Measurement for payment for the contract item Structure Excavation will be the number of cubic yards of material excavated as shown on the drawings. Longitudinal limits of the excavations terminate at a vertical plane at the limits of pipe or structures, measured along the longitudinal axis of the pipe or structure.

Measurement for payment for the contract item Channel Excavation will be the number of cubic yards excavated as shown on the drawings or as directed by the Engineer. No measurement or payment of the fill required to obtain the channel and road cross section and the placement and compaction of material in the mandatory fill areas will be made.

Measurement for payment for the contract items Rock Excavation (Trench); and Rock Excavation (Basin) will be made only if the Engineer has determined that it qualifies as Rock Excavation per the guidelines set forth in Sections 14.5 and 14.6. Areas deemed such shall be cleaned of all loose material and the surface cross sectioned based on survey data to form the lower limit. The cubic yard volume will be determined by the average end area method. Large boulders declared as Rock Excavation may be measured by taking the average circumference and using formula for a sphere. If the Rock Excavation area is spread over a large area, then as an alternative grid, COGO points may be generated by the District's Surveyors who will create a new digital terrain model to compare the volume reduction as compared to the original digital terrain model within the area. Contractor shall coordinate with the District's Surveyors regarding the limits of COGO points to be shot and the related time consumption to perform the work regarding this alternative.

Measurement for payment for the contract item Precompaction will be made to the nearest square yard in conformance with the drawing as measured in the field.

Measurement for payment for the contract item Basin Excavation will be the number of cubic yards excavated as shown on the drawings or as directed by the Engineer.

Measurement for payment for the contract item Asphalt Concrete Excavation will be the number of cubic yards of material excavated as shown on the drawings or as directed by the Engineer.

Measurement for payment for the contract items Backfill; and Embankment will be the number of cubic yards of material placed in final position as specified and within the limits of the payment lines shown on the drawings. The longitudinal limits shall terminate at a vertical plane at the limits of the pipe or structure, measured along the longitudinal axis of the various pipe or structures. Volumes occupied by structures, aggregate base, asphalt concrete and other feature for which a separate payment is made will be deducted from the gross volume.

Measurement for payment for Backfill for the option cast-in-place concrete pipe will be to the paylines established for the reinforced concrete pipe sizes shown on the drawings.

Measurement for payment for the contract item Controlled Low Strength Material (CLSM) Backfill will be the number of cubic yards of material placed in final position as specified and within the limits of the payment lines as shown on the drawings. The longitudinal

limits for CLSM shall terminate at a vertical plane at the limits of the pipe or structure, measured along the longitudinal axis of the various pipe or structures. Volume occupied by structures, aggregate base, asphalt concrete and other features for which a separate payment is made will be deducted from the gross volume.

Measurement for payment for the contract item Filter Material will be the number of cubic yards of material placed in final position as specified to the lines, grades and dimensions as shown on the drawings or as directed by the Engineer.

14.17 Payment - The contract prices paid for Structure Excavation; Channel Excavation; Rock Excavation (Trench); Rock Excavation (Basin); Precompaction; Basin Excavation; Asphalt Concrete Excavation; Backfill; Embankment; Controlled Low Strength Material (CLSM) Backfill; and Filter Material shall include full compensation for all costs incurred under this section.

SECTION 15 - TRENCH SAFETY SYSTEM AND FALSEWORK

15.1 Description - This section covers the contract item Trench Safety System and Falsework. This item is defined as a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Trench safety systems include support systems, sloping and benching systems, shield systems and other systems that will provide necessary protection. The item includes the furnishing and implementation of the safety system as required by Section 306-1.1.6 of the Greenbook Specifications or as directed by the Engineer.

15.2 Trench Safety System - Excavation for any trench five (5) feet or more in depth shall not begin until the Contractor has provided to the Engineer, a detailed plan for worker protection from the hazards of caving ground during the excavation of the trench. The plan shall show the details of the design of shoring, bracing, sloping or other provisions to be made for worker protection including any design calculations done in the preparation of the plan. No such plan shall allow the use of shoring, sloping or a protective system less effective than that required by the Construction Safety Orders of the California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal-OSHA). The plan shall be prepared and signed by an engineer who is registered as a civil engineer in the State of California, and the plan and design calculations shall be submitted for review at least two (2) weeks before the Contractor intends to begin trenching operations.

All safety plans shall reflect surcharge loadings imparted to the side of the trench by equipment and stored materials. Surcharge loads shall be monitored to verify that such loads do not exceed the design assumptions for the system.

The Contractor should not assume that only one type of trench safety system such as a shield or "trench box" will be adequate for all trenching situations encountered on a given project. The Contractor should be prepared with alternative safety system designs (such as solid sheeting) should construction circumstances dictate the use of such.

Trench safety system designs for support systems, shield systems or other protective systems whether drawn from manufacturers' data, other tabulated data or designed for this particular project must be signed by a civil engineer registered in the State of California prior to submittal to the District for review. A shoring plan for the specific use of a shield shall be prepared. Catalogs or engineering data for a product should be identified in the plan as supporting data. All specific items or applicable conditions must be outlined on the submittal.

The State of California Department of Transportation "Trenching and Shoring Manual" will be used as a guide for plan review and approval.

Also included in this item is the fencing and barricading of the open trench as required for the safety of pedestrians and vehicular traffic as directed by the Engineer.

15.3 Falsework – Falsework for the construction of bridges and reinforced concrete boxes shall conform with Section 48-2 Falsework of the Caltrans Specifications.

The Falsework plan shall be prepared and signed by an engineer who is registered as a civil engineer in the State of California, and the plan and design calculations shall be submitted for review at least 4 weeks before the Contractor intends to begin Falsework construction.

The State of California Department of Transportation "Falsework Manual" will be used as a guide for plan preparation and review.

15.4 Measurement and Payment - The contract price paid for the item Trench Safety System and Falsework shall include full compensation for all costs incurred under this section.

This payment will be made on a basis of the percentage of the work completed on the items related to trenching operations.

SECTION 16 - CONCRETE CONSTRUCTION

16.1 Description - This section includes the contract items related to the various classes of Concrete.

16.2 General Requirements - Concrete for all purposes shall be composed of Portland Cement, aggregates and water of the quantities and qualities herein specified, and in the required proportions. The ingredients are to be well mixed and brought to the proper consistency and to have a compressive strength at the age of 28 days of not less than the amount shown in the following tabulation for each type of work listed:

CONCRETE CLASS	MINIMUM SACKS CEMENT/C.Y.	TYPE OF WORK	POUNDS PER SQUARE INCH
A	6	Bridges, Walls, Boxes, Rectangular Channel and Transition Structure Nos. 1, 3 and 4 and Concrete Bulkhead	4000*

A	6	Slope Paving, Trapezoidal Channel, Catch Basins, Inlets, Modified Manhole No. 2 Inlets, Junction Structure No. 1, Manholes, Cross Gutters, Concrete Collars, Headwalls, Parapet Walls and Wing Walls	3250*
B	5	Local Depressions, Cutoff Walls, Encasements, Curb and Gutter, Ditches, Driveways, Sidewalk and Miscellaneous Concrete not otherwise specified	3000*
E	1/2	Controlled Low Strength Material (CLSM) Backfill	50-100 (hand excavatable)

*Note: Concrete for use in structures constructed from State of California, Department of Transportation Standard Plans, "Greenbook" (CAPWA) Standard Plans, County of Riverside Transportation Department Standard Plans and Eastern Municipal Water District (EMWD) Standard Plans shall have compressive strengths as called for on those plans.

16.3 Material and Methods - All concrete materials, methods, forms and proportioning shall conform to Sections 51 and 90, and additionally, curb construction shall conform to Section 73 of the Caltrans Specifications. Concrete test specimens will be made in accordance with ASTM Designation C-31 and C172. Test for concrete compressive strengths will be performed in accordance with ASTM Designation C-39. Combined aggregate grading for all concrete shall be in conformance with Section 90-1.02C(4)(d) of the Caltrans Specifications and the following tabulation for each type of work listed:

TYPE OF WORK	COMBINED AGGREGATE GRADING
Bridge Footings. The inverts of: Spillways, Trapezoidal Channels, Reinforced Concrete Box, Rectangular Channels, Junction Structures, Transition Structures and Manholes.	1-1/2" Maximum
Bridges, Retaining Walls, Slope Paving, Trapezoidal Channel, Box Deck and Walls, Rectangular Channel Walls, Headwalls, Catch Basins, Drop Inlets, Modified Manhole No. 2 Inlets, Local Depressions, Curb and Gutter, Driveways, Sidewalk, Cutoff Walls, Bulkheads, Collars,	1" Maximum

Encasements and other Miscellaneous Concrete
not otherwise specified.
All other concrete structures

Controlled Low Strength Material (CLSM) Backfill *See below

*Note: Controlled Low Strength Material (CLSM) gradation shall conform to Section 201-6.2.2 of the Greenbook Specifications except that the Contractor has the option to use reclaimed concrete material for the CLSM. The reclaimed material shall meet the same grading requirements as non-reclaimed material set forth in Greenbook Specifications Section 201-6.2.2.

The Contractor may also elect to use an air entrained agent or an accelerant (2% PolarSet or equivalent) to speed up the set time of the CLSM. The Contractor shall submit mix designs for review and approval.

Fly Ash, Class F may be substituted for cement, up to a maximum of 15 percent by weight for all concrete. Fly Ash shall meet the standards of ASTM Designation: C-618. Water reducing agents meeting ASTM Designation: C-494 will be permitted in amounts recommended by the supplier and approved by the Engineer in writing.

No other admixture shall be used in any class of concrete without written permission from the Engineer.

Supplementing Section 90-1.01 of the Caltrans Specifications, prior to placement of any concrete the Contractor shall submit mix designs, for all types of concrete to be placed, to the Engineer for approval. Supplementing Section 90-1.02G(3) of the Caltrans Specifications, concrete delivered to the job site shall be accompanied by a ticket containing the weight of each of the individual ingredients in the mix.

16.4 General Reinforcing Steel Requirements - Reinforcing steel for all reinforced concrete structures shall be Grade 60 Low-Alloy or Grade 60 Billet-Steel. The reinforcing steel for use in structures constructed from State of California, Department of Transportation Standard Plans shall be of Grade 60 or as called for on those plans. Cleaning, bending, placing and spacing of reinforcement shall conform to the applicable provisions of Section 52 of the Caltrans Specifications and to the drawings. The Contractor shall furnish a "Certificate of Compliance" with the specification of ASTM Designation: A-706/A or A-615/A. All splices shall conform to the requirements of A.C.I. Manual, Standard 318, latest edition. Splices requested by the Contractor for his convenience shall be subject to approval by the Engineer. Longitudinal lap shall be 16 inches minimum for #4 bars and 19 inches minimum for #5 bars.

16.5 Consistency - The consistency of the concrete shall be such as to allow it to be worked into place without segregation. Unless otherwise specified, the slump shall be 3 inches plus or minus 1 inch for all concrete, except the concrete for the cast-in-place concrete pipe which shall have a slump of 2 inches plus or minus 1 inch.

Controlled Low Strength Material (CLSM) Backfill flow characteristics shall be determined by the producer to meet job site conditions and shall be approved by the Engineer.

The slump test shall be performed in accordance with the requirements of ASTM Designation: C-143. Slumps greater than those specified may be cause for rejection of the concrete by the Engineer.

16.6 Placing - Supplementing Section 51-1.03D(1) of the Caltrans Specifications, concrete shall not be placed except in the presence of the Engineer. The Contractor shall give reasonable notice to the Engineer each time he intends to place concrete. Such notice shall be far enough in advance to give the Engineer adequate time to inspect the subgrade, forms, steel reinforcement and other preparations for compliance with the specifications before concrete is delivered for placing.

Formed concrete shall be placed in horizontal layers in lifts of not more than 20 inches. Hoppers and chutes, pipes and "elephant trunks" shall be used as necessary to prevent segregation of the concrete.

16.7 Form Removal and Finish - Forms shall be removed only when the Engineer has given his approval. Forms shall be removed in such a way as to prevent damage to the concrete. Supports shall be removed in a manner that will permit the concrete to take stresses due to its own weight uniformly.

Forms shall not be removed sooner than the following minimum time or strength after the concrete is placed. These times represent cumulative number of days and fractions of days, not necessarily consecutive, during which the temperature of the air adjacent to the concrete is above 50 degrees Fahrenheit. If the temperature falls below 50 degrees Fahrenheit at any time after the concrete is placed in the forms, the Engineer will advise the Contractor of additional time required before forms can be removed.

Element	Strength or Time
Retaining walls - supporting forms and shoring, and reinforced concrete boxes with spans greater than 14 feet	3000 psi or 7 days
Reinforced Concrete Boxes at pavement grade.	3000 psi or 7 days
Reinforced Concrete Boxes with spans 14 feet or less, and not at pavement grade, Transition Structure Nos. 1, 2 & 4	1600 psi
All other structures	16 hours

The finish on all exposed formed surfaces shall conform to Section 51-1.03F(3) Class 1 Surface Finish of the Caltrans Specifications. A tight wood float finish will be required on the surface of trapezoidal channels and bridge decks and excessive surface working will not be permitted. The exposed concrete surfaces shall be broomed in a transverse direction with a fine

textured hair push broom to produce a uniform surface and eliminate float marks. Brooming shall be done when the surface is sufficiently set to prevent deep scarring. If directed by the Engineer, a fine spray of water shall be applied to the surface immediately in advance of brooming.

Exposed corners of all concrete structures shall be finished with a 3/4" chamfer.

Concrete flatwork shall match adjacent surfaces. The concrete shall be struck off and tamped or vibrated until a layer of mortar has been brought to the surface. The top surface and face of curbs, gutters, catch basins and sidewalks shall be finished to match adjacent surfaces.

16.8 Curing - All concrete shall be prevented from drying for a curing period of at least seven (7) days after it is placed. Surfaces exposed to air during the curing process shall be kept continuously moist for the entire period or until curing compound is applied.

Formed surfaces shall be thoroughly wetted immediately after forms are removed and shall be kept wet until patching and repairs are completed. Water or covering shall be applied in such a way that the concrete surface is not eroded or otherwise damaged. Water for curing shall be clean and free from any substances that will cause discoloration of the concrete.

Concrete may be coated with curing compound in lieu of the continued application of moisture. The curing compound shall comply with the requirements of Section 90-1.03B(3) of the Caltrans Specifications and ASTM Designation C-309. The curing compound shall be No. 2 White Pigmented Curing Compound, Type 2, Class B for all concrete surfaces other than for flatwork which shall be coated with No. 6 Nonpigmented Curing Compound, Type 1-D, Cass A containing a red fugitive dye.

The curing compound shall be sprayed on the moist concrete surfaces as soon as free water has disappeared, but shall not be applied to any surface until patching, repairs and finishing of that surface are completed. The curing compound shall be thoroughly mixed immediately before applying, and shall be applied at a uniform rate of not less than one gallon per 150 square feet of surface. No separate payment will be made for the curing compound or its application.

16.9 Controlled Low Strength Material (CLSM) Backfill Curing - Controlled Low Strength Material (CLSM) Backfill must achieve a maximum indentation diameter of three (3) inches as determined under ASTM D, 6024 before covering.

16.10 Joints - Joints shall be made at the locations shown on the drawings, or as approved by the Engineer.

The Contractor shall construct, in one continuous concrete placing operation, all work comprised between such joints. Joints shall be kept moist until adjacent concrete is placed.

All construction joints having a keyed, stepped, or roughened surface shall be cleaned by sandblasting prior to placement of the adjacent concrete, unless otherwise directed by the Engineer.

The sandblasting operations shall be continued until all unsatisfactory concrete, laitance, coatings, stains, debris, and other foreign materials are removed. The surface of the concrete shall be washed thoroughly to remove all loose material.

Transverse weakened plane joints shall be required in the trapezoidal channel at 10-foot spacing or as directed by the Engineer. The joints may be formed by placing a continuous strip of plastic or other material which will not react adversely with the chemical constituents of the concrete or bond with the concrete. The strip shall have a minimum thickness of 0.013 foot, a width of not less than 0.12 foot nor more than 0.13 foot for the six-inch thick channel slope and invert. After placement, the vertical axis of the joint material shall be within 10 degrees of a plane normal to the surface of the concrete. The tops of the strip shall not be above nor more than 0.02 foot below the finished concrete. Final alignment of the strip for the transverse weakened plane joints shall not vary more than 0.04 foot from the edge of a 12-foot straight edge. After installation of a joint material the concrete shall be free of segregation, rock pockets or voids and the finished concrete surface on each side of the joint shall be in the same plane.

The Contractor may elect to form the weakened plane joints in the channel surface by cutting a groove in the surface with a power driven saw. The grooves shall be cut to a minimum depth of 0.17 foot and the width shall be the minimum width possible with the type of saw being used, but in no case shall the width exceed 0.02 foot. The weakened plane joints shall be sawed within 12 hours after the concrete has been placed.

Construction joints, when required, shall be located between the transverse joints and, unless otherwise specified on the plans, shall utilize 1/2 inch diameter deformed bars 30 inches long, spaced at 18-inch centers as tie bars. The construction joints shall be straight and finished in a workmanlike manner.

Surfaces of construction joints shall be cleaned as set forth in Section 51-1.03D(4) of the Caltrans Specifications.

For reinforced concrete boxes, keyed transverse construction joints shall be placed not more than 50 feet or be less than 10 feet. Transverse joints in the invert, walls and deck shall be in the same plane. Transverse construction joints shall be constructed per details on the Standard Drawings.

(Note 6 in BX401 also includes: a complete curtain of transverse steel shall be placed 3 inches from the face of the joints and longitudinal steel will not be continuous through the joints.)

For rectangular channels, keyed transverse construction joints shall not exceed 50 feet or be less than 10 feet. Transverse joints in the invert and the walls shall be in the same plane. Transverse construction joints shall be constructed per details on the Standard Drawings.

16.11 Weepholes - Weepholes shall be constructed in accordance with the drawings and at locations directed by the Engineer. All weepholes shall be 2-1/2 inches in diameter unless noted otherwise on the drawings.

Weepholes may be formed by removable round wooden dowels, Schedule 40 PVC Pipe or greater, or by other methods acceptable to the Engineer.

All weepholes shall have a rodent screen consisting of 1/4-inch mesh, 16-gauge galvanized hardware cloth securely and permanently attached over the drain opening in a manner approved by the Engineer.

Filter material for the weepholes shall be one inch (1") nominal size crushed rock conforming to the gradation of Section 200-1.2 of the Greenbook Specifications. Filter material shall also meet the quality requirements of Sections 200-1.1 and 200-1.2 of the Greenbook Specifications.

Filter material shall be wrapped in a single layer of filter fabric as shown on the drawings or approved by the Engineer. Filter fabric shall be Class A per Section 88-1.02B of the Caltrans Specifications.

Filter fabric shall be furnished in protective wrapping which shall protect the fabric from ultraviolet radiation and from abrasion due to shipping and handling. The fabric shall also be ultraviolet stabilized.

The fabric shall be placed in the manner and at the locations shown on the drawings. The surface to receive the fabric shall be prepared to a smooth condition free of obstructions and debris.

The fabric shall be covered within 72 hours of its placement. Should the fabric be damaged during construction, the torn or punctured section shall be repaired or replaced as directed by the Engineer.

No separate payment will be made for the installation of the weephole, hardware cloth, filter material or filter fabric.

16.12 Use of the Channel Invert - Dump trucks, concrete trucks and earth moving equipment (whether full or empty) will not be allowed to operate on the invert of the concrete channel.

