Technical Specifications

Item P-620, Runway and Taxiway Marking

DESCRIPTION

620-1.1 This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer. The terms "paint" and "marking material" as well as "painting" and "application of markings" are interchangeable throughout this specification.

MATERIALS

620-2.1 Materials acceptance. The Contractor shall furnish manufacturer's certified test reports for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers 55 gallons or smaller for inspection by the Engineer. Material shall not be loaded into the equipment until inspected by the Engineer.

620-2.2 Marking materials. Paint shall be waterborne in accordance with the requirements of paragraph 620-2.2 **a**. Paint shall be furnished in **Yellow, 33538 or 33655** in accordance with Federal Standard No. 595.

A. **Waterborne**. Paint shall meet the requirements of Federal Specification TT-P-1952E, Type II . The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

620-2.3 Reflective media. Glass beads shall meet the requirements for **Type III**. Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Paint Color	Glass Beads, Type III
Yellow	See Table 1
Black	Not used

CONSTRUCTION METHODS

620-3.1 Weather limitations. The painting shall be performed only when the surface is dry and when the surface temperature is at least 45°F and rising and the pavement surface temperature is at least 5°F above

the dew point or meets the manufacturer's recommendations. Markings shall not be applied when the pavement temperature is greater than 130°F. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns.

620-3.2 Equipment. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray.

620-3.3 Preparation of surface. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material that would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by waterblasting or by other methods as required to remove all contaminants minimizing damage to the pavement surface. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the Engineer. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

Paint shall not be applied to Portland cement concrete pavement until the areas to be painted are clean of curing material. Sandblasting or high-pressure water shall be used to remove curing materials.

At least 24 hours prior to remarking existing markings, loose existing markings must be removed such that 100% of the loose existing markings are removed. After removal, the surface shall be cleaned of all residue or debris either with sweeping or blowing with compressed air or both.

Prior to the initial application of any markings, the Contractor shall certify in writing that the surface has been prepared in accordance with the paint manufacturer's requirements, that the application equipment is appropriate for the type of marking paint and that environmental conditions are appropriate for the material being applied. This certification along with a copy of the paint manufacturer's surface preparation and application requirements must be submitted and approved by the Engineer prior to the initial application of markings.

620-3.4 Layout of markings. The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the plans.

620-3.5 Application. Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the Engineer. The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and marking dimensions and spacings shall be within the following tolerances:

Dimension and Spacing	Tolerance
36 inch or less	±1/2 inch
greater than 36 inch to 6 feet	±1 inch
greater than 6 feet to 60 feet	±2 inch
greater than 60 feet	±3 inch

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted. A period of 30 calendar days shall elapse between placement of a bituminous surface course or seal coat and *final* application of the paint. *A period of 60 calendar days shall elapse between placement of PCC and final application of the paint.*

Prior to the initial application of markings, the Contractor shall certify in writing that the surface has been prepared in accordance with the paint manufacturer's requirements, that the application equipment is appropriate for the marking paint and that environmental conditions are appropriate for the material being applied. This certification along with a copy of the paint manufactures application and surface preparation requirements must be submitted to the Engineer prior to the initial application of markings.

620-3.6 Test strip. Prior to the full application of airfield markings, the Contractor shall produce a test strip in the presence of the Engineer. The test strip shall include the application of a minimum of 5 gallons of paint and application of 50 lbs of Type III glass beads. The test strip shall be used to establish thickness/darkness standard for all markings. The test strip shall cover no more than the maximum area prescribed in Table 1 (e.g., for 5 gallons of waterborne paint shall cover no more than 575 square feet.

Table 1. Application Rates For Paint And Glass Beads

Paint Type	Paint Square feet per gallon, ft^2/gal	Glass Beads, Type III Pounds per gallon of paint-lb/gal
Waterborne Temporary Markings	230 ft^2/gal max	-
Waterborne Final Markings	115 ft^2/gal max	10 lb/gal min

Note: The glass bead application rate for Red and Pink paint shall be reduced by 2 lb/gal for Type I and Type IV beads. Type III beads shall not be applied to Red or Pink paint.

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment should be performed.

All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

620-3.7 Application--preformed thermoplastic airport pavement markings. *Not applicable for this project.*

620-3.8 Protection and cleanup. After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose or unadhered reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the Engineer. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and Federal environmental statutes and regulations.

METHOD OF MEASUREMENT

620-4.1 The quantity of runway and taxiway markings to be paid for shall be the number of square feet of painting performed in accordance with the specifications and accepted by the Engineer.

BASIS OF PAYMENT

620-5.1 Payment shall be made at the respective contract price per square foot for pavement markings**.** This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-620-5.1	Pavement Marking, Yellow (including reflective media) – per square foot
Item P-620-5.2	Pavement Marking, Black – per square foot

TESTING REQUIREMENTS

ASTM C371	Standard Test Method for Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders
ASTM D92	Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester
ASTM D711	Standard Test Method for No-Pick-Up Time of Traffic Paint

ASTM D968	Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1652	Standard Test Method for Epoxy Content of Epoxy Resins
ASTM D2074	Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D7585	Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments
ASTM E1710	Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
ASTM E2302	Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

MATERIAL REQUIREMENTS

ASTM D476	Standard Classification for Dry Pigmentary Titanium Dioxide Products
40 CFR Part 60, Appendix A-7, Method 24	Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings
29 CFR Part 1910.1200	Hazard Communication
FED SPEC TT-B-1325D	Beads (Glass Spheres) Retro-Reflective
American Association of State Highway and Transportation Officials (AASHTO) M247	Standard Specification for Glass Beads Used in Pavement Markings
FED SPEC TT-P-1952E	Paint, Traffic and Airfield Marking, Waterborne
Commercial Item Description A-A-2886B	Paint, Traffic, Solvent Based
FED STD 595	Colors used in Government Procurement
AC 150/5340-1	Standards for Airport Markings

END OF ITEM P-620

APPENDICES

Appendix 1

Construction Safety and Phasing Plan

FRENCH VALLEY AIRPORT

CONSTRUCTION SAFETY AND PHASING PLAN

South Apron Pavement Reconstruction

AIP-3-06-0338-028-2016

Prepared by

Mead & Hunt

July 21, 2016

I. OVERVIEW

This document presents the Construction Safety and Phasing Plan (CSPP) for the proposed improvements of the South Apron Rehabilitation Project at the French Valley Airport (Airport), being performed under Federal Aviation Administration (FAA) Airport Improvement Program (AIP) Grant No. 3-06-0338-028-2016. The anticipated construction duration is August 2016 through November 2016. Specifically, the Project scope includes the following elements:

1) Demolition of the existing apron tie-down anchors, chains, and Portland Cement Concrete (PCC) utility box collars and drainage inlets and disposal of the material.
2) Saw cutting existing pavement at proposed asphalt pavement joins, pulverization of the existing asphalt pavement and existing aggregate baserock.
3) Site work, excavation and recompacting of earthwork, and fine grading of subgrade and baserock material for the proposed pavement reconstruction.
4) Installing rebar, forms, and PCC for the Project's drainage structures that include valley gutters, trench drains, and adjustments to catch basins.
5) Asphalt concrete paving for the reconstructed south apron.
6) Installation for the new tie-down anchors.
7) Application of pavement markings.

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.

II. 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, 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 on 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 Sheets G-021, G-041, G-081, G-082, and G-083 as well as detailed in the Project Specifications. Copies of the Plan Sheets are attached to this report as *Attachment A*.

III. CONSTRUCTION SAFETY AND PHASING RESPONSIBILITIES

A. 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.

B. CONSTRUCTION CONTRACTOR

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

C. 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.

D. 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.

IV. CONSTRUCTION SAFETY AND PHASING

A. COORDINATION

1. **Design Progress Meetings.** Predesign conferences were held during the design development and design (Preliminary, 90%, and Final Bid Documents) phases. These meetings were 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.
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.

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 present and distribute copies of the proposed construction schedule at the preconstruction meeting. Five (5) copies of Contract Documents will be provided to the Contractor by the County.
4. **Contractor Progress Meetings.** Contractor progress meetings will be held weekly for the duration of construction. Operational safety will be a standing agenda item for discussion during progress meetings throughout the Project. Date, time, and location of the progress meetings will be determined at the preconstruction meeting.
5. **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.
6. **FAA Air Traffic Organization (ATO) Coordination.** The Airport currently has the following facilities maintained by the FAA ATO: PAPI (Runways 18 and 36). This Project will not require shutdowns and/or restarts of the FAA-maintained NAVAIDS. It will be not be necessary for the FAA ATO to take part in the coordination meetings and kept current on the construction schedule.

B. PHASING AND TIME LIMITATIONS

The Project has been divided into two Elements: 1) Mobilization and 2) Construction. The Construction Element has been divided into four (4) phases with sub-phases to separate the construction areas and define the sequence of the work associated with the Project. A separate Notice to Proceed shall 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 County. The work efforts and affected airfield areas within the AOA are detailed below. The Mobilization Element shall be completed within twenty (20) working days and the Construction Element (Phases 1-4) shall be completed within eighty (80) working days. If the Contractor fails to meet any of these time limitations, liquidated damages will be assessed as described in Division V, Section A-100 of the Project Specifications.

1. **Element 1 – Mobilization.** (20 working days)

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

   - Processing of required submittals, including the Contractor's work schedule.
   - Preparation and submission of the SPCD.
   - All prequalification testing, review, and approval.
   - Mix design preparation, review, and approval.
   - Airfield Safety Devices delivered to site (construction flags, low profile barricades, airport radios).
   - All miscellaneous Mobilization efforts required to commence construction.
   - Materials and equipment delivered to site, as applicable.

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

2. **Element 2 – Construction.** (80 working days)

Phasing Limitations. The following phasing restrictions apply:

- Contractor shall be responsible for placement, maintenance, and removing low profile barricades, 42-inch high delineators, and traffic control items prior to the start of work, throughout construction, and in coordination with the County for issuance of NOTAMs.
- Work within the Taxiway Safety Area (TSA) requires closure of associated taxiway/airfield pavement.
- All existing airfield pavements to remain open throughout the Project except as permitted during phases 1-4.
- All trenching in areas of new pavement construction shall be complete and the trenches backfilled and compaction verified prior to placing aggregate base and asphalt concrete.
- Construction traffic hauling over new asphalt concrete pavement constructed under this Project shall not be permitted.
- Contractor to remain clear of Runway 18-36 Runway Obstacle Free Zone (ROFZ) and Runway Safety Area (RSA) at all times unless permitted and under escort by the County for survey control tie-ins.
- Phases 1-3 have been determined to minimize the duration of hangar taxilane closure and the total number of hangars to be blocked by construction activities
- The areas delineated for the phases were determined to allow safe movement of aircraft from hangars bordering the construction area to Taxiway A and the runway.
- Prior to reopening airfield pavements to traffic, the areas must be safety area compliant per Section IV.Q "Protection of Runway and Taxiway Critical Areas." Contractor to confirm areas are compliant and the County to verify prior to reopening.
- Any open excavations remaining within the TOFA after work hours shall be trench-plated to accommodate aircraft loading (dual wheel 90,000 pound wheel loading).

Phase Construction Limits

a) ***Phase 1*** – *Phase 1* consists of the work performed in an area that is west of the TSA of Taxiway A, and east of the hangars along "Baseline – Valley Gutter" alignment. This phase is broken into three sub-phases: 1A, 1B, and 1C. This work shall include the demolition of existing pavement, excavation of subgrade material, and all new work, which includes the installation of drainage structures, reconstruction of pavement sections, and installation of tie-downs and pavement markings. All Phase 1 work shall be completed within sixty-five (65) working days and the finished pavement approved and ready for aircraft movement prior to the start of Phase 2 work.

Phase 1A shall be completed in no more than two (2) consecutive working days and may not run concurrent with Phases 1B or 1C. This work shall include the excavation and installation of new 15-inch RCP connecting to the existing catch basin in Baseline – Valley Gutter alignment. After placement of the RCP, the trench will be backfilled with Controlled Low-Strength Material up to the finished subgrade, and the ditch will be covered with a trench-plate suitable for the required loads. The pavement section will be placed during Phase 1C or Phase 2. Phase 1A

shall not restrict or impact aircraft operations or airfield pavement in anyway except for the closure of Taxilane 2, west of the area limit.

Phase 1B shall not restrict or impact aircraft operation or airfield pavement in anyway. Phase 1B shall be completed in no more than two (2) consecutive working days and may not run concurrent with Phases 1A or 1C. This work shall include the excavation and installation of new 15-inch RCP connecting to the existing catch basin in Baseline – Valley Gutter alignment. After placement of the RCP, the trench will be backfilled with Controlled Low-Strength Material up to the finished subgrade and the ditch will be covered with a trench-plate suitable for the required loads. Pavement section will be placed during Phase 1C or Phase 3. Phase 1B shall not restrict or impact aircraft operations or airfield pavement in anyway except for the closure of the Baseline – Valley Gutter alignment between Taxilanes 4 and 5.

Phase 1C shall install temporary taxiway centerline markings along Taxiway A so required TSA dimensions are maintained and aircraft operations on Taxiway A may be active during construction. The closed taxiway directly to the south from the construction limits (Taxilane 10) will be temporarily open during Phase 1C work and will also have temporary taxiway centerline markings installed as well as edge reflectors. Work within the TTOFA shall be done only when appropriate NOTAMs are issued and approved low profile barricades are placed along the outside of the TSA line. A minimum of five-foot clearance must be provided between any equipment and materials and any part of an aircraft (including wingtip overhang). A full-time flagger must be used to monitor aircraft movements on the active Taxiway A when work is being performed within the TTOFA. When larger wingspan aircraft need to pass the construction zone, the flagger must direct construction equipment to move out of the TTOFA during its passage. If for any reason, equipment or materials cannot pull back beyond the TTOFA line, then wing walkers must be used to guide aircraft in order to ensure the minimum 5-foot clearance. Wing walkers shall be County/aviation personnel rather than construction workers. If the 5-foot clearance cannot be maintained and an aircraft cannot have full use of the entire taxiway width (with its main landing gear at the edge of the pavement), then it will be necessary to remove construction equipment and material from the TTOFA for the passage of that aircraft. Closure of Taxiway A is not allowable.

