description of Contractor's plan to ensure that construction personnel are familiar with the safety procedures and regulations on the Airport, the CSPP, and the SPCD. [***Contractor to insert detailed description.]***

SPCD Amendment

The SPCD will be amended when there is a construction practice proposed by the Contractor that does not conform to the CSPP and SPCD and may impact the Airport's operational safety. This will require a revision to the CSPP and SPCD and re-coordination with the Airport Operator and the FAA in advance.

Statement of Certification

I certify that we understand the operational safety requirements of the CSPP and assert that we will not deviate from the approved CSPP and SPCD unless written approval is granted by the Airport Operator and FAA.

Print Name: _____ Title: _____

Signature: _____ Date: _____

Attachment C - Daily Safety Inspection Checklist

CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project.

Potentially Hazardous Conditions

Item	Action Required	or	None
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.			☐
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.			☐
Runway resurfacing projects resulting in lips exceeding 3 in (7.6 cm) from pavement edges and ends.			☐
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.			☐
Equipment or material near NAV AIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.			☐
Tall and especially relatively low visibility units (that is, equipment with slim profiles) – cranes, drills, and similar objects – located in critical areas, such as OFZ and approach zones.			☐
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.			☐
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.			☐

Item	Action Required	or	None
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.			☐
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.			☐
Wildlife attractants – such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water – on or near airports.			☐
Obliterated or faded temporary markings on active operational areas.			☐
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.			☐
Failure to issue, update, or cancel NOT AMs about airport or runway closures or other construction related airport conditions.			☐
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.			☐
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport building.			☐
Lack of radio communications with construction vehicles in airport movement areas.			☐
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.			☐
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.			☐
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.			☐

Item	Action Required	or	None
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).			☐
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.			☐
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.			☐
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.			☐
Site burning, which can cause possible obscuration.			☐
Construction work taking place outside designated work areas and out of phase.			☐

Attachment D - Definitions of Terms

Definition of Terms

Term	Definition
7460-1	Notice Of Proposed Construction Or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, safe, efficient use, and preservation of the navigable airspace. (See guidance available on the FAA web site at oeaaa.faa.gov.) The form may be downloaded at http://www.faa.gov/airports/resources/forms/, or filed electronically at: https://oeaaa.faa.gov.
7480-1	Notice Of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at http://www.faa.gov/airports/resources/forms/.
AC	Advisory Circular
ACRC	Aircraft Reference Code
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area. Any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runways, taxiways, or aprons.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under the authority of 14 CFR Part 139, Certification of Airports.
CFR	Code of Federal Regulations
Construction	The presence and movement of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety And Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.

Term	Definition
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FOD	Foreign Object Debris
HAZMAT	Hazardous Materials
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See AC 150/5300-13, for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to AC 150/5300-13 for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
P&R	Planning and Requirements Group

Term	Definition
PAPI	Precision Approach Path Indicators
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicators
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with AC 150/5300-13.
SIDA	Security Identification Display Area
SMS	Safety Management System
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with AC 150/5300-13.
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See AC 150/5300-13 for guidance on declared distances.
TSA	Taxiway Safety Area Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicators

Term	Definition
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicators (PAPI), visual approach slope indicators (VASI), and pulse light approach slope indicators (PLASI).
VFR	Visual Flight Rules
VOR	VHF Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

Appendix 2

Geotechnical Report

December 7, 2015 CTE Project No. 40-3264G

Mead & Hunt, Inc.
Attn. Mr. Robert Casagrande
133 Aviation Boulevard, Suite 100
Santa Rosa, California 95403

Subject: Report of Geotechnical Investigation
Blythe Municipal Airport Project
County of Riverside, California

Dear Mr. Casagrande:

CTE South, Inc. (CTE) is pleased to submit this report for the subject project. The site is located in Riverside County, California at the Blythe Municipal Airport.

PROPOSED CONSTRUCTION AND SCOPE OF SERVICES

The Blythe Municipal Airport project will consist of rehabilitation of the existing concrete apron which is exhibiting slab curling and joint spalling. The scope of work consisted of obtaining existing pavement thicknesses and evaluation of the apron subgrade. Also included were borings in existing asphalt pavement areas.

The work was performed within the tiedown apron and Taxiway A south of Runway 8-26, an active Air Operations Area. The scope of work consisted of drilling seven 10-foot deep borings on the tiedown apron and seven 10 foot deep borings outside of the apron. Field CBR tests were performed at two of the locations and laboratory CBR tests were performed on samples from four other locations. Specifically, the scope of work consisted of the following:

- Review existing information regarding the airport.
- Utility clearance using a private utility locator.
- Excavation of fourteen 10 foot deep borings at selected locations.
- Laboratory testing of selected soil samples.
- Measure the thickness of existing concrete, asphalt and aggregate base.
- USCS classification of soil encountered.
- Logs of test borings.
- In situ density and moisture content, and gradation (200 wash) on selected samples of site soils.
- Maximum density/optimum moisture content per ASTM D 698.
- California Bearing Ratio per ASTM D 1883.
- Corrosion characteristics of on-site soil.
- In-situ California Bearing Ratio per ASTM D 4429.

- Preparation of a report discussing of subsurface conditions obtained from the boring program and presenting earthwork recommendations.

FIELD AND LABORATORY INVESTIGATION

Field Investigation

Our field investigation was performed from November 10 and 11, 2015 and included 14 exploratory borings identified as B-1 through B-14. These borings were drilled at locations within the existing tiedown apron, andd adjacent Taxiway A and surrounding asphalt paved areas. In addition, two field CBR tests were run in borings B-6 and B-9. The exploration locations are shown on Figure 1.

The explorations were excavated to investigate and obtain samples of the subsurface soils and to measure existing pavement section thickness. The borings were excavated using a truck-mounted, eight-inch diameter, hollow-stem auger drill rig to a maximum explored depth of 11-1/2 feet below the existing pavement surface. The existing pavement at each boring location was cored and existing pavement thicknesses were measured. Bulk samples for laboratory CBR testing were also obtained from Borings B-2, B-6, B-8 and B-9.

Soils encountered within the explorations were classified in the field in accordance with the Unified Soil Classification System. The field descriptions were later modified (as appropriate) based on the results of our laboratory testing program. In general, soil samples were obtained within the upper 5 feet and at 5 and 10 feet with standard split spoon (SPT and California Modified) samplers. Bulk samples were obtained from borings for laboratory testing. Specifics of the soils encountered can be found in the Exploration Logs, which are presented in Appendix A.

Laboratory Analyses

Laboratory tests were conducted on representative soil samples. Specific laboratory tests included: maximum dry density and optimum moisture content, in-place moisture and density, laboratory CBR, maximum dry density and optimum moisture content, 200 washes and corrosivity (pH, resistivity, sulfate content and chloride content). Test method descriptions and laboratory results are presented in Appendix B and on the Exploration Logs.

SITE MATERIALS ENCOUNTERED

Based on our investigation, the site is underlain by silty sand and sand, predominantly in loose to medium dense condition. The borings encountered 2-1/2 to 11 inches of Asphalt Pavement overlying 5 to 12 inches of aggregate base. Subbase was not observed in the borings. Concrete-paved surfaces encountered 5-1/2 to 8-1/2 inches of concrete directly on subgrade soils. Thicknesses of pavement structural components are presented in Table 1. Underlying the pavement section, loose to dense silty sand and sand was encountered in each of the

borings. Groundwater was not encountered in the borings. More detailed descriptions of the soils encountered are provided in the exploration logs in Appendix A.

TABLE 1
PAVEMENT STRUCTURE SECTIONS

Boring No.	PCC (inches)	AC (inches)	Aggregate Base (inches)
B-1	-	10-1/2	12
B-2	-	11	5
B-3	-	10	5
B-4	6	-	-
B-5	5-1/2	-	-
B-6	6-1/4	-	-
B-7	8-1/2	-	-
B-8	-	4	12
B-9	6	-	-
B-10	5-3/4	-	-
B-11	7	-	-
B-12	-	-	-
B-13	-	2-1/2	10
B-14	-	2-1/2	8

FIELD AND LABORATORY TEST RESULTS

Field CBR Tests

Field CBR tests were performed in borings B-6 and B-9. Tests were performed in accordance with ASTM D 4429. Tests were taken in the subgrade soils below the pavement sections at a depth of approximately three feet. Plots of the field results are included in Appendix C. Table 2 presents a summary of the test results.

TABLE 2
FIELD CBR TEST RESULTS

Boring No.	Approximate Depth (inches)	CBR at 0.1” Penetration
B-6	36	10
B-9	36	12

Laboratory CBR Tests

Laboratory CBR tests were performed on samples obtained from borings B-2, B-6, B-8 and B-9. The tests were performed in accordance with ASTM D 1883. Laboratory test results are presented in Appendix B. A summary of the laboratory CBR test results is presented in Table 3.

TABLE 3
LABORATORY CBR TEST RESULTS

Boring No.	Depth (feet)	CBR at 0.1" Penetration		
		90%	95%	100%
B-2	1-5	9	15	21
B-6	1-5	9	24	39
B-8	1-5	7	18	28*
B-9	1-5	12	26	43

*Extrapolated

Maximum Dry Density- Optimum Moisture Content Tests

Maximum dry density/optimum moisture content tests were performed on four samples obtained from borings B-2, B-6, B-8 and B-9. Tests were performed in accordance with ASTM D 698. Test results are included in Appendix B. A summary of test results is presented in Table 4.

TABLE 4
MAXIMUM DRY DENSITY/OPTIMUM MOISTURE CONTENT TEST RESULTS

Boring No.	Depth (feet)	Maximum Dry Density (pcf)	Opt. Moisture Content (%)
B-2	1-5	114.5	6.3
B-6	1-5	117.0	10.0
B-8	1-5	117.7	8.7
B-9	1-5	117.2	10.0

In-situ Moisture/Density

In-situ moisture /density (ASTM D 2216 and D 2937) tests were performed on selected samples of undisturbed soil. In-situ moisture/density test results are presented on the boring logs.

EARTHWORK RECOMMENDATIONS

Site Preparation

For areas that will require removal and replacement of the existing pavement, if applicable, the site should be cleared of existing pavement and deleterious materials. Organic and other deleterious materials not suitable for use as structural backfill should be disposed of offsite at a legal disposal site.

Preparation of Areas to Receive Fill

The site soils should be excavated with conventional heavy-duty excavation equipment in good working order. Exposed excavation bottoms and subgrade surfaces to receive fill should be scarified to a minimum depth of eight inches, brought to within +/- 2 percent of optimum moisture content and compacted to 100 percent of the maximum dry density as determined by ASTM D 698. Due to the relatively low moisture contents of the in-situ soils, significant additional water will need to be added to obtain the specified moisture content for compaction.

Fill Placement and Compaction

Structural fill should be compacted to at least 100 percent of the maximum dry density (as determined by ASTM D 698) at moisture content within +/- 2 percent of optimum. The optimum lift thickness for fill soils will be dependent on the type of compaction equipment being utilized. Generally, fill should be placed in uniform horizontal lifts not exceeding 8 inches in loose thickness. Placement and compaction of fill should be performed in general conformance with geotechnical recommendations and FAA requirements.

Soils generated from on-site excavations are anticipated to be suitable for use as structural fill, provided they are free from debris and deleterious material. Rocks or other soil fragments greater than four inches in size should not be used in the fills or in the upper six inches of subgrade soil. Proposed import materials, if needed, should be evaluated by the project geotechnical engineer prior to being placed at the site. Import materials should consist of non-corrosive, non-expansive granular material.

Subbase and base should be compacted to 100 percent of maximum dry density (as determined by ASTM D 698) at moisture content of +/- 1-1/2 percent of optimum moisture content. Moisture may need to be wet of optimum to achieve 100 percent compaction. Actual moisture needed should be evaluated at the start of construction using test sections as necessary.

Major compaction problems are not anticipated in granular soils provided moisture content is carefully controlled. Subbase, base, granular soils and asphalt pavement may be compacted using smooth drum (vibratory), vibratory sheepsfoot, smooth-wheeled and rubber-tired compactors. It is the responsibility of the contractor to utilize proper equipment to compact site soils and pavement.

Corrosive Soils

Sulfate-containing solutions or soil can have a deleterious effect on the in-service performance of concrete. In order to evaluate the soil corrosivity, a representative sample of the site soil was laboratory tested for pH, resistivity, soluble sulfate and chloride. The results of the tests are summarized in Table 5.

TABLE 5
SUMMARY OF CHEMICAL ANALYSES

Sample Location	pH	Resistivity (ohm-cm)	Sulfate (ppm)	Chloride (ppm)
B-5 @ 1-5'	7.1	8,500	60	54

Based on ACI 18 Building Code and Commentary Table 4.3.1, sulfate exposure of 60 ppm is considered *negligible*. We recommend that Type II modified or Type V cement be used. Concrete should have a maximum water-cement ratio of 0.50 and a minimum compressive strength of 4000 psi.

Based on the results of the resistivity tests, site soil appears to be *moderately corrosive* to ferrous metals. CTE does not practice in the field of corrosion engineering. Therefore, a corrosion engineer could be consulted to determine the appropriate protection for metallic improvements in contact with site soils.

We appreciate this opportunity to be of service on this project. If you have questions regarding this report, please do not hesitate to contact the undersigned.

Respectfully submitted,
CTE, South, Inc.