A small crane with capacity not to exceed 10 tons will be permitted to operate on the concrete channel invert for the purpose of setting and moving forms, and erecting the steel reinforcement for the walls. Wheel loading types and amounts will be subject to the approval of the Engineer. Vehicles of 3/4 ton capacity (or less) will also be permitted access to the invert. The speed of any vehicle using the invert will be limited to 10 m.p.h. maximum to avoid impact loading.

No other category of equipment, except that specifically approved by the Engineer in writing will be permitted to use the invert of the channel for access to the work area.

In any event, vehicular access to the invert will not be permitted until the concrete has achieved its design strength. Approval for access to use the invert shall not relieve the Contractor of the responsibility to avoid damage to the concrete. Cracking, displacement or other damage which occurs to the invert will be cause to restrict some or all of the categories of equipment allowed access to the channel. Repair or replacement of damaged concrete will be required.

16.13 Class "A" Concrete, Reinforced Concrete Box - The contract item Class "A" Concrete, Reinforced Concrete Box covers the concrete incorporated in the construction of Transition Structure No. 4 and parapet walls.

Reinforced concrete box walls shall be constructed by placing the concrete directly against timber or steel sheeting used as the outside form and shoring. Sheeting shall be closely fitted and extend a minimum of 12 inches above the ground surface. Unless otherwise directed, all sheeting shall be removed and the void created shall be immediately backfilled with a well graded sand and thoroughly jetted to the relative densities specified in Backfill.

The Contractor has an option of forming both sides of the reinforced concrete box walls, however, due to additional loads on the box structure resulting from this trench condition, the Contractor will be required to submit an alternate box design prepared by a civil engineer registered in the State of California. All alternate box designs are subject to the approval of the Engineer and no additional payment will be made for the alternate box if approved.

If the box is constructed from State of California, Department of Transportation Standard Plans, either method of forming noted in the above paragraphs may be used without an alternate box design being submitted.

Loading and vehicular use of box deck slab shall comply with the requirements of Section 51-1.03B of the Caltrans Specifications (also apply to bridge deck slab).

Also included in this item of work will be the construction of the weepholes if required in the invert slab or sides of the reinforced concrete box.

16.14 Class "A" Concrete, Channel Wall - The contract item Class "A" Concrete, Channel Wall covers the concrete to be used in the construction of the walls of the channel L2 and L3 transitions, wing walls and headwalls.

16.15 Class "A" Concrete, Basin Intake Structure – The contract item Class "A" Concrete, Basin Intake Structure covers the complete construction of the intake structure as shown on the drawings. Included in this item is the earthwork and reinforcing steel required, exclusive of the steel for grates, which will be paid under Miscellaneous Iron and Steel.

16.16 Class "A" Concrete, Basin Emergency Spillway – The contract item Class "A" Concrete, Basin Emergency Spillway covers the complete construction of the emergency spillway as shown on the drawings exclusive of the rock slope protection. Included in this item is the earthwork and reinforcing steel required for the complete construction of retaining wall, concrete aprons and any other forms of Class "A" Concrete required for the spillway construction.

16.17 Class "A" Concrete, Minor Structures - The contract item Class "A" Concrete, Minor Structures includes the complete construction of the catch basins, collars, concrete bulkhead, and drop inlets. Included in the pay item is all earthwork and reinforcing steel required for these structures, but exclusive of the required miscellaneous iron and steel.

16.18 Class "A" Concrete, Channel Invert - The contract item Class "A" Concrete, Channel Invert covers the concrete to be used in the construction of the invert for the L2 and L3 portions of channel transitions. Included in the pay item is all reinforcing steel required, but exclusive of earthwork.

16.19 Class "A" Concrete, Channel Paving - The contract item Class "A" Concrete, Channel Paving includes the concrete paving of the trapezoidal channel, access ramps within the channel and the basin and the L1 portions of the channel transitions as shown on the drawings. Included in the pay item is all reinforcing steel required, but exclusive of earthwork.

Finish surface of the channel and the basin shall be true to line and grade and concrete shall be not less than the minimum thickness indicated on the drawings, and as specified in Section 6.13 Construction Tolerances of these Special Provisions.

16.20 Class "B" Concrete, 2', 3', 5', 6' Cutoff Wall - The contract item Class "B" Concrete, 2', 3', 5', 6' Cutoff Wall covers the construction of the continuous cutoff walls on each side of the channel prism and transverse cutoff walls. Included in the pay item is all earthwork and reinforcing steel.

16.21 Class "B" Concrete, Concreted Rock – The contract item Class "B" Concrete, Concreted Rock covers the concrete to be used to "grout" or concrete the invert rock and rock slope protection as shown on the drawings.

Concrete for concreted rock shall be Class "B", and shall have a slump sufficient to allow gravity flow into the interstices of the rock with rodding and vibration. Concrete for concreted rock shall be placed in accordance with Section 72-3.03E of the Caltrans Specifications except that total penetration of the rock blanket by the concrete will be required, and the outer rocks of the finished rock surface shall project approximately 9 to 12 inches from the concrete surface.

16.22 Class "B" Concrete, V-Ditch – The contract item Class "B" Concrete, V-Ditch covers the complete construction of concrete V-ditch as shown on the drawings. Included in this item is the earthwork and welded wire mesh required for the complete construction of this item.

16.23 Class "B" Concrete, Miscellaneous - The contract item Class "B" Concrete, Miscellaneous includes the complete construction of the curb and gutters, cross gutters,

sidewalks, driveways, local depressions, pipe plugs, sewer encasements, and any other concrete not specified. Included in the pay item is all earthwork and reinforcing steel required. The subgrade for cross gutters and driveways shall be recompacted to ninety-five percent (95%) relative compaction prior to the placement of concrete.

16.24 Transition Structures - The contract items Transition Structure Nos. 1 and 3 covers the complete construction of these various structures, including reinforcing steel but exclusive of earthwork.

16.25 Junction Structures - The contract items Junction Structure No. 1; and Junction Structure Line 1-B covers the complete construction of these structures, including reinforcing steel, exclusive of earthwork.

No separate payment will be made for Junction Structure No. 3 or Junction Structure No. 4.

16.26 Manholes - The contract items Manhole Nos. 2 and 3 cover the complete construction of these various structures, including reinforcing steel, exclusive of earthwork and the miscellaneous iron and steel.

The manhole rings are required and shall conform to ASTM Designation: C-478, and the drawings. The rings shall be laid up, using Type II modified cement with a 1:2 mix mortar and with 1/2-inch minimum thickness pointed joints. On completion, vertical wall section shall not be out of plumb by more than 1/2-inch in 10 feet of vertical height. The manhole rings shall also be accurately aligned. The cast iron manhole frame and cover shall be installed, with frame accurately set to finished grade of pavement, in mortar well tamped around the perimeter of frame to ensure full bearing.

16.27 Measurement - Measurement for payment for the contract items Class "A" Concrete, Reinforced Concrete Box; Class "A" Concrete, Channel Wall; Class "A" Concrete, Basin Intake Structure; Class "A" Concrete, Basin Emergency Spillway; Class "A" Concrete, Minor Structures; Class "A" Concrete, Channel Invert; Class "A" Concrete, Channel Paving; Class "B" Concrete, V-Ditch; and Class "B" Concrete, Miscellaneous will be the number of cubic yards placed as specified, measured to the neat lines as shown on the drawings.

Measurement for payment for the contract item Class "B" Concrete, 2', 3', 5', 6' Cutoff Wall will be the number of lineal feet placed, measured parallel to the top of the wall.

Measurement for payment for the contract item Class "B" Concrete, grout for Concreted Rock will be the number of cubic yards placed as directed by the Engineer, measured at the mixer as provided in Section 72-3.04 of the Caltrans Specifications.

Measurement for payment for the contract items Transition Structure Nos. 1 and 3; Junction Structure No. 1; Junction Structure Line 1-B; Manhole No. 2; and Manhole No. 3 will be the number of each type constructed as specified.

No measurement or payment will be made for Junction Structure Nos. 3, 4 and 7.

No measurement or payment will be made for dowels, tie bars, tie wires, blocks, chairs and other accessories.

16.28 Payment - The contract prices paid for the various Concrete items and reinforcing steel items shall include full compensation for all costs incurred under this section.

SECTION 17 - CONCRETE PIPE

17.1 Description - This section covers the contract item Reinforced Concrete Pipe of the various sizes as required for the work.

17.2 General Pipe Requirement - Pipe materials, manufacture and quality, shall conform to ASTM Designation: C-76 or C-655. The Engineer shall be furnished a "Certificate of Compliance" signed by the manufacturer of the pipe certifying that the pipe conforms to the ASTM requirements. All pipe and pipe material supplied by the Contractor shall be new.

The District will also require the D-load bearing strength test conforming to ASTM C497 for new pipe 48" or greater, in conformance with Sections 207-2.9.1(1) and 207-2.9.2 of the Greenbook Specifications as a basis for acceptance of the pipe. The test shall be performed in the presence of the Engineer.

Pipe shall be laid in a trench free of ponded water in conformance with Section 306-1.2.2, with joints in conformance with Section 306-1.2.4 of the Greenbook Specifications.

Pipe ends shall be cleaned and moistened prior to making up joint.

17.3 Reinforced Concrete Pipe - The contract items for the various Reinforced Concrete Pipe include the furnishing and installing of the various pipe as specified, exclusive of earthwork.

17.4 Pipe on Curves - Unsymmetrical closure of pipe joints shall not exceed 1 inch pull on the outside of the curve when pull is measured at the springline on the inside of the pipe. Mortar joints on curves shall conform in strength, texture of mortar finish and tightness to the joints for straight ended pipe.

When beveled pipe is used the maximum deflection angle shall not exceed 6 degrees unless shown on the plans or approved by the Engineer.

17.5 Video Inspection – All concrete pipe (cast-in-place and reinforced) with inside diameters of 30 inches or less shall be videotaped prior to final inspection. Copies of the videotapes shall be provided to the Engineer. For pipe placed within roadway area, video inspection shall be performed and the results approved by the Engineer prior to paving.

17.6 Measurement - Measurement for payment of the contract items Reinforced Concrete Pipe of the various sizes and classes will be the number of lineal feet of each class installed as specified measured along the centerline of the pipe in place including curves.

17.7 Payment - The contract prices paid for the Reinforced Concrete Pipe shall include full compensation for all costs incurred under this section.

SECTION 18 - AIR-PLACED CONCRETE

18.1 Air-Placed Concrete – Air-placed concrete may be used for construction of channel transition walls only when specifically allowed elsewhere in these Detailed Specifications or on the drawings. At the Contractor's expense, one inch of concrete shall be added to the channel transition walls to obtain three inches of clear cover for steel reinforcement on the dirt side.

Air-placed concrete shall be installed only by subcontractors with a minimum of 5 years experience specializing in construction of reinforced concrete structures by air-placed methods. Only personnel skilled in the techniques of air placement of concrete shall be utilized for air-placed concrete construction, and nozzle operators shall have a minimum of 3 years experience in air placement of concrete in reinforced concrete structures.

Air-placed concrete shall be applied only by Method B (shotcrete) in conformance with Section 303-2.1.3 of the Greenbook Specifications.

Equipment used for air placement of concrete shall be in conformance with Section 303-2.2 of the Greenbook Specifications for "Method B", except that only "positive displacement piston" type pumps shall be allowed to convey the premixed concrete. So called "rotating roller squeeze" pumps or "ball valve" pumps will not be allowed. In addition, two air compressors shall be provided. The air compressors shall have a minimum capacity of 250 cubic feet per minute for each operating nozzle.

Concrete for air-placed concrete shall conform to the material, proportioning and mixing requirements of these Detailed Specifications, except that materials shall conform to specifications applicable to the "wet-mix process" in Section 53-1.02 of the Caltrans Specifications. The use of 3/8" pea gravel described therein will be required. The use of admixtures will be subject to the approval of the Engineer.

Strength of air-placed concrete shall be determined from cores taken from test panels in accordance with Section 303-2.4 of the Greenbook Specifications. Supplementing Section 303-2.4 of the Greenbook Specifications, the test panels shall have the same thickness as the maximum wall thickness of the transition section being constructed. A minimum of three cores shall be taken for each 250 cubic yards or fraction thereof of air-placed concrete deposited each day. One core test specimen shall be obtained and tested at 14 days, and the remaining two obtained and tested at 28 days. The tests shall be conducted in the presence of the Engineer and by a qualified laboratory acceptable to the District. All coring and testing required shall be at the Contractor's expense. The minimum compressive strength of air-placed concrete shall be in

accordance with the requirements of these Detailed Specifications. A final report documenting all testing shall be given to the Engineer prior to acceptance of the project.

Preparation of surfaces to receive air-placed concrete shall be in accordance with Section 303-2.5 of the Greenbook Specifications.

Forms and ground wires shall be in conformance with Section 303-2.7 of the Greenbook Specifications.

Placement of air-placed concrete shall be in accordance with Section 303-2.6 of the Greenbook Specifications and these Detailed Specifications. Prior to placing any concrete, sufficient scaffolding or other means of access shall be provided to allow adequate access to the work area for proper placement and finishing of the air-placed concrete. Scaffolding shall not be supported by the reinforcing steel or forms. After placement of concrete has started, workmen shall not walk on reinforcing steel or graded slopes. No concrete shall be placed until all scaffolding, forms, reinforcement, ground wires and joints have been inspected and approved by the Engineer. Air-placed concrete shall be applied only in the presence of the Engineer. Whenever possible, except when enclosing reinforcing steel, the nozzle shall be held at right angles to the air-placed concrete surface at a distance of 2-1/2 to 3-1/2 feet. When enclosing steel, the nozzle shall be held at an angle so as to direct the material around the bars. A nozzleman's helper equipped with an air jet shall attend the nozzleman and blow out all rebound, sand, etc., which may have lodged on the forms, steel or air-placed concrete. Concrete material shall emerge from the nozzle in a steady, uninterrupted flow. When flow becomes intermittent for any cause, the nozzle shall be diverted from the work until the flow again becomes constant. In shooting walls or slopes, application shall begin at the bottom and shall completely embed the reinforcement for the full thickness of the structural section less an allowance of one inch for the finish coat. The limit of lift height (when the in place material begins to sag) shall not be exceeded. Immediately after the lift has been allowed to take its initial set, all surfaces shall be cleaned of rebound and other loose material by rodding or brooming.

Construction joints shall be in conformance with Section 303-2.8 of the Greenbook Specifications and these Detailed Specifications. Before applying air-placed concrete, construction joints and adjacent steel and forms shall be cleaned by sand, air and water blast of all laitance, overspray and rebound materials, and the surface of the joint thoroughly wetted.

Finishing shall be in accordance with Section 303-2.9 of the Greenbook Specifications and these Detailed Specifications. The finished surface on exposed portions of transition walls with side slopes steeper than 1:1 (run to rise) shall have a Class 1 surface finish in conformance with Section 51-1.03F(3) of the Caltrans Specifications. Remaining portions of the transition shall have a broomed finish to match the adjacent trapezoidal channel surface. Prior to placing the finish coat, all laitance shall be removed from the existing surface, and the surface thoroughly cleaned and wetted by air and water blast. The finished coat shall be applied no more than 8 hours after the placement of the structural section, and the surface of the structural section shall be kept continuously moist until the finished coat is placed.

Curing of air-placed concrete shall be in accordance with the requirements of these Detailed Specifications.

SECTION 19 - FLEXIBLE PAVEMENT CONSTRUCTION

19.1 Description - This section covers the contract items Aggregate Base, Class 2; Hot Mix Asphalt (HMA); and Temporary Resurfacing.

19.2 Aggregate Base, Class 2 - The contract item Aggregate Base, Class 2 includes furnishing and placing such material as indicated on the drawings. Aggregate Base, Class 2 shall be clean and free from roots, organic material and other deleterious substances, and be of such character that when wet it will compact to form a firm stable base. Material and placing shall be in accordance with Section 26 of the Caltrans Specifications using ¾-inch maximum size.

The aggregate base shall also have a sand equivalent value of not less than 35 when tested in conformance with California Test Method 217.

The aggregate base material shall be spread as specified in Sections 26-1.03A and 26-1.03C of the Caltrans Specifications. The aggregate base material shall be compacted as specified in Section 26-1.03D of the Caltrans Specifications.

The aggregate material used on access roads and basin levees shall not contain recycled concrete products.

19.3 General Hot Mix Asphalt (HMA) Requirements - The Contractor shall not start paving Hot Mix Asphalt (HMA) until all compaction on the aggregate base is tested and approved by the Engineer.

The HMA shall be proportioned, mixed, spread and compacted in accordance with the applicable provisions in Section 39 of the Caltrans Specifications and these Detailed Specifications.

The Contractor shall ensure the safe transportation, storage, use and disposal of HMA.

The Contractor shall prevent the formation of carbonized particles caused by overheating HMA during manufacturing or construction.

19.4 Hot Mix Asphalt (HMA) Aggregate - Aggregates shall be clean and free from decomposed materials, organic material, and other deleterious substances. Coarse aggregate is material retained on the No. 4 sieve and fine aggregate is material passing the No. 4 sieve. Supplemental fine aggregate is added fine material passing the No. 30 sieve including, but not limited to, cement and stored fines from dust collectors.

The aggregate grading of the different types of Hot Mix Asphalt (HMA) shall conform to the following, unless otherwise specified on the plans:

HMA Type	Grading
A	¾-inch and/or ½-inch

The base course of the HMA shall consist of ¾-inch aggregate for Type A and 1-inch aggregate for Type C, and the final course for Type A shall consist of ½-inch aggregate.

The combined aggregate gradation and quality characteristics for HMA Type A and Type C aggregate(s), prior to addition of asphalt binder, shall conform to the requirements found in the following tables:

Aggregate Gradation HMA Type A
(Percentage Passing)

¾-inch HMA Type A

Sieve Sizes	Target Value Limits	Allowable Tolerance
1-inch	100	-
¾-inch	90-100	TV ±5
½-inch	70-90	TV ±6
No. 4	45-55	TV ±7
No. 8	32-40	TV ±5
No. 30	12-21	TV ±4
No. 200	2-7	TV ±2

Aggregate Gradation HMA Type A
(Percentage Passing)

½-inch HMA Type A

Sieve Sizes	Target Value Limits	Allowable Tolerance
¾-inch	100	-
½-inch	95-99	TV ±6
3/8-inch	75-95	TV ±6
No. 4	55-66	TV ±7
No. 8	38-49	TV ±5
No. 30	15-27	TV ±4
No. 200	2-8	TV ±2

HMA Type A Aggregate Quality

Quality Characteristic	Test Method	Requirement
Percent of crushed particles[1]	CT 205	
Coarse aggregate (% min.)		
One fractured face		90
Two fractured faces		75
Fine aggregate (Passing No. 4 Sieve and retained on No. 8 Sieve) (% min.)		
One fractured face		70
Los Angeles Rattler (% max.)[1]	CT 211	
Loss at 100 rev.		12
Loss at 500 rev.		45
Sand equivalent[1, 2] (min.)	CT 217	47
Fine aggregate angularity (% min.)[1]	AASHTO T 304 Method A	45
Flat and elongated particles (% max. by weight at 5:1)[1]	ASTM D 4791	10

Note: [1]Combine aggregate in the job mix formula proportions.
[2]Reported value must be the average of three (3) tests from a single sample.

19.5 Asphalt Binder - The asphalt binder to be mixed with aggregate shall conform to these Detailed Specifications and shall be as designated below or as determined by the Engineer:

- Grade PG 64-10 (Inland Valleys)

The Contractor shall furnish and place the HMA with all asphaltic emulsions required.