Phases 1A, 1B, and 1C Summary

- Scope of Work – Removal, off-haul, and disposal of the existing tie-down anchors, and PCC; Pulverization, recycling and stockpiling of the existing South Apron pavement section within the Phase 1 work area limits; preparation of AC pavement joins; earthwork, site grading, and subgrade preparation; installation of drainage systems; placement of aggregate base, asphalt concrete paving, installation of tie-down anchors, temporary pavement markings, and initial application of pavement markings.
- Area closed to aircraft operations – Taxilane 2 to the west of the Phase 1A work area limits. South Apron closed as shown on Plan Sheet G-081 during Phase 1C. Baseline-Valley Gutter taxilane will be closed between Taxilanes 4 and 5 during Phase 1B construction. Alternative access routes are available during all Phases except for Taxilane 2. These tenants will be given the option to relocate to apron tie-downs during construction closures.
- Duration of closure – Up to sixty-five (65) consecutive working days for entire Phase 1 work. (Phases 1A, 1B, 1C)

- Alternate taxi route – Airport users south of the work area shall temporally utilize the taxilane pavement directly to the south of the Phase 1 work limits (Taxilane 10), which will have temporary markings and reflectors installed to help guide Airport users, from the southernmost hangars to Taxiway A and Runway 18-36. Except for the temporarily closed hangar taxilanes affected by each phase, aircraft shall have continuous access to Taxiway A and Runway 18-36 throughout construction.
- Emergency access routes – County will coordinate alternate Airport access routes with emergency personnel for temporary construction conditions.
- Construction staging area – Material and contractor equipment storage east of the aircraft fueling area (per Plan Sheets G-021, G-081, G-082, G-083). Contractor employee parking will be outside the AOA.
- Construction access and haul route – Via Contractor access routes shown on Plan Sheets G-021, G-081, G-082, and G-083.
- Impacts to NAVAIDs – Not Applicable.
- Lighting and marking changes – The Contractor will be required to obscure or disconnect the South Apron area "Taxilane 12" lights.
- Required hazard marking and lighting – Low profile barricades shall be placed at the following locations:
  - North and west edges of South Apron rehabilitation for Phase 1.
  - Easterly side of South Apron in between the proposed pavement join and the Taxiway A TSA.
  - Southern edge of the South Apron for Phase 1 and around any stub outs for drainage features to extend for connections during Phase 1A and 1B.
- Lead times for required notification – Five (5) working days.

Additional Phase 1 Notes.

- No work in Phases 2 and 3 can be performed concurrent with Phase 1 work.

b) ***Phase 2*** – Phase 2 consists of the work between the west edge of Phase 1C limits and the east edge of the hangars, from Taxilane 4 to Taxilane 13. Phase 2 shall impact aircraft operations by diverting traffic around the work area and for the closure of Taxilanes 1, 2, and 3, adjacent to the west of the Phase 2 limits described above. Those tenants impacted by the taxilane closures will be offered apron tie-down locations during construction.

Phase 2 shall be completed within seven (7) working days.

Phase 2 Summary

- Scope of Work – Removal, off-haul, and disposal of the existing tie-down anchors, chains, and PCC; Pulverization, recycling and stockpiling of the existing South Apron pavement section within the Phase 2 work area limits; preparation of AC pavement joins; earthwork, site grading, and subgrade preparation; installation of drainage systems; placement of aggregate base, asphalt concrete, removal of temporary markings, initial application of pavement markings and installation of tie-down anchors.
- Area closed to aircraft operations – Three hangar taxilanes to the west of the Phase 2 work area limits and the temporary Taxilane 10 opened for Phase 1.
- Duration of closure – Up to seven (7) consecutive working days.

- Alternate taxi route – Airport users south of the work area shall utilize Taxilane 12 on the South Apron and Taxilane 14 to the north, which is outside of the project limits to have access from the hangars to Taxiway A and Runway 18-36. Except for the closed hangar taxilanes, aircraft shall have continuous access to Taxiway A and Runway 18-36 throughout construction during this phase.
- Emergency access routes – County will coordinate alternate Airport access routes with emergency personnel for temporary construction conditions.
- Construction staging area – Material and equipment storage east of the aircraft fueling area (per Plan Sheets G-021, G-081, G-082, G-083).
- Construction access and haul route – Via Contractor access routes shown on Plan Sheets G-021, G-041, G-081, G-082, and G-083.
- Impacts to NAVAIDs – Not Applicable.
- Lighting and marking changes – Not applicable.
- Required hazard marking and lighting – Low profile barricades shall be placed at the locations shown on Plan Sheet G-082.
- Lead times for required notification – Five (5) working days.

Additional Phase 2 Notes.

- No work in Phases 1 and 3 can be performed concurrent with Phase 2 work.

c) ***Phase 3*** – Phase 3 consists of the work area between the west edge of Phase 1 limits and the east edge of the hangars, and Taxilane 3 to Taxilane 7. Phase 3 shall not restrict or impact aircraft operations or airfield pavements in anyway except for the closure of hangar Taxilanes 4, 5, and 6 adjacent to the west of the Phase 3 limits described above.

Phase 3 shall be completed within the overall Project construction period of eighty (80) working days.

Phase 3 Summary

- Scope of Work – Removal, off-haul, and disposal of the existing tie-down anchors, chains, and PCC; pulverization, recycling and stockpiling of the existing South Apron pavement section within the Phase 3 work area limits; preparation of AC pavement joins; earthwork, site grading, and subgrade preparation; installation of drainage systems; placement of aggregate base, asphalt concrete, removal of temporary markings, initial application of pavement markings and installation of tie-down anchors..
- Area closed to aircraft operations – Three hangar row taxilanes to the west of the Phase 3 work area limits and the taxiway opened for Phase 1.
- Duration of closure – Up to seven (7) consecutive working days.
- Alternate taxi route – Airport users south of the work area shall utilize the taxilane through the fueling area to have access from the hangars to Taxiway A and Runway 18-36. Except for the closed hangar taxilanes, aircraft shall have continuous access to Taxiway A and Runway 18-36 throughout the phase.
- Emergency access routes – County will coordinate alternate Airport access routes with emergency personnel for temporary construction conditions.
- Construction staging area – Material and equipment storage east of the aircraft fueling area (per Plan Sheets G-021 and G-083).

- Construction access and haul route – Via Contractor access routes shown on Plan Sheet G-021.
- Impacts to NAVAIDs – Not Applicable.
- Lighting and marking changes – The Contractor will be required to obscure or disconnect the South Apron area lights.
- Required hazard marking and lighting – Low profile barricades shall be placed at the locations shown on Plan Sheet G-083.
- Lead times for required notification – Five (5) working days.

d) ***Phase 4 –*** Phase 4 consists of the final application of pavement markings. Phase 4 shall be completed in one (1) working day; a minimum of 30 calendar days after final paving. The contract clock will be stopped when paving and tie-down installation is complete and started again when conditions allow the paint markings to be applied.

Phase 4 Summary

- Scope of Work –Application of pavement markings.
- Area closed to aircraft operations – Temporary and isolated closures will be coordinated by the County to route aircraft around pavement marking application work and cure time.
- Duration of closure – Varies.
- Alternate taxi route – To be provided.
- Emergency access routes – Unaffected by construction.
- Construction staging area – Material and equipment storage north of the aircraft wash rack (per Plan Sheet G-021).
- Construction access and haul route – Via Contractor access routes shown on Plan Sheets G-021, G-041, and G-081.
- Impacts to NAVAIDs – Not Applicable.
- Lighting and marking changes – Not applicable.
- Required hazard marking and lighting – Vehicles and equipment will be marked with amber flashing lights and orange and white flags.
- Lead times for required notification – Five (5) working days.

Additional Phase 4 Notes.

Final pavement marking application shall be done a minimum of 30 calendar days after the completion and acceptance of AC paving.

3. **Construction Safety and Phasing Plan Sheets.** Drawings specifically indicating operational safety procedures and methods in affected areas have been developed for each construction phase and work area. These Drawings are included as *Attachment A* to this report, and will be in the Contract Plan Set.

C. AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION

1. **Runways.** Runways unaffected by construction.

2. **Taxiways.** Phase 1A will only restrict or impact aircraft operations or airfield pavement with the closure of Taxilane 2, west of the work area limit. Phase 1B will restrict the Baseline Valley Gutter taxilane, but traffic will be directed around the work area safely. Phase 1C will relocate the TOFA

width of Taxiway A to the east of the work limit to minimize the amount of construction within the TOFA that will be managed by the County.

Phase 2 will not restrict or impact aircraft operations on the runway or taxiway in any way, but will cause the closure of the three taxilanes (1, 2, and 3) adjacent to the west side of the Phase 2 work limits described above, and several tie-downs in the row adjacent to the north side area limit.

Phase 3 will not restrict or impact aircraft operations on the runway or taxiway in any way but will cause the closure of the three taxilanes (4, 5, and 6) adjacent to the west side of the Phase 3 work limits described above, and several tie-downs in the row adjacent to the north side area limit.

D. NAVAID PROTECTION

NAVAIDs will be unaffected by construction.

E. CONTRACTOR ACCESS

1. **Location of Stockpiled Construction Materials and Equipment**. Location of stockpiled materials and equipment storage shall be in the staging areas or as approved by the County. Stockpiling materials and equipment outside the staging areas and within the AOA will require prior approval from the County and will be subjected to additional limitations depending on the height(s). Stockpiled material shall meet the requirements of Section IV.F "*Wildlife Management"* to prevent the stockpile location(s) from becoming wildlife attractants.

2. **Vehicle and Pedestrian Operations.**

   a) ***Construction Site Parking*.** Employees' vehicles shall be parked in the Contractor employee parking areas outside the AOA designated on the Plans.

   b) ***Construction Equipment Parking*.** All service and construction vehicles and/or equipment shall be parked in the staging area when not in use, and shall be positioned a minimum of 10 feet away from either side of a perimeter security fence. See Section IV.Q, *"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 park on closed aircraft pavement. If it is necessary to leave specialized equipment on closed pavement at night, the County must approve the request, and the equipment shall be lighted in accordance with Section IV.R, "*Other Limitations on Construction*."

   c) ***Access and Haul Roads.*** The Contractor will be restricted to use only 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 shall be given to all emergency vehicles and aircraft sharing the haul routes with the Contractor. See paragraphs d) through h) for operating within the airfield environment requirements.

   d) ***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 shall be equipped with an omni-directional amber flashing light, head lights, tail lights, and flashers that shall be used between sunset and sunrise or when visibility is low. Vehicles within the airfield environment shall display company identification markings on both sides of the vehicle. Non-motorized equipment shall have reflective devices displayed on the front, back, and sides. Vehicles and equipment shall 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 with a County escort within the airfield environment but outside the work area, shall have a company vehicle with an amber flashing light mounted on the roof of the cab and identifying markings visible from 300 feet mounted on both sides of the vehicle.

e) ***Training Requirement for Vehicle Drivers.*** The Contractor shall designate construction personnel (maximum of 3) 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 shall 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 shall contact the County, 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).

f) ***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 shall 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.

g) ***Two-Way Radio Communication Procedures.*** All radio communications with the Common Traffic Advisory Frequency (CTAF) will be performed by County personnel and/or a trained Contractor-provided construction safety coordinator. The Contractor shall provide escort by a radio controlled vehicle as required to safely guide non-radio vehicles to or from the work areas or when necessary to enter or cross areas requiring radio control. All County requirements for escorting vehicles on the Airport shall be met. All activities within aircraft movement areas will require two-way radio communication. The Contractor's on-site superintendents and foremen/leads shall 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 shall also carry a radio. Frequencies that will be used by County personnel are:
   - CTAF – 122.800

h) ***Airport Security.*** In areas of work activities, the Contractor shall maintain security against unauthorized access to the airfield area through the security gate(s). Gates shall be locked or manned at all times. The gate shall be closed and locked when not in use. Where the Contractor's lock is used for access through County gates, the lock shall 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.

F. WILDLIFE MANAGEMENT

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

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

2. **Standing Water.** Staging areas, stockpile areas, and the work area shall be graded to drain to avoid attracting wildlife.

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

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 Section E.2.h for requirements of maintaining the secured area of the Airport. Contractor personnel shall immediately notify the County if any unwanted wildlife is observed inside the Airport perimeter fence.

5. **Disruption of Existing Wildlife Habitat.** Not applicable for this Project.

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

The Contractor shall 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 shall 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 shall be responsible for any resulting damage to aircraft engines and/or other property arising from failure to secure and/or protect debris, tools, supplies, or other loose items. Following the requirements 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 shall provide the means and methods to remove these materials prior to the vehicle exiting the controlled area. If water wash stations are used, the Contractor shall provide systems for the collection, treatment, and disposal of wheel wash water and accumulated sediment. Equipment operated on haul routes over existing pavements shall be kept free of material spillage and foreign matter at all times. Haul routes that are shared with aircraft operations shall be cleaned continuously with regenerative air vacuum sweepers, or other County approved methods.

Dust control shall be in conformance with Section 10, "Dust Control" of the State Standard Specifications and these Special Provisions. The Contractor shall 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 shall take action as necessary, with the approval of the County, to reduce or eliminate such nuisance. The Contractor shall 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) shall be applied as directed by the County at the Contractor's expense.

H. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

1. If shipments of hazardous material (including hazardous debris, contaminated soil or water, and hazardous waste) will be unloaded onto or loaded from County property, the Contractor shall 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 shall 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 shall sign the manifest and return a copy to the County within 35 days to confirm receipt.
2. Minor spills can be controlled by the first responder at the discovery of the spill. Use absorbent materials on small spills rather than hosing down or burying the spill. First responder should contain the spread of the spill, recover spilled materials, clean the contaminated area, and properly dispose of contaminated materials. For minor spills, consult the products Material Safety Data Sheets (MSDS) for recommended actions for spills or container leaks. Additionally, MSDSs shall provide emergency phone numbers and occupational health hazard information.
3. Semi-significant spills can be controlled by the first responder along with the aid of other personnel such as laborers, 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. 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 shall notify the County, proper County 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.
5. Ensure that hazardous goods and material delivered to or from the construction site meet applicable DOT labeling and placarding requirements. Upon request from the County, supply MSDS for all hazardous material being delivered to the site.
6. The storage and shipment of hazardous waste shall also comply with the requirements of this section.
7. It is emphasized, however, that although spills resulting from incidents or accidents should be responded to, securing the well-being of people shall be the first priority.
8. Good housekeeping practices should be utilized during equipment fueling and maintenance operations. Inspect fueling equipment for leaks prior to dispensing. Fueling operations shall be continuously attended to while dispensing fuel. Fueling and maintenance operations shall 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.

I. NOTIFICATION OF CONSTRUCTION ACTIVITIES

1. **Responsible Representatives / Points of Contact:**

Airports 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.

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.