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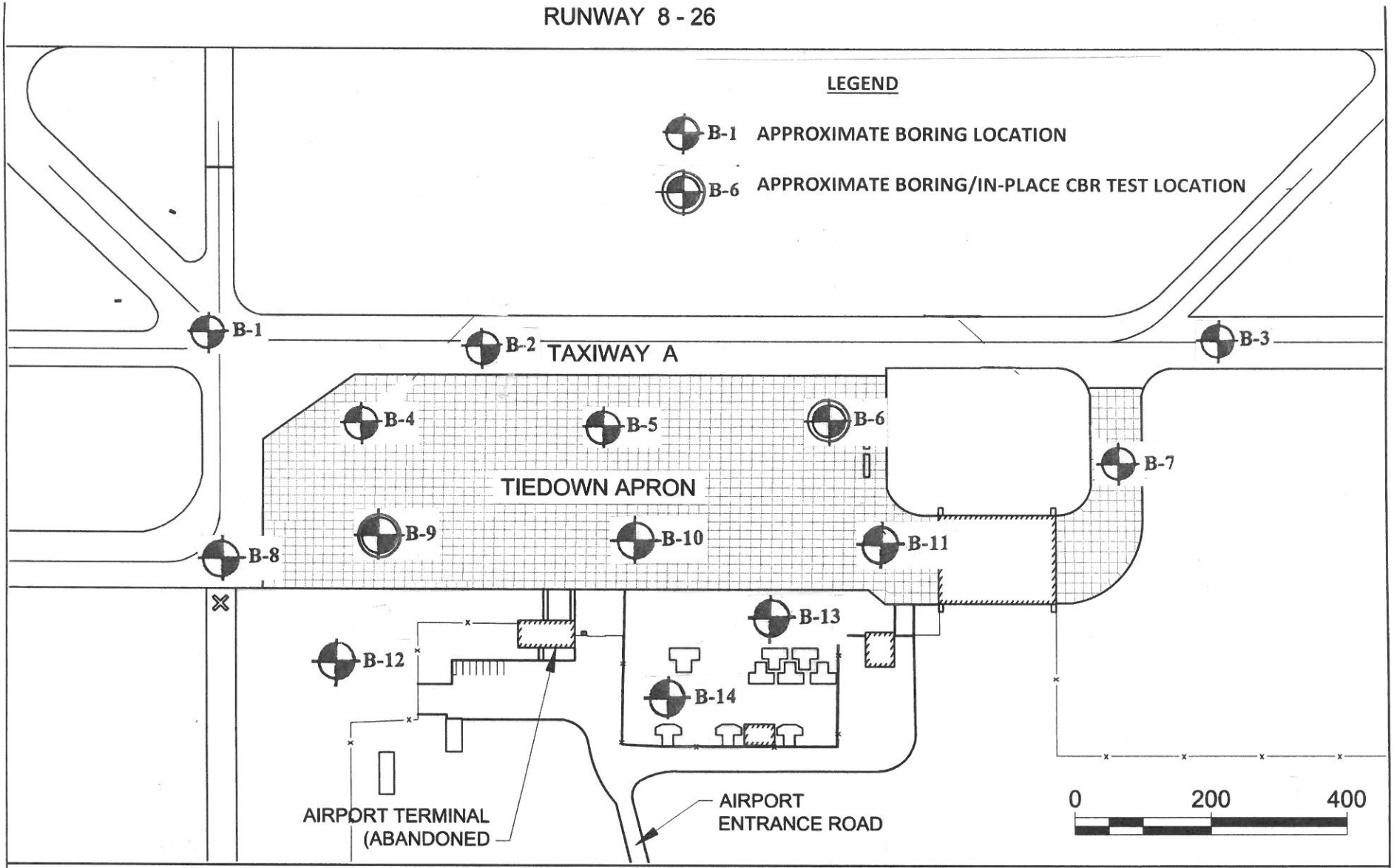

CTE SOUTH

EXPLORATION LOCATION MAP

BLYTHE MUNICIPAL AIRPORT
BLYTHE, CALIFORNIA

Job No.	Date	Figure
40-3264	DEC 2015	1

APPENDIX A

FIELD EXPLORATION METHODS AND EXPLORATION LOGS

APPENDIX A

FIELD EXPLORATION METHODS AND EXPLORATION LOGS

Soil Boring Methods

Relatively "Undisturbed" Soil Samples

Relatively "undisturbed" soil samples were collected using a modified California-drive sampler (2.4-inch inside diameter, 3-inch outside diameter) lined with sample rings. Drive sampling was conducted in general accordance with ASTM D-3550. The steel sampler was driven into the bottom of the borehole with successive drops of a 140-pound weight falling 30-inches. Blow counts (N) required for sampler penetration are shown on the boring logs in the column "Blows/Foot." The soil was retained in brass rings (2.4 inches in diameter, 1.0 inch in height) and sealed in waterproof plastic containers for shipment to the CTE, South, Inc. geotechnical laboratory.

Disturbed Soil Sampling

Bulk soil samples were collected for laboratory analysis using two methods. Standard Penetration Tests (SPT) were performed according to ASTM D-1586 at selected depths in the borings using a standard (1.4-inches inside diameter, 2-inches outside diameter) split-barrel sampler. The steel sampler was driven into the bottom of the borehole with successive drops of a 140-pound weight falling 30-inches. Blow counts (N) required for sampler penetration are shown on the boring logs in the column "Blows/Foot." Samples collected in this manner were placed in sealed plastic bags. Bulk soil samples of the drill cuttings were also collected in large plastic bags. The disturbed soil samples were returned to the CTE, South, Inc. geotechnical laboratory for analysis.

CTE SOUTH

DEFINITION OF TERMS

PRIMARY DIVISIONS			SYMBOLS	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	**GRAVELS** MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS < 5% FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS OR GRAVEL SAND MIXTURES, LITTLE OF NO FINES
		GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS < 5% FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	**SILTS AND CLAYS** LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, SLIGHTLY PLASTIC CLAYEY SILTS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, SILTS OR LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTY CLAYS
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

GRAIN SIZES

BOULDERS	COBBLES	GRAVEL		SAND			SILTS AND CLAYS
		COARSE	FINE	COARSE	MEDIUM	FINE	

12" 3" 3/4" 4 10 40 200

CLEAR SQUARE SIEVE OPENING U.S. STANDARD SIEVE SIZE

ADDITIONAL TESTS

(OTHER THAN TEST PIT AND BORING LOG COLUMN HEADINGS)

MAX- Maximum Dry Density
GS- Grain Size Distribution
SE- Sand Equivalent
EI- Expansion Index
CHM- Sulfate and Chloride Content , pH, Resistivity
COR - Corrosivity
SD- Sample Disturbed

PM- Permeability
SG- Specific Gravity
HA- Hydrometer Analysis
AL- Atterberg Limits
RV- R-Value
CN- Consolidation
CP- Collapse Potential
HC- Hydrocollapse
RDS- Remolded Direct Shear

PP- Pocket Penetrometer
WA- Wash Analysis
DS- Direct Shear
UC- Unconfined Compression
MD- Moisture/Density
M- Moisture
SC- Swell Compression
OI- Organic Impurities

FIGURE: BL1

CTE SOUTH

PROJECT:	DRILLER:	SHEET: of
CTE JOB NO:	DRILL METHOD:	DRILLING DATE:
LOGGED BY:	SAMPLE METHOD:	ELEVATION:

BORING LEGEND

Depth (Feet) | Bulk Sample | Driven Type | Blows/Foot | Dry Density (pcf) | Moisture (%) | U.S.C.S. Symbol | Graphic Log | DESCRIPTION | Laboratory Tests

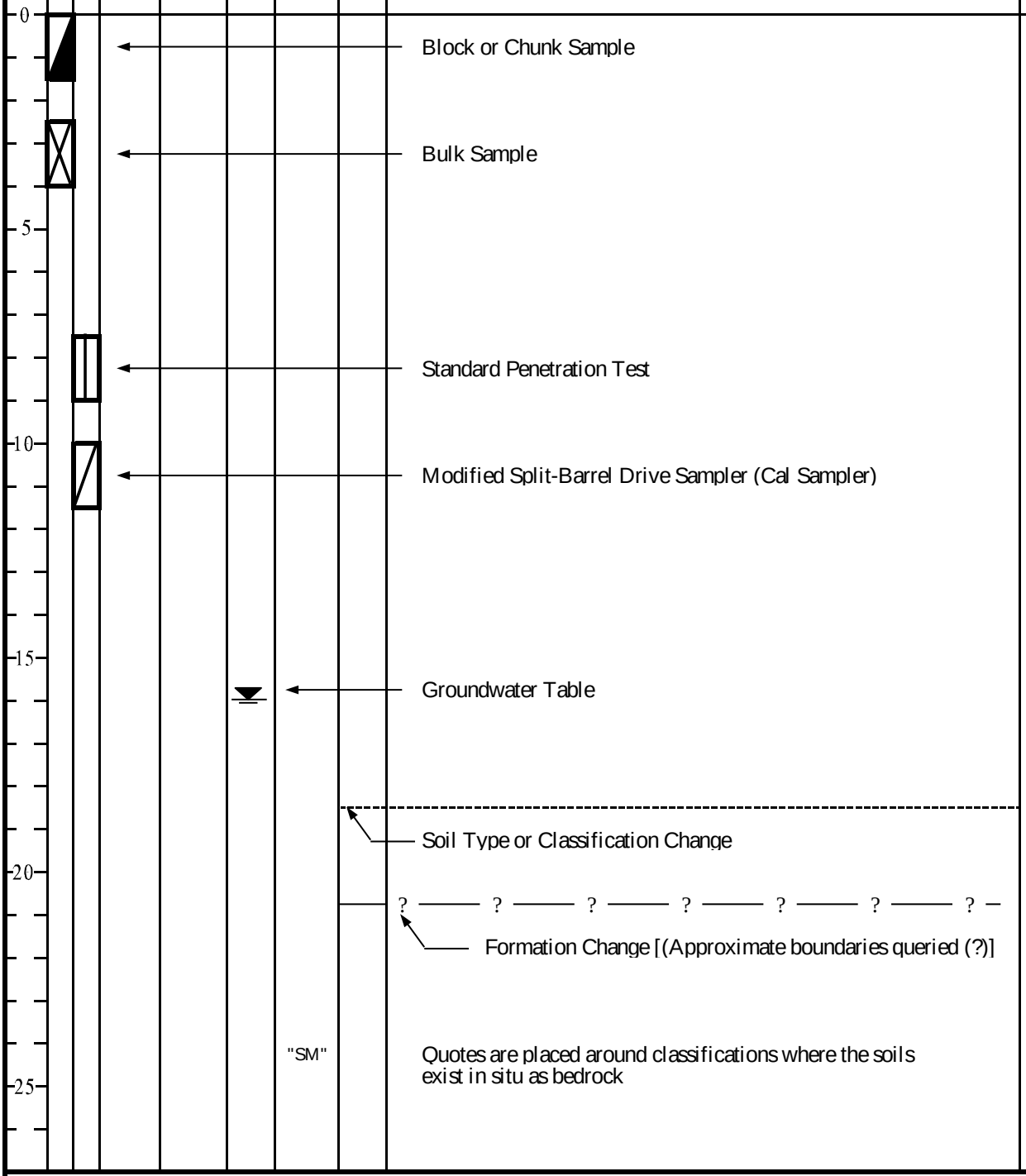

FIGURE: BL2

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		11/11/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-1

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**10.5" AC over 12" Base**	
			8 9 9		6.4	SM		Silty SAND, medium dense, moist, light brown.	M
5			3 4 5		5.6	SP-SM		Poorly-graded SAND with Silt, loose, moist, light brown.	M
10			3 6 10		3.4	SP		Poorly-graded SAND, medium dense, damp, light brown.	M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 10" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport		DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3264		DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		11/11/2015
LOGGED BY:	R. Ellerbusch		SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-2

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**11" AC over 5" Base**	
									CBR, MAX
						SP-SM		Poorly-graded SAND with Silt, dense, damp, light brown, trace gravel.	
			14 19 20	112.1	4.2				MD
5			7 10 17	104.5	2.5	SP		Poorly-graded SAND, medium dense, damp, light brown, trace gravel.	MD
10			15 26 34	105.2	2.8			Poorly-graded SAND, dense, damp, light brown.	MD
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 10" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	11/11/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:	

BORING: B-3

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**10" AC over 5" Base**	
						SP-SM			
		▮	8 12 10		2.9			Poorly-graded SAND with Silt, medium dense, damp, light brown, trace gravel.	M
5		▮	3 2 3			SP		Poorly-graded SAND with Silt, loose, damp, light brown.	
10		▮	4 8 12					Poorly-graded SAND, medium dense, damp, light brown.	
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 10" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		11/10/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-4

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**6" Concrete**	
			3			SP-SM			
			3					Poorly-graded SAND with Silt, loose, damp, light brown.	
			4		4.8				M
5			4			SP			
			6					Poorly-graded SAND, medium dense, damp, light brown,	
			10		2.5			trace gravel.	M
10			8						
			13					Poorly-graded SAND, dense, damp, light brown.	
			18		2.7				M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport		DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3264		DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		11/10/2015
LOGGED BY:	R. Ellerbusch		SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-5

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**5.5" Concrete**	
			5 5 7	110.9	5.8	SP-SM		Poorly-graded SAND with Silt, loose, moist, light brown, trace gravel.	CHM WA (11% pass #200) MD
5			4 6 8					Poorly-graded SAND with Silt, medium dense, damp, light brown.	
10			5 9 12		2.8	SP		Poorly-graded SAND, medium dense, damp, light brown.	M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport		DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3264		DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		11/10/2015
LOGGED BY:	R. Ellerbusch		SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-6