Asphalt binder shall consist of refined petroleum or a mixture of refined liquid asphalt and refined solid asphalt, prepared from crude petroleum. Asphalt binder shall be:

- Free from residues caused by the artificial distillation of coal, coal tar or paraffin
- Free from water
- Homogeneous

The Contractor shall furnish asphalt binder from a supplier that conforms to the State of California Department of Transportation's "Certification Program for Suppliers of Asphalt". The Department maintains the program requirements, procedures, and a list of approved suppliers at http://www.dot.ca.gov/hq/esc/Translab/ofpm/fpmcoc.htm.

The amount of asphalt binder to be mixed with the mineral aggregate shall be between three percent (3%) and seven percent (7%) by weight, of the dry mineral aggregate. The exact amount of asphalt binder to be mixed with the mineral aggregate shall be determined by a special mix design.

Performance grade paving asphalt shall conform to the testing requirements in the table below:

Performance Graded Asphalt Binder

Property	AASHTO Test Method	Specification Grade			
		PG 64-10	PG 64-16	PG 70-10	PG 64-28PM[i]
Original Binder					
Flash Point, Minimum ^{O}C	T48	230	230	230	230
Solubility, Minimum %[b]	T44	99	99	99	98.5
Viscosity[c] at 135 ^{o}C, Maximum, Pa·s	T316	3.0	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, ^{o}C Minimum G*/sin(delta), kPa	T315	64 1.00	64 1.00	70 1.00	64 1.00
RTFO Test[e], Mass Loss, Maximum, %	T240	1.00	1.00	1.00	1.00
RTFO Test Aged Binder					
Dynamic Shear, Test Temp. at 10 rad/s, ^{o}C Minimum G*/sin(delta), kPa	T315	64 2.20	64 2.20	70 2.20	64 2.20
Ductility at 25 ^{o}C Minimum, cm	T51	75	75	75	-
Dynamic Shear, Test Temp. at 10 rad/s, ^{o}C Minimum (delta), %	T315	-	-	-	Note g 80
PAV[f] Aging, Test Temperature, ^{o}C	R28	100	100	110	100
Elastic Recovery[h], Test Temp., °C Minimum recovery, %	T 301	-	-	-	25 75
RTFO Test and PAV Aged Binder					
Dynamic Shear, Test Temp. at 10 rad/s, ^{o}C Maximum G*/sin(delta), kPa	T315	31[d] 5000	28[d] 5000	34[d] 5000	31 5000
Creep Stiffness, Test Temperature, ^{o}C Maximum S-value, Mpa Minimum M-value	T313	0 300 0.300	-6 300 0.300	0 300 0.300	-12 300 0.300

Notes:

a. Not used.

b. The Engineer will waive this specification if the supplier is a Quality Supplier as defined by Department's "Certification Program for Suppliers of Asphalt".

c. The Engineer will waive this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.

d. Test the sample at 3 °C higher if it fails at the specified test temperature. G*sin(delta) shall remain 5000 kPa maximum.

e. "RTFO Test" means the asphaltic residue obtained using the Rolling Thin Film Oven Test, AASHTO Test Method T240 or ASTM Designation: D2827.

f. "PAV" means Pressurized Aging Vessel.

g. Test temperature is the temperature at which G*/sin(delta) is 2.2 kPa. A graph of log G*/sin(delta) plotted against temperature may be used to determine the test temperature when G*/sin(delta) is 2.2 Kpa. A graph of (delta) versus temperature may be used to determine delta at the temperature when G*/sin(delta) is 2.2 kPa. The Engineer also accepts direct measurement of (delta) at the temperature when G*/sin(delta) is 2.2 kPa.

h. Test without a force ductility clamp may be performed.

i. Do not modify PG Polymer Modifier using acid modification.

Certificates of compliance shall be furnished to the Engineer certifying that the asphaltic emulsions and paving asphalts conform to the referenced Greenbook Specifications.

19.6 Hot Mix Asphalt (HMA) Prime Coat - Prime coat shall consist of refined petroleum and shall conform to the provisions in Section 93 "Liquid Asphalts" of the Caltrans Specifications. Prime coat shall be applied only to those areas designated by the Engineer. The application rate shall be 0.25 gallon per square yard of surface covered. The exact rate and number of applications will be determined by the Engineer.

19.7 Hot Mix Asphalt (HMA) Paint Binder/Tack Coat - Asphaltic emulsion for paint binder (tack coat) shall conform to the provisions in Section 94 "Asphaltic Emulsion" of the Caltrans Specifications for the rapid-setting or slow-setting type and grade approved by the Engineer. Grade CQS1 shall be used if not otherwise specified by the Engineer. Tack coat shall be applied to all vertical surfaces of existing pavement, curbs, gutters, and construction joints in the surfacing against which additional material is to be placed, to a pavement to be surfaced, and to other surfaces designated in the Detailed Specifications. The application rate shall be from 0.02 to 0.10 gallon per square yard of surface covered. The exact rate and number of applications will be determined by the Engineer.

19.8 Hot Mix Asphalt (HMA) Placement - Hot Mix Asphalt (HMA) shall be spread and compacted in the number of layers of the thicknesses indicated in the following table:

Total Thickness Shown on Plans[1]	Minimum No. of Layers	Top Layer Thickness (ft.)		Next Lower Layer Thickness (ft.)		All Other Lower Layer Thickness (ft.)	
		Min.	Max.	Min.	Max.	Min.	Max.
0.24-foot or less	1	-	-	-	-	-	-
0.25-foot	2	0.12	0.13	0.12	0.13	-	-
0.26 - 0.46-foot	2	0.12	0.21	0.14	0.25	-	-
0.47-foot or more	3 or more	0.15	0.21	0.15	0.25	0.17	0.25

[1]When pavement reinforcing mat is shown to be placed between layers of HMA, the thickness of HMA above the pavement reinforcing mat shall be considered to be the "total thickness shown on plans".

The straightedge for smoothness determination on the top layer of HMA pavement shall conform to the tolerance specified in Section 39-1.12B, "Straightedge" of the Caltrans Specifications.

Areas of the top surface of the uppermost layer of HMA pavement that do not meet the specified surface tolerances shall be brought within tolerance by abrasive grinding. Areas which have been subjected to abrasive grinding shall receive a seal coat. The corrective method for each area shall be selected by the Contractor and shall be approved by the Engineer prior to beginning the corrective work.

When abrasive grinding is used to bring the top surface of the uppermost layer of HMA surfacing within the specified surface tolerances, additional abrasive grinding shall be performed as necessary to extend the area ground in each lateral direction so that the lateral limits of grinding are at a constant offset from, and parallel with, the nearest lane line or pavement edge, and in each longitudinal direction so that the grinding begins and ends at lines normal to the pavement centerline, within a ground area. Ground areas shall be neat rectangular areas of uniform surface appearance.

19.9 Hot Mix Asphalt (HMA) - The contract item Hot Mix Asphalt (HMA) covers the furnishing and installation of HMA necessary for the repair and resurfacing of streets damaged or removed due to construction operations, or as otherwise specified on the plans, including all aggregate, asphalt binder, prime coat, and tack coat/paint binder as specified herein, exclusive of any excavation or pavement grinding.

19.10 Temporary Resurfacing - The contract item Temporary Resurfacing is required for short reaches of the mainline and connector pipe trenches whenever excavation is made through pavement on which traffic must be allowed immediately after backfilling, only as directed by the Engineer. Otherwise the leveling course of the HMA may be used to open the work area to traffic until the final paving is completed. Measurement and payment of the leveling course will be made as a HMA item, not Temporary Resurfacing.

Temporary Resurfacing shall be 2" (0.17') and in conformance with Section 306-1.5 of the Greenbook Specifications.

19.11 Measurement - Measurement for payment of the contract item Aggregate Base, Class 2 will be the number of cubic yards placed to the lines, grades and dimensions shown on the drawings. **No allowance will be made for aggregate base placed outside said dimensions unless otherwise ordered by the Engineer.**

Measurement for payment of the contract item Hot Mix Asphalt (HMA) will be the number of tons placed to the lines, grades and dimensions shown on the drawings. The HMA pay quantity shall be determined by using a conversion factor of 144 pounds per cubic foot for all HMA placed within standard paylines. No measurement for payment will be made for asphalt emulsions, including asphalt binder, HMA prime coat, HMA tack coat/paint binder required for this portion of the work, all costs for these items shall be included in the price paid

for HMA. **No allowance will be made for HMA placed outside said dimensions unless otherwise ordered by the Engineer.**

Measurement for payment of the contract item Temporary Resurfacing will be the number of tons placed as specified in Section 19.10 and as directed by the Engineer.

19.12 Payment - The contract prices paid for Aggregate Base, Class 2; Hot Mix Asphalt (HMA); and Temporary Resurfacing shall include full compensation for all costs incurred under this section.

SECTION 20 - FENCES AND GATES

20.1 Description - This section covers the contract items 6-Foot Chain Link Fence; Temporary Fencing; 3-Foot Cable Railing; Pipe Swing Gate; and 14-Foot Double Drive Gates.

20.2 6-Foot Chain Link Fence - The contract item 6-Foot Chain Link Fence includes furnishing and installing the material required for this portion of the work as shown on the drawings and as directed by the Engineer. Included in this item is all hardware parts, posts and fittings. Also included in this item of work will be the removal and relocation, if required, of chain link fence as noted on the drawings and as directed by the Engineer.

All materials shall be new except that specified for removal and relocation and shall conform to Section 206-6 of the Greenbook Specifications and the drawings, with installation in conformance with Section 304-3.2. Materials salvaged shall be subject to the Engineer's approval prior to reinstallation. All posts shall be set in commercial plant quality, 4 sack per cubic yard concrete.

20.3 Temporary Fencing - The contract item Temporary Fencing shall include all labor, materials and equipment necessary for installing and removing the temporary fencing and removing and reinstalling the property line fences as shown on the drawings. The temporary fencing shall be a 6-foot high chain link fence. Fencing materials need not be new and fence posts need not be set in concrete.

20.4 3-Foot Cable Railing – The contract item 3-Foot Cable Railing includes furnishing and installing the material required for this portion of the work. Included in this item is all hardware, parts, posts and fitting in conformance with Section 83-1.02E of the Caltrans Specifications.

20.5 Pipe Swing Gate - The contract item Pipe Swing Gate includes furnishing and installing the gate as shown on Sheet No. 13 of the drawings, complete with all gate posts set in concrete and in conformance with Section 304-3.3 of the Greenbook Specifications. Padlocks are not included in this item. On completion, gates shall operate freely without wedging or binding.

20.6 14-Foot Double Drive Gates - The contract item 14-Foot Double Drive Gates includes furnishing and installing the various gates as shown on the drawings, complete with all gate posts set in concrete and in conformance with Section 304-3.3 of the Greenbook Specifications.

Padlocks are not included in this item. On completion, gates shall operate freely without wedging or binding.

20.7 Measurement - Measurement for payment for the contract item 6-Foot Chain Link Fence will be the number of lineal feet of new and relocated fence installed measured along the top of the fence parallel to the ground.

Measurement for payment for the contract item Temporary Fencing will be the number of lineal feet of fencing installed for the temporary fencing and relocations.

Measurement for payment for the contract item 3-Foot Cable Railing will be the number of lineal feet of new cable railing installed along the top of the railing parallel to the ground.

Measurement for payment for the contract item Pipe Swing Gate will be each gate installed. Excavation and concrete required for fence or gate posts will not be measured for payment.

Measurement for payment for the contract item 14-Foot Double Drive Gates will be the number of pairs installed. Excavation and concrete required for fence or gate posts will not be measured for payment.

20.8 Payment - The contract price paid for 6-Foot Chain Link Fence; Temporary Fencing; 3-Foot Cable Railing; Pipe Swing Gate; and 14-Foot Double Drive Gates shall include full compensation for all costs incurred under this section.

SECTION 21 - MISCELLANEOUS

21.1 Description - This section covers the contract items Miscellaneous Iron and Steel; Subdrain; Delineators; Remodel 6-Inch Vitrified Clay Pipe (VCP) House Connection; Install 8-Inch Sewer Laterals; Heritage High School Traffic Signal Modification; State Highway 74 (SH-74) Video Detection Installation; Metal Beam Guard Railing; Modified Manhole No. 2 Inlet; Basin Spillway Inlet; and Extra Directed Work.

21.2 Miscellaneous Iron and Steel - The contract item Miscellaneous Iron and Steel covers all ferrous metal used in the various hydraulic structures. Materials, parts and fittings shall conform with the following:

(a) Manhole Frames and Covers - Per ASTM Designation: A-48, Class 35B. Manhole frames and covers shall be minimum weight as shown on the plans, and the weight of each frame and cover shall be indicated thereon in white paint. Style and markings shall be approved by the Engineer. The castings shall be free from cracks, blowholes or other imperfections, straight, true to pattern and have a uniform finish. The castings for manholes in streets shall be thoroughly cleaned and coated with asphaltum paint of approved composition; all other castings for frames and covers shall be cleaned and galvanized. The cover shall fit firmly into

the frame without rocking, with the frame accurately placed so that cover is flush with finish paving.

(b) All other Miscellaneous Metal - Per ASTM Designation: A-36.

(c) Galvanizing – Except for manhole frames and covers described above, all exposed ferrous metal shall be galvanized per Section 210-3 of the Greenbook Specifications.

21.3 Subdrain - The contract item Subdrain covers trenching and the furnishing of the subdrain pipe, all fittings, galvanized screen, filter material and filter fabric.

The filter material shall be wrapped in filter fabric as shown on the drawings. Filter material and filter fabric shall conform to the material specifications as specified in Section 16.11 Weepholes of these Detailed Specifications.

Filter Fabric shall be furnished in a protective wrapping which shall protect the fabric from ultraviolet radiation and from abrasion due to shipping and handling. The fabric shall also be ultraviolet stabilized.

The fabric shall be placed in the manner and at the locations shown on the drawings. The surface to receive the fabric shall be prepared to a smooth condition free of obstructions and debris.

The fabric shall be covered within 72 hours of its placement. Should the fabric be damaged during construction, the torn or punctured section shall be repaired by placing a piece of fabric that is large enough to cover the damaged area and to meet the overlap requirement. Adjacent borders of the fabric shall be overlapped a minimum of twelve (12) inches or sewn. Upstream sections of fabric shall overlap downstream sections.

Perforated subdrain pipe shall be vitrified clay pipe, concrete pipe, ABS Pipe or PVC Pipe, at the option of the Contractor. Vitrified clay pipe shall meet the requirements of ASTM Designation: C-700, for extra strength pipe. Concrete pipe shall meet the requirements of ASTM Designation: C-14 Class 3 and C-444 Type I. ABS pipe shall meet the requirements of ASTM Designation: D-2751, SDR 23.5, and PVC pipe shall meet the requirements of ASTM Designation: D2665, and perforations shall be that as described in ASTM Designation: C-700.

21.4 Delineators - The contract item Delineators includes the material, equipment and labor necessary to install each delineator as shown on the drawings.

The delineators shall be in accordance with State of California, Department of Transportation Standard Plan A73-A, Class 1, Type L-1 or as shown on the drawings and shall conform to Section 82 of the Caltrans Specifications.

21.5 Remodel 6-Inch Vitrified Clay Pipe (VCP) House Connection - The contract item Remodel 6-Inch Vitrified Clay Pipe (VCP) House Connection pertains to the removing of

interfering portions of house connections and replacing with new pipe and any mainline modification required. The remodeling shall be done in accordance with the drawings prepared by Eastern Municipal Water District (EMWD) as shown in Appendix "D", including excavation, backfill, concrete encasement, asphalt concrete or aggregate base in this item of work. The Contractor shall contact EMWD at least 14 working days in advance prior to performing the house connection modification. EMWD specifications can be downloaded from http://rcflood.org/Documents/EMWD_Specs_400034501.pdf.

21.6 Install 8-Inch Sewer Laterals - The contract item Install 8-Inch Sewer Laterals includes the installation of two new 8-inch sewer laterals for the property located within Assessor's Parcel Number 459-020-065 located southeast of the intersection of Briggs Road and State Highway 74. The installations shall be done in accordance with the drawings prepared by EMWD as shown in Appendix "D", including excavation, backfill, concrete encasement, drop manhole, asphalt concrete and aggregate base in this item of work. The Contractor shall contact EMWD at least 14 working days in advance prior to performing the house connection modification. EMWD specifications can be downloaded from http://rcflood.org/Documents/EMWD_Specs_400034501.pdf.

21.7 Heritage High School Traffic Signal Modification – The contract item Heritage High School Traffic Signal Modification covers the all labor, earthwork, items and materials required for the relocation of the interfering traffic signal poles as shown on Sheets 2 and 34C of the Drawings. Please also refer to Section 6.2 Work Near Heritage High School of the Special Provisions. Contractor shall contact Riverside County Transportation Department Signal Shop prior to beginning relocation and shall follow the following specifications for the material required for this item as shown in Appendix "E".

No measurement will be made for this contract item and it will be paid as a lump sum.

21.8 State Highway 74 (SH-74) Video Detection Installation – The contract item State Highway 74 (SH-74) Video Detection Installation covers all labor, items and materials required for upgrading the existing intersection of SH-74 and Briggs Road from traffic loop detection to video detection. All electrical work shall be in conformance with Section 86 of the Caltrans Specifications and any latest standards as required by Caltrans. The Contractor shall refer to the traffic control and traffic signal plans for this intersection. The Contractor shall not begin work prior to contacting California Department of Transportation (Caltrans) and Riverside County Transportation Department. The Contractor shall obtain the latest traffic standards and specifications from Caltrans for performing this work. This review process shall be performed as part of the second Encroachment Permit, which the Contractor shall apply for and obtain from Caltrans. Please refer to Section 6.8 of the Special Provisions. The video detection camera shall be installed on the existing signal pole mast arms and will be capable of covering a range of 300 feet of vehicle detection in each direction. If the camera cannot detect advanced loops, then the Contractor shall install advanced detector loop if approved by Caltrans. This item also includes any adjustments to signal timing during and after construction.

No measurement will be made for this contract item and it will be paid as a lump sum.

21.9 Metal Beam Guard Railing - The contract item Metal Beam Guard Railing includes the material, equipment and labor necessary to install Metal Beam Guard Railing as shown on the drawings.

The Metal Beam Guard Railing shall be in accordance with State of California, Department of Transportation Revised Standard Plan A77L1 and shall conform to Section 83 of the Caltrans Specifications.

21.10 Modified Manhole No. 2 Inlet - The contract item Modified Manhole No. 2 Inlet covers the furnishing and installation of the various inlets as shown in the drawings. This item shall be in conformance with District Standard Drawing No. MH 252 and Section 16 of these Detailed Specifications. Included in this item are all materials, parts, fittings, earthwork, pipe and required concrete, but exclusive of debris rack cage, cutoff wall and concrete paving for local depression which shall be paid under separate contract items.

21.11 Basin Spillway Inlet - The contract item Basin Spillway Inlet covers the complete construction of the spillway inlet as shown on Sheet No. 25 of the drawings. Included in the pay item is all earthwork, Class "A" Concrete, Rock Slope Protection (1-ton rock spaced 6 feet apart along the spillway inlet), reinforcing steel required, but exclusive of the 3' cutoff walls which shall be paid under separate contract item. The Class "A" Concrete shall be in conformance with Section 16 of these Detailed Specifications. Rock Slope Protection shall be in conformance with Section 26 of these Detailed Specifications.