3. **Emergency Contact Information**

   a) Emergency – Dial 911

   b) Division of Aviation Emergency Line – 951-712-5995

   c) Police Department –951-304-2677 (Murrieta Police Department)

   d) Fire Department – 951-696-0962 (Station 83- Riverside Co. French Valley Fire Station)

   e) Hospital – 951-696-6000-Rancho Springs Medical Center

   f) California Poison Center – 1-800-222-1222

4. **Coordination with Emergency Personnel.** The proposed Project does not deactivate waterlines or hydrants, does not block airfield emergency routes and is not anticipated to include the use of hazardous materials. Emergency personnel will be briefed by the County as to the construction schedule. If additional notification of Emergency personnel is required, the Contractor shall contact the County.

5. **Notification of the FAA**

   a) ***Part 77.*** The Project will not affect navigable airspace, therefore, the County will not be required to submit a FAA Form 7460-1, "*Notice of Proposed Construction or Alteration*" for a specific element. Any equipment (cranes, graders, other equipment) used by the Contractor that exceeds the height limitation in Section IV.R, *"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.

   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 Daryl Shippy. The County must provide seven days' notice to schedule the actual shutdown.

J. INSPECTION REQUIREMENTS

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

2. **Final Inspections**. A final inspection shall 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.

K. UNDERGROUND UTILITIES AND NOTIFICATION RESPONSIBILITIES

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

L. PENALTIES

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 shall be responsible for any fines caused by his failure to observe the security requirements contained herein or required by the SPCD. Violations will be cause for the Project to be stopped and Project safety procedures evaluated. Contractor 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.

M. SPECIAL CONDITIONS

1. 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 instructions.

2. 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 IV.I, "*Notification of Construction Activities*" for emergency contact information.

3. A VPD (vehicle / pedestrian deviation) is any entry or movement on the movement area by a vehicle or pedestrian that has not been authorized. 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 IV.E, "*Contractor Access*" for vehicle and pedestrian operations and two-way radio communication requirements.

4. 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 shall be grounds for time extensions as approved by the Engineer. No additional payment will be allowed for emergency cessation of work.

N. RUNWAY AND TAXIWAY VISUAL AIDS

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.

2. **Lighting.**

   a) ***Temporarily Closed Taxiways.*** Temporarily closed taxiways are identified in Section IV. B, "*Phasing and Time Limitations*" and in the work area Plans attached as *Attachment A.* If present, the temporarily closed taxiway(s) will have the edge lighting circuit deactivated. When deactivation is not possible (e.g., other taxiways on the same circuit remain open), the light fixtures shall be covered in such a way to prevent light leakage. The use of temporary jumper wires shall be required to maintain operation of existing edge lights. Low profile barricades will be used to indicate closed portions of taxiways and taxilanes.

   b) ***Temporarily Closed Runways.*** The runway is not intended to be closed for any portion of this work.

3. **Airfield Signs**

   a) ***Temporarily Closed Taxiways.*** Temporarily closed taxiways are identified in Section IV. B, "*Phasing and Time Limitations*" and in the work area Plans attached as *Attachment A.* If possible, the temporarily closed taxiway(s) will have the taxiway signs deactivated. When deactivation is not possible (e.g., other taxiways on the same circuit remain open), the signs shall be covered in such a way to prevent light leakage.

   b) ***Temporarily Closed Runways.*** Not affected by this Project.

O. MARKING AND SIGNS FOR ACCESS ROUTES

1. The Contractor shall place traffic control signs and/or devices along Sky Canyon Drive and adjacent to the Airport entrance as appropriate, to advise the Airport users of construction operations and hauling. Signs and/or devices shall conform to the *California Manual on Uniform Traffic Control Devices (MUTCD), 2012 Edition.*

P. HAZARD MARKING AND LIGHTING

1. Before starting work, provide and have available all signs, barricades, and lights necessary for protection of the work. Install and maintain adequate warning signs and lighted barricades to

protect property and personnel in the work area. Barricades shall be weighted or anchored to prevent overturning from wind or aircraft engine blast.

2. Barricades are not permitted in any active safety area. Barricades located within a runway or taxiway object free area and/or on aprons must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights. The Contractor shall provide low-level barricades, marked with diagonal, alternating orange and white stripes, to separate all construction/maintenance areas from the movement areas listed above. The low-level barricades shall have red omni-directional flashers and an orange vinyl flag. Low-level barricades shall be spaced a maximum of 4 feet apart unless directed otherwise by the County. The barricades shall be 8-foot long, low profile, as manufactured by Multi-Barrier (Model AR-10 x 96), Sherwin Industries, Inc., or approved equal.

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

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

6. 42-inch high plastic delineators shall be used to delineate restricted areas as shown on the Plans. Delineators shall be four inches in diameter, florescent orange, supplied with a weighted base and reflective stripes. The delineators shall be interconnected with high visibility yellow rope.

Q. PROTECTION OF RUNWAY AND TAXIWAY CRITICAL AREAS

1. **Runway Safety Area (RSA).** No construction may occur within the existing RSA while the runway is open for aircraft operations. Open trenches or excavations are not permitted within the RSA while the runway is open. If possible, backfill trenches before 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 (90,000 pound duel 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 shall not have edges exceeding 3 inches or slopes greater than 5 percent unless the runway is closed. The dimensions for the Runway 18-36 RSA (Category II) is 75 feet each side of centerline and 300 feet beyond each runway end._The RSA is depicted on the work area Plans contained in *Attachment A*.

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 dimension for the Runway 18-36 ROFA is 250 feet each side of centerline and 300 feet beyond each runway end. The ROFA is depicted on the work area Plans.

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 (90,000 pound duel 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 shall 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. The TSA (applicable for all taxiways) is 39.5 feet each side of centerline. The TSAs are depicted on the work area Plans.

4. **Taxiway/Taxilane Object Free Area (TOFA).** Work inside the parallel Taxiway A TOFA shall be done only when appropriate NOTAMs are issued and low profile barricades with lights at no more than 18 inches high are placed along the outside of the TSA line. A minimum of 5-foot clearance must be provided between equipment and materials and any part of an aircraft (including wingtip overhang). A full-time flagger must be used to monitor aircraft movements on the active Taxiway A when work is being accomplished within the TOFA. When larger wingspan aircraft need to pass the construction zone, the flagger must direct construction equipment to move out of the TOFA during its passage. If for any reason, equipment or materials cannot pull back beyond the TOFA line, then wing walkers must be used to guide aircraft in order to ensure the minimum 5-foot clearance. Wing walkers shall be County/aviation personnel rather than construction workers. If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the pavement), then it will be necessary to move construction equipment and material for the passage of that aircraft. The TOFA will be 65.5 feet on each side of the taxiway centerline. The TOFA's are depicted as the RWAs on the work area Plans.

5. **Obstacle Free Zone (OFZ).** Personnel, material, and/or equipment may not penetrate the OFZ while the runway is open to aircraft operations. The dimension for Runway 18-36 OFZ 125 feet each side of centerline and 200 feet beyond each runway end. The runway OFZ is depicted on the work area Plans.

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).

   a) ***Runway 18 Approach Surface.*** Runway 18 is a non-precision runway. Using Table 3-2 and Figure 3-2 from AC150/5300-13A for Runway Type 6, the resulting approach surface begins 200 feet from the runway threshold and consists of a trapezoid with the following dimensions:
      - Width at inner departure – 800 feet
      - Width at outer departure – 3,800 feet
      - Length of departure – 10,000 feet
      - Approach slope – 20:1

b) ***Runway 36 Approach Surface.*** Runway 36 is a visual runway. Using Table 3-2 and Figure 3-2 from AC150/5300-13A for Runway Type 3, the resulting approach surface begins at the runway threshold and consists of a trapezoid with the following dimensions:
- Width at inner departure – 400 feet
- Width at outer departure – 1,000 feet
- Length of departure – 1,500 feet
- Approach slope – 20:1

c) ***Runway 18-36 Departure Surfaces.*** Using Table 3-2 and Figure 3-2 from AC150/5300-13A for Runway Type 9, the resulting departure surfaces begins at the runway thresholds and consists of trapezoids with the following dimensions:
- Width at inner departure (runway threshold) – 1,000 feet
- Width at outer departure – 6,466 feet
- Length of departure – 10,200 feet
- Departure slope – 40:1

d) ***Affected Runway 18-36 Approach Surface***. The Runway 18-36 approach surface will be unaffected by construction.

e) ***Affected Runway 18-36 Departure Surface.*** The Runway 18-36 departure surface will be unaffected by construction.

R. OTHER LIMITATIONS ON CONSTRUCTION

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.

e) Texting while driving on Airport property is strictly prohibited.

2. **Restrictions**

a) ***Equipment***

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

2) If directed by the County, construction equipment that cannot be lowered below the 15-foot height limitation shall be lighted at night and during periods of reduced daytime visibility. The light shall be mounted on the highest point of equipment; shall be omni-directional; and shall 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.

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

S. SAFETY PLAN COMPLIANCE DOCUMENT (SPCD).

The SPCD shall detail how the Contractor will comply with the CSPP. This shall include all Project-specific Construction Safety Plan details not included in the CSPP, including construction equipment heights, any applicable hazard management requirements, and contact information for the Contractor's safety management staff responsible for monitoring the CSPP and SPCD during construction. The SPCD shall be 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 and SPCD must be submitted to the County for review and approval prior to performing any activities that are not in compliance with a previously approved CSPP.

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

ATTACHMENTS:

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

Attachment A

PLAN SHEETS

See Project Contract Plan Set

Attachment B

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

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

Project Information

Airport and Sponsor: FRENCH VALLEY AIRPORT, RIVERSIDE COUNTY, CALIFORNIA

Project ID: FAA AIP NO. 3-06-0338-028-2016

Description of Project: South Apron Pavement Reconstruction

Type of Work: _____

FAA Project Manager: _____ Phone: _____

Airport Operator Contact: Daryl Shippy, Airport Manager Phone: 951-955-8916

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 shall be prepared in a detailed written and graphical format that identifies the timing and methodology for the Contractor's compliance with the project's Construction Safety and Phasing Plan (CSPP).

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

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

   Location(s) of CSPP and SPCD: _____

   _____

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

Point of Contact: _____ Phone: _____

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

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

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

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

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

7. Provide a description and schedule of anticipated operation for all Contractor equipment over 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 shall be amended when there is a construction practice proposed by the Contractor that does not conform to the CSPP and SPCD and may impact the Airport's operational safety. This will require a revision to the CSPP and SPCD and re-coordination with the Airport Operator and the FAA in advance.

Statement of Certification

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

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

August 6, 2015 CTE Project No. 40-3128

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

Subject: Report of Geotechnical Investigation
French Valley 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 French Valley Airport.

PROPOSED CONSTRUCTION AND SCOPE OF SERVICES

The French Valley Airport project will consist of reconstruction of the existing asphalt apron. The existing apron consists of asphalt concrete (AC) overlying compacted base and subbase. The existing pavement is weathered and has numerous large cracks through the AC.

The work was performed within an active Air Operations Area adjacent to Taxiway A. The scope of work consisted of drilling 16, 10-foot deep borings on the apron. Field CBR tests were performed at two of the locations and laboratory CBR tests were performed on samples from three other locations. Specifically, the scope of work consisted of the following:

- Measure the thickness of existing asphalt and aggregate base and subbase.
- USCS classification of soils encountered.
- Logs of the test borings
- Liquid limit, plastic limit and plasticity index of selected samples of site soils.
- Maximum density/optimum moisture content per ASTM D 698.
- California Bearing Ratio per ASTM D 1883
- In-situ California Bearing Ratio per ASTM D 4429.
- Discussion of subsurface conditions obtained from the boring program.

FIELD AND LABORATORY INVESTIGATION

Field Investigation

Our field investigation was performed on June 23 and 24, 2015 and included 16 exploratory borings identified as B-1 through B-16. These borings were drilled at locations within the apron adjacent to Taxiway A. In addition, two field CBR tests were run in borings B-3 and B-13. The exploration locations are shown on Figure 1.

The explorations were excavated to investigate and obtain samples of the subsurface soils. 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.

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 at depths of 1, 5 and 10 feet with standard split spoon (SPT and California Modified) samplers. Bulk samples were obtained from borings B-5, B-11 and B-12 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, CBR, Atterberg limits, and 200 washes. 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 medium dense to very dense clayey and silty sand and medium stiff to stiff clay and sandy clay. The borings encountered 2 to 3 inches of AC overlying 4-1/2 to 5-1/2 inches of aggregate base and 10 to 11 inches of subbase. A woven, biaxial filter fabric overlying natural subgrade soils was encountered at a depth of approximately 1-1/2 feet. Thicknesses of pavement structural components are presented in Table 1. Underlying the pavement section, very old alluvial channel deposits, consisting of medium dense to very dense clayey sand and firm to hard sandy lean clay, were encountered in each of the borings. Fractured rock was encountered at approximately 7 feet in boring B-4. Groundwater was not encountered in the borings. More detailed descriptions are provided in the exploration logs in Appendix A.

TABLE 1
PAVEMENT STRUCTURAL SECTIONS

Boring No.	AC (inches)	Aggregate Base (inches)	Subbase (inches)
B-1	2-1/2	5-1/2	10
B-2	2-1/2	4-1/2	11
B-3	2-1/2	5-1/2	10
B-4	2-1/2	5-1/2	10
B-5	2-1/2	5	10-1/2
B-6	2-1/2	5	10-1/2
B-7	2-1/2	5	10-1/2
B-8	2-1/2	5-1/2	10-1/2
B-9	2	5	10-1/2
B-10	2-1/2	5	10-1/2
B-11	2-1/2	5	10-1/2
B-12	3	4-1/2	10-1/2
B-13	2-1/2	5	10-1/2
B-14	2	5	11
B-15	2-1/2	5-1/2	10
B-16	3	5	10

The on-site soils should be placed and compacted in accordance with FAA specifications. Proper compaction equipment and moisture control will be critical to achieve specified compaction. The contractor should be aware of the difficulties compacting clay soils. If these soils have high moisture contents, they may need to be dried or replaced. Spreading and working these soils will be necessary to reduce or increase moisture content. These soils should be spread in thin layers and turned over using a disc or other suitable equipment. Compaction of clay soils should utilize kneading or sheepsfoot compactors.

Major compaction problems are not anticipated in granular soils provided moisture content is carefully controlled. Base, granular soils and pavement may be compacted using smooth drum (vibratory) and smooth-wheeled compactors. Granular soils should be placed wet of optimum. It is the responsibility of the contractor to utilize proper equipment to compact site soils.