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**6.25" Concrete**	
						SP		Poorly-graded SAND, damp, light brown.	CBR, MAX
			9 11 14	104.7	3.1			Poorly-graded SAND, medium dense, damp, light brown, trace gravel.	MD
5			10 15 22	103.1	2.0			Poorly-graded SAND, dense, dry, light brown, trace gravel.	MD
10			10 20 25	102.3	2.6			Poorly-graded SAND, dense, damp, light brown, trace gravel.	MD
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1	of	1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:			11/10/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:			

BORING: B-7

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**8.5" Concrete**	
			7 5 3		6.5	SP		Poorly-graded SAND, loose, moist, light brown, trace gravel.	M
5			6 8 10		2.7			Poorly-graded SAND, medium dense, damp, light brown.	M
10			7 11 13		2.6			Poorly-graded SAND, medium dense, damp, light brown.	M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 10" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport		DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3264		DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		11/10/2015
LOGGED BY:	R. Ellerbusch		SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-8

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**4" AC over 12" Base**	
			10			SM		Silty SAND, medium dense, moist, light brown.	CBR, MAX
			14						WA (14% pass #200)
			13		5.9				M
5			4			SP			
			6					Poorly-graded SAND, medium dense, damp, light brown.	WA (3% pass #200)
			10		2.6				M
10			8						
			14					Poorly-graded SAND, dense, damp, light brown.	
			19		3.2				M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport		DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3264		DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		11/10/2015
LOGGED BY:	R. Ellerbusch		SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-9

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**6" Concrete**	
						SP-SM		Poorly-graded SAND with Silt, damp, light brown.	CBR, MAX
			6					Poorly-graded SAND with Silt, medium dense, damp, light brown.	
			10						
			13	103.4	3.3				MD
5			14			SP			
			21					Poorly-graded SAND, dense, damp, light brown.	
			29	103.1	3.7				MD
10			14						
			28					Poorly-graded SAND, very dense, damp, light brown,	
			40	102.9	2.1			trace gravel.	MD
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	11/10/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:	

BORING: B-10

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**5.75" Concrete**	
			2			SM		Silty SAND, loose, moist, light brown.	
			2						WA (14% pass #200)
			3		7.5				M
5			5			SP		Poorly-graded SAND, medium dense, damp, light brown.	
			7						
			8		3.7				M
10			5						
			11					Poorly-graded SAND, medium dense, damp, light brown.	
			16		3.1				M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1	of	1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:			11/10/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:			

BORING: B-11

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**7" Concrete**	
		▮	3 4 5		5.1	SP-SM		Poorly-graded SAND with Silt, loose, damp, light brown, trace gravel.	M
5		▮	5 8 11		2.0	SP		Poorly-graded SAND, medium dense, damp, light brown.	M
10		▮	6 10 15		2.0			Poorly-graded SAND, medium dense, damp, light brown.	M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1	of	1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:			11/11/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:			

BORING: B-12

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0						SM		(Dirt surface)	
			6					Silty SAND, medium dense, damp, brown, scattered gravel.	
			6						
			7		2.6				M
5			3			SP			
			6					Poorly-graded SAND, medium dense, dry, trace gravel.	
			9		1.7				M
10			9						
			11					Poorly-graded SAND, medium dense, damp, light brown.	
			15		2.5				M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with asphalt patch.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	11/11/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:	

BORING: B-13

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**2.5" AC over 10" Base**	
			7			SM		Silty SAND, medium dense, moist, light brown.	
			7						
			5		6.0				M
5			3			SP			
			6					Poorly-graded SAND, medium dense, damp, light brown.	
			9		2.5				M
10			3						
			7					Poorly-graded SAND, medium dense, dry, light brown.	
			10						
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with asphalt patch.	
15									
20									
25									

PROJECT:	Blythe Municipal Airport	DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3264	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		11/11/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-14

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**2.5" AC over 8" Base**	
		▮	3 4 4		6.1	SM		Silty SAND, loose, moist, light brown, trace gravel.	M
5		▮	4 8 11			SP		Poorly-graded SAND, medium dense, damp, light brown, trace gravel.	
10		▮	7 13 15		2.5			Poorly-graded SAND, medium dense, damp, light brown,.	M
								Total Depth = 11.5 ft. below pavement surface. No Groundwater encountered. Bore hole backfilled with soil cuttings and capped with asphalt patch.	
15									
20									
25									

APPENDIX B

LABORATORY METHODS AND RESULTS

APPENDIX B
LABORATORY METHODS AND RESULTS

Laboratory tests were performed on selected soil samples to evaluate their engineering properties. Tests were performed following test methods of the American Society for Testing and Materials (ASTM), or other accepted standards. The following presents a brief description of the various test methods used. Laboratory results are presented in the following section of this Appendix.

California Bearing Ratio

Laboratory CBR tests were performed on selected soil samples in accordance with ASTM D 1883. The test specimens were saturated during testing.

California Bearing Ratio of In-Place Soils

Field CBR tests were performed at selected boring locations. The tests were conducted in accordance with ASTM D 4429.

Chemical Analysis

Soil materials were collected and tested for Sulfate and Chloride content, pH, by EPA methods and Resistivity by Caltrans test methods.

Classification

Soils were classified visually according to the Unified Soil Classification System. Visual classifications were supplemented by laboratory testing of selected samples according to ASTM D 2487.

In-Place Moisture/Density

The in-place moisture content and dry unit weight of selected relatively undisturbed samples in accordance with ASTM D 2216 and D 2937, respectively.

Material Finer than #200 Sieve by Washing.

200 washes were performed on selected samples in accordance with ASTM D 1140.

Moisture and Density Relations (Standard Effort)

Laboratory maximum dry density and optimum moisture content were evaluated on selected soil samples in accordance with ASTM D 698.

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California Bearing Ratio Report -ASTM D1883

Job Name:	Blythe Municipal Airport Pavement Rehab
Job Number:	40-3264
Lab Number:	25788
Date Sampled:	11/10/2015
Date Tested:	11/19/2015
Location:	B-2 @ 1' - 5'
Sample Description:	Light Brown/Tan Sand

Maximum Density Results	
Optimum Moist (%)	6.3
Max Density (pcf)	114.5
% Remolded:	NA
Density of Remold:	NA
Initial Moisture:	6.3
CBR Mold Volume:	0.0751

Moisture Top 1"		
Mold 1	**Wet. w/Tare:**	1208.6
	Dry w/Tare:	1099.8
	Tare:	172.4
	Moist %:	11.7
Mold 2	**Wet. w/Tare:**	1142.9
	Dry w/Tare:	1025.5
	Tare:	176.9
	Moist %:	13.8
Mold 3	**Wet. w/Tare:**	1110.6
	Dry w/Tare:	981.5
	Tare:	156.5
	Moist %:	15.6

Compaction Data:	**Mold 1**	**Mold 2**	**Mold 3**
# of Blows:	**56**	**25**	**10**
Wt. Mold & Soil:	8330.6	8115.3	7915.8
Wt. Mold:	4216.9	4210.0	4211.3
Wt. Wet Soil:	4113.7	3905.3	3704.5
Wet Density (PCF):	120.8	114.6	108.7
Dry Density (PCF):	113.6	107.8	102.3
% Compaction:	99.2	94.2	89.3
CBR, Percent @ 0.1"	20.9	15.2	9.7
CBR, Percent @ 0.2"	18.7	14.3	8.2

Soak & Swell Data:	**Mold 1**	**Mold 2**	**Mold 3**
Initial Height (in.):	4.58	4.58	4.58
Initial Reading (in):	0.0000	0.0000	0.0000
96hr:	0.0000	0.0000	0.0000
Swell (in.):	0.0000	0.0000	0.0000
Percent Swell:	0.0	0.0	0.0

Diameter of Piston:	1.96
Area of Piston:	3.02
Weight of Surcharge	10lbs

	Load In Pounds		
Penetration Data:	**Mold 1**	**Mold 2**	**Mold 3**
0.025	80	62	44
0.050	218	172	144
0.075	418	298	210
0.100	556	406	264
0.125	680	500	306
0.150	772	568	340
0.175	834	624	366
0.200	854	652	386
0.300	772	594	426
0.400	704	546	454
0.500	638	544	484

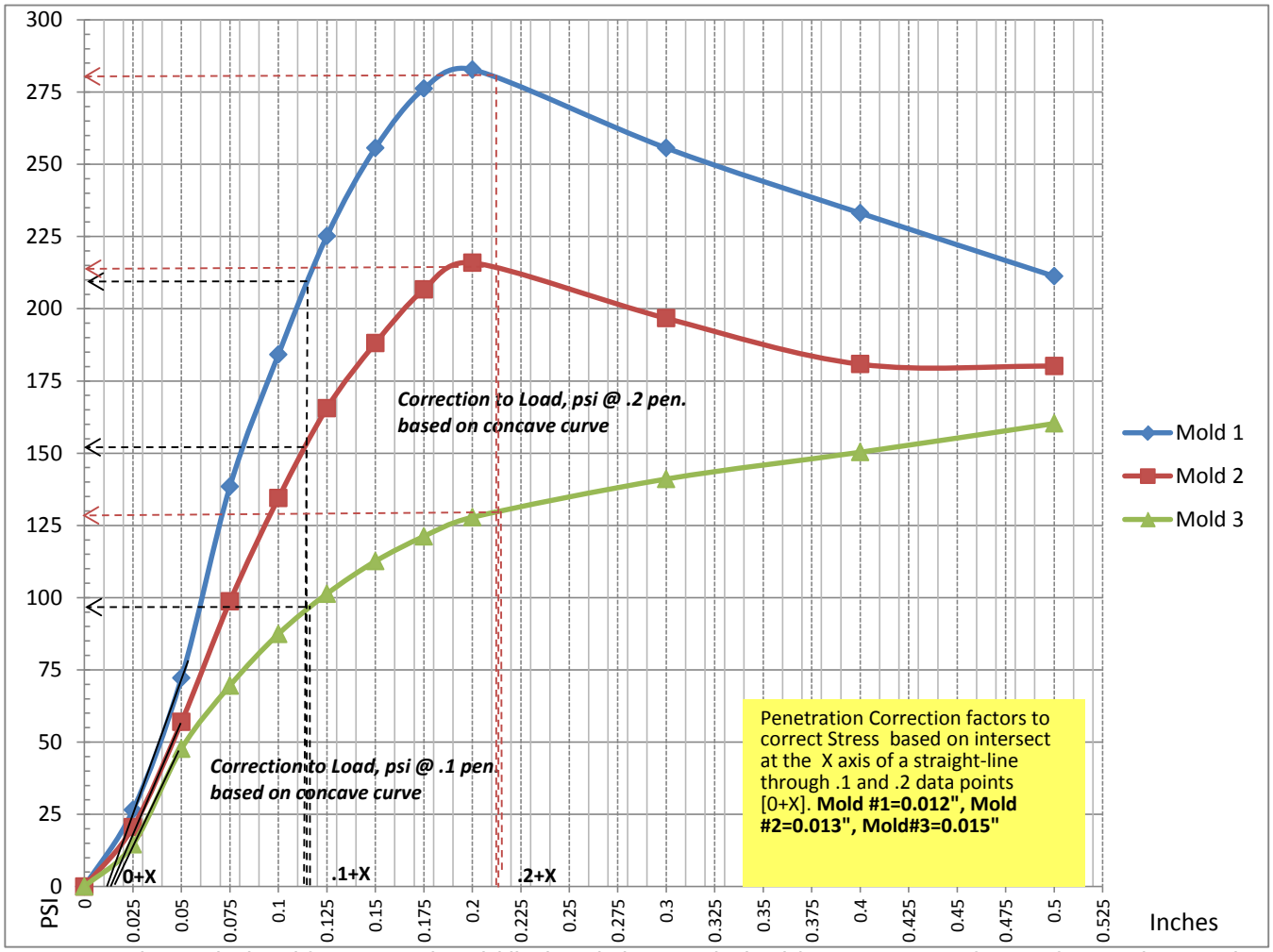
Load In PSI		
Mold 1	**Mold 2**	**Mold 3**
26	21	15
72	57	48
138	99	70
184	**134**	**87**
225	166	101
256	188	113
276	207	121
283	**216**	**128**
256	197	141
233	181	150
211	180	160

Tested By: RJP
Date Completed: 11/24/2015

Reviewed By: Erik Campbell
Date: 11/24/2015

California Bearing Ratio Report -ASTM D1883

Stress Penetration Curve



CBR values calculated from stress in psi (displayed along vertical axis). See ***Page 1*** of report for raw data results.

NOTE: The load penetration curve is necessary to determine if adjustments must be made to 0.1" and 0.2" penetration readings due to surface irregularities or concave upward curves. Any corrected values obtained from this graph will be listed below.