No measurement for payment will be made for this lump sum contract item.

21.12 Extra Directed Work – The contract item Extra Directed Work shall consist of necessary work that is not included in other contract bid items and not shown on drawings, as determined by the Engineer. All Extra Directed Work shall be performed only as directed by the Engineer and in accordance with all applicable standards and specifications.

21.13 Measurement - Measurement for payment for the contract item Miscellaneous Iron and Steel will be the number of pounds used in the work as specified. Should manhole frames and covers exceed the minimum weights as shown on the drawings by more than two percent (2%) that weight in excess of the allowable two percent (2%) increase will not be measured for payment. Manhole frames and covers to be salvaged and reused will not be measured for payment.

Measurement for payment for the contract item Subdrain will be the number of lineal feet installed as specified. No measurement will be made of the gravel filter material required for this portion of the work.

Measurement for payment for the contract item Delineators will be for each installation.

Measurement for payment for the contract item Remodel 6-Inch Vitrified Clay Pipe (VCP) House Connection will be for each house connection.

Measurement for payment for the contract item Install 8-Inch Sewer Laterals will be for each lateral installation.

Measurement for payment for the contract item Metal Beam Guard Railing will be the number of lineal feet installed as specified.

Measurement for payment for the contract item Modified Manhole No. 2 Inlet will be for each inlet installed.

21.14 Payment - The contract prices paid for Miscellaneous Iron and Steel; Subdrain; Delineators; Remodel 6-Inch Vitrified Clay Pipe (VCP) House Connection; Install 8-Inch Sewer Laterals; Heritage High School Traffic Signal Modification; State Highway 74 (SH-74) Video Detection Installation; Metal Beam Guard Railing; and Basin Spillway Inlet shall include full compensation for all costs incurred under this section.

The contract price paid per lump sum for Heritage High School Traffic Signal Modification shall include full compensation for furnishing all labor, materials, tools, equipment, foundations, pole and mast arm mounted regulatory signs, documents, programming, testing, potholing required for utility verification prior to all conduit installation temporary overhead wiring, temporary wireless video detection and incidents and for doing all the work specified herein, elsewhere in these Detailed Specifications, and plans including the complete installation of an operational traffic signal and lighting system and no additional compensation shall be allowed therefor.

The contract price paid per lump sum for State Highway 74 (SH-74) Video Detection Installation shall include full compensation for furnishing all labor, materials, tools, equipment, foundations, pole and mast arm mounted video detection details, documents, programming, testing, potholing required for utility verification prior to any conduit installation and for doing all the work specified herein, elsewhere in these Detailed Specifications, plans and coordination with Caltrans for any changes including the complete upgrade of an operational traffic video detection system and no additional compensation shall be allowed therefor.

The contract price paid per lump sum for Basin Spillway Inlet shall include full compensation for furnishing all labor, materials, tools and equipment to construct the spillway inlet in accordance with the construction drawings and the Detailed Specifications.

Full compensation for the contract item Extra Directed Work shall be made as "Extra Work" and shall be paid pursuant to Section 2.07 of the General Provisions. The total accumulated costs for Extra Directed Work shall not exceed the amount specified in the contract bid item unless otherwise increased by change order.

SECTION 22 THROUGH SECTION 25 - NOT USED

SECTION 26 - STONEWORK

26.1 Description - This section covers the contract items Rock Slope Protection of various classes; Concreted Rock; Filter Blanket, No. 2 Backing; and Rock Slope Protection Fabric.

26.2 General - All rock materials shall meet the gradation requirements of Section 72-2.02 of the Caltrans Specifications and the quality requirements of Sections 200-1.6.1 and 200-1.63 of the Greenbook Specifications.

Rock materials shall be blocky and predominantly angular in shape. Not more than 25% of the rock shall have a length more than 2.5 times the breadth or thickness. No rock shall have a length exceeding 3.0 times its breadth or thickness. All oversize rocks, as determined by the Engineer, shall be removed.

Rock materials shall be placed on a firm dry foundation in conformance with Method B of Section 72-2.03 of the Caltrans Specifications, however, additional placement effort shall be required to meet the lines and grades as shown on the drawings and to fill and chink oversize voids with selected rock to establish a stable interlock. Chinking of voids will not be required for rock specified to be concreted.

Permeable materials such as filter blankets shall be consolidated and the surface trimmed to final grade as directed by the Engineer.

Concrete for concreted (grouted) rock shall be Class "B", and shall have a slump sufficient to allow gravity flow into the interstices of the rock with rodding and vibration. Concrete for concreted rock shall be placed in accordance with Section 72-3.03E of the Caltrans Specifications except that total penetration of the rock blanket by the concrete will be required, and the outer rocks of the finished rock surface shall project approximately 9 to 12 inches from the concrete surface.

26.3 Rock Slope Protection, 1-Ton Class; and Rock Slope Protection, 1/4-Ton Class - The contract items Rock Slope Protection, 1-Ton Class; and Rock Slope Protection 1/4-Ton Class covers the rock furnished and placed as shown on the drawings as specified. Rock shall conform to 1-Ton Class, and 1/4-Ton Class, for Method B placement per Section 72-2.02 of the Caltrans Specifications.

26.4 Filter Blanket, No. 2 Backing - The contract item Filter Blanket, No. 2 Backing covers the 9-inch filter blanket installed under the Rock Slope Protection.

The filter blanket shall be permeable material conforming to Section 72-2.02A of the Caltrans Specifications for No. 2 Backing, and shall be placed to the lines and grades as shown on the plans. Material shall be placed on firm, dry foundation. Soft, spongy material shall be removed and replaced with acceptable compacted material as directed by the Engineer. The cost of foundation preparation shall be included in the price bid for excavation and no additional allowance will be made for such work. The permeable material shall be consolidated and the surface trimmed to final grade as shown on the drawings or as directed by the Engineer.

26.5 Rock Slope Protection Fabric – Rock Protection Fabric placed beneath rock shall conform to Class 10 per Section 88-1.02I of the Caltrans Specifications. A six-inch minimum layer of backing material shall be placed over the fabric prior to placing rock unless otherwise shown on the plans.

26.6 Measurement - Measurement for payment for the contract item Rock Slope Protection, 1-Ton Class; Rock Slope Protection, 1/4-Ton Class; and Filter Blanket, No. 2 Backing, including all rock to be concreted, shall be the number of cubic yards placed as specified.

Measurement for payment for the contract item Rock Slope Protection Fabric shall be the number of square yards placed as specified. No measurement for payment will be made for laps required for installation or for convenience to the Contractor.

Concrete for concreted rock shall be measured and paid for as specified under the Concrete Construction Section of these Specifications, and no additional payment for labor, equipment, materials or incidentals for concreting rock will be made.

26.7 Payment - The contract prices paid for Rock Slope Protection, 1-Ton Class; Rock Slope Protection 1/4-Ton Class; and Filter Blanket, No. 2 Backing; and Rock Slope Protection Fabric shall include full compensation for all costs incurred under this section with the exception of concrete for concreted rock which shall be measured and paid for as specified under the Concrete Construction Section of these Specifications.

SECTION 27 - DUST ABATEMENT

27.1 Description - This section covers the implementation of dust control measures necessary to prevent harm and nuisance from dust. Supplementing Section 8.06 of the General Provisions, the Contractor shall comply with all the provisions of the South Coast Air Quality Management District (SCAQMD) Rule 403 as described in Appendix "A".

27.2 Dust Abatement - The contract item Dust Abatement includes the action necessary to prevent, reduce or control dust within the work area as required to complete the work. The Contractor shall carry out proper and efficient measures to prevent his operations from producing dust in amounts damaging to property or causing a nuisance, or harm to persons living nearby or occupying buildings in the vicinity of the work. The methods to be used for controlling dust in the construction area and along haul roads shall be approved by the Engineer prior to starting any work included in this contract. The Rule 403 Implementation Handbook published by the SCAQMD contains a detailed listing of reasonably available dust control measures and is available for inspection at the District office.

27.3 Payment - The contract lump sum price paid for Dust Abatement shall include full compensation for all direct and indirect costs incurred under this section.

This payment will be made on a basis of the percentage of work completed on the entire project.

SECTION 28 - HYDROSEEDING

28.1 Description - This section covers the contract item Hydroseeding as directed by the Engineer. The outside of levee and channel embankments, cut or fill slopes, disturbed creek

bottom, and all exposed or stripped areas (including TCE's) within the project limits shall be hydroseeded.

28.2 Hydroseeding - This item includes the furnishing of all materials, incidentals, labor and equipment necessary to complete the work as specified herein, and as directed by the Engineer. All hydroseeding work shall be done by fully qualified and experienced personnel.

The hydroseeding materials shall not be stored onsite without prior approval of the Engineer as to location, duration and method of storage. All debris and excess materials shall be removed on a daily basis, unless otherwise authorized by the Engineer. The Contractor shall leave the work area in a clean and finished appearance upon completion of hydroseeding.

28.3 Equipment and Materials - The equipment shall be a mobile mounted unit in a fully operational and well maintained condition, meeting the requirements of Section 21-1.03E of the Caltrans Specifications. Fiber shall be produced from natural or recycled (pulp) fiber and shall meet the requirements of Section 21-1.02E of the Caltrans Specifications. Stabilizing binder upon drying shall allow water and air penetration, shall be non-flammable, shall have an effective life of at least 1 year, and shall not be toxic to plants and animals.

All seed shall be delivered to the site tagged and labeled in accordance with the California Agricultural Code. Seed shall be of a quality which has a minimum pure live seed content (% of purity x % germination) as specified and weed seed shall not exceed 0.5% of the aggregate of pure live seed and other material.

A commercial Ammonium Phosphate fertilizer shall be used containing a minimum of 16% nitrogen, 20% available phosphoric acid and 0% water soluble potash, uniform in composition, dry and free flowing, pelleted or granular. All fertilizer shall be delivered in unbroken or unopened containers, labeled in accordance with applicable State regulations and bearing the warranty of the producer for the grade furnished.

28.4 Application - The Engineer shall review and approve completion of all construction and grading prior to any section being approved as ready for hydroseeding application.

The Contractor shall provide a written per load mix tabulation, ratioed to the tank capacity of the equipment to be used on the project, for review and approval by the Engineer well in advance of anticipated start of hydroseeding.

The Contractor shall provide a sample demonstration area for application by preparing one load of hydroseed mix. The demonstration areas shall be wet down thoroughly prior to application. The Engineer shall review and approve the sample section for compliance and workmanship. Upon approval, this area shall become the sample for all remaining application. No hydroseeding shall take place during high winds or during periods of rainfall.

Areas designated for hydroseeding shall receive an application made with an overlapping fan motion to provide a full and even spread throughout the coverage area.

The hydroseed mix, per acre of coverage, shall be as follows:

2,000 lbs./acre	Fiber Mulch
250 lbs./acre	16-20-0 Commercial Fertilizer
120 lbs./acre	Stabilizing binder
23 lbs./acre	Seed Mix as follows:

Species	**Pure Live Seed Lbs/Acre**
Seashore bent grass/Agrostis pallens	5.00
Dwarf Barley/Hordeum depressum	8.00
Idaho fescue/Festuca idahoensis	10.00
Sandberg bluegrass/Poa secunda	5.00
Small fescue/Vulpia microstachys	8.00

28.5 Measurement - Measurement for the contract item Hydroseeding will be made on the basis of the actual area treated to the nearest one hundredth (0.01) acre as measured by the Engineer.

28.6 Payment - The contract price paid for Hydroseeding shall include full compensation for all costs incurred under this section.

SECTION 29 – STORMWATER AND NON-STORMWATER POLLUTION CONTROL

29.1 Description – This section covers the contract items Stormwater and Non-Stormwater Pollution Control; and Non-Stormwater Discharge or Dewatering. The contract item Stormwater and Non-Stormwater Pollution Control shall include preparing, obtaining approval of, amending and implementing the Permit Registration Documents (PRDs) as required by the State Water Resources Control Board (SWRCB) and the California Regional Water Quality Control Board (CRWQCB) - Santa Ana Region. The contract item Non-Stormwater Discharge or Dewatering shall include compliance with Santa Ana Regional Water Quality Board Order No. R8-2009-0003.

29.2 General Requirements – All activities performed by the Contractor for this project shall conform to the requirements of the State-wide National Pollutant Discharge Elimination System (NPDES) General Permit (Board Order No. 2009-0009-DWQ, NPDES No. CAS000002 as amended by Board Order No. 2012-00006-DWQ for Stormwater Discharges Associated with Construction and Land Disturbance Activities, hereafter referred to as the "General Permit", issued by the SWRCB. This General Permit regulates both stormwater and non-stormwater discharges associated with Contractor's construction activities. This General Permit can be downloaded at http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

The PRDs mentioned above consist of:

1. Notice of Intent
2. Risk Assessment (Section VIII of the General Permit)

3. Site Map
4. Stormwater Pollution Prevention Plan (SWPPP) (Section XIV of the General Permit)
5. Annual Fee
6. Signed Certification Statement

Notice of Intent - The District will complete and submit the Notice of Intent.

Risk Assessment - Using the methodology in Appendix 1 of the General Permit, the District has calculated the preliminary Risk Level to be 1 based on returning disturbed areas to pre-construction conditions at the end of the day.

Site Map – The Contractor shall revise District provided site map of the project area if Contractor's Qualified SWPPP Developer (QSD) deems necessary. Site Map shall conform to requirements of General Permit Attachment A, Section B.

SWPPP – For the convenience of the Contractor and to expedite the SWPPP preparation and approval, a "90%" SWPPP Template has been prepared by the District. This SWPPP Template has been tailored to the referenced project and can be downloaded from http://rcflood.org/Documents/SWPPP_Template_400034501.pdf or obtained from the District in CD form. Winning bidder will be provided two (2) hard copies and a Word document of the "90%" SWPPP Template to amend. The Contractor shall review and amend this SWPPP Template based on the requirements of the General Permit and per the construction schedule and work plan proposed by the Contractor. The Contractor shall then submit a SWPPP certified by the Contractor's QSD which conforms to Section 29.3 for District review and approval.

The Contractor shall amend and finalize the complete "90%" SWPPP Template referenced above. The Contractor shall, at a minimum, provide and/or prepare the following:

1. Name and contact information for the Contractor's Qualified SWPPP Practitioner (QSP) and QSD
2. Contractor name and contact information
3. Contractor site contact person and emergency contact person information
4. Verification of disturbance area due to construction
5. Construction commencement date
6. Anticipated construction completion date
7. Construction Activity Schedule/Best Management Practices (BMPs) Installation Schedule
8. Name and contact information for personnel responsible for pre-storm, post-storm and storm event BMP inspections – this should be the project's QSP
9. Name of the lab responsible for testing any stormwater samples for non-visible pollutants
10. Verification of project risk level and permit type (Linear Underground/Overhead Project (LUP) or Traditional)
11. List of all subcontractors that will be working on the project
12. Review and finalize water pollution control drawings

The SWPPP shall be certified by the Contractor's QSD and implemented by the Contractor's QSP. The SWPPP shall be developed based on the format outlined in the CASQA SWPPP Template located in the California Stormwater Quality Association (CASQA) Construction BMP Handbook Portal and modified as required to meet the LUP specific requirements set forth in the General Permit Attachment A. The portal can be found on the CASQA Website: www.casqa.org. The SWPPP shall identify site specific BMPs to be implemented during and after construction to minimize the potential pollution of stormwater runoff and downstream receiving waters. The identified BMPs shall be practices designed to minimize or eliminate the discharge of pollutants from the construction site and Contractor's construction activities, including, but not limited to:

1. Good housekeeping practices for solid and sanitary/septic waste management, vehicle and equipment cleaning/maintenance, and material handling and storage.

2. Construction procedures such as stabilized construction access points, scheduling/phasing to minimize areas of soil disturbance, soil stabilization and erosion/sediment control.

The SWPPP shall also stipulate an ongoing program for monitoring and maintenance of all BMPs.

The SWPPP shall be designed to address the following objectives:

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;
2. Where not otherwise required to be under a Regional Water Board permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;
3. Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Conventional Technology (BAT/BCT) standard;
4. Calculations and design details as well as BMP controls for site run-on are complete and correct; and
5. Stabilization BMPs, installed to reduce or eliminate pollutants after construction, are completed.

To demonstrate compliance with requirements of the General Permit, the QSD shall include information in the SWPPP that supports the conclusions, selections, use, and maintenance of BMPs.

The Contractor shall make the SWPPP available at the construction site during working hours while construction is occurring and shall be made available upon request by a State or Regional Board inspector. When the original SWPPP is retained by a crewmember in a

construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone.

Annual Fee – The District will pay any necessary fees.

Signed Certification Statement – The Contractor's QSD shall submit a signed certification certifying the SWPPP is a true, accurate and complete representation of the proposed project and mitigation measures.

In the event the District incurs any Administrative Civil Liability or Mandatory Minimum (fine) imposed by the CRWQCB - Santa Ana Region, as a result of Contractor's failure to fully implement the provisions of this section and permit requirements, "Stormwater and Non-Stormwater Pollution Control", the Engineer may, in the exercise of his sole judgment and discretion, withhold from payments otherwise due Contractor a sufficient amount to cover the Civil Liability. Liability for "Negligent Violations" may be in an amount up to $50,000 per day per deemed occurrence while "Knowing Violations" can result in fines as high as $250,000 and imprisonment.

Stormwater and Non-Stormwater Pollution Control work shall conform to the requirements in the latest version of the CASQA Handbook, entitled **"California Stormwater BMP Handbook – Construction" updated November 2009**. A copy of the "California Stormwater BMP Handbook – Construction", updated November 2009, hereafter referred to as the "CASQA Handbook", may be obtained from CASQA, Post Office Box 2105, Menlo Park, California 94026-2105. Telephone: 650.366.1042. Copies of the CASQA Handbook can also be downloaded from the CASQA Construction BMP Handbook Portal.

The Contractor shall be responsible for all costs and for any liability imposed by law as a result of the Contractor's failure to comply with the requirements set forth in this section, "Stormwater and Non-Stormwater Pollution Control", including but not limited to, compliance with the applicable provisions of the CASQA Handbook, General Permit, General De Minimus Permit, Federal, State and local regulations. For the purpose of this paragraph, costs and liabilities include, but are not limited to, fines, penalties and damages whether assessed against the District or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Quality Act.

The Contractor shall become fully informed of and comply with the applicable provisions of the CASQA Handbook, General Permit, General De Minimus Permit, and Federal, State and local regulations that govern the Contractor's activities and operation pertaining to both stormwater and non-stormwater discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall, at all times, keep copies of the General Permit, General De Minimus Permit, approved SWPPP and all amendments at the project site. The SWPPP shall be made available upon request of a representative of the SWRCB, CRWQCB, United States Environmental Protection Agency (USEPA) or local stormwater management agency. Requests by the public shall be directed to the Engineer.

The Contractor is solely and exclusively responsible for any arrangements made between the Contractor and other property owners or entities that result in disturbance of areas or construction activities being conducted outside limits of the designated rights-of-way and temporary construction easements as shown on the project drawings.

The Contractor shall, during work hours, allow authorized agents of the CRWQCB, SWRCB, USEPA or local stormwater management agency, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the construction site and the Contractor's facilities pertinent to the work;
2. Have access to and copy any records required to be kept as specified in the General Permit;
3. Inspect the construction site, including any offsite staging areas or material storage areas, and related soil stabilization practices and sediment control BMPs; and
4. Sample or monitor for the purpose of ensuring compliance with the General Permit.