FIELD AND LABORATORY TEST RESULTS

Field CBR Tests

Field CBR tests were performed in borings B-3 and B-13. Tests were performed in accordance with ASTM D 4429. Tests were taken in the subgrade soils below the fabric 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.	Depth (inches)	CBR at 0.1" Penetration
B-3	36	24
B-13	36	20

Laboratory CBR Tests

Laboratory CBR tests were performed on samples obtained from the borings 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" or 0.2" Penetration		
		90%	95%	100%
B-5	1-5	1	3	8
B-11	1-5	3	7	16
B-12	1-5	1	2	3

Maximum Density- Optimum Moisture Content Tests

Maximum density/optimum moisture content tests were performed on three samples obtained from the borings B-5, B-11 and B-12. 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 DENSITY/OPTIMUM MOISTURE CONTENT TEST RESULTS			
Boring No.	Depth (feet)	Maximum Density (pcf)	Opt. Moisture Content (%)
B-5	1-5	126.9	8.9
B-11	1-5	118.1	11.7
B-12	1-5	113.1	12.5

Atterberg Limits & In-situ Moisture/Density

Atterberg limits were performed on selected samples obtained from the borings in accordance with ASTM D 4318. In-situ moisture /density (ASTM D 2216 and D 2937) tests were performed on selected samples of undisturbed soil. Atterberg limits results are presented in Table 5. In-situ moisture/density and Atterberg limits tests are presented on the boring logs.

TABLE 5
ATTERBERG LIMITS TEST RESULTS

Boring No.	Depth (feet)	Liquid Limit %	Plastic Limit %	Plasticity Index %	USCS (entire sample)
B-2	1-2.5	33	21	12	CL
B-6	1-2.5	31	21	10	SC
B-11	1-2.5	35	22	13	SC
B-16	1-5	28	17	11	SC

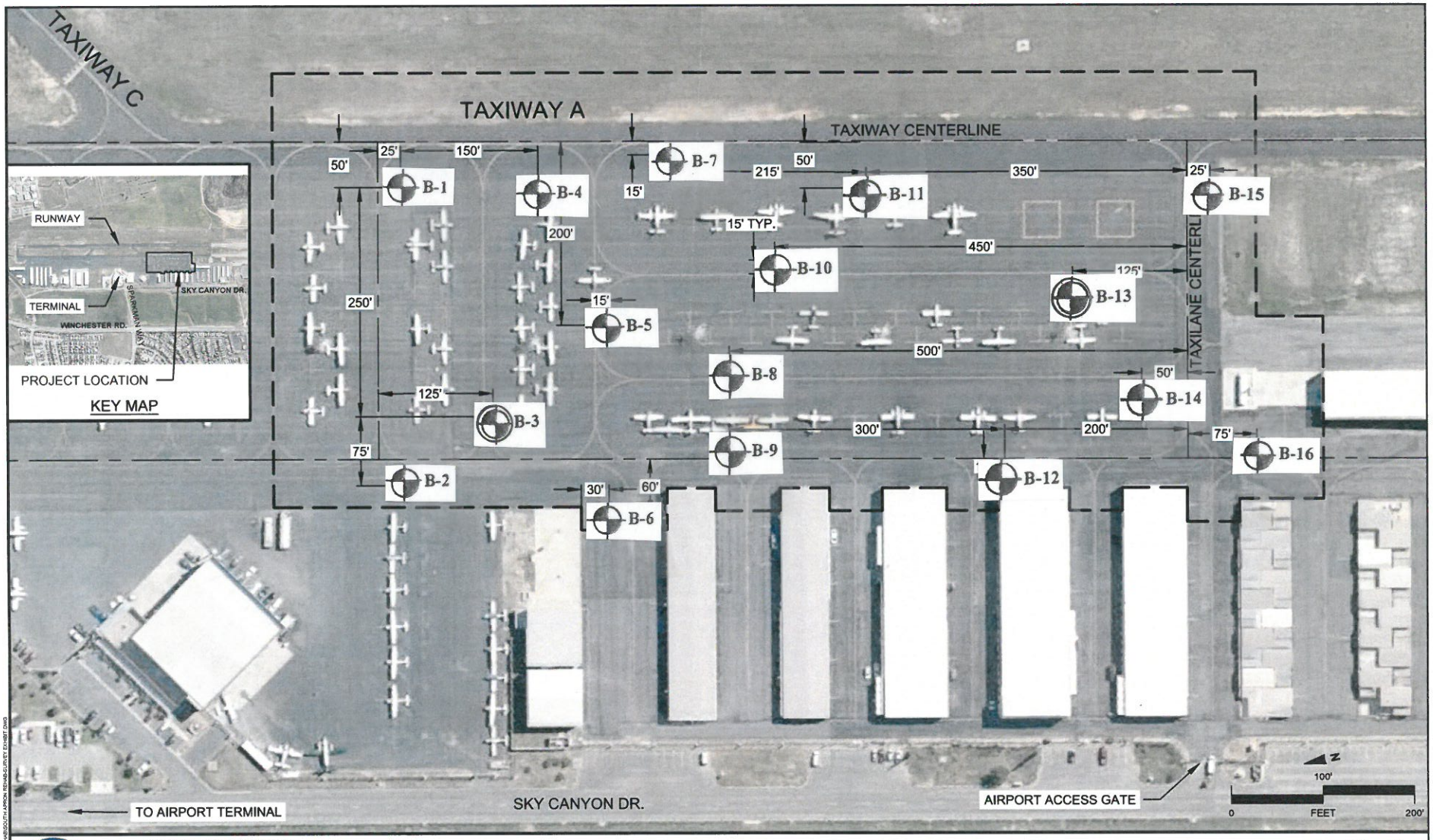
We appreciate this opportunity to be of service on this project. If you have questions regarding this report, please do not hesitate to contact the undersigned.

Respectfully submitted,
CTE, South, Inc.

Clifford A. Craft, GE #243
Senior Geotechnical Engineer

Vincent J. Patula, CEG #2057
Senior Engineering Geologist

Robert L. Ellerbusch
Staff Geologist



COUNTY OF RIVERSIDE
FRENCH VALLEY AIRPORT
SOUTH APRON REHAB

SEPTEMBER 2014

Mead & Hunt

EXHIBIT 1.2

LEGEND

B-1 APPROXIMATE BORING LOCATION

B-3 APPROXIMATE BORING/FIELD CBR LOCATION

CTE SOUTH

EXPLORATION LOCATION MAP

FRENCH VALLEY AIRPORT PAVEMENT REHAB
RIVERSIDE COUNTY, CALIFORNIA

Job No.	Date	Figure
40-3128	AUG 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

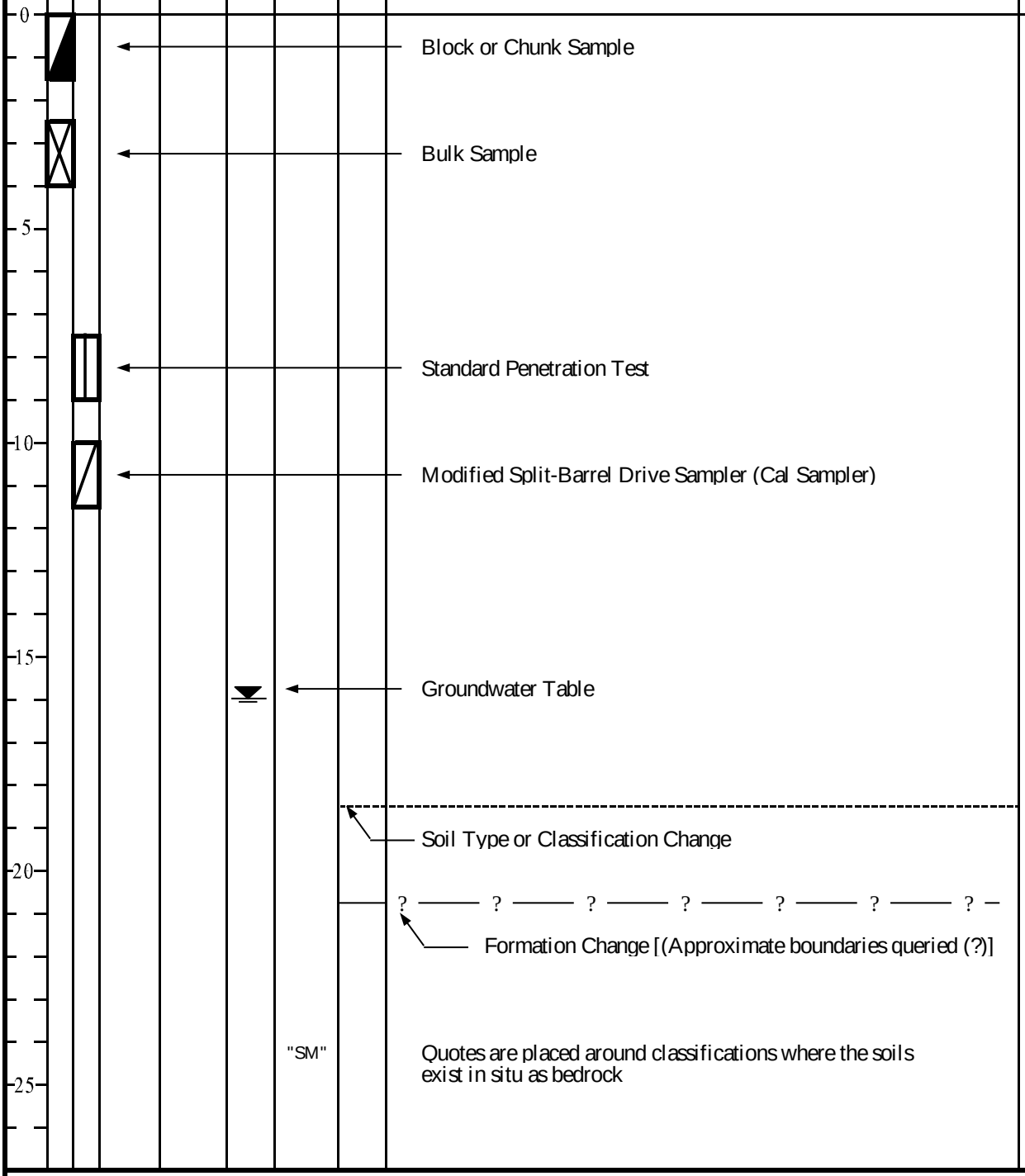


FIGURE: BL2

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/24/2015
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								**2.5" AC over 5.5" Base over 10" Subbase (clayey sand)**	
								(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
						SC		**Very Old Alluvial Channel Deposits (Qvoa)** Clayey SAND with scattered gravel, moist, brown.	
5			14 43 50		3.5			Clayey SAND, very dense, damp, grayish brown, fractured rock fragments, well-indurated.	M
10			33 27 50/5"		3.7			Clayey SAND, very dense, damp, grayish brown, fractured rock fragments, well indurated.	M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		6/24/2015
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								**2.5" AC over 4.5" Base over 11" Subbase (sandy clay)**	
			4					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	WA (51% pass #200)
			4			CL		**Very Old Alluvial Channel Deposits (Qvoa)**	AL (LL=33, PI=12)
			9		13.9			Sandy Lean CLAY, stiff, moist, reddish-brown, trace gravel.	M
5			5					Sandy Lean CLAY, stiff, moist, reddish brown, carbonate veinlets	
			6						
			8		12.5				M
10			2						
			5					Lean CLAY with Sand, very stiff, moist, dark gray.	
			13		12.1				M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/24/2015
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								**2.5" AC over 5.5" Base over 10" Subbase (sandy clay)**	
								(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
						CL		**Very Old Alluvial Channel Deposits (Qvoa)** Sandy Lean CLAY, stiff, moist, reddish-brown, trace gravel.	
								Field CBR conducted at approximately 3 ft.	
5			2 3 6		14.8			Lean CLAY, stiff, moist, dark gray.	M
10			15 16 28		9.3	SC		Clayey SAND, dense, moist, dark brown, carbonate concretions.	M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		6/23/2015
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								**2.5" AC over 5.5" Base over 10" Subbase (clayey sand)**	
			12					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
			32			SC		**Very Old Alluvial Channel Deposits (Qvoa)**	
			50/4"	142.0	6.5			Clayey SAND, dense, moist, dark grayish brown.	MD
5			37			SC-SM		Silty Clayey SAND, very dense, damp, dark grayish brown,	
			50/4"		2.1			fractured rock fragments.	M
								Fractured granitic rock, dark gray	
								(very hard drilling from 7' to 9' - rock)	
10			50/5"		2.9			Fractured granitic rock, dark gray and brown, weathered.	M
								Total depth 10.4 ft. below pavement surface.	
								No ground water encountered.	
								Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.		DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3128		DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		6/23/2015
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								**2.5" AC over 5" Base over 10.5" Subbase (clayey sand)**	
			16					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
			13			SC		**Very Old Alluvial Channel Deposits (Qvoa)**	
			16	116.1	14.3			Clayey SAND, medium dense, moist, brown, trace gravel.	MD CBR, MAX
5			2			CL		Sandy Lean CLAY, stiff, moist, dark gray.	
			4						
			7		12.2				M
10			3					Sandy Lean CLAY, stiff, very moist, light brown, carbonate concretions.	
			6						
			8		18.7				M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/23/2015
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								**2.5" AC over 5" Base over 10.5" Subbase (clayey sand)**	
			4					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	WA (45% pass #200)
			8			SC		**Very Old Alluvial Channel Deposits (Qvoa)**	AL (LL=31, PI=10)
			9		13.4			Clayey SAND, dense, moist, brown, trace gravel.	M
5			4						
			5			CL		Lean CLAY, stiff, very moist, dark gray.	
			9	104.3	19.4				MD
10			5						
			5					Sandy Lean CLAY, stiff, moist, dark reddish brown.	
			9		7.6				M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/23/2015
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								**2.5" AC over 5" Base over 10.5" Subbase (clayey sand)**	
			5					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
			5			SC-SM		**Very Old Alluvial Channel Deposits (Qvoa)**	
			6		10.6			Silty Clayey SAND, medium dense, moist, orangish brown.	M
5			7			SC		Clayey SAND, medium dense, moist, reddish brown.	
			13						
			13		8.7				M
10			4						
			10					Clayey SAND, medium dense, moist, reddish brown.	
			13		8.9				M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/23/2015
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								**2.5" AC over 5" Base over 10.5" Subbase (clayey sand)**	
			12					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
			14			SC		**Very Old Alluvial Channel Deposits (Qvoa)**	
			15	126.5	7.4			Clayey SAND, medium dense, moist, dark brown.	MD
5			8					Clayey SAND, medium dense, moist, dark reddish brown, faint	
			9					iron-oxide staining.	M
			12		10.8				
10			12					Clayey SAND, dense, moist, reddish brown.	
			15						
			25		8.3				M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/23/2015
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								**2.5" AC over 5.5" Base over 10" Subbase (clayey sand)**	
			8					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
			7			SC		**Very Old Alluvial Channel Deposits (Qvoa)**	
			7	117.5	13.9			Clayey SAND, medium dense, moist, dark brown, trace gravel.	MD
5			22			SC-SM			
			42					Silty Clayey SAND, very dense, moist, reddish brown, fractured	
			34		9.7			rock fragments, well indurated.	M
10			7						
			11					Silty Clayey SAND, medium dense, very moist, dark reddish	
			16		17.3			brown.	M
								Total depth 11.5 ft. below pavement surface.	
								No ground water encountered.	
								Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		6/23/2015
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								**2.5" AC over 5" Base over 10.5" Subbase (sandy clay)**	
		▯	9 7 11		13.0	CL		(woven biaxial filter fabric encountered at approximately 1.5 ft.) **Very Old Alluvial Channel Deposits (Qvoa)** Sandy Lean CLAY, very stiff, moist, dark brown, trace gravel.	M
5		▯	15 36 50/5"	126.0	9.5	SC		Clayey SAND, very dense, moist, reddish brown, well indurated.	MD
10		▯	14 16 22		8.1			Clayey SAND, dense, moist, reddish brown.	M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/23/2015
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								**2.5" AC over 5" Base over 10.5" Subbase (clayey sand)**	
			7					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	WA (40% pass #200)
			6			SC		**Very Old Alluvial Channel Deposits (Qvoa)**	AL (LL=35, PI=13)
			8		19.9			Clayey SAND, medium dense, very moist, dark brown.	M
									CBR, MAX
5			16					Clayey SAND, medium dense, moist, reddish brown.	
			15						
			13	123.2	9.5				MD
10			5			CL			
			8					Sandy Lean CLAY, very stiff, moist, dark brown.	
			13		16.9				M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.		DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3128		DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		6/23/2015
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								**3" AC over 4.5" Base over 10.5" Subbase (clayey sand)**	
								(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
			2			CL		**Very Old Alluvial Channel Deposits (Qvoa)**	
			5						
			7		18.2			Sandy Lean CLAY, stiff, very moist, dark reddish brown.	M
									CBR, MAX
5			2					Lean CLAY with Sand, firm, very moist, dark grayish brown.	
			3						
			4		20.8				M
10			4						
			6					Lean CLAY with Sand, stiff, very moist, dark grayish brown.	
			10		15.2				M
								Total depth 11.5 ft. below pavement surface.	
								No ground water encountered.	
								Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/24/2015
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 5" Base over 10.5" Subbase (sandy clay)**	
								(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
						CL		**Very Old Alluvial Channel Deposits (Qvoa)** Sandy Lean CLAY, moist, dark brown.	
		▨	8 10 12	98.3	23.8			Field CBR conducted at approximately 3 ft. Sandy Lean CLAY, stiff, very moist, dark reddish brown, carbonate concretions.	MD
5									
10		▥	10 16 21		15.7			Sandy Lean CLAY, hard, moist, reddish brown.	M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/23/2015
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" AC over 5" Base over 11" Subbase (sandy clay)**	
			9					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
			8			CL		**Very Old Alluvial Channel Deposits (Qvoa)**	
			5		14.3			Sandy Lean CLAY, stiff, moist, dark brown.	M
5			8			SC		Clayey SAND, dense, moist, reddish brown.	
			13						
			21		9.2				M
10			4			CL			
			7					Sandy Lean CLAY, very stiff, moist, reddish brown.	
			12		13.4				M
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.	DRILLER:	2R Drilling CME 75	SHEET:	1 of 1
CTE JOB NO:	40-3128	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	6/23/2015
LOGGED BY:	R. Ellerbusch	SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:	