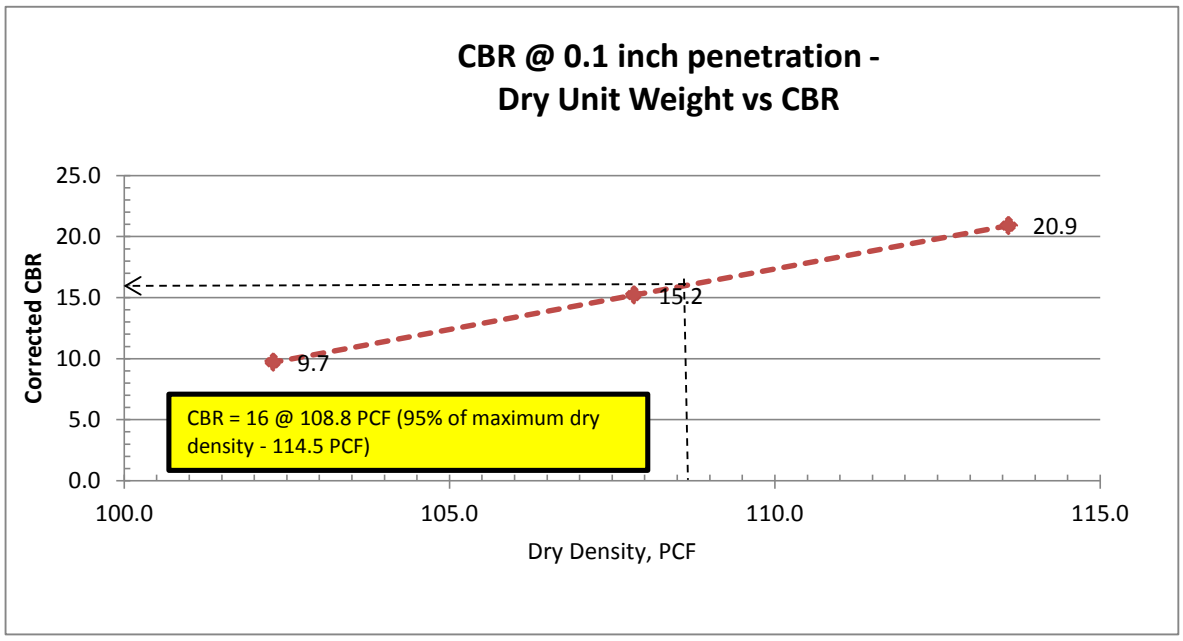
Corrected Load Penetration Values (psi)				
	0.1"		0.2"	
Mold ID	Plotted	Corrected	Plotted	Corrected
Mold 1	184	***209***	283	***280***
Mold 2	134	***152***	216	***214***
Mold 3	87	***97***	128	***123***

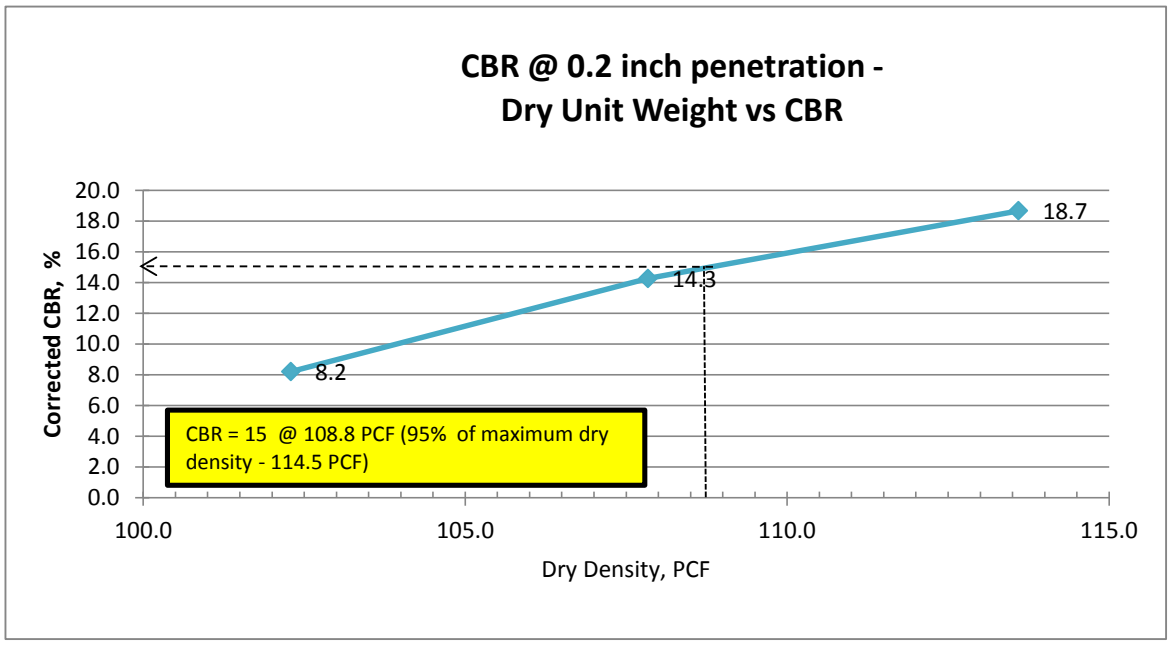
CBR @ Various Compaction Percentages			
	0.1"	0.2"	
90% (Mold #3)	**9%**	**10%**	*
95% (Mold #2)	**16%**	**15%**	*
100% (Mold #3)	**21%**	**19%**	*

***** *Data obtained through interpolation/extrapolation*

California Bearing Ratio Report - ASTM D1883
Graph of Dry Unit Weight vs. CBR*

***CBR corrected, as needed, where Load Penetration Curves are concave due to surface irregularities**





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California Bearing Ratio Report -ASTM D1883

Job Name:	Blythe Municipal Airport Pavement Rehab
Job Number:	40-3264
Lab Number:	25802
Date Sampled:	11/10/2015
Date Tested:	11/27/2015
Location:	B-6 @ 1-5'
Sample Description:	Light Brown/Tan Sand

Maximum Density Results	
Optimum Moist (%)	10.0
Max Density (pcf)	117.0
% Remolded:	NA
Density of Remold:	NA
Initial Moisture:	10.0
CBR Mold Volume:	0.0751

Moisture Top 1"		
Mold 1	**Wet. w/Tare:**	1129.9
	Dry w/Tare:	1023.7
	Tare:	168
	Moist %:	12.4
Mold 2	**Wet. w/Tare:**	1108.2
	Dry w/Tare:	995.8
	Tare:	162.5
	Moist %:	13.5
Mold 3	**Wet. w/Tare:**	1110.3
	Dry w/Tare:	979.9
	Tare:	162
	Moist %:	15.9

Compaction Data:	**Mold 1**	**Mold 2**	**Mold 3**
# of Blows:	**60**	**29**	**13**
Wt. Mold & Soil:	8612.6	8381.8	8175.6
Wt. Mold:	4216.7	4209.6	4211.4
Wt. Wet Soil:	4395.9	4172.2	3964.2
Wet Density (PCF):	129.0	122.5	116.4
Dry Density (PCF):	117.3	111.3	105.7
% Compaction:	100.2	95.1	90.4
CBR, Percent @ 0.1"	39.4	24.2	9.1
CBR, Percent @ 0.2"	40.9	25.7	10.9

Soak & Swell Data:	**Mold 1**	**Mold 2**	**Mold 3**
Initial Height (in.):	4.58	4.58	4.58
Initial Reading (in):	0.0000	0.0000	0.0000
96hr:	0.0000	0.0000	0.0000
Swell (in.):	0.0000	0.0000	0.0000
Percent Swell:	0.0	0.0	0.0

Diameter of Piston:	1.96
Area of Piston:	3.02
Weight of Surcharge	15 lbs

	Load In Pounds		
Penetration Data:	**Mold 1**	**Mold 2**	**Mold 3**
0.025	100	52	64
0.050	320	188	138
0.075	638	364	210
0.100	976	552	274
0.125	1294	726	338
0.150	1548	880	398
0.175	1752	1052	442
0.200	1870	1165	492
0.300	1722	1104	634
0.400	1644	1098	714
0.500	1622	1084	766

Load In PSI		
Mold 1	**Mold 2**	**Mold 3**
33	17	21
106	62	46
211	121	70
323	**183**	**91**
428	240	112
513	291	132
580	348	146
619	**386**	**163**
570	366	210
544	364	236
537	359	254

Tested By: Ryan Powney

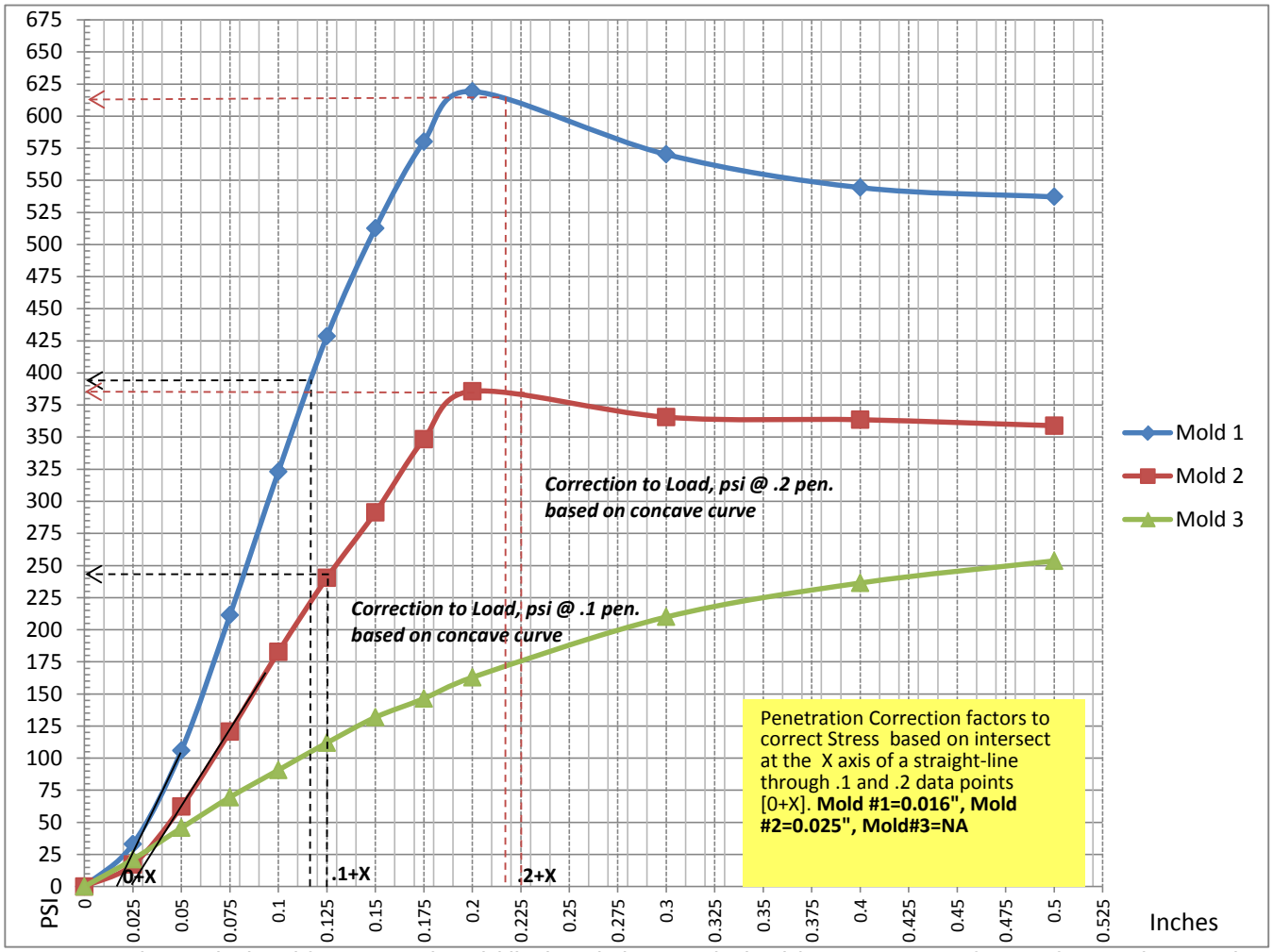
Date Completed: 12/2/2015

Reviewed By: Erik Campbell

Date: 12/2/2015

California Bearing Ratio Report -ASTM D1883

Stress Penetration Curve



CBR values calculated from stress in psi (displayed along vertical axis). See ***Page 1*** of report for raw data results.

NOTE: The load penetration curve is necessary to determine if adjustments must be made to 0.1" and 0.2" penetration readings due to surface irregularities or concave upward curves. Any corrected values obtained from this graph will be listed below.