The Contractor shall notify the Engineer immediately upon request from regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records.

29.3 PRDs Preparation and Approval - The Contractor shall prepare and obtain approval of the PRDs as part of the Stormwater and Non-Stormwater Pollution Control work for this contract. The SWPPP shall include an appropriate Monitoring and Reporting Program (M&RP) as required by Section M, "Monitoring and Reporting Requirements" of Attachment A of the General Permit. A guidance document titled "Field Monitoring and Analysis Guidance" is available from the CASQA internet site in their Construction BMP Handbook Portal. The Contractor shall prepare and implement the SWPPP in accordance with the CASQA Handbook, the General Permit and these Detailed Specifications.

In case of conflict between the CASQA Handbook and these Detailed Specifications, the Detailed Specifications shall govern; in case of conflict between these Detailed Specifications and the General Permit, the latter shall govern.

Within five (5) working days after the award of the contract, the Contractor shall submit two (2) copies of the PRDs to the Engineer for review and approval. The Contractor shall allow ten (10) working days for the Engineer to review the PRDs. If revisions are required as determined by the Engineer, the Contractor shall revise and resubmit the PRDs within three (3) working days of receipt of the Engineer's comments and shall allow ten (10) working days for the Engineer to review the revisions. The Contractor shall submit four (4) hard copies and one (1) pdf copy of the approved SWPPP to the Engineer prior to the pre-construction meeting. **The Contractor must have approved PRDs prior to the pre-construction meeting**.

The SWPPP shall incorporate BMPs in each of the following categories:

1. Soil stabilization practices;
2. Sediment control practices;
3. Sediment tracking control practices;
4. Wind erosion control practices; and
5. Non-stormwater management, and waste management and disposal control practices.

Specific objectives and minimum requirements for each category of BMPs are described in the CASQA Handbook. The Contractor shall consider the objectives and minimum requirements presented in the CASQA Handbook for each of the above categories. When minimum requirements are listed for any category, the Contractor shall incorporate one or more of the listed minimum BMPs required into the SWPPP and implement them on the project to meet the pollution control objectives for the category. In addition, the Contractor shall consider other BMPs presented in the CASQA Handbook to supplement the minimum BMPs required when necessary to meet the objectives of the SWPPP and maintain compliance with the General Permit. The Contractor shall document the selection process in accordance with the procedure specified in the CASQA Handbook.

The Contractor should not assume that the minimum BMPs required for each category presented in the CASQA Handbook are adequate to meet the pollution control objectives. The Contractor may use other effective BMPs, as approved by the Engineer, in addition to the minimum as required in the CASQA Handbook to achieve the pollution control objectives.

The SWPPP shall include the following items as described in the CASQA Handbook and General Permit:

Section 1 - SWPPP Requirements:

1.1 Introduction
1.2 PRDs
1.3 SWPPP Availability and Implementation
1.4 SWPPP Amendments
1.5 Retention of Records
1.6 Required Non-Compliance Reporting
1.7 Annual Report
1.8 Changes to Permit Coverage
1.9 Notice of Termination

Section 2 - Project Information:

2.1 Project and Site Description
2.2 Permits and Governing Documents
2.3 Stormwater Run-on from Offsite Areas
2.4 Findings of the Construction Site Sediment and Receiving Water Risk Determination

2.5 Construction Schedule
2.6 Potential Construction Site Pollutant Sources
2.7 Identification of Non-Stormwater Discharges
2.8 Required Site Map Information

Section 3 - Best Management Practices:

3.1 Schedule for BMP Implementation
3.2 Erosion Control and Sediment Control
3.3 Non-Stormwater Controls, Waste and Material Management
3.4 Post-Construction Stormwater Management Measures

Section 4 - BMP Inspection and Maintenance:

4.1 BMP Inspection and Maintenance

Section 5 - Training

Section 6 - Responsible Parties and Operators:

6.1 Responsible Parties
6.2 Contractor List

Section 7 – Monitoring and Reporting Program (M&RP):

7.1 Objectives
7.2 M&RP Implementation Schedule
7.3 LUP Monitoring and Reporting Requirements
7.4 Monitoring for Non-Visible Pollutants

To ensure that the preparation, implementation, and oversight of the SWPPP is sufficient for effective pollution prevention, individuals responsible for creating, revising, overseeing, and implementing the SWPPP should participate in applicable training programs and document such training in the SWPPP. A copy of the SWPPP should be located at the construction site.

The following notes (or notes of substantially similar intent) that address pollution prevention to the Maximum Extent Practicable during the construction phase of a project on a year-round basis need to be placed on the Stormwater and Non-Stormwater Pollution Control Drawings:

- Erosion control BMPs shall be implemented and maintained to minimize and/or prevent the entrainment of soil in runoff from disturbed soil areas on construction sites.
- Sediment control BMPs shall be implemented and maintained to prevent and/or minimize the transport of soil from the construction site.

- Stockpiles of soil shall be properly contained to eliminate or reduce sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tracking or wind.
- Appropriate BMPs for construction-related materials, wastes, spills or residues shall be implemented to eliminate or reduce transport from the site to streets, drainage facilities or adjoining properties by wind or runoff.
- Runoff from equipment and vehicle washing shall be contained at construction sites and must not be discharged to receiving waters or the local storm drain system. Washwaters or rinsate from ready mix, concrete, or cement vehicles must be handled appropriately and may not be discharged to receiving waters or any storm drain system.
- All construction contractor and subcontractor personnel are to be made aware of the required BMPs and good housekeeping measures for the project site and any associated construction staging areas.
- At the end of each day of construction activity all construction debris and waste materials shall be collected and properly disposed in trash or recycle bins.
- Construction sites shall be maintained in such a condition that a storm does not carry wastes or pollutants off the site. Discharges other than stormwater (non-stormwater discharges) are prohibited, except as authorized by an individual NPDES Permit or the State-wide General Permit for Stormwater Discharges Associated with Construction Activity. Potential pollutants include but are not limited to: solid or liquid chemical spills; wastes from paints, stains, sealants, solvents, detergents, glues, lime, pesticides, herbicides, fertilizers, wood preservatives and asbestos fibers; paint flakes or stucco fragments; fuels, oils, lubricants and hydraulic, radiator or battery fluids; concrete and related cutting or curing residues; floatable wastes; wastes from engine/equipment steam cleaning or chemical degreasing; wastes from street cleaning; and super-chlorinated potable water from line flushing and testing. During construction, disposal of such materials should occur in a specified and controlled temporary area onsite physically separated from potential stormwater runoff, with ultimate disposal in accordance with local, State and Federal requirements.
- Discharging contaminated groundwater produced by dewatering groundwater that has infiltrated into the construction site is prohibited. Discharging of contaminated soils via surface erosion is also prohibited.
- The Contractor is required to notify and obtain approval from the District ten (10) days prior to any non-stormwater discharge or dewatering associated with Contractor's construction activities.
- Construction sites shall be managed to minimize the exposure time of disturbed soil areas through phasing and scheduling of grading to the extent feasible and the use of temporary and permanent soil stabilization.
- BMPs shall be maintained at all times. In addition, BMPs shall be inspected prior to predicted storm events and following storm events.

29.4 PRD and Rain Event Action Plan (REAP) Amendments - If the scope or schedule of the project changes, the Contractor shall immediately notify the Engineer. The Engineer will

determine if the Contractor will be required to recalculate the Risk Assessment. If it is determined by the Engineer that a new Risk Assessment is required, the Engineer will notify the Contractor to resubmit amended PRDs and in the case that the risk level increases, the Contractor shall comply with additional applicable requirements of the General Permit, including preparation and implementation of REAPs, M&RP, Numeric Action Level (NAL) Exceedance Reports, and annual reporting requirements. The Contractor shall also prepare amendments to the PRDs, both graphically and in narrative form, whenever there is a change in Contractor's construction activities or operations which may result in the discharge of pollutants to surface waters, groundwaters, municipal storm drain systems, or as deemed necessary by the Engineer. The Contractor shall also amend the PRDs if they are in violation of any condition of the General Permit, or has not effectively achieved the objective of reducing pollutants in stormwater discharges. Amendments shall show additional BMPs, revised Contractor's construction activities or operations, including those in areas not shown in the initially approved SWPPP, which are required on the project to effectively control water pollution.

Amendments to the PRDs shall be submitted for review and approval by the Engineer in the same manner specified for the initial approval of the PRDs. The Contractor shall date and attach all approved amendments to any of the PRDs. Upon approval of the amendment, the Contractor shall implement the approved changes, revised construction activities or operations.

29.5 Non-Compliance Reporting - If the project is in non-compliance at any time, the Contractor shall make a written report to the Engineer within two (2) calendar days of identification of non-compliance activities.

29.6 SWPPP Implementation - Upon approval of the SWPPP, the Contractor shall be responsible throughout the duration of the project for placing, installing, constructing, inspecting and maintaining the BMPs as well as conducting the M&RP as included in the SWPPP and any amendments thereto, and for removing and disposing of temporary BMPs. All SWPPP implementation shall be performed or supervised by a QSP. Unless otherwise directed by the Engineer or specified in these Detailed Specifications, the Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in accordance with Section 6.05, "TEMPORARY SUSPENSION OF THE WORK", of the General Provisions. Requirements for installation, construction, inspection, maintenance, removal and disposal of BMPs are specified in the CASQA Construction BMP Handbook Portal and these Detailed Specifications.

The Engineer may order the suspension of construction operations if the Contractor fails to comply with the requirements of this section, "Stormwater and Non-Stormwater Pollution Control", as determined by the Engineer.

The Contractor will not be compensated for sampling and analysis work because of the Contractor's failure to properly implement, inspect, maintain and repair BMPs in the approved SWPPP and any amendments thereto, or for failing to store construction materials or wastes in watertight containers.

(a) Stormwater Pollution Control - **The Contractor shall implement soil stabilization practices and sediment control BMPs, including minimum requirements as presented in the CASQA Construction BMP Handbook Portal, on all disturbed areas of the project site throughout the duration of the project.**

Implementation of soil stabilization practices and sediment control BMPs for soil-disturbed areas, including but not limited to, rough graded access roads, slopes, channel inverts, operational inlets and outlets of the project shall be completed prior to soil disturbance. The General Permit requires BMPs to be deployed throughout the duration of the project.

The Engineer may require the Contractor, on a case-by-case basis, to reduce the active, soil-disturbed area limit of the project. The Contractor shall demonstrate the ability and preparedness to fully deploy soil stabilization practices and sediment control BMPs to protect soil-disturbed areas of the project site by maintaining an adequate quantity of soil stabilization and sediment control materials onsite to protect exposed, soil-disturbed areas and a detailed plan for the mobilization of sufficient labor and equipment to fully deploy the required BMPs prior to the onset of precipitation and for the duration of the project.

Throughout the duration of the project, soil-disturbed areas of the project site shall be considered to be inactive whenever soil disturbing activities are expected to be discontinued for a period of fourteen (14) calendar days or more. Areas that will become inactive shall be fully protected with soil stabilization practices such as covering with mulch, temporary seeding, fiber rolls, blankets, etc., within ten (10) calendar days of the discontinuance of soil disturbing activities or two (2) calendar days prior to the onset of precipitation, whichever is first to occur. Areas that will become inactive shall be fully protected with sediment control BMPs within ten (10) calendar days of the discontinuance of soil disturbing activities or two (2) calendar days prior to the onset of precipitation, whichever is first to occur.

Throughout the duration of the project, the project site shall be fully protected with soil stabilization practices and sediment control BMPs. The Contractor shall monitor the weather forecast on a daily basis. The National Weather Service forecast shall be used.

(b) Non-Stormwater Pollution Control - **The Contractor shall implement, year-round and throughout the duration of the project, BMPs included in the SWPPP for sediment tracking, wind erosion, non-stormwater management, and waste management and disposal.**

(c) Inspections and Reporting - The Contractor shall ensure that a QSP regularly inspects the construction site for BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs. The QSP shall identify

corrective actions and time frames to address any damaged BMPs or reinitiate any BMPs that have been discontinued. All repairs and design changes shall begin to be implemented within 72 hours of identification.

At a minimum, the Contractor shall inspect the construction site as follows:

1. Prior to a forecast storm;
2. After any precipitation which causes runoff capable of carrying sediment from the construction site;
3. At 24-hour intervals during extended precipitation events; and
4. At a regular interval of once every week.

The construction site inspection checklist provided in the CASQA SWPPP Template shall be used to ensure that the necessary BMPs are being properly implemented and are functioning adequately. The Contractor shall submit one copy of each site inspection record to the Engineer.

(d) Maintenance - The Contractor's QSP shall maintain construction site BMPs identified in the SWPPP to ensure the proper implementation and functioning of BMPs. If the QSP or the Engineer identifies a deficiency in the deployment or functioning of an identified BMP, the QSP shall begin implementing repairs or design changes within 72 hours of identification and complete as soon as possible. The correction of deficiencies shall be at no additional cost to the District.

(e) Training – The Contractor shall ensure that all persons responsible for implementing requirements of the General Permit shall be appropriately trained in accordance with Section VII "Training Qualifications and Certification Requirements" of the General Permit. Training should be both formal and informal, occur on an ongoing basis, and should include training offered by recognized governmental agencies or professional organizations. All training shall be documented and included in the SWPPP as an appendix.

The Contractor shall ensure that SWPPPs are written, amended and certified by a QSD. The Contractor shall also ensure that all inspection, maintenance, repair and sampling activities shall be performed or supervised by a QSP. A QSP is a person responsible for non-stormwater and stormwater visual observations, sampling and analysis.

29.7 REAP – **The REAP is applicable to LUP Risk Level 2 construction sites only.** The Contractor shall ensure a QSP develop a REAP and submit a copy to the Engineer for review 48 hours prior to any likely precipitation event. The Contractor shall amend and implement the REAP as directed by the Engineer. If no comments are received prior to the precipitation event, the REAP shall be implemented as proposed. A likely precipitation event is any weather pattern that is forecast to have a 50% or greater probability of producing precipitation in the project area. The discharger shall ensure a QSP obtain a printed copy of the precipitation forecast information

from the National Weather Service Forecast Office (e.g., enter the zip code of the project's location at http://www.srh.noaa.gov/forecast).

The Contractor's QSP shall ensure that the REAP include, at a minimum, the following site information:

a. Site Address

b. Calculated Risk Level

c. Site Stormwater Manager information including the name, company and 24-hour emergency telephone number

d. Erosion and Sediment Control Provider information including the name, company and 24-hour emergency telephone number

e. Stormwater Sampling Agent information including the name, company and 24-hour emergency telephone number

29.8 Water Quality Monitoring, Sampling and Analysis – **The Water Quality Monitoring, Sampling and Analysis is applicable to LUP Risk Level 2 construction sites only.** The Contractor's QSD shall be responsible for preparing an M&RP and implementing the monitoring, sampling and analysis requirements as described in Attachment A of the General Permit. Records of all visual observations and sampling results required by the General Permit shall be kept using the forms contained in Attachment 3 of the CASQA Construction BMP Handbook Portal. Copies of the forms shall be maintained in the SWPPP and submitted to the Engineer within 24 hours of the visual observation or sampling event.

29.9 NAL Exceedance Report - **The NAL Exceedance Report is applicable to LUP Risk Level 2 construction sites only.** The Contractor shall be responsible for submitting a NAL Exceedance Report to the Engineer in the event that any effluent sample exceeds an applicable NAL.

a. The Contractor shall submit all storm event sampling results for each discharge point to the Engineer no later than 24 hours after the conclusion of the storm event.

b. The Contractor shall certify each NAL Exceedance Report in accordance with the Special Provisions for Construction Activity.

c. The Contractor shall retain an electronic or paper copy of each NAL Exceedance Report for a minimum of three (3) years after the date the annual report is filed.

d. The Contractor shall include in the NAL Exceedance Report:

i. The analytical method(s), method reporting unit(s) and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit").

ii. The date, place, time of sampling, visual observation (inspections) and/or measurements, including precipitation.

iii. A description of the current BMPs associated with the effluent sample that exceeded the NAL and the proposed corrective actions taken.

29.10 Non-Stormwater Discharge or Dewatering - **Dewatering activity should only be considered after other methods have been determined to be inadequate for storm drain construction by the Engineer.** If groundwater will be encountered during the project activities, the dewatering activity must be covered by the General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant Threat to Water Quality (De Minimus Permit), Santa Ana Regional Water Quality Control Board Order No. R8-2009-0003. The Contractor shall comply with this Order, and notify and obtain approval from the Engineer fifteen (15) days prior to any non-stormwater discharging of groundwater dewatering. If an emergency or unforeseen dewatering activity that will discharge to Waters of the United States occurs, the Contractor shall contact the Engineer immediately.

When discharging groundwater from dewatering activities to surface waters, the Contractor shall comply with and implement the Monitoring and Reporting Program required under Order No. R8-2009-0003. This Order can be downloaded from http://www.waterboards.ca.gov/santaana/board_decisions/adopted_orders/orders/2009_orders.shtml. Under the Monitoring and Reporting Program, the Contractor shall prepare the monitoring report in accordance with Attachment E of the Order. The Contractor must submit the Monitoring Reports to the Engineer by the 15th day of each month following the monitoring period. The District will submit the Monitoring Reports to the Santa Ana Regional Water Quality Control Board. The Monitoring Reports shall cover the previous month's monitoring activities.

If there is any other form of non-stormwater discharge from the project to surface waters, the Contractor shall immediately contact the Engineer to determine appropriate actions required for coverage under the De Minimus Permit.

Failure of the Contractor to fully comply with this requirement may result in the suspension of construction operations and liability for any associated monitoring, fines, penalties and remediation activities related to the discharge.

29.11 Reports -

(a) Annual Report - The Contractor shall be responsible for preparing an Annual Report to meet the requirements of Section XVI of the General Permit covering the preceding period of construction from July 1st to June 30th. The Annual

Report shall be structured in accordance with the CASQA Construction BMP Handbook Portal Section 1.7. The Contractor shall submit two (2) copies of the Annual Report to the Engineer by July 15th of each year for review and approval. The Contractor shall allow ten (10) working days for the Engineer to review the Annual Report. If revisions are required as determined by the Engineer, the Contractor shall revise and resubmit the Annual Report within three (3) working days of receipt of the Engineer's comments. The Contractor shall submit four (4) copies of the approved Annual Report to the Engineer prior to August 15th of each year. **The Contractor shall be responsible for providing an Annual Report to the Engineer for any construction occurring for part of the year after July 1st prior to receiving final payment on the project.**

(b) Monthly Report – The Contractor shall prepare and submit to the Engineer a Monthly Report within five (5) working days of the end of the month including:

1. All visual observation reports;
2. All sampling and analysis reports;
3. All NAL Exceedance Reports; and
4. Summary of changes to the SWPPP and or REAP based on inspection results for the preceding month.

29.12 Payment - The contract lump sum price paid for Stormwater and Non-Stormwater Pollution Control work shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved in developing, preparing, obtaining approval of, revising and amending the PRDs, and installing, constructing, maintaining, removing and disposing of BMPs as shown in the SWPPP, as specified in the CASQA Handbook, General Permit and these Detailed Specifications, and as directed by the Engineer.