BORING: B-15

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 5.5" Base over 10" Subbase (clayey sand)**	
		▯	9					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	
		▯	9			SC		**Very Old Alluvial Channel Deposits (Qvoa)**	
		▯	12		12.7			Clayey SAND, medium dense, moist, dark brown	M
5		▯	3					Clayey SAND, dense, moist, brown, carbonate concretions.	
		▯	14						
		▯	46	132.3	6.8				MD
10		▯	9			CL			
		▯	9					Sandy Lean CLAY, medium dense, moist, dark brown,	WA (52% pass #200)
		▯	13		12.6			carbonate concretions.	M
								Total depth 11.5 ft. below pavement surface.	
								No ground water encountered.	
								Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
15									
20									
25									

PROJECT:	French Valley Airport Pavement Rehab.		DRILLER:	2R Drilling CME 75	SHEET:	1	of 1
CTE JOB NO:	40-3128		DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:		6/23/2015
LOGGED BY:	R. Ellerbusch		SAMPLE METHOD:	140 lb/30" Autohammer	ELEVATION:		

BORING: B-16

Depth (Feet)	Bulk Sample	Driven Type	Blows/6 inches	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0								**3" AC over 5" Base over 10" Subbase (clayey sand)**	
			5					(woven biaxial filter fabric encountered at approximately 1.5 ft.)	WA (33% pass #200)
			6			SC		**Very Old Alluvial Channel Deposits (Qvoa)**	AL (LL=28, PI=11)
			6		14.7			Clayey SAND, medium dense, moist, dark brown	M
5			15					Clayey SAND, dense, moist, dark brown.	
			24						
			30	123.9	6.6				MD
10			7						
			11					Clayey SAND, medium dense, moist, dark reddish brown.	
			16						
								Total depth 11.5 ft. below pavement surface. No ground water encountered. Bore hole backfilled with soil cuttings and capped with 8" of concrete.	
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.

Atterberg Limits
The liquid limit and plasticity index were determined on selected soil samples in accordance with ASTM D4318.

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.

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.

Standard Proctor
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:	French Valley Airport
Job Number:	40-3128
Lab Number:	25411
Date Sampled:	Not Submitted
Date Tested:	7/15/2015
Location:	B-5 @ 1' - 5'
Sample Description:	Dark Brown Clayey Sand

Compaction Data:	**Mold 1**	**Mold 2**	**Mold 3**
# of Blows:	**56**	**25**	**10**
Wt. Mold & Soil:	8915.9	8681.0	8447.5
Wt. Mold:	4217.3	4216.2	4212.1
Wt. Wet Soil:	4698.6	4464.8	4235.4
Wet Density (PCF):	137.9	131.1	124.3
Dry Density (PCF):	126.7	120.4	114.2
% Compaction:	99.8	94.9	90.0
CBR, Percent @ 0.1"	7.3	3.0	1.2
CBR, Percent @ 0.2"	7.8	3.0	1.4

Soak & Swell Data:	**Mold 1**	**Mold 2**	**Mold 3**
Initial Height (in.):	4.58	4.58	4.58
Initial Reading (in):	0.1000	0.1000	0.1000
96hr:	0.2100	0.2200	0.2490
Swell (in.):	0.1100	0.1200	0.1490
Percent Swell:	2.4	2.6	3.3

Load In Pounds			
Penetration Data:	**Mold 1**	**Mold 2**	**Mold 3**
0.025	66	30	10
0.050	126	54	22
0.075	176	74	30
0.100	220	92	36
0.125	258	106	44
0.150	292	118	50
0.175	324	128	58
0.200	352	136	64
0.300	442	164	86
0.400	518	192	102
0.500	580	220	115

Maximum Density Results		
Optimum Moist (%)		8.9
Max Density (pcf)		126.9
% Remolded:		NA
Density of Remold:		NA
Initial Moisture:		8.9
CBR Mold Volume:		0.0751
Moisture Top 1"		
Mold 1:	**Wet. w/Tare:**	858.8
	Dry w/Tare:	762.5
	Tare:	156.5
	Moist %:	15.9
Mold 2:	**Wet. w/Tare:**	909.8
	Dry w/Tare:	789.2
	Tare:	168.0
	Moist %:	19.4
Mold 3:	**Wet. w/Tare:**	858.1
	Dry w/Tare:	728.1
	Tare:	158.7
	Moist %:	22.8

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

Load In PSI		
Mold 1	**Mold 2**	**Mold 3**
22	10	3
42	18	7
58	25	10
73	**30**	**12**
85	35	15
97	39	17
107	42	19
117	**45**	**21**
146	54	28
172	64	34
192	73	38

Tested By: RJP
Date Completed: 7/20/2015

Reviewed By: Fred Pacheco
Date: 7/22/2015

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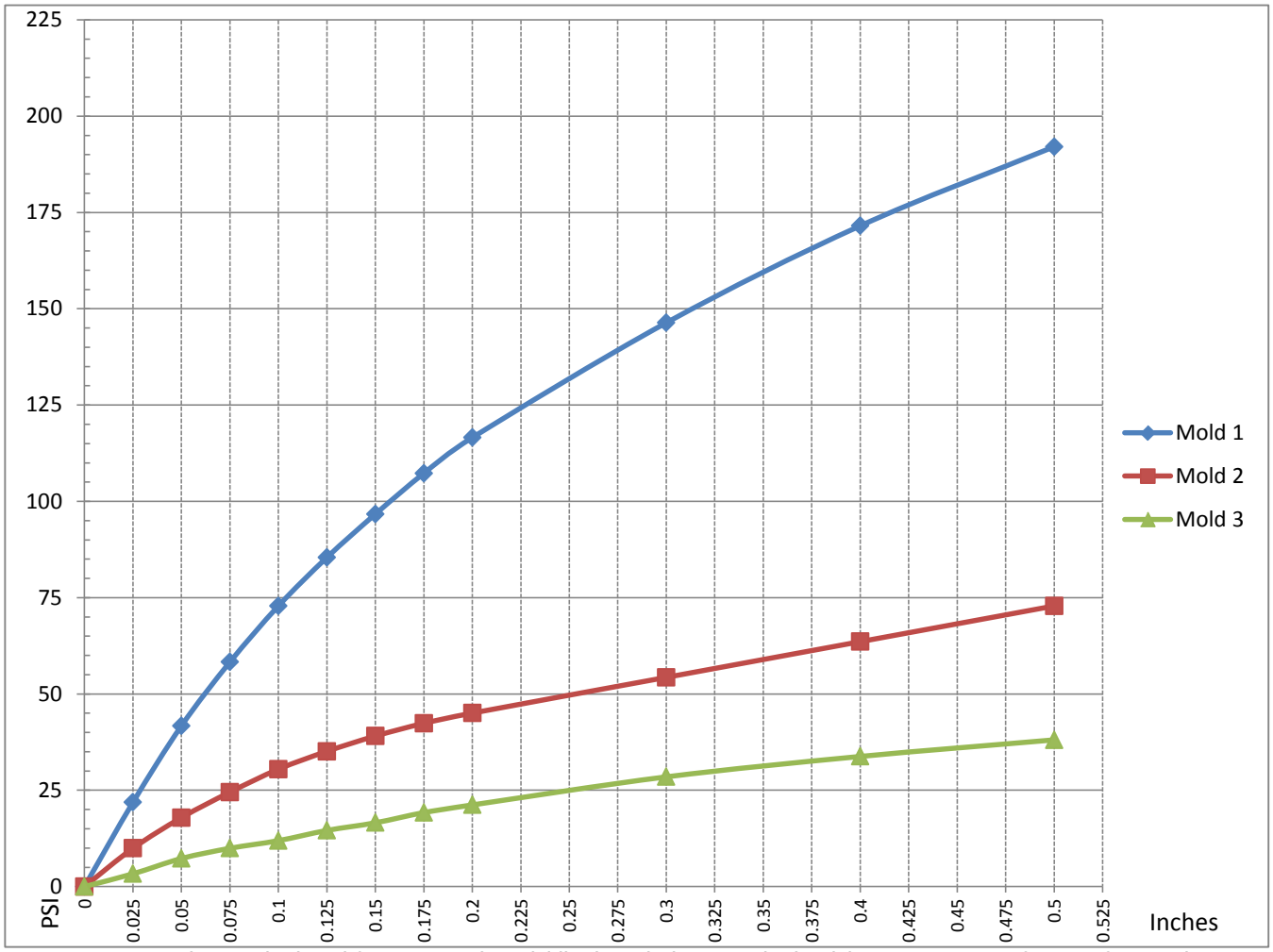
California Bearing Ratio Report -ASTM D1883

Stress Penetration Curve



CBR values calculated from stress in psi (displayed along vertical axis). See ***Page 1*** of report for 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	73	*73*	117	*117*
Mold #2	30	*30*	45	*45*
Mold #2	12	***12***	21	***21***

CBR @ Various Compaction Percentages			
	0.1"	0.2"	
90%	1%	1%	*
95%	3%	3%	*
100%	7%	8%	*