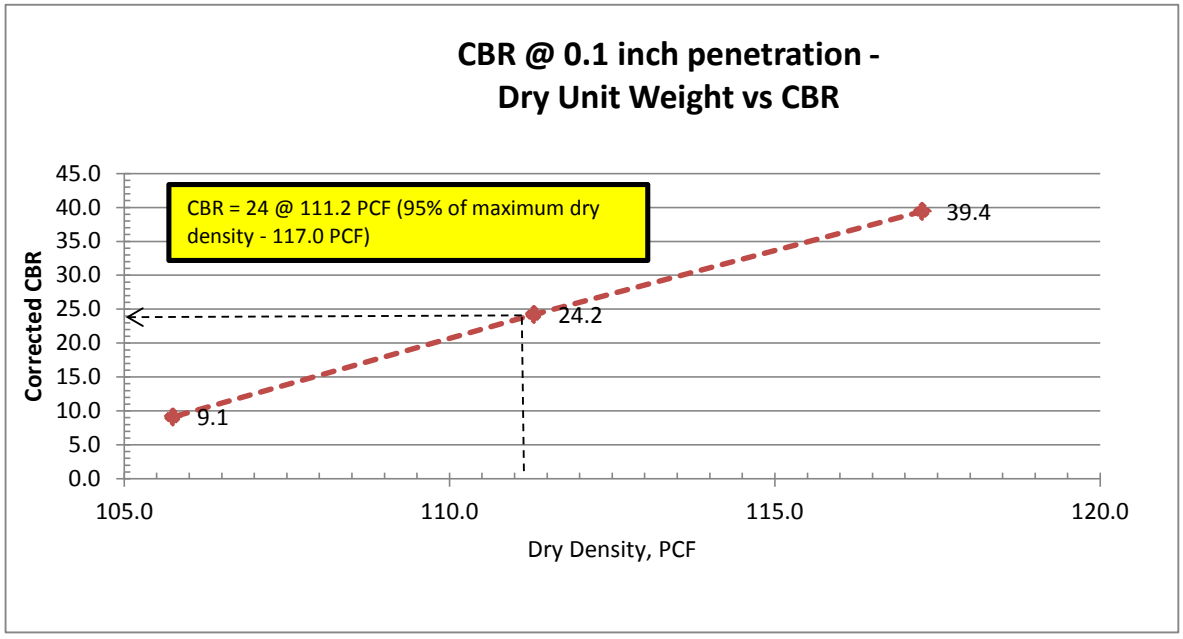
Corrected Load Penetration Values (psi)				
	0.1"		0.2"	
Mold ID	Plotted	Corrected	Plotted	Corrected
Mold 1	323	***394***	619	***613***
Mold 2	183	***242***	386	***385***
Mold 3	91	***91***	163	***163***

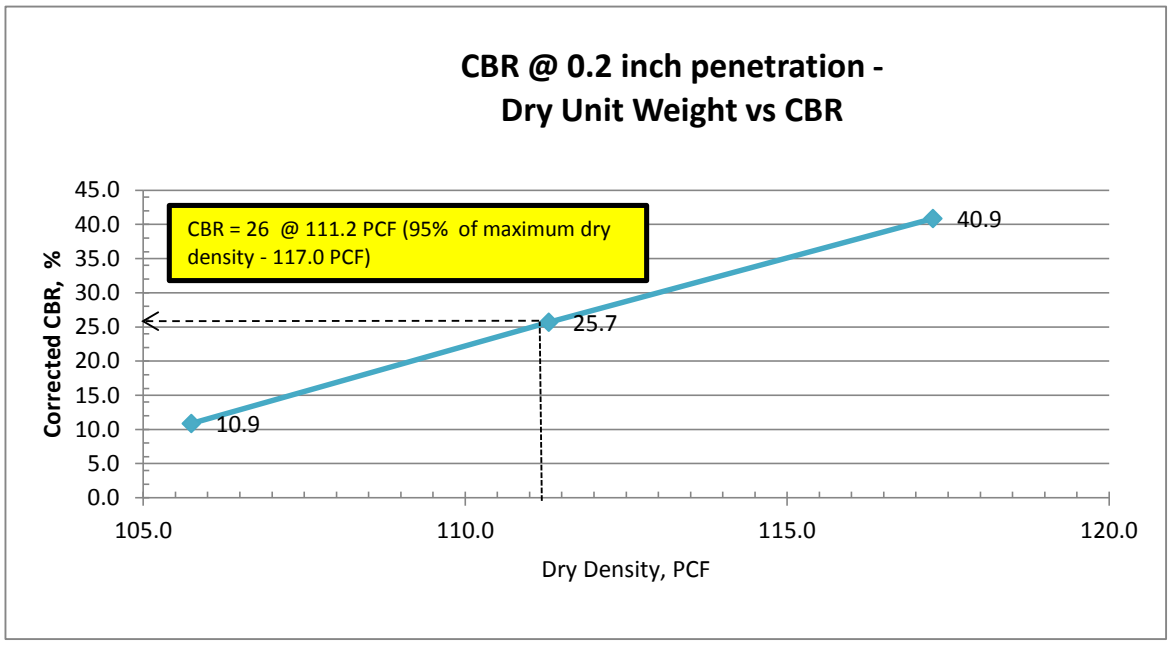
CBR @ Various Compaction Percentages			
	0.1"	0.2"	
90% (Mold #3)	**9%**	**11%**	
95% (Mold #2)	**24%**	**26%**	
100% (Mold #1)	**39%**	**41%**	

***** *Data obtained through interpolation/extrapolation*

California Bearing Ratio Report - ASTM D1883
Graph of Dry Unit Weight vs. CBR*

***CBR corrected, as needed, where Load Penetration Curves are concave due to surface irregularities**





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California Bearing Ratio Report -ASTM D1883

Job Name:	Blythe Municipal Airport Pavement Rehab
Job Number:	40-3264
Lab Number:	25788
Date Sampled:	11/10/2015
Date Tested:	11/19/2015
Location:	B-8 @ 1' - 5'
Sample Description:	Light Brown/Tan Silty Sand

Compaction Data:	**Mold 1**	**Mold 2**	**Mold 3**
# of Blows:	**56**	**25**	**10**
Wt. Mold & Soil:	8629.9	8435.9	8202.9
Wt. Mold:	4320.0	4323.9	4327.9
Wt. Wet Soil:	4309.9	4112.0	3875.0
Wet Density (PCF):	126.5	120.7	113.8
Dry Density (PCF):	116.4	111.0	104.6
% Compaction:	98.9	94.3	88.9
CBR, Percent @ 0.1"	50.1	18.4	7.1
CBR, Percent @ 0.2"	36.3	16.1	6.5

Soak & Swell Data:	**Mold 1**	**Mold 2**	**Mold 3**
Initial Height (in.):	4.58	4.58	4.58
Initial Reading (in):	0.0000	0.0000	0.0000
96hr:	0.0000	0.0000	0.0000
Swell (in.):	0.0000	0.0000	0.0000
Percent Swell:	0.0	0.0	0.0

Maximum Density Results	
Optimum Moist (%)	8.7
Max Density (pcf)	117.7
% Remolded:	NA
Density of Remold:	NA
Initial Moisture:	8.7
CBR Mold Volume:	0.0751

Moisture Top 1"		
Mold 1	**Wet. w/Tare:**	1168.2
	Dry w/Tare:	1043.3
	Tare:	168
	Moist %:	14.3
Mold 2	**Wet. w/Tare:**	1048.3
	Dry w/Tare:	930.3
	Tare:	162.6
	Moist %:	15.4
Mold 3	**Wet. w/Tare:**	1065.2
	Dry w/Tare:	944.5
	Tare:	162
	Moist %:	15.4

Diameter of Piston:	1.96
Area of Piston:	3.02
Weight of Surcharge	10lbs

	Load In Pounds		
Penetration Data:	**Mold 1**	**Mold 2**	**Mold 3**
0.025	360	148	84
0.050	822	318	138
0.075	1198	448	178
0.100	1466	536	214
0.125	1646	610	246
0.150	1730	662	264
0.175	1726	704	282
0.200	1656	735	296
0.300	1566	812	368
0.400	1552	866	420
0.500	1588	840	466

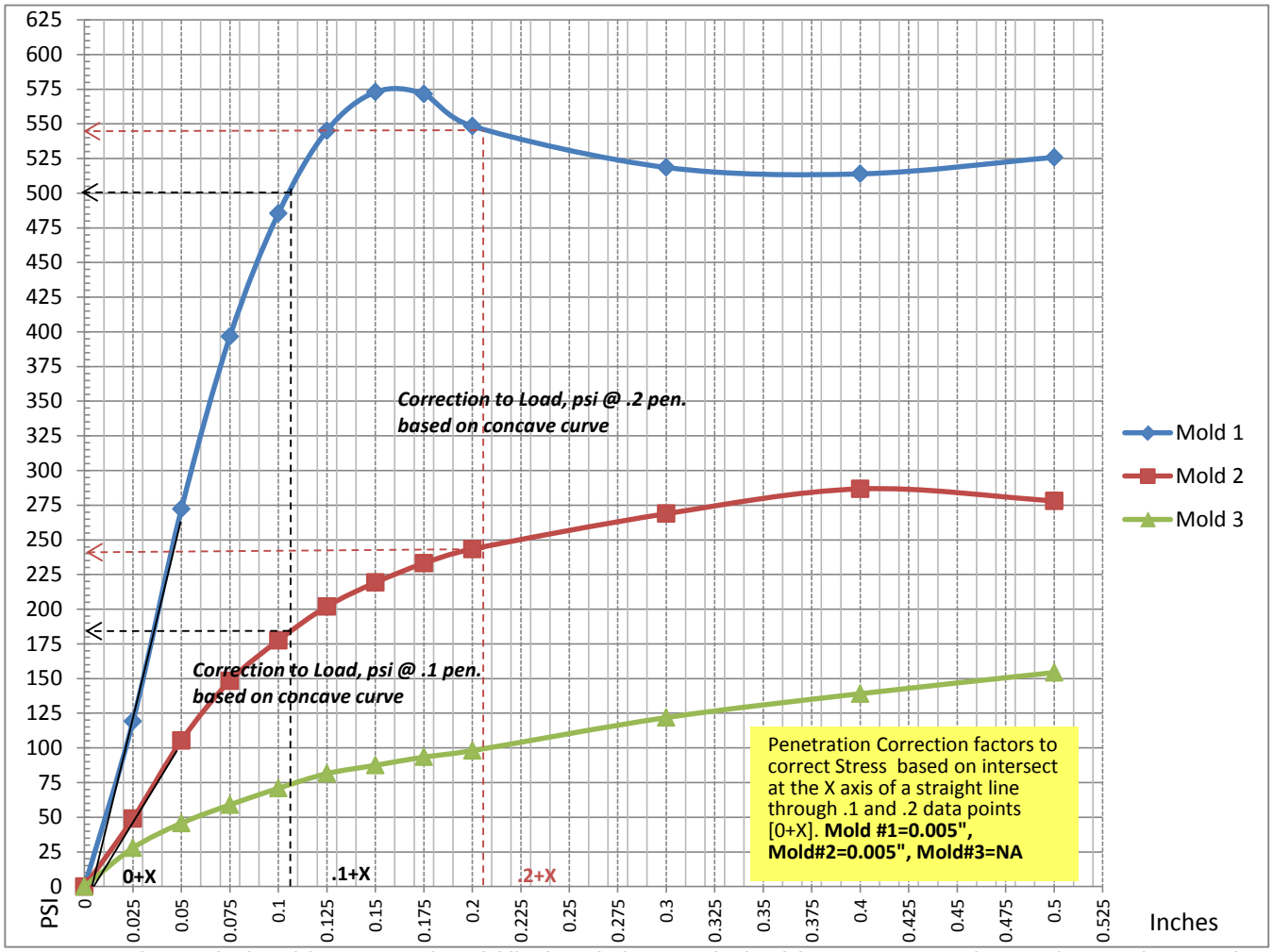
Load In PSI		
Mold 1	**Mold 2**	**Mold 3**
119	49	28
272	105	46
397	148	59
485	**177**	**71**
545	202	81
573	219	87
572	233	93
548	**243**	**98**
519	269	122
514	287	139
526	278	154

Tested By: RJP
Date Completed: 11/24/2015

Reviewed By: Erik Campbell
Date: 11/24/2015

California Bearing Ratio Report -ASTM D1883

Stress Penetration Curve



CBR values calculated from stress in psi (displayed along vertical axis). See ***Page 1*** of report for raw data results.

NOTE: The load penetration curve is necessary to determine if adjustments must be made to 0.1" and 0.2" penetration readings due to surface irregularities or concave upward curves. Any corrected values obtained from this graph will be listed below.

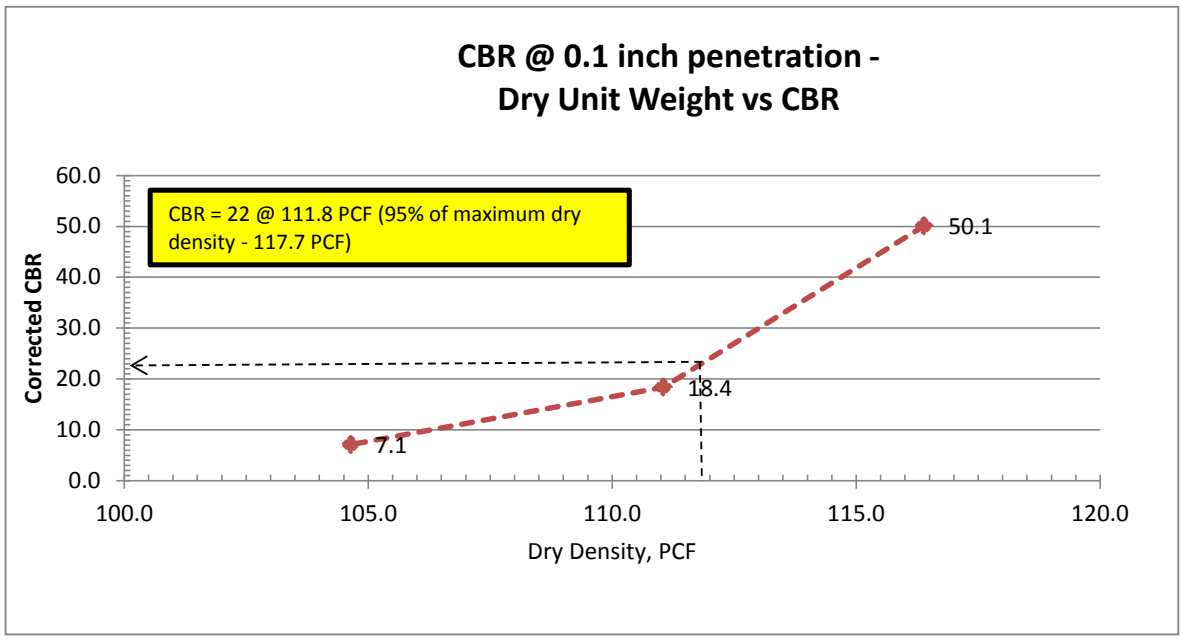
Corrected Load Penetration Values (psi)				
	0.1"		0.2"	
Mold ID	Plotted	Corrected	Plotted	Corrected
Mold 1	485	***501***	548	***545***
Mold 2	177	***184***	243	***241***
Mold 3	71	***71***	98	***98***