The contract lump sum price paid for Non-Stormwater Discharge or Dewatering De Minimus Permit shall include full compensation for compliance of Section 29.10, "Non-Stormwater Discharge or Dewatering De Minimus Permit". **Contractor shall not be paid any portion of the contract lump sum if coverage under the De Minimus Permit is not required.**

Monthly payment will be made on a basis of the percentage of work completed on the entire project and subject to the submittal of a complete Monthly Report as specified in Section 29.11(b). Failure to complete or report required visual inspections, monitoring, sampling and analysis requirements, NAL Exceedance Reports, and/or other necessary follow-up actions to ensure that the project stays in compliance with the General Permit can be the basis for reducing monthly progress payments for the project. Monthly progress payments will be reduced by the amount of direct costs, overhead costs and engineering costs incurred by the Engineer to address compliance deficiencies, including costs to conduct inspections, monitoring, reporting and supplemental BMP implementation necessary to comply with the General Permit and costs incurred by the Engineer to address complaints, additional State inspections and violations and/or fines issued by the State or USEPA associated with failure to properly comply with the General Permit. Progress payment reductions can exceed the monthly percentage or total contract lump sum price for Stormwater and Non-Stormwater Pollution Control work.

Payment will be made on a basis of the percentage of work completed on the entire project.

SECTION 30 - UTILITIES

30.1 Description - This section covers the contract item Southern California Edison (SCE) Power Pole Protection Plan.

30.2 Southern California Edison (SCE) Power Pole Protection Plan – The contract item Southern California Edison (SCE) Power Pole Protection Plan covers all labor, equipment and plans which the Contractor shall prepare to protect the power poles within 10 feet of the storm drain trench limits. The power pole protection plan shall be to the satisfaction of SCE. The Contractor shall contact James Lee at 909.820.5679 at least 14 days prior to performing any work within 10 feet of the power poles. The District will reimburse Contractor for any additional review and/or inspection fee charged by SCE.

No measurement will be made for payment for this lump sum contract item.

30.3 Measurement and Payment – Payment for the lump sum item Southern California Edison (SCE) Power Pole Protection Plan will be made upon District and SCE approval of Power Pole Protection Plan. The contract price paid for SCE Power Pole Protection Plan will be full compensation for all costs incurred to produce and secure SCE approval for the Power Pole Protection Plan and its implementation during construction.

SECTION 31 – PRECAST REINFORCED CONCRETE BOX

31.1 Description – This section includes the contract items Precast Reinforced Concrete Box (PRCB) of the various sizes as required for the work.

31.2 General Requirements – This specification covers single-cell Precast Reinforced Concrete Box (PRCB) sections, the span, rise, soil weight and design earth cover shall be shown on the plans. The Contractor shall follow Sections 51 and 90 of the Caltrans Specifications except as noted herein.

Prior to the manufacture of the PRCB and prior to the pre-construction meeting, two (2) sets of prints of the PRCB layout diagrams and two (2) sets of shop drawings, including identifying the lifting devices and locations, shall be submitted to the Engineer in accordance with Section 2-5.3.1 of the Greenbook Specifications. The layout diagrams will be used by the Engineer for reference only and their use shall in no way relieve the Contractor of its responsibility for accuracy. The Engineer may waive the PRCB layout diagram requirement.

Plant inspections will include cage manufacturing, curing processes, batching equipment and process, aggregate and cement storage, concrete mix designs and product handling.

The interior surface of the PRCB shall be smooth and well-finished. Joints shall be of such type and design and so constructed as to be adequate for the purpose intended so that when laid, the PRCB will form a continuous conduit with a smooth uniform interior surface. The manufacturer shall provide a representative section to be used to determine the acceptable finish by the Engineer.

Tongue and groove ends of the PRCB shall be free from any deleterious substance or condition which might prevent a satisfactory mortar or mastic bond at the joint.

31.3 Material and Methods – All concrete for PRCB shall have a compressive strength of 5,000 psi minimum and conform to Section 16 of the specifications. When precast concrete members are manufactured at the plant of an established manufacturer of precast concrete members, the mix proportions of the concrete shall be determined by the Contractor and a trial batch and prequalification of the materials, mix proportions, mixing equipment and procedures will not be required.

Reinforcing steel shall conform to Section 52 of the Caltrans Specifications.

31.4 Fabrication – The Fabrication for the PRCB shall conform to Section 51-4.02B(5) of the Caltrans Specifications with the following exceptions:

Reinforcement placement shall conform to the details shown on the plans or standard plans except that the minimum cover of concrete over the reinforcement for the invert is two (2) inches.

Welding of the reinforcing steel is not allowed. All splices or laps must be tied.

If deformed steel reinforcing bars are used, the area of steel shall be increased to account for the differences in the steel yield strength, steel spacing, concrete cover and crack control between the welded wire reinforcement and the deformed steel reinforcing bars. Calculations for the deformed steel reinforcing design shall conform to the latest edition of ACI 318 and be prepared by a California Registered Civil Engineer and submitted to the Engineer for approval prior to the pre-construction meeting and in accordance with Section 2-5.3.1 of the Greenbook Specifications.

31.5 Shop Drawings – Shop drawings shall be provided to the Engineer to show the necessary details of all reinforcing steel required for manhole and junction structures as shown on the plans. Shop drawings shall be prepared by a California Registered Civil Engineer and submitted to the Engineer for approval prior to the pre-construction meeting and in accordance with Section 51 of the Caltrans Specifications. No manufacturing of any specially designed PRCB sections will be allowed prior to the approval of the shop drawings.

31.6 Testing Requirements – Testing requirements for the PRCB shall conform to Section 216-4 of the Greenbook Specifications.

31.7 Permissible Variations – Permissible Variations shall comply with Section 51-4.02B(5) of the Caltrans Specifications.

31.8 Markings – Markings shall comply with Section 216-6 of the Greenbook Specifications.

31.9 External Sealing Bands – External Sealing Band shall be on top of the precast reinforced concrete box as shown on the Standard Plans.

31.10 Precast Reinforced Concrete Box (PRCB) – The contract item Precast Reinforced Concrete Box (PRCB) includes the furnishing and installation of the various PRCB sizes as specified, exclusive of earthwork.

31.11 Measurement – Measurement for payment of the contract item Precast Reinforced Concrete Box (PRCB) of the various sizes will be the number of lineal feet of each size installed as specified measured along the centerline of the box in place including curves.

31.12 Payment – The contract prices paid for the Precast Reinforced Concrete Box (PRCB) shall include full compensation for all costs incurred under this section.

APPENDIX "A"

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

RULE 403

(Adopted May 7, 1976) (Amended November 6, 1992)
(Amended July 9, 1993) (Amended February 14, 1997)
(Amended December 11, 1998)(Amended April 2, 2004)
(Amended June 3, 2005)

RULE 403. FUGITIVE DUST

(a) Purpose

The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.

(b) Applicability

The provisions of this Rule shall apply to any activity or man-made condition capable of generating fugitive dust.

(c) Definitions

(1) ACTIVE OPERATIONS means any source capable of generating fugitive dust, including, but not limited to, earth-moving activities, construction/demolition activities, disturbed surface area, or heavy- and light-duty vehicular movement.

(2) AGGREGATE-RELATED PLANTS are defined as facilities that produce and / or mix sand and gravel and crushed stone.

(3) AGRICULTURAL HANDBOOK means the region-specific guidance document that has been approved by the Governing Board or hereafter approved by the Executive Officer and the U.S. EPA. For the South Coast Air Basin, the Board-approved region-specific guidance document is the Rule 403 Agricultural Handbook dated December 1998. For the Coachella Valley, the Board-approved region-specific guidance document is the Rule 403 Coachella Valley Agricultural Handbook dated April 2, 2004.

(4) ANEMOMETERS are devices used to measure wind speed and direction in accordance with the performance standards, and maintenance and calibration criteria as contained in the most recent Rule 403 Implementation Handbook.

(5) BEST AVAILABLE CONTROL MEASURES means fugitive dust control actions that are set forth in Table 1 of this Rule.

(6) BULK MATERIAL is sand, gravel, soil, aggregate material less than two inches in length or diameter, and other organic or inorganic particulate matter.

(7) CEMENT MANUFACTURING FACILITY is any facility that has a cement kiln at the facility.

(8) CHEMICAL STABILIZERS are any non-toxic chemical dust suppressant which must not be used if prohibited for use by the Regional Water Quality Control Boards, the California Air Resources Board, the U.S. Environmental Protection Agency (U.S. EPA), or any applicable law, rule or regulation. The chemical stabilizers shall meet any specifications, criteria, or tests required by any federal, state, or local water agency. Unless otherwise indicated, the use of a non-toxic chemical stabilizer shall be of sufficient concentration and application frequency to maintain a stabilized surface.

(9) COMMERCIAL POULTRY RANCH means any building, structure, enclosure, or premises where more than 100 fowl are kept or maintained for the primary purpose of producing eggs or meat for sale or other distribution.

(10) CONFINED ANIMAL FACILITY means a source or group of sources of air pollution at an agricultural source for the raising of 3,360 or more fowl or 50 or more animals, including but not limited to, any structure, building, installation, farm, corral, coop, feed storage area, milking parlor, or system for the collection, storage, or distribution of solid and liquid manure; if domesticated animals, including horses, sheep, goats, swine, beef cattle, rabbits, chickens, turkeys, or ducks are corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.

(11) CONSTRUCTION/DEMOLITION ACTIVITIES means any on-site mechanical activities conducted in preparation of, or related to, the building, alteration, rehabilitation, demolition or improvement of property, including, but not limited to the following activities: grading, excavation, loading, crushing, cutting, planing, shaping or ground breaking.

(12) CONTRACTOR means any person who has a contractual arrangement to conduct an active operation for another person.

(13) DAIRY FARM is an operation on a property, or set of properties that are contiguous or separated only by a public right-of-way, that raises cows or

produces milk from cows for the purpose of making a profit or for a livelihood. Heifer and calf farms are dairy farms.

(14) DISTURBED SURFACE AREA means a portion of the earth's surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for emission of fugitive dust. This definition excludes those areas which have:

(A) been restored to a natural state, such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby natural conditions;

(B) been paved or otherwise covered by a permanent structure; or

(C) sustained a vegetative ground cover of at least 70 percent of the native cover for a particular area for at least 30 days.

(15) DUST SUPPRESSANTS are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive dust emissions.

(16) EARTH-MOVING ACTIVITIES means the use of any equipment for any activity where soil is being moved or uncovered, and shall include, but not be limited to the following: grading, earth cutting and filling operations, loading or unloading of dirt or bulk materials, adding to or removing from open storage piles of bulk materials, landfill operations, weed abatement through disking, and soil mulching.

(17) DUST CONTROL SUPERVISOR means a person with the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule 403 requirements at an active operation.

(18) FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person.

(19) HIGH WIND CONDITIONS means that instantaneous wind speeds exceed 25 miles per hour.

(20) INACTIVE DISTURBED SURFACE AREA means any disturbed surface area upon which active operations have not occurred or are not expected to occur for a period of 20 consecutive days.

(21) LARGE OPERATIONS means any active operations on property which contains 50 or more acres of disturbed surface area; or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic

meters (5,000 cubic yards) or more three times during the most recent 365-day period.

(22) OPEN STORAGE PILE is any accumulation of bulk material, which is not fully enclosed, covered or chemically stabilized, and which attains a height of three feet or more and a total surface area of 150 or more square feet.

(23) PARTICULATE MATTER means any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.

(24) PAVED ROAD means a public or private improved street, highway, alley, public way, or easement that is covered by typical roadway materials, but excluding access roadways that connect a facility with a public paved roadway and are not open to through traffic. Public paved roads are those open to public access and that are owned by any federal, state, county, municipal or any other governmental or quasi-governmental agencies. Private paved roads are any paved roads not defined as public.

(25) PM_{10} means particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by the applicable State and Federal reference test methods.

(26) PROPERTY LINE means the boundaries of an area in which either a person causing the emission or a person allowing the emission has the legal use or possession of the property. Where such property is divided into one or more sub-tenancies, the property line(s) shall refer to the boundaries dividing the areas of all sub-tenancies.

(27) RULE 403 IMPLEMENTATION HANDBOOK means a guidance document that has been approved by the Governing Board on April 2, 2004 or hereafter approved by the Executive Officer and the U.S. EPA.

(28) SERVICE ROADS are paved or unpaved roads that are used by one or more public agencies for inspection or maintenance of infrastructure and which are not typically used for construction-related activity.

(29) SIMULTANEOUS SAMPLING means the operation of two PM_{10} samplers in such a manner that one sampler is started within five minutes of the other, and each sampler is operated for a consecutive period which must be not less than 290 minutes and not more than 310 minutes.

(30) SOUTH COAST AIR BASIN means the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange

County as defined in California Code of Regulations, Title 17, Section 60104. The area is bounded on the west by the Pacific Ocean, on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains, and on the south by the San Diego county line.

(31) STABILIZED SURFACE means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust and is demonstrated to be stabilized. Stabilization can be demonstrated by one or more of the applicable test methods contained in the Rule 403 Implementation Handbook.

(32) TRACK-OUT means any bulk material that adheres to and agglomerates on the exterior surface of motor vehicles, haul trucks, and equipment (including tires) that have been released onto a paved road and can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(33) TYPICAL ROADWAY MATERIALS means concrete, asphaltic concrete, recycled asphalt, asphalt, or any other material of equivalent performance as determined by the Executive Officer, and the U.S. EPA.

(34) UNPAVED ROADS means any unsealed or unpaved roads, equipment paths, or travel ways that are not covered by typical roadway materials. Public unpaved roads are any unpaved roadway owned by federal, state, county, municipal or other governmental or quasi-governmental agencies. Private unpaved roads are all other unpaved roadways not defined as public.

(35) VISIBLE ROADWAY DUST means any sand, soil, dirt, or other solid particulate matter which is visible upon paved road surfaces and which can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(36) WIND-DRIVEN FUGITIVE DUST means visible emissions from any disturbed surface area which is generated by wind action alone.

(37) WIND GUST is the maximum instantaneous wind speed as measured by an anemometer.

(d) Requirements

(1) No person shall cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that:

(A) the dust remains visible in the atmosphere beyond the property line of the emission source; or

(B) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook), if the dust emission is the result of movement of a motorized vehicle.

(2) No person shall conduct active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize fugitive dust emissions from each fugitive dust source type within the active operation.

(3) No person shall cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other U.S. EPA-approved equivalent method for PM_{10} monitoring. If sampling is conducted, samplers shall be:

(A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate U.S. EPA-published documents for U.S. EPA-approved equivalent method(s) for PM_{10}.

(B) Reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized.

(4) No person shall allow track-out to extend 25 feet or more in cumulative length from the point of origin from an active operation. Notwithstanding the preceding, all track-out from an active operation shall be removed at the conclusion of each workday or evening shift.

(5) No person shall conduct an active operation with a disturbed surface area of five or more acres, or with a daily import or export of 100 cubic yards or more of bulk material without utilizing at least one of the measures listed in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road.

(A) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long.

(B) Pave the surface extending at least 100 feet and at least 20 feet wide.

(C) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(D) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(E) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the actions specified in subparagraphs (d)(5)(A) through (d)(5)(D).

(6) Beginning January 1, 2006, any person who operates or authorizes the operation of a confined animal facility subject to this Rule shall implement the applicable conservation management practices specified in Table 4 of this Rule.

(e) Additional Requirements for Large Operations

(1) Any person who conducts or authorizes the conducting of a large operation subject to this Rule shall implement the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards can not be met through use of Table 2 actions; and shall:

(A) submit a fully executed Large Operation Notification (Form 403 N) to the Executive Officer within 7 days of qualifying as a large operation;

(B) include, as part of the notification, the name(s), address(es), and phone number(s) of the person(s) responsible for the submittal, and a description of the operation(s), including a map depicting the location of the site;

(C) maintain daily records to document the specific dust control actions taken, maintain such records for a period of not less than three years; and make such records available to the Executive Officer upon request;

(D) install and maintain project signage with project contact signage that meets the minimum standards of the Rule 403 Implementation Handbook, prior to initiating any earthmoving activities;

(E) identify a dust control supervisor that:

(i) is employed by or contracted with the property owner or developer;

(ii) is on the site or available on-site within 30 minutes during working hours;

(iii) has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements;

(iv) has completed the AQMD Fugitive Dust Control Class and has been issued a valid Certificate of Completion for the class; and

(F) notify the Executive Officer in writing within 30 days after the site no longer qualifies as a large operation as defined by paragraph (c)(18).

(2) Any Large Operation Notification submitted to the Executive Officer or AQMD-approved dust control plan shall be valid for a period of one year from the date of written acceptance by the Executive Officer. Any Large Operation Notification accepted pursuant to paragraph (e)(1), excluding those submitted by aggregate-related plants and cement manufacturing facilities must be resubmitted annually by the person who conducts or authorizes the conducting of a large operation, at least 30 days prior to the expiration date, or the submittal shall no longer be valid as of the expiration date. If all fugitive dust sources and corresponding control measures or special circumstances remain identical to those identified in the previously accepted submittal or in an AQMD-approved dust control plan, the resubmittal may be a simple statement of no-change (Form 403NC).

(f) Compliance Schedule

The newly amended provisions of this Rule shall become effective upon adoption. Pursuant to subdivision (e), any existing site that qualifies as a large operation will have 60 days from the date of Rule adoption to comply with the notification and recordkeeping requirements for large operations. Any Large Operation

Notification or AQMD-approved dust control plan which has been accepted prior to the date of adoption of these amendments shall remain in effect and the Large Operation Notification or AQMD-approved dust control plan annual resubmittal date shall be one year from adoption of this Rule amendment.

(g) Exemptions

(1) The provisions of this Rule shall not apply to:

(A) Dairy farms.

(B) Confined animal facilities provided that the combined disturbed surface area within one continuous property line is one acre or less.

(C) Agricultural vegetative crop operations provided that the combined disturbed surface area within one continuous property line and not separated by a paved public road is 10 acres or less.

(D) Agricultural vegetative crop operations within the South Coast Air Basin, whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Agricultural Handbook;

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(E) Agricultural vegetative crop operations outside the South Coast Air Basin whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Coachella Valley Agricultural Handbook; and

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Coachella Valley Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(F) Active operations conducted during emergency life-threatening situations, or in conjunction with any officially declared disaster or state of emergency.

(G) Active operations conducted by essential service utilities to provide electricity, natural gas, telephone, water and sewer during periods of service outages and emergency disruptions.

(H) Any contractor subsequent to the time the contract ends, provided that such contractor implemented the required control measures during the contractual period.

(I) Any grading contractor, for a phase of active operations, subsequent to the contractual completion of that phase of earth-moving activities, provided that the required control measures have been implemented during the entire phase of earth-moving activities, through and including five days after the final grading inspection.

(J) Weed abatement operations ordered by a county agricultural commissioner or any state, county, or municipal fire department, provided that:

(i) mowing, cutting or other similar process is used which maintains weed stubble at least three inches above the soil; and

(ii) any discing or similar operation which cuts into and disturbs the soil, where watering is used prior to initiation of these activities, and a determination is made by the agency issuing the weed abatement order that, due to fire hazard conditions, rocks, or other physical obstructions, it is not practical to meet the conditions specified in clause (g)(1)(H)(i). The provisions this clause shall not exempt the owner of any property from stabilizing, in accordance with paragraph (d)(2), disturbed surface areas which have been created as a result of the weed abatement actions.

(K) sandblasting operations.

(2) The provisions of paragraphs (d)(1) and (d)(3) shall not apply:

(A) When wind gusts exceed 25 miles per hour, provided that:

(i) The required Table 3 contingency measures in this Rule are implemented for each applicable fugitive dust source type, and;

(ii) records are maintained in accordance with subparagraph (e)(1)(C).