***** *Data obtained through interpolation*

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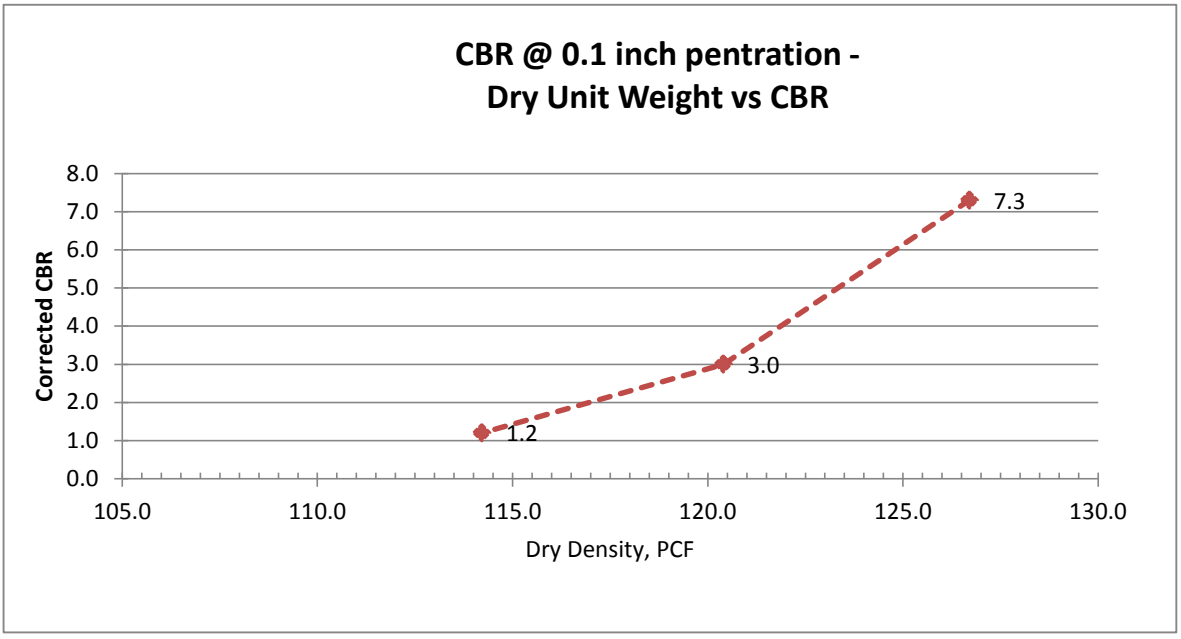
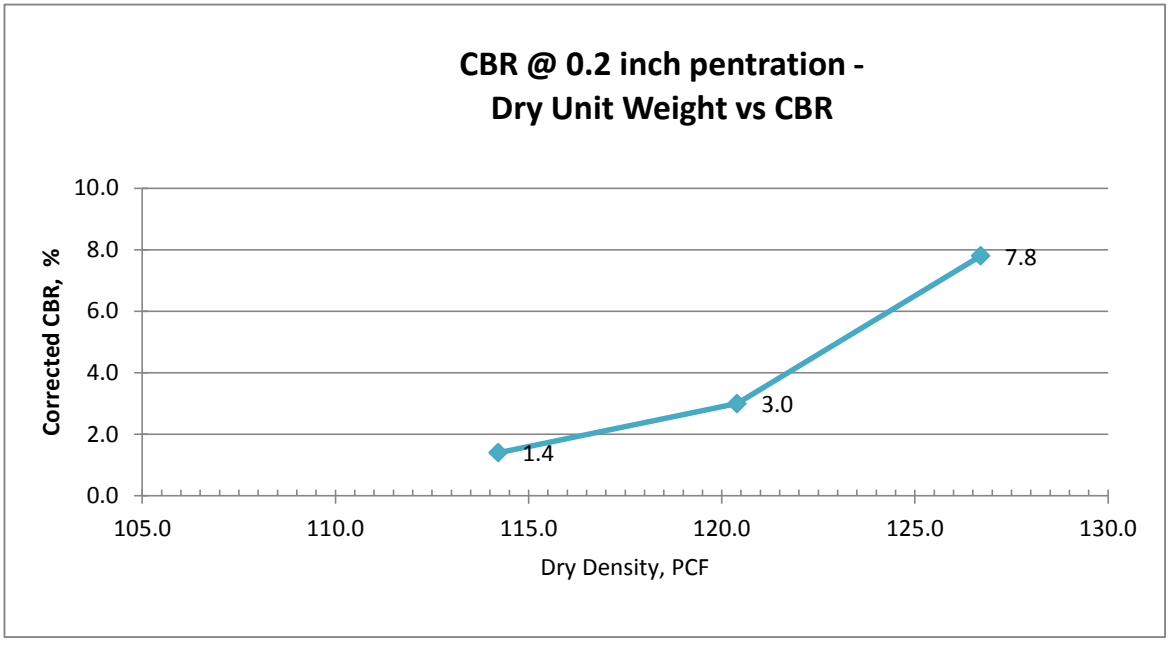
California Bearing Ratio Report - ASTM D1883
Graph of Dry Unit Weight vs. CBR*

***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:	French Valley Airport
Job Number:	40-3128
Lab Number:	25411
Date Sampled:	Not Submitted
Date Tested:	7/15/2015
Location:	B-11 @ 1' - 5'
Sample Description:	Dark Brown Clayey Sand

Maximum Density Results	
Optimum Moist (%)	11.7
Max Density (pcf)	118.1
% Remolded:	NA
Density of Remold:	NA
Initial Moisture:	11.7
CBR Mold Volume:	0.0751

Moisture Top 1"		
Mold 1:	**Wet. w/Tare:**	828.4
	Dry w/Tare:	733.9
	Tare:	162.6
	Moist %:	16.5
Mold 2:	**Wet. w/Tare:**	830.3
	Dry w/Tare:	724.1
	Tare:	161.9
	Moist %:	18.9
Mold 3:	**Wet. w/Tare:**	835.8
	Dry w/Tare:	727.5
	Tare:	172.4
	Moist %:	19.5

Compaction Data:	**Mold 4**	**Mold 5**	**Mold 6**
# of Blows:	**56**	**25**	**10**
Wt. Mold & Soil:	8828.1	8606.6	8369.5
Wt. Mold:	4333.9	4324.2	4329.1
Wt. Wet Soil:	4494.2	4282.4	4040.4
Wet Density (PCF):	131.9	125.7	118.6
Dry Density (PCF):	118.2	112.6	106.2
% Compaction:	100.0	95.3	89.9
CBR, Percent @ 0.1"	16.0	6.3	2.6
CBR, Percent @ 0.2"	19.4	7.3	2.9

Soak & Swell Data:	**Mold 1**	**Mold 2**	**Mold 3**
Initial Height (in.):	4.58	4.58	4.58
Initial Reading (in):	0.1000	0.1000	0.1000
96hr:	0.1930	0.1770	0.1730
Swell (in.):	0.0930	0.0770	0.0730
Percent Swell:	2.0	1.7	1.6

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	100	44	22
0.050	220	94	42
0.075	350	144	64
0.100	482	190	78
0.125	594	230	94
0.150	704	268	108
0.175	798	300	120
0.200	880	328	132
0.300	1144	434	168
0.400	1374	534	200
0.500	1564	630	234

Load In PSI		
Mold 1	**Mold 2**	**Mold 3**
33	15	7
73	31	14
116	48	21
160	**63**	**26**
197	76	31
233	89	36
264	99	40
291	**109**	**44**
379	144	56
455	177	66
518	209	77

Tested By: RJP

Date Completed: 7/20/2015

Reviewed By: Fred Pacheco

Date: 7/22/2015

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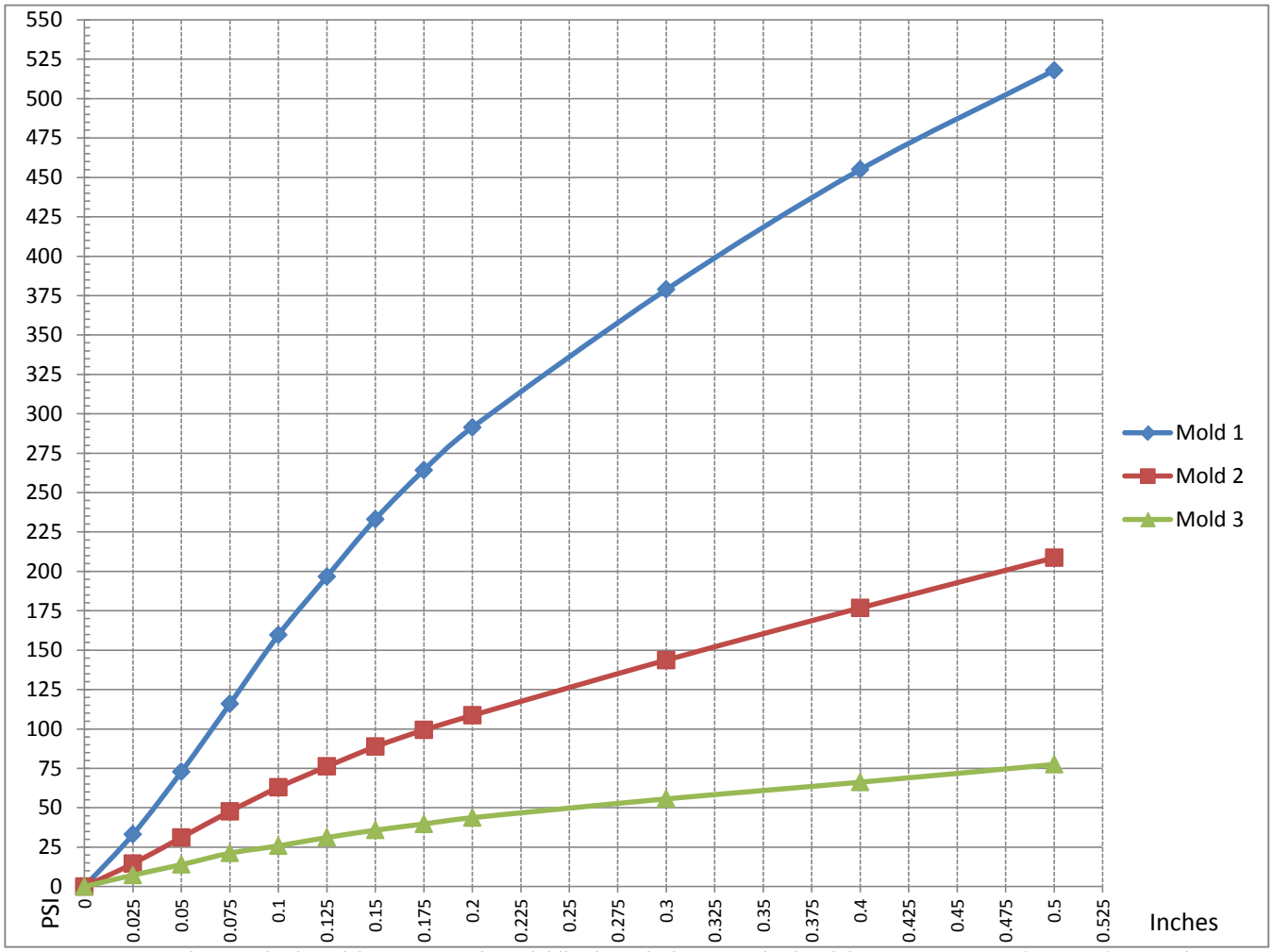
California Bearing Ratio Report -ASTM D1883

Stress Penetration Curve



CBR values calculated from stress in psi (displayed along vertical axis). See ***Page 1*** of report for 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	160	*160*	291	*291*
Mold #2	63	*63*	109	*109*
Mold #2	26	***26***	44	***44***

CBR @ Various Compaction Percentages			
	0.1"	0.2"	
90%	3%	3%	*
95%	6%	7%	*
100%	16%	19%	*

***** *Data obtained through interpolation*

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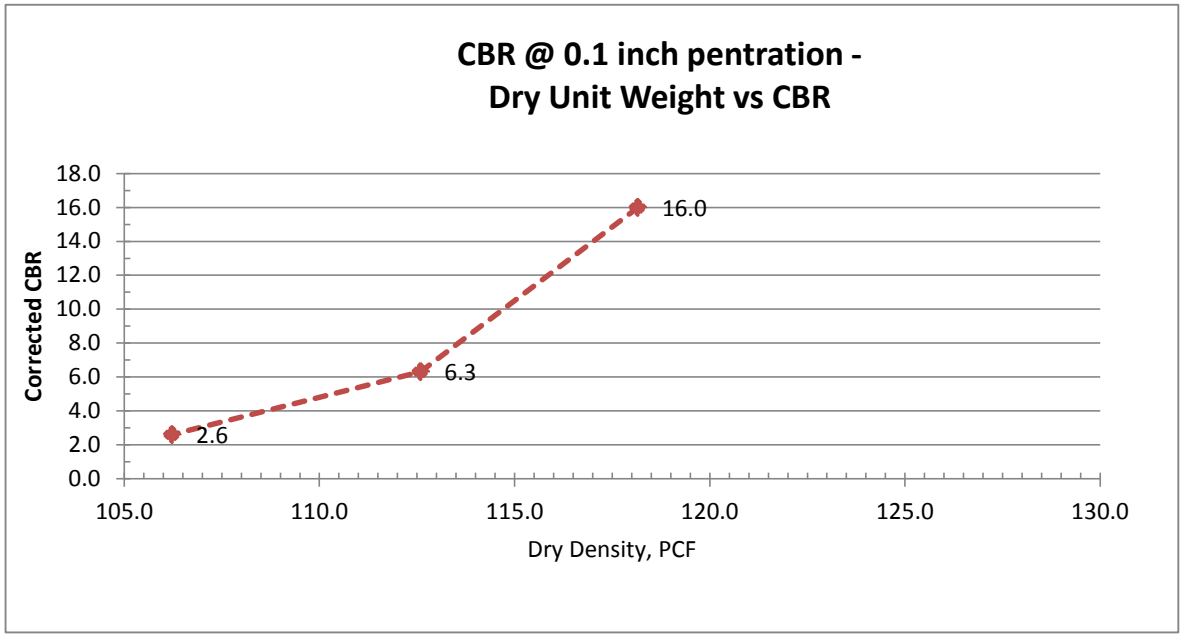
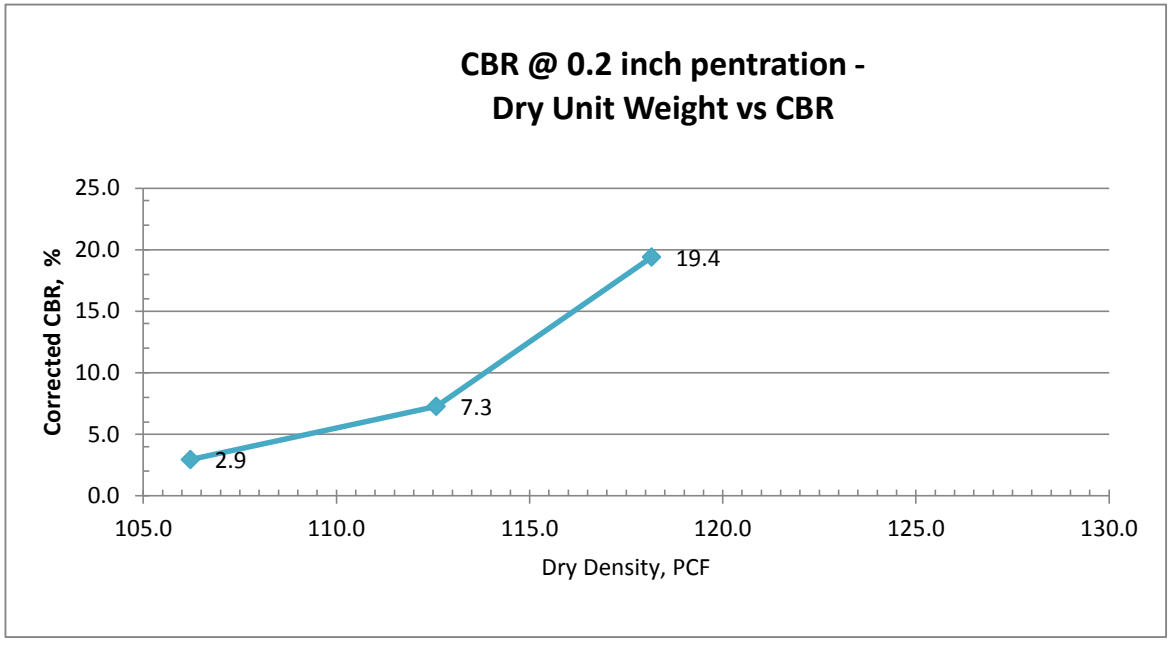
California Bearing Ratio Report - ASTM D1883
Graph of Dry Unit Weight vs. CBR*