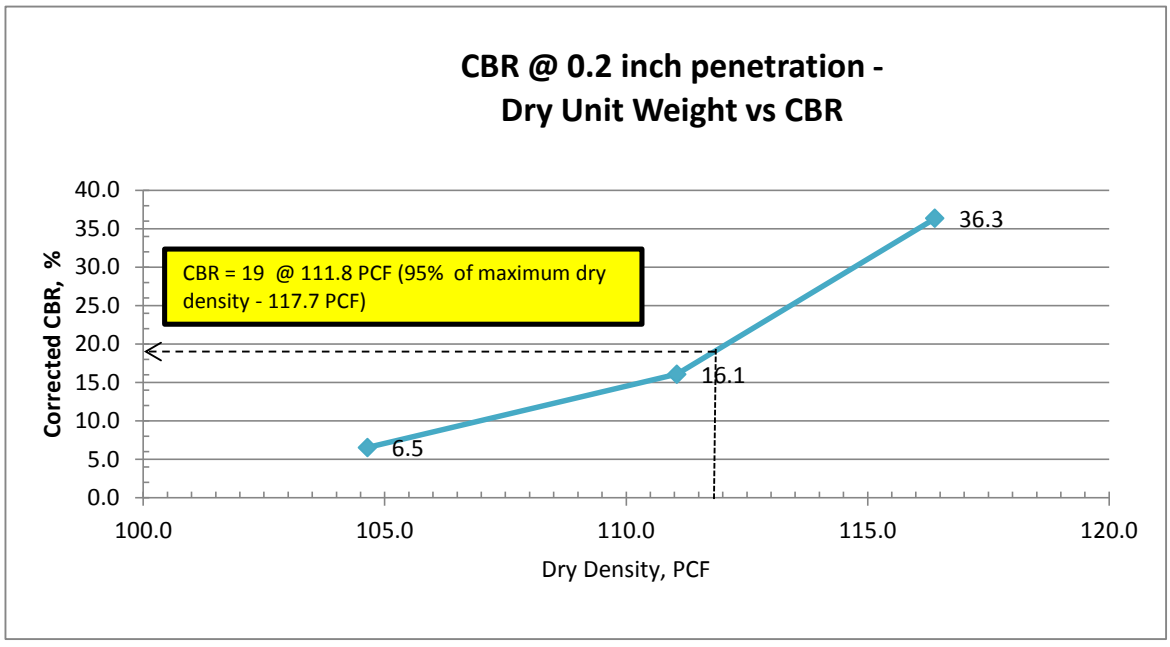
CBR @ Various Compaction Percentages			
	0.1"	0.2"	
90% (Mold # 3)	**9%**	**8%**	*
95% (Mold #2)	**22%**	**19%**	*
100% (Mold #1)	**58%**	**42%**	*

***** *Data obtained through interpolation/extrapolation*

California Bearing Ratio Report - ASTM D1883
Graph of Dry Unit Weight vs. CBR*

***CBR corrected, as needed, where Load Penetration Curves are concave due to surface irregularities**





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California Bearing Ratio Report -ASTM D1883

Job Name:	Blythe Municipal Airport Pavement Rehab
Job Number:	40-3264
Lab Number:	25802
Date Sampled:	11/10/2015
Date Tested:	11/25/2015
Location:	B-9 @ 1-5'
Sample Description:	Light Brown/Tan Sand

Maximum Density Results	
Optimum Moist (%)	10.0
Max Density (pcf)	117.2
% Remolded:	NA
Density of Remold:	NA
Initial Moisture:	10.0
CBR Mold Volume:	0.0751

Moisture Top 1"		
Mold 1	**Wet. w/Tare:**	1000.5
	Dry w/Tare:	907.9
	Tare:	172.4
	Moist %:	12.6
Mold 2	**Wet. w/Tare:**	1031.0
	Dry w/Tare:	929.7
	Tare:	177.0
	Moist %:	13.5
Mold 3	**Wet. w/Tare:**	1022.1
	Dry w/Tare:	905.1
	Tare:	156.6
	Moist %:	15.6

Compaction Data:	**Mold 1**	**Mold 2**	**Mold 3**
# of Blows:	**60**	**29**	**13**
Wt. Mold & Soil:	8717.3	8501.0	8279.6
Wt. Mold:	4320.0	4323.9	4327.9
Wt. Wet Soil:	4397.3	4177.1	3951.7
Wet Density (PCF):	129.1	122.6	116.0
Dry Density (PCF):	117.3	111.4	105.4
% Compaction:	100.1	95.1	90.0
CBR, Percent @ 0.1"	43.0	26.0	11.9
CBR, Percent @ 0.2"	39.7	25.7	13.4

Soak & Swell Data:	**Mold 1**	**Mold 2**	**Mold 3**
Initial Height (in.):	4.58	4.58	4.58
Initial Reading (in):	0.0000	0.0000	0.0000
96hr:	0.0000	0.0000	0.0000
Swell (in.):	0.0000	0.0000	0.0000
Percent Swell:	0.0	0.0	0.0

Diameter of Piston:	1.96
Area of Piston:	3.02
Weight of Surcharge	**15 lbs.**

	Load In Pounds		
Penetration Data:	**Mold 1**	**Mold 2**	**Mold 3**
0.025	130	78	62
0.050	420	198	150
0.075	778	320	248
0.100	1098	532	330
0.125	1422	722	400
0.150	1632	886	468
0.175	1768	1022	532
0.200	1816	1114	590
0.300	1700	1240	736
0.400	1622	1264	795
0.500	1598	1250	818

Load In PSI		
Mold 1	**Mold 2**	**Mold 3**
43	26	21
139	66	50
258	106	82
364	**176**	**109**
471	239	132
540	293	155
585	338	176
601	**369**	**195**
563	411	244
537	419	263
529	414	271

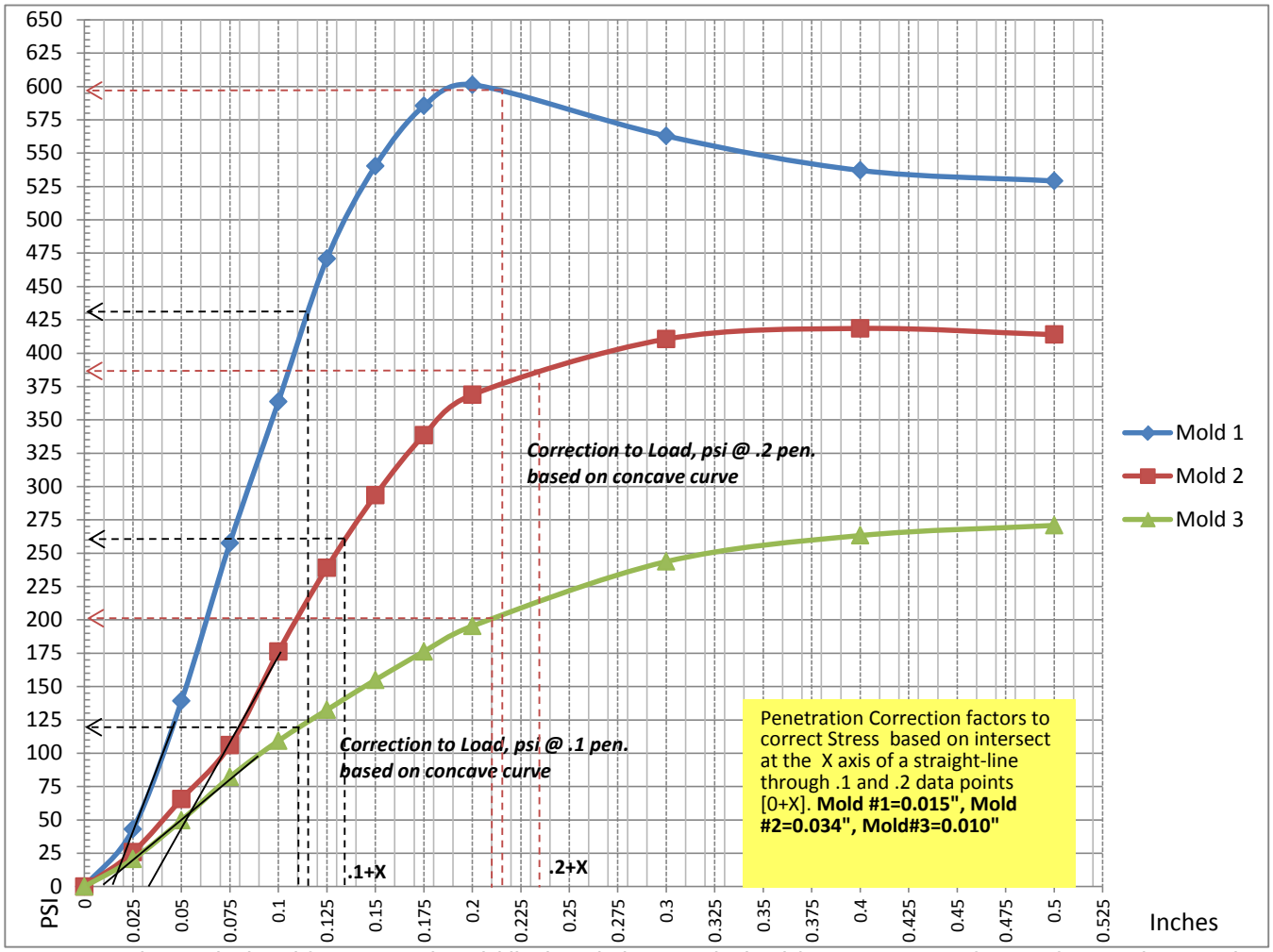
0+X

Tested By: Ryan Powney
Date Completed: 12/2/2015

Reviewed By: Erik Campbell
Date: 12/2/2015

California Bearing Ratio Report -ASTM D1883

Stress Penetration Curve



CBR values calculated from stress in psi (displayed along vertical axis). See ***Page 1*** of report for raw data results.

NOTE: The load penetration curve is necessary to determine if adjustments must be made to 0.1" and 0.2" penetration readings due to surface irregularities or concave upward curves. Any corrected values obtained from this graph will be listed below.

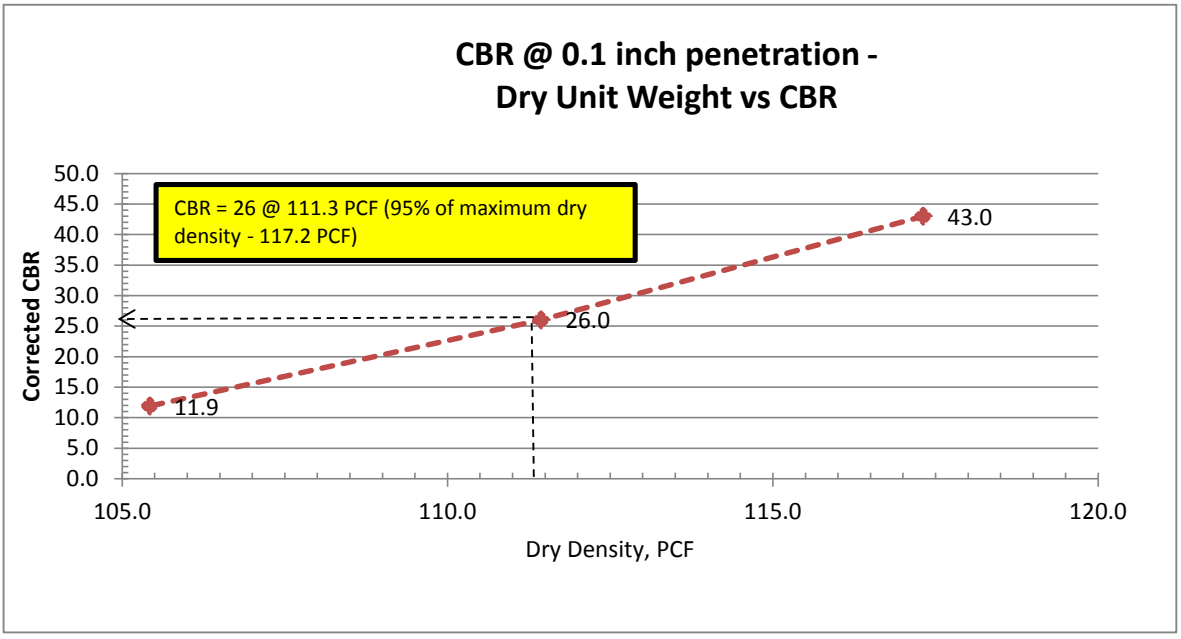
Corrected Load Penetration Values (psi)				
	0.1"		0.2"	
Mold ID	Plotted	Corrected	Plotted	Corrected
Mold 1	364	***430***	601	***596***
Mold 2	176	***260***	369	***386***
Mold 3	109	***119***	195	***201***