(B) To unpaved roads, provided such roads:

(i) are used solely for the maintenance of wind-generating equipment; or

(ii) are unpaved public alleys as defined in Rule 1186; or

(iii) are service roads that meet all of the following criteria:

(a) are less than 50 feet in width at all points along the road;

(b) are within 25 feet of the property line; and

(c) have a traffic volume less than 20 vehicle-trips per day.

(C) To any active operation, open storage pile, or disturbed surface area for which necessary fugitive dust preventive or mitigative actions are in conflict with the federal Endangered Species Act, as determined in writing by the State or federal agency responsible for making such determinations.

(3) The provisions of (d)(2) shall not apply to any aggregate-related plant or cement manufacturing facility that implements the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards of paragraphs (d)(1) and (d)(3) can not be met through use of Table 2 actions.

(4) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to:

(A) Blasting operations which have been permitted by the California Division of Industrial Safety; and

(B) Motion picture, television, and video production activities when dust emissions are required for visual effects. In order to obtain this exemption, the Executive Officer must receive notification in writing at least 72 hours in advance of any such activity and no nuisance results from such activity.

(5) The provisions of paragraph (d)(3) shall not apply if the dust control actions, as specified in Table 2, are implemented on a routine basis for

each applicable fugitive dust source type. To qualify for this exemption, a person must maintain records in accordance with subparagraph (e)(1)(C).

(6) The provisions of paragraph (d)(4) shall not apply to earth coverings of public paved roadways where such coverings are approved by a local government agency for the protection of the roadway, and where such coverings are used as roadway crossings for haul vehicles provided that such roadway is closed to through traffic and visible roadway dust is removed within one day following the cessation of activities.

(7) The provisions of subdivision (e) shall not apply to:

(A) officially-designated public parks and recreational areas, including national parks, national monuments, national forests, state parks, state recreational areas, and county regional parks.

(B) any large operation which is required to submit a dust control plan to any city or county government which has adopted a District-approved dust control ordinance.

(C) any large operation subject to Rule 1158, which has an approved dust control plan pursuant to Rule 1158, provided that all sources of fugitive dust are included in the Rule 1158 plan.

(8) The provisions of subparagraph (e)(1)(A) through (e)(1)(C) shall not apply to any large operation with an AQMD-approved fugitive dust control plan provided that there is no change to the sources and controls as identified in the AQMD-approved fugitive dust control plan.

(h) Fees

Any person conducting active operations for which the Executive Officer conducts upwind/downwind monitoring for PM_{10} pursuant to paragraph (d)(3) shall be assessed applicable Ambient Air Analysis Fees pursuant to Rule 304.1. Applicable fees shall be waived for any facility which is exempted from paragraph (d)(3) or meets the requirements of paragraph (d)(3).

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	✓ Mix backfill soil with water prior to moving ✓ Dedicate water truck or high capacity hose to backfilling equipment ✓ Empty loader bucket slowly so that no dust plumes are generated ✓ Minimize drop height from loader bucket
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	✓ Maintain live perennial vegetation where possible ✓ Apply water in sufficient quantity to prevent generation of dust plumes
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	✓ Use of high pressure air to clear forms may cause exceedance of Rule requirements
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	✓ Follow permit conditions for crushing equipment ✓ Pre-water material prior to loading into crusher ✓ Monitor crusher emissions opacity ✓ Apply water to crushed material to prevent dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	✓ For large sites, pre-water with sprinklers or water trucks and allow time for penetration ✓ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
Demolition – mechanical/manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	✓ Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	✓ Limit vehicular traffic and disturbances on soils where possible ✓ If interior block walls are planned, install as early as possible ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth-moving activities are complete.	✓ Grade each project phase separately, timed to coincide with construction phase ✓ Upwind fencing can prevent material movement on site ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Importing/exporting of bulk materials	09-1 Stabilize material while loading to reduce fugitive dust emissions; and 09-2 Maintain at least six inches of freeboard on haul vehicles; and 09-3 Stabilize material while transporting to reduce fugitive dust emissions; and 09-4 Stabilize material while unloading to reduce fugitive dust emissions; and 09-5 Comply with Vehicle Code Section 23114.	✓ Use tarps or other suitable enclosures on haul trucks ✓ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage ✓ Comply with track-out prevention/mitigation requirements ✓ Provide water while loading and unloading to reduce visible dust plumes
Landscaping	10-1 Stabilize soils, materials, slopes	✓ Apply water to materials to stabilize ✓ Maintain materials in a crusted condition ✓ Maintain effective cover over materials ✓ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes ✓ Hydroseed prior to rain season
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and 11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	✓ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs ✓ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	✓ Dedicate water truck or high capacity hose to screening operation ✓ Drop material through the screen slowly and minimize drop height ✓ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	✓ Limit size of staging area ✓ Limit vehicle speeds to 15 miles per hour ✓ Limit number and size of staging area entrances/exists
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	✓ Add or remove material from the downwind portion of the storage pile ✓ Maintain storage piles to avoid steep sides or faces

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	✓ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas ✓ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	✓ Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching ✓ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard exceeds six inches (CVC 23114)	✓ Empty loader bucket such that no visible dust plumes are created ✓ Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	✓ Haul waste material immediately off-site

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Unpaved roads/parking lots	19-1 Stabilize soils to meet the applicable performance standards; and 19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
Vacant land	20-1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

Table 2
DUST CONTROL MEASURES FOR LARGE OPERATIONS

FUGITIVE DUST SOURCE CATEGORY		CONTROL ACTIONS
Earth-moving (except construction cutting and filling areas, and mining operations)	(1a)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR
	(1a-1)	For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas:	(1b)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY		CONTROL ACTIONS
Earth-moving: Construction cut areas and mining operations:	(1c)	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	(2a/b)	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	(2c)	Apply chemical stabilizers within five working days of grading completion; OR
	(2d)	Take actions (3a) or (3c) specified for inactive disturbed surface areas.
Inactive disturbed surface areas	(3a)	Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
	(3b)	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
	(3c)	Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
	(3d)	Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS	
Unpaved Roads	(4a)	Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR
	(4b)	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
	(4c)	Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	(5a)	Apply chemical stabilizers; OR
	(5b)	Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR
	(5c)	Install temporary coverings; OR
	(5d)	Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
All Categories	(6a)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used.

TABLE 3
CONTINGENCY CONTROL MEASURES FOR LARGE OPERATIONS

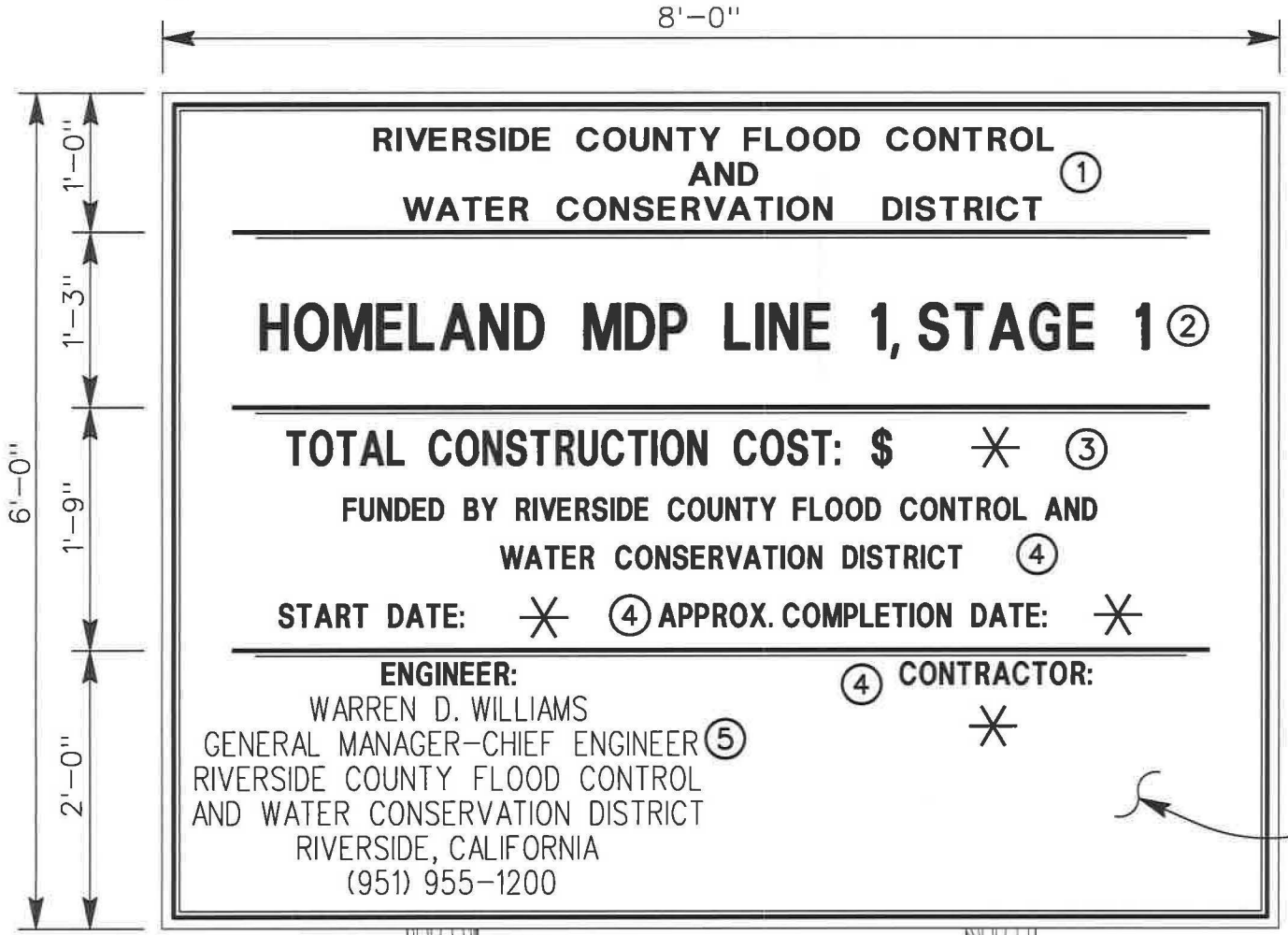
FUGITIVE DUST SOURCE CATEGORY	CONTROL MEASURES
Earth-moving	(1A) Cease all active operations; OR (2A) Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	(0B) On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR (1B) Apply chemical stabilizers prior to wind event; OR (2B) Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR (3B) Take the actions specified in Table 2, Item (3c); OR (4B) Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	(1C) Apply chemical stabilizers prior to wind event; OR (2C) Apply water twice per hour during active operation; OR (3C) Stop all vehicular traffic.
Open storage piles	(1D) Apply water twice per hour; OR (2D) Install temporary coverings.
Paved road track-out	(1E) Cover all haul vehicles; OR (2E) Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	(1F) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 3 may be used.

Table 4
(Conservation Management Practices for Confined Animal Facilities)

SOURCE CATEGORY	CONSERVATION MANAGEMENT PRACTICES
Manure Handling **(Only applicable to Commercial Poultry Ranches)**	(1a) Cover manure prior to removing material off-site; AND (1b) Spread the manure before 11:00 AM and when wind conditions are less than 25 miles per hour; AND (1c) Utilize coning and drying manure management by removing manure at laying hen houses at least twice per year and maintain a base of no less than 6 inches of dry manure after clean out; or in lieu of complying with conservation management practice (1c), comply with conservation management practice (1d). (1d) Utilize frequent manure removal by removing the manure from laying hen houses at least every seven days and immediately thin bed dry the material.
Feedstock Handling	(2a) Utilize a sock or boot on the feed truck auger when filling feed storage bins.
Disturbed Surfaces	(3a) Maintain at least 70 percent vegetative cover on vacant portions of the facility; OR (3b) Utilize conservation tillage practices to manage the amount, orientation and distribution of crop and other plant residues on the soil surface year-round, while growing crops (if applicable) in narrow slots or tilled strips; OR (3c) Apply dust suppressants in sufficient concentrations and frequencies to maintain a stabilized surface.
Unpaved Roads	(4a) Restrict access to private unpaved roads either through signage or physical access restrictions and control vehicular speeds to no more than 15 miles per hour through worker notifications, signage, or any other necessary means; OR (4b) Cover frequently traveled unpaved roads with low silt content material (i.e., asphalt, concrete, recycled road base, or gravel to a minimum depth of four inches); OR (4c) Treat unpaved roads with water, mulch, chemical dust suppressants or other cover to maintain a stabilized surface.
Equipment Parking Areas	(5a) Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR (5b) Apply material with low silt content (i.e., asphalt, concrete, recycled road base, or gravel to a depth of four inches).

APPENDIX "B"

PROJECT SIGNS



LETTER SCHEDULE

	SIZE	COLOR
(1)	2"	BLACK
(2)	4"	ROYAL
(3)	3"	ROYAL
(4)	2"	ROYAL
(5)	2"	BLACK

NOTES:

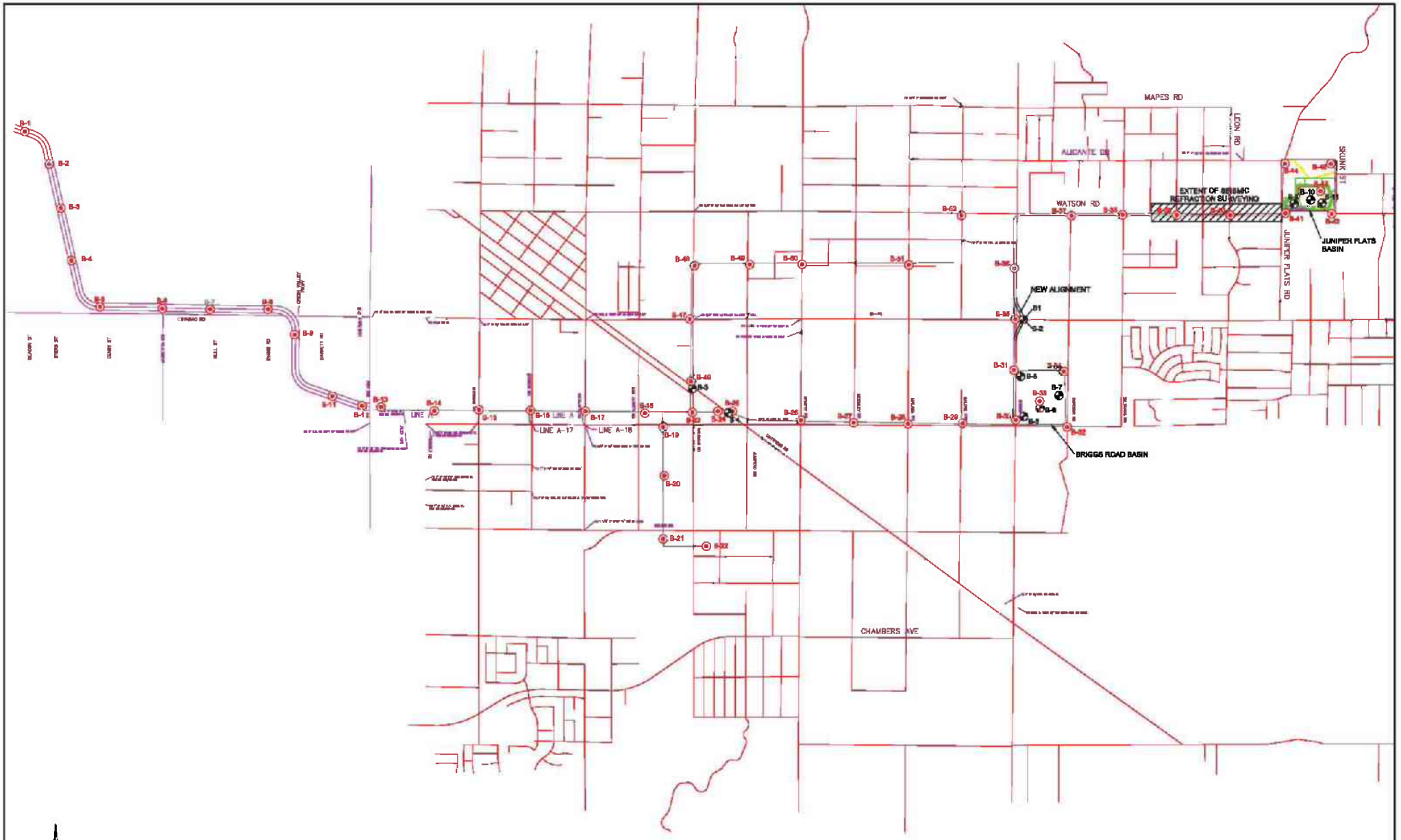
1. MINIMUM SPACING BETWEEN LINES 1".
2. ✳ -INFO. FURNISHED BY ENGINEER
3. ALL LETTERS FILLED AND CENTERED
4. THE STRIPES ARE GOLD AND BLACK ON WHITE BACKGROUND.

APPENDIX "B" PROJECT SIGN

APPENDIX "C"

LOG OF SOIL BORINGS
GEOTECHNICAL REPORT

NOTICE: The geotechnical report is included herein for informational purposes only. This report was not prepared for purposes of bid development. It was produced to assist the design engineer regarding overall project feasibility and to make recommendations regarding some design parameters. Contractors are encouraged to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer.



LEGEND:

- EXPLORATORY BORING
- EXPLORATORY BORING (PREVIOUS INVESTIGATION, 2004)

PLAT

FOR: COUNTY OF RIVERSIDE FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DATE: OCTOBER 2014

GEOTECHNICAL INVESTIGATION
ROMOLAND MDP LINE A, STAGE 4
PROJECT NO. 4-0-00310-04
RIVERSIDE COUNTY, CALIFORNIA

ENCLOSURE: "A-2"

JOB NUMBER: 14311-3

CHJ Consultants

KEY TO LOGS

LEGEND OF LAB/FIELD TESTS:

Blows	A measure of the penetration resistance of soil expressed as the number of hammer blows required to advance the indicated sampler 6 inches (or less if noted). Samplers are driven with an automatic hammer that drops a 140-pound weight 30 inches for each blow. After the required seating, samplers are advanced up to 18 inches ahead of the boring, providing up to three sets of blows per drive.
Bulk	Indicates Disturbed or Bulk Sample
Consol.	Consolidated Test (ASTM D2435)
Cor.	Chemical/Corrosivity Tests (ASTM G187)
Dist.	Indicates Disturbed Sample
DS	Direct Shear Test (ASTM D3080)
Hydro.	Hydrometer Analysis (ASTM D422)
Exp.	Expansion Test (California Building Code Standard Test Method 18-2)
MDC	Optimum Moisture - Maximum Density Determination (ASTM D1557)
N.R.	Indicates No Recovery of Sample
PI	Plasticity Index
Ring	Indicates Relatively Undisturbed Ring Sample. Relatively Undisturbed Ring Samples are obtained with a "Modified California Sampler" (3.25" O.D. and 2.42" I.D.) lined with rings driven with a 140-pound weight falling 30 inches.
RV	R-Value (CT 301)
SA	Sieve Analysis (ASTM D422)
SE	Sand Equivalent (ASTM D2419)
SPT	Indicates a Sample Obtained with an Unlined Standard Penetration Test Sampler (2" O.D. and 1-3/8" I.D.).