***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:	French Valley Airport
Job Number:	40-3128
Lab Number:	25411
Date Sampled:	Not Submitted
Date Tested:	7/15/2015
Location:	B-12 @ 1' - 5'
Sample Description:	Dark Brown Sandy Clay

Maximum Density Results	
Optimum Moist (%)	12.5
Max Density (pcf)	113.1
% Remolded:	NA
Density of Remold:	NA
Initial Moisture:	12.5
CBR Mold Volume:	0.0751

Moisture Top 1"		
Mold 1:	**Wet. w/Tare:**	834.5
	Dry w/Tare:	713.2
	Tare:	176.9
	Moist %:	22.6
Mold 2:	**Wet. w/Tare:**	868.6
	Dry w/Tare:	721.9
	Tare:	149.5
	Moist %:	25.6
Mold 3:	**Wet. w/Tare:**	838.1
	Dry w/Tare:	688
	Tare:	121.0
	Moist %:	26.5

Compaction Data:	**Mold 1**	**Mold 2**	**Mold 3**
# of Blows:	**56**	**25**	**10**
Wt. Mold & Soil:	8520.2	8289.3	8101.3
Wt. Mold:	4190.7	4173.8	4198.9
Wt. Wet Soil:	4329.5	4115.5	3902.4
Wet Density (PCF):	127.1	120.8	114.6
Dry Density (PCF):	112.9	107.4	101.8
% Compaction:	99.9	94.9	90.0
CBR, Percent @ 0.1"	2.8	1.7	1.1
CBR, Percent @ 0.2"	2.6	1.7	1.1

Soak & Swell Data:	**Mold 1**	**Mold 2**	**Mold 3**
Initial Height (in.):	4.58	4.58	4.58
Initial Reading (in):	0.2000	0.2000	0.2000
96hr:	0.4690	0.4500	0.4410
Swell (in.):	0.2690	0.2500	0.2410
Percent Swell:	5.9	5.5	5.3

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	36	22	14
0.050	58	35	22
0.075	72	44	28
0.100	86	52	32
0.125	96	60	38
0.150	104	68	42
0.175	112	74	46
0.200	118	78	50
0.300	140	94	62
0.400	162	104	70
0.500	182	116	74

Load In PSI		
Mold 1	**Mold 2**	**Mold 3**
12	7	5
19	12	7
24	15	9
28	**17**	**11**
32	20	13
34	23	14
37	25	15
39	**26**	**17**
46	31	21
54	34	23
60	38	25

Tested By: RJP

Date Completed: 7/20/2015

Reviewed By: Fred Pacheco

Date: 7/22/2015

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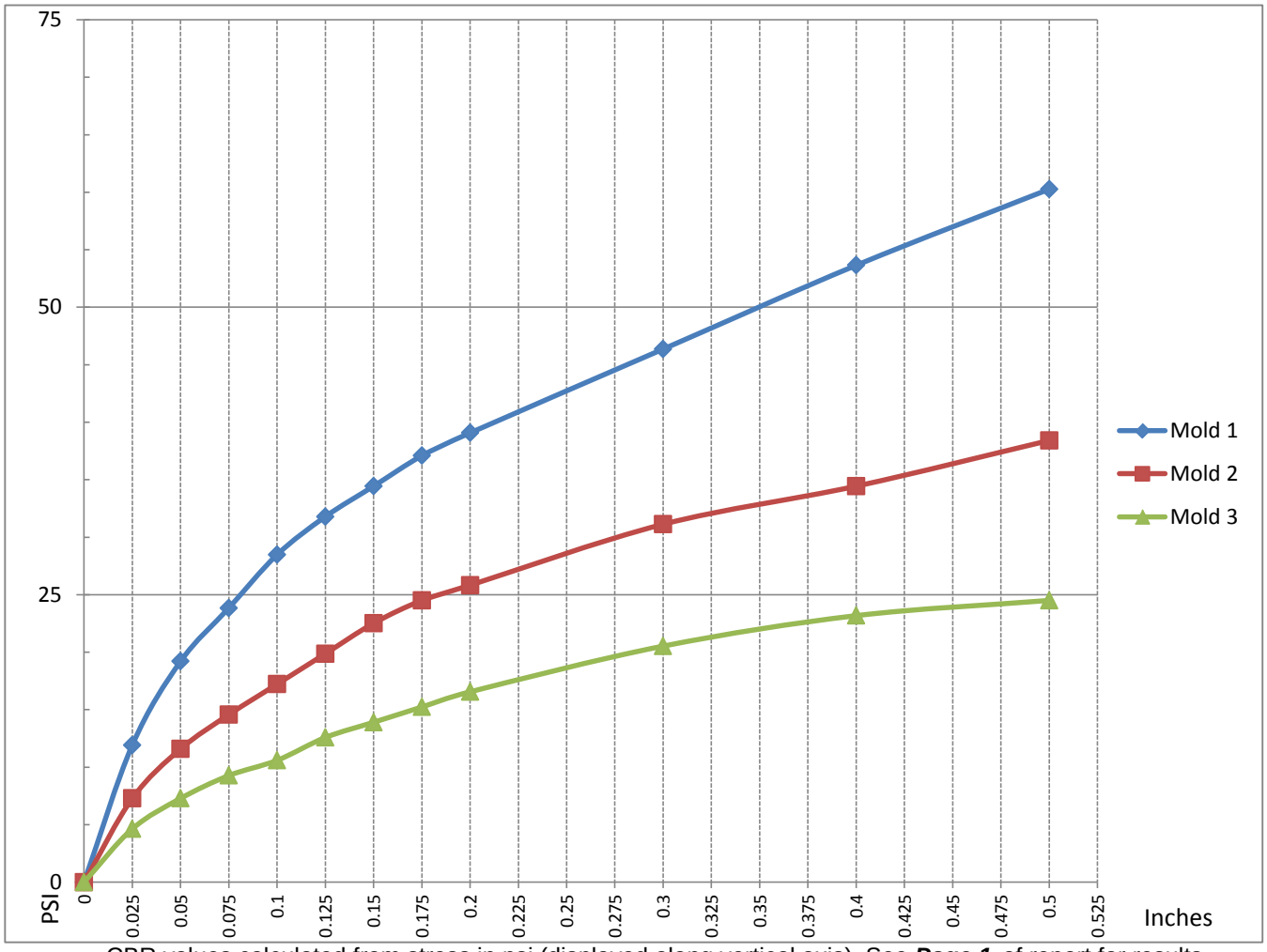
California Bearing Ratio Report -ASTM D1883

Stress Penetration Curve



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

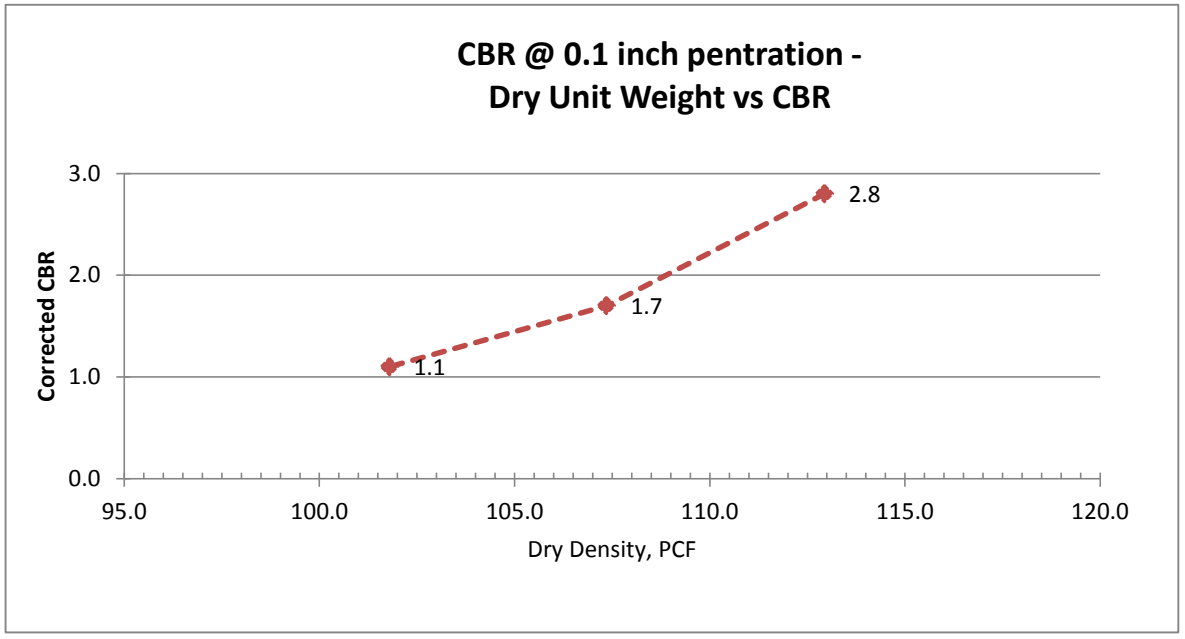
Corrected Load Penetration Values (psi)				
	0.1"		0.2"	
Mold ID	Plotted	Corrected	Plotted	Corrected
Mold #1	28	*28*	39	*39*
Mold #2	17	*17*	26	*26*
Mold #2	11	***11***	17	***17***

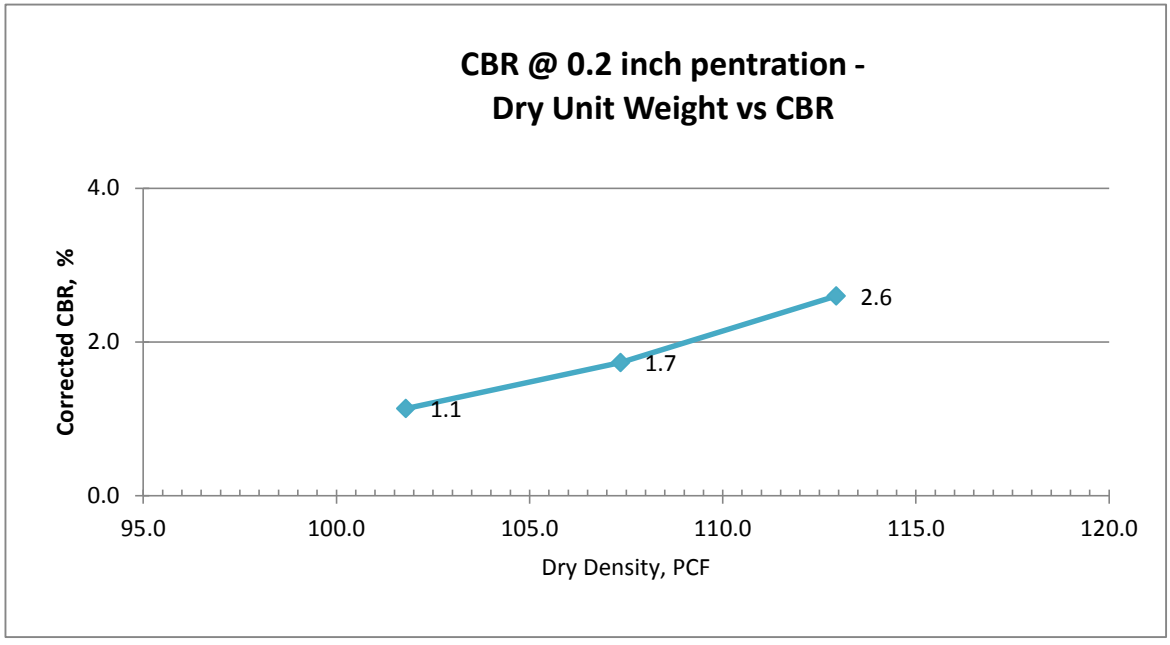
CBR @ Various Compaction Percentages			
	0.1"	0.2"	
90%	1%	1%	*
95%	2%	2%	*
100%	3%	3%	*

***** *Data obtained through interpolation*

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

ASTM D 698

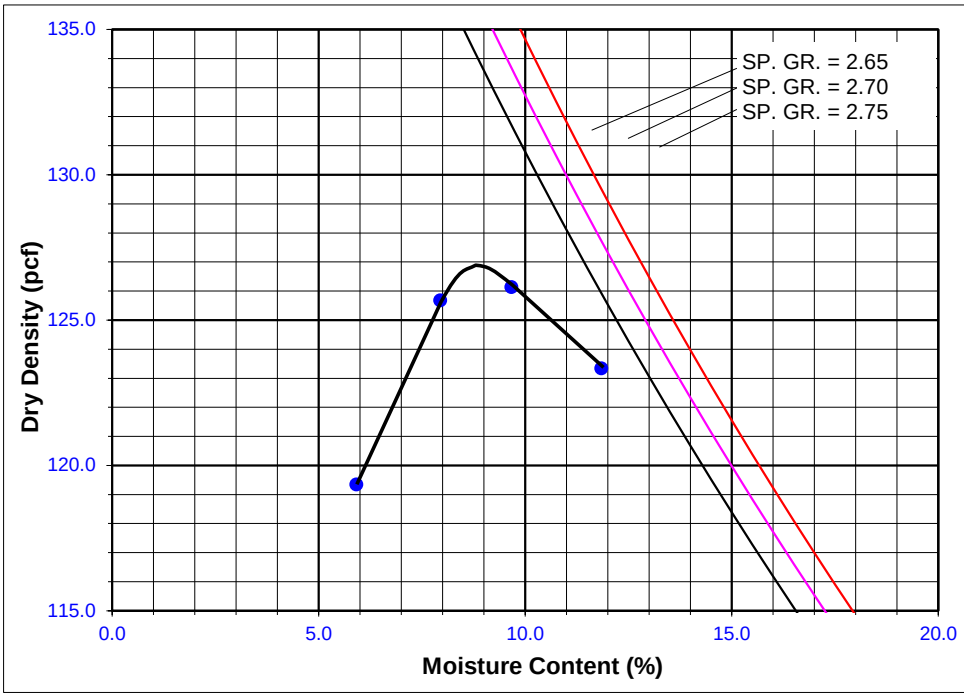
Project Name:	French Valley Airport		Tested By :	RJP	Date: 7/12/15
Project No.:	40-3128		Calculated By :	RJP	Date: 7/12/15
Lab No.:	25411		Sampled By:	Not Submitted	Date: Not Submitted
Sample No. :	B-5		Depth (ft.)	1' - 5'	
Sample Description:	Dark Brown Clayey Sand				