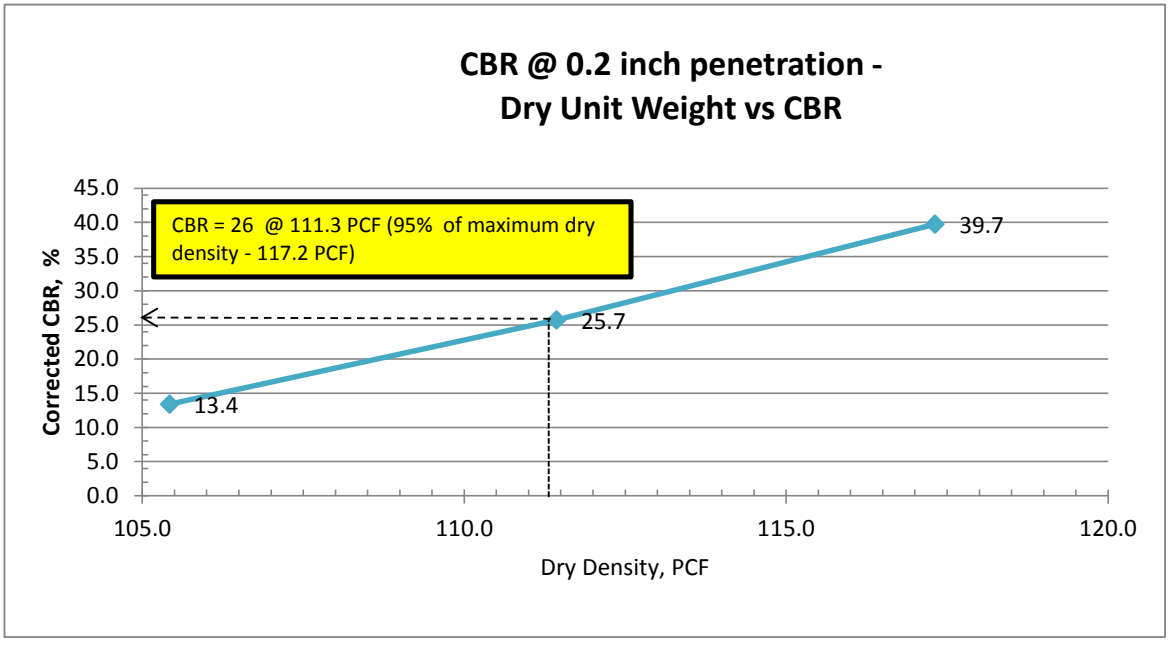
CBR @ Various Compaction Percentages			
	0.1"	0.2"	
90% (Mold #3)	**12%**	**13%**	
95% (Mold #2)	**26%**	**26%**	
100% (Mold #1)	**43%**	**40%**	

***** *Data obtained through interpolation/extrapolation*

California Bearing Ratio Report - ASTM D1883
Graph of Dry Unit Weight vs. CBR*

***CBR corrected, as needed, where Load Penetration Curves are concave due to surface irregularities**





LABORATORY COMPACTION OF SOIL (MOD.)

ASTM D 698

Project Name:	Blythe Municipal Airport		Tested By :	RJP	Date: 11/18/2015
Project No.:	40-3264		Calculated By :	RJP	Date: 11/18/2015
Lab No.:	25788		Sampled By:	RE	Date: 11/10/2015
Sample No. :	B-2		Depth (ft.)	1' - 5'	
Sample Description:	Light Brown/Tan Beach Sand				

Moisture Added (ml)	100	150	200	50	
TEST NO.	1	2	3	4	
Wt. Comp. Soil + Mold (g)	3850	3882	3907	3797	
Wt. of Mold (g)	2037	2037	2037	2037	
Net Wt. of Soil (g)	1812	1845	1869	1760	
	B-18	B-6	B-5		
Wet Wt. of Soil + Cont. (g)	838.4	905.0	890.7	871.3	
Dry Wt. of Soil + Cont. (g)	805.9	857.5	831.0	850.0	
Wt. of Container (g)	197.9	195.8	181.8	190.1	
Moisture Content (%)	5.3	7.2	9.2	3.2	
Wet Density (pcf)	120.3	122.5	124.1	116.8	
Dry Density (pcf)	114.2	114.3	113.7	113.2	

Preparation Method: Dry [X] Moist [ ]

Mechanical Rammer [ ]
Manual Rammer [X]

Hammer Weight: 5.0 lb.

Drop: 12.00 in.

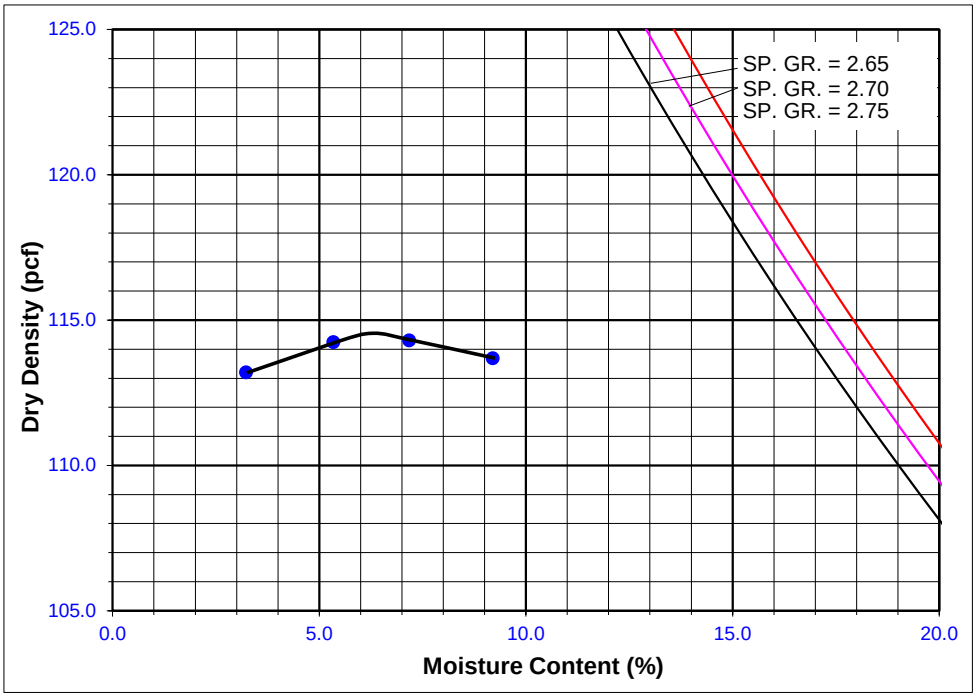
Mold Volume (ft.^{3}): 0.03320

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 3 (Three)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 3 (Three)
Blows per layer : 25 (twenty-five)
Use if + #4 > 20% and + 3/8 " < 20%

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 3 (Three)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + ¾ in <30%



OVERSIZE FRACTION

Total Sample Weight (g): N/A

Weight Retained (g)		Percent Retained
	Plus 3/4"	N/A
	Plus 3/8"	
	Plus #4	

Maximum Dry Density (pcf): 114.5

Optimum Moisture Content (%): 6.3

Rock Correction Applied per ASTM D 4718

Maximum Dry Density (pcf): N/A

Optimum Moisture Content (%): N/A

LABORATORY COMPACTION OF SOIL (MOD.)

ASTM D 698

Project Name:	Blythe Municipal Airport		Tested By :	RJP	Date: 11/24/2015
Project No.:	40-3264		Calculated By :	RJP	Date: 11/24/2015
Lab No.:	25802		Sampled By:	RE	Date: 11/10/2015
Sample No. :	B-6		Depth (ft.)	1' - 5'	
Sample Description:	Light Brown/Tan Sand				

Moisture Added (ml)	150	200	250	300	0
TEST NO.	1	2	3	4	
Wt. Comp. Soil + Mold (g)	3868	3938	3977	3990	
Wt. of Mold (g)	2031	2031	2031	2031	
Net Wt. of Soil (g)	1837	1907	1946	1959	
	c-5	c-6	c-4	c-1	c-2
Wet Wt. of Soil + Cont. (g)	907.9	1026.4	1016.0	1009.8	1093.6
Dry Wt. of Soil + Cont. (g)	860.5	955.1	932.9	914.5	1085.1
Wt. of Container (g)	177.0	156.7	172.6	173.9	162.2
Moisture Content (%)	6.9	8.9	10.9	12.9	0.9
Wet Density (pcf)	122.0	126.6	129.2	130.1	
Dry Density (pcf)	114.1	116.3	116.5	115.3	

Preparation Method: Dry [X] Moist [ ]

Mechanical Rammer [ ] Manual Rammer [X]

Hammer Weight: 5.0 lb.

Drop: 12.00 in.

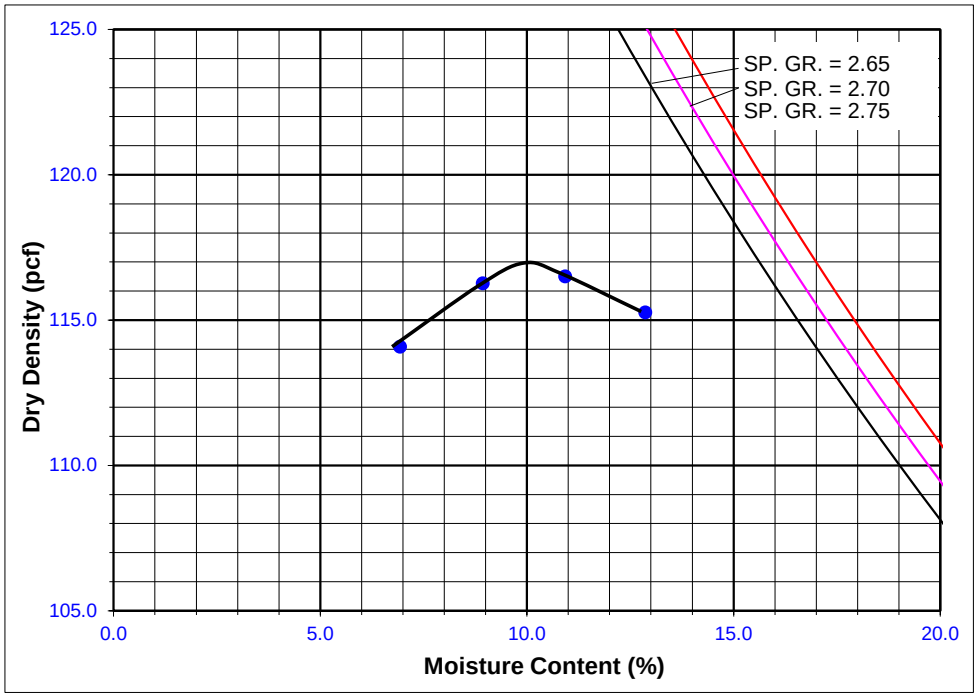
Mold Volume ($ft.^3$): 0.03320

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 3 (Three)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 3 (Three)
Blows per layer : 25 (twenty-five)
Use if + #4 > 20% and + 3/8 " < 20%

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 3 (Three)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + ¾ in <30%



OVERSIZE FRACTION

Total Sample Weight (g): N/A

Weight Retained (g)		Percent Retained
	Plus 3/4"	N/A
	Plus 3/8"	
	Plus #4	

Maximum Dry Density (pcf): 117.0

Optimum Moisture Content (%): 10.0

Rock Correction Applied per ASTM D 4718

Maximum Dry Density (pcf): N/A

Optimum Moisture Content (%): N/A

LABORATORY COMPACTION OF SOIL (MOD.)

ASTM D 698

Project Name:	Blythe Municipal Airport	Tested By :	RJP	Date:	11/18/2015
Project No.:	40-3264	Calculated By :	RJP	Date:	11/18/2015
Lab No.:	25788	Sampled By:	RE	Date:	11/10/2015
Sample No. :	B-8	Depth (ft.)	2' - 5'		
Sample Description:	Light Brown/Tan Beach Sand				

Moisture Added (ml)	100	150	200	250	
TEST NO.	1	2	3	4	
Wt. Comp. Soil + Mold (g)	3835	3922	3969	3960	
Wt. of Mold (g)	2037	2037	2037	2037	
Net Wt. of Soil (g)	1798	1885	1932	1923	
Wet Wt. of Soil + Cont. (g)	854.9	849.2	861.3	841.3	
Dry Wt. of Soil + Cont. (g)	820.3	802.9	803.3	774.3	
Wt. of Container (g)	193.4	188.5	191.5	189.8	
Moisture Content (%)	5.5	7.5	9.5	11.5	
Wet Density (pcf)	119.4	125.2	128.3	127.7	
Dry Density (pcf)	113.1	116.4	117.2	114.5	

Preparation Method: Dry [X] Moist [ ]

Mechanical Rammer [ ] Manual Rammer [X]

Hammer Weight: 5.0 lb.

Drop: 12.00 in.

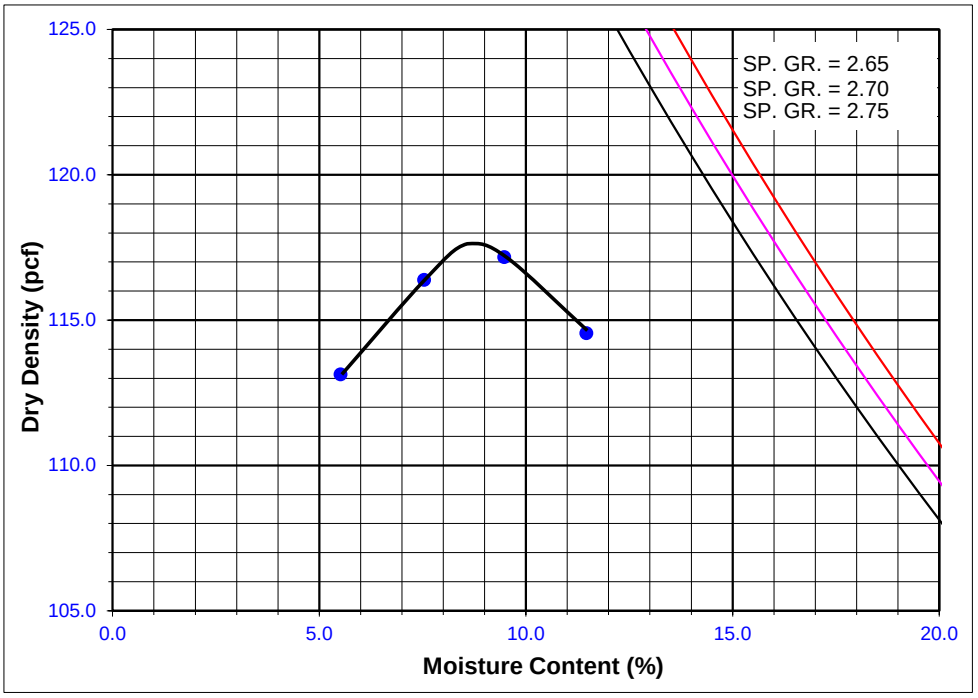
Mold Volume (ft.^{3}): 0.03320

PROCEDURE USED

[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 3 (Three)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 3 (Three)
Blows per layer : 25 (twenty-five)
Use if + #4 > 20% and + 3/8 " < 20%

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 3 (Three)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + ¾ in <30%



OVERSIZE FRACTION

Total Sample Weight (g): N/A

Weight Retained (g)		Percent Retained
	Plus 3/4"	N/A
	Plus 3/8"	
	Plus #4	

Maximum Dry Density (pcf): 117.7

Optimum Moisture Content (%): 8.7

Rock Correction Applied per ASTM D 4718

Maximum Dry Density (pcf): N/A

Optimum Moisture Content (%): N/A

LABORATORY COMPACTION OF SOIL (MOD.)