Enclosure "B" (2 of 2)
Job No. 14311-3

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size)			
GRAVELS More than 50% of coarse fraction larger than No.4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No.4 sieve size	Clean Sands (Less than 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 (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		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 silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA

GW $C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3

GP Not meeting all gradation requirements for GW

GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
GC	Atterberg limits above "A" line with P.I. greater than 7	

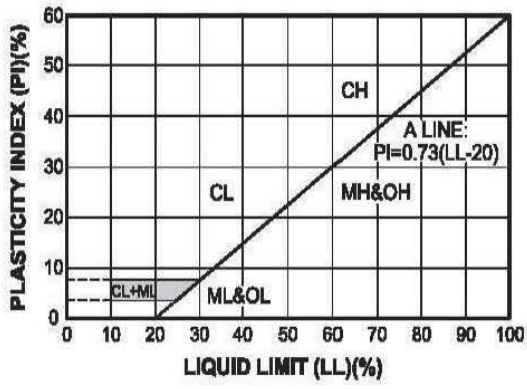
SW $C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3

SP Not meeting all gradation requirements for SW

SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size).
Coarse-grained soils are classified as follows:
Less than 5 percent.....GW, GP, SW, SP
More than 12 percent.....GM, GC, SM, SC
5 to 12 percent.....Borderline cases requiring dual symbols

PLASTICITY CHART



EXPLORATORY BORING NO. 1

Date Drilled: 8/6/14

Client: Riverside County Flood Control District

Equipment: CME 75 Truck Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1528

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	Asphalt Concrete, 7"	Fill						
	Aggregate Base, 7"							
	(SP-SM) Sand, fine to medium with coarse, with silt, brown		X		14 14 11	8.1	109	Ring
				▩		4.2		MDC, RV
5	(SM-SC) Silty Clayey Sand, fine to medium, dark brown	Native	X		7 10 12	11.1	127	Hydro., Ring
				▩		12.4		SE
10			X		12 26 26	10.0	132	Ring
15	(SM) Silty Sand, fine to medium, yellow brown		X	▩	13 26 36	6.8	130	Ring Cor.
20			X		30 50/5"	11.4	125	Ring
25	(SM) Silty Sand, fine to coarse, dark brown	Added Water	X	▩	21 50/2"	8.4	112	DS, Ring
30		Added Water	X		35 50/4"	7.1	126	Ring

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-1a

EXPLORATORY BORING NO. 1

Date Drilled: 8/6/14

Client: Riverside County Flood Control District

Equipment: CME 75 Truck Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1528

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to coarse, dark brown	Added Water	X		34 50/4"	7.4	124	Ring
40				X		25 50/5"	9.8	122	DS, Ring
45				X		50/5"	5.2	110	Ring
		END OF BORING NO REFUSAL, NO BEDROCK NO GROUNDWATER NO CAVING, FILL TO 5'							
50									
55									
60									
65									

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-1b

EXPLORATORY BORING NO. 2

Date Drilled: 8/6/14

Client: Riverside County Flood Control District

Equipment: CME 75 Truck Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1528

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	Asphalt Concrete, 7"	Fill						
	Aggregate Base, 7"							
	(SM) Silty Sand, fine to medium with coarse, dark brown		X		7 4 4			SPT
				▩		6.7		MDC, RV
5	(SC) Clayey Sand, fine to medium, yellow brown	Native	X		4 4 7			Hydro., SPT
10		Smoky Auger to 20'	X		7 8 13			SPT
				▩		12.4		Cor., SE
15	(SM) Silty Sand, fine to medium with coarse, yellow brown		X		4 8 15			SPT
20	(SM) Silty Sand, fine to coarse, strong brown	Added Water	X		17 27 37			SPT
25		Added Water	X		16 25 43			SPT
30		Added Water	X		17 30 34			SPT

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-2a

EXPLORATORY BORING NO. 2

Date Drilled: 8/6/14

Client: Riverside County Flood Control District

Equipment: CME 75 Truck Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1528

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to coarse, strong brown		X		11 25 30			SPT
40		(SM) Silty Sand, fine to medium, yellow brown	Added Water	X		7 16 21			SPT
45				X		25 28 34			SPT
50			Added Water	X		14 23 27			SPT
55			Added Water	X		18 27 40			SPT
60		Granitic Bedrock recovered as (SM) Silty Sand, fine to coarse, brown		X		40 50			SPT
65				X		20 24 28			SPT
		END OF BORING NO REFUSAL, NO CAVING NO GROUNDWATER, FILL TO 5' GRANITIC BEDROCK AT 60'							

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-2b

EXPLORATORY BORING NO. 3

Date Drilled: 8/6/14

Client: Riverside County Flood Control District

Equipment: CME 75 Truck Rig

Driving Weight / Drop / Sampler Size: 140 lbs./ 30 in.

Surface Elevation(ft): 1452

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(CL) Sandy Clay, fine, with silt, dark yellow brown	Native				8.5		Cor., RV
				X		16 17 36	9.8	129	Ring
5			Carbonate Staining	X		7 14 42	12.9	126	Hydro., Ring
10		(ML) Sandy Silt, fine with medium, few clay, dark yellow brown	Smoky Auger	X		20 50/5	7.5	132	Ring
							10.2		MDC
15			Added Water	X		18 50/5"	15.1	116	DS, Ring
20		(SM) Silty Sand, fine with medium, yellow brown	Added Water	X		40 50/5"	11.5	120	Ring
25			Added Water	X		33 50/4"	14.4	119	Ring
30			Added Water	X		26 50	16.8	116	Ring

10331-3 14311-3.GPJ CHJ.GDT 8/28/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-3a

EXPLORATORY BORING NO. 3

Date Drilled: 8/6/14

Client: Riverside County Flood Control District

Equipment: CME 75 Truck Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1452

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine with medium, yellow brown		X		23 40 50/3"	16.2	117	Ring
40				X		17 50	18.2	113	Ring
		END OF BORING NO REFUSAL, NO BEDROCK NO GROUNDWATER NO CAVING, NO FILL							
45									
50									
55									
60									
65									

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-3b

EXPLORATORY BORING NO. 4

Date Drilled: 8/6/14

Client: Riverside County Flood Control District

Equipment: CME 75 Truck Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1454

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(ML) Sandy Silt, fine, light brown	Native		▨		3.5		Cor., RV
			☒		3 6 13			SPT
5	(SM-SC) Silty, Clayey Sand, fine to medium, strong brown		☒		37 37 50			Hydro., SPT
10	(ML) Sandy Silt, fine with medium, few clay, strong brown	Smoky Auger	☒		14 25 40			SPT
				▨		6.8		MDC
15		Added Water	☒		10 17 36			SPT
20	(SM) Silty Sand, fine to medium, brown	Added Water	☒		13 21 27			SPT
25		Added Water	☒		10 22 36			SPT
30			☒		10 17 38			SPT

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-4a

EXPLORATORY BORING NO. 4

Date Drilled: 8/6/14

Client: Riverside County Flood Control District

Equipment: CME 75 Truck Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1454

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium, brown	Added Water	X		15 18 21			SPT
40			Added Water	X		13 35 50			SPT
45		(SM) Silty Sand, fine to medium, few clay, brown	Added Water	X		9 14 20			SPT
50				X		12 12 13			SPT
		END OF BORING NO REFUSAL, NO BEDROCK NO GROUNDWATER NO CAVING, NO FILL							
55									
60									
65									

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-4b

EXPLORATORY BORING NO. 5

Date Drilled: 5/29/14

Client: Riverside County Flood Control District

Equipment: CME 75 Track Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1521

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine, light brown	Native						
5					▩		3.8		
10				☒		50	6.7	Dist.	Ring
15									
20		(SM) Silty Sand, fine to coarse, dark brown		☒		20 27 45	10.1	128	Ring
25			Approximate Bottom of Basin						
		(SP-SM) Sand, fine to medium, with silt, brown		☒		17 32 46	3.6	122	Ring
30		END OF BORING NO REFUSAL, NO FILL NO GROUNDWATER NO CAVING, NO BEDROCK							

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-5

EXPLORATORY BORING NO. 6

Date Drilled: 5/29/14

Client: Riverside County Flood Control District

Equipment: CME 75 Track Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1523

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine with medium, brown	Native						
5					▩		4.6		
10		(SP-SM) Sand, fine to medium, with silt, brown		☒		12 21 21	1.8	124	Ring
15									
20		(SP) Sand, fine to medium, few silt, dark brown		☒		20 24 32	3.6	119	Ring
25			Approx. Bottom of Basin						
30		END OF BORING NO REFUSAL, NO FILL NO GROUNDWATER NO CAVING, NO BEDROCK		☒		9 27 38	8.0	112	Ring

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-6

EXPLORATORY BORING NO. 7

Date Drilled: 5/29/14

Client: Riverside County Flood Control District

Equipment: CME 75 Track Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1529

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine, brown	Native						
5					▩		4.8		
10		(SP-SM) Sand, fine to medium, with silt, brown		☒		7 11 12	1.6	113	Ring
15									
20				☒		18 39 49	5.5	134	Ring
25			Approx. Bottom of Basin Hard Drilling						
30		(SC) Clayey Sand, fine to medium, with coarse, with silt, dark brown		☒		15 32 50/5"	8.8	134	Ring

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-7a

EXPLORATORY BORING NO. 7

Date Drilled: 5/29/14 | Client: Riverside County Flood Control District

Equipment: CME 75 Track Rig | Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1529 | Logged by: VJR | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SC) Clayey Sand, fine to medium, with coarse, with silt, dark brown							
		Granitic Bedrock recovered as (SP-SM) Sand, fine to medium, with coarse, with silt, gray brown							
40				⊠		50/4"	3.9	106	Ring
		END OF BORING							
		NO REFUSAL, NO FILL NO GROUNDWATER NO CAVING, BEDROCK AT 38'							
45									
50									
55									
60									
65									

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3 | Enclosure B-7b

EXPLORATORY BORING NO. 8

Date Drilled: 5/29/14

Client: Riverside County Flood Control District

Equipment: CME 75 Track Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1518

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium, red brown	Native						
5					■		7.6		
10				⊠		12 20 24	4.9	128	Ring
15			Approx. Bottom of Basin						
20				⊠		50	7.2	108	Ring
		END OF BORING NO REFUSAL, NO FILL NO GROUNDWATER NO CAVING, NO BEDROCK							
25									
30									

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-8

EXPLORATORY BORING NO. 9

Date Drilled: 5/29/14

Client: Riverside County Flood Control District

Equipment: CME 75 Track Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1703

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium, brown	Native						
5					▨		2.9		
10		Granitic Bedrock recovered as (SP-SM) Sand, fine to medium, with silt, gray brown		⊠		50/5"	3.8	125	Ring
15									
20		END OF BORING				50/1"	N.R.	N.R.	Ring
		NO REFUSAL, NO FILL NO GROUNDWATER NO CAVING, BEDROCK AT 10'							
25									
30									

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-9

EXPLORATORY BORING NO. 10

Date Drilled: 5/29/14

Client: Riverside County Flood Control District

Equipment: CME 75 Track Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1705

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium, dark brown	Native						
							6.5		
5				X		4 6 9	11.1	115	Ring
10									
15		Granitic Bedrock recovered as (SP-SM) Sand, fine to medium, with silt, gray brown		X		50/5"	4.4	113	Ring
20									
25		END OF BORING		X		50/4"	N.R.	N.R.	Ring
30		NO REFUSAL, NO FILL NO GROUNDWATER NO CAVING, BEDROCK AT 15'							

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-10

EXPLORATORY BORING NO. 11

Date Drilled: 5/29/14

Client: Riverside County Flood Control District

Equipment: CME 75 Track Rig

Driving Weight / Drop: 140 lbs./ 30 in.

Surface Elevation(ft): 1705

Logged by: VJR

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6 IN.	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine with medium, dark brown	Native						
5					■		3.2		
10				☒		6 11 17	3.4	125	Ring
15									
20		(SP-SM) Sand, fine to medium with coarse, with silt, brown		☒		12 19 20	2.7	123	Ring
		END OF BORING							
25		NO REFUSAL, NO FILL NO GROUNDWATER NO CAVING, NO BEDROCK							
30									

10331-3 14311-3.GPJ CHJ.GDT 8/19/14

CHJ

ROMOLAND MDP, LINE A, STAGE 4
ROMOLAND, RIVERSIDE COUNTY, CA

Job No. 14311-3

Enclosure B-11

APPENDIX "B-1"

EXPLORATORY LOGS—PREVIOUS INVESTIGATION

EXPLORATORY BORING NO. 13

Client: Albert A. Webb Associates

Date Drilled: 3/14/04

Location: Station 124+00

Equipment / Driving Wt./Drop: CME 55 Drill Rig/140 lbs/30 in

Surface/Flow Line Elevation(ft): 1426.0/1414.0

Logged by: S.H.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine with clay, light brown	Native				8.4		
5						30/4.5"	14.2	117	Ring
		(SM) Silty Sand, fine to medium with coarse, light brown					9.4		MDC, SA
10						53/11"	11.1 11.0	124	Ring
		(SC) Clayey Sand, fine to medium with coarse and silt, yellow brown							
15						30/5"	11.1	124	Ring, DS
20						43	11.9	119	Ring
25						46/11"	12.0	120	Ring
		END OF BORING NO BEDROCK NO REFUSAL NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									

BORING LOG - WEBB ASSOC. ADP STORM DRAIN 04175-3.GPJ CHJ.GDT 4/26/04

C·H·J·

HOMELAND/ROMOLAND ADP PHASE I
RIVERSIDE COUNTY, CALIFORNIA

Job No. 04175-3

Enclosure B-12

EXPLORATORY BORING NO. 14

Client: Albert A. Webb Associates

Date Drilled: 3/15/04

Location: Station 137+80

Equipment / Driving Wt./Drop: CME 55 Drill Rig/140 lbs/30 in

Surface/Flow Line Elevation(ft): 1427.0/1418.1

Logged by: S.H.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine with medium and coarse, light brown	Native				6.1		
						30/6"	3.6 7.3	125	Ring
5									
		(SM) Silty Sand, fine to medium, orange brown				30/4"	11.3 9.5	Dist.	DS,MDC, SA Ring
10		(ML) Sandy Silt, fine with clay, brown					12.4		
						52	12.0	128	Ring
15		(SC) Clayey Sand, fine to medium with coarse, light brown					11.7		
						30/6"	10.4	130	Ring
20		(SP-SC) Sand, fine to medium with coarse, clay and silt, yellow brown					7.0		
						30/4"	8.4	123	Ring
25		END OF BORING NO BEDROCK NO REFUSAL NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									

BORING LOG - WEBB ASSOC. ADP STORM DRAIN 04175-3.GPJ CHJ.GDT 4/22/04

C·H·J·

HOMELAND/ROMOLAND ADP PHASE I
RIVERSIDE COUNTY, CALIFORNIA

Job No. 04175-3

Enclosure B-13

EXPLORATORY BORING NO. 15

Client: Albert A. Webb Associates

Date Drilled: 3/15/04

Location: Station 149+30

Equipment / Driving Wt./Drop: CME 55 Drill Rig/140 lbs/30 in

Surface/Flow Line Elevation(ft): 1429.8/1421.1

Logged by: S.H.

Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	(SM) Silty Sand, fine with medium and coarse, light brown	Native				4.1		
			X		38	5.6	115	Ring
	(SM) Silty Sand, fine to medium with coarse and clay, light brown					8.9		
5			X		30/5"	6.5	113	Ring
	(SM) Silty Sand, fine with medium and clay, light brown					9.1		
10			X		30/3"	8.6	127	Ring
	(SP-SM) Sand, fine to medium with coarse and silt, light brown					6.4		
15			X		30/5"	6.1	123	Ring
	(SM) Silty Sand, fine, light brown					7.5		
20			X		30/6"	9.1	Dist.	Ring
	(ML) Sandy Silt, fine, light brown					9.9		
25			X		30/6"	8.8	106	Ring
	END OF BORING							
	NO BEDROCK NO REFUSAL NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30								

BORING LOG - WEBB ASSOC. ADP STORM DRAIN 04175-3.GPJ CHJ.GDT 4/22/04

C·H·J·

HOMELAND/ROMOLAND ADP PHASE I
RIVERSIDE COUNTY, CALIFORNIA

Job No. 04175-3

Enclosure B-14

EXPLORATORY BORING NO. 16

Client: Albert A. Webb Associates

Date Drilled: 3/15/04

Location: Station 166+50

Equipment / Driving Wt./Drop: CME 55 Drill Rig/140 lbs/30 in

Surface/Flow Line Elevation(ft): 1435.0/1425.9

Logged by: S.H.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine with medium and coarse, light brown	Native				7.1		
						30/3"	8.8	113	Ring
5							9.4		
						30/6"	9.0	123	Ring, DS
10		(SM) Silty Sand, fine, light brown					14.9		
						30/4"	12.5	120	Ring
15		(SM) Silty Sand, fine, light brown					6.9		
						46	4.4	115	Ring
		(SP) Sand, fine with medium, light brown					5.3		
20									
						30/5"	3.2	109	Ring
25		END OF BORING NO BEDROCK NO REFUSAL NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									

BORING LOG - WEBB ASSOC. ADP STORM DRAIN 04175-3.GPJ CHJ.GDT 4/22/04

C·H·J·

HOMELAND/ROMOLAND ADP PHASE I
RIVERSIDE COUNTY, CALIFORNIA

Job No. 04175-3

Enclosure B-15

EXPLORATORY BORING NO. 17

Client: Albert A. Webb Associates

Date Drilled: 3/15/04

Location: Station 176+00

Equipment / Driving Wt./Drop: CME 55 Drill Rig/140 lbs/30 in

Surface/Flow Line Elevation(ft): 1438.6/1428.5

Logged by: S.H.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine with medium, coarse and clay, light brown	Native				9.7		
						30/4"	7.5	126	Ring
5						30/5"	6.2	114	Ring
		(SM) Silty Sand, fine with medium and coarse, light brown					10.5		
10						30/5.5"	9.9	117	Ring
		(SP-SM) Sand, fine to medium with clay, light brown					11.5		
15						56/11"	7.1	127	Ring
		(SM) Silty Sand, fine to medium with coarse and clay, orange brown					6.4		
20						30/6"	10.0	120	Ring
		(ML) Sandy Silt, fine, light brown					11.1		
25						47	12.6	114	Ring
		END OF BORING NO BEDROCK NO REFUSAL NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									

BORING LOG - WEBB ASSOC. ADP STORM DRAIN 04175-3.GPJ CHJ.GDT 4/22/04

C·H·J·

HOMELAND/ROMOLAND ADP PHASE I
RIVERSIDE COUNTY, CALIFORNIA

Job No. 04175-3

Enclosure B-16

EXPLORATORY BORING NO. 18

Client: Albert A. Webb Associates

Date Drilled: 3/15/04

Location: Station 193+50

Equipment / Driving Wt./Drop: CME 55 Drill Rig/140 lbs/30 in

Surface/Flow Line Elevation(ft): 1444.0/1433.0

Logged by: S.H.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine with medium and coarse, light brown	Native				13.2		
5		(SM) Silty Sand, fine to medium with coarse and clay, light brown					9.1		
						30/2"	9.0	Dist.	Ring
10						49	5.0	117	Ring
		(SP-SM) Sand, fine with medium, coarse and silt, light brown					7.3		
15							12.4		
						30/6"	8.7	113	Ring
20		(SP) Sand, fine to medium with coarse, yellow brown					2.0		
						30/6"	1.9	115	Ring
25		END OF BORING							
		NO BEDROCK NO REFUSAL NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									

BORING LOG - WEBB ASSOC. ADP STORM DRAIN 04175-3.GPJ CHJ.GDT 4/26/04

C·H·J·

HOMELAND/ROMOLAND ADP PHASE I
RIVERSIDE COUNTY, CALIFORNIA

Job No. 04175-3

Enclosure B-17