Moisture Added (ml)	110	220	330	440	
TEST NO.	1	2	3	4	
Wt. Comp. Soil + Mold (g)	7071	7386	7476	7463	
Wt. of Mold (g)	2770	2770	2770	2770	
Net Wt. of Soil (g)	4300	4615	4706	4693	
Wet Wt. of Soil + Cont. (g)	981.7	978.4	954.5	932.3	
Dry Wt. of Soil + Cont. (g)	926.9	906.4	870.4	833.6	
Wt. of Container (g)	0.0	0.0	0.0	0.0	
Moisture Content (%)	5.9	7.9	9.7	11.8	
Wet Density (pcf)	126.4	135.7	138.3	137.9	
Dry Density (pcf)	119.3	125.7	126.1	123.3	

Preparation Method: Dry	X
Moist	
Mechanical Rammer	
Manual Rammer	X
Hammer Weight:	5.5 lb.
Drop:	12 in.
Mold Volume ($ft.^3$):	0.07500

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)	126.9
Optimum Moisture Content (%)	8.9

ck Correction Applied per ASTM D 4718

Maximum Dry Density (pcf)	N/A
Optimum Moisture Content (%)	N/A

LABORATORY COMPACTION OF SOIL

ASTM D 698

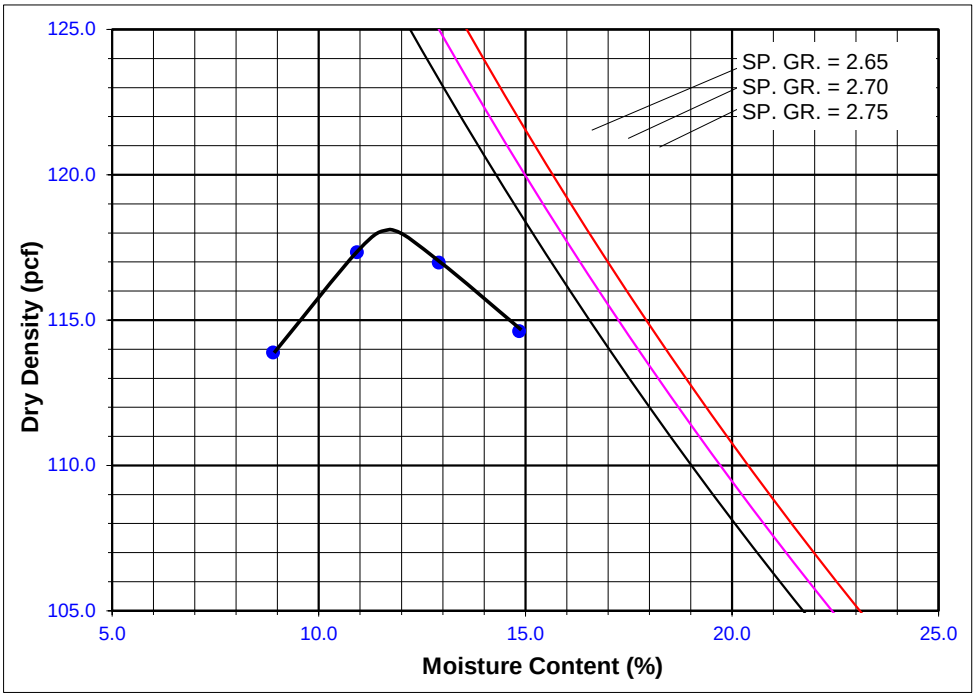
Project Name:	French Valley Airport		Tested By :	RJP	Date: 7/12/15
Project No.:	40-3128		Calculated By :	RJP	Date: 7/12/15
Lab No.:	25411		Sampled By:	Not Submitted	Date: Not Submitted
Sample No. :	B-11		Depth (ft.)	1-5'	
Sample Description:	Dark Brown Clayey Sand				

Moisture Added (ml)	110	220	330	440	
TEST NO.	1	2	3	4	
Wt. Comp. Soil + Mold (g)	6998	7207	7272	7258	
Wt. of Mold (g)	2779	2779	2779	2779	
Net Wt. of Soil (g)	4219	4428	4493	4479	
Wet Wt. of Soil + Cont. (g)	949.9	924.0	939.4	954.3	
Dry Wt. of Soil + Cont. (g)	872.3	833.0	832.0	830.9	
Wt. of Container (g)	0.0	0.0	0.0	0.0	
Moisture Content (%)	8.9	10.9	12.9	14.9	
Wet Density (pcf)	124.0	130.2	132.1	131.6	
Dry Density (pcf)	113.9	117.3	117.0	114.6	

Preparation Method: Dry	X
Moist	
Mechanical Rammer	
Manual Rammer	X
Hammer Weight:	5.5 lb.
Drop:	12 in.
Mold Volume ($ft.^3$):	0.07500

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)	118.1
Optimum Moisture Content (%)	11.7

ɔck Correction Applied per ASTM D 4718

Maximum Dry Density (pcf)	N/A
Optimum Moisture Content (%)	N/A

LABORATORY COMPACTION OF SOIL

ASTM D 698

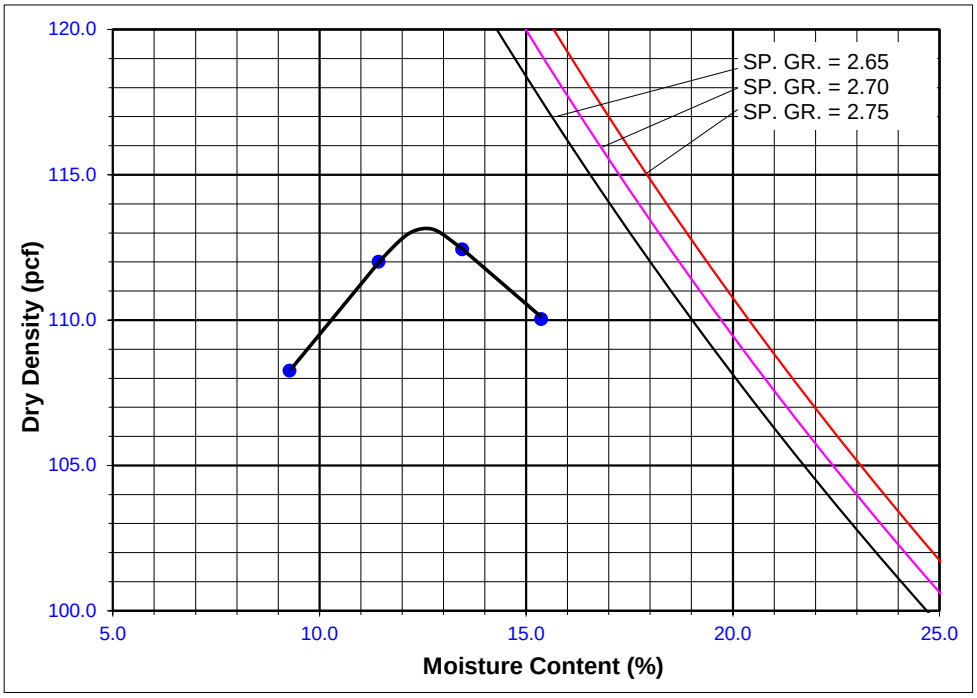
Project Name:	French Valley Airport		Tested By :	RJP	Date: 7/13/15
Project No.:	40-3128		Calculated By :	RJP	Date: 7/13/15
Lab No.:	25411		Sampled By:	Not Submitted	Date: Not Submitted
Sample No. :	B-12		Depth (ft.)	1' - 5'	
Sample Description:	Dark Brown Sandy Clay				

Moisture Added (ml)	110	220	330	440	
TEST NO.	1	2	3	4	
Wt. Comp. Soil + Mold (g)	6809	7031	7124	7103	
Wt. of Mold (g)	2779	2779	2779	2779	
Net Wt. of Soil (g)	4030	4252	4345	4324	
Wet Wt. of Soil + Cont. (g)	316.9	319.8	338.1	321.4	
Dry Wt. of Soil + Cont. (g)	290.0	287.0	298.0	278.6	
Wt. of Container (g)	0.0		0.0	0.0	
Moisture Content (%)	9.3	11.4	13.5	15.4	
Wet Density (pcf)	118.3	124.8	127.6	126.9	
Dry Density (pcf)	108.3	112.0	112.4	110.0	

Preparation Method: Dry	X
Moist	
Mechanical Rammer	
Manual Rammer	X
Hammer Weight:	5.5 lb.
Drop:	12 in.
Mold Volume (ft.^{3}):	0.07510

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):

Weight Retained (g)		Percent Retained
	Plus 3/4"	
	Plus 3/8"	
	Plus #4	

Maximum Dry Density (pcf)	113.1
Optimum Moisture Content (%)	12.5

ıck Correction Applied per ASTM D 4718

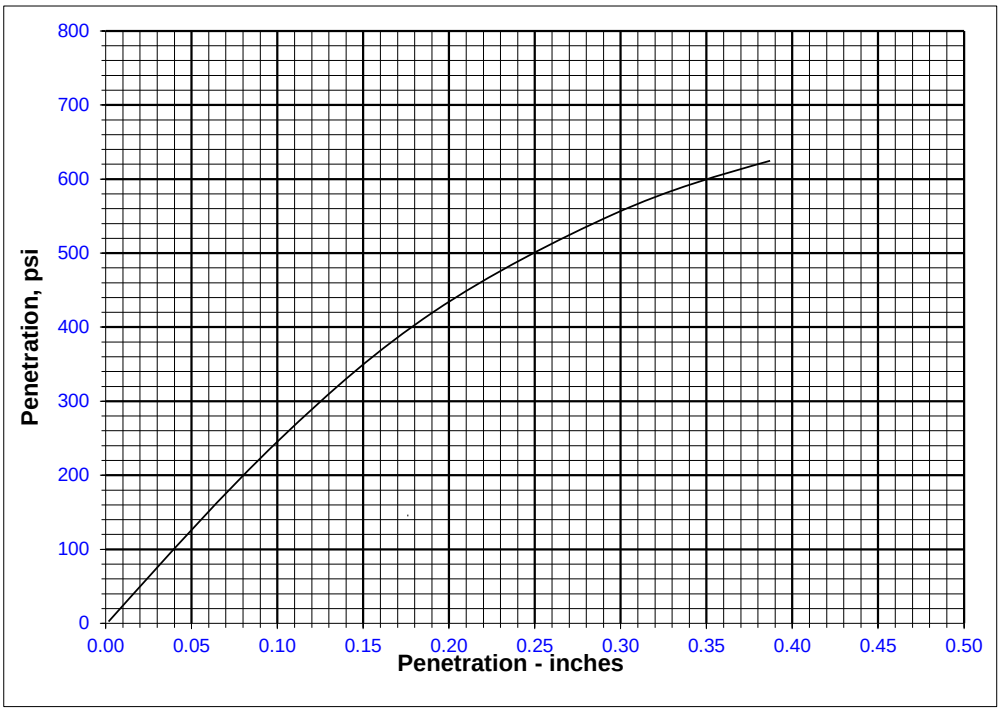
Maximum Dry Density (pcf)	N/A
Optimum Moisture Content (%)	N/A

APPENDIX C

FIELD CBR RESULTS

Field CBR Test (ASTM D4429)

Project Name:	French Valley Airport Pavement Rehabilitation
CTE Project No.:	40-3128
Test Date:	6/24/2015
Test ID:	B-3
CBR Value:	24



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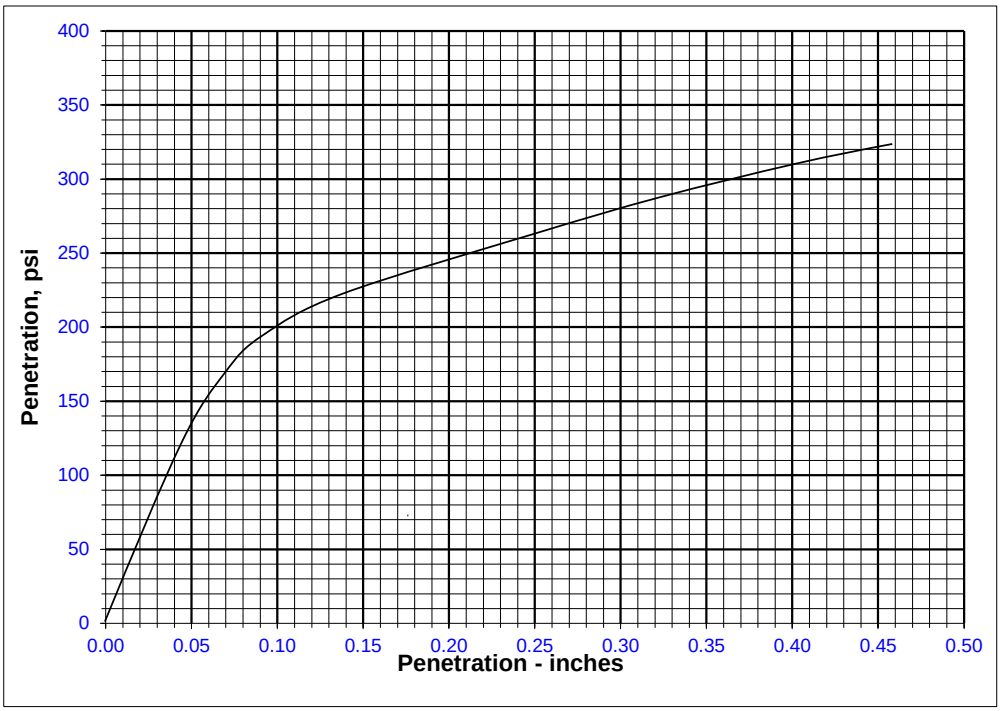
Field CBR Test (ASTM D4429)

Project Name:	French Valley Airport Pavement Rehabilitation
CTE Project No.:	40-3128
Test Date:	6/24/2015
Test ID:	B-13
CBR Value:	20



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