ASTM D 698

Project Name:	Blythe Municipal Airport	Tested By :	RJP	Date:	11/24/2015
Project No.:	40-3264	Calculated By :	RJP	Date:	11/24/2015
Lab No.:	25802	Sampled By:	RE	Date:	11/10/2015
Sample No. :	B-9	Depth (ft.)	1' - 5'		
Sample Description:	Light Brown/Tan Sand				

Moisture Added (ml)	150	200	250	300	0
TEST NO.	1	2	3	4	
Wt. Comp. Soil + Mold (g)	3884	3942	3988	3999	
Wt. of Mold (g)	2037	2037	2037	2037	
Net Wt. of Soil (g)	1846	1905	1951	1962	
Wet Wt. of Soil + Cont. (g)	835.7	959.6	1027.1	995.0	1020.9
Dry Wt. of Soil + Cont. (g)	793.3	897.0	944.7	902.5	1014.8
Wt. of Container (g)	162.1	168.2	174.1	171.8	158.9
Moisture Content (%)	6.7	8.6	10.7	12.7	0.7
Wet Density (pcf)	122.6	126.5	129.5	130.3	
Dry Density (pcf)	114.9	116.5	117.0	115.6	

Preparation Method: Dry [X] Moist [ ]

Mechanical Rammer [ ]
Manual Rammer [X]

Hammer Weight: 5.0 lb.

Drop: 12.00 in.

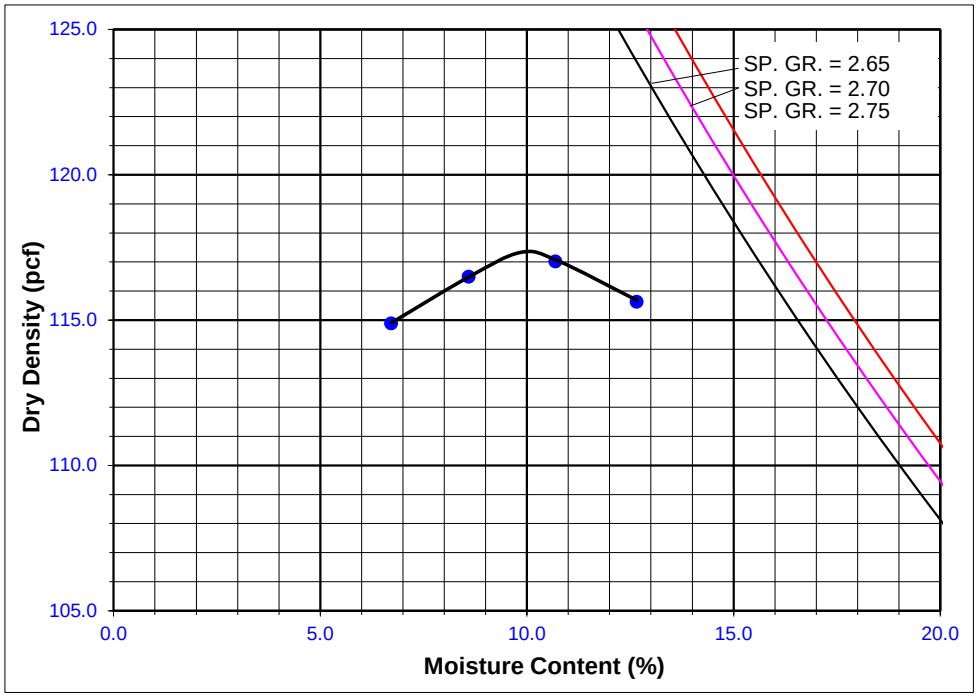
Mold Volume (ft.^{3}): 0.03320

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 3 (Three)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 3 (Three)
Blows per layer : 25 (twenty-five)
Use if + #4 > 20% and + 3/8 " < 20%

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 3 (Three)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + ¾ in <30%



OVERSIZE FRACTION

Total Sample Weight (g): N/A

Weight Retained (g)		Percent Retained
	Plus 3/4"	N/A
	Plus 3/8"	
	Plus #4	

Maximum Dry Density (pcf): 117.2

Optimum Moisture Content (%): 10.0

Rock Correction Applied per ASTM D 4718

Maximum Dry Density (pcf): N/A

Optimum Moisture Content (%): N/A

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The Standard of Excellence for Over 100 Years

Client Name: Construction Testing & Eng., Inc.
Contact: Robert Ellerbusch
Address: 14538 Meridian Parkway, Suite A
Riverside, CA 92518

Report Date: 22-Nov-2015

Project Name: Const. Test.-Soils
Project Number: [none]

Work Order Number: B5K1232

Received on Ice (Y/N): Yes Temp: 22 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

Sample Identification

Lab Sample #	Client Sample ID	Matrix	Date Sampled	By	Date Submitted	By
B5K1232-01	40-3264: B-5 @ 1-5'	Soil	11/10/15 12:00	Rob Ellerbusch	11/12/15 15:53	Robert Ellerbusch

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Client Name: Construction Testing & Eng., Inc.
Contact: Robert Ellerbusch
Address: 14538 Meridian Parkway, Suite A
Riverside, CA 92518

Report Date: 22-Nov-2015

Project Name: Const. Test.-Soils
Project Number: [none]

Work Order Number: B5K1232

Received on Ice (Y/N): Yes Temp: 22 °C

Laboratory Reference Number
B5K1232-01

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
40-3264: B-5 @ 1-5'	Soil	11/10/15 12:00	11/12/15 15:53

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Saturated Paste							
pH	7.1	0.1	pH Units	S-1.10 W.S.	11/20/15 14:55	cdcs	
Minimum Resistivity	8500	10	ohm-cm	Cal Trans 643	11/20/15 14:55	cdcs	
Water Extract							
Chloride	54	10	ppm	Ion Chromat.	11/19/15 17:19	dcb	N-SAG, N_WEX
Sulfate	60	10	ppm	Ion Chromat.	11/19/15 17:19	dcb	N-SAG, N_WEX

BABCOCK Laboratories, Inc.
The Standard of Excellence for Over 100 Years

Client Name: Construction Testing & Eng., Inc.
Contact: Robert Ellerbusch
Address: 14538 Meridian Parkway, Suite A
Riverside, CA 92518

Report Date: 22-Nov-2015

Project Name: Const. Test.-Soils
Project Number: [none]

Work Order Number: B5K1232

Received on Ice (Y/N): Yes Temp: 22 °C

Notes and Definitions

N_WEX	Analyte determined on a 1:10 water extract from the sample.
N-SAG	Results reported in ppm are expressed on an air dried soil basis.
ND:	Analyte NOT DETECTED at or above the Method Detection Limit **(if MDL is reported)**, otherwise at or above the Reportable Detection Limit (RDL)
NR:	Not Reported
RDL:	Reportable Detection Limit
MDL:	Method Detection Limit
* / ''' :	NELAP does not offer accreditation for this analyte/method/matrix combination

Approval

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted. Babcock Laboratories and its officers and employees assume no responsibility and make no warranty, express or implied, for uses or interpretations made by any recipients, intended or unintended, of this report.

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NELAP no. 02101CA
CA Elap no. 2698
EPA no. CA00102

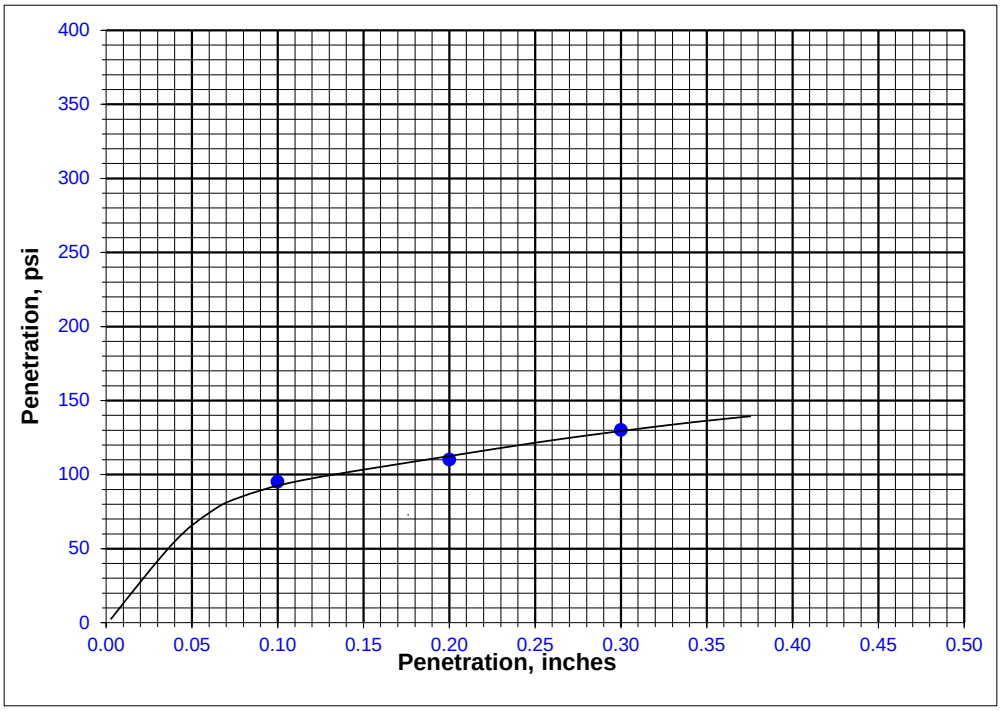
APPENDIX C

FIELD CBR RESULTS

Field CBR Test (ASTM D4429)

Project Name:	Blythe Municipal Airport Pavement Rehabilitation
CTE Project No.:	40-3264
Test Date:	11/10/15
Test ID:	B-6
CBR Value:	10

	1	2	3
inches	0.10	0.2	0.30
psi	95.0	110.0	130.0



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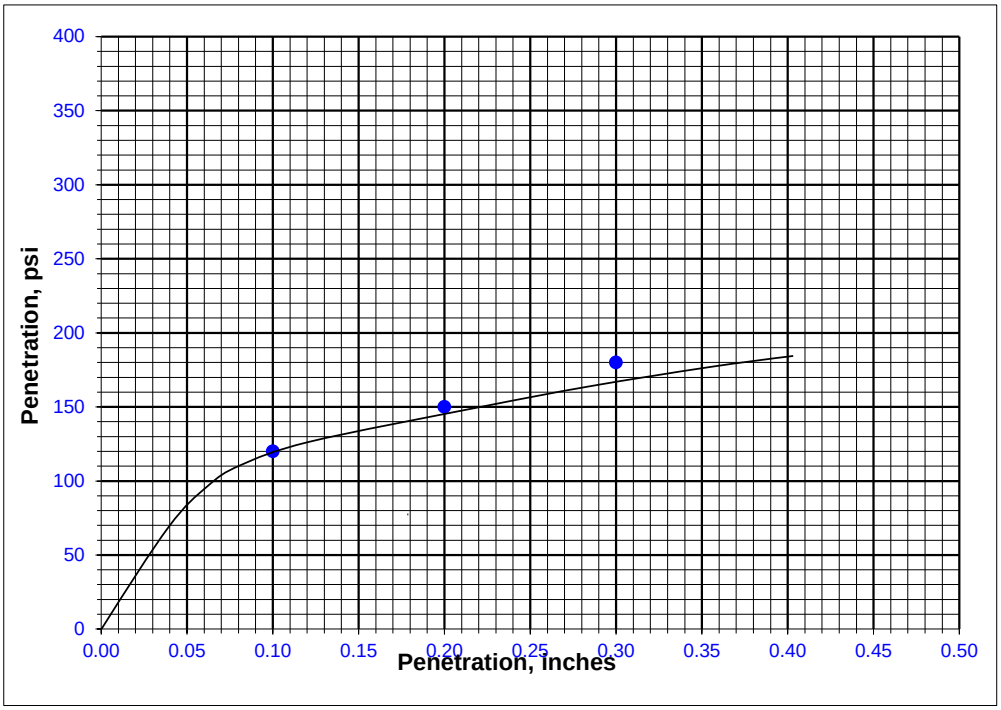
Field CBR Test (ASTM D4429)

Project Name:	Blythe Municipal Airport Pavement Rehabilitation
CTE Project No.:	40-3264
Test Date:	11/10/15
Test ID:	B-9
CBR Value:	12

	1	2	3
inches	0.10	0.2	0.30
psi	120.0	150.0	180.0



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